Greater Sage-Grouse Range-Wide Compensatory Mitigation Framework

On March 23, 2010, the U. S. Fish and Wildlife Service (Service) determined that the Greater Sage-Grouse (*Centrocercus urophasianus*) warranted the protections of the Endangered Species Act of 1973, as amended, 1531 et seq. (ESA). The 2010 Finding was based on two primary factors: 1) the present or threatened destruction, modification, or curtailment of habitat or range, and 2) the inadequacy of existing regulatory mechanisms.

Currently, many states and conservation groups are in the process of developing conservation and mitigation programs to address inadequacies in local regulatory mechanisms to protect Greater sage-grouse (hereafter sage-grouse) from potential impacts of development actions. The Service will evaluate the efficacy of mitigation programs through two different lenses:

1) when assessing the status of the sage-grouse and the overall conservation value of mitigation programs; and
2) with regard to the use of pre-listing conservation actions to serve as mitigation for future development should the species become listed (**advance credit acquisition**).

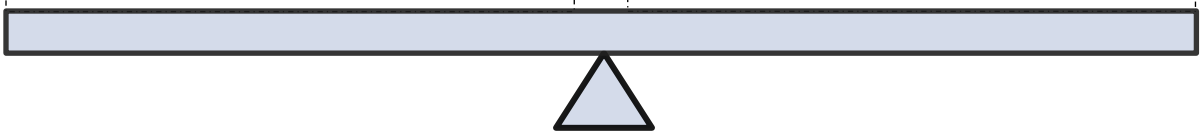
Recognizing that state wildlife agencies have management expertise and management authority for sage-grouse and given the variability in ecological conditions across the range of the species, this document outlines the Service's conceptual recommendations to assist states and stakeholders in deciding how to implement a **compensatory mitigation** program, optimize conservation value to the species, and provide relevant information the Service can use when evaluating mitigation programs.

Balancing Consistency & Flexibility

The Service recognizes the challenge in providing recommendations that foster consistency while leaving room for jurisdictional flexibility.

A consistent foundation for a mitigation approach, applied across the species range, will better enable stakeholders to implement positive conservation actions for sage-grouse and also enable the Service to assess the biological impacts of these mitigation efforts at a range-wide scale.

By providing flexibility in this framework the many differences in regulatory, economic, and ecological environments between and within States can be accommodated. This flexibility will also allow for and encourage innovation as programs are developed and tested.



Bold language throughout the document indicates important terms, defined in a glossary (Appendix I).

This document focuses on recommendations for implementation of compensatory mitigation (aka offsets) within the context of broader conservation programs that should cover the full **mitigation hierarchy** (first avoid impacts, then minimize, rectify and offset unavoidable impacts).

Part I provides context for the demand for compensatory mitigation within broader mitigation programs:

- Development Activity Impacts
- Regulatory Mechanisms
- Regulatory Predictability & ESA

Part II provides overarching principles and recommendations for the development of compensatory mitigation organized in seven specific elements:

- Governance
- Service Areas
- Recommended Conservation Actions
- Baseline & Additionality
- Durability, Ratios & Reversals
- Land Tenure
- Metrics & Accounting

PART I – DEMAND FOR COMPENSATORY MITIGATION

Demand for a compensatory mitigation program originates from regulatory, risk management, market speculation, and philanthropic drivers. State or local regulatory policy may require mitigation for proposed or existing disturbances. The potential constraints that future regulation might require can also be a driver. Developers, especially those in the energy industry, have expressed interest in advance credit acquisition. By securing credits early, future impacts for as yet to-be-determined activities may be covered by present conservation actions.

The recommendations provided here are consistent with the information and conservation objectives provided in the 2013 Conservation Objectives Team (COT) Report, which urges an avoidance first strategy for potential impacts to Priority Areas for Conservation (PACs) and other important habitat to sage-grouse. When avoidance and minimization of impacts to sage-grouse are insufficient to prevent a net loss to the species, and these disturbances are unavoidable, project developers may offset their impact (a **debit** to be mitigated) through identified eligible conservation actions (**credits** that mitigate debits). Employing offsets, or compensatory mitigation, within an overall mitigation program requires a consistent set of guidelines to be successful.

Before developing a mitigation program, the Service recommends that the types of development activities, the regulatory mechanisms that relate to those activities and considerations of regulatory predictability with the context of the ESA – all of which ultimately drive demand for compensatory mitigation - are first addressed.

Development Activity Impacts

A mitigation program should clearly identify the development activities and impacts that will be addressed and the avoidance, minimization, and compensatory mitigation standards for addressing the full lifecycle of direct and indirect impacts (i.e., ongoing effects as well as initial impacts) or new

development (i.e., design standards to avoid highest priority habitat; minimization measures applied during construction). A compensatory mitigation program should clearly describe the impact assessment methodology that will be used to measure a development activity's remaining direct and indirect effects to sage-grouse and habitat over the life of a development's effects, and quantify the potential direct and indirect impact "debits" that likely accrue from each of the specific development types. The compensatory mitigation program should be designed to encourage close adherence to avoidance guidance and full conformity with minimization measures.

Based on the main threats identified in the COT Report, the following types of developments likely will cause the greatest direct and indirect impacts to sage-grouse and its habitats: Energy Development; Agricultural Conversions; Mining; Ex-urban Development; and Infrastructure. The COT Report provides initial guidance on impact avoidance, minimization, and mitigation for each of these development activities that should be applied in the mitigation program.

Different development activities will have different direct and indirect effects to sage-grouse. A mitigation program will need to be based on criteria that reliably and predictably determine the types, amounts, and locations of impacts and associated avoidance, minimization and offset obligations based on the type of development activity. A mitigation program should provide additional focus on development actions with higher likelihoods of larger scale, higher intensity adverse impacts while the elements of a mitigation program (e.g. impact assessment) should apply regionally and consistently to each of the land development activities.

In an effort to improve consistency of compensatory mitigation programs across the range of the sage-grouse, the Service has identified and qualitatively ranked major development activity impacts associated with different development sectors on a range wide basis (see Appendix 2, Table 1). It is recommended that states use the range wide ranking as a starting point and adapt the rankings to local conditions and threats found in each state and PAC

Regulatory Mechanisms

The combination of increased energy and other natural resource development and a lack of regulatory mechanisms to responsibly site development to avoid impacts and adequately mitigate for unavoidable impacts is a pressing issue for sage-grouse conservation. It was cited as a major threat in the 2010 Finding.

States hold the primary responsibilities for the protection and management of non-federally listed species such as sage-grouse. State laws and regulations impact the species by providing the following: 1) broad authority to regulate and protect wildlife on all lands within their borders, 2) specific authority for conservation activities over lands which are state-owned, and 3) an indirect mechanism for conservation through the regulation of threats to the species (e.g., development, invasive plants).

While states hold the primary responsibility over sage-grouse conservation, federal agencies manage almost two-thirds of the total sagebrush habitat. The BLM manages just over half of the species total range. Discretionary measures by the BLM and state conservation agencies in particular will have a significant impact on development in sage-grouse habitat and therefore a significant impact on the future of conservation of the species.

Regulatory mechanisms are the strongest and most consistent drivers of compensatory mitigation. The Service recognizes that federal, state, and local laws vary across the landscape. However, when determining the adequacy of regulatory mechanisms, the Service will factor in the following considerations:

1. Establishment of clear thresholds that limit impacts to PACs and other quality habitat;
2. Avoidance of direct impacts to sage grouse during construction;
3. Minimization of impacts to other sage-grouse habitats (siting guidelines; construction BMPs; seasonal restrictions);
4. Accurate assessment and quantification of remaining direct and indirect impacts of new development;
5. Requiring compensatory mitigation for unavoidable adverse impacts, and showing certainty that project outcomes have been achieved;
6. Monitoring with adaptive management to maintain compensatory mitigation.

The Service recommends clearly identifying the federal, state, local and Tribal regulatory mechanisms for siting and permitting for each major development types that impact sage-grouse (as noted in the exercise above). Note where environmental review is triggered for each development and land ownership type (specific to sage-grouse) and how that review may result in avoidance, minimization, restoration, and offset recommendations (see Appendix 2, Table 2, as an example). Identify deficiencies where regulatory mechanisms do not adequately protect sage-grouse.

The following common regulatory mechanisms are listed in order of their strength of enforceability: legislation, executive order, memorandum of agreement, and voluntary mitigation (*others?*).

Regulatory Predictability and ESA

Both the purchasers and suppliers of compensatory mitigation may wish to know from the Service that their actions contribute to larger efforts that could preclude the need to list sage-grouse. In addition, suppliers of compensatory mitigation credits may seek to receive regulatory predictability that, should the species become federally listed, the management they agreed to in order to provide credits would not change and incidental take coverage would be provided for these previously agreed upon management actions.

Developers may seek advanced regulatory certainty from the Service that conservation actions that qualify as compensatory mitigation that they implement or acquire in the absence of any negative impacts would "count" if a listing should occur. The advanced credit would then provide incidental take coverage commensurate with the level of offset that had been purchased or developed. A program that utilizes advanced credit acquisitions, designed to lock in the credit value at the time of acquisition well in advance of a proposed development, could provide a major market driver for a compensatory mitigation program. Depending on the degree to which a net conservation benefit is obtained and how targeted the credits are at addressing threats, advanced credits could provide a significant conservation benefit.

To maximize favorable consideration in precluding the need to list the species, any program should clearly show how it directly reduces the imminence, intensity, or magnitude of threats or indirectly reduces or eliminates threats through regulatory mechanisms. For conservation programs in early stages

of implementation, the Service evaluates efforts according to the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE policy) to determine if it provides certainty of implementation and effectiveness and thereby improves the status of the species such that it does not meet the ESA's definition of a threatened or endangered species.

If a species is proposed for listing, robust mitigation programs implemented prior to the listing decision can provide many benefits. Most importantly, programs will already be contributing to conservation and recovery. In addition, the Service might propose a special rule under section 4(d) of the ESA to allow for take incidental to activities conducted pursuant to a conservation (in this case compensatory mitigation) program that has been determined by the Service to provide a net conservation benefit.

For mitigation providers, existing tools such as Candidate Conservation Agreements with Assurances (CCAAs), Habitat Conservation Plans (HCPs), or Conservation Banking Agreements could be used to provide regulatory predictability to both the Service and the agreement holders. Programmatic agreements between the Service and compensatory mitigation program administrators (e.g. state agencies, others), which step down coverage to individual mitigation providers, may also be adequate. From the development side, regulatory predictability may come through NEPA, consultation with the Service (e.g. resulting in a conference opinion), or through a programmatic agreement.

PART II: COMPENSATORY MITIGATION PRINCIPLES AND PROGRAM ELEMENTS

Any compensatory mitigation program should be developed with the following overarching principles:

- New and ongoing development activities should be designed, sited, and implemented to adhere to the basic hierarchy of avoidance, minimization, rehabilitation, and compensatory mitigation (also referred to as "offset") as guided by a conservation/mitigation strategy or program.
- The mitigation program should be developed in conjunction with, or guided by, a landscape-level conservation plan to ensure the viability of the species and the ecosystem upon which it depends over time.
- Including mitigation, overall outcomes should result in no net loss to the species; a net benefit will improve overall net conservation status improvement and assist in precluding the need to list.
  (*OR*) Compensatory mitigation outcomes should provide a net benefit to the species that will improve overall net conservation status improvement and assist in precluding the need to list.

The following list provides additional, specific elements to consider when developing a compensatory mitigation program:

1. Governance
2. Service Areas
3. Recommended Conservation Actions
4. Baseline & Additionality
5. Durability, Ratios & Reversals
6. Land Tenure
7. Metrics & Accounting

1. Governance

A compensatory mitigation program requires a broad array of functions to operate. While many of the functions (project development, monitoring, etc.) can be carried out by third parties, the the program administrator is a critical role. The program administrator should be the entity with enforcing authority for the establishment, operation and management of compensatory mitigation projects. The degree of authority granted to the administrator determines the Service's confidence that conservation benefits from compensatory mitigation will persist. The administrator(s) must have the ability to reconcile any funding (e.g. separately manage, collect, distribute funds), perform or enforce management actions, incorporate adaptive management, track credits, report results, etc.

While technically any entity with sufficient stability and capacity to perform these functions can administer a mitigation program, the Service recognizes that state agencies have a direct connection to the potential regulatory drivers that require compensatory mitigation. Since the states hold the primary responsibility for the protection and management of the sage-grouse, the program administrator should be recognized by the state through a formal agreement to facilitate enforcement of the requirements of the compensatory mitigation program. In lieu of administration of a mitigation program by a state agency, state endorsement of a program administrator is recommended. Agreements should also be developed with major stakeholders, including land managers such as the BLM and USFS, and with the Service if regulatory predictability is sought.

A legally binding credit agreement should be in place between any party generating credits and the program administrator to increase the Service's confidence that conservation benefits from compensatory mitigation will persist. Credit agreements should outline and demonstrate the durability of a mitigation program (see *Durability*, below). Compliance and performance of any agreement the Service is party would be subject to verification by the Service. Agreements do not have to be directly with the Service, especially for individual agreements in a programmatic setting, provided that a Service agreement with the program administrator is in place.

Conservation banking agreements with the Service have a proven track record of implementation and represent a familiar and durable type of mitigation program. Conservation banking, however, may not be a feasible option in all situations. For example, conservation banks are traditionally protected by permanent conservation easements and are not located on public land. While some deviations may be needed to develop a commercially viable and biologically relevant sage-grouse compensatory mitigation program, the closer the elements in a compensatory mitigation program line up with those in conservation banking, the more likely the program is to provide certainty of implementation and effectiveness in improving the status of the species.

All lands being used for compensatory mitigation should have an active management plan that includes goals and objectives specific to maintaining the habitat for the continued use of sage-grouse for the life of mitigation credits. Management plans should include a process for adaptive management and should address uncertainties. Each plan should also identify discrete **performance standards** (measurable attributes used to determine if the management plan meets the agreed upon goals and objectives), how those ecological and administrative performance standards are to be met, and possible contingencies for not meeting standards. Monitoring should be designed to contribute to knowledge gaps and improve the program. Provisions to require existing participants to adopt improved conservation strategies in the future would strengthen the program.

To demonstrate stability, the administrator of a compensatory mitigation program should identify an adequate funding source to provide for interim and long-term operation, management, monitoring, enforcement, and documentation costs. The recommended vehicle for long-term funding is a non-wasting management endowment (i.e., a fund that generates enough interest each year to cover the costs of the yearly management).

The Service recognizes that some participants in voluntary agreements, whether directly with the Service or indirectly through a program administer, may object to potential for public disclosure of their information. To properly assess the effectiveness in the program in adequately reducing threats the species, the Service should be able to evaluate individual actions. The Service therefore recommends that any mitigation program provide for a transparent review process of the entire program and that individual agreement holders be made aware of the review process.

2. Service Area

Identifying areas where offsets can and should be focused is critical to ensuring that unavoidable impacts are adequately offset by mitigation. In traditional mitigation terms, this is known as a **service area**, the geographic area within which impacts to species' habitat can be offset. In general, larger service areas provide greater flexibility to exchange credits and debits and thus are more commercially viable. Landscape, economic, and regulatory realities will inform and constrain decisions on service areas.

States have already undertaken considerable efforts to identify and map key habitats necessary for sage-grouse conservation in the development of their state management plans. These areas are also broadly identified in the COT report as PACs, defined as key areas across the landscape necessary to maintain redundant, representative, and resilient populations. Local sage-grouse population considerations should factor strongly into compensatory mitigation siting decisions; additional finer scale planning efforts by states or federal land management agencies may be necessary to determine if other essential habitats exist, particularly for connectivity, population expansion opportunities, and flexibility in managing habitat changes that may result from climate change. Generally, compensatory mitigation should target providing the greatest benefit to sage-grouse that is allowable given jurisdictional and other constraints.

Jurisdictional issues may play a significant role in siting of compensatory mitigation. Many large-scale development projects cross state and county boundaries. Where compensatory mitigation programs line up across jurisdictions, efficiencies and greater conservation benefits for sage-grouse could be realized. The BLM, for example, is taking a regional approach to mitigation with its 2013 draft MS-1794 policy which focuses on attaining the highest compensatory mitigation benefit, regardless of land ownership. Bundling of credits from multiple debit sources may provide more concentrated landscape level conservation benefits. If policy requires that compensatory mitigation occur locally, and local opportunities are limited or do not fit well into a given sage-grouse conservation strategy, higher mitigation ratios may be used to compensate for spatial deficiencies.

The Service recommends working with stakeholders such as the BLM to clearly define service areas early in the compensatory mitigation program development process. The geographic extent of a service area should be guided by the COT report and current state sage-grouse conservation plans. PACs should be

used as a starting point. Justification should be provided for service areas that are shaped based on jurisdictional or policy considerations.

3. Recommended Conservation Actions

In an effort to improve consistency of compensatory mitigation programs across the range of the sage-grouse, the Service has identified, broadly, project types and recommended conservation measures that address threats identified in the COT Report at the range wide scale (Appendix 2 – Table 3). If the conservation actions of compensatory mitigation programs are consistent across the range and address the greatest threats in a PAC or service area, that will help maximize the value of programs for status assessment and use for advance credit acquisition. The recommended conservation actions are qualitatively ranked in order of conservation benefit at the range wide scale. Compensatory mitigation programs are encouraged to adapt the ranked list to address local conditions and threats in PACs and service areas.

In addition to targeting recommended conservation actions, offset projects should also meet the test for **additionality** (i.e. actions proposed as mitigation must provide benefits beyond those that would be achieved anyway under applicable regulations and/or land-use management plans; see *Baseline &Additionality*, below). In general, actions that have significant lag time before providing conservation benefits shouldn't be prioritized for compensatory mitigation. Out of kind compensatory mitigation may be appropriate in some cases if rationalized through quantitative analysis (e.g. development of nesting habitat to replace loss of wintering habitat where nesting habitat is a limiting condition).

4. Baseline & Additionality

Baseline refers to the habitat and/or species population conditions at any given point in time against which conservation actions are measured to determine uplift, or additionality. Baseline conditions should be assessed and measured using the same methodology employed to predict future conditions during project planning stages and ultimately to verify project conditions and associated credits during periodic and final monitoring. The Service strongly recommends that the same methodology also be applied to predict impacts to sage-grouse and sage-grouse habitat (see *Metrics*, below).

The Service has not developed nor endorsed any one specific methodology for determining baseline conditions at a given site. States or other management entities may find it useful to cooperatively develop, adapt, adopt, or align methods that can be consistently applied across larger landscapes. Conservation banking agreements and similar documents provide informative examples to facilitate such efforts.

Actions proposed as compensatory mitigation must provide a level of conservation benefit beyond what would have been achieved anyway under applicable (non-mitigation related) regulations and/or land-use management plans. Corrective actions applied to existing sage-grouse management requirements that are not being met (on public lands, for example), would not be considered "additional" to normal requirements or management. Some temporal credit consideration may be appropriate for contributions to substantively accelerated management actions on a case-by-case basis (e.g. restoration of a large burned area in a shorter timeframe) where benefits can be quantified.

Additionality and potential credit associated with proposed restoration and enhancement activities should be evaluated in comparison with both baseline and projected future condition of a given site that would be expected in the absence of the proposed mitigation activity. Additionality of preservation projects should be evaluated, and credits proportionately assigned, according to the magnitude and likelihood of existing and future threats to the habitat at hand. Restoration, enhancement, and preservation projects should also consider the potential for future development and disturbance at these sites if they were managed as mitigation sites. A Step Down Key (Appendix 2 – Table 4) provides general guidance for evaluating additionality as it pertains to proposed offset projects.

5. Durability, Ratios & Reversals

Actions or plans proposed as compensatory mitigation should demonstrate timeliness (i.e. should achieve targeted biological conditions in a timeframe that benefits sage-grouse), biological effectiveness (i.e. ecological **durability**) and be accompanied by appropriate legal and financial assurances that secure and protect the conservation status of the mitigation site and credits for at least as long as associated impacts persist (protective durability). Durability may be compromised when the benefits of compensatory mitigation do not persist for the full duration that is required based on the impact that is offset. These types of **reversals** must be addressed in any compensatory mitigation program. Uncertainty in temporal, ecological, and legal considerations can be ameliorated by **mitigation ratios**.

Timeliness: Because most impacts typically begin to occur in the early stages of projects (i.e., construction and initial operations), benefits of proposed mitigation actions should also begin to accrue as early in the life of the project as possible. These benefits should be verified via standardized monitoring. When the success of compensatory mitigation is demonstrated prior to impacts occurring, ecological risk is reduced. Compensatory mitigation projects proposed subsequent to impact-inducing projects should not be allowed, due to uncertainty of implementation and time lag effects. One benefit of allowing for advanced credit acquisition in a compensatory mitigation program is that credits are demonstrating benefits will in advance of any impacts.

Ecological Durability: The length of time the intended improvements persist on and influence the landscape should meet or preferably exceed the length of time that the projected impacts negatively affect greater sage-grouse. Consistently striving to maximize biological durability of such projects can facilitate the “no net loss” and “net benefit” principles. Conservation actions are more likely to be meaningful if they are aggregated. Mitigation areas should be large enough so that they will, either in themselves or in conjunction with adjacent landscape conditions, provide the targeted biological benefits. Mitigation shouldn’t occur in areas impacted by a development project (“on site” mitigation), nor in areas where benefits are likely to be obviated over time by incompatible land-uses on the mitigation site and surrounding landscape.

Protective Durability: An ecologically sound plan offers limited ecological value if subject to or affected by future development or disturbance or if necessary adaptive management actions identified by monitoring are inappropriately limited by lack of funds. Durability should be demonstrated in the form of real estate protections and plans (e.g. conservation easements, fee title transfers, habitat management agreements) and financial (e.g. bonding, non-wasting management endowment) protections. The amount of financing to deliver the mitigation should be determined by an appropriate cost-analysis for all elements of the mitigation, including acquisition or easement, restoration or enhancement, and long-term maintenance. All funds should be held in dedicated accounts and

managed based on agreed-upon terms to assure that target biological conditions will be attained and maintained.

Ratios: Risk and uncertainty associated with durability can be addressed to a degree with higher mitigation ratios; however, the point at which risk and uncertainty render an offset project as unsuitable should be determined at the project level. If the success of compensatory mitigation has not been verified prior to impacts occurring, higher credit to debit mitigation ratios may be warranted. The value of compensatory mitigation projects should be discounted if a time lag will exist from when impacts are incurred and offset benefits are realized (and the associated risk of offset project failure). Strong projected ecological durability should therefore favorably influence mitigation ratios. Lower levels of protective durability should result in higher mitigation ratios.

Reversals occur when the benefits of compensatory mitigation do not persist for the full duration that is required based on the impact that is offset. Reversals may be caused by natural disturbances (unintentional reversal) or anthropogenic disturbances (intentional reversal). Requiring the credit provider to be responsible for unintentional reversals would likely make administration of a program more complex and decrease interest in providing credits. One recommended approach to address unintentional reversals is to establish an insurance pool (see Appendix 2, Table 5). For intentional reversals, the Service recommends compensation by the party responsible for the reversal. A policy should be established such that the conservation benefits from a compensatory mitigation project are not diminished due to replacements made necessary by intentional reversals.

6. Land Ownership/Management

Compensatory mitigation for the sage-grouse can occur on either private or publicly managed land. Generally, conservation actions used as compensatory mitigation should be limited to those identified as the most critical for sage-grouse conservation in the applicable geography and that will yield the most substantial benefit, regardless of ownership. BLM's 2013 draft MS-1794 policy echoes this consideration:

> "Mitigation site, projects, and measures should be focused where the impacts of the use authorization can be best mitigated and BLM can achieve the most benefit to its resource and value objectives, regardless of land ownership. The most appropriate area for mitigation projects may be on Federal lands (the BLM or another agency) or on non-Federal lands."

However, criteria related to additionality and durability present challenges with use of public lands and lands with split estate ownerships, which often involve public lands.

For public lands, if the biological values expected to occur from public programs are the same as those required for compensatory mitigation, those lands may not meet the additionality test. Durability on public lands may be difficult to guarantee because of rules and policies (e.g. FLPMA) that preclude many legal land protection mechanisms that can assure protection and management commensurate with the life of project impacts. Use of public lands for compensatory mitigation purposes could also limit attainment of broader goals for sage-grouse conservation, specifically those related to providing economic benefits to landowners and increasing incentives for private landowners to engage in conservation actions. For lands with split estate ownerships, laws and policies (e.g. mining laws) may also prevent a particular site from meeting the durability test if land-use management instruments (e.g. conservation easements) cannot be applied.

The Service recommends that compensatory mitigation programs clearly define how additionally and durability will be addressed on various land ownership types. Close coordination with large public land managers such as the BLM will be necessary in most states so that BLM regional mitigation strategies and state or local mitigation strategies align.

To show that compensatory mitigation projects will persist, the agency responsible for oversight of public lands on which the mitigation occurs should be responsible for providing alternative adequate mitigation if subsequent changes in management direction result in incompatible uses on those lands. Similarly, if subsurface development occurs on split estate lands, alternative mitigation at a higher ratio should be provided so as not to result in any net loss of conservation benefit. This contingency responsibility should be identified in the administrative and regulatory documents (*e.g*. Records of Decision, etc.) that enable the original mitigation. In order to guarantee no net loss of original mitigation, a >1:1 ratio should be used in determining the alternative offsets.

7. Metrics, Equivalence and Accounting Systems

The methodologies, or metrics, used to determine the expected impacts of actions (debits) and the measures necessary to avoid, minimize, restore and/or offset those impacts (credits) should be based solely on biological conditions and upon reliable and repeatable methods and result in a common "currency" between credits and debits.

A formal, consistent, rigorous but relatively simple methodology[1] to assess impacts should be used and applied to all land development activities that impact sage-grouse. The methodology should address direct impacts (habitat removal), indirect impacts and disturbance, and ecological site conditions. Approaches such as sound propagation, distance-based disturbance bands, habitat weighting, and ratios are acceptable, especially in conjunction with defined thresholds of allowable impact.

Credits must be reasonably likely to deliver expected conservation benefits (see *Durability*, above). The Service recommends providing phased credit releases based on ecological and administrative performance. Monitoring and adaptive management should be important components of mitigation programs to ensure success. Ultimately, the metrics used must tie back to populations and should clearly show the conservation benefit to the species. Programs that provide only no net loss will be treated more conservatively by the Service.

Mitigation ratios may be used to address uncertainty in the program and ensure durability. Ratios may be determined based on several factors including temporal considerations (impact versus mitigation timing), functional quality and importance of proposed impacted areas, projected functional quality of proposed mitigation areas, likelihood of restoration success, degree of threat to proposed preservation areas, durability, etc.

[1] Refer to *Measuring Up* document for examples of developing robust metrics: http://willamettepartnership.org/measuring-up/Measuring%20Up%20w%20appendices%20final.pdf

A compensatory mitigation program should provide an accounting system whereby credits and debits can be tracked. The accounting system should foster transparency, accountability, and credibility and facilitate the connections between compensatory mitigation providers at the lowest transaction costs[2]. If the Service is going to assess compensatory mitigation programs in a listing decision and provide future impact coverage allowances for credits that are acquired in the present, the Service will need to be able to examine and compare programs (credits, debits, ratios) across the sage-grouse range.

Internal Considerations for Equivalence and Metrics: *If states do have different metrics, it is more challenging to: 1) roll up the overall conservation value of mitigation programs when assessing the status of the sage-grouse (something the Service must do); and 2) allow for the exchange of credits between states with different metrics. If states were willing and a method was developed that would allow the exchange of debits and credits between states, purchased credits could be used to fund the highest range wide priority conservation actions. If states were not willing to allow the exchange of debits and credits between states, purchased credits could be directed toward the highest priority conservation actions within a state.*

Options to achieve equivalence between states:

1. *Pull together a technical committee with representatives from each state. Develop an agreed upon metric system that will facilitate the flow of credits and debits between states.*
2. *Value could be assessed on how "close" the PAC is to securing the maximum amount percent disturbance that is tolerated by sage-grouse (3 to 5%, as qualified by density of disturbance). For example, PACs within 1 % of meeting the minimum disturbance threshold may be a higher priority for mitigation than one that is 10% from meeting that minimum threshold. This would need to be caveated by local seasonal habitat or connectivity information, if available, particularly where sage-grouse populations cross state lines.*

CONCLUSION

The Service's primary goal for any sage-grouse compensatory mitigation program is to support conservation of the species by working with others in reducing or stopping threats, protecting populations, and reversing declines. Implementation of a compensatory mitigation program should provide the following:

- contribute to reducing the need to list the species or reduce adverse regulatory implications of a listing while allowing for well-sited actions to move forward smoothly;
- represent a collaborative, unified approach between the Service, state(s), federal land managers and other stakeholders;
- utilize existing regional, state, and local-level processes as the primary authorizing, implementing and enforcing mechanisms to the greatest extent practicable; and
- benefits derived from the mitigation program should include:
    a) streamlined and expedited project review/permitting,
    b) utilization across multiple local, state and federal regulatory frameworks,
    c) regulatory predictability,

[2] See Willamette Partnership, General Crediting Protocol, for an example of a complete ecosystem credit accounting system.

d) increased public transparency and confidence,
e) increased economic incentives for landowners engaged in conservation actions,
f) a foundation for incorporating mitigation into other conservation programs, and
g) legal, scientific, political, and economic defensibility and credibility of actions and entities covered under the program.

Any robust compensatory mitigation program developed for sage-grouse will positively influence expanded use of mitigation as a conservation tool for other listed and imperiled species by demonstrating its viability and by increasing public understanding of associated principles, standards, and policies.

APPENDIX 1 – Glossary

Advance Credit Acquisition
Mitigation Hierarchy
Compensatory Mitigation
Debit
Credit
Additionality
Reversal
Service Area
Net Conservation Benefit
No Net Loss
Performance Standards
Durability

APPENDIX 2

Table 1. Example of a table outlining development types and impacts.

Development Type	Activity	Direct & Indirect Effects	Scale of Impact	Qualitative Impact Rank
Oil and Gas	Development of roads, pads, storage areas, pipelines, etc.	Habitat Removal (all types) and Fragmentation		High
	Project- and public-related road use on upgraded and new roads	Disturbance and Displacement		Low
	Noise, lighting and anthropogenic activities at above-ground development features	Disturbance and Displacement		High
	Power lines to and from well sites	Habitat Removal (all types), displacement, increased predation		Low
Wind				

Table 2. Example of a table outlining some of the considerations the Service will make associated with adequacy of federal, state, and local regulatory mechanisms for new developments in sage-grouse habitat.

Threat Category	Phase	State-by-state Regulatory Assurance Programs		
		Federal Lands	Nonfederal Lands	Mix
Energy Development	Avoidance of high quality habitat			
	Avoidance of direct impacts to individual sage-grouse			
	Minimization of impacts to sage-grouse and habitat			
	Analytical Framework for			

	direct, indirect effects			
	Monitoring and adaptive management			
	Compensatory mitigation			
Agricultural Conversions				
Mining				
Ex-urban Development				
Infrastructure				

Table 3. Recommended Conservation Actions

Inside PACs

- Targeted habitat management (actions that help retain habitat) or habitat restoration (*examples)*
  - improve grazing systems so that they are consistent with the ecological conditions that maintain or restore healthy sagebrush shrub and native perennial grass and forb communities and conserve the essential habitat components for sage-grouse. Proper functioning Conditions (PFCs) for riparian; Rangeland Health Standards (RHS) for uplands
  - Reduce the likelihood of catastrophic wildfire
  - Cheatgrass control
  - Where habitat in PAC is lost to catastrophic events
  - Restoration of areas adjacent to burned habitat
  - Restoration of degraded habitat in PACs
  - Prioritized use of mechanical treatments for removing pinyon and/or juniper infill (Phase I or II)
  - Reduce phase I and II juniper cover to less than 5%, but preferably eliminate entirely
  - Remove or modify range management structures that are contributing to negative impacts
- Avoided threats
  - Fee title purchases so that property can be managed for sage-grouse
  - Conservation easements that reduce threats that are identified for the PAC

Outside of PACs

- Conservation Easements
  - Buffering PACs
  - to increase connectivity between PACs

- Targeted habitat restoration
  - to increase connectivity between PACs
  - Buffering PACs
  - Expand opportunities for recovery areas for sage-grouse

Indirect Greater Sage-Grouse Benefits

- Address shortage of locally-adapted seed and storage capabilities
- Monitor and control invasive vegetation post-wildfire
- Research that improves restoration or understanding of limiting seasonal habitats for the population, or improves our understanding the underlying mechanisms of know threats to the species such that future project impacts can be avoided or minimized in the future (e.g. transmission line research).

Table 4. Element 4 – Baseline/Additionality. Step Down Key

Note: The key does not address every potential situation, is only intended to assist with the concept of additionality, and is not inclusive of all parameters discussed in this document that are necessary to evaluate the viability, appropriateness, or credits that may be associated with a given proposed mitigation project.

1. Does the proposed offset project consist of required reclamation /rectification of temporary direct project impacts only?
a. Yes: the activity is not an offset project, and would not be considered additional. b. No: go to 2.
2. Is the offset project site proposed on private (go to 3) or public (go to 5) land?
3. Does the proposed project site on private land contain a conservation easement purchased with public funds, or lands restored, enhanced, or managed with public funds?
a. Yes: go to 4. b. No: proposed offset project could be considered additional and resultant credits may be available for private landowner or third party use. Continue evaluation.
4. Does the proposed site on private land contain potential for additional easements, restoration and/or enhancement beyond that achieved with public funds that could measurably benefit sage-grouse?
a. Yes: new proposed offset project could be considered additional and resultant credits may be available for private landowner (original measures plus new offset project) or third party use (new offset project only). Continue evaluation. b. No: proposed offset project would not be considered additional; credits from original measures could be considered for private landowner use only.
5. Is the public offset project site currently managed for sage-grouse, with development / disturbance excluded?
a. Yes: proposed offset project is not considered additional. b. No: go to 6.
6. Is restoration and/or enhancement of the public offset project site (whether accomplished or not) required under existing management (statute, land management plan, etc.)?

a. Yes: go to 7. b. No: proposed offset project could be considered additional and resultant credits may be available for agency or third party use. Continue evaluation.
7. Is there opportunity to substantively accelerate implementation to measurably benefit sage-grouse?
a. Yes: proposed offset project could, on a case-by-case basis, be considered additional and resultant credits may be available for agency or third party use. Continue evaluation. b. No: (or already implemented); proposed offset project would not be considered additional.

Table 5. Element 5 – Durability/Reversals. The following are two examples of how insurance pools could be established to address reversals.

1. Each individual mitigation provider sets aside a small portion of credits in reserve, never to be sold. In the event of an unintentional reversal, the mitigation program administer could draw from the pool of credits to make up for the lost conservation.
2. After determining the level of compensatory mitigation needed to offset debits, the compensatory mitigation program administrator would use best available science to estimate the likelihood that natural disturbance might lead to an unintentional reversal. An insurance premium, based on the likelihood of unintentional reversal, would be added to the cost of compensatory mitigation for the debits requested. The insurance premium would then be used to generate additional compensatory mitigation projects that generate credits for the insurance pool. In the event of an unintentional reversal that generates unintentional debits, the compensatory mitigation program administrator would draw down credits from the pool to offset the debits. This would allow the compensatory mitigation program to seamlessly maintain conservation integrity.