2019 Western Regional Partnership Meeting

Marine Corps Installations West- Marine Corps Base Camp Pendleton, CA
November 2019

Advancing Compatible Planning in The West for America's Defense, Energy, Environment and Infrastructure Through Enhancing Collaboration Among Federal, State and Tribal Entities

Report to Address WRP 2018-2019 Priority Presented at the 2019 WRP Principals' Meeting

Western Regional Partnership

Reliable Outcomes for America's Defense, Energy, Environment,
and Infrastructure in the West

WRP provides a proactive and collaborative framework for senior-policy level Federal, State and Tribal leadership to identify common goals and emerging issues in the states of Arizona, California, Colorado, Nevada, New Mexico and Utah and to develop solutions that support WRP Partners and protect natural and cultural resources, while promoting sustainability, homeland security and military readiness.

wrpinfo.org

Table of Contents

Introduction

At each WRP Principals' Meeting, Principals meet to share information, network and formally adopt strategic priorities governing collaborative staff-level efforts for the following year. The Priority for the 2018-2019 WRP Year, approved by the WRP Principals at their 2018 Principals' Meeting, focused on *Advancing Compatible Planning in the West for America's Defense, Energy, Environment and Infrastructure through Enhancing Collaboration among Federal, State and Tribal Entities*. This report prepared by WRP Committees (with contractor support) summarizes WRP efforts over the past year and documents recommended priorities.

Each of the three WRP Committees (Energy, Military Readiness, Homeland Security, Disaster Preparedness and Aviation (MRHSDP&A) and Natural Resources) were specifically tasked with addressing pertinent items within their purview. The results of the Committees' efforts and WRP Working Groups are detailed in this report. Information in the report is based on input provided through the Committees and Working Groups.

WRP History and Overview of the Region

In 2007, representatives of Federal agencies and State and Tribal leadership in Arizona, California, Nevada, New Mexico and Utah partnered with the Department of Defense (DoD) to establish the Western Regional Partnership. Colorado was added in 2015.

WRP provides a proactive and collaborative framework for senior-policy level Federal, State and Tribal leadership to identify common goals and emerging issues in the states of Arizona, California, Colorado, Nevada, New Mexico and Utah and to develop solutions that support WRP Partners and protect natural and cultural resources, while promoting sustainability, homeland security and military readiness.

The WRP Region has 18% of the U.S. population, 19% of the U.S. land mass, considerable state, federal and Tribal lands and various land management processes. These factors and the fact that many land use issues are regional means that unintended land use conflicts may result among WRP Partners' interests. To more effectively work together across geopolitical boundaries, common and emerging issues in the WRP region must be identified, along with potential conflicts and solutions.

Within the six-state region, there are:

- Significant amounts of Federally managed lands (Federal land ownership in these states ranges from 34.1% - 84.9%)
- Extensive Training Ranges, Premier Testing Facilities, Unmatched Military Air Space
- Approximately 172 Federally recognized Tribes
- Significant State Trust Landholdings

State	% of Federal Land (not including DoD managed lands)	% of DoD Managed Land	% of Indian Trust Land	Private Land	State Trust Land	Size of State in square miles and ranking by area
Arizona	35.5%	6.6%	27.6%	17.5%	12.7%	114,000; 6th largest state
California	40.2%	4.0%	.5%	50.3%	2.5%	160,000; 3rd largest state
Colorado	38.9%	0.7%	1.1%	54.9%	4.4%	104,100; 8th largest state
Nevada	78.8%	6.1%	1.42%	13.03%	.15%	110,561; 7th largest state
New Mexico	29.7%	4.4%	10.2%	43.9%	11.6%	121, 593; 5th largest state
Utah	63.6%	3.4%	4.5%	21%	7.5%	84,904; 13th largest state

The benefits of participating in WRP include:

- A forum to engage with high-level representatives of states, federal and Tribal entities across WRP Region
- Opportunities to enhance situational awareness of policy and emerging issues
- Enable interagency dialogue for identifying, addressing, and avoiding these potential conflicts
- Recommendations and innovative solutions in the gap between real time problems and long-term policy development
- Access to tools and WRP Deliverables

WRP Structure

WRP's Charter delineates the mission, goals and responsibilities for the Partnership. The Steering Committee (SC) is composed of senior staff members representing WRP Principals; it coordinates with the Co-Chairs of the three WRP Committees:

- Energy
- Military Readiness, Homeland Security, Disaster Preparedness and Aviation
- Natural Resources.

The Committees work to improve regional and interagency cooperation among Federal agencies, Tribal leadership, States, and non-governmental organizations on critical Western regional issues and provide a forum for information exchange, issue identification, problem solving and recommendations.

A GIS Support Group works with the WRP SC to assist all Committees.

Two working groups were created by the SC acting under the authorization of the Principals: WRP Bureau of Land Management (BLM) Planning Temporary Working Group and the WRP Tribal Engagement Temporary Working Group.

Executive Summary

Advancing Compatible Planning in The West for America's Defense, Energy, Environment and Infrastructure Through Enhancing Collaboration Among Federal, State and Tribal Entities

Introductory Note

The Report that follows is more extensive than that of previous WRP Annual Reports. Primarily, this is the result of the significant work of the three WRP Committees (Energy, Natural Resources and Military Readiness, Homeland Security, Disaster Preparedness & Aviation) during the current year, particularly as each Committee performed "deep-dives," or intensive study, on three important items identified by the Committees from the 2019 survey of Members, together with the important efforts of the two Temporary Working Groups.

The first step was to survey entities (through WRP Steering Committee coordination) regarding areas where enhanced collaboration might help them achieve their goals. The guiding principles behind the survey and the work of the Committees that followed were:

- Project will highlight WRP Partners' missions and long-term goals
- Recognizing the inherent, differentiated authority of federal, state and tribal entities, encouraging communication and cooperation among those entities and avoiding interference with any entity's distinct rights and responsibilities
- Leverage efforts; not duplicate
- Information will be publicly available

The survey was completed in March 2019. From there, the survey results were discussed in each of the three WRP Committees, and each selected three subject areas on which they would do "deep-dives," that is, they would focus their efforts on three particular subjects into which they could do significant fact-finding and information sharing.

WRP's three Committees focused on this priority through webinars, working calls and information-sharing regarding their plans and processes, both those in action and those expected in the future. In addition, WRP's two Temporary Working Groups (on BLM Planning and on Tribal Engagement) continued their efforts.

The activities of these committees and working groups are provided in some detail in this Report and summarized here.

Thank you to everyone who provided key expert input with the goal of Advancing Compatible Planning in the West for America's Defense, Energy, Environment and Infrastructure Through Enhancing Collaboration Among Federal, State and Tribal Entities.

WRP Energy Committee

The Energy Committee focused on three issues:

- Electric Vehicle Charging Stations and Infrastructure
- Energy Resilience and Infrastructure
- Enhancing Awareness of New Energy Projects

To do this work, they held three webinars with 10 subject matter experts on the topics of regional trends and updates and Tribal and DoD energy issues.

Electric Vehicle Charging Stations and Infrastructure

The increasing adoption of plug-in electric vehicles (EVs) requires the development of different supportive infrastructure. Three WRP states are among the states with the greatest number of EVs registered *per capita*. Growth of the EV market has been significant, with new registrations exceeding 30% growth year-over-year nationally, and greater in the WRP region. This growth suggests the importance of understanding the fundamental assumptions for planning EV infrastructure:

- Charging stations must be spaced properly and near the electric grid or another source of power.
- Charging equipment (how fast an EV can be charged at a given charging station) and its associated costs must be considered.
- Drivers need the ability to know where charging stations are, and the type of equipment located at them.

Federal, State and Tribal entities have taken numerous regulatory, policy and other steps to encourage the growth of the EV market. Among these are exempting EVs from regulations of other vehicles, giving a preference to their procurement by government agencies, providing funding, tax or other incentives for the purchase or deployment of EVs or associated equipment, and investing in EV infrastructure and technology. Coincident with the desire for further state investment, the EPA's settlement with Volkswagen regarding the alleged sale of improperly equipped diesel vehicles provided a source of funds to the states that could be used for EV charging stations and other actions to increase EV usage.

All the WRP states are involved in interstate compacts that assist in planning EV charging stations: the West Coast Electric Highway (CA and other states and a Canadian province) and the REV West Plan (AZ, CO, NM, NV, and UT and other states.) Additionally, utilities and agencies on the West Coast are studying the use of long-haul electric trucks.

Several items are recommended for WRP Partners to consider with respect to EVs:

- EV technology's continuing evolution must be considered in planning for future growth.

- Rural areas pose infrastructure challenges, particularly in that there are recommended or required maximum distances between charging stations that might not be feasible given the remote areas in the West.
- Agreements with federal agencies to use government sites for charging stations is considered a best practice.
- Minimum standards for charging station equipment should be considered.

Energy Resilience and Infrastructure

WRP Partners recognize the need for improved resiliency and reliability of energy infrastructure across the region and many are taking proactive steps. Among the factors that may cause disruption of electric service are the condition of the infrastructure, including its age; cyber threats; weather events; and wildfires.

A number of efforts have been undertaken to improve reliability in the face of these threats, including modeling to assess exposure to cyber threats, the creation of a federal office to address natural and man-made disruptions to infrastructure and of a resilience program for Department of Defense installations, identification and protection of infrastructure critical to the nation's defense and more generally important to the nation, the funding of pre-disaster mitigation programs and adoption of forest and electric power management practices designed to reduce the frequency and intensity of wildfires. Also noteworthy were the efforts of electric utilities to ensure the ability to restore power in the event of widespread outages, the growth of microgrids as a means of providing security in the event of larger systemic events, and collaborative efforts among the states and federal agencies.

Among the actions recommended for WRP Partners to consider are proper vegetation management particularly near energy infrastructure, recognizing the importance of providers of resources that would assist quicker restoration of the grid in the event of widespread outages, exploring the use of microgrids in particular situations, and self-evaluation of Partners' particular circumstances and how they can best protect their infrastructure and diversify their energy sources.

Enhancing Awareness of New Energy Projects

Cooperation among federal, state and tribal entities in the development of energy projects is a recognized need. A single entity could stop a project that would provide needed power to an area, thwarting efforts to build resilience to threats. WRP's Energy Committee is a forum to exchange information on projects so that potential conflicts may be identified and addressed.

Current energy challenges identified were the aging of the infrastructure, increased regulation, intermittent resources, varying hydropower production, increased customer-side

resources, market changes and security issues. The mix of resources used for electric generation capacity has shifted in recent years by decreases in coal and increases in wind, solar and, most notably, natural gas. Renewable energy is better integrated by the expansion of the Western Energy Imbalance Market, as more energy producers have joined or intend to join soon.

Regional efforts such as the encouragement of distributed energy, (e.g., solar) to help lessen the impact of disruptions, resource adequacy studies to ensure electric utilities have those resources needed in all but the most extreme conditions and aligning resources with distribution planning all can improve reliability and resilience.

Energy development on tribal lands not only generate power but create jobs. However, grid access may inhibit these developments. The Department of Energy's Office of Indian Energy provides financial and technical assistance, education and outreach to tribes to maximize their energy potential. In addition, the U.S. Department of Agriculture's Rural Development office has provided funding to tribal projects in the WRP region.

Military considerations of compatible energy planning is assisted by the creation of a clearinghouse to act as a single point of entry into the Department of Defense for reviewing energy projects and coordinating mission compatibility reviews. Issues of concern include wind turbine interference with radars, interference with electromagnetic spectrum, and physical obstructions. A process has been established to expeditiously resolve identified issues by early engagement on possible issues. Additionally, the DoD provides grants (which AZ, CA and UT have received) to help prevent adverse siting of energy projects, and has a process for creating Geographic Areas of Concern around installations and ranges to inform developers of known DoD concerns.

A wealth of tools and information are available and detailed in the report from government and private sources regarding a range of energy planning data, such as a review of energy corridor designations on federal lands, a database to track environmental review for large or complex projects, a database on pipeline projects, interactive access to numerous data series, a report regarding geothermal electricity generation capacity, a public platform of R&D data and tools, a database of permitting information and other references for renewable energy and bulk transmission projects, a web mapping application of data relevant to energy research, and numerous other related subjects. WRP Partners are well-advised to be aware of these tools that may be of considerable use in advancing their missions.

Military Readiness, Homeland Security, Disaster Preparedness and Aviation Committee

The MRHSDP&A Committee focuses on supporting WRP Partners on emerging issues. This year, it conducted deep-dives on:

- All-Hazards Disaster Response
- Latest Unmanned Aerial Systems (UAS) Trends
- Compatible Planning with the Military to Support Military Requirements

To help inform its activities, the Committee hosted three webinars with 15 subject matter experts on 2019 Homeland Security Disaster Preparedness Trends and Updates, 2019 Aviation Trends and Updates, and DoD State/Regional Organizations/Forums in the WPR Region.

All-Hazards Disaster Response

The term "all-hazards disaster response" refers to the ability of emergency management entities and others to respond to the array of hazards they may be faced with, regardless of whether the threat is natural or man-made.

Wildfires and Natural Disasters

The number of large disasters has increased over the past twenty years. In the WRP states in 2017, the number of governor-declared disasters ranged from 1 to 17. Although the frequency of wildfires over the last thirty years has been variable, the trend over that time has been toward greater acreage burned.

WRP Partner Roles/Responsibilities

Management of damage from disaster and mitigating the potential for future disaster vary across the several agencies. Among the actions of federal, state and tribal entities are the provision of federal assistance to individuals affected by disasters and federal funding of homeland security and emergency management grants to assess risks and enhance preparedness for emergencies. Pre-disaster mitigation dollars have been found to decrease the need for post-disaster funding by a factor of 6. At the same time, Federal funding has been reduced to less than half of that provided in recent years, placing greater burdens on state, local and tribal entities.

Among the areas of focus are the effect of large scale wildfires in increasing flooding potential and mitigation opportunities, tools that provide current wildfire situation in real-time to assist in coordinating the mobilization of resources, both the use of unmanned aerial systems in fighting fires and their potential interference with firefighting aircraft, and the utility of collaboration among emergency managers in fighting cyber threats.

A number of existing or developing programs may help WRP Partners with all-hazards disaster response, including several from the Federal Emergency Management Agency: development of a Building Resilient Infrastructure Communities (BRIC) program, designed to set aside a portion of disaster grants to make infrastructure and communities more resilient; the Incident Command System integrates facilities, equipment, personnel, procedures and communication; efforts to coordinate regional emergency communications and to integrate FEMA personnel with state, local and tribal partners to improve technical assistance, enhance the public's receipt of services and build more resilience and better response and recovery operations; a national preparedness framework to save lives, protect property and the environment and meet basic human needs post-disaster; and a lifeline service to enable continuous operation of critical functions.

Collaborative efforts include Congress's authorization of the Mitigation Framework Leadership Group, composed of federal, state and tribal entities, which produced a National Mitigation Strategy to advance mitigation investment to reduce risks associated with natural hazards and a Regional Resilience Toolkit produced by FEMA, the EPA and the Metropolitan Transportation Commission/Association of Bay Area Governments in northern California to provide a process for meeting state and federal planning requirements of resilience efforts.

Cyber and Infrastructure Security

Federal agencies report over 30,000 incidents of cyber and infrastructure security intrusions; state and local governments face similar challenges. A number of resources are described by the Committee to address this growing issue, including a 2017 Executive Order establishing a federal working group to improve cyber security by securing federal networks, collaborating with industry to protect critical infrastructure, deter further cyber threats and build international coalitions; DHS's Cybersecurity and Infrastructure Security Agency (CISA), which protects critical infrastructure from physical and cyber threats and performs voluntary cybersecurity assessment; and a Nationwide Cybersecurity Review (currently in process) to provide free, anonymous self-assessment of gaps and capabilities to state, local and tribal entities.

Additional tools enhance situation awareness, such as Geospatial Multi-Agency Coordination, an internet-based mapping application now publicly available to provide real-time information about wildfires and their proximity to life, property and infrastructure. Other efforts Include making geospatial information more readily available, such as state GIS-based compilations of data allowing users to visualize data in emergency situations; an all-hazards consortium of over 45,000 industry and government stakeholders in disaster management, sensitive information sharing, cybersecurity, research transition and solution development; earth science data including facilitation of connections and coordination among data providers, mangers and developers of disaster response systems and tools; promoting the use of Earth observations from space to improve prediction and preparation for disasters, ;a national framework to implement protection of aviation; and national

planning frameworks describing how communities can work together to achieve disaster preparedness goals of prevention, protection, mitigation, response and recovery.

Latest UAS Trends

The WRP region's airspace is complex and busy, with four of the ten busiest airports, four of the eleven MetroPlex projects (including SoCal, the largest and most complex) three space ports, and 75% of DoD's special airspace. Increased competition for this airspace has developed as more private and commercial aircraft, Next Gen technology and new aircraft such as the F-35 are added. Adding to this complex environment is the growth of Unmanned Aerial Systems (UAS, also known as unmanned aerial vehicles, remotely piloted vehicles and drones) ranging in size from micro craft to airliners and now numbering in the hundreds of thousands throughout the country. UAS are being used for urban air mobility, product delivery, search and rescue, law enforcement, agriculture and infrastructure and emergency management.

Safely integrating UAS and their several functions is the subject of many efforts, including surveys of the use of these systems, state laws regulating their use, an FAA initiative to evaluate operational concepts such as night operations, flights above populations and beyond line-of-sight and other factors. Pilot programs have been established, including two in the WRP region (Reno, NV and San Diego, CA.) Another FAA effort is to examine traffic management of UAS. Three pilot programs were selected, one of which is in the WRP region (Nevada). The pilot program is to develop, demonstrate and provide enterprise services using a cloud service infrastructure, and provide a report of its findings. The 2018 Act reauthorizing the FAA codified its UAS Integrated Pilot Program, granted Counter UAS authority to the Departments of Justice and Homeland Security, codified Counter UAS testing at airports, created a framework for UAS hobbyists, and required the FAA to establish a pilot program for the remote detection and identification of drones.

<u>Challenges and threats posed by drones</u>
Among the challenges and threats presented by UAS are that some UAS participate in the National Airspace (non-hobbyists) and use a system for air traffic surveillance, but other, nonparticipating UAS are not on radar and consequently require the use of detect and avoid technology. Also, credible threats may emerge using UAS. These require counter UAS measures to be employed, authorized through various Department of Homeland Security missions.

<u>UAS best practices/success stories</u>
Among best practices and successes in the use of UAS are: the Department of the Interior's use of 600 drones, at a cost less than that of most airplanes, to conduct approximately 20,000 flights annually; MCIWest's use of UAS to support resource management/conservation, disaster management, force protection, utilities and safety; and

Colorado's development of a UAS training and certification program for fire, law enforcement and emergency response personnel.

Compatible Planning with the Military to Support Military Requirements

The WRP region has extensive military training ranges, premier testing facilities and unmatched military airspace, allowing military members to test and train so they are best prepared for times of war. Encroachment can impact DoD's use of land, sea, airspace, electromagnetic spectrum and other resources.

National Defense Strategy and Latest DoD Policies

The 2018 *National Defense Strategy* lays out DoD's strategy in the current environment and requires the Joint Force to be structured accordingly. Consequently, DoD is pursuing three areas:

- Rebuilding military readiness while building a more lethal Joint Force;
- Strengthening alliances and attracting new partners; and
- Reforming the Department's business practices for greater performance and affordability

Range Readiness (Range Modernization Report)

DoD is required to develop and implement a plan to identify and address deficits in the capabilities of training ranges to support current and anticipated readiness requirements. The Act requires a progress report by April 1, 2020 that describes the plan and the results of the evaluation and recommends appropriate improvements.

Military Installation Resilience

A priority of the Assistant Secretary of Defense for Sustainment is to create and sustain resilient installations, including the ability to defend against and recover from human acts such as cyber and from infrastructure vulnerability, providing redundant systems and minimizing the effect of weather or environmental changes.

Establishment of the Electromagnetic Spectrum Operations Cross Functional Team

The EMSO Team was established in February 2019 to provide collaboration and integration within DoD, identify gaps in EMSO and provide methods of addressing the gaps.

Types of Encroachment/Mission Incompatibility

An example of the kinds of interests that must be weighed is found in the process of the NAS Fallon Training Range Modernization, where the State and other stakeholders have expressed concerns that the Navy was not taking their concerns into account.

Encroachment Issues for the Department of Defense

Military installations and ranges provide the platform for testing and training so that military members are best prepared for times of war. Encroachment can impact DoD's use of land, sea, airspace, frequency spectrum and other resources; it is the cumulative impact of development that hampers DoD's ability to carry out its testing and training mission.

Examples of such challenges in broad categories are listed below:

Land	• Urban development • Development of renewable energy and energy infrastructure • Vertical structures located in or beneath low altitude military airspace • Security issues • Range transients
Electromagnetic Spectrum	• Demand for electromagnetic spectrum
Airspace	
Regulatory/Legal	• Threatened and endangered species/critical habitat • Munitions restrictions • Maritime sustainability • Air quality • Noise restrictions • Cultural resources • Water quality/supply • Wetlands

Best practices and Resources

Among the best practices and resources identified are DoD's Readiness and Environmental Protection Integration (REPI) Program that helps mitigate or avoid land use conflicts near installations and regulatory restrictions that inhibit the military mission; the Sentinel Landscapes Partnership among USDA, DoD and DOI that aligns resources in areas where their priorities overlap; the Military Aviation and Installation Assurance Siting Clearinghouse, which protects mission capabilities from incompatible energy development; compatible use plans that assist state and local governments to work with installations to avoid encroachment; the Arizona Commanders Summit, which focuses on mission sustainment through cooperation among the State's military installations; and the Western Regional Airspace Council, hosted by the Air National Guard, including military units, the FAA and general and commercial aviation stakeholders.

Several states have taken actions to support military testing and training, including participating in state/federal partnerships, obtaining federal grants to help prevent adverse

siting of energy projects, improving highway access to an air force base, cooperation on wildfire action, establishing a joint military affairs committee, establishing a base planning program, and supporting test and training range buffers.

Actions for WRP Partners' Consideration

From the DoD perspective, consideration of current and future military requirements for testing and training on and around installations and ranges must be considered. Early communication and engagement on proposed planning projects gives the military more time to ensure compatibility. Enhanced communication between installations and local, state and federal agencies are also helpful.

WRP Natural Resources Committee

As about half the land in the WRP region is managed by federal agencies, and there are significant military assets, varied ecosystems and extensive infrastructure, the possibility of unintended land use conflicts among WRP Partners exists. The Natural Resources Committee provides Partners with information that may help deal with these potential conflicts. This year, the Committee focused on three deep-dives:

- Federal agencies streamlining planning processes
- Focused action on the Yellow-Billed Cuckoo
- Supporting WRP working groups on natural resource-related items

The Committee held numerous working calls and hosted three webinars with 19 subject matter experts on:

- State Wildlife Action Plans
- Tribal and Cultural Resources
- 2019 Water Strategies and Collaboration

Federal Agencies Streamlining Processes

Federal agencies are streamlining processes such as land use planning, permitting and environmental reviews, making it more important to understand where collaborative engagement is available to stakeholders.

In August 2017, President Trump issued an executive order to expedite environmental review and approval of major infrastructure projects, requiring a lead agency setting a timetable, a single environmental impact statement and record of decision, and that all federal agencies complete permitting within 90 days of the decision, with a target of two years between the environmental review and the decision. In April 2018, a memorandum of understanding to implement the executive order was reached among twelve federal agencies often involved in major infrastructure projects. Additionally, presumptive page

limits on the length of environmental impact statements were established. Consequently, planning processes are moving faster and early engagement in planning processes is recommended.

Highlights of major streamlining efforts include an April 2019 executive order regarding energy infrastructure, FAST-41 which establishes new procedures to standardize interagency consultation and coordination and the creation of the Federal Permitting Improvement Steering Council, a DOI order directing BLM to weigh public access in determining whether to dispose of or exchange federal lands, other changes in BLM processes which suggest optimizing the way stakeholders engage with BLM, the US Fish and Wildlife Service's planning tool that streamlines environmental review by allowing users to identify resources and conservation measures for projects, the U.S. Department of Transportation's Infrastructure Permitting Improvement Center to expedite environmental review and permitting and the US Forest Services proposed revisions to NEPA procedures and its partnership with the states, including a memorandum of understanding with the Western Governors' Association.

Land Withdrawals

The Secretary of the Interior is authorized to withdraw federal lands in order to limit activities to maintain public values of the area or to reserve it for a particular purpose. In addition, withdrawals are used to transfer land from one federal entity to another or for support of military training and testing in support of national defense requirements.

Water

The latest information on water strategies and collaboration include an October 2018 Presidential Memorandum promoting the reliable supply and delivery of water in the west, WaterSMART, which allows states, tribes, irrigation districts and other water or power delivery authorities to apply for funding, the anticipated repeal of the 2015 amendment to the Waters of the United States definition, EPA's draft National Reuse Action Plan (comments on which are being received through mid-December 2019) identifying ten strategic objectives for water reuse, NASA's Western Water Applications Office, which uses several platforms to monitor water quantity, quality and fluxes, and the Western States Water Council, which advises 18 Western Governors (including all WRP States) on water issues.

Species: Focused action on Yellow-Billed Cuckoo and work with USFWS to obtain species listings and recovery over the next 10 years

This year the Natural Resources Committee focused its efforts on the Yellow-Billed Cuckoo (YBC) and a broader view of species of concern by working with the US Fish and Wildlife

Service to obtain species listing under the Endangered Species Act (ESA) and recovery over the next 10 years.

Hundreds of species are known or believed to occur in the WRP states (recognizing there is overlap among the states) that are listed as threatened or endangered. Changes in processes under the ESA must be considered by stakeholders. Among those recent changes are: revisions by USFWS and the National Marine Fisheries Service to the regulations implementing the ESA, including applying the same standards for delisting species as are used for listing species, requiring that areas where species occur are evaluated before unoccupied areas are considered, requiring interagency consultation and, in USFWS's case, repealing its rule that generally equated threatened with endangered species protections, and completion of the Final EIS and proposed plan amendments for conservation plans of the greater sage-grouse.

State and Federal Role in Wildlife Resource Management

States have the primary authority for most species, subject to federal preemption as through the Endangered Species Act. States are federally funded to have a comprehensive conservation strategy, typically called State Wildlife Action Plans (SWAPs). These plans were initiated in 2005 and updated in 2015, addressing specific prescribed elements and identifying Species of Greatest Conservation Need (SGCN) that are rare, declining or vulnerable in the state. WRP States have identified between 141 and 1153 in their respective SWAPs, each of which were presented in some detail to the Natural Resources Committee. A key takeaway form those presentations is that prevention is usually less expensive, while recovery is almost always very costly and time consuming. Consequently, SWAPs are prevention focused, and WRP Partners are encouraged to review relevant SWAPs and develop partnerships to best supports species and habitats in a non-regulatory environment.

Several species known or believed to occur in WRP states are being considered for changes in their threatened or endangered status. Two success stories were also detailed, involving collaboration on recovery of the Least Bell's Vireo and the Sonoran Desert Tortoise.

Yellow-Billed Cuckoo (YBC)

The Committee focused on this large bird found throughout the WRP states that has been listed as Threatened since 2014 (and Endangered by the State of California.) The principal threat to the species is loss of habitat, primarily caused by conversion of land from agricultural to urban uses and by flood control measures. The USFWS has been petitioned to review that designation and determined that enough information was provided to warrant further review. It seeks additional information regarding the species biology, range,

population trends, ESA factors and the potential effect of climate change on the species or its habitat.

Utah Division of Wildlife Resources presented a case study with respect to the YBC, which included the development of tools including a Distinctive Population Segment (DPS)-wide map of the population and a proposal to discover the current breeding range, estimates of the breeding population, and a species distribution model.

The Western Association of Fish and Wildlife Agencies (WAFWA) applied for federal funds to assess the habitat occupancy of the YBC's Western DPS, with the project to begin in the Winter 2019/Spring 2020 and conclude in 2022. The results of this assessment will provide a basis for future management of the YBC.

Collaboration between USFWS, Pacific Region and WRP

USFWS, Pacific Southwest Region noted the importance of balancing expectations and deadlines in establishing priorities. USFWS shared with WRP its at-risk species workload, contained in the report proper, and Partners are encouraged to review the document for opportunities to collaborate on key species. Similar documents for other USFWS Regions in the WRP states were not available; however, that portion of the National Listing 5-Year Workplan that includes species with a range in at least one WRP state is reproduced in the report.

Supporting WRP Working Groups on Natural Resource Related Items

Two Temporary Working Groups were stood up by the WRP Steering Committee under authority of the Principals at their 2017 meeting. Leadership of the Natural Resources Committee participated with both the Tribal Engagement and the BLM Planning Temporary Working Group with focused support on addressing natural resource-related items.

Webinar Focused on Tribal and Cultural Resources

The WRP Natural Resources Committee hosted a webinar on tribal and cultural resources which included presentations on the ecology of golden eagles on Hopi lands in Arizona, tribal consultation and additional federal actions needed on federal infrastructure projects, the Native American Fish and Wildlife Society, and natural and cultural resource preservation.

WRP Temporary Working Groups

Two working groups were created by the SC acting under the authorization of the Principals: WRP Bureau of Land Management (BLM) Planning Temporary Working Group and the WRP Tribal Engagement Temporary Working Group.

BLM Planning Temporary Working Group

This group of state, BLM and DoD members worked to improve members' understanding of BLM planning processes and proactively address land issues. The primary focus was enhancing coordination to address DoD issues of concern with BLM Resource Management Plan (RMP) efforts in the WRP region. BLM provided a list of projects and RMPs in progress, which is reproduced in the report. The result of these efforts is an anticipated Memorandum of Understanding between DoD and BLM to create mutually beneficial process to support the agencies' respective missions. Consequently, the Group is considered to have completed its task and recommends that it be sunset at the 2019 WRP Principals' Meeting.

Tribal Engagement Temporary Working Group

This group is involved in outreach to Tribes to obtain greater engagement in WRP. It held regular calls with numerous presentations by various state and federal agencies and one in-person meeting. In all, its work was informative and provided an effective forum for participants. Among the topics covered by the group were an update on California Energy Commission outreach and work with Native American Tribes, Employment, Training and Related services funded in a 477 Plan, Indian Energy Act Eligibility Criteria, Western Electricity Coordinating Council considerations, US Forest Service Land Management Plan Revision updates and numerous other presentations.

It is recommended that this Temporary Working Group be continued for another year to develop recommendations for long term tribal engagement by the 2020 WRP Principals' Meeting.

Proposed 2019-2020 WRP Priority

In light of the activities of the Committees and Working Groups, the SC recommends that the Principals adopt as its strategic priority for 2019-2020 "*Building Resilience in the West for America's Defense, Energy, Environment and Infrastructure through Enhanced Collaboration among Federal, State and Tribal Entities*."

Advancing Compatible Planning in the West for America's Defense, Energy, Environment and Infrastructure Through Enhancing Collaboration Among Federal, State and Tribal Entities

Summary of WRP Committee and WRP Working Group Efforts in 2018-2019

WRP Energy Committee

After analyzing the results from the 2019 WRP survey, it was apparent three specific areas that the Committee would look at in depth this year. The Committee held numerous working calls to gather the information they needed to provide detailed information on the three deep-dive issues:

- Electric Vehicle Charging Stations and Infrastructure
- Energy Resilience and Infrastructure
- Enhancing Awareness of New Energy Projects

Over the past year, the WRP Energy Committee hosted three webinars with subject matter experts highlighting energy trends, efforts to develop energy projects on Tribal lands and a presentation by DoD on the latest issues. These webinars included ten subject matter experts sharing their insight on the following topics:

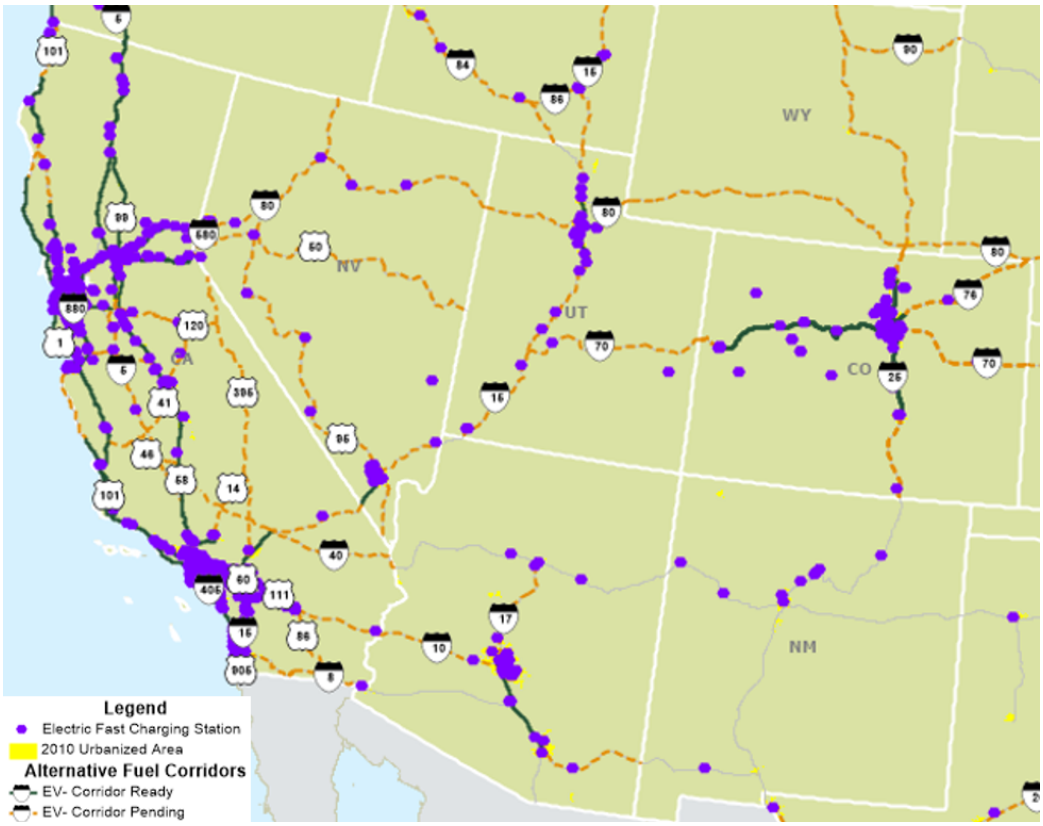
- Regional Trends and Updates
- Tribal Energy
- DoD Energy

The Committee Co-Chairs would like to thank those who dedicated their time and expertise over the past year.

Electric Vehicle Charging Stations and Infrastructure

Overview

For the first time, WRP Leadership indicated an interest in learning more about plug-in electric vehicle (EV) charging stations and infrastructure. From the launch of the Interstate system in the late 1950s to now, much has changed with planning and development. Changes in vehicle technology impacts infrastructure delivery and planning. Self-driving or airborne vehicles are future considerations. Increased adoption of EVs and the accompanying changes in driver behavior require different infrastructure development. Many EV proponents see their efforts as a way to diversify the nation's fuel supply so that it is more resilient and dependable, providing for a distributed resource. This section provides background along with a few planning considerations.



Map 1: Electric Vehicle Charging Stations and Infrastructure Map, Dated October 2019[1]

About Electric Vehicles

The Energy Committee focused their efforts on EVs, as distinguished from hybrid vehicles that have electric motors supplementing a gasoline engine but cannot be plugged in. EVs are of two types.

- All-electric vehicles run entirely on electricity and are charged primarily by being plugged in to electric power from time-to-time and to some extent by power generated when the vehicle brakes. Most EVs currently have driving ranges of up to 100 miles per charge; some are longer.
- Plug-in battery electric vehicles have electric motors for shorter ranges (often up to 40 miles) and an engine, usually powered by gasoline, but sometimes alternative fuels, when the battery charge has been depleted. These vehicles are similar to hybrid vehicles, but can be plugged in.[2]

EVs, while running on electricity, do not have the tailpipe emissions, particularly greenhouse gases, of vehicles powered by gasoline or diesel engines. The benefit to the public from the

[1] https://hepgis.fhwa.dot.gov/fhwagis/ViewMap.aspx?map=Highway+Information|Electric+Vehicle+(EV-Round+1,+2+and+3)#

[2] Source: U.S. Department of Energy, https://www.energy.gov/eere/electricvehicles/electric-vehicle-basics, accessed 9/14/19.

use of EVs in lieu of gas and diesel vehicles has spurred government encouragement of the purchase and use of EVs and supportive infrastructure.

Brief History of Electric Vehicles in the WRP Region

EV registrations have increased substantially in the WRP Region. In 2017, the Region includes three States (AZ, CA and CO) of the eight nationally with more than two EVs per 1,000 people[3]:

State	EV Registrations per 1,000 People (2017)
Arizona	2.29
California	8.64
Colorado	2.33
Nevada	1.73
New Mexico	0.85
Utah	1.90
United States	2.21

Growth of Electric Vehicle Market

Since the introduction of plug-ins in 2010, growth in EVs has been significant. In 2011, there were 17,000 EVs sold in the country. By 2015, that number exceeded 120,000.[4] Between 2016 and 2017, the average rate of growth in EV registrations per capita for the US was 30.2%; the growth rate in each of the WRP States but California (which already has by far the largest number of EVs, both in absolute terms and per capita) greatly exceeded that of the country[5]:

State	Percent Change in EV Registrations per capita 2016-17
Arizona	38.3%
California	29.9%
Colorado	46.2%
Nevada	38.7%
New Mexico	40.5%
Utah	44.4%
United States	30.2%

[3] Source: U.S. Department of Energy, Fact of the Week #1059, December 10, 2018, https://www.energy.gov/eere/vehicles/articles/fotw-1059-december-10-2018-california-had-most-plug-vehicle-registrations, accessed 9/14/19.

[4] Source: Council of State Governments, Plug-in Electric Vehicles: Policies and Trends in the States, February 18, 2016, http://knowledgecenter.csg.org/kc/content/plug-electric-vehicles-policies-and-trends-states

[5] Source: U.S. Department of Energy, Fact of the Week #1061, December 24, 2018, https://www.energy.gov/eere/vehicles/downloads/fotw-1061-december-24-2018-vermont-had-growth-rate-564-plug-vehicle, accessed 9/14/19.

Planning Assumptions

In planning for infrastructure for EVs, some assumptions are fundamental.

- As many EVs have a relatively short driving range, charging stations must be spaced close enough to one another that an EV driver can confidently drive long distances knowing that another charging station is in easy range, thereby avoiding "range anxiety."
- Charging times must be considered. There are three major categories of EV chargers, based on the maximum amount of power the charger provided to the battery from the electric grid:[6]
    - Level 1: Provides charging through a 120-volt (V) alternating current (AC) plug and does not require installation of additional charging equipment. Can deliver 2 to 5 miles of range per hour of charging. Most often used in homes, but sometimes used at workplaces or other locations with a standard 120 V outlet.
    - Level 2: Provides charging through a 240 V (for residential) or 208 V (for commercial) plug and requires installation of additional charging equipment. Can deliver 10 to 20 miles of range per hour of charging. Used in homes, workplaces, and for public charging.
    - Direct Current (DC) Fast Charge: Provides charging through 480 V AC input and requires highly specialized, high-powered equipment as well as special equipment in the vehicle itself. Not all EV models can use a fast charging unit. (Plug-in hybrid electric vehicles typically do not have fast charging capabilities.) Can deliver 60 to 80 miles of range in 20 minutes of charging. Used most often in public charging stations, especially along heavy traffic corridors.
- Fast charging would encourage EV use for longer trips, but are much more expensive than slower units.
- Consumers and businesses may need to consider the type of charging unit that is appropriate for their needs. A guide, funded by the California Energy Commission, is available. [7]
- Drivers need tools to know where they can find stations and what charging facilities are at those stations. Charging stations need a reliable source of electric power, either via the grid or other reliable alternative power sources.

The Colorado Energy Office has identified these barriers to EV adoption:[8]

- High initial costs

[6] https://www.energy.gov/eere/electricvehicles/vehicle-charging

[7] A guide, funded by the California Energy Commission, is available. https://afdc.energy.gov/files/u/publication/EV_Charger_Selection_Guide_2018-01-112.pdf

[8] Colorado Energy Office presentation to WRP, September 13, 2019

- Lack of publicly accessible charging infrastructure[9]
- Lack of awareness of EVs and their costs and benefits
- Limited model availability

Federal EV efforts

Regulations	
DOT-FHWA:	• EVs may exceed the federal maximum gross vehicle weight limit for comparable conventional fuel vehicles by up to 2,000 pounds.[10] • States may exempt EVs from high-occupancy vehicle (HOV) lane passenger requirements.[11] All WRP States but Nevada have exempted EVs.[12]
Policies	
DoD:	• DoD must prefer the lease or procurement of electric or hybrid electric vehicles, if commercially available at a reasonably comparable cost to gas and diesel vehicles.[13]
DOE:	• The Clean Cities Coalition Network, part of the DOE's Vehicle Technologies Office (VTO), works locally to advance affordable, domestic transportation fuels, energy efficient mobility systems, and other fuel-saving technologies and practices.[14] Argonne National Laboratories provides research support to Clean Cities.[15]
EPA:	• EPA certifies the fuel economy-equivalent for charging EVs, known as the miles per gallon gasoline equivalent or MPGe, and creates fuel economy labels for all EV models.[16] • The ENERGYSTAR program certifies EV charging stations to ensure idle charging equipment does not draw unnecessary electricity.[17]
DOT-FHWA:	• DOT designated national EV charging corridors in strategic locations along major highways to improve the mobility of EVs.[18]

[9] Tesla has an installed base of proprietary charging stations available to Tesla owners only, but are not available to the general public.

[10] https://afdc.energy.gov/laws/11682, Public Law 116-6 and 23 U.S. Code 127(s)

[11] https://afdc.energy.gov/laws/HOV, *Fixing American's Surface Transportation Act (FAST Act*, U.S. Senate, 2015 http://www.epw.senate.gov/public/_cache/files/f7896e24-ab3c-4356-9eb1-6b2a032cfab3/fastact-xml.pdf

[12] https://afdc.energy.gov/laws/state

[13] https://afdc.energy.gov/laws/431, 10 U.S. Code 2922g

[14] https://cleancities.energy.gov/about/

[15] https://www.anl.gov/es/clean-cities

[16] https://www.epa.gov/ve-certification/certification-and-compliance-onroad-vehicles-and-engines

[17] https://www.energystar.gov/products/other/evse

[18] https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/

FTC:	• EV charging station manufacturers must disclose equipment's kilowatt capacity, voltage, whether the voltage is AC or DC, amperage, and whether the system is conductive or inductive.[19]
Funding	
DOE:	• The Clean Cities program provides funding for alternative fuel vehicles. infrastructure and technical expertise to educate consumers and those working to advance alternative fuel vehicles. For example, the Clean Cities Program provides incentives to convert vehicle fleets to electric vehicles.[20] • The Advanced Research Projects Agency - Energy (ARPA-E) funds projects that will develop transformational technologies including vehicle technologies and energy storage.[21] • Advanced Technology Vehicles Manufacturing Direct Loan Program provides direct loans for manufacturing facilities, or for engineering integration performed in, the U.S. for EVs or components. [22]
EPA:	• The Clean Diesel Program, through the Diesel Emission Reduction Act, provides grants to scrap old, polluting on- and off-road medium- and heavy-duty trucks, buses and vehicles and replace them with cleaner-burning equipment, including EVs.[23]
IRS:	• The Federal Government provides tax credits ranging from $2,500 to $7,500 depending on the size of the vehicle and its battery capacity.[24]
DOT-FHWA:	• The Congestion Mitigation and Air Quality Improvement Program provides funding to state departments of transportation, local governments, and transit agencies for projects and programs including EVs and infrastructure.[25]

VW settlement

The EPA resolved allegations that Volkswagen (VW) violated the sale of diesel vehicles equipped with "defeat devices" that increased oxides of nitrogen (NOx) emissions throughout the nation. Under part of this settlement, VW was required to spend over $2 billion to advance EVs and charging infrastructure, of which $800 million has been directed to California as a party of this consent decree. Settlement funds include the installation of EV charging stations, education and outreach on the benefits of EVs, and activities to increase EV exposure or access.

[19] https://afdc.energy.gov/laws/8060, 81 Federal Register 2054 and 16 CFR 306 and 309
[20] https://cleancities.energy.gov/
[21] https://arpa-e.energy.gov/
[22] https://www.energy.gov/lpo/advanced-technology-vehicles-manufacturing-atvm-loan-program
[23] https://www.epa.gov/cleandiesel
[24] https://www.fueleconomy.gov/feg/taxevb.shtml
[25] https://www.fhwa.dot.gov/fastact/factsheets/cmaqfs.cfm

VW also funded a $2.9 billion mitigation trust fund available to States and federally recognized Indian tribes to select and implement appropriate actions to reduce diesel emissions from medium- and heavy-duty on- and off-road vehicles and equipment, including EVs. Up to 15% of these available funds can be used by States and tribes to install EV charging stations.[26]

Tribes were allocated $55 million of the VW Settlement Emission Mitigation Trust. Tribes may apply for funding of projects that reduce diesel emissions, such as replacing or changing the power supply on existing diesel equipment or installing EV charging stations. Nearly $6 million was paid to tribes in the first funding cycle, and the second funding cycle of $15 million is pending.

State efforts in WRP Region

Each of the States have adopted policies encouraging the purchase of EVs or deployment of public charging stations and other EV infrastructure. Many approaches are common among the States (for example, all WRP States but Nevada allow for EV use in HOV lanes.) Although each State has adopted its own specific manner of employing these common general themes, the most common practices are summarized below[27]:

Approach	States Adopted					
	AZ	CA	CO	NM	NV	UT
Authorizes reduced electric utility rates for EV owners	x	x	x	x	x	x
Funding for EV infrastructure		x	x		x	
Subsidy for purchase or use of EVs	x	x	x		x	
Subsidy or loans for deployment of EVSE		x	x		x	
Preferential parking for EVs	x	x				
Providers of electricity solely for EVs not public utilities		x		x		x

Other State Actions to encourage EVs

Some States have adopted other policies and rules to encourage the deployment of EVs and the construction of EV infrastructure.

State	Policies/Rules
CA:	• Substantial investments have been made in EV (and other alternative and ZEV technology) infrastructure throughout the state of California, including over $1 B in investor-owned utility ratepayer investments through 2023; annual investments up to $100 million through the California Energy Commission's (CEC) Clean Transportation Program to accelerate development and

[26] https://vwclearinghouse.org/about-the-settlement/

[27] Source: Department of Energy, Office of Energy Efficiency and Renewable Energy, https://afdc.energy.gov/laws/

	deployment of advanced transportation and fuel technologies; and over $2 billion in California Climate Investments administered by the California Air Resources Board (CARB) through its Low Carbon Transportation Program. • Cities and counties are encouraged to use road maintenance funds toward advanced transportation technologies including infrastructure.[28] • Cities and counties must provide an expedited permitting process for EVSE and many not restrict the type of EVs that may access a public charging station.[29] • All California state agencies must support and facilitate rapid commercialization of ZEVs in California.[30] • EVSE facilities at roadside businesses may be included on state highway information signs.[31] • EVSE service providers must provide "open access" by not charging subscription fees or requiring membership; disclosing charges at point of sale; allow at least two payment options; and disclose the location and other information about the station to the NREL.[32] • Common interest developments and landlords must allow for the installation of EVSE.[33] • On September 11, 2019, the California Energy Commission allocated $32.7 million for light duty EV charging infrastructure and $30 million for medium- and heavy-duty ZEVs and infrastructure[34] • California's Air Resources Board was approved to use $5 million in VW Settlement Emission Mitigation Funds to fully or partially fund up to 480 charging stations.[35] • The California Energy Commission has funded an EV planning tool.[36]
CO:	• EVs powered exclusively by electricity are exempt from emissions inspections.[37]

[28] California Streets and Highways Code 2030
[29] California Government Code 65850.7; California Government Code 65850.9
[30] Executive Orders B-48, 2018, and B-16, 2012
[31] California Streets and Highway Code 101.7
[32] California Health and Safety Code 44268 and 44268.2
[33] Senate Bill 1016, 2018, and California Civil Code 4745 and 6713; California Civil Code 1947.6 and 1952.7
[34] https://www.energy.ca.gov/news/2019-09/cec-approves-95-million-plan-critical-clean-transportation-investments
[35] https://www.vwenvironmentalmitigationtrust.com/sites/default/files/2019-08/D-4_California_%20LD%20ZEV%20Funding%20request%201%20-%20Trustee%20Approved_0.pdf
[36] https://maps.nrel.gov/cec/?aL=0&bL=cdark&cE=0&lR=0&mC=36.8708321556463%2C-116.34521484375001&zL=6
[37] 1 Code of Colorado Regulations 204-11 Rule 2

	• In January 2019, Colorado Governor Jared Polis issued an Executive Order to support the transition to zero emission vehicles by directing Colorado to develop a ZEV and clean transportation plan.[38] • The Colorado Electric Vehicle Plan includes building out key charging corridors and updating signage and wayfinding requirements to include EV fast-charging stations.[39] • Charge Ahead Colorado, a partnership between the Colorado Energy Office and the Regional Air Quality Council, has provided grants for over 900 community-based Level 2 and DC fast-charging stations across the state[40] • EV Fast-Charing Corridors-ChargePoint received a $10.3 million award to build 33 DC Fast Charing Stations along six corridors with 2 to 4 50-150kW chargers per site (including retail, grocery, c-store and local government hosts), to be completed by June 2020.[41] • Residential tenants may install EVSE on leased premises and request that the EVSE be accessible by other tenants. Common interest communities must provide residents with an opportunity to charge plug-in electric vehicles and may not create restrictions around EVSE. Common interest communities are encouraged to allow EVSE and to apply for grants from the Electric Vehicle Grant Fund.[42] • Colorado was approved to use up to $10.3 million of its VW Emission Mitigation Funds to provide up to 325 charging stations.[43]
NV:	• Nevada has allocated the maximum 15% of the VW Emission Mitigation Funds (category 9) to build out the Nevada Electric Highway (DC Fast Charging along I-80, I-15, US-95, US-93 and US-50). ○ As part of the Nevada Electric Highway program, Nevada has partnered with a wide variety of stakeholders, including the Fallon Paiute-Shoshone Tribe in the development of the Fox Peak Station.[44] • SB 428 (2019)[45] passed in Nevada allowing a fee to be charged for non-EV charging activities in an EV parking spot.

[38] https://www.colorado.gov/governor/sites/default/files/inline-files/b_2019-002_supporting_a_transition_to_zero_emissions_vehicles.pdf
[39] https://www.colorado.gov/governor/sites/default/files/colorado_electric_vehicle_plan_-_january_2018.pdf
[40] Colorado Energy Office presentation to Western Regional Partnership, September 13, 2019
[41] *Id.*
[42] Colorado Revised Statutes 38-12-601 and 38-33.3-106.8
[43] https://www.vwenvironmentalmitigationtrust.com/sites/default/files/2019-01/ColoradoZEV_D4%20-%20revised%2012.20%20%28no%20Attachment%20A%29.pdf
[44] http://www.ftdc.us/business-ops/fox-peak-fallon
[45] https://www.leg.state.nv.us/App/NELIS/REL/80th2019/Bill/6807/Overview

	• The Nevada Division of Environmental Protection currently manages the states VW Settlement Trust and has awarded nearly $25 million in grants for projects across Nevada that reduce NOx pollution. • SB 145 (2017)[46] authorized NV Energy (Nevada's only investor owned utility) to provide incentives for EV charging infrastructure. As of September 2019, that program has funded or reserved ~$3.2 million in projects.[47] SB 299 (2019)[48] further allows for incentives for school buses.
UT:	• Interlocal entities, such as counties, local districts, and military installations, may issue bonds for EV charging infrastructure.[49]

Best Practice Highlight: Colorado Electric Vehicle Plan

The State of Colorado was an early proponent of EVs. It has built out key charging corridors and soon most corridors will have DC fast chargers. The Colorado Electric Vehicle Plan was launched in 2018 and serves as a living document. Governor Polis's Administration plans for 100% renewable energy by 2040; they are currently underway to have 940,000 EVs registered by 2030. According to the EIA, CO2 emissions for electric power generation is now below that of the transportation sector for the first time since the late 1970s. [50]

Best Practice Highlight: Regional Interstate Corridor Coordination on EVs in WRP Region

Numerous interstate corridors within the WRP Region have EV charging stations, and many more are planned. For example, the Nevada Electric Highway, initiated by then-Governor Sandoval, added five charging sites to US 95. With the VW settlement, Nevada has now dedicated the maximum amount ($3.7 million or 15%) to expand to all five NV major corridors (I-80, I-15, U.S. 93, U.S. 50 and U.S. 95) and is working to have them completed by 2020. Nevada Governor Sisolak has a renewed focus on reducing greenhouse gas emissions and noted that the transportation sector is the largest greenhouse gas emitter.

States are cooperating across state boundaries to ensure EV charging sites are planned in consideration of a broader transportation network. Examples are cited below.

West Coast Electric Highway

In October 2013, California, Washington, Oregon and the British Columbia developed the "Pacific Coast Action Plan on Climate and Energy," an agreement that created the West

[46] https://www.leg.state.nv.us/App/NELIS/REL/79th2017/Bill/4981/Overview
[47] https://www.nvenergy.com/publish/content/dam/nvenergy/brochures_arch/cleanenergy/renewable-energy-incentives/monthly-report/clean-energy-programs-september-2019-monthly-report.pdf
[48] https://www.leg.state.nv.us/App/NELIS/REL/80th2019/Bill/6531/Overview
[49] Utah Code 11-13-103, 11-13-218, and 11-42-102
[50] https://www.eia.gov/todayinenergy/detail.php?id=29612

Coast Electric Highway, a network of high speed EV charging stations located every 25 to 50 miles along Interstate 5 and other major transportation corridors in the Pacific Northwest[51].

REV West Plan

In October 2017, eight western states (including the five remaining WRP States of AZ, CO, NV, NM and UT, plus ID, MT and WY) entered into a Memorandum of Understanding[52] regarding the development of a network of DC fast charge EV stations. The Regional Electric Vehicle Plan for the West (REV West) will "make it possible to seamlessly drive an electric vehicle" across the States' major transportation corridors, including 14 Interstates.[53] The MOU provides that the States intend to:

- Address "range anxiety"
- Coordinate on charging station locations to avoid redundancy while being close enough to one another
- Create voluntary minimum charging station standards
- Incorporate stations into planning and development processes, e.g., building codes, metering, and renewable energy generation; and
- Identify and collaborate on funding opportunities to support the Plan

It is anticipated the REV West MOU will be updated soon given that five of the eight governors are new; much coordination among the states already exist.

In 2018, NASEO produced a report entitled "REV West Electric Vehicle Policy Baseline for the Intermountain States."[54] The report is intended to help the REV West states gather baseline data and develop an inventory of policies across the region. It provides data on charging station availability, highlights policy and program trends in the region, including EV and charging station incentives, state-level procurement and deployment targets, electricity rates and regulations, education and outreach initiatives, relevant building codes, and other policies. The report also provides individual state policies and spending under the VW Settlement's Environmental Mitigation Trust.

Electric Trucking Infrastructure[55]

Nine electric utilities and two agencies representing municipal utilities are sponsoring the West Coast Clean Transit Corridor Initiative to study how to ensure that Interstate 5 has enough charging stations to support long haul electric trucks. The study is expected to be concluded by the end of 2019.

[51] Source: California Energy Commission – Tracking Progress, Last Updated December 18, 2018, https://www.energy.ca.gov/sites/default/files/2019-05/electric_vehicle.pdf

[52] Source: NASEO, https://www.naseo.org/Data/Sites/1/revwest_mou.pdf accessed 9/4/2019

[53] Interstates 8, 10, 15, 17, 19, 25, 40, 70, 76, 80, 84, 86, 90 and 94.

[54] https://naseo.org/Data/Sites/1/revwest_baseline_final_combined.pdf

[55] https://ngtnews.com/west-coast-states-team-up-to-advance-electric-trucking

Actions Recommended for WRP Partners' Consideration

EV Charging Stations

Within the WRP Region, there is a mix of EV charging stations; some on Tribal or private lands and others on locations that the state controls (freeway, state land or state park). Some WRP states have recommended that policies be changed to allow commercial activities (e.g., vending machines, etc.) at charging stations to encourage additional public-private efforts.

States recognize that EV technology will continue to evolve and their planning for EVs must take this and future growth in EV registrations into account. California has instituted a streamlined permitting process as planning permits by city, county and local jurisdictions can vary. [56]

States recognized that the success of their EV plans relied heavily on strong partnerships with utilities. Many utilities invest in relevant infrastructure.

Planning challenges remain for rural areas. Logistical issues such as solar battery storage need to be overcome.

Best Practice Highlight: California's Agreements with Federal Agencies Regarding Charging Stations

The State of California has agreements with the National Park Service and General Services Administration to secure EV charging stations on government sites. **This cooperative effort is viewed as a best practice and other states may wish to follow this practice and include other federal agencies.**

Interstate EV Charging Stations

In September 2017, the DOE produced a report entitled "National Plug-In Electric Vehicle Infrastructure Analysis."[57] The purpose of the report was to address how much EV charging structure is needed in the United States to support EVs. The report concluded that approximately 400 DC Fast Charging stations were needed along the Interstate system, assuming that stations were at 70-mile intervals.[58]

FHWA has determined its objective that an EV corridor established after 2016 will not be considered "ready" unless it has fast charging stations at intervals no longer than 50 miles.[59]

[56] http://businessportal.ca.gov/wp-content/uploads/2019/07/GoBIZ-EVCharging-Guidebook.pdf
[57] https://www.nrel.gov/docs/fy17osti/69031.pdf
[58] *Id*. at page xi
[59] https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/resources/afc_handout/index.cfm

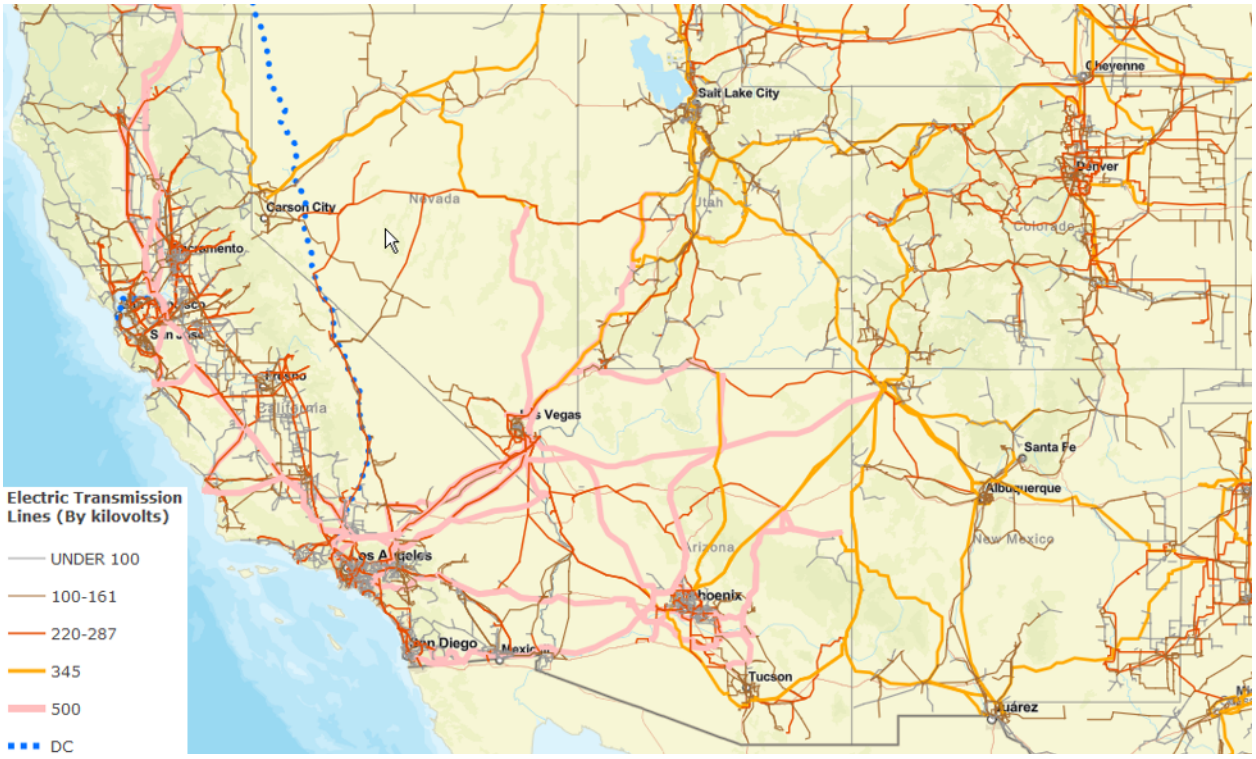
Many of the states noted that requiring that EV travel distance intervals not be longer than 50 miles is extremely challenging in the West given that many areas have no electric capacity. **States recommended that as a policy it would be better to not have a geographic distance requirement given the remoteness of some areas in the West.**

Additionally, it seems prudent to have interstate standardization for EV charging stations. REV West states are working on a set of voluntary minimum standards.

Energy Resilience and Infrastructure

Overview

Disruptions to energy infrastructure pose significant threats to the country. The need for this infrastructure to be able to avoid disruption in the first instance and rebound from disruptions that do occur is one of the most basic requirements of national security. WRP Partners noted the need for improved resiliency and reliability of energy infrastructure across in the west. The purpose of this section is to explore the threats to energy infrastructure and the ability to restore it as needed. Many WRP Partners have recognized this issue of importance and are taking proactive steps. For example, in the 2019 WRP survey, California Governor's Office of Planning and Research (OPR) noted their efforts to quantify state support for energy resilience on military bases and facilitate greater partnerships between the military and state energy agencies.



Map 2: Energy Resilience and Infrastructure, dated October 2019[60]

Types of Disruptions and Associated Resources for Improving Reliability

Several significant threats to infrastructure exist including aging infrastructure, energy cybersecurity, wildfire, weather events and other intentional attacks. Details on each of these significant threats are summarized below, along with identified resources and programs to address or alleviate threats. Disruptions of energy and associated infrastructure are felt at

[60] https://hifld-geoplatform.opendata.arcgis.com/

all levels (federal, Tribal, state, and local). Many of these topics are sensitive in nature, therefore a full exploration of issues in this deep-dive analysis was not practicable. The Energy Committee hopes that the following information will assist WRP Partners to assess their agency's vulnerabilities and connect to existing resources.

Types of Disruptions

Disruptions	Description
Aging Infrastructure/ Infrastructure Conditions	According to the American Society of Civil Engineers (ASCE), the Energy Infrastructure in the Country has a grade of D+.[61] Most electric transmission lines in the lower 48 states were constructed in the middle of the last century with expected 50-year lifespans and are at full capacity. This can affect the reliability of service and the ability to transmit power from remote generation sites, including renewable sites. Although oil and gas pipeline systems have seen recent investment, oil refinery capacities have been at or beyond 90% of capacity for approximately 40 years. over that same time span. A large part of the natural gas transmission system also consists of aging infrastructure, with many lines over 40 years old. The ASCE provided Energy grades for only California and Nevada among the WRP States. CA's grade of D- noted that its energy systems are "*under duress*" but that they "*generally*" met the needs of consumers, specifically that it had "*Aging equipment … and poor right-of-way vegetation management.*" By contrast, NV, with a B-, notably had "*relatively young*" energy infrastructure that was adequate to meet the state's current energy needs.
Energy cybersecurity	Cyber threats into all types of systems, including energy systems, have increased as attacks have become easier to launch, including attacks to interrupt energy service and damage specialized equipment. As energy system operations increasingly depend on the internet, infrastructure becomes increasingly vulnerable to cyberattacks.
Weather Events (threat)	Significant weather events have always been a threat to energy infrastructure, but the aging of that infrastructure increases the severity and scale of the impact of those events on energy infrastructure. Utilities can shut down major grid components in the expectation of weather events or wildfires.
Wildfires	Population growth, drought, land use planning and forest management practices have increased wildfire danger, threatening all types of property, including energy infrastructure.

[61] 2017 Infrastructure Report Card, ASCE, https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Energy-Final.pdf

Associated Efforts and Resources for Improving Reliability

Federal Related Efforts and Resources
Cybersecurity Capability Maturity Model Version 2.0 In June 2019, the Department of Energy, with assistance from the Department of Homeland Safety and in collaboration with private- and public-sector experts, developed the Cybersecurity Capability Maturity Model Version 2.0 (C2M2) which focuses on implementing and managing cybersecurity practices associated with information, information technology and operations technology and their environments. The model is intended to: strengthen cybersecurity; help evaluate cybersecurity; share knowledge, best practices and other references to improve cybersecurity and help prioritize actions and investments to improve cybersecurity.[62] The model is to guide, not require, actions, so that organizations of various kinds can adapt it to their particular circumstances.
Office of Cybersecurity, Energy Security and Emergency Response In February 2018, Energy Secretary Rick Perry created the Office of Cybersecurity, Energy Security and Emergency Response (CESER) to address emerging threats, both natural, such as earthquakes or weather events, and man-made, such as cyber-attacks, to energy infrastructure. It is investing in Research and Development by industry and the National Laboratories on next generation advance technologies. CESER plays a coordinating role among Federal and state governments and industry. When incidents occur, CESER helps coordinate across government with energy providers on response and recovery while coordinating Federal mitigation of the impacts of energy disruptions.[63] In June 2018, the Department of Energy issued its Cybersecurity Strategy.[64] Among other things, the strategy will provide critical support to CESER. In August 2019, CESAR awarded $30 million[65] to fund National Laboratory and partner research, development, integration, and demonstrations that aim to advance cybersecurity, reliability, and resiliency in energy delivery systems. The ten selected projects include cybersecurity innovations in operational technology meant for use in electricity or oil and natural gas production and delivery systems and will meet the objectives articulated in DOE's Cybersecurity Strategy. Recipients include Sandia National

[62] https://www.energy.gov/sites/prod/files/2019/08/f65/C2M2%20v2.0%2006202019%20DOE%20for%20Comment.pdf

[63] https://www.energy.gov/ceser/about-us

[64] https://www.energy.gov/national-security-safety/cybersecurity

[65] https://www.energy.gov/ceser/articles/department-energy-announces-awardees-30-million-research-call-enhance-cybersecurity

Laboratory (NM) to isolate power system applications, Lawrence Berkley National Laboratory (CA) to allow battery storage systems to automatically defend against attacks and to explore techniques to analyze data for critical energy infrastructure, and National Renewable Energy Laboratory (CO) to identify anomalous behavior to rapidly detect a cyberattack against the grid.

Energy Resilience Program[66]

ASD(S) is focused on creating and sustaining resilient installations. Resilient and reliable energy is critical to defense strategy and a holistic fuel laydown strategy is critical to preparing the battlefield. The focus is on energy resilience, cybersecurity and availability and reliability. The Energy Performance Program uses directed energy resilience and alternative financing mechanisms to offset shortfalls and enhance its workforce. DoD Instruction 4170.11 (December 2009)[67] ensures performance and encourages cost-effective solutions to improve mission assurance. Energy Resilience Analyses and Exercises have been undertaken in various parts of the County, including, within the WRP Region, Creech AFB in NV and Beale and Vandenberg AFB, Fort Irwin, Camp Pendleton and NB San Diego in CA. The concept is to integrate energy resilience activities funded by OSD and the Services to advance project development and readiness exercises.

Defense Critical Electric Infrastructure (DCEI)[68]

DCEI is defined in the 2015 Fixing America's Surface Transportation FAST Act[69] as "*any electric infrastructure located in any of the 48 contiguous States or the District of Columbia that serves a facility designated by the Secretary [of the Department of Energy] as critical to the defense of the United States and vulnerable to a disruption of the supply of electric energy provided to such facility by an external provider, but that is not owned or operated by the owner or operator of such facility.*" The Secretary of Energy is to consult with Federal agencies and the owners and operators of the infrastructure in designating DCEI. The goals include strengthening security and resilience of the power grid to support priority installations. The Department of Homeland Safety has a parallel effort to strengthen security and resilience of other commercial infrastructure to support critical functions.

In order to harden the electrical supply, DOE is leading an effort including DoD, DHS, FERC, utilities and other stakeholders to assess the grid, provide technical support to DoD on request, define mechanisms for efficient and effective recovery from physical or cyber disruptions, and prioritize near-term and long-term solutions. To perform this task, DOE intends to request information regarding critical electric load needs, voltage support

[66] Source: Presentation by ODASD (Energy)on March 22, 2019 to WRP

[67] https://www.acq.osd.mil/dodsc/library/dodi-4170-11-installation.pdf

[68] Source: DOE Office of Energy Presentation August 8, 2019 to WRP, "Defense Critical Electric Infrastructure DCEI"

[69] https://www.congress.gov/114/plaws/publ94/PLAW-114publ94.pdf

needs and an analysis of single point failures. DOE is also considering other tactical and strategic matters, such as battery storage, both as on-site DCEI renewables and immediately off-installation and connected to the grid; the installation of micro-grids with generation or connected to utility supply lines or to DCEI mission assurance facilitie;, and cyber monitoring. Approximately 92 military bases nationwide have been defined as defense critical and efforts are underway to assess and propose and implement measures.

DOE Rule Exempting Defense Critical Electric Infrastructure from FOIA Requests

In October 2018, the Department of Energy published a proposed rule[70] to implement its authority to designate critical electric infrastructure under the Federal Power Act. The Rule would generally exempt the information gathered (see above) regarding designated infrastructure from Freedom of Information Act disclosure. Defense Critical Electric Infrastructure, defined as "*is proposed to be designated automatically upon receipt.*"

National Infrastructure Advisory Council (NIAC)[71]

In December 2018, the President's NIAC, composed of senior executives from industry and state and local governments that own and operate critical infrastructure, issued its report "Surviving a Catastrophic Power Outage: How to Strengthen the Capabilities of the Nation." [72]The report resulted from its being "*tasked to examine the nation's ability to respond to and recover from a catastrophic power outage of a magnitude beyond modern experience, exceeding prior events in severity, scale, duration, and consequence*." It found that existing plans, resources and strategies are insufficient, requiring significant public and private action. It recommended two primary responses: designing a national approach to prepare for, respond to and recover from catastrophic power failures with federal guidance and other resources provided to take action at all levels of government, industry and individuals; and improving understanding of the effect of cascading failures of critical infrastructure. It suggests the National Security Council work with other agencies and provide a status report on progress made or barriers to implementation.

North American Energy Resilience Model

At the request of Congress, DOE's Office of Electricity (OE) released a report in July 2019 on the North American Energy Resilience Model (NAERM). The NAERM, a collaboration of the DOE, its National Laboratories, and industry, is intended to enhance the *"capability to ensure reliable and resilient energy delivery across multiple energy sectors while considering a range of large-scale, emerging threats."* There are two main phases to NAERM: Long-term Energy Planning; and "*energy planning and operational studies with real-time data*

[70] 83 FR 54268 (https://www.federalregister.gov/documents/2018/10/29/2018-23459/critical-electric-infrastructure-information-new-administrative-procedures)

[71] https://www.dhs.gov/national-infrastructure-advisory-council

[72] https://www.dhs.gov/sites/default/files/publications/NIAC%20Catastrophic%20Power%20Outage%20Study_FINAL.pdf

streams, national-level situational awareness for both infrastructure and threats, and analytic and decision support capabilities to anticipate threats and mitigate their impact."[73] At completion of this second phase, NAERM intends to have a model able to analyze the power system, predict threat consequences and recommend mitigation. Ultimately, NAERM intends to provide "*real-time situational awareness and analysis capabilities for emergency events for optimal operations and recovery*."[74] Although NAERM is primarily focused on energy, it will also assist with decisions on associated infrastructure, and be used by DOE's National Nuclear Security Administration, DoD and DHS to support national security.

Disaster Recovery Reform Act of 2018 (DRRA)[75]

This Act, signed into law in October 2018, contains several provisions which pertain to electricity resilience. Among its provisions are setting aside funds (approximately $1 billion) in the Pre-Disaster Hazard Mitigation Program for assistance to State and local governments on pre-disaster projects to enhance energy systems; requires FEMA to provide mitigation grant funding in areas affected by wildfires and windstorms, including hardening electricity infrastructure; authorizes FEMA to provide guidance and training to state, local and tribal governments and utilities on prioritizing facilities in returning them to functionality; and allows federal rebuilding assistance to make facilities resilient, rather than just to restore them to the previously applicable building codes.

Security of High Voltage Transformer Substations

The Congressional Research Service produced a report on the "*Physical Security of the U.S. Power Grid: High-Voltage Transformer Substations*"[76] dealing with the vulnerability of High Voltage (HV) Transformers. HV transformers are critical to the nation's electric security as they carry 60-70% of electricity. In March 2014, The Federal Regulatory Commission ordered the North American Electric Reliability Corporation to submit a new reliability standard requiring that steps be taken to address physical security risks, including to HV transformers, which are vulnerable to attacks that could have catastrophic consequences. However, because a significant attack would require a degree of knowledge and sophistication on the part of the attackers, the actual vulnerability of HV transformers to this attack on a wide scale remains uncertain. It was recommended that there be consideration of identifying critical transformers, protecting information about critical transformers, quantifying the threat and determining means of recovery from transformer attacks.

[73] *Id.* page 3.
[74] *Id*.
[75] Division D of the FAA Reauthorization Act of 2018, Public Law No 115-254, https://www.congress.gov/bill/115th-congress/house-bill/302?q=%7B%22search%22%3A%5B%22HR+302%22%5D%7D&r=1
[76] Report of June 17, 2014, https://fas.org/sgp/crs/homesec/R43604.pdf

State Related Efforts
State Energy Resilience Framework[77] In December 2016, Argonne National Laboratory proposed a five-step State Energy Resilience Framework to enable State and local governments, along with utility suppliers, to identify concepts, challenges and vulnerabilities to implement cost-effective, proven options enhancing resilience. The five steps are: understanding stakeholders needs and requirements, determining susceptibilities and vulnerabilities, developing a resilience plan, implementing the plan, and reviewing and maintaining the plan.
State Laws States have provided additional framework and guidance to support energy resilience and associated infrastructure. For example, in May 2019, Nevada enacted a new natural disaster law[78] that requires the state, its regulators and its utilities to reduce the frequency and intensity of wildfires by adopting new forest management practices, undertaking fuel reduction and vegetation trimming, and requiring the hardening of electric utility infrastructure. California passed SB901[79] which, among other things, required the State's three investor-owned utilities to submit annual Wildfire Mitigation Plans (WMPs) to the California Public Utility Commission for review and approval (which has now occurred), and required the Governor's Office of Planning and Research to establish a Commission on Catastrophic Wildfire Cost and Recovery to examine issues surrounding catastrophic wildfire costs and damages, and recommendations for changes to law that would ensure equitable distribution of costs among affected parties. A key finding of the report is "SB 901 does not do enough to manage the systemic risk from wildfire to the state's major utilities." The report, findings, and recommendations were submitted to the Legislature in June 2019. [80] California also took a proactive step about wildfires, where electric utilities developed de-energization programs, referred to as "Public Safety Power Shutoff," as a preventative measure of last resort if the utility reasonably believes there is an imminent and significant risk that strong winds may topple power lines or cause major vegetation-related issues leading to increased risk of fire.[81]

[77] https://www.energy.gov/sites/prod/files/2017/01/f34/State%20Energy%20Resilience%20Framework.pdf
[78] https://www.leg.state.nv.us/App/NELIS/REL/80th2019/Bill/6598/Text
[79] http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB901
[80] http://opr.ca.gov/docs/20190618-Commission_on_Catastrophic_Wildfire_Report_FINAL_for_transmittal.pdf
[81] https://www.cpuc.ca.gov/deenergization/

Utility Related Efforts and Resources

Blackstart

In support of WRP Energy Committee discussions, the Western Area Power Administration provided a "Blackstart Overview" paper dated June 14, 2019[82] and noted: *"…The Western Interconnection is undergoing a fundamental change in its resource mix with the retirement of numerous baseload resources and the interconnection of large amounts of new wind and solar generation, with solar generation largely on distribution systems…" "In line with other reliability and resilience considerations, it would be advisable to develop a national policy on Blackstart resources that recognizes the cost of maintaining the units so they are prepared and can be counted on in times of emergency. This could also be coupled with the Defense Critical Electric Infrastructure initiative to more closely coordinate Blackstart capability to key military installations."* Major power disturbances may cause multiple power plants to go offline that cannot be restarted until power is restored to the facility itself. To provide this power, utilities have identified power plants that can provide power through emergency on-site generators, known as Blackstart units, typically powered by gasoline or diesel fuels, but may include small hydroelectric units. These units supply minimal power to allow the main hydroelectric plant to be brought back online, and its power is then diverted to other types of plants to bring them back online. Utilities have collaborated on plans for how Blackstart will be implemented. Recent regulatory changes have limited the number of Blackstart generators, putting more pressure on the remaining pool of generators.

In May 2018, the Federal Energy Regulatory Commission and the North American Electric Reliability Corporation and its regional entities issued a Study on Blackstart Resources Availability.[83] The study was to deal with the availability of Blackstart resources, including identifying strategies to replace these resources in the future, and options for expanding system restoration plan testing beyond Blackstart resource testing to ensure Blackstart resources can energize the system as required by the restoration plan. Participants in the study verified they have sufficient Blackstart resources and strategies for mitigation going forward, including expanded testing. The study team made five specific recommendations: that single fuel dependent Blackstart resource owners develop alternative fuel capacity or coordinate with fuel providers to mitigate the risk; that Regional Transmission Organizations, Independent System Operators and others consider examining the adequacy of compensation for services and benefits provided by Blackstart resources; ensure that modeling data used to perform restoration simulations is accurate; transmission operators perform expanded testing of their Blackstart plan; and that those entities who have not engaged in expanded testing contact those who have done so.

[82] Source: Western Area Power Administration presentation June 14, 2019 to WRP, "Blackstart Overview"

[83] https://www.ferc.gov/legal/staff-reports/2018/bsr-report.pdf

Extreme Natural Disasters Task Force (ENDTF):[84]

This task force was established by the Studies Subcommittee of the Western Electricity Coordinating Council (WECC) "to address the potential reliability risk related to the loss or reduced of major path, loss of major generation or loss of major load in year-10 horizon." To accomplish this task, the ENDTF will perform a power flow and production cost model, provide reliability concerns related to thermal and voltage violations, stability issues, islanding of the system, unserved energy and cascading outages, and gather information related to an identified disaster, such as a wildfire. Phase One of its assessment is due in 2019.

Distributed Energy Resources (DER)

The growth of microgrids, solar photovoltaic generation and battery storage provides a new option for energy resilience that policymakers may consider, particularly as part of clean energy programs and grid modernization. In April 2019, the National Association of Regulatory Utility Commissioners produced a report, "*The Value of Resilience for Distributed Energy Resources: An Overview of Current Analytical Practices*"[85] regarding DER from the standpoint of utility regulators. Among their findings are that regulators have not identified and valued resilience in decisions related to DERs; that the value of resilience is used in other, non-regulatory venues; that there are two broad categories of analyzing this value (economy-wide and bottom-up) each of which include a variety of data collection and quantitative tools; that there are pros and cons to each effort to value resilience; and that regulators can use these valuation methods in regulatory decisions.

Collaborative Efforts between State and Federal Agencies

WGA Collaborative Efforts with USDA

In June 2019, the Western Governors' Association (WGA) announced an agreement with the USDA to "pursue collaborative projects in wildfire response, vegetation management and invasive cheatgrass."[86] The Interagency Wildfire Disaster Response Project will develop a roadmap of federal assistance to local and state governments after a disaster, and pursue greater coordination between federal agencies. Under the Vegetation Management Project, the WGA will facilitate an effort "*to improve vegetation management in and near transmission and distribution corridors to reduce the likelihood of wildfire*," focusing on the complexity of doing so in corridors with different landowners.

[84] https://www.wecc.org/Corporate/Extreme%20Natural%20Disaster%20Task%20Force%20Charter.pdf

[85] https://pubs.naruc.org/pub/531AD059-9CC0-BAF6-127B-99BCB5F02198

[86] http://westgov.org/news/wga-announces-agreement-with-usda-on-collaborative-land-management-projects

Actions Recommended for WRP Partners' Consideration

Aging energy infrastructure makes the energy systems in the WRP region more vulnerable to threats from weather events, cyber and other attacks, and wildfires. To counterbalance that vulnerability, there are opportunities to mitigate these vulnerabilities in both likelihood and extent.

Members of the WRP Energy Committee appreciated WGA's collaborate efforts with USDA and offered that proper vegetation management (to have fire break) would proactively address some causes of wildfires thereby better ensuring continued energy supply. In California, which has been beset by wildfires over the last several years, the PSPS will allow utilities to protect public safety and prevent wildfires.

A national policy that recognizes the cost to Blackstart resource providers would assist in assuring these units are available when needed in an emergency. Further, this could be coordinated with the Defense Critical Electric Infrastructure Initiative to ensure key military installations are considered in the Blackstart process.

During the assessment and review of military bases with Defense Critical Electric Infrastructure, it may be feasible for those near tribal lands to partner with the Tribes to enhance energy security. Both tribal lands and military bases tend to be in remote areas, and tribal lands frequently possess energy resources (please reference next energy section for further details.) Military bases and tribes could collaboratively create a regional micro-grid, effectively providing distributed deployment of energy and enhancing energy resilience.

WRP Partners should assess their circumstances to determine their energy requirements and supplies, and the possibilities of disruption of those supplies. They can then meaningfully analyze mitigation measures, such as hardening infrastructure, distributed energy and diverse fuel sources, and promoting Blackstart resources and processes so that the likelihood of serious disruption may be reduced and the effect from any disruption is minimized.

Enhancing Awareness of New Energy Projects

Overview

The WRP Region contains diverse existing energy generation resources, both conventional and alternative, and significant transmission corridors. The region benefits from climates conducive to alternative forms of energy, including wind, solar and geothermal, and has significant hydroelectric resources, e.g., Hoover Dam. This region also supports considerable military testing, training and operations; species and their associated habitats; and Tribal lands with unique cultural aspects. All of these can be impacted by development. This section focuses on the latest energy trends and briefly highlights key features to consider in order to best ensure compatible development.

For many years, much of the energy planning in the West has focused on renewable energy, transmission infrastructure, and the sharing of renewable energy generation resources across larger geographies and transmission systems to reduce costs, achieve public policy goals, and maintain system reliability. More recently, at the federal level, the focus has shifted to ensuring grid resilience while integrating all forms of energy to best provide for the nation's economy. In 2019, four of the six Governors' Administrations changed, and, in many states, there appears to be a heightened focus once again on renewable energy projects. Of the six WRP states, California remains the most aggressive with a requirement of 60% renewable energy by 2030 and 100% clean energy by 2045.[87]

During the Committee's October 2019 working call discussing this report, there was general agreement about the importance of federal, state and tribal entities working cooperatively across jurisdictional lines to ensure that an adequate and stable energy supply exists throughout the WRP Region. It was observed that a single agency can stop an energy project, preventing an energy resource from being supplied to an area needing power. There are many entities involved in energy planning and all are encouraged to address interstate implications, especially to ensure power supply is provided in times of disaster; this was an item noted of importance for the Committee to more thoroughly review in the context of the proposed WRP priority on "building resilience."

Regardless of energy production focus, there remains a need for continued and robust collaborative planning to ensure that certain projects in some locations do not impact military testing, training, and operations, natural resources, Tribal lands, etc.

A consistent major focus of the WRP Energy Committee is providing a forum to exchange information and updates on major energy projects in the WRP Region, identifying potential conflicts and working proactively to address them.

[87] http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx#nv

2019 Energy Challenges, Predictions and Emerging Issues

Changes in the Western Electric Market[88]

In May 2019, Western Area Power Administration (WAPA), Western Interstate Energy Board (WIEB), National Association of State Energy Officials (NASEO), Western Electricity Coordinating Council (WECC), and California Independent System Operator presented to the WRP Energy Committee on Regional Trends and Updates. By way of background on these organizations:

- WAPA's mission is to market and deliver clean, renewable, reliable, cost-based federal hydroelectric power and related services. WAPA has more than 17,000 circuit miles of transmission, markets electricity from 56 federal hydropower plants and serves more than 700 customers including rural electric cooperatives, municipal entities, irrigation districts, public power entities, and 92 Native American Tribes. Of these customers, 42 are federal agencies that vary in mission, size and scope from DOE laboratories to NASA to more than 40 Air Force, Army, Navy and Marine installations under 24 contracts across 15 states.
- WIEB is an organization of eleven Western States and three Western Canadian Provinces. Board members are appointed by the governor of each state and the premier of each province. The WIEB Compact states that the purpose of the Board is to provide the instruments and framework for cooperative state efforts to "enhance the economy of the West and contribute to the well-being of the region's people." The Board seeks to achieve this purpose by promoting energy policy that is developed cooperatively among member states and provinces and with the federal government.
- NASEO is the only national non-profit association for the governor-designated energy officials from each of the 56 states and territories. Formed by the states in 1986, NASEO facilitates peer learning among state energy officials, serves as a resource for and about state energy offices, and advocates the interests of the state energy offices to Congress and federal agencies.
- WECC is responsible for the reliability of the Western Interconnection and conducts studies, technical analysis, modeling and scenario development. WECC's service territory extends from Canada to Mexico. It includes the provinces of Alberta and British Columbia, the northern portion of Baja California, Mexico, and all or portions of the 14 Western states between.
- The California ISO is one of nine independent grid operators in North America. They are involved in the Energy Imbalance Market (EIM) and are exploring the

[88] Source: May 17, 2019 WRP Energy Committee webinar on Regional Trends and Updates. Presenters included: Mark Gabriel, Administrator and Chief Executive Officer, Western Area Power Administration; Maury Galbraith, Executive Director, Western Interstate Energy Board; David Terry, Executive Director, National Association of State Energy Officials; Byron Woertz, Manager, System Adequacy Planning, Western Electricity Coordinating Council; and Phil Pettingill, Director of Regional Integration, California Independent System Operator

development of an Extended Day Ahead Market to facilitate more effective integration of renewable energy generation resources across a larger footprint.

Current energy challenges included aging infrastructure, increased regulation, intermittent resources, varying hydropower production, more customer-side resources, changing markets, and security. The mix of resources used for electric generating capacity in the West[89] has undergone significant changes in the last several years. The most significant change is in the effective displacement of some coal generating capacity by natural gas generating capacity. While coal generation capacity in the West has decreased from a peak of 35,000 MW in 2011 to under 30,000 MW in 2017, natural gas generation capacity has quadrupled from 20,000 MW in 2001 to over 80,000 MW in 2017. Wind generation capacity has increased from under 5,000 MW as recently as 2006 to in excess of 20,000 MW in 2017and solar generation capacity has increased from under 2,000 MW in 2011 to over 18,000 MW in 2017. Wind and solar generation capacity in the West together (38,000 MW) exceeds that of coal (30,000 MW). The U.S. Energy Information Administration (EIA) anticipates these trends will continue. [90] Nationally, natural gas-fired power generation is expected to rise from 34% in 2018 to 37% in 2020, coal generation will decrease from 28% to 22%, nuclear and hydropower generation will remain at about 20% and 7% respectively.[91] Wind, solar, and other non-hydropower renewables together are expected to increase from 10% in 2018 to 12% in 2020.[92] EIA also anticipates generation from wind will surpass hydropower generation for the first time in 2019 to become the leading source of renewable electricity generation and that it will maintain that position in 2020.[93] It was observed that diversity in types of generation makes the energy grid more reliable; too much reliance on a single source creates instability.

Other Western Energy Regional Efforts

- The Western Energy Imbalance Market (EIM) continues to expand. Eleven[94] more entities intend to become part of the market by 2022, including two in AZ, three in CA and one in NM. A benefit of EIM is to provide a more effective method to integrate renewables.

[89] For these purposes, the West is the area in the United States served by the Western Interstate Energy Board, which includes the WRP States and the States of Washington, Oregon, Idaho, Montana and Wyoming.
[90] https://www.eia.gov/outlooks/steo/report/electricity.php
[91] *Id.*
[92] *Id.*
[93] *Id.*
[94] November 2019 information; an update from the presentation https://www.westerneim.com/Pages/About/default.aspx

- Outreach to State on Distributed Energy Resources.[95] WIEB partners on this initiative include NREL and LBNL. The goal of this initiative is to mitigate or remove barriers to distributed solar photovoltaic power deployment in the West. Perceived barriers are interconnection, reliability and utility rate design. One impact of distributed energy resources would be that voltage disturbances would be lessened compared to those situations where distributed energy is unavailable.
- Project on Resource Adequacy in the West.[96] The goal of this project is to create a framework for regional resource adequacy policy in the West. Resource adequacy is a regulatory construct to ensure electric utilities have enough resources to serve demand under all but the most extreme conditions. Many Western electric utilities use Integrated Resource Planning to identify generation needed to ensure adequacy by providing forecasted reserve margins.
- State Energy[97] Policy and Regulatory Coordination.[98] National Association of Regulatory Utility Commissioners-National Association of State Energy Officials (NARUC-NASEO) Comprehensive Electricity Planning Task Force focuses on aligning resource and distribution planning. Greater alignment of state electricity planning, policy and regulatory processes could improve reliability and resilience. The Task Force has held workshops on innovation-pioneering new tools and roadmaps for aligning planning. WRP States participating in the Task Force: AZ, CA, CO and UT.
- WECC captures important events [99](news articles, press releases etc.) on energy related efforts and views that on a broader context of the Western Interconnection to analyze potential impacts on reliability. WECC is performing[100] a 2019 reliability assessment regarding "System Resilience Under Extreme Natural Disaster" such as wildfires or earthquakes.

Energy Development on Tribal Lands

Within the WRP Region there are approximately 172 federally recognized Tribes and the percentage of Tribal lands range from 27.6% of the state of Arizona to 0.5% of the state of California. Tribal lands possess energy resources that could generate power, provide revenue, and create jobs in Indian Country while supporting the goals of clean energy and energy independence. Developing energy projects (from initial assessment to project operations) can be time-consuming, complicated and frustrating. There is a complex mix of

[95] Source: May 17, 2019 WRP Energy Committee webinar on Regional Trends and Updates. Presenter: Maury Galbraith, Executive Director, Western Interstate Energy Board
[96] Id.
[97] Source: May 17, 2019 WRP Energy Committee webinar on Regional Trends and Updates. Presenter: David Terry, Executive Director, National Association of State Energy Officials
[98] Source: Presentation of May 17, 2019 by National Association of State Energy Officials to WRP.
[99] www.wecc.org/systemadequacyplanning/pages/scenario-planning.aspx
[100] Source: May 17, 2019 WRP Energy Committee webinar on Regional Trends and Updates. Presenter: Byron Woertz, Manager, System Adequacy Planning, Western Electricity Coordinating Council

history and laws regulating leasing and development. Many Tribes have viable renewable energy resources and land for development, but do not have direct or proximate access to connect with the electrical grid system, diminishing Tribes' participation in developing profitable, utility-scale renewable energy.

The Department of Energy's Office of Indian Energy[101] promotes tribal energy development, efficiency and use, reduced or stabilized energy costs, enhanced tribal energy infrastructure and bringing electric service to tribal lands. Eighty six percent of Indian lands with energy or mineral resources are untapped. The mission of the Office of Indian Energy is to "*maximize the development and deployment of energy solutions for the benefit of American Indians and Alaska Natives*." It does this through financial and technical assistance, education and outreach. It invested nearly $70 million in more than 170 tribal energy projects from 2010-2018 (including 3 in CA and one in NM, totaling more than $2 million of federal funds and nearly $5 million with cost-sharing.) Obtaining funding is a competitive process, with about 30% of applications funded over that period. Projects must be on Tribal land and at least half of the project cost must be from the Tribe's non-federal sources unless otherwise allowed.

The Office also administers a Tribal Energy Loan Guarantee Program with $2 billion in partial loan guarantees. The Office provides an "Energy Development Assistance Tool" that provides information for Tribes about federal grant, loan, and technical assistance programs available from more than 10 federal agencies to support energy development and deployment in Indian Country and Alaska Native villages.[102]

Education and Outreach includes an energy webinar series[103] with information on energy efficiency, energy technologies and project development. The Office has also developed a Tribal Energy Atlas,[104] providing an interactive application that lets tribes analyze installed energy projects and resource potential on their lands. (This tool could be more robust if combined with other WRP Partners' data and mapping tools to develop multi-agency scenarios regarding developable energy technologies.)

The Office's Division of Energy and Mineral Development's mission[105] includes providing technical and economic advice and services to assist tribes in achieving self-sufficiency by using their energy and mineral resources to create sustainable, environmentally sound economies. Tribes' reasons for developing these projects include enhanced sovereignty, energy independence, environmental benefits and economic impacts such as reduced energy costs, revenue generation, job creation and new development. The 2017 Indian

[101] Source: U.S. Department of Energy, Office of Indian Energy Presentation on July 10, 2019 to WRP.
[102] https://www.energy.gov/indianenergy/energy-development-assistance-tool
[103] https://www.energy.gov/indianenergy/resources/education-and-training/webinars
[104] https://www.energy.gov/indianenergy/projects/tribal-energy-atlas
[105] Source: Presentation of Division of Energy & Mineral Development on July 10, 2019 to WRP.

Tribal Energy Development and Self Determination Act resulted in over 600 contracts for biomass demonstration projects for management of federal forests.

Financing Programs for Tribal Energy Projects:[106]

Rural Development (RD) is one of USDA's eight missions, supporting the Department's strategic goal of facilitating rural prosperity and economic development by expanding rural business opportunity and rural quality of life with access to capital; improving infrastructure, broadband access and connectivity; and supporting the rural workforce. In Fiscal Year 2019 RD's electric programs offered over $6 billion in loans, primarily to utilities, and about $10 million in grants to assist in lowering energy costs for consumers in areas with extremely high per-household energy costs. The Rural Energy for America Program (REAP) provides grants and guaranteed loans for agricultural producers and rural small businesses to purchase and install renewable energy systems and improve energy efficiency. RD's Community Facilities Programs provide direct loans, guaranteed loans, grants (including a tribal college initiative) and Rural Community Development Initiative grant funds – totaling in excess of $3 billion available to finance essential community facilities during FY19. Examples of program investments for tribal projects within the WRP include a $94 million electric loan to the Navajo Tribal Utility Authority to construct a 55.1 MW solar facility and a $2.3 million High Energy Cost Grant to the Moapa (NV) Travel Center for a solar power array.

For more information on Tribal energy, please see Tribal Engagement Temporary Working Group summary later in this report. Highlights include CEC Tribal Energy related information.

Compatible Energy Planning – Military Considerations

Military Aviation and Installation Assurance Siting Clearinghouse (SCH)[107] was established in the FY2011 NDAA and renamed in the FY2018 NDAA. It acts as a single point of entry into DoD for reviewing energy projects filed with the FAA or when requested by state and local governments, other federal agencies or other interested persons. SCH coordinates mission compatibility reviews with all DoD stakeholders to determine mission compatibility and oversees mitigation negotiations. Typical energy siting concerns include wind turbine interference on air traffic control, surveillance and weather radars, low-level flight obstruction; electromagnetic interference and physical obstruction from power lines and glint/glare from solar energy projects. The number of projects received from the FAA alone has increased by a factor of 10 from CY11 to CY18. Once a project is received from the FAA,

[106] Source: Presentation of July 10, 2019 of Rural Development Innovation Center, U.S. Department of Agriculture to WRP.

[107] Source: Presentation of Military Aviation and Installation Assurance Siting Clearinghouse, Office of the Assistant Secretary of Defense (Sustainment) to WRP

it is reviewed by the military departments. If an adverse impact is found, the SCH establishes a mitigation response team and designates a military department as lead negotiator. The team works with the developer to identify strategies to overcome the impacts.

The team's work results in one of three resolutions: a determination that the impact is acceptable; execution of an agreement among the DoD, the military department and the developer that establishes a mitigation strategy; or a DoD objection to the Secretary of Transportation. Mitigation solutions have included site modification, height/number restrictions, curtailment, radar improvements and foreign investment reviews. Although notification from the developer to the FAA is required 45 days before construction begins, the FAA's decision is advisory only. However, most developers require FAA approval as a matter of sound business practices.

SCH is coordinating with states for additional protections, including educating regional partnerships on DoD concerns, direct state discussions, and advocating for statewide energy compatibility studies. Among state approaches are legislation that limits wind turbine construction without a No Hazard determination from FAA and a mitigation agreement with the DoD; requiring DoD notification before allowing access to electric grid; restricting state tax credits for projects within 25 miles of air installations; including military impacts in land-use permitting; and soliciting SCH and installation input before permitting. In sum, DoD is looking for early notice of energy projects that might be near or in the vicinity of military bases, ranges and other operational areas such as airspace corridors (Military Training Routes, Military Special Use Airspace, etc.) Such active engagement ensures mission success and, if there is a conflict, works to find a feasible and affordable solution.

Best Practice: The DoD Office of Economic Adjustment provides grants for community planning assistance to help prevent siting energy projects that will adversely affect DoD's testing, training and operations. Several states have received these grants, including AZ, CA and UT. WRP States are encouraged to review this grant opportunity to see if it might be of assistance.

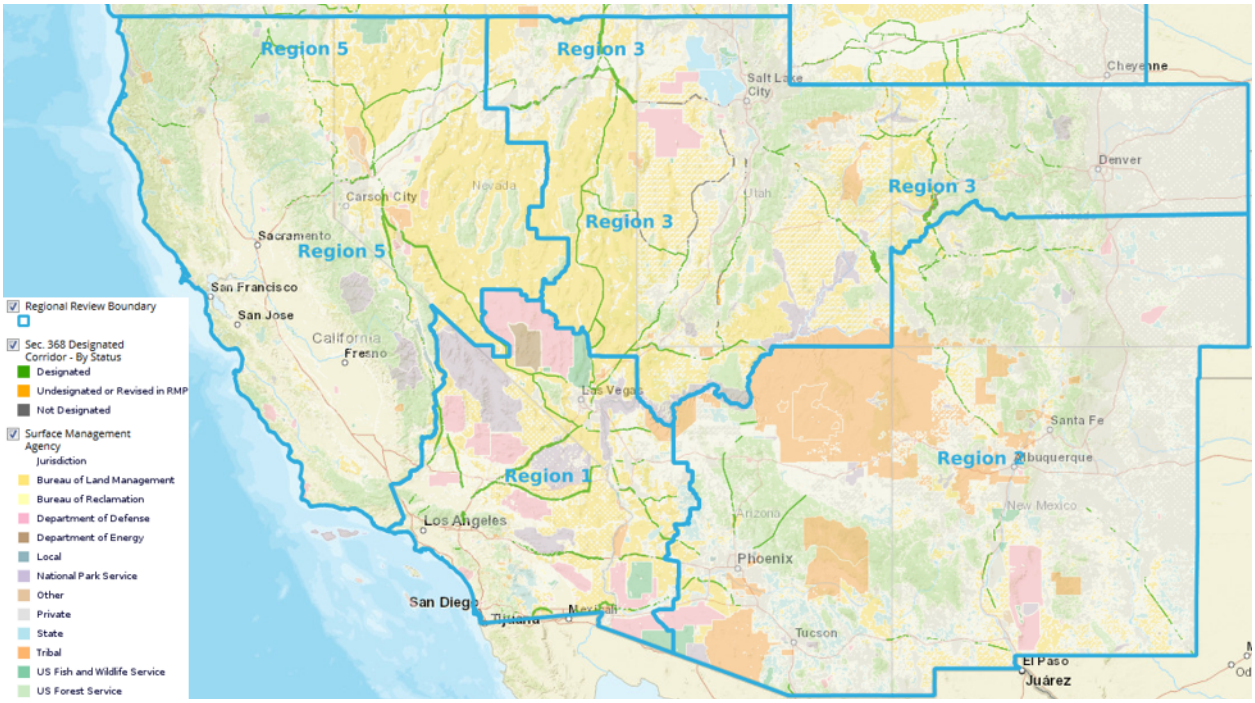
The WRP Energy Committee discussed an approach[108] that might assist WRP Partners in compatible planning with energy projects to make better known key areas to communicate and collaborate. It was noted that DoD has a process for creating Geographic Areas of Concern around installations and range areas. It is used as an outreach tool to inform developers of DoD concern early in their decision-making cycle to ensure that the developers know what concerns DoD has before spending large amounts of time and money on a project.

[108] Aug 8, 2019 WRP Energy Committee Working Call presentation, "An Approach to Compatible Planning by Steve Duboyce, Encroachment Manager, NAWCWD Point Mugu Sea Range"

Compatible Energy Planning – Coordination with Bureau of Land Management

The Bureau of Land Management (BLM) manages significant portions of land within the WRP Region. At the 2017 WRP Principals' Meeting, the Principals decided to establish a BLM Planning Temporary Working Group to better understand BLM planning processes, projects in the WRP Region and efforts to better work together. For more information, please see BLM Planning Temporary Working Group summary later in this report.

2019 Energy Project Highlights and Tools for More information



Map 3: 368 Energy Corridors and Surface Management Agency, dated October 2019[109]

Over the past year, there has been much activity on energy projects. Selected highlights below along with a few key energy sites for more information.

Section 368 Energy Corridor Review

Energy Corridors designated on federal lands in 11 Western States for oil, gas and hydrogen pipelines and electricity transmission and distribution facilities, per Section 368 of the Energy Policy Act of 2005, are under review pursuant to a 2012 settlement agreement. The West Wide Energy Corridor Information Center[110] provides an overview of regional reviews, opportunities for public participation and updates to the regional review process when available. The WRP Region is included in four of the six regions

[109] https://bogi.evs.anl.gov/section368/portal/

[110] http://corridoreis.anl.gov/regional-reviews/

(Region 1 (Western AZ, Southern NV and Southeastern CA), Region 2 (NM, Most of AZ and Southern CO), Region 3 (Utah, Northern CO, Eastern NV and part of NW AZ) and Region 5 (Western NV and Northern CA)). Corridor Studies are used to inform regional reviews, which focus on identifying over-utilized corridors. During regional reviews, agencies provide information to and solicit input from stakeholders including state and local governments, federal agencies, tribes, NGOs, industry and others. A Section 368 Mapping Tool[111] is provided; this GIS tool facilitates stakeholder understanding.

Federal Infrastructure Permitting Dashboard[112]
This is an online tool for federal agencies, developers and the public to track environmental review and authorization for large or complex infrastructure projects, including projects under the Fixing America's Surface Transportation (FAST) Act,[113] major infrastructure projects under Executive Order 13807,[114] and projects that were part of the original MAX.gov Permitting Dashboard. The Data Portal[115] allows downloading of project and timeline information. Although most projects are in the surface transportation sector, some relate to renewable energy and pipelines.

EIA Pipeline Projects and State Energy Portal
The U.S. Energy Information Administration (EIA) maintains databases on natural gas[116] and other pipeline projects.[117] EIA also maintains a State Energy Portal[118] that provides access to more than 1,700 state- and regional-level data series with interactive, customizable views of more than 150 charts, tables, and maps. Users can add other state, regional, or U.S. data to make quick comparisons.

EIA projects[119] that by 2020, increases in crude oil, natural gas and natural gas liquids production will exceed the growth of U.S. energy consumption, meaning that the United States will be a net exporter for the first time in 60 years.

[111] https://bogi.evs.anl.gov/section368/portal/
[112] https://www.permits.performance.gov/
[113] https://www.congress.gov/114/bills/hr22/BILLS-114hr22enr.pdf
[114] https://www.govinfo.gov/content/pkg/FR-2017-08-24/pdf/2017-18134.pdf
[115] https://data.permits.performance.gov/
[116] https://www.eia.gov/naturalgas/data.php#pipelines
[117] https://www.eia.gov/petroleum/data.php#movements
[118] https://www.eia.gov/beta/states/overview
[119] https://www.eia.gov/todayinenergy/detail.php?id=38152

GeoVision: Harnessing the Heat Beneath Our Feet[120] The Department of Energy released this report that summarizes findings demonstrating the potential for geothermal electricity generation to increase more than 26-fold, reaching 60 GWs of capacity by 2050.
Energy Data Exchange (EDX)[121] EDX is the U.S. Department of Energy Fossil Energy virtual platform for public curation of R&D data and tools, developed and maintained by the National Energy Technology Laboratory.
Geocube[122] The National Energy Technology Laboratory created Geocube, a web mapping application of data relevant to regional energy research needs. It connects users to data collections and resources using EDX (above.) Users can view public data collections and create their own maps.
Regulatory and Permitting Information Desktop (RAPID) Toolkit[123] The Department of Energy's Office of Electricity created RAPID to provide permitting information, best practices and reference material for renewable energy and bulk transmission project development. It makes regulatory and permitting information accessible from one location, providing step-by-step analysis of the approval process, contact information of regulators, best practices, reference materials, and links to permit applications and other information.
Energy Zones Mapping Tool[124] Argonne National Laboratory (ANL), in collaboration with the National Renewable Energy Laboratory and Oak Ridge National Laboratory, created the Eastern Interconnection States Planning Council Energy Zones Study to develop a methodology and mapping tool to enable identification of parts of the Eastern Interconnection suitable for developing low- or no-carbon energy generation sources. After its completion in 2013, the Department of Energy continued to fund ANL to enhance the project, including making it national in scope and including nine energy sources: Biomass, Coal, Geothermal, Natural Gas, Nuclear, Solar, Storage, Water, and Wind.

[120] https://www.energy.gov/articles/doe-releases-new-study-highlighting-untapped-potential-geothermal-energy-united-states
[121] https://edx.netl.doe.gov/
[122] https://edx.netl.doe.gov/geocube/
[123] https://openei.org/wiki/RAPID/BulkTransmission
[124] https://ezmt.anl.gov/

DOE analyzes[125] challenges and opportunities associated with taller wind towers of up to 160 meters.
BLM released the Final Environmental Impact Statement[126] (EIS) for the proposed Ten West Link Transmission Line project
WECC's Interactive Transmission Project Portal[127] This portal shows information submitted by transmission developers about projects that are in various stages of implementation.
WRP Website Resource[128] WRP's website has a set of GIS resources on its website obtained from WRP Partners.
The Wilderness Society This non-profit maintains Public Lands Tracker Web Maps for Solar Energy[129] and Wind Energy.[130]
Solar Energy Industries Association produced the Major Solar Projects List[131] This is a database of ground-mounted solar projects 1 MW and above that are either operating, under construction or under development.
Over the last ten years, more than 15,000 megawatts of renewable energy projects have come online in California. In 2018, Senate Bill 100 (de León, Chapter 312, Statutes of 2018) increased the renewables mandate to 60 percent by 2030 and set a goal to serve 100% of retail load with zero-carbon energy by 2045. The Energy Commission's energy, environmental, and land use planning activities will support these goals. CEC is also conducting energy, environmental, and land use planning and coordination activities throughout California to minimize potential impacts to species and habitats and minimize

[125] https://www.energy.gov/eere/wind/downloads/increasing-wind-turbine-tower-heights-opportunities-and-challenges

[126] https://www.blm.gov/press-release/blm-releases-final-environmental-impact-statement-proposed-ten-west-link-transmission

[127] https://www.wecc.org/SystemAdequacyPlanning/Project%20Information%20Portal%20Documents/WECC_Plan_Map.html

[128] https://wrpinfo.org/resources/gis-maps/

[129] https://wilderness.maps.arcgis.com/apps/webappviewer/index.html?id=0cef355a57254a6a9175d6c607813f43

[130] https://wilderness.maps.arcgis.com/apps/webappviewer/index.html?id=d4448a6f8c674f05b435e366034db7e0

[131] https://www.seia.org/research-resources/major-solar-projects-list

land use conflicts that may be associated with renewable energy and related transmission projects. Information[132] on these activities is regularly included in California updates to WRP.
BOEM-California Intergovernmental Renewable Energy Task Force This task force is working to identify potential areas where offshore wind energy development may be suitable in the future. This includes coordination, data gathering, and providing outreach to local communities and governments, Native American Tribes, environmental groups, commercial fishing groups, and various other stakeholder groups. BOEM anticipates conducting a sale[133] in 2020.
California Statewide Energy Gateway[134] This is a compilation of energy planning related information in California created by scientists, software engineers and educators at the Conservation Biology Institute.
The New Mexico Governor signed energy legislation[135] to establish New Mexico as a national leader in renewable transition efforts.
In March 2019, the Navajo Nation voted to end efforts to purchase the Navajo Generating Station (coal-fired power plant)[136]
Resources for Wind Energy Siting with Consideration of Species ○ Ecological Society of America published "Impacts to Wildlife of Wind Energy Siting and Operation in the U.S.[137] ○ The Nature Conservancy launched Site Wind Right[138]

[132] CEC blog: http://calenergycommission.blogspot.com/, CEC newsletter: https://www.energy.ca.gov/commission/newsletter/index.php

[133] https://www.boem.gov/The-Path-Forward-for-Offshore-Wind-Leasing/

[134] https://caenergy.databasin.org/

[135] https://www.governor.state.nm.us/2019/03/22/governor-signs-landmark-energy-legislation-establishing-new-mexico-as-a-national-leader-in-renewable-transition-efforts/

[136] https://gallery.mailchimp.com/3341677ced70eee20b6a79473/files/95ea6aa3-9f7a-4734-991d-bedb50fb74d5/PR_NAABI_3.21_0044_19_2_.pdf?utm_source=Media+Contacts&utm_campaign=e27e22abc5-EMAIL_CAMPAIGN_2019_03_23_12_26&utm_medium=email&utm_term=0_c3fb2c8cdc-e27e22abc5-17163325

[137] https://www.esa.org/wp-content/uploads/2019/09/Issues-in-Ecology_Fall-2019.pdf

[138] https://www.nature.org/en-us/what-we-do/our-priorities/tackle-climate-change/climate-change-stories/site-wind-right/

Military Readiness, Homeland Security, Disaster Preparedness and Aviation Committee

The Military Readiness, Homeland Security, Disaster Preparedness and Aviation (MRHSDP&A) Committee is "mission" focused and works to support WRP Partners on emerging issues. Historically, this Committee has worked on such items as enhancing awareness of the DoD mission, assisting WRP Partners' homeland security/disaster preparedness missions to foster awareness of interdependence among Partners and serving as a forum for aviation users. This year, after careful review of the 2019 WRP Survey (in support of the current WRP Priority), the Committee conducting deep-dives into three areas:

1. All-Hazards Disaster Response
2. Latest UAS Trends
3. Compatible Planning with the Military to Support Military Requirements

To more fully be appraised of current issues, the Committee hosted three webinars with 15 subject matter experts on the following topics:

- 2019 Homeland Security/Disaster Preparedness Trends and Updates
- 2019 Aviation Trends and Updates
- DoD State/Regional Organizations/Forums in the WRP Region

Details on the deep-dives are summarized below.

All-Hazards Disaster Response

Overview

All-hazards disaster response refers to the ability of emergency management entities and others to respond to the array of hazards that they may face. Whether these hazards are natural, such as earthquakes, hurricanes, flooding, high winds, drought, mudslides or other weather-caused hazards, man-made, such as cyber or physical attacks on infrastructure, or perhaps either, such as wildfires, emergency managers in the region must be ready to avoid or mitigate the risks associated with these events. This section provides a snapshot of the roles and responsibilities of WRP Partners in addressing these hazards, emerging issues and areas of focus, and resources, programs and best practices to consider.

Wildfires, Natural Disasters (Earthquakes, flooding, high winds, mudslides, etc.)

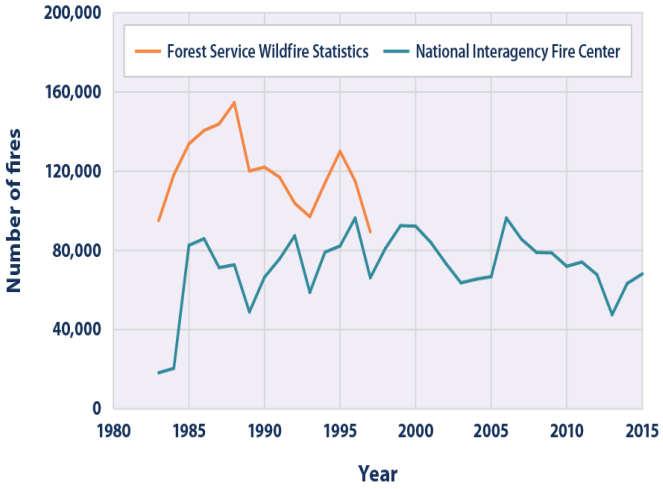
According to the National Centers for Environmental Information (NCEI), the number of large disasters (defined as exceeding $1 billion each, inflation adjusted) has increased over the past twenty years. The average number of such events has been 6; 2017 had 16, 2018 had 19 and 2019 (through October 8) has had 10.[139]

[139] https://www.ncdc.noaa.gov/billions/

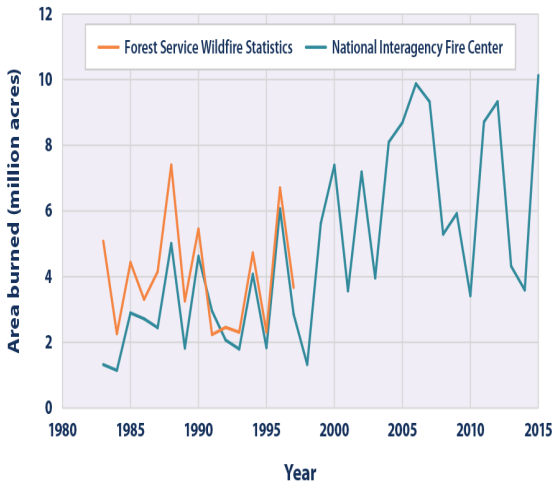
Disaster Declarations by Governors in the WRP States FY2017[140]

State	Number of Disaster Declarations
Arizona	5
California	17
Colorado	12
New Mexico	1
Nevada	7
Utah	1

Wildfire Frequency[141]

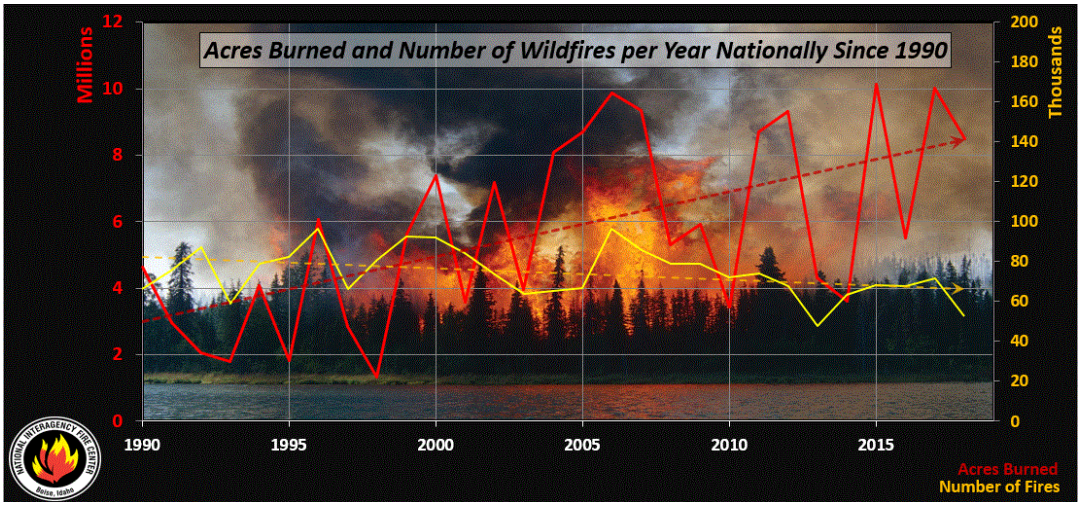


Wildfire Extent[142]



[140] Source: NEMA 2018 Biennial Report
[141] https://www.epa.gov/climate-indicators/climate-change-indicators-wildfires
[142] *Id.*

Historical 1990-2018[143]



Cyber and Infrastructure Security

Additionally, emergency managers need to be concerned about cyber and infrastructure security and their associated impacts. Over 30,000 incidents annually have been reported by federal branch civilian agencies alone, and state and local governments face similar challenges. For more information, please cyber information below and see Energy Committee Chapter on Energy Resilience and Infrastructure.

WRP Partner Roles/Responsibilities

All-hazard planning (as opposed to hazard-specific plans) addresses disaster resilience and response. It identifies areas at risk of natural disasters and infrastructure reliability and resiliency in the face of both natural and intentional threats to infrastructure. Roles and funding for emergency management to disasters varies across agencies. Details below.

FEMA Individual Assistance

In March 2019, FEMA issued a final rule effective June 1, 2019[144] regarding its role in funding Individual Assistance (IA) in the event of disasters. FEMA revised the factors to be considered in providing IA: State fiscal capacity and resource availability, uninsured home and personal property losses, disaster impacted population profile, impact to community infrastructure, casualties and disaster related unemployment. These factors are intended to allow FEMA and the President to decide whether an event is of such severity and magnitude that it was beyond the State and local capacity to deal with it. A significant shift in emphasis was basing the proposed fiscal capacity of the state or local area on total taxable resources, gross domestic product and per capita personal income rather than population counts.

[143] Source: Presentation of Bryan Henry, Meteorologist, National Interagency Coordination Center, May 15, 2019 to WRP.

[144] 84 FR 10632, https://www.govinfo.gov/content/pkg/FR-2019-03-21/pdf/2019-05388.pdf

State Funding[145]

State Homeland Security Grants are allocated to local jurisdictions based on a variety of factors, including population, risk and vulnerability assessment, meeting program requirements and, most typically, competitive investment justifications, which 25 states use exclusively to allocate 32% of grants.

FEMA Public Assistant Grants and Mitigation grants require 25% to come from state and local governments. States have various cost-sharing mechanisms.

Emergency Management Performance Grants

Emergency Management Performance Grants are the only source of federal funding specifically directed to state and local governments for all-hazard emergency preparedness. In the WRP States, these funds are allocated by the States as follows:

State	Local	Tribes	State Agencies	Retained by State
Arizona	40%	4%	7%	49%
California	55%	1%	0%	44%
Colorado	50%	1%	0%	49%
New Mexico	35%	1%	9%	55%
Nevada*	45%	3%	0%	51%
Utah*	40%	0%	1%	58%

*1% to "other"

States also fund disaster assistance programs in a variety of ways:

State	Amount in fund (Millions)	Source
Arizona	$4.0	Governor's budget line item
California	$67.5	California Disaster Assistance Act
Colorado	-	-
New Mexico	$0.75	Governor's Executive Order
Nevada	$8.5	State General Fund allocation
Utah	$21.1	State Appropriation

Emerging Emergency Management Issues/Areas of Focus

WRP Partners involved in emergency management noted that because more responsibility is placed on State, Local and Tribal entities, there is a need for more capacity to build resiliency and to mitigate future risk. A FEMA funded study suggests that $6 is saved for every $1 spent on federal mitigation grants.[146] There is also a need to ensure rural areas are

[145] Source: NEMA 2018 Biennial Report

[146] Natural Hazard Mitigation Saves: 2017 Interim Report, National Institute of Building Sciences, 2017 Interim Report, file:///C:/Users/sduff/Documents/LLC/WRP/2019/MS2_2017InterimReport.pdf

taken care of; sometimes urban areas can be the focus. Some of the emerging issues include less national funding, addressing issues of flooding after wildfires and the continued increase in cyber-related issues.

Less National Funding [147]

The federal State Homeland Security Grant Program has held steady for the last four years at $412 million; this is less than half the amount available in FY2010 of $890 million. About 70% of State Homeland Security offices are funded with federal dollars, the remainder coming from state appropriations and a small amount from other sources. There has been a shift over the last several years from federal to state appropriations.

Flooding After Wildfires[148]

Large-scale wildfires alter the terrain and ground conditions. Vegetation that absorbs rainfall, reducing runoff, is lost in wildfires, leaving the ground unable to absorb water, creating flash flooding and mudslides. Flood risk remains significantly higher until vegetation returns, which may take as much as five years. In the meantime, flooding is often more severe. Debris left from the fire can form mudflows, and rainwater carry soil and sediment in floodwaters, causing even more damage.

Fire Season Status/Outlook

The National Interagency Fire Center (NIFC) works to provide interagency coordination of wildland firefighting resources in the U.S. It provides the current fire situation information in the country.[149] The National Interagency Coordination Center (NICC) is the focal point for coordinating the mobilization of resources for wildland fire and other incidents throughout the U.S. NICC/NIFC predictive services[150] provide critical decision-support for fire management and resource distribution.

As of May 2015, NICC predicted a delayed monsoon in the southwest or a more easterly push on it, and that California grasses could become a big problem in middle and lower elevations.[151]

CAL FIRE Update 2019[152]

CAL FIRE's goal is to have an aircraft on any fire within 20 minutes and contain 95% of all unwanted fires at 10 acres or less by Rapid Initial Attack. It has a variety of aircraft, including

---

[147] Source: NEMA 2018 Biennial Report

[148] https://www.fema.gov/media-library-data/1509629241846-93a30888b273ae9c8751381cae84dbb5/Flood_After_Fire_ENGLISH-508-FINAL.pdf

[149] https://www.nifc.gov/fireInfo/nfn.htm

[150] https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm

[151] Source: Presentation of Bryan Henry, Meteorologist, National Interagency Coordination Center, May 15, 2019 to WRP

[152] Source: Presentation by Dennis W. Brown, Senior Chief of Aviation, CAL FIRE, July 18, 2019 to WRP

those that are called when needed. Although they are successful 90-95% of the time, some fires cannot be so easily contained. In 2017, nearly 9,000 wildfires in California burned 1.2 million acres, destroyed nearly 11,000 structures and killed 46 people. In 2018, 8,500 fires burned almost 1.9 million acres, destroyed over 18,000 structures and killed 85 people. California has the greatest concentration of firefighting aircraft between Federal, State and Local government then anywhere in the world; and it is most likely the most volatile area for wildland fire in the urban interface. They have issues of unauthorized drone interference which may impact firefighting response; this is an issue they are working on with FAA and law enforcement. TFRs are very helpful for fire response.

Cyber

Cyber continues to be a significant focus for emergency managers. WRP Partners have noted that to best address cyber issues, it takes policy and technical people working together with strong leadership and understanding.

Existing Resources and Programs to Assist with All-Hazards Disaster Response

FEMA
FEMA's Building Resilient Infrastructure and Communities (BRIC)[153] FEMA's Building Resilient Infrastructure and Communities (BRIC) program remains under development, but is a 6% set-aside from estimated disaster grant expenditures making infrastructure and communities more resilient. This new pre-disaster mitigation program focuses on funding public infrastructure projects that increase a community's resilience before a disaster affects an area. Examples of interest areas include infrastructure mitigation projects, hazard mitigation planning, building codes and enforcement and risk-informed funding.
FEMA Incident Command System (ICS)[154] This management system was designed to enable incident management by integrating facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. ICS normally acts in five major functional areas: command, operations, planning, logistics, intelligence & investigations, and finance and administration. Its purpose is enabling incident managers to identify the key concerns associated with the incident, often under urgent conditions, without sacrificing attention to any component of the command system.

[153] https://www.fema.gov/drra-bric

[154] https://www.fema.gov/incident-command-system-resources

FEMA's Regional Emergency Communications Coordination Working Group[155] FEMA established the Regional Emergency Communications Coordination Working Groups (RECCWGs) to serve as the primary focal points for interoperable communications coordination among federal, state, local, tribal and territorial emergency responders. RECCWGs coordinate multi-jurisdictional and multi-agency emergency communications networks for use during disasters and emergencies.
FEMA Integration Teams (FIT) [156] The FEMA Integration Teams (FIT) program co-locates FEMA personnel with state, local, tribal and territorial partners to provide a continuous and coordinated FEMA presence, increase the amount, speed and quality of technical assistance, provide customers with increased access to FEMA personnel and enhance the customer experience, build more resilient communities and ensure more effective response and recovery operations.
FEMA National Response Network The National Response Framework provides context for how the whole community works together and how response efforts relate to other parts of national preparedness. It includes those items needed to save lives, protect property and the environment, and meet basic human needs after an incident has occurred.
FEMA Community Lifelines[157] Community Lifelines is a service enabling continuous operation of critical business and government functions, protecting human health and safety and economic security. Lifelines highlight priority areas and interdependencies, focus on actions taken, communicate coordination efforts toward stabilization and integrate information. The lifelines are safety and security; food, water and shelter; health and medical; energy; communications; transportation; and hazardous materials. Each component is identified, its cause of instability summarized, specific effects are outlined, actions performed by response operations are described, issues preventing stabilization are described and field leadership is given a best estimate of a timeframe for stabilization. A Senior Leadership Brief (SLB) template consists of four tiers (disaster summary, lifeline overview, lifeline component status and WebEOC (a web-based emergency operation center application) integration, each color coded from green (stable), yellow (stabilizing), red (unstable) and grey (unknown) so status is obvious at a glance.

[155] https://www.fema.gov/news-release/2015/07/30/fema-outlines-decade-progress-after-hurricane-katrina

[156] https://www.fema.gov/fema-integration-teams

[157] Presentation by Susan Jones, FEMA Regional State Liaison Officer Program and Regional Response Coordination Center, May 15, 2019 to WRP

National Mitigation Investment Strategy[158]

The Government Accountability Office identified a need for a coordinated, Federal and national investment strategy for mitigation that reduces the nation's exposure to future losses from disasters. The Mitigation Framework Leadership Group (MitFLG) was authorized by Congress as a national coordinating structure. It is composed of federal, state, local, tribal, and territorial public-sector representatives to integrate federal responsibilities of the National Mitigation Framework. In August 2019, it produced the National Mitigation Investment Strategy (NMIS) as a single national strategy for advancing mitigation investment to reduce risks of natural hazards. Its objective is to identify and measure the effectiveness of mitigation investments and inform decisions on where and when to invest. The NMIS has three goals: show how mitigation investments reduce risk; coordinate mitigation investments to reduce risk; and make mitigation investment standard practice.

Regional Resilience Toolkit[159]

This report, by FEMA, the EPA and the Metropolitan Transportation Commission/Association of Bay Area Governments, provides a process for meeting state and federal planning requirements, communication and outreach guidance and resources, guidance conducting vulnerability assessments, writing required plans, and implementing projects, tools that can be used to bring in decision makers and community leaders to guide the overall action plan and detailed appendices with worksheets to help inform and guide work.

Cybersecurity

Cybersecurity Executive Order

On May 11, 2017, the President signed Executive Order 13800, [160] "Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure." The Order was issued to improve the Nation's cyber posture by securing Federal networks; encouraging collaboration with industry to protect critical infrastructure; strengthen the deterrence posture of the United States; and build international coalitions. It focuses on building a stronger cybersecurity workforce. The Order is in three parts: Cybersecurity of Federal Networks, Cybersecurity of Critical Infrastructure, and Cybersecurity for the Nation. A Working Group of representatives from across the U.S. Government was formed to implement EO work.

[158] https://www.fema.gov/media-library-data/1565706308412-19739d7deeca639415cc76c681cee531/NationalMitigationInvestmentStrategy.pdf

[159] https://www.epa.gov/sites/production/files/2019-07/documents/regional_resilience_toolkit.pdf

[160] https://www.whitehouse.gov/presidential-actions/presidential-executive-order-strengthening-cybersecurity-federal-networks-critical-infrastructure/

DHS Cybersecurity and Infrastructure Security Agency (CISA)[161]

CISA is responsible for protecting the Nation's critical infrastructure from physical and cyber threats. It coordinates and collaborates with a broad spectrum of government and private sector organizations. Its main areas are comprehensive cyber protection, infrastructure resilience, emergency communications and operating the National Risk Management Center.

CISA assists with preparedness activities, response assistance and cybersecurity and protective security advisors. On August 22, 2019, the agency published "CISA Strategic Intent-Defend Today, Secure Tomorrow"[162] It provides how CISA executes its responsibilities. Its guiding principles are leadership and collaboration, risk-prioritization, results-orientation, respect for national values, and unified mission and agency.

According to the Office of Management and Budget,[163] agencies sustained over 31,000 cybersecurity incidents in FY2018, a 12% decrease from the prior year, and it was also the first year in which no major incident occurred.

CISA conducts a range of cybersecurity assessments that are free, voluntary and non-regulatory. The assessments range from strategic (e.g. cyber resilience review, external dependencies management, cyber infrastructure survey) to technical (e.g. phishing campaign assessment, validated architecture design review and risk and vulnerability assessment). According to sector performance review, the following ranks have been assigned:

- Top Tier: Financial Services; Healthcare and Public Health; and Communications
- Middle Performance: Energy; Government Facilities; and Transportation Systems
- Bottom Tier: Emergency Services; Water and Wastewater; and Commercial Facilities

Given the importance of the sectors in the middle and bottom tier, collectively this shows there is much work to be done. It is important to assess your agency's cyber resilience and plot a path to get to where it should be. It is very important to protect critical services such as emergency response, communications, utilities, etc.

2019 Nationwide Cybersecurity Review[164]

The U.S. Department of Commerce National Institute of Standards and Technology is conducting a cybersecurity review (from October through December 2019.) It provides a free, anonymous, annual self-assessment to measure gaps and capabilities of state, local and tribal government cybersecurity programs. It was developed by the U.S. Department

[161] https://www.dhs.gov/CISA and Presentation by Deron McElroy, Chief of Operations for CISA, May 15, 2019 to WRP

[162] https://www.dhs.gov/publication/cisa-strategic-intent

[163] https://www.whitehouse.gov/wp-content/uploads/2019/08/FISMA-2018-Report-FINAL-to-post.pdf

[164] https://www.cisecurity.org/ms-isac/services/ncsr/

of Homeland Security in partnership with the Multi-State Information Sharing & Analysis Center, the National Association of State Chief Information Officers, and the National Association of Counties.
Resources to Provide Enhanced Situational Awareness
GeoMAC [165] The Geospatial Multi-Agency Coordination, or GeoMAC, is an internet-based mapping application originally designed for fire managers but now available to the public. Fire Managers had requested a real-time application providing geospatial information on the status, location, and proximity of wildfires to life, property and infrastructure. It is hosted by the U.S. Geological Survey and funded by the Department of the Interior Office of Wildland Fire.
AZ ESF/RSF Operations Dashboard[166] Arizona's Department of Emergency and Military Affairs produced this GIS-based dashboard. They compiled information from existing data and now it funnels raw data into an Emergency Support Function (ESF) and something that could be used in the State Emergency Response & Recovery Plan.[167] In this way, users can visualize data in a more dynamic process with updating information of particular situations. Uses WebEOC to allow non-GIS users to report information that can then be presented on the Dashboard. The future is to make it mobile.
CO Team Awareness Kit (TAK)[168] The Colorado Department of Public Safety Center of Excellence for Advanced Technology Aerial Firefighting is developing a geospatial mapping engine, originally developed for the Android operating system, that facilitates situational awareness, navigation, and data sharing. TAK can function as a stand-alone situational awareness tool or can be incorporated into various tactical and commercial data networks. The goal is to enable first responders to reliably transmit location information, collaboratively map an incident, and access other tools that enable them to be safe, effective, and efficient in their operations, even if traditional Internet connections are degraded or absent.

[165] https://nifc.maps.arcgis.com/apps/webappviewer/index.html?id=fa067b6b21534df283a87acc3ae3227c

[166] https://azdema.maps.arcgis.com/apps/MapSeries/index.html?appid=62e6bfa682a34e6aae9d9255ac865467

[167] https://dema.az.gov/sites/default/files/publications/EM-PLN_SERRP.pdf

[168] https://cofiretech.org/feature-projects/team-awareness-kit-tak

All Hazards Consortium[169] The Consortium consists of over 45,000 industry and government stakeholders nationwide in disaster management, sensitive information sharing, cybersecurity, research transition and solution development.
ESIP Disaster Cluster [170] Earth System Information Partners (ESIP) is a community of data and information technology practitioners funded by grants from NASA, NOAA and EPA. It supports networking and data dissemination of Earth science data. Its Disaster Lifecycle Cluster is intended to facilitate connections and coordinate efforts among data providers, managers and developers of disaster response systems and tools.
NASA Disasters Program[171] This Program promotes the use of Earth observations to improve the prediction of, preparation for, response to, and recovery from natural and technological disasters including floods, earthquakes, volcanoes, and landslides as well as combined hazards and cascading impacts. It facilitates timely access to reliable, relevant data and data products, and creates partnerships where applied research is necessary for developing and deploying next-generation technology, as well as airborne and satellite assets, while stimulating research and analysis to better understand and describe hazards.
National Strategy for Aviation Security[172] This report, issued December 2018, provides a framework for implementing an approach to protecting aviation, broadening the scope of potential threats to include not only terrorist groups, criminals and hostile nation states but also insiders, foreign intelligence and the potential for the spread of infectious disease.
OGC Emergency and Disaster Management Domain Working Group[173] The Open Geospatial Consortium (OGC) is an international consortium of more than 520 businesses, government agencies, research organizations, and universities driven to make geospatial (location) information and services FAIR - Findable, Accessible, Interoperable, and Reusable. Its Emergency & Disaster Management Domain Working Group is a merger of its Law Enforcement and Public Safety Domain Working Group and its Emergency and Disaster Domain Working Group. It provides a forum for uniting government agencies, industry, research organizations, NGOs and others in various phases of emergency and disaster activities. Its chairs include representatives of NASA and DoD.

[169] https://www.ahcusa.org/
[170] http://wiki.esipfed.org/index.php/Disasters
[171] https://disasters.nasa.gov/
[172] https://www.dhs.gov/sites/default/files/publications/nspd-47.pdf
[173] https://www.opengeospatial.org/projects/groups/edmdwg

FEMA National Planning Frameworks[174]
The Frameworks describe how the whole community works together to achieve the National Preparedness Goal. There is one Framework for each of the five mission areas: Prevention, Protection, Mitigation, Response, and Recovery.

Recommendations for WRP Partners' Consideration

- Review your agency's cyber threats and consider contacting your CISA Cyber Security Advisor for assistance.
- Review FEMA's Building Resilient Infrastructure and Communities (BRIC) program to have BRIC projects ready for consideration; buy down cost of risk mitigation.

[174] https://www.fema.gov/national-planning-frameworks

Latest UAS Trends

Overview

Airspace is a finite resource and competition for its use is increasing. There are various types of manned flight operations underway daily, which include government (federal, state, local, Tribal and law enforcement) commercial and general aviation. The WRP Region has arguably the most complex and busiest airspace in the nation. This area has four of the ten largest airports, four of the eleven MetroPlex projects (SoCal is the largest and most complex), and three of nine space ports in the United States, while accounting for 19 percent of the country's landmass and 75 percent of the DoD's special airspace. Significant changes are occurring within the region's airspace such as: exponential increase in the use of private and commercial unmanned aircraft; implementation of new technology (such as NextGen and commercial space operations); introduction of new aircraft such as the F-35; and an expected increase in passenger aircraft. Access to airspace is critically important for continued economic growth in the west and must support civil, commercial and military aviation while also integrating unmanned aircraft.

WRP Region Aviation Highlights[175]

Within the WRP Region are four of the nation's busiest airports: Los Angeles International (3rd), Denver International (5th), McCarran International (6th) and San Francisco (10th). There are two ongoing Metroplex study areas (Denver and Las Vegas) and two completed (Southern and Northern California). Southern California airspace is the busiest and most complex in the world. There are significant (commercial, government and private; active and proposed) launch sites in the WRP Region including: California Spaceport, Vandenberg AFB, Mojave Air and Space Port, Edwards AFB, White Sands Missile Range and Spaceport America.

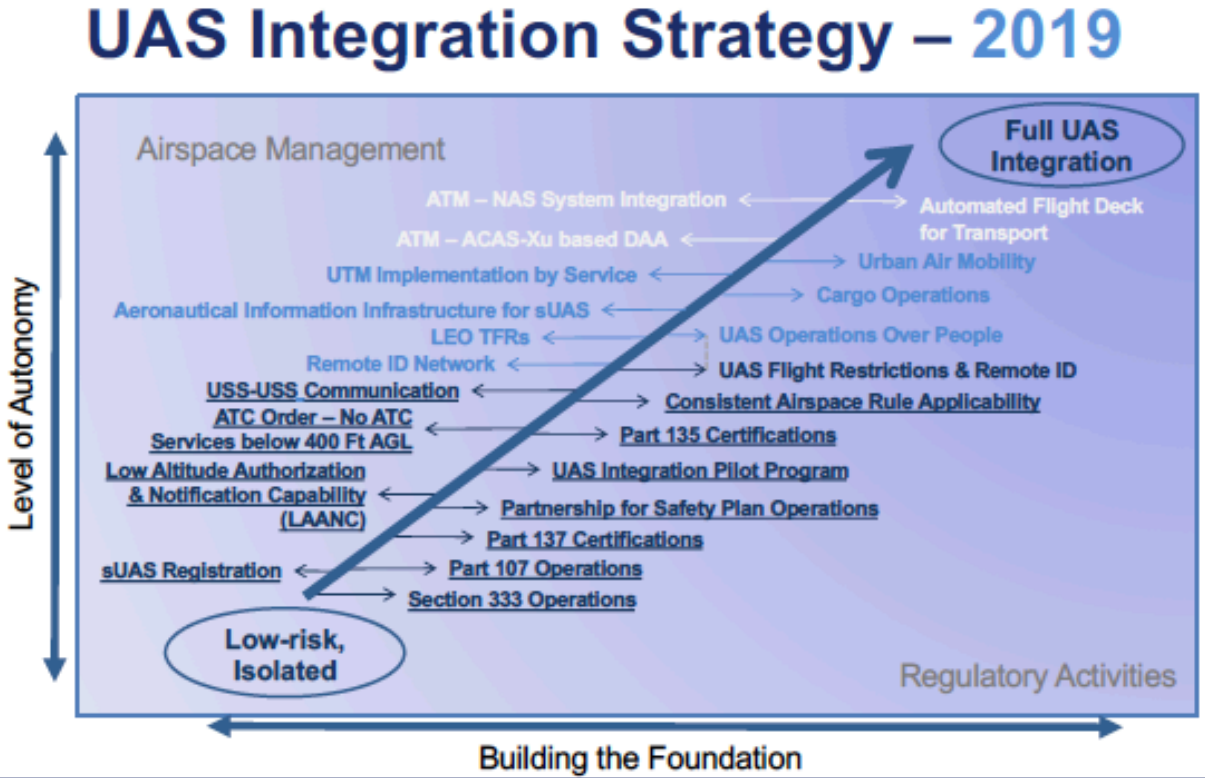
UAS/Drones

UAS (also known as unmanned aerial vehicle, remotely piloted vehicle and drone) consists of an aircraft designed to operate autonomously or to be piloted remotely and the equipment to control it. Unmanned aircraft are currently used for government (federal, including military, state and local, law enforcement), commercial and research purposes. UAS use is growing exponentially and can perform many roles that manned aircraft cannot and these uses will likely increase in the future. Airspace cohabitation is an important national security and public safety issue. UAS can range in size from micro to 737 airliner. The smaller UAS use line of sight (LOS) communications. Medium and large UAS use both LOS and beyond line of sight (BLOS) for flight. The FAA defined small aircraft as being 55 pounds or less.

[175] Source: FAA Western-Pacific Region presentation by Tamara Swann, Deputy Regional Administrator, FAA

There are currently more than 350,000 unmanned aircraft systems operating in the United States[176] and the number of UAS operations is outpacing that of manned aircraft, with drones outnumbering registered manned aircraft by four to one.[177]

There are many efforts underway to develop and conduct UAS mission across the WRP Region as well as evaluate procedures on how to safely integrate UAS into the National Airspace System.



UAS Integration Strategy – 2019 by FAA

<u>UAS/Drone Emerging Trends</u>

Drones are currently being used or evaluated for use in many more functions such as:[178]

- Urban Air Mobility (enables access to high speed internet, infrastructure improvements, etc.)
- Drone delivery of products
- Public safety-search and rescue and law enforcement
- Agriculture management-smart farms and aerial mapping

[176] https://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=23574

[177] Source: UAS Symposium, June 3, 2019, Speech of Daniel K. Elwell, FAA Deputy Administrator, "Safety First"

[178] Source: NASAO Presentation by Shelly Simi, President and CEO, NASAO of July 18, 2019 to WRP.

- Infrastructure management-inspections of airports, bridges, roads, signs, transmission lines
- Emergency management (disaster response, deliver real-time video of crisis area; UAS training; accident investigation, etc.)

The technology of UAS is rapidly evolving and drones are now being tested, deployed and improved for many uses. Over the last year, among the many developments are:

- FedEx makes first drone delivery[179]
- UPS subsidiary UPS Flight Forward Inc. is the first to be fully certified by the FAA to operate a drone airline[180]
- U.S. Postal Service is exploring using drones to supplement mail delivery[181]
- Amazon reported progress on its Prime Air drones designed to fly up to 15 miles and deliver packages under five pounds to customers in less than 30 minutes.[182]
- GE Aviation, Auterion and Hybrid Project are teaming on a commercial vertical takeoff and landing UAV, targeting availability in first quarter 2020[183]
- General Atomics works with NASA to bring drones into US airspace[184]
- How emergency responders are using drones to save lives[185]
- Engineers from Australia and Iraq have designed a computer vision system for drones capable of finding signs of life in disaster scenes from 4-8 meters away[186]
- Bell's APT-70 tiltbody drone may help restore communications in disasters[187]
- A long-range hybrid gas-electric drone successfully performed the first civilian beyond-visual-line-of-sight flight without visual observers.[188]

---

[179] https://about.van.fedex.com/newsroom/wing-drone-deliveries-take-flight-in-first-of-its-kind-trial-with-fedex/

[180] https://pressroom.ups.com/pressroom/ContentDetailsViewer.page?ConceptType=PressReleases&id=1569933965476-404

[181] https://postalnews.com/blog/2019/09/25/usps-wants-to-look-at-using-drones-to-deliver-mail-and-to-improve-autonomous-vehicle-performance/

[182] https://blog.aboutamazon.com/transportation/a-drone-program-taking-flight

[183] https://www.aerospacemanufacturinganddesign.com/article/ge-aviation-auterion-hybrid-project-commercial-uav/

[184] https://www.flightglobal.com/news/articles/mq-9b-to-demonstrate-national-airspace-flight-above-461326/

[185] https://www.brookings.edu/blog/techtank/2018/12/04/how-emergency-responders-are-using-drones-to-save-lives/

[186] https://interestingengineering.com/drones-are-being-tested-for-precise-detection-of-life-in-disaster-zones

[187] https://www.c4isrnet.com/unmanned/2019/10/14/this-drone-may-restore-comms-after-disasters/?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2010.15.19&utm_term=Editorial%20-%20Military%20-%20Early%20Bird%20Brief

[188] https://generalaviationnews.com/2019/08/22/first-drone-beyond-line-of-sight-flight-successful/?utm_source=ActiveCampaign&utm_medium=email&utm_content=%5BThe+Pulse+of+Aviation%5D+Momma+dreams+of+flying&utm_campaign=TPOA-20190823

- Drones helping build power lines[189]
- FAA allows a small UAS with a parachute to fly over people[190]
- Drones being used to predict avalanches[191]

AASHTO study of states using Drones[192]

In March 2018, the American Association of State Highway and Transportation Officials surveyed state departments of transportation regarding their use of UAS. Of the 44 states responding, 35 reported that they were deploying UAS, 20 of which use them in their daily operations (including AZ, CO, NV and UT) and 15 are researching how to deploy them. States found that use of UAS led to savings in both time and cost by clearing crash scenes quicker.

Policies (Federal and State)

State UAS Laws

States can regulate the use of UAS provided the laws are not in conflict with the FAA rules, which pre-empt any contrary state or local laws. Since 2013, State Legislatures have passed laws to address the growing use of UAS. Although the legal ability of States to regulate military activity of any kind, including the use of UAS, is highly doubtful, specific language in legislation that clarifies that the State does not intend to regulate the use of UAS by the military would be a helpful addition so that there is no uncertainty attached to state UAS regulation.

The following table provides general information about each of the WRP States' drone laws. As this field is evolving quickly, this should be considered informative only, and not necessarily either current or complete:[193]

State	Statutory Regulations of UAS
AZ	Cannot interfere with police, firefighters or manned aircraft; cannot fly within 500 feet horizontally or 250 feet vertically of critical facilities, such as oil and gas, water treatment, power plants, courthouses, military installations and hospitals.
CA	Immunity for first responders who damage a UAS that interfered with the first responder while providing emergency services; cannot interfere with first

[189] https://apnews.com/13cfc155bbac4947a37c560ebe6ae454
[190] https://generalaviationnews.com/2019/06/04/faa-allows-drone-with-parachute-to-fly-over-people/?utm_source=ActiveCampaign&utm_medium=email&utm_content=%5BThe+Pulse+of+Aviation%5D+I+can+t&utm_campaign=TPOA-20190605
[191] https://apnews.com/47661ce735874125860ecf216c27adab
[192] https://news.transportation.org/Pages/NewsReleaseDetail.aspx?NewsReleaseID=1504
[193] Source: https://uavcoach.com/drone-laws/

	responders; prohibits entering airspace of individuals to photograph or record the individual in private activity
CO	Department of Public Safety Center for Excellence to study integration of UAS with local and state government functions (firefighting, search and rescue, accident reconstruction, crime scene documentation, emergency management; unlawful to operate drones in State Parks except as designated.
NM	Prohibits use of drones for unwanted surveillance.
NV	Prohibits weaponization of UAS or use within certain distances of critical facilities and airports without permission.
UT	Prohibits disturbing livestock; allows use by law enforcement unrelated to criminal investigations; prohibits weaponization; prohibits drones entering or remaining over property for invasion of privacy and similar purposes; allows law enforcement to use UAS to collect data at testing site and locate lost or missing person in open space; requires a warrant for law enforcement agencies to use data from a UAS or to use in a place where a person has a reasonable expectation of privacy.

FAA has several key initiatives underway

UAS Integration Pilot Program (IPP)[194]

Brought together state, local and tribal governments and private sector. UAS operators and manufacturers to help DOT and FAA with new rules supporting complex low-altitude operations by identifying how to balance local and national interests, improving communications with local, state and tribal jurisdictions, addressing security and privacy risks and accelerating approval of operations. The group is evaluating operational concepts such as night operations, flights over people and beyond line-of-sight, package delivery, detect-and-avoid technologies and the reliability and security of data links between pilot and aircraft. Within the WRP Region, there are two IPP Participants: City of Reno, Nevada and City of San Diego, CA.

UAS Traffic Management (UTM)[195]

A safe and efficient UTM is needed to help ensure drone operations can integrate into the National Airspace System. A UTM Pilot Program (UPP) was established in April 2017. In January 2019, DOT Secretary Elaine Chao announced the FAA had selected three UAS test sites: Nevada, North Dakota and Virginia. The goal of the pilot program is to develop, demonstrate and provide enterprise services, using a cloud service infrastructure, to support

[194] https://www.faa.gov/uas/programs_partnerships/integration_pilot_program/

[195] https://www.faa.gov/uas/research_development/traffic_management/utm_pilot_program/

initial UTM operations. The pilot program was successfully completed[196] and a report was expected in September 2019.

The FAA Reauthorization Act of 2018[197]

This Act addressed unmanned aerial systems by codifying the UAS Integrated Pilot Program,[198] granting Counter UAS authority to DOJ and DHS and codifying Counter UAS testing at airports, creating a new framework for UAS hobbyists (requiring passage of a test, registration/marking of drone, operating within a set of safety guidelines and below 400 feet) and requiring the FAA to establish a pilot program for remote detection and identification of drones.[199]

Challenges, Threats Posed by UAS

The challenges involving UAS integration lie in the pace of innovation, volume of aircraft, and personal nature of UAS. The industry is moving too fast to meet the demand, capabilities are expanding, operators do not need to receive training in all cases, and these are personal devices kept in homes and communities.

NAS integration of Participating and Nonparticipating aircraft[200]

Participating aircraft use Automatic Dependent Surveillance Broadcast, a system for air traffic surveillance; this is not for the hobbyist. Nonparticipating aircraft require use of detect and avoid technology as they are typically not on radar.

Counter-UAS [201]

It has been reported that there have been more than a dozen significant drone incidents in 2018-19 and there are concerns that drones may be weaponized at some future time.[202] Counter-UAS (CUAS) is a major issue and there is a need for policies to be updated to keep up with the UAS technology and potential issues. C-UAS can be defined as kinetic, non-kinetic and natural.

The Preventing Emerging Threats Act of 2018 grants the Department of Homeland Security statutory authority to counter credible threats from UAS to the safety or security of a

[196] http://stateaviationjournal.com/index.php/unmanned-systems/faa-uas-partners-complete-successful-demos
[197] https://www.congress.gov/bill/115th-congress/house-bill/302/text?q=%7B%22search%22%3A%5B%22PL+115-254%22%5D%7D&r=1
[198] https://www.faa.gov/uas/programs_partnerships/integration_pilot_program/
[199] Source: NASAO Presentation by Shelly Simi, President and CEO, NASAO of July 18, 2019 to WRP.
[200] Source: NASAO Presentation by Shelly Simi, President and CEO, NASAO of July 18, 2019 to WRP.
[201] https://www.dhs.gov/sites/default/files/publications/19_0502_cisa_dhs-cuas-legal-authorities-factsheet.pdf
[202] Source: Counter UAS USA meeting August 20—22, Washington, D.C.

covered facility or asset, which are authorized Department of Homeland Security missions, including certain protection and security missions of U.S. Coast Guard, U.S. Customs and Border Protection, U.S. Secret Service and Federal Protective Service. The Department is in the process of coordinating with Components and stakeholders regarding the need for additional counter-UAS (CUAS) authorities.

Best Practices/Success Stories

DOI Unmanned Aircraft Systems Program[203]

DOI is the largest land manager with 500 million acres or one in every five acres nationwide. As a result, DOI has a UAS system with 600 drones, at a cost of approximately $2 million, which is less than the cost of most airplanes used in firefighting. DOI conducts around 20,000 flight operations in a year at a very low maintenance cost. Issues with manned aircraft for firefighting include the fact that smoke can ground the aircraft and 20-50% of all wildfires discovered fall outside aviation coverage (e.g. fire was ignited at dark). Optionally Piloted Airplanes/Helicopters (OPA/OPH) can be piloted either from the cockpit or remotely. This is an add-on to existing aircraft. In 2010, a firefighting helicopter was made OPH. From 2011-2014, OPH were deployed to Afghanistan, making thousands of flights, mostly cargo at night. OPA/OPH are safer than small drones as they have redundant systems, electronic ID, are easy to see, and have military-grade encryption. For wildland firefighting, OPH can be more aggressive, while still allowing them to be used in conventional mode with pilots during the day, leverage proven military technology and close gaps in aerial wildfire support.

Marine Corps Installations-West Unmanned Aerial Systems Efforts[204]

UASs support installations in resource management/conservation, disaster management, force protection, utilities, and safety. As an example, Operation Wild Buck in December 2018 involved the survey by Camp Pendleton Game Wardens of wild deer and bison populations. Helicopter surveys are the most scientifically sound method, but also the most expensive and dangerous. Instead, UAS were used, providing numerous benefits including a real-time UAS feed into the Camp Pendleton Emergency Operations Center and clear, reliable communications with and between the other participants including Game Wardens and UAS operators in the field, scouts on hilltop and March Air Reserve Base. The total cost per flight hour was roughly half of a contracted manned helicopter. Among lessons learned are to have a pre-built template for future use, avoiding radio and other electromagnetic interference and enabling communication by location.

[203] Source: Presentation of Mark L. Barthrick, Director, Office of Aviation Services, U.S. Department of the Interior, July 18, 2019 to WRP.

[204] Source: Presentation of Major Julio "J-Lo" Gonzalez, United States Marine Corps, July 18, 2019 to WRP.

Colorado Department of Public Safety Center of Excellence

The Colorado Department of Public Safety Center of Excellence for Advanced Technology Aerial Firefighting has developed an UAS training and certification program[205] for state cooperators (fire, law enforcement, emergency response) based on work done by the National Institute of Standards and Technology (NIST). A goal of the project is a state registry of qualified UAS pilots.

[205] https://cofiretech.org/feature-projects/uas-program/unmanned-aerial-systems/uas-training/coe-flight-qualification-test

Compatible Planning with the Military to Support Military Requirements

Overview

The WRP Region is important for the military, it contains extensive training ranges, premier testing facilities and unmatched military airspace. For the services, it includes:

- Approximately 55% of the Army's landholdings
- Over 33% of Navy's landholdings
- 85% of Marine Corps' Live Fire Ranges and 67% of Marine Corps' airspace
- Four of the largest Air Force range complexes: Edwards Air Force Base (AFB); Nellis AFB/Creech/Nellis Test and Training Range (NTTR); Luke AFB/Barry M. Goldwater Range East; and Utah Test and Training Range (UTTR)
- 75% of DoD Special Use Airspace is located within the WRP Region

Within the WRP region, there are significant military testing and training installations and ranges. WRP developed Military Asset Listing (MAL)[206] summaries from all of the Services and the National Guard, describing the history, missions, and importance of these assets. WRP appreciates all the military's review, coordination and input to develop the following 80 MAL summaries:

By State

Arizona:	18
California:	29
Colorado:	9
Nevada:	9
New Mexico:	9
Utah:	6

By Service

Air Force:	23
Army:	16
Marine Corps:	9
National Guard:	20
Navy:	12

Military installations and ranges provide the platform for testing and training so that military members are best prepared for times of war. For more information on issues of importance to DoD and other useful information please see WRP Guide to Working with DoD[207] and WRP State Support for Military Testing and Training[208]

National Defense Strategy and Latest DoD Policies

The National Defense Strategy provide overarching objectives for the Department of Defense; additional relevant key DoD policies are listed below.

[206] http://wrpinfo.org/resources/dod-information/
[207] http://wrpinfo.org/media/1047/guide-to-working-with-the-us.pdf
[208] http://wrpinfo.org/media/1266/wrp-state-support-for-military-testing-and-training_august-2015_final.pdf

National Defense Strategy

The 2018 *National Defense Strategy*[209] articulates the DoD's strategy to "compete, deter and win" in an environment where: there had been erosion of the Nation's competitive military advantage; increasing global disorder as the post-WWII international order weakens, making inter-state strategic competition (particularly with China and Russia, but also rogue nations), as opposed to terrorism, the primary concern of U.S. national security; rapid technological change; challenges in every domain; and the impact of the longest continuous stretch of armed conflict in the Nation's history on current readiness. The Joint Force must be structured to match this existing and changing environment.

Defense objectives in support of the National Defense Strategy include:

- Defending the homeland from attack;
- Sustaining Joint Force military advantages;
- Deterring adversaries from aggression;
- Enabling U.S. interagency counterparts to advance U.S. influence and interests;
- Maintaining favorable regional balances of power;
- Defending allies from military aggression, bolstering partners against coercion, and fairly sharing responsibilities for common defense;
- Dissuading, preventing, or deterring state and non-state actors from acquiring, proliferating, or using weapons of mass destruction;
- Preventing terrorists from directing or supporting external operations against the United States homeland and our citizens, allies, and partners overseas;
- Ensuring common domains remain open and free;
- Continuously delivering performance with affordability and speed; and
- Establishing an unmatched twenty-first century National Security Innovation Base that effectively supports Department operations and sustains security and solvency.

Considering these objectives, DoD will pursue three areas:

- Rebuilding military readiness while building a more lethal Joint Force;
- Strengthening alliances and attracting new partners; and
- Reforming the Department's business practices for greater performance and affordability.

Range Readiness (Range Modernization Report)

Section 2862 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019[210] requires that the DoD "shall develop and implement a comprehensive strategic plan to identify and address deficits in the capabilities of Department of Defense training ranges

[209] https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf (unclassified synopsis of the classified 2018 *National Defense Strategy*)
[210] https://www.congress.gov/bill/115th-congress/house-bill/5515/text

to support current and anticipated readiness requirements to execute the National Defense Strategy (NDS)." The Act directs DoD to conduct an evaluation of:

> *"(1) The adequacy of current training range resources to include the ability to train against near-peer or peer threats in a realistic 5th Generation environment.*
> *(2) The adequacy of current training enablers to meet current and anticipated demands of the Armed Forces. "*

The Act gives the Under Secretary of Defense for Acquisition and Sustainment lead responsibility for this duty and requires the Under Secretary to provide to Congress by April 1, 2020 "*a report on the progress made in implementing this section, including the following:*

> *(1) A description of the strategic plan*
> *(2) A description of the results of the evaluation . . ..*
> *(3) Such recommendations as the Secretary considers appropriate with respect to improvements of the capabilities of training ranges and enablers."*

Military Installation Resilience

A priority of the Assistant Secretary of Defense for Sustainment is to create and sustain resilient installations.

> "The term `military installation resilience' means the capability of a military installation to avoid, prepare for, minimize the effect of, adapt to, and recover from extreme weather events, or from anticipated or unanticipated changes in environmental conditions, that do, or have the potential to, adversely affect the military installation or essential transportation, logistical, or other necessary resources outside of the military installation that are necessary in order to maintain, improve, or rapidly reestablish installation mission assurance and mission-essential functions.''[211]

Consequently, DoD sees resilience as the ability to defend against and recover from human acts, such as cyberthreats, or infrastructure vulnerability, by providing for redundant systems, and to minimize the effect of or adapt to weather or environmental changes.

Establishment of the Electromagnetic Spectrum Operations Cross Functional Team[212]

On February 2, 2019, the Electromagnetic Spectrum Operations (EMSO) Cross Functional Team was established within the DoD in accordance with the FY2019 NDAA to provide collaboration and integration within DoD, identify gaps in EMSO, provide policies, strategies, plans and requirements to address those gaps, make decisions and provide oversight for

[211] 10 U.S. Code, Section 101(e)(8), as added by NDAA FY19

[212] Secretary of Defense Memorandum, *Establishment of the Electromagnetic Spectrum Operations Cross Functional Team*

policies, strategies, plans and resource decisions approved by the Secretary of Defense. The Team is overseen by the Vice Chairman of the Joint Chiefs of Staff.

Types of Encroachment/Mission Incompatibility

NAS Fallon Training Range Training Complex Modernization

An example of the kinds of differing interests that must be weighed may be found in the process of this project. The State of Nevada and other stakeholders have continued to express concerns about aspects of the proposed modernization project. For example, the then-Governor of the State expressed his belief that the Navy was not taking the State's concerns into account.[213] The Final Environmental Impact Statement on the project is expected in the fall of 2019, with a record of decision expected in the winter of 2020.[214]

Encroachment Issues for the Department of Defense

Military installations and ranges provide the platform for testing and training so that military members are best prepared for times of war. Encroachment can impact DoD's use of land, sea, airspace, frequency spectrum and other resources; it is the cumulative impact of development that hampers DoD's ability to carry out its testing and training mission. Examples of such challenges in broad categories are listed below.

Land

- **Urban Development**. If not planned appropriately, housing and other sensitive development near a military installation's runway may necessitate a change in mission in order to not overfly concentrations of people.
- **Development of renewable energy and energy infrastructure.** Without collaborative planning, certain projects could impact military operations in several ways, including causing radar interference to ground and airborne systems and creating thermal sources that may be detrimental to sensitive testing of weapons systems.
- **Vertical structures located in or beneath low altitude military airspace.** Development under a low-level flight path can impact the military's ability to train pilots or may restrict certain types of testing and training, such as terrain following.
- **Security Issues.** A tall building constructed close to a military installation could create a line of sight into an installation that infringes the installation's security. DoD continues to be concerned about foreign investment in proximity to military testing

[213] Source: June 20, 2018 Letter from Governor Brian Sandoval regarding Preliminary Environmental Impact Statement.

[214] https://frtcmodernization.com/portals/FRTCModernization/files/draft_eis/Executive_Summary/FRTC_DEIS_Executive_Summary_Design.pdf

and training areas, potentially allowing for surveillance and data collection and presenting national security and encroachment challenges.[215]

- **Range Transients.** Unannounced or unauthorized presence of individuals, livestock, aircraft, or watercraft transiting ranges.

Electromagnetic Spectrum

- **Demand for electromagnetic spectrum**. The testing and training mission depends heavily on access to portions of the electromagnetic spectrum for telemetering functions such as: navigation and voice communications (aircraft, convoy, etc.); testing and training support (discharging flares, aircraft weapons radar, aircraft and weapons-sensors, threat simulators) and GPS. At the same time, there is an increase in both DoD's need and public demand for wireless technology and services.

Airspace

- **Airspace.** Airspace is a finite resource; increases in aviation operations and types of users along with changes in land use patterns can impact aviation missions. For more information, please see WRP Airspace Sustainability Overview Report.

Regulatory/Legal

- **Threatened & Endangered Species/Critical Habitat.** It is estimated that nationally over 300 federally listed species are on lands managed by DoD, exceeding the number on BLM-managed land. This can impact all phases of testing and training through constraints from regulatory requirements and/or Military Service guidance to manage at risk, threatened, or endangered species or associated habitat.
- **Munitions Restrictions**. Regulatory requirements and/or Military Service guidance on munitions use, munitions constituents, or residue to include range clearance. (*Note: Some constraints on munitions use may be attributable to other encroachment factors such as Noise, Air Quality, Water Quality, and Transients.)*
- **Maritime Sustainability.** Regulatory requirements and/or Military Service guidance to protect and sustain the maritime environment. This includes marine mammals and sonar issues.
- **Air Quality.** Regulatory requirements and/or Military Service guidance to maintain air quality. This includes any restrictions placed on prescribed burning.

ENCROACHMENT

Factors and influences, whether external or internal to DoD that constrain or have the potential to inhibit the full access or operational use of the live training and test domain. Examples include, but are not limited to, endangered species and critical habitat, unexploded ordnance and munitions, radio frequency spectrum, maritime or airspace restrictions, air quality, airborne noise, urban growth, physical obstructions, and renewable energy projects

[215] http://gao.gov/products/GAO-15-149

- **Noise Restrictions.** Mitigation measures for unwanted sound generated from the operation of military weapons or weapon systems. These restrictions affect people, animals (domestic or wild), and structures on or in proximity to military test and training areas. Noise restrictions do not include occupational noise exposure or underwater sound.
- **Cultural Resources.** Legal or regulatory requirements or Military Service guidance to manage and maintain cultural resources.
- **Water Quality/Supply.** Legal or regulatory requirements or Military Service guidance to manage water quality and supply.
- **Wetlands.** Legal or regulatory requirements or Military Service guidance to manage wetlands.

Examples of Encroachment

Land

- Population Growth
- Development (Residential, Industrial and Commercial Development)
- Urban Sprawl
- Transportation, Energy and Transmission Infrastructure

Sea

- Commercial Fishing Grounds, Offshore mineral exploration and extraction in designated military maritime operations
- Merchant Shipping Lanes and navigation systems transect and expand into areas designated for military maritime operations
- Off-shore energy development

Airspace

- Redesign of airspace
- Obstructions
- Light Emissions
- Government Regulations
- Commercial flight corridors and navigation systems transect and expand into military special use airspace

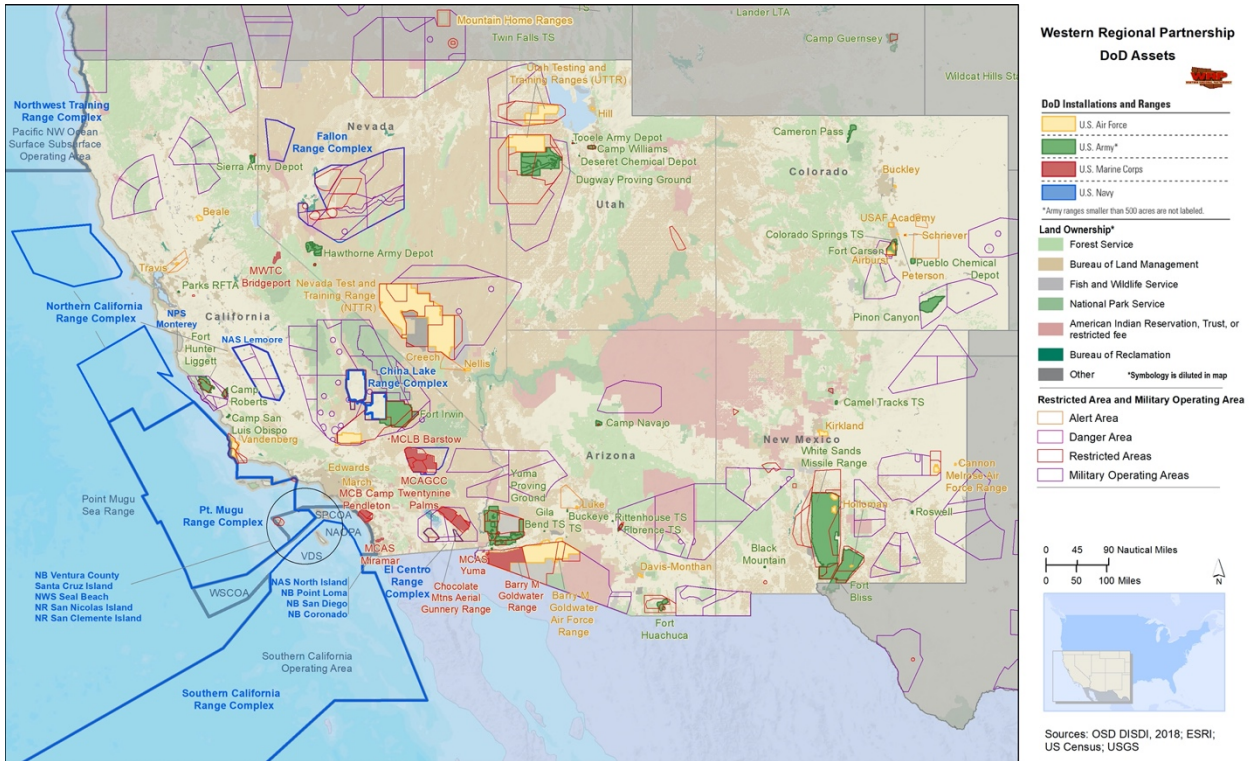
Electromagnetic Spectrum

- Increase in Commercial Bandwidth and Satellite Communications Access
- Increase in military data requirements
- Spectrum Reallocation

Encroachment may impact the military mission by causing:

- Inability to realistically test and train
- Increased Costs
- Delay, rescheduling or cancellation of a particular mission
- Workarounds
- Self-imposed restrictions

The military will continue to develop new weapons and new tactics in order to maintain combat readiness. It is critical that military men and women have realistic training environments.



Map 4: WRP DoD Assets, dated October 2019

Examples of sustainability/encroachment issues from the 2019 WRP Survey are below:[216]

- "NRSW's biggest challenge is coordinating and maintaining compatible land use and growth in the vicinity of installations, Testing and Training Ranges, and network of military training routes that interconnect critical operational areas. The Navy has stationed Community Plans and Liaison Officers on primary installations whose sole function is to network with local planning agencies and stay abreast of proposed infrastructure upgrades and development projects, assessing potential mission impacts and engaging to protect and sustain mission capability. Levels of engagement include local city and county planning and regulatory agencies, larger regional agencies, such as transportation and airport boards and state and federal agencies."
- "Urban installation sustainment focuses on infrastructure support, which includes energy supplies, water, and transportation. Traffic congestion is a major concern. NRSW is working with SANDAG and others to align planning efforts to create SMART

[216] Source: DoD Response to WRP 2019 Survey.

Growth and increase multimodal transportation options, while ensuring mission readiness".

- "Several encroachment threats are unique to rural installations that are associated with Navy test and training ranges.
    - Loss of secure and sustainable water supplies.
    - Renewable energy development, such as wind energy projects, impacts airborne radar testing, impacts research, development and testing mission capabilities.
    - Expanded sell off and use of limited frequency spectrums may impact research and development data gathering abilities."
- "In response to wind energy development, DoD developed the R-2508 Risk of Adverse Impact on Military Operations and Readiness Area (RAIMORA), which identifies specific areas where wind energy development may create significant and unavoidable impacts and informs developers and land planning agencies that development in those areas could adversely impact military operations and readiness activities. Ensuring local land use jurisdictions are aware of the DoD RAIMORA and provide information on how to engage NAWS China Lake will improve collaboration on planning efforts."
- "Compatible planning takes into account potential mission impacts resulting from planning activities and engaging all stakeholders early in the planning process in order to develop mitigating measures that reduce adverse impacts, while allowing projects and plans to move forward."
- "Some issues of particular interest to DoD include regulation and planning for use of unmanned vehicles - both at the federal and state level. This includes unmanned aerial systems, as well as unmanned surface and undersurface systems, which can pose safety, scheduling, and security issues for DoD airspace and maritime interests. Coordination with federal and state agencies on use of these systems is important, and state engagement to limit or regulate such activities may be helpful moving forward."

<u>Electromagnetic Interference</u>

Electromagnetic spectrum is a finite resource that is increasingly in high demand by many users including state and federal government and the private sector for such use as wireless broadband service (smart phones, laptops, tablets, e-readers, etc.). As data usage becomes more intensive (cell phones are used for more than talk service, but also for internet searches, etc.) more competition arises for electromagnetic spectrum that was previously used by aviators for radar and voice communication systems and for national security purposes such as by the Department of Defense. As UAS operations increase, so do demands on electromagnetic spectrum availability; UAS operations need electromagnetic spectrum for communications (to avoid mid-air collisions and to safely land). The National Telecommunications and Information Administration (NTIA) manages the Federal Government's use of the electromagnetic spectrum while the Federal Communications

Commission (FCC) manages all other uses. This resource needs to be carefully managed so that multiple users have the electromagnetic spectrum they need to safely and securely accomplish their mission and not be impacted by other users especially with the increasing demand for electromagnetic spectrum. Not having enough use of electromagnetic spectrum at the time needed can result in the flight not occurring, safety issues and interference with navigation and communication. As more electromagnetic spectrum for 5G (commercial broadband use) is needed, there is more pressure on federal agencies to relinquish electromagnetic spectrum.

Best Practices and Resources

Federal
DoD's Readiness and Environmental Protection Integration (REPI) Program[217] Administered by the Office of the Secretary of Defense, REPI focuses on encroachment that can restrict military training, testing, and operations. The REPI Program helps mitigate or avoid land-use conflicts near installations and regulatory restrictions that inhibit the military mission. The REPI Program uses buffer partnerships among the Military Services, private conservation groups, and state and local governments, sharing the cost of acquiring easements or interests in land from willing sellers and preserving compatible land uses and natural habitats near installations and ranges to help sustain military mission capabilities. REPI supports large landscape partnerships, including the Southeastern Regional Partnership for Planning and Sustainability (SERPPAS) and the Western Regional Partnership (WRP), to advance cross-boundary solutions and link military readiness, conservation, and communities with federal and state partners through a common, collaborative framework. REPI also participates in the Sentinel Landscapes Partnership among DoD and the Departments of Agriculture and the Interior. REPI has changed how DoD responds to conservation and military training issues. It engages in outside-the-fence land use planning with all stakeholders at the federal, state, and local level, and continues to explore policy and regulatory solutions to incompatible development, off-installation species habitat, and other mission sustainability issues.
Sentinel Landscapes[218] Established in 2013, the Sentinel Landscapes Partnership advances USDA, DoD, and DOI land-use interests by aligning resources in areas where their priorities overlap. The Departments recognize Sentinel Landscapes as working or natural lands that are situated to protect military installations and ranges from encroachment challenges. Members of the Partnership designate locations as Sentinel Landscapes and work with local stakeholders to coordinate delivery of federal assistance programs to landowners

[217] https://www.repi.mil

[218] https://sentinellandscapes.org/

who maintain their properties as farms, ranches, timberlands, or open space. As a result, the three founding Departments collectively bolster economic productivity, protect critical natural resources, and strengthen military readiness. The 2019 Sentinel Landscapes Accomplishments Report[219] outlines accomplishments of the Sentinel Landscapes Partnership through fiscal year 2018.

Military Aviation and Installation Assurance Siting Clearinghouse (Clearinghouse)[220]
Energy generation and transmission projects involving tall structures, such as wind turbines, solar power towers and panels, and electrical transmission towers, may degrade military testing and training operations. The Clearinghouse was established by Congress in 2011 to protect the DoD's mission capabilities from incompatible energy development. It collaborates with DoD Components and external stakeholders to prevent, minimize, or mitigate adverse impacts on military training, testing, and readiness operations. The Clearinghouse has GIS data publicly available for low level military airspace in the United States.

Compatible Use Plans
In April 2019, the DoD's Office of Economic Adjustment sought nominations for Compatible Use Plans (formerly Joint Land Use Studies) that assist state and local governments to work with installations where encroachment is likely to impair continued operation of the installation. In August 2019, the OEA published a federal funding opportunity[221] for community planning assistance to states and communities to work with military installations to promote and guide civilian development and activities which are compatible and support the long-term readiness and operability of military installations, ranges, special use air space, military operation areas, and military training routes.

OEA also funded Energy Siting Efforts to assist with compatible planning with the military mission. During an August 12, 2019 WRP MRHSDP&A Committee working call, updates were provided on the Arizona Military Energy Land Use Plan (AME-UP[222]), California Energy Siting Grant,[223] New Mexico Energy Land Use Plan,[224] and the Utah Energy Land Use Plan.[225]

[219] https://sentinellandscapes.org/media/1239/2019-sentinel-landscapes-accomplishments-report_final_07252019.pdf
[220] https://www.acq.osd.mil/dodsc/
[221] 84 FR 38014, http://www.oea.gov/sites/default/files/sites/default/uploads/2019-16619.pdf
[222] Sources: https://ameup.asu.edu/ ; presentation of Kevin Seegmiller, Director of Program Management, Delta Environmental Sciences
[223] Source: Presentation of Kyle Smith, Associate Planner, CA Office of Planning and Research
[224] Source: Presentation of Col Greg Myers, USAF (Ret), Director, Military Base Planning and Support
[225] Source: Presentation of Selma Sierra and Gordon Douglass, Utah Geological Survey

Arizona Commanders Summit[226]

The ACS meets twice each year and focuses on mission sustainment through cooperation among all the State's military installations. The Summit started out of a desire for compatible management of the Barry M. Goldwater Range, and grew to include all issues of common concern to all State installations. It is successful because it enables a strategic view of these issues, provides clear lines of communications, is shared among the various installations, has a permanent coordinator, involves AZ State BLM Director, regional FAA and environmental coordinators, and receives strong support from the State. It provides a consensus position that enables "one voice" input to policymakers. Current issues include strategic planning of residential and commercial development, UAS plans and requirements, renewable energy and transmission impacts, and operating space requirements. Over the years it has been able to provide better inter-installation communication, facilitate state legislation, identify core mission vulnerabilities, develop a vertical infrastructure impact GIS database and map, coordinate input to state agencies and energy companies, and engage in successful outreach.

Western Regional Airspace Council[227]

The Air National Guard hosts three (Western, Eastern and Central) Regional Airspace/Ranges Councils (ARCs) every year. Attendees at the meetings include DoD military units, FAA, general and commercial aviation stakeholders. The 2019 Focus includes the FAA and DoD signed an Accommodation Memorandum of Agreement on July 26, 2018 regarding the FAA's requirement that aircraft must have Automatic Dependent Surveillance – Broadcast (ADS-B) Out by January 1, 2020. Under this Memorandum, FAA and DoD agree that:

- Many aircraft will never be equipped with ADS-B Out as they are set to be retired or for security reasons. DoD will identify those aircraft that will never equip due to security.
- On equipped aircraft, DoD will be able to turn the system off for security and training

Another topic at the Council's meeting was wind Farm encroachment into military airspace.

Successful State Support of Military Testing and Training

Many tools have been developed to equip the military and communities to proactively work together on these issues. Tools developed in partnership at the state and local level can be very effective. For the states, military installations represent a sustainable benefit to their economies and their local communities, one that is typically consistent and unaffected by market forces and most economic cycles. In addition, the installations

[226] Source: Presentation of Kevin O'Berry, ACS Facilitator, Luke AFB on April 25, 2019 to WRP.

[227] Source: Presentation of Jamie Flanders, ANG Airspace Manager, July 18, 2019 to WRP.

contribute to national security and military members tirelessly provide many volunteer hours each year in support of local communities.

State and Federal Partnerships in support of the DoD: A California Case Study[228]
California Governor's Office of Planning and Research has several duties including advising the Governor and Executive Cabinet on long-range planning and research; facilitating coordination with military for land use, environmental protection, compatible development and mission sustainability; and by statute serving as the liaison to include military in state energy and environment policy. California Governor's Military Council is by statue the Governor's advisor on national security activities and policies. It consists of retired flag and general officers and senior DoD civilians, defense industry members and state leaders. Its mission is to articulate the value of California's installations and missions in order to sustain and grow operations in the state. OPR has developed compatible land use tools such as the California Military Land Use Compatibility Analyst[229], California Advisory Handbook for Community and Military Compatibility Planning[230] and General Plan Guidelines[231].

Through the Office of Planning and Research, California received a $1.25 million grant from OEA to assist with data collection, mapping, planning assistance and outreach to help prevent adverse siting of energy projects. Phase I will be Northern California (north of San Francisco Bay) with planned deliverables of model ordinances, a summary of applicable energy siting policies, updated maps and planning tools, and a North Coast offshore wind feasibility study.

The Colorado Office of Economic Development & International Trade[232]
Colorado's aerospace economy has over 180 aerospace companies and 500 suppliers, mostly small businesses, contributing over 190,000 direct and indirect jobs and more than $15 billion in economic impact. Approximately 80% is government funded, 61% from DoD. About 148,000 direct jobs are created by defense industries in Colorado, 7.5% of all jobs in the state. Through FY2018, REPI projects have spent nearly $50 million at three Colorado Installations. State and municipal government agreed on improvement to Highway 94 from Colorado Springs to Schriever AFB. Fort Carson, through joint military and community teams, was able to engage local communities in the Pinon Canyon Maneuver Site. Federal activation and support was key to wildfire action in 2018.

[228] Source: Presentation of Scott Morgan, California Governor's Office of Planning and Research, California Governor's Military Council of April 25, 2019 to WRP.
[229] http://cmluca.gis.ca.gov
[230] http://www.opr.ca.gov/docs/20190812-2016_CA_Handbook.pdf
[231] http://www.opr.ca.gov/planning/general-plan/guidelines.html
[232] Source: Presentation of Jay Lindell, Colorado Office of Economic Development & International Trade, of April 25, 2019 to WRP.

Nevada Joint Military Affairs Committee[233]

Because 86% of land in Nevada is Federally managed and a large percentage is military withdrawn land, many counties are less than 10% private, making economic development challenging. The NJMAC was created as a result of the State feeling inadequately represented in the expansions of NAS Fallon, Nellis AFB and the Nevada Test and Training Range in the early 1990s to maintain effective communication and relationships among the State, DoD, DOE and federal land management agencies. Since its inception, the working relationship has greatly improved. It meets twice each year and always includes a field trip or facility tour.

New Mexico's Military Base Planning Program[234]

After several years of informal collaboration, in 2002 a director was appointed and in 2003 the Commission was formed. The Commission, consisting of the Lieutenant Governor and 11 other members, advises the Governor on measures to ensure the continued presence of military bases, works with community organizations supporting long-term viability of bases, obtains and evaluate information relating to the impact of installations, works with the State's congressional delegation. The Office of Military Base Planning and Support supports the Commission and carries out much of the Commission's work on its behalf. Among the Commission's projects include its previous and ongoing engagement on the SunZia project, beddown of two F-16 squadrons at Holloman AFB and the possibility of two more, coordination between White Sands Missile Range and Holloman AFB, buffer zones around Fort Bliss, and a more than 30,000-acre REPI project. The New Mexico Military Base Planning Program has been a success in addressing military sustainment issues and ensuring state leadership is made aware of areas to support the military.

Utah Support of DoD Training, Testing and Operations[235]

Recent DoD support initiatives include the Utah Test and Training Range Buffer Enhancement, part of NDAA 2017, that closes adjacent lands for limited, test-specific activities; Camp William Encroachment-Army Compatible Use Buffer Program, which included a Sentinel Landscape designation and a partnership with the Traverse Mountain Community; a state law exempting military spouses from state licensing if licensed in another state; and an OEA funded study on renewable energy siting compatibility with military operations. Defense was responsible for over 109,000, or 5.8%, of jobs in Utah, and over $9.2 billion in economic activity. The Utah Veterans and Military Affairs Commission studies and recommends to the Legislature on issues related to service members, veterans and their dependents. The Utah Defense Alliance is a community

[233] Source: Presentation of Skip Canfield, Program Manager, Nevada State Clearinghouse, State Land Use Planning Agency, of April 25, 2019 to WRP.

[234] Source: Presentation of Brigadier General Hanson Scott, USAF (Ret), Former Director, of April 25, 2019 to WRP.

[235] Source: Presentation of Gary Harter, Utah Department of Veterans and Military Affairs of April 25, 2019 to WRP.

organization to promote the continued vitality of Utah military installations and has been existence for 25 years. The Military Installation Development Authority fosters development of under-utilized military land.

Actions for WRP Partners' Consideration[236]

- From a DoD perspective, this involves consideration of current and future military requirements for testing and training activities that occur on and around installations and ranges (on land, air, and sea). DoD missions continuously evolve, so on-going dialogue is key. Coordination at the local installation or range level is the first and most critical step in the compatible planning process. In addition to local level coordination with installation and range personnel, there are several tools and resources within the DoD that can assist in compatible planning efforts:
    - Office of Economic Adjustment (OEA), Compatible Use Program[237]
    - DoD Energy Siting Clearinghouse[238]
    - Readiness and Environmental Protection Integration Program[239]
- Provide early communication and engagement on proposed planning projects with the military. Earlier communication would apply to all NEPA/CEQA documentation and actions that require variances or changes to planning codes. Early engagement would give the military more time to ensure compatibility of land use planning and proposed projects.
- Enhanced communication processes between the installations and local and state agencies and external federal agencies are always helpful. An understanding of the strategic importance of installations by other agencies is critical to achieving mutual goals and minimize incompatibilities where stated objectives may differ. This level of understanding can be achieved through a combination of education (outreach materials, tours, etc.), evidence (EIAs, operational statistics), and engagement (notification procedures, cooperative planning efforts, etc.).

[236] Source: DoD response to WRP 2019 survey.
[237] https://www.oea.gov/how-we-do-it/compatible-use
[238] https://www.acq.osd.mil/dodsc/
[239] https://www.repi.mil

WRP Natural Resources Committee

The WRP Region represents 19% of the U.S. land mass and includes 18% of the U.S. population. Approximately 50% of the land within the WRP Region is managed by Federal agencies. There are significant military assets, varied natural ecosystems and extensive infrastructure such as energy and transportation. These factors and the fact that many land use issues are regional lead to possible unintended land use conflicts among WRP Partners' interests.

The WRP Natural Resources Committee provides WRP Partners with information that may help them deal with this complex situation. While in past years the Committee took more wide-ranging looks at existing problems and ongoing and future solutions, this year, in support of the 2018-2019 WRP Priority, the WRP Natural Resources Committee conducted three detailed analyses on the following:

1. Federal agencies streamlining planning processes
2. Focused action on Yellow-Billed Cuckoo and Work with USFWS to obtain species listings and recovery over the next 10 years
3. Supporting WRP Working Groups on natural resource-related items

Over the past year, the WRP Natural Resources Committee held numerous working calls and hosted three webinars to identify the major planning changes, create more awareness among WRP Partners and to develop best practices and models for more efficient and consistent planning collaboration. The three webinars included 19 subject matter experts presenting on the following topics:

- State Wildlife Action Plans (SWAP) and related state collaborative efforts in support of species
- Tribal and Cultural Resources
- 2019 Water Strategies and Collaboration

These items all align with the WRP Natural Resources Committee goals and are detailed below.

Federal Agencies Streamlining Planning Processes

Overview

Federal agencies are streamlining processes, including land use planning, permitting and environmental reviews. These changes make it more imperative that stakeholders have a keen understanding of these changing processes and collaborative engagement opportunities available to them. This is particularly important in the West, given the

resources and considerable state, federal and Tribal lands and various land management processes.

Federal Planning Background

In August 2017, President Trump issued Executive Order 13807,"[240] to expedite environmental review and approval of major infrastructure projects, such as bridge and highway repair, airport modernization and traditional and renewable energy projects. The Executive Order (EO) requires approval of these projects in "One Federal Decision," requiring:

- the "lead agency" to develop a single permitting timetable or schedule for the necessary environmental review and authorization decisions;
- a single Environmental Impact Statement (EIS);
- a single record of decision (ROD); and
- that all other federal agencies must complete any permitting and other authorization decisions required for project construction within 90 days after the ROD.

The goal was to establish a target of two years between the time the environmental review is begun to ROD.

In April 2018, twelve federal departments and agencies often involved in major infrastructure projects[241] signed a Memorandum of Understanding Implementing One Federal Decision Under Executive Order 13807 ("MOU")[242] committing to implementation of the EO, establishing deadlines and processes for agency coordination, communication and dispute resolution, and providing for a process of determining by communication among the involved agencies which one will be designated as "lead agency" or, if no consensus can be reached, to rely on the federal rule for that determination.[243] The MOU includes specific streamlining provisions for natural gas pipelines and hydropower projects where Federal Energy Regulatory Commission (FERC) acts as lead agency.

Additionally, the Council on Environmental Quality's regulations implementing the National Environmental Policy Act (NEPA) state that the text of final environmental impact statements

[240] https://www.whitehouse.gov/presidential-actions/presidential-executive-order-establishing-discipline-accountability-environmental-review-permitting-process-infrastructure/

[241] Departments of the Interior, Agriculture, Commerce, Housing and Urban Development, Transportation, Energy, and Homeland Security, the Environmental Protection Agency, Army Corps of Engineers, Federal Energy Regulatory Commission, Advisory Council on Historic Preservation and the Federal Permitting Improvement Steering Council.

[242] https://www.whitehouse.gov/wp-content/uploads/2018/04/MOU-One-Federal-Decision-m-18-13-Part-2.pdf

[243] 40 CFR §1501.5, https://www.govinfo.gov/content/pkg/CFR-2012-title40-vol34/pdf/CFR-2012-title40-vol34-part1501.pdf

(FEIS) shall "normally be less than 150 pages and for proposals of unusual scope or complexity shall normally be less than 300 pages."[244]

Over 2018-2019, federal agencies continue to streamline planning and environmental review of projects. Many of the federal agencies observed that government shutdowns impact planning since efforts must be restarted, meetings rescheduled, etc.

Federal agencies involved in WRP noted planning processes are moving faster and it is therefore recommended that partners engage early in the planning processes and meet with their local agencies to exchange information on potential concerns.

Brief Highlights of Major Streamlining Efforts are Summarized Below

Executive Order 13868: Promoting Energy Infrastructure and Economic Growth[245] On April 10, 2019, the President issued an Executive Order "to promote private investment in the Nation's energy infrastructure." Among the provisions of this Order include consultation with States, tribes and agencies regarding, and review and clarification of, the EPA's regulations and guidance under Section 401 of the Clean Water Act; updating the Department of Transportation's safety regulations regarding Liquefied Natural Gas; actions regarding renewals of energy infrastructure rights-of-way to be taken by the Departments of Interior, Agriculture and Commerce; a report on barriers to a national energy market by the Secretary of Transportation in consultation with the Secretary of Energy; and a report by federal agencies with respect to assistance to State and local governments supporting energy infrastructure.
FAST-41 and Federal Permitting Improvement Steering Council (FPISC) Title 41[246] of the Fixing America's Surface Transportation Act (FAST-41)[247] establishes new procedures to standardize interagency consultation and coordination. Key Components of FAST-41 include the creation of the Federal Permitting Improvement Steering Council (FPISC), specifically tasked with improving Federal infrastructure permitting;[248]

[244] 40 CFR § 1502.7, https://www.govinfo.gov/content/pkg/CFR-2012-title40-vol34/pdf/CFR-2012-title40-vol34-sec1502-7.pdf

[245] 84 FR 15495, https://www.govinfo.gov/content/pkg/FR-2019-04-15/pdf/2019-07656.pdf

[246] https://uscode.house.gov/view.xhtml?path=/prelim@title42/chapter55/subchapter4&edition=prelim

[247] FAST-41: Your Tailored Roadmap for Infrastructure Project Permitting briefed to all three WRP Committees by Ms. Amber Levofsky, Federal Permitting Improvement Steering Council

[248] The Agencies that are part of FPISC include the Department of Agriculture's Rural Development agency and the U.S. Forest Service, the Army Corps of Engineers Directorate of Civil Works, the Department of Commerce's National Telecommunications & Information Administration, National Oceanic and Atmospheric Administration's National Marine Fisheries Service and Office of National Marine Sanctuaries, the Department of the Interior's U.S. Fish and Wildlife Service, Bureau of Land Management, Bureau of Reclamation, National Park Service and Bureau of Ocean Energy Management, The Department of Energy,

environmental review and authorization processes, including early consultation and enhanced interagency cooperation on projects with specific plans and timetables; an Online Permitting Dashboard[249], allowing stakeholders to track the status of significant Federal permitting activity; and funding authority for the Federal government to collect fees from project sponsors allowing the FPISC to direct resources across the environmental review process. The intent of these changes is to increase visibility, predictability and accountability, enhance coordination and legal protections, and provide for rapid mediation and resolution of interagency disputes.[250]

Since its inception, the FPISC has provided benefits in four key areas: providing a single point of contact; providing executive level oversight; providing for a Chief Environmental Review and Permitting Officer to facilitate efficient permitting processes and recommend improvements; and mediating timetable disputes.[251] Some of FPISC's suggested best practices to improve the environmental review and authorization process include early publication of the steps of environmental review and authorization; creating joint processes or programmatic approaches; and sharing lessons learned. The FPISC also strongly supports a number of items to agencies to further streamline processes and promote efficient and effective use of resources, including expanded use of non-Federal funds to support accelerated review; enhancing coordination with State, local and tribal governments; ensuring access for non-Federal entities to FAST-41 tools and best practices; and expanding the use of technology.[252]

Department of Interior (DOI)

On March 21, 2019, Acting Secretary of the Interior David Bernhardt issued Secretarial Order 3373,[253] directing that the Bureau of Land Management weigh public access for outdoor recreation, including hunting and fishing, when determining whether to dispose of or exchange public lands.

---

the Department of Transportation, the Department of Defense, the Environmental Protection Agency, the Federal Energy Regulatory Commission, the Nuclear Regulatory Commission, the Department of Homeland Security, the Department of Housing and Urban Development, the Advisory Council on Historic Preservation, the Office of Management and Budget and the Council on Environmental Quality.

[249] https://www.permits.performance.gov

[250] https://www.hsgac.senate.gov/imo/media/doc/Herrgott%20Testimony%20Attachment%203%20-%20FAST-41%20Factsheet.pdf

[251] Source: Presentation of Federal Permitting Improvement Steering Council, August 15, 2019 to WRP.

[252] https://www.permits.performance.gov/sites/permits.performance.gov/files/docs/documentation/49226/fast-41fy2019-best-practices-report.pdf

[253] https://www.doi.gov/sites/doi.gov/files/elips/documents/s0_3373.pdf

Bureau of Land Management (BLM)

BLM manages more than 245 million acres of America's public lands and roughly 700 million acres of its subsurface mineral estate. WRP Partners have identified a need to have a proactive and enduring relationship with BLM, and in 2017, a BLM Planning Temporary Working Group was created. Given the significant overlap, leadership of the WRP Natural Resources Committee participated in the Working Group. BLM planning efforts are detailed in this section of the report and in the subsequent chapter on Working Groups.

The BLM land use planning process includes: scoping (Notice of Intent); Analysis of the Management Situation; draft Resource Management Plan (RMP) and Draft Environmental Impact Statement (EIS); proposed RMP and Final EIS; approved RMP and ROD; ongoing Assessment, Inventory, and Monitoring data collection; and 5 year plan evaluation. Over the last several years BLM received new guidance/changes[254] in policy to streamline planning efforts. BLM Headquarters and State Offices within the WRP Region presented updates on efforts at the June 2019 WRP Steering Committee. This year, many BLM rulemaking efforts are underway to change regulations regarding how BLM operates in these areas:

- Paleontology (see Federal Register ID# 1093-AA16 and Forest Service rule and the BLM fact sheet.)
- Livestock Grazing (see: 1004-AE63)
- Timber sales (see: 1004-AE61)
- Protest and appeal
- Wild horse and burro
- Land use planning (for RMP, see: 1004-AE62)

The proposed land use planning regulation takes what is in the Code of Federal Regulations (CFR) (derived from Federal Land Policy Management Act (FLPMA)), land use planning handbook and other programmatic guidance. BLM is working to have the draft rule in 2019 and public comment period in early 2020. They are starting to conduct some initial outreach. The proposed regulation is intended to:

- Modify minimum time frames for public comment periods and governor's consistency reviews to be more consistent with what NEPA requires; to streamline efforts to meet one-year EIS time frame
- Clarify how to handle protests and provide more formality for electronic protest submissions
- Clarify procedures used to establish and modify Areas of Critical Environmental Concern (ACECs)

[254] https://www.blm.gov/programs/planning-and-nepa and https://www.doi.gov/oepc/resources/nepa-procedures

- Clarify use of FLPMA for inventory standards and how BLM looks at land health standards; currently it is in the grazing rule, but BLM wants to put it in a more general standard for land use planning
- Limit the use of overlapping designations and closings designations, that is, if it is designated No Surface Occupancy (NSO) it is NSO once, or if it is closed to minerals it is closed to minerals once, in order to avoid having one designation on top of another designation, which makes it hard for partners to know which permits they need
- Consider state alternatives proposed by Governors in the RMP process. Now they have three possible actions: No action, conservation alternative or development alternative. This causes concern with state partners since they do not know where their input fits in.
- Clarify data standards, so land use planning decisions are more readily apparent on the BLM website.
- Remove NEPA requirements completely from land use planning regulations. There is already a CFR on NEPA, so there is an overlap issue
- Clarify and refocus on coordination and consistency processes early in the planning process. This is relevant to WRP Partners. Engaging with partners and other landowners early, even before there is a notice of intent to engage in a planning process, is invaluable. Once BLM has started the scoping process and hits the one-year timeline, any surprise is challenging. Frontloading the RMP process, making sure BLM has good data, and that partners are comfortable with the process, data and GIS information is important.

The 'John D. Dingell, Jr. Conservation, Management, and Recreation Act' (The Dingell Act) is another major update that will impact planning and NEPA process. A number of states may require some form of RMP amendment or Environmental Assessment, but there are several states that have two- to five-year timelines to get projects completely analyzed and developed, boundaries set up, finalize all the planning actions and decisions, engage the public and make a final decision.

Minerals

In June 2019, the Administration issued "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals."[255] Under this Strategy, mining permits will be considered for expediting. The BLM, which is responsible for onshore mineral rights and mining on lands managed by BLM, and the Bureau of Ocean Energy Management (BOEM), which provides mineral permitting in the Federal Offshore and Exclusive Economic Zone, will each review their permitting processes to reduce unnecessary permitting delays and increase access to critical minerals.

[255] https://www.commerce.gov/news/reports/2019/06/federal-strategy-ensure-secure-and-reliable-supplies-critical-minerals

Some best practices in engagement with BLM include: regularly meeting face-to-face; designing a process; developing a work plan (objectives, tasks, products, roles, deadlines, constraints); defining the ground rules; identifying sideboards (legal mandates); using a third-party facilitator; meeting in the field/on-site; rotating meeting locations; maintaining meetings and communication; providing updates on any changes in leadership/contacts; inviting staff from another agency to attend your agency's meetings; and sharing information about common concerns.

For more details on BLM planning efforts, please see WRP BLM Planning Temporary Working Group summary.

US Fish and Wildlife Service (USFWS)

The Mission of the USFWS is "*to work with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people.*" It manages the 150 million-acre National Wildlife Refuge System of more than 560 National Wildlife Refuges and thousands of small wetlands and other special management areas. Its fisheries program operates 70 National Fish Hatcheries, 65 fishery resource offices and 86 ecological services field stations.

Information for Planning and Consulting (IPaC)[256] is a project planning tool that streamlines the USFWS environmental review process by allowing users to identify USFWS-managed resources and suggested conservation measures for projects. Users can explore species and habitat, conduct a regulatory review and perform an impact analysis early in the development of their project so that they can determine the likely impacts and obtain suggestions to address them.

For more information regarding species-related efforts over the past year, please see the Species section in this chapter.

U.S. Department of Transportation

U.S. Department of Transportation

DOT's Infrastructure Permitting Improvement Center is working to expedite environmental review and permitting of major infrastructure projects by removing barriers to efficient and effective permitting and review, supporting environmental solutions for major projects and promoting and sharing best practices across DOT. Among its activities are providing leadership in infrastructure initiatives, implementing project delivery reforms, collaborating with the FPISC on permit reform efforts, supporting DOT Operating Administrations and its Build America Bureau to assist projects navigating the permit

[256] https://ecos.fws.gov/ipac/

process and Coordinating with the Council on Environmental Quality relating to permitting and project delivery.[257]

Additionally, on August 23, 2019, DOT published two interim policies, one limiting the number of pages on NEPA submissions, the other applying the One Federal Decision Process to DOT projects. These interim policies were effective immediately.[258]

United States Department of Agriculture (USDA)

United States Forest Service (USFS)
USFS has direct stewardship responsibility for 193 million acres of national forests and grasslands and shares responsibility, working through State forestry agencies, for the management, protection, and wise use of about 500 million acres of non-Federal rural and urban forests. The National Forest Management Act requires the USDA to develop a Land Management Plan for each national forest and grassland, revise the Plans every 15 years, and amend them as necessary. These plans provide broad strategic direction to guide future decisions without authorizing any action or compelling any use.

USFS Proposed Revisions to NEPA Procedures
In June 2019, the USFS proposed revisions to how it performs environmental analysis and decision making in compliance with the NEPA. The Proposed Rule[259], which is expected to be finalized by summer 2020, would exclude certain activities from environmental assessments or EIS, which would reduce delays for these activities by months or years. The proposed exclusions would be for restoration projects, roads and trails management, recreation and facility management, and special use authorizations that issue permits for outfitters and guides, community organizations, civic groups and others. This follows on the initiative noted by the USFWS in the 2018-2019 WRP Strategic Priority Survey that it is "working to plan, schedule and coordinate more effectively with partners, including federal agencies such as DoD and the Corps of Engineers, and private entities such as timber and mining companies" in light of Department of Interior direction to complete the NEPA process within new timelines and page limits.

USFS Partnership with States
In December 2018, the USDA and the Western Governors' Association (WGA) signed a Memorandum of Understanding[260] to "establish a framework to allow the USFS and WGA to work collaboratively to accomplish mutual goals, further common interests, and effectively respond to the increasing suite of challenges facing western landscapes." It

[257] https://www.transportation.gov/PermittingImprovementCenter
[258] https://www.govinfo.gov/content/pkg/FR-2019-08-23/pdf/2019-18204.pdf
[259] https://www.fs.fed.us/emc/nepa/revisions/includes/docs/36CFR220ProposedRuleFRN.pdf
[260] https://www.usda.gov/sites/default/files/documents/usda-wga-mou.pdf

commits the Forest Service and WGA to work together in setting priorities that address broad landscapes in making investments so that they will have the greatest impacts, particularly noting the urgent challenges facing forests and rangelands such as catastrophic wildfires, invasive species, degraded watersheds and insect and disease epidemics. USFS had earlier announced a new strategy to work more closely with states to identify landscape-scale priorities.

Land Withdrawals[261]
The Secretary of the Interior is authorized to withdraw Federal lands for the purpose of limiting activities to maintain other public values in the area or reserving it for a particular public purpose or program. Withdrawals are also used to transfer jurisdiction of Federal land from one Department, bureau, or agency to another.

Public lands may also be withdrawn and reserved for military training and testing in support of national defense requirements.

There are four major categories of formal withdrawals:

1. Administrative withdrawals made by the President, Secretary of the Interior, or other authorized Executive branch officers.
2. Presidential Proclamation withdrawals under the Antiquities Act of 1906 to designate landmarks, historic and prehistoric structures, and other objects of historic or scientific interest.
3. Congressional withdrawals such as Wilderness designations, National Parks, and Wild and Scenic River designations.
4. FPA or FERC withdrawals.

WGA Policy Resolution 2019-05, Federal-State Land Exchanges and Purchases[262]
Federally owned lands are widespread throughout western states and are often interspersed with state, county and private lands. This ownership pattern complicates various land management activities, including wildfire mitigation, habitat conservation, and watershed protection. In this resolution, Western Governors call on Congress to simplify and expedite federal-state land exchange, sale and conveyance processes to help address checkerboard land ownership challenges in the West.

Water

The western U.S. is one of the fastest growing regions of the country, and the future growth and prosperity of the western states depend upon the availability of adequate quantities of

[261] https://www.blm.gov/programs/lands-and-realty/land-tenure/withdrawals
[262] http://westgov.org/images/files/WGA_PR_2019-05_Land_Exchanges_and_Purchases.pdf

water of suitable quality. During an August 27, 2019 WRP Natural Resources Committee webinar key presenters provided the latest information on water strategies and collaboration.

Presidential Memorandum on Promoting the Reliable Supply and Delivery of Water in the West (October 19, 2018) noted that during the 20th century, the Federal Government invested enormous resources in water infrastructure, but decades of uncoordinated, piecemeal funding and regulatory actions have diminished the ability to deliver water and power in an efficient, cost-effective way. Unless addressed, fragmented regulation of water infrastructure and underfunded maintenance and replacement needs will continue to produce inefficiencies, unnecessary burdens, and conflict among the Federal Government, States, tribes, and local public agencies. Several other actions are addressed in this Presidential Memo. Federal agencies such as the Bureau of Reclamation (for example, through WaterSMART; see below)[263] are working to implement the provisions set forth in the Memo.

WaterSMART and Activities in the Colorado River Basin[264]

WaterSMART allows states, tribes, irrigation districts and other water or power delivery authorities to apply for project funding. Typically, Federal cost-share is 50% or less. Projects range from $75,000 (small-scale water conservation) to $6 million (water reuse and desalinization). Projects must be completed within 2-3 years. New in 2019 were applied science grants, developing tools, information and modeling capabilities to support improved water management, including developing or comparing reservoir operations alternatives, improving or adapting forecasting tools and technologies and improving access to and use of water resources data.

The Colorado River Basin has just experienced the driest 20-year period in over 100 years, although some data suggest more severe droughts have occurred much earlier. However, the April through July 2019 runoff is 145% of average. Drought contingency planning has a goal of reducing the risk of Lakes Mead and Powell reaching critically low levels by additional water contributions by Lower Basin states, additional flexibility for water storage and recovery to incentivize conservation and drought operations and demand management in the Upper Basin. With the drought contingency planning activities, the risk of the two lakes reaching critically low levels by 2026 was reduced to under 10% for both lakes, from risk projections over 30-40% without those activities.

[263] www.usbr.gov/watersmart

[264] Source: Presentation of Bureau of Reclamation August 27, 2019 to WRP

Waters of the United States Rule Repeal[265]

The U.S. Army Corps of Engineers and the Environmental Protection Agency have agreed on a final rule returning the definition of the "Waters of the United States" to its definition before it was amended in 2015.[266] When effective, it is anticipated to remove delays caused by the prior definition on the development of certain projects, particularly transportation projects.[267] The agencies are reviewing comments on a proposed new definition of "Waters of the United States," which is expected to become final in the coming months.

National Water Reuse Action Plan [268]

In September 2019, the EPA announced the release of a Draft National Water Reuse Action Plan,[269] seeking public comment by December 16, 2019. The intent of the draft is to support consideration and implementation of water reuse across the water sector, including agriculture, industry, potable water, national security and environmental legislation, among federal, state, tribal governments and other water stakeholders. The draft identifies 46 proposed actions across ten strategic objectives: Enable consideration of water reuse at the watershed scale; coordinate and integrate federal, state, tribal, and local programs and policies; compile and refine specifications; promote technology development, deployment, and validation; improve availability of water information; facilitate financial support; integrate and coordinate research; improve outreach and communication; support a talented and dynamic workforce; and develop water reuse metrics that support goals and measure progress.

NASA Western Water Applications Office (WWAO)[270]

WWAO uses the International Space Station and several airborne platforms to monitor water quantity, quality and fluxes. WWAO's mission is to improve how water is managed by applying NASA data, technology and tools in partnership with water managers and decision makers in the western U.S. It identifies needs for information and decision support, connects stakeholders to NASA scientists and resources, supports projects tailored to meet the needs and transition's water application and technology into an operational, sustainable state for long-term impact. All WRP States have current partnerships with NASA. Among their capabilities are rapid assessment of extreme weather events such as floods and droughts, monitoring water supplies, quality, demand and use and monitoring groundwater.

---

[265] https://www.epa.gov/sites/production/files/2018-12/documents/wotus_infographic.pdf

[266] https://www.epa.gov/sites/production/files/2019-09/documents/wotus_rin-2040-af74_final_frn_prepub2.pdf

[267] https://aashtojournal.org/2018/12/14/wotus-redefinition-could-reduce-regulatory-burden-for-transportation-projects/

[268] https://www.epa.gov/waterreuse/water-reuse-action-plan

[269] https://www.federalregister.gov/documents/2019/09/16/2019-19984/draft-national-water-reuse-action-plan

[270] Source: Presentation of Forrest Melton, Program Scientist, NASA Western Water Applications Office, August 27, 2019

Western Water Strategies and Collaboration[271]

The Western States Water Council advises 18 western Governors (including all WRP States) on water issues. It provides states a collective voice, fosters state-to-state and state-federal collaboration, works with the Western Governors' Association and the Western Federal Agency Support Team (WestFAST). Its activities include state efforts to promote infrastructure improvement, forecasting on subseasonal and seasonal time scales, adopting forecast-informed reservoir operations, addressing resiliency to extreme weather events, raising questions related to expansion of 5G spectrum and interference with frequencies monitoring water vapor, and reminds the federal government of states' authority to protect their water quality and allocate water supply under the cooperative federalism principles of the Clean Water Act and other federal statutes.

[271] Source: Presentation by Tony Willardson, Executive Director, Western States Water Council, August 27, 2019

Species: Focused action on Yellow-Billed Cuckoo and Work with USFWS to obtain species listings and recovery over the next 10 years

Overview

The WRP Natural Resources Committee has worked for many years to identity species of concern for WRP Partners ad identify appropriate steps. The first such survey was conducted in 2015 and was used as a baseline and compared with subsequent years to identify species of continued concern and those that are emerging. This year the Natural Resources Committee focused its efforts on Yellow-Billed Cuckoo (YBC) for further examination as well as a broader view on species of concern by working with USFWS to obtain species listings under the ESA and recovery over the next 10 years.

Early conservation efforts (prior to a listing of a species) can maximize management options, reduce costs and ultimately eliminate the need for listing. WRP Partners spend significant resources to assist with environmental planning. Through enhanced collaboration among WRP Partners it may be possible to support species and land more effectively in a non-regulatory environment.

WRP Region

The WRP Region has a diverse range of climates and ecosystems, so it follows that the number of plant and animal species found in the region is considerable. According to the USFWS Environmental Conservation Online System[272] as of October 2019 the following numbers of species listed as threatened or endangered are believed or known to occur in the WRP states:

State	Number of federally listed species per state (total numbers of animals and plants)	Animal	Plant
Arizona	64	43	21
California*	287	105	182
Colorado	34	17	17
Nevada	40	30	10
New Mexico	53	40	13
Utah	42	18	24

** Of the above list, the only change from 2018 to 2019, is the State of California's numbers of animals reduced from 118 to 105.*

[272] https://ecos.fws.gov/ecp0/reports/species-listed-by-state-totals-report

Significant Federal Changes over the Past year

ESA Implementation: Regulations of ESA Sections 4 and 7

USFWS, along with National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce, published final rules effective September 26, 2019 revising regulations implementing the ESA. Among the more important changes are: the standards for delisting species are the same as the standards for listing species as threatened or endangered; requirement that areas where listed species are present at the time of listing are evaluated before unoccupied areas are considered and clarification that the required interagency consultation among federal agencies, USFWS and NMFS. Additionally, USFWS rescinded its rule that generally required threatened and endangered species to be provided the same protections, a rule that NMFS had not employed, thereby aligning the two agencies' requirements.[273]

John D. Dingell Jr. Conservation Management and Recreation Act[274]

This Act, signed into law March 12, 2019, is an omnibus land management act that provides for the management and conservation of natural resources on Federal lands. Among its provisions are wildlife conservation and wildland fire operations. Sec. 3001 of the Act permanently reauthorized the Land and Water Conservation Fund.

Greater Sage-Grouse Conservation Plans

In December 2018, the BLM announced the completion of the Final EIS and Proposed Plan Amendment for the Nevada and Northeastern California Greater Sage-Grouse Land Use Plan.[275] The Bureau and the Department of the Interior worked closely with the Governors of states with Greater Sage-Grouse habitat in adopting this amendment.

On July 31, 2019, the USFS proposed changes[276] to how it manages Greater Sage-Grouse in Colorado, Nevada and Utah (along with Idaho and Wyoming.) The changes would allow for greater flexibility and local control of conservation and management actions related to sage grouse; align state and federal conservation standards and align mitigation options with state-based systems so mitigation strategies on how to ensure no net-loss of habitat are locally supported; and would remove the requirement that every action increase conservation, enabling local stakeholders to determine what strategies to implement where and how while still conserving sage grouse habitat.

---

[273] https://www.govinfo.gov/content/pkg/FR-2019-08-27/pdf/2019-17518.pdf and https://www.fws.gov/endangered/improving_ESA/regulation-revisions.html

[274] Public Law 116-9, https://www.congress.gov/bill/116th-congress/senate-bill/47/text

[275] https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=103343&dctmId=0b0003e8810d9c10

[276] FR 84-37233, https://www.govinfo.gov/content/pkg/FR-2019-07-31/pdf/2019-16283.pdf

State and Federal Role in Wildlife Resource Management[277]

Wildlife is considered a public trust resource, with States as the primary authority for most species. Federal agencies such as the National Park Service, USFS and BLM have specific responsibilities as trustees for lands and resources including habitats, and these responsibilities may preempt primary State authority. Certain Federal laws and treaties specifically allow for Federal authority. The Endangered Species Act of 1973 (ESA) provides regulatory protection for imperiled species, primarily through the USFWS and NOAA. However, States are not excluded from maintaining a significant role in management and conservation of protected species and in exerting primary authority over candidate and proposed species under the ESA.

The Federal government also provides funding for wildlife conservation and is responsible for resource management, particularly in the West where there are large amounts of Federal lands (e.g., BLM, USFS, DoD, USFWS lands) and works with States and private landowners for conservation (via the Farm Bill, Natural Resources Conservation Service, USDA and others).

State Wildlife Action Plans (SWAP)

In 2000, Congress created a program that funds each State's "comprehensive wildlife conservation strategy," typically called State Wildlife Action Plans (SWAPs). The initial versions were submitted to the USFWS in 2005 and they went through the first update in 2015. These plans address eight required elements, including the Species of Greatest Conservation Need (SGCN), and a plan of actions to conserve wildlife and vital habitats before the conservation becomes too difficult and expensive.

Although there is naturally overlap from State-to-State, each of the States has identified the SGCN under its SWAP (see below), a list of at-risk species found in the state that need special attention because they are rare, declining, or vulnerable in the state.[278] The following table provides the counts of the SGCN by state in the WRP Region:

State	Number of Species of Greatest Conservation Need
Arizona	531
California	1153
Colorado	159
New Mexico	235
Nevada	256
Utah	141

[277] Source: Nevada Department of Wildlife presentation April 9, 2019 to WRP

[278] Some states have other "red lists" of species. For example, CA has a list of species under the CA Endangered Species Act (CESA). There are overlaps between ESA and CESA lists, but they are not identical.

SWAPs in the WRP Region

Arizona SWAP[279]

This SWAP[280] provided a database of species, habitats and threats, categorizing 531 species as either vulnerable or unknown status, and created a geospatial web-based product called HabiMap^{TN} Arizona, which allows for viewing relationships between various data layers, provides species distribution models, wildlife stressor models, and allows users to query areas of interest down to the level of coordinates or street addresses and print maps.

California SWAP[281]

This SWAP[282] articulates conservation priorities, such as, what to conserve (target, key ecological attribute), what are degraded (stress), what are the causes (pressure), and what should be done to reverse the negative impacts and/or to enhance the conditions (goal, objective, action), for each 39 geographic unit utilizing standardized protocols and focusing on ecosystem targets. Statewide goals, by integrating the regional goals, have been written to sustain and enhance the following three factors: 1) Abundance and richness of ecosystems and species, 2) Ecosystem conditions, and 3) Ecosystem functions and processes. The SWAP has been used as a data source and reference in various manners (e.g., framework, guidance, priorities and standards), and for diverse activities, from land protection; regulatory and policy making; strategic planning; data gathering and analyses and studies; granting; and leverage resources for conservation. Implementation examples include developing the sector-specific companion plans (identifying where the SWAP priorities overlap with partners' priorities, as a preparation for future collaboration), and integration efforts with various strategic plans (e.g., CA Water Plan, CA Wildlife Conservation Board Strategic Plan, CA Climate Adaptation Strategy, CA Forest Carbon Plan, CA Forests and Rangelands Assessment). CA Biodiversity Initiatives (2018) created by a Governor's Order has adapted the SWAP as the top guidance document exhausting the three statewide goals as its overarching goals. Many grant programs have also adapted the SWAP as part of their project selection criteria, including Environmental Enhancement & Mitigation Program ($7M per year), Restoration Grant Program ($372.5M per 10 years), Water Storage Investment Program (one solicitation at $2.7 billion), and Climate Adaptation & Resiliency Program ($20M total).

[279] Source: Arizona Game & Fish Department presentation April 9, 2019 to WRP

[280] https://www.azgfd.com/wildlife/actionplan/

[281] Source: California Department of Fish & Wildlife presentation April 9, 2019 to WRP

[282] https://www.wildlife.ca.gov/SWAP

Colorado's SWAP[283]

The basic tenets of the SWAP [284]and State Wildlife Grants is developing clear and compelling conservation goals, establishing prioritized framework for conservation of rare and imperiled species, identifying important conservation areas, supporting conservation efforts that preclude the need to list species under the ESA, helping keep common species common and engaging the public and partners in wildlife and habitat conservation. They have identified Tier 1 species as those in greatest conservation need, identified the distribution of key habitats, threats and actions to be taken.

New Mexico SWAP[285]

The guiding principles of the SWAP[286] are to guide use of State Wildlife Grant and Share with Wildlife research and habitat enhancement funds, rely on standardized and accepted ecological classification systems, provide linkages to information sources and management tools, incorporate a current climate change analysis, identify Conservation Opportunity Areas derived from Crucial Habitat Assessment Tool polygons and other geospatial layers, and serve as the foundation for a web-based conservation information portal. Six ecoregions provide an intuitive, coherent, peer-reviewed organizational structure for the Plan, provides regional, national, and international ecological context for interpreting the State's environment and are organized around the U.S. Environmental Protection Agency Level II Ecoregions. Key habitats are identified, as are conservation opportunity areas to help direct geographic foci of conservation actions. Share with Wildlife is a voluntary donation program that funds conservation and research projects. Geospatial enhancements to the plan were to go live on June 30, 2019.

Nevada SWAP [287]

Nevada has 894 regularly occurring species, of which 8 are threatened and 20 endangered. There are currently no candidate species. Nevada's unique challenges are its arid climate, mountainous geography, limited water sources and unique species easily subjected to threats and stressors. Characteristics of the Nevada SWAP are to keep common species common, address declining species' needs before they are listed, be proactive rather than reactive, based on collaboration and partnerships, leverages state funding with federal funding and protect wildlife for future generations of Nevadans. The SWAP [288]identifies 256 species of greatest conservation need are those that are Federal and State Endangered, Threatened, and Sensitive Species, exhibiting declining trends, have restricted ranges or serious habitat concerns, have a high level of global

[283] Source: Colorado Parks and Wildlife presentation April 9, 2019 to WRP
[284] https://cpw.state.co.us/aboutus/Pages/StateWildlifeActionPlan.aspx
[285] Source: New Mexico Department of Game and Fish presentation April 9, 2019 to WRP
[286] http://www.wildlife.state.nm.us/conservation/state-wildlife-action-plan/
[287] Source: Nevada Wildlife Diversity Division presentation April 9, 2019 to WRP
[288] http://www.ndow.org/Nevada_Wildlife/Conservation/Nevada_Wildlife_Action_Plan/

conservation responsibility in Nevada and are a management priority for the state. Twenty-two key habitat types are tied to these species.

Utah SWAP[289]

Utah [290]ran all their species and key habitats through a threat-ranking system, developed by their SWAP Joint Team, based on voluntary Best Practices. An example of a threat assessment for the Yellow-Billed Cuckoo includes high threats such as brush eradication/vegetation treatments, channel downcutting, improper grazing, problematic plant species and water allocation policies; and medium threats such as camping, dam/reservoir operation, droughts, habitat shifting and alteration, inappropriate fire frequency and intensity and OHV motorized recreation. Utah has found having standard language and metrics enabled them to compare threats impacting multiple targets. Most threats are trivial, local or affect few species, but a few are existential, ubiquitous and affect many species and habitats, (for example, in Utah a wildfire that required restoration of the watershed). Implementation actions include restoration of watersheds through partnerships.

Key-Takeaway from SWAPs:

Prevention is usually less expensive, and recovery is almost always very costly and time consuming. SWAP efforts are generally prevention focused and are always looking for partners to maximize funding opportunities to conduct efforts now to avoid future listings. WRP Partners are encouraged to review their relevant SWAPs and develop proactive and enduring partnerships to best support species and associated habitats in a non-regulatory environment. Once a species is listed, it is very difficult to de-list the species.

However, three species, none of which found in WRP States have been delisted in 2019[291] and currently there are six species known to be found in one or more WRP States that are being considered for a status change or delisting:[292]

[289] Source: Utah Division of Wildlife Resources presentation April 9, 2019 to WRP
[290] https://wildlife.utah.gov/discover/wildlife-action-plan.html
[291] https://ecos.fws.gov/ecp0/reports/delisting-report
[292] https://ecos.fws.gov/ecp0/reports/ad-hoc-species-report?status=A*&header=Species+Proposed+for+Status+Change+or+Delisting&fleadreg=on&fstatus=on&finvpop=on

WRP State	Species	Current Federal Listing Status	Proposed Change
All	Canis lupus (Gray wolf)	Endangered	Delisting
NM	Eriogonum gypsophilum (Gypsum wild buckwheat)	Threatened	Delisting
CA	Eucyclogobius newberryi (Tidewater goby)	Endangered	Threatened
CO	Gaura neomexicana var. coloradensis (Colorado Butterfly plant)	Threatened	Delisting
AZ, CA, NV, UT	Gymnogyps californianus (California condor)	Endangered	Status change to reflect experimental population, non-essential in northern CA and northwest NV (only)
CA	Pipilo crissalis eremophilus (Inyo California towhee)	Threatened	Delisting

Success Story: Collaborative Wildlife Protection and Recovery Initiative (CWPRI) on Least Bell's Vireo[293]

CWPRI is an informal partnership of state and federal agencies and NGOs interested in recovering listed species and preventing new listings under the Endangered Species Act. After considering several species, in April 2017 CWPRI chose the least Bell's vireo (*Vireo bellii pusillus*) as its pilot species. This bird was listed in 1986 as a federally endangered subspecies. Its habitat is mostly woody riparian along watercourses. Although management activity by various parties over the previous three decades has led to significant population increases, there was still a need for collaborative action.

CWPRI's collaboration included a workshop at which they developed short-, middle- and long-term actions to support the species' recovery, with a goal of proving that by acting together, federal agencies can recover species and strengthen each agency's capacity to meet its mission. A follow-up session in March 2019 allowed the parties to share knowledge and ideas about the least Bell's vireo's biology, conservation and habitat; learn of tools and models for recovery efforts and assign tasks for the future.

This proof of concept has resulted in federal and state funding to allow parties to develop a habitat suitability study, build capacity and conduct targeted surveys and habitat rehabilitation projects. This success is an example that could be replicated for other species and habitats throughout the country.

[293] Source: https://nri.tamu.edu/media/2555/cwpri_factsheet_october_2019.pdf

Success Story: Arizona Game and Fish Department's efforts of working with key stakeholders in support of the Sonoran Desert Tortoise (Gopherus morafkai)[294]

The Sonoran Desert tortoise (SDT) occupies portions of western, northwestern, and southern Arizona; it is also found in the Mexican state of Sonora. Its habitat includes rocky, steep slopes and bajadas in Mojave and Sonoran Desert scrub. The SDT has been state protected since 1989, is a SGCN, and was a candidate from 2010-2015.

In 1985, an Arizona Interagency Desert Tortoise Team was established, led by Arizona Game and Fish Department (AGFD) and USFWS. In 2015, AGFD worked with federal and state agencies developed a Candidate Conservation Agreement for submission to the FWS and AGFD worked with ranchers, Natural Resources Defense Council and other partners to create Best Management Practices for Ranching in SDT habitat. The USFWS determined in 2015 that listing the species was not warranted [295]at that time. The decision of FWS was based extensively on this activity. The Arizona population of the species has been actively monitored by AGFD for approximately 30 years with 17 long-term monitoring plots. Survivorship exceeds 90% in most locations; no evidence suggests a systematic decline.

This species was noted as a top priority for WRP Partners in 2015 (ranked the highest) and since then the extensive collaboration led by AGFD working with federal, state, and county members regarding the SDT has made remarkable progress and should be considered a success story.

WRP Focus: Yellow-Billed Cuckoo (YBC) (Coccyzus americanus)

The YBC is a large bird. Its Western U.S. Distinctive Population Segment (DPS) is found in most Western states, including all the WRP States: throughout Arizona and Utah, in the western part of New Mexico and Colorado, in Central Nevada and Northern California. The Western U.S. DPS has been listed as Threatened since 2014. (The Eastern U.S. DPS is not listed.) The species has been endangered in California since 1978[296], identified as a species of concern in Arizona in 1988 and a sensitive species on USFS lands in Arizona and New Mexico.[297]

The species uses a variety of riparian habitats. Cottonwood and willow trees provide an important foraging habitat in areas where the species has been studied in California. For this reason, the principal threat to the species is loss of these riparian habitats. Principal causes of riparian habitat losses are conversion of lands to agricultural and urban uses and flood control measures. Available breeding habitats for yellow-billed cuckoos have also been

[294] Source: Arizona Game and Fish Department presentation April 9, 2019 to WRP
[295] FR Vol 80, No. 93, p 60321, October 6, 2015.
[296] http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/bird.html
[297] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5182002.pdf

reduced in area and quality by groundwater pumping, and the replacement of native riparian habitats by invasive non-native plants, particularly tamarisk.

A petition has been brought to seek USFWS review of the designation as Threatened for two asserted reasons:

- Western DPS is not distinct from individuals elsewhere in the range.
- Even if it is distinct, it is using additional habitat in the West, so it is not under threat.

The USFWS determined in its 90-day review that there is enough information on the use by the species of additional habitat to review the listing and, considering that review, will revisit the DPS determination as well, and issue 12-month findings.[298]

The USFWS seeks information on the following subjects (see FR above):

(1) The species' biology, range, and population trends, including:

(2) The factors described in the Endangered Species Act

(a) Habitat range (b) Overutilization (c) Disease or predation (d) The inadequacy of existing regulatory mechanisms or (e) Other natural or manmade factors including past and ongoing conservation measures that could decrease the extent to which one or more of the factors affect the species, its habitat, or both.

(3) The potential effects of climate change on the species and its habitat.

This species has consistently been ranked as a species of interest for WRP Partners in 2015, 2017, and 2018.

YBC: Utah SWAP Case Study[299]

Few ecological problems can be solved in isolation, effective collaboration needs trust and data, and trust starts between people, but agreements need institutions.

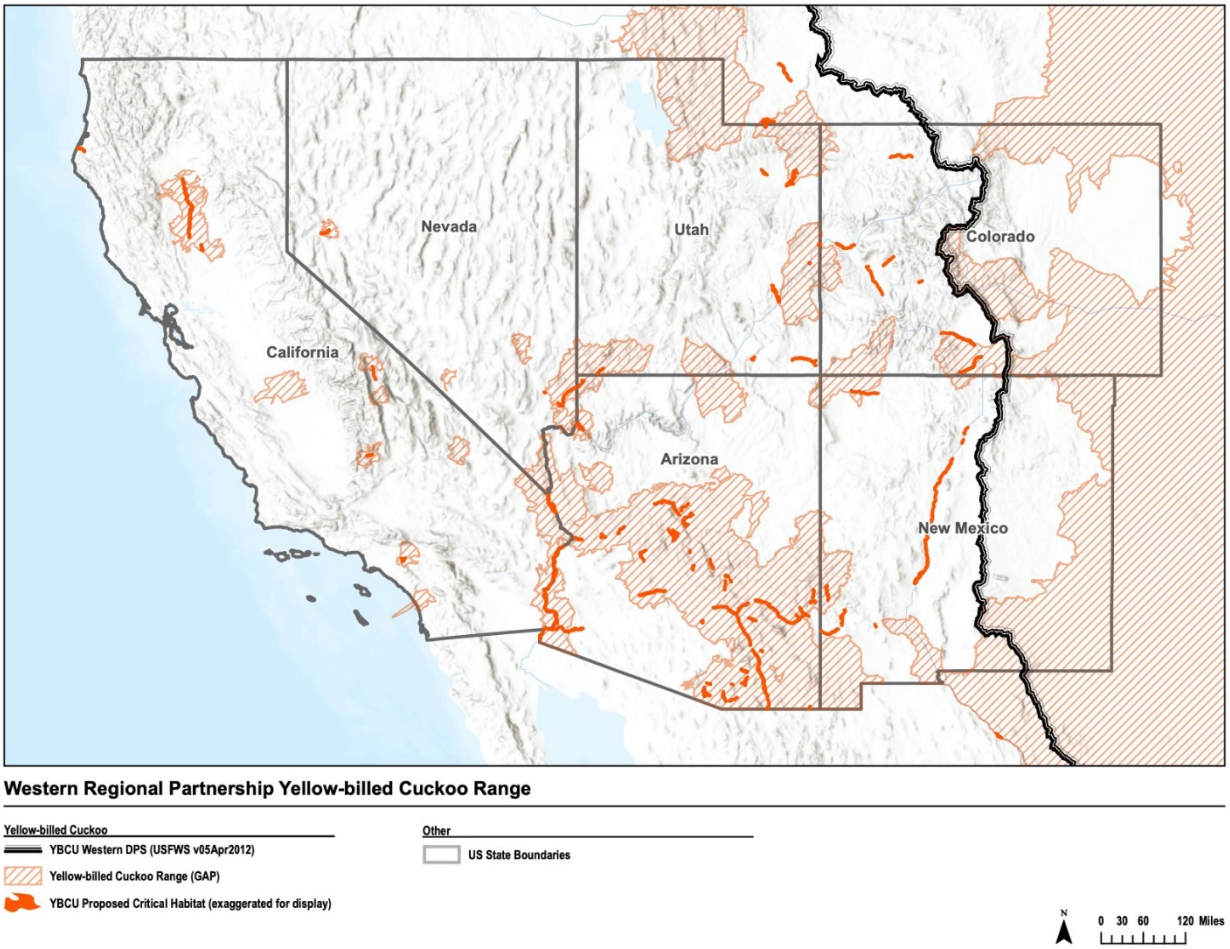
The habitat for the YBC is riparian vegetation and mesic shrubs. It feeds on large insects, migrates late, and breeds very fast. Because they are secretive and mobile, their ranges are largely unknown, and their populations down more than 50% over the last fifty years, they are hard to survey.

Threats to YBC in Utah were all the result of changes in stream water and fire. There are also data gaps on distribution and abundance.

[298] FR Vol 83, No. 124, p. 30091, June 27, 2018, https://www.govinfo.gov/content/pkg/FR-2018-06-27/pdf/2018-13843.pdf

[299] Source: Utah Division of Wildlife Resources presentation April 9, 2019 to WRP

It is Federally Threatened in the western DPS and a SGCN in all 12 states it is known to inhabit and is therefore a common priority in the West. Because of open collaboration and trust among the interested parties a proposal was submitted. (See below.)



Map 5: WRP Yellow-billed Cuckoo Range, dated November 2019

<u>Successful Submission of YBC Grant</u>

In June 2019, Western Association of Fish and Wildlife Agencies (WAFWA) applied on behalf of 12 western states for State Wildlife Grant funds for the proposed project "*Assessing Habitat Occupancy for the Western Distinct Population Segment of the Yellow-billed Cuckoo (Coccyzus americanus)*." The project had three main objectives: to develop a western DPS range-wide SDM, to implement a western DPS range-wide survey, and to investigate use of Autonomous Recording Units (ARUs) as an alternate survey method. The project is to begin in the Winter 2019/Spring 2020 and conclude in mid-2022. The resulting SDM and occupancy dataset from this study will provide a basis for future management actions to improve cuckoo populations.

The application notes "*implementing actions to reverse the cuckoo's decline and ultimately delist the species will require new information on the species' habitat and population distribution. This project will provide needed information currently lacking, including a regional cuckoo habitat distribution model, occupancy information of sampled areas, an estimated range-wide occupancy model, and an ARU cuckoo detection assessment.*"

Leadership of the WRP Natural Resources Committee recognizes the value of this proposal to support YBC conservation and looks forward to learning if the proposal is successful, and if so, best ways to partner to advance efforts.

Regional State Coordination

The Western Governors Association (WGA)[300] has a Chairman's Initiative each year. In 2015, Wyoming's then-Governor Matthew Mead's Initiative was Species Conservation and Endangered Species Act (ESA) which had three main tenets: share best practices, elevate the state's role and to review ESA. From this, WGA has developed two efforts: Working Lands Roundtable[301] and the WGA Task Force on Collaborative Conservation[302]. There is a need to be more proactive and not constantly managing on the edge of a crises, which is not sustainable.

Collaboration between USFWS, Pacific Southwest Region and WRP

USFWS, Pacific Southwest in its response to the 2019 WRP survey noted, "compatible planning means balancing the expectations and deadlines of the current administration and collaboration with local, state and federal partners through planning and communicating with partners on primary priorities." For some projects/work, this can mean monthly, weekly or daily check-ins as well as ensuring communication happens across field staff to regional leadership. Examples of priority areas, and in some cases, implementing compatible planning:

- California and Klamath water issues. Per the October 2018 Presidential Memo, USFWS is required to complete biological consultations on the Central Valley Water Project, Klamath water operations and the proposed raising of Shasta Dam this fiscal year. USFWS Pacific Southwest Regional Director is the lead for all three agencies (USFWS, Bureau of Reclamation and NMFS) for these consultations, with the intended goal of increased coordination, communication and streamlined processes. USFWS is working closely with these federal agencies and others, along with state partners, water districts, agricultural community, tribes and others daily to accomplish this work.

[300] Source: WGA presentation April 9, 2019 to WRP

[301] http://westgov.org/initiatives/wga-working-lands-roundtable

[302] http://westgov.org/news/wga-launches-task-force-on-collaborative-conservation-to-lead-proactive-work-in-the-west

- Streamlined NEPA processes. Per new Department of Interior direction, agencies are required to complete the NEPA process in new consolidated timelines and with page limits (150 pages for EIS). As part of this, USFWS is working to plan, schedule and coordinate more effectively with partners, including federal agencies such as DoD and the Corps of Engineers, and private entities such as timber and mining companies.
- Collaborative DoD conservation projects. A priority for the USFWS is to work toward compatible planning with DoD partners on projects such as the LEIS for Desert National Wildlife Refuge and desert tortoise recovery on several bases in southern California and Nevada.

Primary planning efforts center around the current administration's priorities and completed required work under tight two-year timeframes."

During an August 15, 2019 WRP Natural Resources Committee call, USFWS Pacific Southwest Region [303]shared the following Region at-risk species workload. WRP Partners are encouraged to review this document for opportunities with USFWS Pacific Southwest Region to collaborate on key species.

[303] Source: Presentation by Ms. Jody Holzworth, Deputy Regional Director, Pacific Southwest Region, U.S. Fish & Wildlife Service

Species	Due Date	Distribution	Potential Threats	Conservation Status	Notes
High Conflict/High Investment*					
Humboldt Marten	FY19 (proposed in FY18)	Coastal forests in northern California and southern Oregon	- Small Population Size - Timber Management - Predation	- Green Diamond-CDFW Agreement - 2018 - Conservation Strategy - early 2019 - Assisted Dispersal Study – early 2019	- Good progress made in discussions with partners about conservation actions - Need to negotiate agreements and funding to implement strategy
California Spotted Owl	FY19	Sierra Nevada forests	- Timber Management - Wildfire - Barred Owls	- Draft Conservation Plan with USFS - Draft CCAA with SPI	- Will be a sprint to complete agreements - Barred owl management is costly
Foothill Yellow-legged Frog	FY20	California foothill streams	- Altered Hydrology - hydropower - Predation - Disease	- CDFW considering CESA Listing - USFS Species of Concern - Often Considered during FERC relicensing	- Rapid Assessment completed in 2018 - Conservation strategy in development with target for draft in 2019 - FERC processes my limit some opportunities
Western Spadefoot	FY20	Grasslands of the Central Valley and foothills	- Habitat Loss - Drought	- No current effort - Various USGS studies on going and potential to expand to address data gaps	- Believed extirpated in SoCal and estimated 80% habitat loss - Included in Vernal Pool Recovery Plan - Significant data gaps in distribution and life history information
Western Pond Turtle	FY21	Aquatic and terrestrial habitat networks in Washington to Mexico, below 6,000 feet	- Habitat loss - Invasive species - Disease	- AZA WPT Working Group is developing a conservation strategy - Over $600,000 invested so far and some improvements in WA	- Recently divided into two species - Declines in Willamette and Central Valleys and significant declines in WA and southern CA

Species	Due Date	Distribution	Potential Threats	Conservation Status	Notes
Shasta Salamander	FY22	4 limestone belts in headwaters of Shasta Reservoir	- Habitat Loss – Shasta Dam raise - Small Populations	- Rapid assessment planned for March 2019 - 2018 interagency agreement with USFS to work on a conservation strategy with partners	- Little is known about species. - Previous candidate - Raising Shasta dam would potentially flood a large portion of known habitat for three of the species
Terrestrial Mollusks	FY23	Shasta County, CA	- Habitat Loss – Shasta dam raise	- All species occur primarily on USFS lands where some conservation is provided (Survey and Manage Species) - Rapid assessment planned for March 2019 - 2017 interagency agreement with USFS to work on a conservation strategy with partners	- Little is known about these species - Raising Shasta dam would potentially flood a large portion of known habitat for three of the species
Moderate Conflict/Moderate Investment*					
Longfin Smelt DPS/Delta Smelt	FY19/20	Sac-SJ Delta	- Altered Hydrology - Contaminants - Non-native predators - Habitat loss	- On-going discussions related to SWRCB water quality plan, DWR 2081 permit, OCAP re-initiation. - CDFW report due in late 2018 will help understand benefits of saltmarsh restoration work.	- Need additional 3-5 years to complete the various discussions and regulatory processes
Clear Lake Hitch	FY20	Clear Lake	- Habitat Loss - Non-native fish - Contaminants	- State listed as threatened - USGS study on spawning habitat - Conservation strategy needed	- No statistically valid population estimates - Estimated that 2 years are needed to work with partners to develop a strategy – USGS research will help

Species	Due Date	Distribution	Potential Threats	Conservation Status	Notes
Relict Dace DPS	FY20	Big Spring, Elko Co., NV	- Habitat loss from groundwater use	- Working with Newmont Mining Co. to develop a conservation strategy	- DPS assessment is needed
7 Northern Nevada Springsnails	FY21	Springs in the Ralston, Spring and Steptoe Valley areas of Nevada	- Habitat loss from groundwater use	- Working with NDOW and SNFWO to develop a springs conservation strategy/CCA	- USGS is conducting surveys in 2018 - May be some taxonomic issues
Terrestrial Mollusks	FY23	Shasta County, CA	- Habitat Loss – Shasta dam raise	- All species occur on primarily on USFS lands where some conservation is provided (Survey and Manage Species) - 2017 interagency agreement with USFS to work on a conservation strategy with partners	- Raising Shasta dam would potentially flood most known habitat for three of the species
Low Conflict/Low Investment*					
2 Spring Mt Dark Blue Butterflies	FY20	Spring Mts Recreation Area	- Small populations size	- Recent surveys indicate a much wider distribution than known at time of 12-month finding - Conservation commitments from USFS	- UNLV survey report expected this year
11 Southern Nevada Springsnails	FY20	- 10 species at Ash Meadows NWR - *P. turbatrix*	- Habitat loss from groundwater use	- Most species occur at Ash Meadows - P. trubatrix is more widely distributed than known at the time of 12-month finding	- It is unknown when/if a decision will be made on the proposed increased groundwater pumping that could impact the Ash Meadow springs

Species	Due Date	Distribution	Potential Threats	Conservation Status	Notes
		- Southern NV springs		- Working with NDOW and SNFWO to develop a springs conservation strategy/CCAA	
Inyo Mountains Salamander	FY21	Inyo NF – springs and seeps at 15 localities	- Habitat Loss - Small populations	- Distribution surveys needed (contracted) - Conservation Strategy in development	- Previous candidate - BLM/USFS Sensitive Species
Kern Canyon Slender Salamander	FY21	Sequoia NF	- Habitat Loss - Small Populations	- Conservation plan in development with Sequoia NF – need 2 years to complete	- Little is known about species
Kern Plateau Salamander	FY21				
Relictual Slender Salamander	FY23				
Unknown Conflict/Unknown Investment*					
Lesser Slender Salamander	FY19	Southern Santa Lucia Range in San Louis Obispo Co.	- Habitat Loss	- No effort underway	- Little is known about species - Surveys needed
Southern Rubber Boa	FY20	San Bernardino and San Jacinto Mountains	- Habitat Loss	- No effort underway	- Taxonomy questions - Surveys needed to determine distribution
Limestone Salamander	FY23	Merced River Canyon	- Habitat Loss – mining - Small Populations	- No effort underway - 120 ac preserve and 1,600 ac ACEC	- Little is known about species. - Previous candidate

We were unable to obtain such a listing for the remaining FWS regions in the WRP prior to the 2019 WRP Principals' Meeting; during the September 15th WRP Natural Resources Committee Working call, the FWS Five-year listing workplan was provided, and subsequently tailored for WRP States.

During an October WRP Natural Resources Committee working call, the subject of how a species is listed[304] was discussed. It was noted there are two main ways a species gets on a five-year listing workplan. The FWS has developed an internal priority system to gather information and determine whether a species is a candidate for protection and, if so, publishes its intent to do so by rule in the Federal Register, allowing for public comment, a hearing if requested, and ultimately either adoption of the rule listing the species or withdrawing the rule. The FWS may also receive a petition that a species needs protection, and makes a preliminary assessment of whether the petition presents substantial reasons for protection. If there is an initial determination that substantial reason exists to list the species, then there will be a more detailed review of the species and a determination of whether protection is warranted. If that is found, and there is no preclusion of listing the species because of higher priority listing activities, then a proposed rule is published, and the rule follows the same process as for that of an internally generated candidate determination.

Petitions for listing must provide "substantial information" that listing may be warranted. For example, a petition [305] filed in 2009 sought the listing of 475 species. The FWS determined that there was not substantial information as to 270 species, 5 species were ineligible for listing, and whether there was substantial information to list the other 200 was deferred.

[304] https://www.fws.gov/endangered/esa-library/pdf/listing.pdf

[305] https://www.fws.gov/news/ShowNews.cfm?ref=petition-regarding-multiple-species-does-not-establish-need-for-endangered-&_ID=30860

USFWS Five-year Listing Workplan for WRP States[306]

National Listing Workplan
5-Year Workplan (May 2019 Version)

Action Types:
12M/PLPCH – 12-month finding on a petition to list a species. If listing is warranted, we generally intend to proceed with a concurrent proposed listing rule and proposed critical habitat designation, if critical habitat is prudent and determinable.

Discretionary Status Review/PLPCH – Status review undertaken by discretion of the Service. Results of the review may be to propose listing, make a species a candidate for listing, provide notice of a not warranted candidate assessment, or other action as appropriate.

PLPCH - For species that are already candidates for listing, a proposed listing determination would either propose the species for listing or provide notice of a not warranted finding. We generally intend to propose critical habitat designations concurrent with proposed listing rules, to the extent prudent and determinable.

Package Name	Species Name	Action Type	Lead FWS Legacy Region	Priority Bin Ranking (1-5) or LPN	Planned FY	Range	Species Scientific Name
	Oregon vesper sparrow	12M/PLPCH	R1	3	FY23	CA	*Pooecetes gramineus* ssp. *affinis*
New Mexico Plants	glowing indian-paintbrush	12M/PLPCH	R2	3	FY21	NM	*Castilleja ornata*
New Mexico Plants	Tharp blue-star	12M/PLPCH	R2	3	FY21	NM	*Amsonia tharpii*
Texas Plants	Chisos coralroot	12M/PLPCH	R2	4	FY23	AZ	*Hexalectris revoluta*
	Penasco least chipmunk	PLPCH	R2	LPN 6	FY20	NM	*Tamias minimus atristriatus*
	cactus ferruginous pygmy-owl	12M/PLPCH	R2	N/A	FY21	AZ	*Glaucidium brasilianum cactorum*
	desert massasauga	12M/PLPCH	R2	3	FY21	AZ, CO, NM	*Sistrurus catenatus edwardsii*
	lesser prairie-chicken	12M/PLPCH	R2	4	FY21	CO, NM	*Tympanuchus pallidicinctus*

[306] Source: https://www.fws.gov/endangered/what-we-do/listing-workplan.html courtesy of Mike Dick, Biologist (GIS & Data Steward), USFWS - Southwest Region, Ecological Services. The table is limited to those species with range in the WRP States

	Rio Grande cooter	12M/PLPCH	R2	4	FY21	NM	*Pseudemys gorzugi*
	roundtail chub	Discretionary Status Review/PLPCH	R2	3	FY21	AZ, NM, CO	*Gila robusta*
	monarch butterfly	12M/PLPCH	R3	4	FY21	All	*Danaus plexippus*
	golden-winged warbler	12M/PLPCH	R3	3	FY23	CO	*Vermivora chrysoptera*
	little brown bat	Discretionary Status Review/PLPCH	R3	4	FY23	CA, CO, NM, NV, UT	*Myotis lucifugus*
	plains spotted skunk	12M/PLPCH	R3	3	FY23	CO	*Spilogale putorius interrupta*
	tricolored bat	12M/PLPCH	R5	2	FY21	CO, NM,	*Perimyotis subflavus*
2 Colorado Plants	Brandegee's wild buckwheat	12M/PLPCH	R6	4	FY22	CO	*Eriogonum brandegeei*
2 Colorado Plants	Weber's whitlow grass	12M/PLPCH	R6	4	FY22	CO	*Draba weberi*
2 Utah Astragalus	Cisco milk-vetch	12M/PLPCH	R6	4	FY22	UT	*Astragalus sabulosus*
2 Utah Astragalus	Isely milk-vetch	12M/PLPCH	R6	4	FY22	UT	*Astragalus iselyi*
3 Utah Molluscs	Hamlin Valley pyrg	12M/PLPCH	R6	4	FY20	NV, UT	*Pyrgulopsis hamlinensis*
3 Utah Molluscs	longitudinal gland pyrg	12M/PLPCH	R6	4	FY20	NV, UT	*Pyrgulopsis anguina*
3 Utah Molluscs	sub-globose snake pyrg	12M/PLPCH	R6	4	FY20	UT	*Pyrgulopsis saxatilis*
	Arapahoe snowfly	PLPCH	R6	LPN 5	FY19	CO	*Arsapnia arapahoe*
	whitebark pine	PLPCH	R6	LPN 8	FY19	CA, NV	*Pinus albicaulis*
	Rocky Mountain monkeyflower	12M/PLPCH	R6	4	FY20	CO	*Mimulus gemmiparus*
	skiff milk-vetch	PLPCH	R6	LPN 8	FY20	CO	*Astragalus microcymbus*
	white-tailed ptarmigan	12M/PLPCH	R6	3	FY20	CA, CO, NM, UT	*Lagopus leucura*

	Great Basin silverspot	12M/PLPCH	R6	5	FY21	AZ, CO, NM, UT	*Speyeria nokomis*
	North Park bugseed	12M/PLPCH	R6	3	FY21	CO	*Corispermum navicula*
	Virgin River spinedace	12M/PLPCH	R6	4	FY21	AZ, NV, UT	*Lepidomeda mollispinis*
	regal fritillary	12M/PLPCH	R6	4	FY22	CO	*Speyeria idalia*
	western bumble bee	12M/PLPCH	R6	5	FY23	All	*Bombus occidentalis*
	yellow cedar	12M/PLPCH	R7	3	FY19	CA	*Cupressus nootkatensis*
	tufted puffin	12M/PLPCH	R7	3	FY20	AK, CA, OR, WA	*Fratercula cirrhata*
11 Southern Nevada Springsnails	Amargosa tryonia	12M/PLPCH	R8	5	FY20	CA, NV	*Tryonia variegata*
11 Southern Nevada Springsnails	Ash Meadows pebblesnail	12M/PLPCH	R8	5	FY20	NV	*Pyrgulopsis erythropoma*
11 Southern Nevada Springsnails	crystal springsnail	12M/PLPCH	R8	5	FY20	NV	*Pyrgulopsis crystalis*
11 Southern Nevada Springsnails	distal gland springsnail	12M/PLPCH	R8	5	FY20	NV	*Pyrgulopsis nanus*
11 Southern Nevada Springsnails	elongate gland springsnail	12M/PLPCH	R8	5	FY20	NV	*Pyrgulopsis isolata*
11 Southern Nevada Springsnails	Fairbanks springsnail	12M/PLPCH	R8	5	FY20	NV	*Pyrgulopsis fairbanksensis*
11 Southern Nevada Springsnails	median-gland Nevada pyrg	12M/PLPCH	R8	5	FY20	NV	*Pyrgulopsis pisteri*
11 Southern Nevada Springsnails	minute tryonia	12M/PLPCH	R8	5	FY20	NV	*Tryonia ericae*
11 Southern Nevada Springsnails	Point of Rocks tryonia	12M/PLPCH	R8	5	FY20	NV	*Tryonia elata*
11 Southern Nevada Springsnails	Southeast Nevada pyrg	12M/PLPCH	R8	5	FY20	NV	*Pyrgulopsis turbatrix*

11 Southern Nevada Springsnails	Sportinggoods tryonia	12M/PLPCH	R8	5	FY20	NV	*Tryonia angulata*
2 Spring Mountain Dark Blue Butterflies	*Euphilotes ancilla cryptica*	12M/PLPCH	R8	4	FY20	NV	*Euphilotes ancilla cryptica*
2 Spring Mountain Dark Blue Butterflies	*Euphilotes ancilla purpura*	12M/PLPCH	R8	4	FY20	NV	*Euphilotes ancilla purpura*
California Terrestrial Mollusks	Big Bar hesperian	12M/PLPCH	R8	5	FY23	CA	*Vespericola pressleyi*
California Terrestrial Mollusks	Shasta chaparral	12M/PLPCH	R8	5	FY23	CA	*Trilobopsis roperi*
California Terrestrial Mollusks	Shasta hesperian	12M/PLPCH	R8	5	FY23	CA	*Vespericola shasta*
California Terrestrial Mollusks	Shasta sideband	12M/PLPCH	R8	5	FY23	CA	*Monadenia troglodytes*
California Terrestrial Mollusks	Wintu sideband	12M/PLPCH	R8	5	FY23	CA	*Monadenia troglodytes* ssp. *Wintu*
	California spotted owl	12M/PLPCH	R8	4	FY19	CA, NV	*Strix occidentalis*
	lesser slender salamander	12M/PLPCH	R8	5	FY19	CA	*Batrachoseps minor*
	Clear Lake hitch	12M/PLPCH	R8	2	FY20	CA	*Lavinia exilicauda chi*
	foothill yellow-legged frog	12M/PLPCH	R8	2	FY20	CA	*Rana boylii*
	longfin smelt (San Francisco Bay-Delta DPS)	PLPCH	R8	LPN 6	FY20	CA	*Spirinchus thaleichthys*
	relict dace	12M/PLPCH	R8	3	FY20	NV	*Relictus solitarius*
	southern rubber boa	12M/PLPCH	R8	5	FY20	CA	*Charina bottae umbratica*
	western spadefoot	12M/PLPCH	R8	2	FY20	CA	*Spea hammondii*
	flat-topped steptoe pyrg	12M/PLPCH	R8	5	FY21	NV	*Pyrgulopsis planulata*
	Inyo Mountains slender salamander	12M/PLPCH	R8	5	FY21	CA	*Batrachoseps campi*

	Kern Canyon slender salamander	12M/PLPCH	R8	5	FY21	CA	*Batrachoseps simatus*
	Kern Plateau salamander	12M/PLPCH	R8	5	FY21	CA	*Batrachoseps robustus*
	Landyes pyrg	12M/PLPCH	R8	5	FY21	NV	*Pyrgulopsis landyei*
	Lassics lupine	12M/PLPCH	R8	2	FY21	CA	*Lupinus constancei*
	neritiform Steptoe Ranch pyrg	12M/PLPCH	R8	5	FY21	NV	*Pyrgulopsis neritella*
	northern Steptoe pyrg	12M/PLPCH	R8	5	FY21	NV	*Pyrgulopsis serrata*
	southern Steptoe pyrg	12M/PLPCH	R8	5	FY21	NV	*Pyrgulopsis sulcata*
	Sterile Basin pyrg	12M/PLPCH	R8	5	FY21	NV	*Pyrgulopsis sterilis*
	sub-globose Steptoe Ranch pyrg	12M/PLPCH	R8	5	FY21	NV	*Pyrgulopsis orbiculata*
	western pond turtle	12M/PLPCH	R8	4	FY21	CA	*Actinemys marmorata*
	Dixie Valley toad	12M/PLPCH	R8	3	FY22	NV	*Bufo williamsi*
	Shasta salamander	12M/PLPCH	R8	5	FY22	CA	*Hydromantes shastae*
	limestone salamander	12M/PLPCH	R8	5	FY23	CA	*Hydromantes brunus*
	relictual slender salamander	12M/PLPCH	R8	5	FY23	CA	*Batrachoseps relictus*

Supporting WRP Temporary Working Groups on Natural Resource-Related Items

Two WRP Temporary Working Groups were stood up by the SC, under the authority of the WRP Principals at their 2017 Meeting. Leadership of the WRP Natural Resources Committee participated faithfully in the Tribal Engagement Temporary Working Group and the BLM Planning Temporary Working Group; both working groups had significant efforts that had a natural resources nexus.

WRP Natural Resources Committee Webinar focused on Tribal and Cultural Resources
This webinar featured keynote speakers who highlighted an overview of unique aspects of Tribal lands, perspectives and key considerations when working with a Tribe.

Ecology of Golden Eagles on Hopi Lands in Arizona[307]

Golden Eagles on Hopi Lands, which are part of a larger population on the Colorado Plateau, are sacred to Hopi. Their feathers are used in various traditional ceremonies. The Hopi Tribe conducts surveys with the American Eagle Research Institute to demonstrate that they are not impacting the population. Among the survey components are an occupancy and reproduction assessment, inventory of nesting habitat and existing nest structures, assessing the breeding area occupancy, incubation surveys, nestling surveys and a prey (e.g., jackrabbits, prairie dogs) population assessment.

Tribal Consultation: Additional Federal Actions Needed for Infrastructure Projects (GAO-19-22)[308]

The objectives of this GAO Report were to examine factors that hinder effective consultation between tribes and federal agencies on infrastructure projects, the extent to which selected agencies have consultation policies on such projects and related activities, and steps taken by agencies to facilitate consultation with tribes. Tribes identified five areas that hinder consultation: agency processes for initiating consultation; agency practices for engaging with tribes to obtain and use their input; agency respect of Indian law and accountability; tribal resources for participating in consultation; and agency officials' knowledge or training in tribal consultation. Agencies identified four areas: initiating consultation when there may be tribal implications; tribal participation in and response to consultation notifications; agency capacity to conduct consultation; and interagency coordination of consultation. Although all 21 federal agencies reviewed have consultation policies, the content varied across agencies and GAO recommended improvements to several agencies. In addition, most agencies have systems to help with initiating consultation, some more formal than

[307] Source: Presentation of Clayton Honyumptewa, Director, Department of Natural Resources, The Hopi Tribe of Arizona, August 2, 2019 to WRP.
[308] Source: Presentation of Anne-Marie Fennell, Director, Natural Resources and Environment, U.S. Government Accountability Office, August 2, 2019 to WRP.

others. The Federal Permitting Improvement Steering Council (FPISC) recommended that agencies develop a centralized information system, but there is no plan to do so. GAO recommended that FPISC should work with FPISC member agencies to develop a plan, and in doing so should consider how to involve tribes to help ensure accuracy of tribal information in the system.

Native American Fish and Wildlife Society[309]

This organization was established in 1982 and became incorporated as a non-profit under 501(c)(3) of the Internal Revenue Code the following year. Its mission is assisting Native American and Alaska Native Tribes with conservation, protection and enhancement of their fish and wildlife resources. It provides networking, conferencing (including regional conferences and an annual national conference) training, professional and youth practicums, technical services and support. The organization members include 227 tribes from 7 regions, individuals, conservation officer, biologists, technicians and tribal, state and NGOs. At the most recent national conference, it held workshops on climate change and tribal feral horse management issues, several sessions on ecology, threatened and endangered species, and management of various specific species, habitat and wildlife.

Natural and Cultural Resource Preservation[310]

Among the examples of natural and cultural resource protection included protection of the Greater Chaco Region. Chaco Canyon is an area where Pueblo people have lived for over 2,000 years. Over 90% of the land in the region has been leased for oil and gas development, and the remaining land is close to the Canyon itself. A multi-strategy approach was taken including administrative processes (involvement in the NEPA process; an amendment to the Resource Management Plan; a proposed ethnographic study of the area and a State Land Office working group); a lawsuit; and legislative processes (Chaco Cultural Heritage Area Protection Act and New Mexico Environmental Review Act.)

During the webinar, best practices for Tribal engagement that were noted by speakers included: having programmatic agreements with federal agencies and many of the items captured in the Indian Arts Research Center's Guidelines for Collaboration[311].

For full details on the WRP Working Groups (BLM and Tribal) natural resource-related efforts please see next section.

[309] Source: Presentation of Julie Thorstenson, Ph.D., Executive Director, Native American Fish and Wildlife Society, August 2, 2019 to WRP

[310] Source: Presentation of Governor Brian Vallo, Pueblo of Acoma and member of All Pueblo Council of Governors, August 2, 2019 to WRP

[311] https://westmuse.org/articles/indian-arts-research-center's-guidelines-collaboration

WRP Temporary Working Groups: BLM Planning and Tribal Engagement

Two WRP Temporary Working Groups were stood up by the SC, under the authority of the WRP Principals at their 2017 Meeting. Principals empowered the SC to establish temporary working groups to address strategic priorities adopted at a Principals' meeting that fall outside of existing committee structure or overlap committee jurisdiction. The group's activities are to be limited in time and scope and results are to be reported back to the Principals by the SC members.

BLM Planning Temporary Working Group

Within the WRP Region, BLM manages a significant amount of land. This working group of State, BLM and DoD Members worked since its formation to improve WRP Members' understanding of the BLM planning processes and to proactively address land issues. The primary focus was to enhance coordination with key DoD Members to identify best practices in addressing DoD issues of concern with BLM Resource Management Plan (RMP) efforts in the WRP Region and provide key information on how DoD can best collaborate with BLM. BLM and DoD had regular calls and held an in-person meeting in June 2019 to further collaborate. Based on this effective forum, a Memorandum of Understanding Between the Department of Defense and the Department of the Interior was developed for the purposes of "Establishing A Land Use Planning Coordination Process." At the time this report was prepared, the MOU had been coordinated and it was anticipated the MOU would be signed shortly. This MOU creates a mutually beneficial process among the Parties to develop and promote timely and effective land use planning and coordination practices that will support DOI's multiple-use mission, and provide for protection of DoD's mission activities. **This working group has been deemed a success and has completed its task, and therefore it is recommended that the group sunset at this time and focus its energies in supporting the Coordinating Council established in the MOU.** This Coordinating Council is planning to hold meetings annually in conjunction with the WRP Principals' Meeting so that a natural partnership will continue to exist.

BLM provided a list of BLM Projects and Resource Management Plans (In Progress) within the WRP Region (dated November 2019):

Western Regional Partnership - BLM Projects and Resource Management Plans (In Progress)					
Resource Management Plan	**District/Field Office(s)**	**Ongoing**	**FY2020 Target**	**Expected ROD (Record of Decision)**	**ePlanning Link**
ARIZONA					
San Pedro River National Conservation Area	Gila DO, Tucson FO, San Pedro Riparian NCA	X	ROD	Completed	link
Ray Land Exchange RMP Amendment and Supplemental EIS	Gila DO	X	ROD	Completed	link
Sonoran Parkway Project	Phoenix DO	X	FEIS,ROD	completed	link
Kanab Creek ACEC Amendment to Arizona Strip Field Office RMP	Arizona Strip FO	X	Unknown; FERC is lead agency, no dates provided on ePlanning or NOI	Unknown; FERC is no longer lead agency. Awaiting identification of new lead agency	link
CALIFORNIA					
Bakersfield FO Hydraulic Fracturing SEIS and Potential RMPA	Bakersfield FO	X	FEIS,ROD	2020	link
Crimson Solar EIS RMP Amendment	Palm Springs South Coast FO	X	FEIS,ROD	2020	link
California Desert Conservation Area (CDCA) Plan (specifically, the West Mojave Route Network Plan, Supplemental)	CA Desert DO	X	ROD signed	Completed FY 2020	link
Central Coast RMP Amendment for Oil and Gas Leasing and Development	Central Coast FO	X	ROD signed	Completed FY 2020	link
Desert Plan Amendment	CA State Office	X	DEIS,FEIS,ROD	2020	link
Desert Quartzite Solar Project	Palm Springs - South Coast FO	X	ROD	2020	link
Haiwee Geothermal Leasing Area	Ridgecrest FO	X	FEIS,ROD	2020	link

Ocotillo Wells State Vehicular Recreation Area Management Plan	El Centro FO	X	DEIS,FEIS	Unknown	link*
Palen Solar Project (Palen Solar Power Project)	Palm Springs South Coast FO	X	ROD signed	Completed FY 2018	link
Upper Santa Ana River Habitat Conservation Plan and Land Exchange	Palm Springs South Coast FO	X	DEIS,FEIS,ROD	N/A	link
US Gypsum Company Mine Expansion and Modernization Project SEIS	El Centro Field Office	X	FEIS,ROD	2020	link
COLORADO					
Browns Canyon National Monument RMP	Browns Canyon National Monument	X	FEIS,ROD	2020	link
Uncompahgre RMP	Uncompahgre FO	X	ROD	2019	link
Eastern Colorado RMP	Royal Gorge DO	X	FEIS, ROD	2020	link
Gunnison Field Office Big Horn Sheep EIS	Gunnison FO	X	FEIS,ROD	2020	link
Blue Valley Land Exchange	Kremmling FO	X	FEIS,ROD	2019	link
Colorado Greater Sage-Grouse Resource Management Plan Amendments (2018)	CO State Office	X	ROD	2019	link
Parkdale Competitive Mineral Materials Sale Environmental Impact Statement	Royal Gorge FO	x	DEIS, FEIS, ROD	2020	link
Gunnison Field Office Sage Grouse RMP Amendment	CO State Office and Gunnison, Tres Rios, Uncomphargre, Grand Junction Field Offices and Front Range, Southwest, and Northwest District Offices	Paused (USFWS completing a recovery plan)	Reinitiation is dependent on USFWS recovery plan completion, Draft RMP/EIS completed August 2016)	Reinitiaton is dependent on USFWS recovery plan completion, Draft RMP/EIS completed August 2016)	link

NEVADA					
Barrick Cortez - Deep South Expansion Project	NV Mount Lews FO	X	FEIS,ROD	2019	link
Coeur Rochester Mine Plan	Black Rock FO	X	DEIS,FEIS,ROD	2019	link
Eureka Moly LLC - Mount Hope Project - Supplemental EIS	Mount Lews FO	X	DEIS,FEIS,ROD	2019	link
Gemfield Mine Project	Tonopah FO	X	DEIS,FEIS,ROD	2019	link
Gemini Solar Project	Las Vegas FO	X	DEIS,FEIS,ROD	2019	link
Haliburton - Rossi Mine Expansion Project	Tuscarora FO	X	FEIS,ROD	2019	link
Hycroft Mine Expansion Phase II	Black Rock FO	X	DEIS,FEIS,ROD	2019	link
Mackay Optimization Project	Humboldt River FO	X	DEIS,FEIS,ROD	2019	link
Proposed Burning Man Event 10-Year Special Recreation Permit	Black Rock FO	X	DEIS,FEIS,ROD	2019	link
Southern Nevada DO RMP	Southern NV DO	X	FEIS,ROD	2019	link
Three Bars Ecosystem and landscape Restoration Project	Mount Lewis FO	X	ROD	2019	link
Yellow Pine Solar	Las Vegas FO	X	DEIS,FEIS,ROD	2019	link
Carson City DO RMP	Carson City DO	X	FEIS,ROD	2019	link
Battle Mountain District RMP	Battle Mountain DO	X	Paused; no status updates on project since 2012	Paused; no status updates on project since 2012	link
Basin and Range National Monument RMP	Basin and Range NM; Elko DO	X	Paused; no status updates on project since summer 2017	Paused; no status updates on project since summer 2017	link
NEW MEXICO					
Socorro RMP Amendment: Borderlands Wind Project	Socorro FO	X	DEIS	2020	link
Rio Puerco RMP	Rio Puerco FO	X	--	2020	link
Carlsbad RMP	Carlsbad FO	X	--	2020	link
Copper Flat Copper Mine	Las Cruces DO	X	FEIS,ROD	2019	link

TriCounty RMP Revision	Las Cruces DO	X	FEIS	2020	link
Oklahoma, Kansas Texas (OKT) RMP	Oklahoma FO	X	DEIS	2020	link
Farmington RMP Amendment: Mancos-Gallup Formations	Farmington FO	X	--	2021	link
Taos RMP Amendment: Verde Transmission Line	Taos FO	X	--	--	link
UTAH					
Cedar City RMP	Cedar City FO	X	FEIS,ROD	2020	link
Grand Staircase-Escalante National Monument Resource Management Plans	Kanab FO	X	FEIS,ROD	2019	link
Bears Ears National Monument - Monument Management Plan	Canyon Country DO	X	FEIS,ROD	2019	link
Gunnison Field Office Sage Grouse RMP Amendment (same project as under Colorado)	Grand Country DO and Moab and Monticello FO	Paused (USFWS completing a recovery plan)	Reinitiation is dependent on USFWS recovery plan completion, Draft RMP/EIS completed August 2016)	Reinitiaton is dependent on USFWS recovery plan completion, Draft RMP/EIS completed August 2016)	link
Nevada and Northeastern California Greater Sage-Grouse Resource Management Plan Amendments (2018)	NV, CA	X	ROD	15-Mar-19	link
Ten West Link 500-Kilovolt Transmission Line	AZ - Colorado River DO, Yuma FO; CA - California Desert DO	X	FEIS,ROD	2019	link

Tribal Engagement Temporary Working Group

Within the WRP Region there are 172 Federally Recognized Tribes.[312, 313] Federally Recognized Tribes "are acknowledged to have the immunities and privileges available to federally recognized Indian Tribes by virtue of their government-to-government relationship with the United States as well as the responsibilities, powers, limitations, and obligations of such Tribes."[314] The percentage of Indian Trust land within each of the WRP States ranges from 0.5% to 27.6%. At the 2017 WRP Principals' Meeting, a Tribal Caucus was held and a brief drafted outlining the request to stand up a WRP Tribal Engagement Temporary Working Group (TETWG). This was not intended to revive the previous Tribal Committee of the WRP or to supplant any existing forums for Tribal-agency engagement. As expressed by one long-time Tribal representative in WRP, the WRP provides another level of communication among Tribal leadership, Tribal staff, Tribal organizations, federal or state leadership and specialists working to achieve effective outcomes, and this Working Group is intended to promote outreach to Tribes to obtain greater engagement in WRP.

The TETWG held regular calls over the past year and held one in-person meeting in June 2019. Over the course of the year, the TETWG has proven to be a very effective forum and is invaluable in supporting efforts of WRP. **It is recommended that the TETWG continue for one more year** to develop recommendations on long-term WRP Tribal engagement by the November 2020 WRP Principals' Meeting, support the proposed 2019-2020 WRP Strategic Priority, encourage increased inclusion of Tribal perspectives in WRP including participation in WRP Committees, hold regular conference calls and one in-person meeting to facilitate information-sharing among Tribal members and state and federal agencies in the WRP Region; seek Tribal input on WRP efforts; and receive updates on timely and important issues, continue to serve as a forum that empowers technical staffs from multiple agencies to find innovative, cross-program solutions to identified Tribal issues and develop a communication/outreach plan to encourage additional Tribal participation in WRP; as much as possible, it will leverage existing structures. TETWG members are encouraged to share the benefits they have had by participating in WRP to highlight reasons for Tribal involvement.

TETWG members would like to acknowledge and thank the numerous agencies for their presentations, information sharing and collaborative efforts over the past year. Some of the topics addressed included natural resources, disaster, energy, better planning, funding opportunities, Tribal-State/Federal relations and addressing Tribal infrastructure. Highlights of some of the presentations shared in 2019 include:

---

[312] Some States recognize tribes that are not Federally Recognized.
[313] The latest list of Federally recognized Tribes is found at 84 FR 1200, https://www.govinfo.gov/content/pkg/FR-2019-02-01/pdf/2019-00897.pdf
[314] *Id.*

- Department of Homeland Security Update [315]
- BLM Update on Resource Management Plans in the WRP Region [316]
- California Energy Commission Tribal Outreach Activities[317]
- Transportation electrification efforts in the region[318]
- NRCS Funding/Tribal Assistance[319]
- DOI MOU Regarding Federal Consolidated Funding[320]
- Overview of Volkswagen Settlement and Tribal Funds Available[321]
- FEMA Region VIII Tribal Efforts[322]
- Strengthening collaboration and cooperation between USACE and Native American Tribes for water resource management[323]
- USFS biomass programs for both energy and wildfire management purposes[324]
- Update on Four Forest Restoration Initiative[325]
- U.S. Forest Service Forest Plan Revision Updates[326]

Details on some of these efforts include:

Update on California Energy Commission outreach and work with Native American Tribes[327]
There are 109 Federally recognized Tribes in the state of California and another 55 state recognized Tribes. In 2011, Governor Brown signed Executive Order B-10-11, requiring state departments to engage in effective government-to-government engagement and consultation with Tribes. CEC adopted a tribal consultation program that outlines a

[315] Presentation by David T. Munro, Ph.D., Director, Tribal Government Affairs, DHS
[316] Presentation by Abbie Jossie, Deputy State Director, Resources, BLM Utah
[317] Presentation by Karen Douglas, Commissioner, California Energy Commission
[318] Presentation by David Bobzien, Director of NV Governor's Office of Energy
[319] Presentation by Astor Boozer, Regional Conservationist-West, NRCS-USDA
[320] Presentation by Ida C. Doyle, Workforce Development Specialist, U.S. DOI, BIA - Office of Indian Services, Division of Workforce Development
[321] Presentation By Pilar Thomas, Of counsel, Tribal Lands and Natural Resources, Alternative Energy and Utilities, Lewis Roca Rothgerber Christie and http://www7.nau.edu/itep/main/volkswagensettlement/
[322] Presentation by Mr. Lee dePalo, Regional Administrator for FEMA Region VIII
[323] Presentation by Dr. Seth B Cohen, USACE Collaboration & Public Participation Center of Expertise (CPCX), Institute for Water Resources
[324] Presentation by Alicia Bell-Sheeter – Program Specialist, Forest Management, Rangeland Management & Vegetation Ecology (detail), Forest Service, National Forest System - Washington Office; Sharon Nygaard-Scott, National Program Manager - SBA, TFPA, and Special Forest Products, Forest Service, Forest & Rangeland Management and Vegetation Ecology, WO-NFS; Mr. Gary Church, Assistant Director – Forest Projects, Forest Service, Forest & Rangeland Management & Vegetation Ecology, WO-NFS
[325]Presentation by Jeremy Kruger, Chief Executive Four Forest Restoration Initiative, Forest Service, Coconino National Forest
[326] John Rupe, Land Management Planning Specialist, Forest Service, Washington Office, Ecosystem Management Coordination
[327] Source: Presentation by Commissioner Karen Douglas, California Energy Commission at June 2019 TETWG Meeting and https://www.energy.ca.gov/tribal/documents/

consultation process and developed a tribal program. California has aggressive greenhouse gas reduction goals and renewable energy goals that can impact Tribes. CEC has done significant renewable energy planning such as the DRECP and seeks to ensure Tribal input is incorporated. In November of last year, CEC cohosted the first California Tribal Energy Summit with the Pechanga Band of Luiseño Indians, CPUC, and Governor's Tribal Advisor. In May 2019 a CEC (public) workshop was held on energy funding opportunities including a roundtable discussion with Tribes and the Governor's tribal advisor on Tribal priorities and how CEC can improve funding programs. In July there was an (invite-only) Tribal Environmental and Cultural Resources Energy Conference to broaden dialogue between Tribes and the state concerning past and current projects, plans, and assessments in relation to tribal cultural and environmental issues. CEC is working on mitigation activities, drafting a field manual for documenting impacts to the landscape and developing an informational video.

477 Plans

The Indian Employment, Training and Related Services Demonstration Act of 1992[328] authorized a temporary demonstration project allowing Tribes to integrate employment and training related, formula-funded Federal grants into a single 477 Plan. The Indian Employment, Training and Related Services Consolidation Act of 2017[329] made this project permanent, and directed several agencies[330] to execute a Memorandum of Agreement[331] to implement the 2017 law. In December 2018, the agencies entered into the Memorandum of Agreement. The Bureau of Indian Affairs Division of Workforce Development has the lead responsibility to implement the Memorandum of Agreement.[332] Tribes with 477 Programs are using these new authorities and submitting their plans to the BIA for consideration and approval.

US Forest Service Plan Revision Updates

During the July 2019 TETWG call, the following USFS Plan Revision update was provided, along with a broad overview of the Forest Service planning process.

[328] Pub. L. No. 102-477, https://uscode.house.gov/statutes/pl/102/477.pdf
[329] Pub. L. No. 115-93, https://www.congress.gov/115/plaws/publ92/PLAW-115publ92.pdf
[330] Departments of Agriculture, Commerce, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Interior, Justice, Labor, Transportation and Veterans Affairs.
[331] https://www.bia.gov/sites/bia.gov/files/DTLL-477%20MOA.pdf
[332] https://www.doi.gov/pressreleases/secretary-zinke-secures-historic-interagency-memorandum-agreement-between-12-federal

LMP REVISIONS CURRENTLY UNDERWAY

as of 3/31/2019

		Planning Unit	NFMA	Notice	Assessment			Expected	Admin Review			
		NF = National Forest	Required	to Begin	Report		Expected	FEIS/	Appeal	Expected		
		NG = National Grassland	Revision	Assessment	Released	NOI	NOA for DEIS	Final Plan	or	ROD	WO Brief	WO Final
	Region	State	NRA = National Recreation Area	Date	Date 6/	Date 2/	Date 1/	Date	Date	Objection	Date 3/	Draft Date 5/	Brief Date 5/
				Fiscal Year	mm/yyyy	mm/yyyy	mm/dd/yy	mm/yyyy	mm/yyyy	Objection	mm/yyyy	mm/dd/yy	mm/dd/yy
1982 Plan Forests	3	AZ	Coconino NF	2002			**5/12/2010**	**12/2013**	**5/2018**	**Appeal**	**3/2018**	**07/26/2012**	**9/2017**
	3	AZ	Coronado NF	2001			**1/27/2010**	**11/2013**	**6/2018**	**Appeal**	**10/2017**	**04/30/13**	**4/2017**
2012 Plan Forests	2	CO	Rio Grande NF	2012	**12/2014**	**03/2016**	**8/2016**	**9/2017**	7/2019	Objection	12/2019	**9/2018**	**5/2019**
	2	CO	Grand Mesa, Uncompahgre and	1998	**6/2017**	**3/2018**	**3/2018**	8/2019	8/2020	Objection	2/2021	**6/2019**	
	3	NM	Cibola NF	2000	**11/2012**	**04/2014**	**02/2015**	6/2019	6/2020	Objection	12/2020	**2/22/2019**	
	3	NM	Carson NF	2001	**02/2014**	**05/2015**	**10/2015**	6/2019	6/2020	Objection	12/2020	**2/22/2019**	
	3	NM	Santa Fe NF	2002	**4/2014**	**10/2015**	**06/2016**	6/2019	6/2020	Objection	12/2020	**2/22/2019**	
	3	AZ	Tonto NF	2000	**01/2014**	**9/2016**	**4/2017**	9/2019	9/2020	Objection	3/2021	8/2019	
	3	NM	Gila NF	2001	**05/2015**	**10/2016**	**3/2017**	9/2019	9/2020	Objection	3/20/21	8/2019	
	3	NM	Lincoln NF	2001	**7/2015**	**7/2018**	5/2019	6/2020	6/2021	Objection	12/2021		
	4	UT	Ashley NF	2001	**07/2016**	**10/2017**	5/2019	7/2020	5/2021	Objection	11/2021		
	4	UT	Manti-La Sal NF	2001	**07/2016**	**11/2019**	11/2019	7/2020	5/2021	Objection	12/2021		
	5	CA	Inyo NF	2003	**05/2013**	**12/2013**	**08/2014**	**5/2016**	**8/2018**	Objection	7/2019	**1/2016**	**8/2017**
	5	CA	Sequoia NF	2003	**05/2013**	**12/2013**	**08/2014**	**4/2019**	5/2020	Objection	2/2021	**1/2016**	6/2019
	5	CA	Sierra NF	2007	**05/2013**	**12/2013**	**08/2014**	**4/2019**	5/2020	Objection	2/2021	**1/2016**	6/2019

1/ Initiation = Notice of Intent (NOI) published (Updated NOI for 1982 rule plans)
2/ For 2012 rule plans only, enter date for final assessment report
3/ Completion = Final decision document signed
4/ Second round of LMP revision
5/ Only for units within 6 months of expected DEIS or FEIS date
6/ Intent of this field is to capture when work began on the Assessment phase; a formal notice may or may not have been published.
Boldface dates indicate completed milestones. Dates in month/year format are anticipated completions.

Indian Energy Act Eligibility Criteria[333]

The Indian Tribal Energy Development and Self-Determination Act Amendments of 2017 direct the Secretary of Agriculture to enter into Tribal Forest Protection Act agreements with Indian tribes to carry out at least five biomass demonstration projects on National Forest System lands to reduce threats to adjacent tribal communities. The Act contains Eligibility Criteria to be addressed by an Indian tribe or tribal organization in their application to the Secretary, in order to enter into Biomass Demonstration Projects. The Act also contains Selection Criteria, which will be used, to evaluate applications. The Selection criteria are that the project would increase the availability or reliability of local or regional energy; enhance the economic development of the Indian tribe; result in or improve the connection of electric power transmission facilities serving the Indian tribe with other electric transmission facilities; improve the forest health or watersheds of Federal land or Indian forest land or rangeland; demonstrate new investments in infrastructure; or otherwise promote the use of woody biomass.

[333] 84 FR 11487, March 27, 2019, https://www.govinfo.gov/content/pkg/FR-2019-03-27/pdf/2019-05502.pdf

WECC Environmental and Cultural Considerations[334]

It is important to be able to visualize and analyze land data in siting new transmission. Patterns and trends are revealed through that visualization. For these reasons, the Western Electricity Coordinating Council (WECC) captures environmental, cultural, risk and terrain data in an Environmental Data Viewer (EDV), a high-level screening tool for planners in the Western Interconnection. The goal is to inform decision-makers of potential environmental and/or cultural resource issues that might need to be addressed should an entity pursue a new or enhanced transmission project. The EDV also offers the capability to estimate environmental mitigation costs. The EDV is for screening only and is not intended to replace site-level environmental reviews or assessments.

Information Sharing on Key Items

The WRP continues to work together in sharing information on formal government-to-government consultations and engagements. For example, the Department of Homeland Security's is revising its Tribal Consultation Policy. This revision effects all offices and components of DHS including the Cybersecurity Infrastructure Security Agency, U.S. Customs and Border Protection, Transportation Security Administration, and the Federal Emergency Management Agency. The Department issued an engagement letter to tribal leaders and Alaska Native Corporations on October 23, 2019 for a consultation engagement until the end of March 2020. [335]

[334] https://www.wecc.org/SystemAdequacyPlanning/Pages/Environmental-and-Cultural-Considerations.aspx

[335] Additional information is available at https://www.dhs.gov/tribal-desk

Proposed 2019-2020 WRP Priority

In light of the activities of the Committees and Working Groups, the SC recommends that the Principals adopt as its strategic priority for 2019-2020 *Building Resilience in the West for America's Defense, Energy, Environment and Infrastructure through Enhanced Collaboration among Federal, State and Tribal Entities."* Details below.

Western Regional Partnership Strategic Priority for 2019-2020

The 2019-2020 WRP Strategic Priority is "*Building Resilience in the West for America's Defense, Energy, Environment and Infrastructure through Enhanced Collaboration among Federal, State and Tribal Entities."*

Background:
Every year, WRP develops a Strategic Priority to focus its energies to advance efforts in the West. The 2018-2019 WRP Strategic Priority was "*Advancing Compatible Planning in the West for America's Defense, Energy, Environment and Infrastructure through Enhancing Collaboration among Federal, State and Tribal Entities*."

Identified outcomes from this strategic priority effort included improved understanding and awareness of planning efforts, as well as actions that may improve compatible planning in support of WRP Partners. Results of this effort will be included in the 2019 WRP Report and detailed at the November 2019 WRP Principals' Meeting.

Statement of Purpose:
Over the past year, a common theme emerged: the necessity for "*Building Resilience in the West for America's Defense, Energy, Environment and Infrastructure through Enhanced Collaboration among Federal, State and Tribal Entities."* Leveraging of resources and interagency coordination are required to avoid duplication of effort, minimize agency/mission impacts, and encourage sharing of best practices.

In 2019-2020, WRP will explore the tools and resources needed to build resilience pertinent to the diverse missions of Federal, State and Tribal entities in the WRP Region.

Building Resilience Terminology
The term "building resilience" is widely used, but has a variety of definitions. For purposes of this strategic priority, "building resilience" will focus on:

- *The natural and built infrastructure systems needed by Federal, State and Tribal Entities to perform essential functions;*

- *Current or anticipated impacts on these natural and built infrastructure systems from natural processes or human activities; and*
- *Resources to maintain, improve or rapidly reestablish essential functions in the event of such impacts or to avoid, prepare for, minimize the effect of, adapt to or recover from such impacts on these infrastructure systems.*

Phase one of this activity is a brief survey to better understand existing Federal, State, and Tribal priorities to "build resilience" and identify opportunities among WRP Partners to develop shared solutions to promote natural and built infrastructure resilience.

The results of the survey will be consolidated and further analyzed to identify areas of commonality for WRP focus for the year to support WRP Partners' efforts. Potential areas of synergy might include further deep-dives into areas of energy assurance, disaster response, cybersecurity, wildland fire, water security, etc.

Expected Outcome:
Note: The success of this effort depends on the availability of WRP Partner input and dedicated WRP resources. It is expected that WRP Steering Committee members will coordinate timely responses to the survey; responses to be provided NO LATER THAN JANUARY 31, 2020 in order for WRP Committees and Working Groups to do their deep-dives and meet WRP timetables. WRP Steering Committee, WRP Committee Co-Chairs and Working Groups leads will work throughout the year to support this Strategic Priority.

The 2019-2020 WRP Strategic Priority will seek to provide the following through webinars, monthly updates, maps and factsheets or report as appropriate:

- Catalog how Federal agencies, States, and Tribal entities currently define and address resilience.
- Identify common environmental or built infrastructure issues/stressors that threaten WRP Partner missions and require resilience efforts in the west.
- Identify specific tools and resources needed by WRP Partners to build resilience for their missions.
- Determine areas of commonality in which WRP Partners can leverage existing or develop new tools and resources needed to promote resilience in the west.
- Highlight best practices and approaches to leverage existing tools and resources that promote resilience.
- Produce a map or sets of maps that highlight areas where WRP Partner interests overlap, in order to promote sharing of tools, data, and resources to improve the collaboration and coordination needed to build resilience.

Project Phases:
The 2019-2020 WRP Strategic Priority will be attained through the following steps:

1. November 2019: Strategic Priority approved during 2019 WRP Principals' Meeting.

2. By January 31, 2020: All entities complete and submit the survey (Attachment A). To the extent possible, federal agencies are asked to please coordinate across any management regions so that the entire WRP geography (AZ, CA, CO, NM, NV and UT) is included.
3. February – October 2020: WRP Steering Committee and WRP Committees will review input provided, conduct follow-on analysis, synthesize data, develop draft recommendations, facilitate additional agency coordination, and establish mutually agreed-upon actions and priorities with clearly identified metrics to demonstrate progress.
4. June 2020: WRP Steering Committee and WRP Committee Co-Chairs will review analysis at their June 18th meeting. SC members will apprise their WRP Principal on current progress.
5. October 2020: Final report with analysis and recommendations will be circulated in preparation for presentation and discussion at the 2020 WRP Principals' Meeting.
6. November 2020: Presentation and discussion of findings at the November 2020 WRP Principals' Meeting in Colorado.

Guiding Principles:

- The project will highlight WRP Partners' missions, long-term goals and requirements, and common challenges among Partners, for building resilience.
- In recognition of the inherent, differentiated authority of federal, state and Tribal entities, this effort will encourage communication and cooperation among all Partners and avoid interference with any Partner's distinct rights and responsibilities.
- The project will leverage, not duplicate efforts.

Acronyms

AC	Alternating Current
ACECs	Areas of Critical Environmental Concern
ACS	Arizona Commanders Summit
ADS-B	Automatic Dependent Surveillance – Broadcast
AFB	Air Force Base
AGFD	Arizona Game and Fish Department
ANL	Argonne National Laboratory
ARCs	Regional Airspace/Ranges Councils
ARPA-E	The Advanced Research Projects Agency - Energy
ARUs	Autonomous Recording Units
ASCE	American Society of Civil Engineers
ASD(S)	Assistant Secretary of Defense (Sustainment)
BLM	Bureau of Land Management
BLOS	Beyond Line of Sight
BOEM	Bureau of Ocean Energy Management
BRIC	Building Resilient Infrastructure and Communities
C2M2	Cybersecurity Capability Maturity Model Version 2.0
CARB	California Air Resources Board
CEC	California Energy Commission
CESER	Cybersecurity, Energy Security and Emergency Response
CFR	Code of Federal Regulations
CISA	Cyber Security Advisor
CISA	Cybersecurity and Infrastructure Security Agency
CPUC	California Public Utilities Commission
CUAS	Counter-UAS
CWPRI	Collaborative Wildlife Protection and Recovery Initiative
DC	Direct Current
DCEI	Defense Critical Electric Infrastructure
DER	Distributed Energy Resources
DHS	Department of Homeland Security
DoD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice
DOT	Department of Transportation
DPS	Distinctive Population Segment
DRECP	Desert Renewable Energy Conservation Plan
DRRA	Disaster Recovery Reform Act of 2018
EDV	Environmental Data Viewer

EDX	Energy Data Exchange
EIA	The U.S. Energy Information Administration
EIM	Western Energy Imbalance Market
EIS	Environmental Impact Statement
EMSO	Electromagnetic Spectrum Operations
ENDTF	Extreme Natural Disasters Task Force
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESF	Emergency Support Function
ESIP	Earth System Information Partners
EV	Electrical Vehicle
EVSE	Electric Vehicle Supply Equipment
FAIR	Findable, Accessible, Interoperable, and Reusable
FAST	Fixing America's Surface Transportation
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FIT	FEMA Integration Teams
FLPMA	Federal Land Policy Management Act
FPISC	Federal Permitting Improvement Steering Council
GAO	Government Accountability Office
GIS	Geographic Information System
GPS	Global Positioning System
HOV	High-Occupancy Vehicle
HV	High Voltage
IA	Individual Assistance
ICS	Incident Command System
IPaC	Information for Planning and Consulting
IPP	Integration Pilot Program
LBNL	Lawrence Berkeley National Laboratory
LMP	Land Management Plan
LOS	Line of Sight
MAL	Military Asset Listing
MitFLG	Mitigation Framework Leadership Group
MOU	Memorandum of Understanding
MRHSDP&A	Military Readiness, Homeland Security, Disaster Preparedness and Aviation
NAERM	North American Energy Resilience Model
NARUC	National Association of Regulatory Utility Commissioners
NASEO	National Association of State Energy Officials
NAWS	Naval Air Weapons Station
NB	Naval Base

NCEI	National Centers for Environmental Information
NDAA	National Defense Authorization Act
NDS	National Defense Strategy
NEPA	National Environmental Policy Act
NEPA/CEQA	National Environmental Policy Act/California Environmental Quality Act
NGOs	Non-Government Organizations
NIAC	National Infrastructure Advisory Council
NICC	National Interagency Coordination Center
NIFC	National Interagency Fire Center
NIST	National Institute of Standards and Technology
NJMAC	Nevada Joint Military Affairs Committee
NMFS	National Marine Fisheries Service
NMIS	National Mitigation Investment Strategy
NOAA	National Oceanic and Atmospheric Administration
NOx	Oxides of Nitrogen
NREL	National Renewable Energy Laboratory
NRSW	Navy Region Southwest
NSO	No Surface Occupancy
NTTR	Nellis Test and Training Range
OE	Office of Electricity
OEA	Office of Economic Adjustment
OGC	Open Geospatial Consortium
OHV	Off-Highway Vehicle
OPA/OPH	Optionally Piloted Airplanes/Helicopters
OPR	Office of Planning and Research
OSD	Office of the Secretary of Defense
PLPCH	Proposed Listing-Propose Critical Habitat
RAIMORA	Risk of Adverse Impact on Military Operations and Readiness Area
RAPID	Regulatory and Permitting Information Desktop
RD	Rural Development
REAP	Rural Energy for America Program
RECCWGs	Regional Emergency Communications Coordination Working Groups
REPI	Readiness and Environmental Protection Integration
REV	Regional Electric Vehicle
RMP	Resource Management Plan
ROD	Record of Decision
SANDAG	San Diego Association of Governments
SC	Steering Committee
SCH	Siting Clearinghouse
SDT	Sonoran Desert Tortoise
SERPPAS	Southeastern Regional Partnership for Planning and Sustainability
SGCN	Species of Greatest Conservation Need

SLB	Senior Leadership Brief
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
SWAP	State Wildlife Action Plan
TAK	Team Awareness Kit
TETWG	Tribal Engagement Temporary Working Group
UAS	Unmanned Aircraft System
UAV	Unmanned Aerial Vehicle
UPP	UTM Pilot Program
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Service
UTM	UAS Traffic Management
UTTR	Utah Test and Training Range
V	Volt
VTO	Vehicle Technologies Office
VW	Volkswagen
WAFWA	Western Association of Fish and Wildlife Agencies
WAPA	Western Area Power Administration
WECC	Western Electricity Coordinating Council
WestFAST	Western Federal Agency Support Team
WGA	Western Governors' Association
WIEB	Western Interstate Energy Board
WMP	Wildfire Mitigation Plans
WRP	Western Regional Partnership
WWAO	Western Water Applications Office
YBC	Yellow-Billed Cuckoo
ZEV	Zero-Emissions Vehicle