



ORGANIZATIONAL UNIT PROPOSAL FORM

DIRECTIONS: *Use this form when proposing a new organizational unit, center, institute, department, school, or college.*

DATE OF REQUEST: 11/02/15

Date of AAC Approval:

11/2/15

INSTITUTION: Desert Research Institute

NAME OF PROPOSED UNIT: Wildland Fire Science Center (WFSC)

Date of Board Approval:

DATE OF IMPLEMENTATION: January 1, 2016

PART 1

A. Action requested

DRI seeks approval to establish the Wildland Fire Science Center (WFSC).

B. Brief description and purpose of proposed unit

Wildland fires and fire-adapted ecosystems are common in areas that (1) are sufficiently moist to allow for vegetation, but (2) feature dry periods with low-enough fuel moisture for combustion, and (3) have a natural (i.e., lightning) or anthropogenic ignition source present during dry periods.

Therefore, fires, their causes, processes, and effects, critically depend on terrestrial ecosystems and their management, terrain and topography, atmospheric conditions, hydrological conditions, and the social and technological environment including fire ignition and fire fighting. In turn, fires affect all these components: terrestrial ecosystems and their management, through combustion of vegetation and organic soils; terrain and topography, through vegetation removal and erosion; atmospheric conditions, through large-scale emissions of gaseous and particulate matter and through buoyancy-driven convection; hydrological conditions, through modification of precipitation, soil infiltration, and runoff properties; and the social and technological environment, through destruction of human possessions and lives and modification of human behavior. Fire science is thus inherently interdisciplinary in terms of causes, processes, and effects, ranging from multidisciplinary environmental, physical, and chemical sciences to social sciences. Establishment of the interdisciplinary WFSC allows DRI to leverage faculty expertise at DRI, UNR, and UNLV to enhance fire-related research and provide a unique NSHE-wide resource within the State of Nevada to address the critical issues of wildland fire and adaptation.

C. Outline plans for the success of the proposed unit

The involvement of all three DRI research divisions, as well as considerable faculty expertise at UNR and UNCE—combining expertise in operational fire support, fire emissions, fire ecology, and fire hydrology—is key to developing a holistic understanding of fire causes, processes, and effects. The WFSC will integrate existing divisional activities and expertise to expand DRI's capacity

beyond our current, uncoordinated approaches to pursuing fire-related research projects and funding. In addition, because climate change is increasing frequency and spatial and seasonal extent of fires, building upon existing DRI climate change research will allow us to respond to the increasing need for bridging basic research and operational support, yielding solution-oriented science.

PART II

A. Mission statement

The vision of WFSC is to grow NSHE's capacity to provide both information and the technical capacity to governmental and non-governmental organizations working to identify and solve problems related to wildfire assessment and mitigation.

B. Goals and objectives

i. Teaching

The Center will support existing collaborative teaching efforts with UNR in atmospheric sciences, hydrologic sciences, ecology, etc., where appropriate.

ii. Research

The Center will build broad interdisciplinary collaborations among DRI faculty from all three divisions, UNR faculty from CABNR and UNCE, UNLV faculty, and with outside researchers to address the inherently interdisciplinary topic of wildland fire causes, processes, and effects. The initial focus will be on multidisciplinary research activities in the US, facilitated by the excellent existing programmatic connections with land management agencies needed for research on public lands. As the Center establishes a strong domestic portfolio of funded projects and collaborations, it will expand into the global research arena with work in all wildfire prone areas including high latitude and altitude (boreal and alpine) regions, Amazon, sub-Saharan Africa, Southeast Asia, and Australia. WFSC will also support availability and development of tools needed for fire science including unmanned aircraft systems (UAS), satellite remote sensing, biomass burning facilities, and ecosystem laboratories; most of these tools are established at DRI and will be utilized and further developed for WFSC applications.

iii. Service

The Center will develop and disseminate relevant information to enhance our ability to address fire related issues.

C. Major participants or collaborators

i. Internal to campus

Faculty within DRI's three Divisions will support WFSC activities on an as needed basis.

ii. External to campus

In addition to expanding existing interactions with UNR, UNLV, and other research institutions, we anticipate significantly expanding collaborations with and support from Federal agencies. For example, the National Aeronautics and Space Administration (NASA): NASA strongly supports fire research in the areas of ecosystems and ecosystem services, atmospheric emission, connection to radiative forcing and climate change, and related to remote sensing and plume sampling from satellites and suborbital platforms. National Science Foundation (NSF): NSF gives high priority to interdisciplinary research and supports it through interdisciplinary programs e.g., Prediction of and Resilience against Extreme EVENTS (PREEVENTS), Dynamics of Coupled Natural Human Systems, Water Sustainability and Climate) and through

co-reviewing unsolicited interdisciplinary proposals in multiple programs. Land Management Agencies and their Joint Fire Science Program (JFSP): Land management agencies within the US Departments of Interior (Bureau of Indian Affairs (BIA; 56 million acres), Bureau of Land Management (BLM; 248 million acres), Fish and Wildlife Service (FWS; 589 million acres), Geological Survey, National Park Service (NPS; 80 million acres), and Agriculture (USFS; 193 million acres)) have established the Joint Fire Science Program (JFSP) to coordinate and fund their fire science research needs. Department of Defense (DoD): DoD manages 19 million acres of lands for military exercises and training and actively uses and suppresses fires, as appropriate, for land management purposes. Fire-related research needs are funded by its Strategic Environmental Research and Development Program (SERDP) and its Environmental Security Technology Certification Program (ESTCP). National Oceanic and Atmospheric Administration (NOAA): NOAA is currently planning FIREX (Fire Influence on Regional and Global Environments Experiment) to study the impact of biomass burning on climate and air quality through a study of western North American fires. Department of Energy (DOE): DOE manages large areas of land (2.4 million acres) with unique needs in terms of fire management. Of particular interest is the potential release of surficial contamination during and after fires on DOE sites and the safety of DOE installations. Environmental Protection Agency (EPA): The EPA is heavily involved in characterizing the influence of fires and fire emissions on air and water quality. International Funding Sources: International fire science relevant for global change is being funded by the US agencies listed above.

D. Evidence of contact within and between affected academic units

The proposed center builds on existing research programs at DRI and UNR, as well as the state-wide “Living with Fire” outreach program at UNCE. The WFSC will enhance these collaborations.

E. Proposed physical location

Desert Research Institute, 2215 Raggio Parkway, Reno, Nevada 89512-1095.

F. Proposed organizational structure (include organizational structure within the campus)

Dr. Hans Moosmuller will serve as the WFSC Director. Additional DRI faculty will support the program on an as needed basis.

G. Activities to be sponsored (e.g. courses, seminars, research, and outreach) – indicate if courses or seminars will be offered through the proposed unit. Please specify if they will be offered for academic credit and applicable to a degree program. Give estimated enrollment.

None at this time; although we do anticipate seminars detailing WFSC activities will be presented on a routine basis at DRI as part of the VPR's Environmental Seminar Series.

H. Resource Analysis – source of funds necessary for the proposed change (enrollment-generated state funds, reallocation of existing funds, grants, other state funds)

Existing funds for DRI's Interdisciplinary Science Centers will be used to support this activity.

I. Projected Budget – identify portions of costs which will require state resources, grants, gifts and/or contracts

No new state resources will be required.

Please attach any supporting documentation (i.e. support letters from community, industry).