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STATE OF NEVADA
Sagebrush Ecosystem Program

SAGEBRUSH ECOSYSTEM COUNCIL
STAFF REPORT
MEETING DATE: June 23, 2014

DATE: June 17, 2014

TO: Sagebrush Ecosystem Council Members

FROM: Sagebrush Ecosystem Technical Team
Telephone: 775-684-8600

THROUGH: Tim Rubald, Program Manager
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SUBJECT: Discussion and possible adoption of proposed revisions to sections of the 2012 State Plan, including: Predation; Wild Horse and Burro Management; Livestock Grazing; and The Conservation Credit System.

SUMMARY

The purpose of this item is to discuss and consider adoption of proposed revisions to sections of the State Plan, including: Fire and Invasive Plants; Mining; and Energy Production, Transmission, and Distribution. The SEC first directed the SETT to update the State Plan and EIS Alternative at the April 22, 2013 meeting. Since that time, the SETT has been primarily focused on revising items necessary for inclusion in the BLM/USFS LUPA and FEIS. With that work accomplished, the primary focus has shifted to updating the State Plan, necessary to be complete by September 2014, when the USFWS begin their 12-month findings process for the listing decision. A timeline for accomplishing this work was approved by the SEC at the April 8, 2014 meeting.

PREVIOUS ACTION

March 27, 2013. The Council directed the SETT to meet with USFWS and NDOW staffs to discuss the USFWS comments on the Nevada State Plan and report back to the Council.

April 22, 2013. The Council directed the SETT to further develop the Nevada State Plan and the EIS Alternative to incorporate the concerns expressed by the USFWS.

July 30, 2013. The Council adopted the Sagebrush Ecosystem Strategic Detailed Timeline, which included revision of the State Plan/EIS Alternative.

April 8, 2014. The Council approved a report on the timeline for revising the State Plan, which included consideration of the revised Fire and Invasive Plants; Mining; Energy; and Monitoring and Adaptive Management sections at the June Council meeting.

December 18, 2013. The Council adopted a Revised Section 3.0 Goals and Objectives of the 2014 State Plan.

December 18, 2014. The Council approved Appendix A: Site-Specific Consultation Based Design Features of the 2014 State Plan.

DISCUSSION

This agenda item requests the approval of revisions to the Fire and Invasive Plants; Mining; and Renewable and Non-Renewable Energy Production, Transmission, and Distribution sections of the State Plan. The revised sections provide more detailed background information, further develop the concepts in the 2012 State Plan, and incorporate concepts approved by the SEC in Section 3.0 and Appendix A (Site-Specific Consultation Based Design Features) of the 2014 State Plan. The Monitoring and Adaptive Management section was also originally scheduled to be presented at this meeting, however it will be discussed at the June 24, 2014 SEC Committee on Monitoring meeting, due to the interest of the Committee. The section will be brought to the full SEC for consideration and approval at the August meeting.

RECOMMENDATION

Staff recommends the SEC approves the proposed revisions to the Fire and Invasive Plants; Mining; and Renewable and Non-Renewable Energy Production, Transmission, and Distribution sections of the State Plan or provides direction to the SETT on how to further revise the sections.

POSSIBLE MOTION

Should the SEC agree with the staff recommendation, a possible motion would be: "Motion to approve the proposed revisions to the Fire and Invasive Plants; Mining; and Renewable and Non-Renewable Energy Production, Transmission, and Distribution sections of the State Plan."

or

"Motion to approve the proposed revisions to the Fire and Invasive Plants; Mining; and Renewable and Non-Renewable Energy Production, Transmission, and Distribution sections of the State Plan, with additional amendments."

(The SEC may choose to approve the sections individually or collectively.)

Attachments:

1. Revised State Plan Section 7.1: Fire and Invasive Plants
2. Revised State Plan Section 7.6: Mining
3. Revised State Plan Section 7.7: Renewable and Non-Renewable Energy Production, Transmission, and Distribution

mf: TR

7.1 Fire and Invasive Plants

In 2012, Nevada's Greater Sage-grouse Advisory Committee, using the best available science, identified fire and invasive plants, principally cheatgrass, as the primary threat to sage-grouse and their habitat in the state of Nevada. Wildland fires and the subsequent invasion by cheatgrass and other invasive plants continue to create large-scale habitat loss and fragmentation. This current rate of habitat loss is not sustainable for long-term sage-grouse population persistence.

While the vast majority of fires in sage-grouse habitat are suppressed in the initial attack phase, the continued loss of large areas in sage-grouse habitat occurs most often during periods of 'Extreme Fire Danger Conditions' when fire behavior has the greatest impact on suppression capabilities. These 'Extreme' conditions can exist simultaneously over large areas of the western U.S, creating a shortage of regional/national firefighting assets due to pre-existing large fires with greater values at risk (Murphy et al. 2013).

The State acknowledges these threats must be adequately addressed in order to achieve the conservation goal for sage-grouse and actions must be taken to increase overall preparedness, strategically locate fuels management projects, increase local suppression capabilities, improve rehabilitation/restoration capabilities.

To this end, the State has begun to address these threats by creating the Sagebrush Ecosystem Program, composed of the Sagebrush Ecosystem Council, with its attendant Sagebrush Ecosystem Technical Team, to develop and approve a state plan that facilitates best available science review and technology transfer to State and local agencies and works in coordination with federal land managers and other public and private partners. In addition, the State has also approved and is implementing the Nevada Division of Forestry's (NDF) Wildland Fire Protection Program, which allows for full implementation of Nevada Revised Statute 472, improving delivery of financial, technical and equipment/human resources to Nevada counties in fuels reduction planning and implementation, wildfire management and suppression, and restoration of burned areas.

Nevada Revised Statute (NRS) 555 and Nevada Administrative Code (NAC) 555 address both noxious and invasive plants, their status, and any regulations regarding the control of such plants. The State has established a priority list of noxious weeds that require some form of control. Other widespread invasive plants, such as cheatgrass, while not on the noxious weed priority lists, pose a significant threat to Nevada's landscapes and habitats and will be addressed on a priority basis, particularly when it is compromising sage-grouse habitat objectives (see Section 4.0).

The introduction of exotic invasive plant species in Nevada has likely been occurring since the early European settlers arrived and has been knowingly and unknowingly occurring since that time. While some species may go seemingly unnoticed, many currently pose significant threats to the sagebrush ecosystem, wildlife habitats, and our landscape in general. While all of these identified species are currently considered by the State as invasive plants, some warrant further declaration as 'noxious'. Noxious weeds are defined in NRS 555.130 as: "Any species of plant which is likely to be detrimental, destructive and/or difficult to control, but is not already introduced and established in the State to such

an extent as to make its control or eradication impracticable in the judgment of the State Quarantine Officer". Plants that do not meet this definition are generally considered to be invasive or nuisance weeds. Cheatgrass falls into the 'invasive' category due to its expansive footprint within Nevada's sagebrush ecosystem.

Cheatgrass (*Bromus tectorum*) is an exotic species from the Middle East that was introduced in North America in the late nineteenth century and has become one of the most adaptive and dominant invasive plants in the Western U.S. This is especially true following fire and other major ground disturbing activities in sagebrush ecosystems, particularly at lower elevations and precipitation zones in Nevada.

Many factors will be considered when prioritizing treatments for fire and invasive plants (i.e. noxious weed presence, sage-grouse breeding densities, habitat suitability (abundance, quality, and connectivity), existing additional threats, resistance, resilience, ecological site description, state and transition models, etc.). Additionally, further prioritization may be determined by the type of action required (conservation related, prevention based, or restoration or rehabilitation activities), presence of or proximity to sage-grouse habitat, and the amount of funding available for treatment in a given year.

Goals, Objectives, and Management Actions

The overarching direction of Nevada's plan is to stop the decline of sage-grouse populations and restore and maintain a functioning sagebrush ecosystem. Currently, it is not economically or ecologically feasible to restore all fire damaged or invasive plant dominated landscapes, nor is it possible to prevent all fires, though the State acknowledges that this threat must be addressed in order to provide for the conservation of sage-grouse. In order to achieve this goal, the State will take a phased approach through a series of short term and long term objectives and management actions. The State will first seek to reduce the amount of habitat loss, with the long-term objective of restoring ecosystem functions and processes. This will require a concerted and consistent commitment to achieve these objectives over the long-term.

The State has already taken steps to achieve these objectives through statewide adoption and implementation of the Nevada Division of Forestry's Wildland Fire Protection Program, creating a tiered system that gives equal priority to cooperative pre-suppression fire prevention projects; adopting and incorporating National Wildfire Coordination Group (NWCG) approved training and firefighting techniques that can help preserve habitat; and, cooperative post-suppression rehabilitation and restoration activities in and around areas of important habitat.

Goal 1: Ameliorate the threat of fire and invasive plants in order to provide for the conservation of sage-grouse and their habitat.

Short term objectives and management actions:

Objective 1.1: Reduce the amount of sage-grouse habitat loss due to large acreage wildfires and invasion by non-native plants.

Pre-suppression

In order to address the threat of fire and invasive plants, which continues to challenge land managers throughout the western United States, the State proposes a paradigm shift. This

entails a shift in focus from the current suppression-centric approach to a more nuanced, cost effective, and proactive approach focusing on pre-suppression activities; which if adequately supported, will contribute greatly to Federal, State and local efforts to stop the dominance of invasive plants, reduce catastrophic wildfire incidence, and restore fire to within a range of variability to support sustainable populations of sage-grouse in Nevada.

Management Action 1.1.1a: Develop, and provide sustainable, predictable federal, state, and local funding sources for pre-suppression activities (including maintenance) separate from and independent of funding for suppression and post-fire rehabilitation activities.

Management Action 1.1.1b: Dedicated funding will be used to plan and implement cost effective pre-suppression activities with an emphasis on strategic, scalable cooperative projects informed by best available science; utilizing cost efficient methods and tools; and followed up with effective, repeatable monitoring.

Management Action 1.1.1c: Pre-suppression planning and fuels management projects will be informed by the best available science. This information will be incorporated into the planning process to inform locations of landscape and local scale fuels management projects and to provide protection to areas of sage-grouse habitat that have compromised resilience, resistance, and heterogeneity (see Appendix {X} for modeling and planning tools commonly used).

Management Action 1.1.1d: Prioritize pre-suppression fuels management projects, fire prevention planning, and invasive plant control activities in and around Core and Priority Management Areas. Pre-suppression projects will be identified, designed and prioritized so that they facilitate firefighter safety, protect private property, prioritize important sage-grouse habitat, and work to maintain natural resource functions.

Management Action 1.1.1e: Establish, maintain, and fund an effective, repeatable pre-suppression monitoring and adaptive management program that informs future project planning and implementation.

Suppression

State and federal agencies will provide safe, cost-effective fire management programs that support the conservation of sage-grouse habitat through collaborative planning, coordination, training, staffing, resource allocation, and fire management oversight.

Management Action 1.1.2a: Support robust, coordinated, and rapid fire suppression management using a diversity of agencies, including federal, state, tribal and local government, as well as creating, empowering and training (to latest Nevada and National Wildfire Coordinating Group (NWCG) standards) Rural Fire Associations, Fire Protection Districts and Wildfire Support Groups.

Management Action 1.1.2b: Support and improve interagency wildfire prevention activities and education statewide, including: interagency agreement updates, wildfire workshops, demonstration projects, and public service announcements on wildfire and sage-grouse habitat loss.

Management Action 1.1.2c: When prioritizing wildland firefighting actions in the Sage Grouse Management Area (SGMA), top priority should be given to Core Management Areas, followed by Priority and General Management Areas during fire operations.

Management Action 1.1.2d: Wildland fire can be used strategically to accomplish resource management objectives. Fire may not have to be suppressed in all instances. Resource and fire managers should consider beneficial fire use if located in areas that may benefit sage-grouse habitat, but only if:

- it would not risk the spread of invasive plants;
- human lives, property, and important natural resource functions are not at risk;
- wildland fires exhibit prescribed/desired fire behavior characteristics and are located in designated sage-grouse habitats appropriate for beneficial fire use; and
- will not increase the spread of invasive plants into sage-grouse habitat

Management Action 1.1.2e: Manage wildland fires in sage-grouse habitat to retain as much habitat as possible. Interior unburned islands of vegetation in areas of habitat should be protected through follow-up mop-up of the island's perimeter and interior, when fire crew safety is not at risk.

Post-Fire Restoration/ Rehabilitation

Emergency stabilization (ES) and burned area rehabilitation (BAR) funding streams are instrumental in the process of stabilizing soils and reestablishing vegetation on federal lands post-fire. Currently, these programs typically provide funding for rehabilitation treatment immediately post-fire usually, which does not reflect the need to accommodate for poor initial success due to lack of precipitation and other environmental variables.

Management Action 1.1.3a Work with federal, tribal, and local governments to develop dedicated funding sources that allow for up to five years of additional post-fire restoration treatments in order to better insure projects meet goals and objectives.

Management Action 1.1.3b Until such time as dedicated funding sources for multi-year post-fire restoration treatments can be developed, federal, state, tribal, and local governments should submit budget requests and projections that reflect the need for funding that will cover actual and contingent yearly costs associated with successful multiyear post-fire rehabilitation efforts.

Management Action 1.1.3c: Use the concepts of resistance and resilience and products developed by BLM's FIAT group to determine if post-fire restoration actions are necessary to achieve sage-grouse habitat objectives (see Section 4.0).

Management Action 1.1.3d: Control the spread of invasive plants post-fire.

Management Action 1.1.3e: Post-fire rehabilitation efforts in sage-grouse habitat should be collaborative and strategic in approach. Federal, state, tribal and local agencies should coordinate and collaborate on rehabilitation projects in sage-grouse habitat where responsibilities and land ownership interests intersect.

Management Action 1.1.3f: Post-fire restoration treatments in Core, Priority, and General Management Areas should be designed to meet sage-grouse habitat objectives (see Section 4.0). Consider the use of native plant materials based on availability and probability of success. When native plant materials are not available or the probability of success is low, use non-native plant materials that will meet sage-grouse habitat. All seed used on rehabilitation and restoration projects must be certified weed-free.

Management Action 1.1.3g: Monitor post-fire restoration treatments to ensure long term persistence of restored habitat, and that the monitoring continues at least until treatment objectives are met.

Invasive plants

While wildfire is commonly the vector for the spread of invasive plants, such as cheatgrass, invasive plants are currently widespread throughout the Great Basin and can spread without the aid of wildfire. In order to address the general threat of invasive plants, the State will pursue a strategy of Prevent, Detect, Control, Restore, and Monitor, using the best available science. The Nevada Department of Agriculture (NDA) will utilize its EDDMaps program to assist the State in the implementation of these efforts.

Management Action 1.1.4a**:** *Prevent* the establishment of invasive plants into uninvaded sage-grouse habitat. This will be achieved by conducting systematic and strategic detection surveys, data collection, and mapping of these areas and engaging in early response efforts if invasion occurs. This will be achieved by further developing federal and state partnerships and working with counties, cities, and local groups, such as Weed Control Districts, Cooperative Weed Management Areas, and Conservation Districts. This is the highest priority for the state of Nevada.

Management Action 1.1.4b: Proposed anthropogenic disturbance should employ Site Specific Consultation Based Design Features (see Appendix A) in order to minimize land disturbance and prevent the spread of invasive plants.

Management Action 1.1.4c: Require anthropogenic disturbance proponents to monitor for the existence of invasive plants pre-disturbance and to report all findings to the NV EDDMaps database. Pre- and post-disturbance activities must include prevention strategies prior to entering sites, control, restoration, and monitoring for one full growing season following the disturbance. All sites must be certified weed free prior to any relinquishment of obligations that authorized the disturbance.

Management Action 1.1.4d: *Detect* new invasive plant infestations, whether it is a single plant or a small patch. If it can be detected and mapped early in the invasion and control begins immediately, then the likelihood for eradication will increase dramatically. NDA will use its EDDMaps program to assist in the effective and efficient implementation of this action.

Management Action 1.1.4e: Within sage-grouse habitat, and where funding may be a limiting factor, the first priority will be to control invasive plants that are compromising attainment of sage-grouse habitat objectives (see Section 4.0).

Management Action 1.1.4f: *Restore* ecologically functioning sagebrush ecosystems already compromised by invasion to meet sage-grouse habitat objectives (see Section 4.0). Restoration may include revegetating sites with native plants cultivated locally or locally adapted, and/or non-native plant species where appropriate. Control of invasives must be accompanied by ecosystem restoration.

Management Action 1.1.4g: Ecological site descriptions and associated state and transition models will be used to identify target areas for resiliency enhancement and/or restoration. Maintaining and/or enhancing resilience should be given top priority. In the Great Basin sagebrush-bunchgrass communities, invasion resistance and successional resilience following disturbance are functions of a healthy perennial bunchgrass component. Therefore a combination of active and passive management will be required to ensure this functionality. Areas that are in an invaded state that will likely transition to an annual grass monoculture if a disturbance occurs and are located within or near sage-grouse habitat should be prioritized for restoration efforts to increase resistance and resilience.

Management Action 1.1.4h: Engage climatological and meteorological professionals and their agencies to identify opportunities to increase both effectiveness and efficiency in the timing of restoration activities. Additional activities could include weather augmentation through cloud seeding, and assistance with both short term and longer term weather prediction model guidance or shorter term weather indicators.

Management Action 1.1.4i: *Monitor* and adaptively manage to ensure effectiveness of efforts to prevent, detect, control and restore. Use the resource mapping functions within EDDMaps to identify and map infestations as well as any preventive, restoration, or rehabilitation efforts.

Long term objectives and management actions:

Objective 2a: Maintain an ecologically healthy and intact sagebrush ecosystem that is resistant to the invasion of non-native species and resilient after disturbances, such as wildfire.

Objective 2b: Restore wildfire return intervals to within a spatial and temporal range of variability that supports sustainable populations of sage-grouse and other sagebrush obligate species.

Management Action 1.2.1 Develop consistent and dedicated funding sources in order to provide a consistent commitment to pre-suppression, suppression, post-fire restoration, and invasive plant management actions described above.

Management Action 1.2.2: Federal, state, tribal, and local governments, as well as private entities should work collaboratively to consistently implement the management actions described above.

Management Action 1.2.3: Monitor and adaptively management all management actions to evaluate and assess the effectiveness at achieving objectives.

Management Action 1.2.4: Emphasize continued research and provide funding to enhance knowledge and understanding of how to further reduce the prevalence of catastrophic wildfire, the invasion of annual grasses (primarily cheatgrass), fire behavior, and reclamation/ restoration techniques.

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7.6 MINING

Mining is a vital part of the state of Nevada's economy both currently and historically. The initial discovery of the Comstock Lode silver ore deposit in Virginia City in the 1850s was central to the settling and development of Nevada, as well as a major reason for Nevada's admission into the United States in 1864. The Nevada Department of Taxation currently assesses the net mineral value in the State to be approximately $5.1 billion (State of Nevada 2014). The annual tax revenue collected in fiscal year 2013 was approximately $236 million (State of Nevada 2014). It is estimated that Nevada's mining economic output contributes to a 6% share of Nevada's statewide GDP (Nevada Mining Association 2011).

The primary type of mineral exploration and development in the state of Nevada is locatable minerals, including gold, silver, and copper. Locatable mineral development and exploration is governed under the General Mining Law of 1872 and is a non-discretionary activity on federal lands. Salable and non-energy leasable mineral exploration and development also occurs, though to a lesser extent. Salable mineral materials, which are common varieties of construction materials and aggregates, such as sand, stone, and gravel are governed under the Materials Acts of 1947. Government and non-profit organizations may obtain these resources free of charge for community purposes on BLM and USFS administered lands. The Nevada Department of Transportation and local governments are the primary users of gravel and sand resources on federal lands in Nevada. Non-energy leasable minerals, such as potassium and sodium, which are governed under the Mineral Leasing Act of 1920 are also present, however there are currently no leases in sage-grouse habitat in Nevada (BLM 2013).

The extent of mining activities across the state of Nevada overlaps with the range of sage-grouse habitat. There are approximately 2 million acres of locatable mineral claims in sage-grouse habitat in Nevada (BLM 2013). Mining and its associated facilities and infrastructure may result in habitat fragmentation, direct habitat loss, and indirect impacts decreasing the suitability of otherwise suitable habitat (USFWS 2013). The specific impacts of mining on sage-grouse and their habitat is largely unknown (Manier 2013); however the large body of research on energy development, principally oil and gas development in the eastern part of the sage-grouse range may offer insight to the impacts of other anthropogenic disturbances, such as mining. The relative consistency in findings from research evaluating the impacts of different types of oil and gas development on sage-grouse (Naugle et al 2011) indicates that these findings can be applied to different types of anthropogenic disturbances. In a comprehensive literature review of the impacts of energy development on sage-grouse conducted by Naugle et al (2011), all studies reported negative effects, while no positive impacts to sage-grouse populations or habitat were reported. Negative responses of sage-grouse were consistent regardless of whether lek dynamics or demographic rates were studied (Naugle et al 2011).

Anthropogenic disturbances can negatively impact sage-grouse both directly and indirectly, and through various mechanisms. Anthropogenic disturbances can directly impact sage-grouse by causing direct loss of habitat, avoidance behavior to infrastructure (Doherty et al. 2008) and to otherwise suitable habitat (Lyon and Anderson 2003, Holloran 2005, Kaiser 2006, Doherty et al 2008), direct mortality through collision with infrastructure (Beck et al 2006, Stevens et al 2012), and negative impacts to survival and reproduction (Lyon and Anderson 2003, Holloran 2005, Kaiser 2006, Aldridge and Boyce 2007, Holloran et al 2007). Indirect impacts on sage-grouse demographics can be caused by noise produced from operations (Braun et al 2002, Holloran 2005, Kaiser 2006, Blickley et al 2012), vehicle traffic on associated roads (Lyon and Anderson 2003), and increased predation by raptors perching on associated power lines (Ellis 1984). In addition, habitat fragmentation resulting from cumulative effects of multiple

anthropogenic disturbances across the landscape has been shown to have long term negative impacts on sage-grouse populations (Johnson et al 2011, Knick and Hanser 2011, Knick et al 2013).

The state of Nevada seeks a balanced approach to mineral development and exploration that allows for the continued activities vital to the Nevada economy and heritage, while conserving and protecting sage-grouse populations and the sagebrush ecosystem upon which they need to survive. Nevada's strategy is to provide consultation for project planning to first avoid and minimize impacts to sage-grouse to the greatest extent possible (see Section 3.0) and then to offset residual impacts through compensatory mitigation via the Conservation Credit System (see Section 8.0).

Goals, Objectives, and Management Actions

Goal 1: Manage mineral development and exploration in a manner that provides for the long-term conservation of sage-grouse and their habitat, while providing reasonable access to and development of the resource.

Objective 1.1: Achieve no net unmitigated loss of sage-grouse habitat due to new anthropogenic disturbances, including mineral development and exploration and its associated facilities and infrastructure within the Sage-Grouse Management Area (SGMA) in order to maintain stable or increasing sage-grouse populations.

Management Action 1.1.1: All new proposed mineral development and exploration activities within the SGMA will trigger SETT Consultation for application of the "avoid, minimize, mitigate" process (see Section 3.0). This will serve as a centralized impact assessment process that provides consistent evaluation, reconciliation and guidance for project development.

Management Action 1.1.2: Avoid new mining activities and its associated facilities and infrastructure within the SGMA. Locate activities, facilities, and infrastructure in non-habitat wherever possible. Avoidance of a disturbance within sage-grouse habitat is the preferred option. If avoidance is not possible, the project proponent must demonstrate why it is not possible in order for the SETT to consider minimization and mitigation alternatives. The process to demonstrate that avoidance is not possible (the "avoid process") is determined by the four management categories. (See Table 3-1 for more details on the avoid process.)

Management Action 1.1.3: If adverse impacts to sage-grouse and their habitat cannot be avoided, project proponents will be required to minimize impacts by employing Site Specific Consultation-Based Design Features (Design Features; see Appendix A) appropriate for the project. This may include seasonal operational restrictions, noise restrictions, clustering disturbances, and placing infrastructure in previously disturbed locations.

Management Action 1.1.4: If impacts from mining activities cannot be avoided and after minimization options have been exhausted, residual adverse impacts are required to be offset through compensatory mitigation. Mitigation obligations will be determined through the Conservation Credit System (see Section 8.0).

Management Action 1.1.5: Consider the inclusion of sage-grouse habitat objectives (see Section 4.0) in site reclamation plans (Pyke 2011) where feasible.

Objective 1.2*:* Explore options to minimize impacts from existing and historic mining activities.

Management Action 1.2.1: While SETT Consultation and the "avoid, minimize, mitigate" process does not apply retroactively to existing mining operations, existing operators are encouraged to incorporate the Design Features outlined in Appendix A and contact the SETT for input on techniques and practices to avoid and minimize existing impacts to sage-grouse and their habitat.

Management Action 1.2.2: Inventory abandoned mine sites within sage-grouse habitat and, where practical, reclaim sites to meet sage-grouse habitat objectives (see Section 4.0).

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7.7 RENEWABLE AND NON-RENEWABLE ENERGY PRODUCTION, TRANSMISSION, AND DISTRIBUTION

The development, transmission, and distribution of renewable and non-renewable energy is a high priority for the state of Nevada. Shifting national and state energy policies, as well as Nevada's favorable conditions for different types of renewable energy resources, renewable energy development is likely to increase in the State. The SEP supports Nevada's Renewable Portfolio Standard goal of 25% of Nevada's energy coming from renewable sources by 2025. In addition, the Nevada Public Utilities Commission this year ruled in accordance with Nevada S.B. 123 requiring the retirement of no less than 300 MW of coal-fired electrical generating capacity on or before December 31, 2013, and not less than 250 MW of coal-fired electrical generating capacity on or before December 31, 2017 (Public Utilities Commission of Nevada 2014). Though there is currently little oil and gas development in Nevada, recent exploration efforts may shift the landscape of oil and gas production in the State.

Renewable and Non-Renewable Energy Production

Renewable energy resources in Nevada include geothermal, wind, solar, and biomass. Nevada has vast geothermal resources and is leading the way in geothermal energy development in the United States. As of the end of 2013, of the 3442 MW of installed generating capacity in the U.S. (Matek 2014), Nevada contributes 586 MW (Nevada Division of Minerals 2014a), representing approximately 17% of total installed capacity in the U.S. Nevada is outpacing the rest of the country in developing geothermal projects. Nevada accounted for approximately 41% of the total number of developing project in the U.S. since 2011 (Matek 2014). Nevada currently has 22 operating geothermal plants at 14 different locations (Nevada Division of Minerals 2014a). There are significant geothermal resources in northern Nevada that coincide with the sage-grouse habitat range. Recent geothermal projects that coincide with sage-grouse habitat include the Tuscarora, McGinness Hills, and Jersey Valley Geothermal Power Plants.

Wind energy is one of the fastest growing renewable energy sectors in the U.S.; however the potential viability for development of this resource in Nevada is currently limited. Analysis conducted as part of BLM's Wind Energy Development Programmatic EIS showed most of Nevada's wind power classification rated as poor to fair, with only small pockets classified as good to outstanding (BLM 2005). Some of those pockets however, overlap with sage-grouse habitat. Currently there is one wind generation facility in Nevada, the Spring Valley Wind Project; an approximately 150 MW facility located approximately 30 miles east of Ely, NV.

The BLM, as part of a Programmatic Environmental EIS for Solar Energy Development, developed Solar Energy Zones (SEZ), defined as areas well suited for utility scale production of solar energy. Five SEZs were identified for Nevada; all located in Clark and southern Nye counties, outside the range of sage-grouse (BLM 2012). There are currently no solar energy rights of ways within sage-grouse habitat in Nevada (BLM 2013).

There is currently no significant commercial conifer biomass energy economy in Nevada (BLM 2013); however considering that pinyon-juniper expansion is one of the major threats facing sage-grouse in Nevada, the SEP encourages exploring and incentivizing biomass energy development in the State.

Oil production in Nevada has been on a steady decline and is currently limited to approximately 336,000 barrels of oil production annually (Nevada Division of Minerals 2014b). Within sage-grouse habitat it is limited to two major basins, including the Railroad Valley and Pine Valley, with Railroad Valley being the predominant oil-producing valley in Nevada (BLM 2013). However, with recent federal approval of oil

and gas exploration near Wells, Nevada (BLM 2014), there may be potential for increased oil and gas production in the State pending results of the exploration.

Renewable energy development can negatively impact sage-grouse both directly and indirectly, and through various mechanisms. Impacts to sage-grouse from geothermal energy development have not been assessed in the scientific literature because the development has been too recent to identify immediate and lag effects (Knick et al 2011). There are currently no commercial solar projects operating in sage-grouse habitats at this time, so the impacts cannot be assessed. There has been one study on the effects on sage-grouse from wind energy developments recently completed in south-central Wyoming, which demonstrated that the relative probabilities of sage-grouse nest and brood success decreased with proximity to wind turbines (LeBeau 2012). Wind energy generation also requires tall structures, which can provide artificial nesting and perching substrate for sage-grouse predators (Knight and Kawashima 1993). Renewable energy development requires many of the same features for construction and operation as non-renewable energy, so it is anticipated that the potential impacts from direct habitat loss, habitat fragmentation through roads and power lines, noise, increased human presence would most likely be similar to those for non-renewable energy production (USFWS 2010). For more information on the specific impacts from non-renewable energy production, refer to Section 7.6.

Energy Transmission and Distribution

Transmission- and distribution-lines (hereafter collectively referred to as power lines) are necessary for transmitting energy from power production facilities and distributing that power to homes and businesses. Power lines may directly impact sage-grouse through habitat loss and fragmentation (Knick et al 2013), as well as direct mortality due to collisions (Beck et al 2006). Indirect habitat loss due to avoidance of vertical structures, presumably due to increases in predator populations is also a concern (Manier 2013). Power lines have been shown to decrease male lek attendance (Ellis 1985) and probability of lek persistence (Walker et al 2007), as well as causing avoidance behavior of brood-rearing habitat (LeBeau 2012). Power lines have been shown to increase predator distributions and hunting efficiency resulting in increased predation on sage-grouse (Connelly et al 2004). Preliminary results from a ten-year study on the impacts of the Falcon-Gonder transmission line on sage-grouse populations dynamics in Eureka County, Nevada show a negative effect of the transmission line on nest and adult survival (Gibson et al 2013).

The Nevada Approach

The State of Nevada seeks a balanced approach to renewable and non-renewable energy production, transmission, and distribution that allows for Nevada to achieve it energy goals, while conserving and protecting sage-grouse populations and the sagebrush ecosystem upon which they need to survive. Nevada's strategy is to provide consultation for project planning to first avoid and minimize impacts to sage-grouse to the greatest extent possible (see Section 3.0) and then to offset residual impacts through compensatory mitigation via the Conservation Credit System (see Section 8.0).

Energy development can be managed spatially and temporally to minimize impacts to sage-grouse. Through tools, such as the Conservation Credit System and the USGS Habitat Suitability Model, siting analysis will be conducted to avoid and minimize impacts to sage-grouse habitat. In order to meet both energy goals and achieve effective sage-grouse conservation, close coordination is required with various stakeholders across the West, such as federal, state, tribal, and local governments and relevant industry groups.

Goals, Objectives, and Management Actions

Goal 1: Manage renewable and non-renewable energy production, transmission, and distribution in a manner that provides for the long-term conservation of sage-grouse and their habitat, while balancing the need for continued development of renewable and non-renewable energy resources.

Objective 1.1: Achieve no net unmitigated loss of sage-grouse habitat due to new anthropogenic disturbances, including renewable and non-renewable energy production, transmission, and distribution and its associated facilities and infrastructure within the Sage-Grouse Management Area (SGMA) in order to maintain stable or increasing sage-grouse populations.

Management Action 1.1.1: All new proposed energy production, transmission, and distribution activities, facilities, and infrastructure within the SGMA will trigger SETT Consultation for application of the "avoid, minimize, mitigate" process (see Section 3.0). This will serve as a centralized impact assessment process that provides consistent evaluation, reconciliation and guidance for project development.

Management Action 1.1.2: Avoid new energy-related activities and its associated facilities and infrastructure within the SGMA. Locate activities, facilities, and infrastructure in non-habitat wherever possible. Avoidance of a disturbance within sage-grouse habitat is the preferred option. If avoidance is not possible, the project proponent must demonstrate why it is not possible in order for the SETT to consider minimization and mitigation alternatives. The process to demonstrate that avoidance is not possible (the "avoid process") is determined by the four management categories. (See Table 3-1 for more details on the avoid process.) If development cannot be sited in non-habitat, it should occur in the least suitable habitat.

Management Action 1.1.3: If adverse impacts to sage-grouse and their habitat cannot be avoided, project proponents will be required to minimize impacts by employing Site Specific Consultation-Based Design Features (Design Features; see Appendix A) appropriate for the project. This may include seasonal operational restrictions, noise restrictions, clustering disturbances, and placing infrastructure in previously disturbed locations.

Management Action 1.1.4: Site new linear features in existing corridors (Figure XX) or, at a minimum, co-locate with existing linear features in Core, Priority, and General Management Areas.

Management Action 1.1.5: Reduce and eliminate artificial hunting perches and nesting substrate for aerial predators by installing anti-nesting and anti-perching devices on new power lines (see Section 7.3).

Management Action 1.1.6: Encourage continued research in the development of more effective perching and nesting deterrent options (see Section 7.3).

Management Action 1.1.7: Bury distribution power lines of up to 35kV where ground disturbance can be minimized. Where technology and economic factors allow, bury higher kV power lines (see Appendix A). Sage-grouse habitat objectives (see Section 4.0) will be incorporated when reclaiming the site.

Management Action 1.1.8: Aggressively engage in reclamation/weed control efforts during pre- and post-project construction.

Management Action 1.1.9: If impacts from energy activities cannot be avoided and after minimization options have been exhausted, residual adverse impacts are required to be offset through compensatory mitigation. Mitigation obligations will be determined through the Conservation Credit System (see Section 8.0).

Objective 1.2: Explore options to minimize impacts from existing energy-related activities and infrastructure.

Management Action 1.2.1: While SETT Consultation and the "avoid, minimize, mitigate" process does not apply retroactively to existing energy-related project, existing operators are encouraged to incorporate the Design Features outlined in Appendix A and contact the SETT for input on techniques and practices to avoid and minimize existing impacts to sage-grouse and their habitat.

Management Action 1.2.2: Work with the energy industry to explore opportunities to install anti-nesting and anti-perching devices on existing power lines and tall structures and to bury existing power lines where practical.

Management Action 1.2.3: Inventory power lines that are no longer in use and look for opportunities to decommission the lines and reclaim the sites to meet sage-grouse habitat objectives (see Section 4.0).

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