INTEGRATING TRANSPORTATION PLANNING, CONSERVATION, AND REGULATORY ACTIONS

Roberta Gerson
Regional Transportation Coordinator
U.S. Fish and Wildlife Service
Pacific Southwest Regional Office
2800 Cottage Way, Rm. W-2606
Sacramento, California 95825
roberta_gerson@fws.gov
(916) 978-6191

Amy Pettler Bailey
Senior Endangered Species Coordinator
California Department of Transportation
Division of Environmental Analysis, MS-27
P.O. Box 942874
Sacramento, California 94274-0001
amy_pettler@dot.ca.gov
(916) 651-8166

Integrating Transportation Planning, Conservation, and Regulatory Actions

Abstract: In 2005, Congress passed a new surface transportation law known as SAFETEA-LU, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. Section 6001 of the Act requires long-range statewide transportation plans and metropolitan transportation plans include a discussion of potential environmental mitigation activities and potential areas to carry out these activities. The challenge for practitioners is how to translate project level conservation needs into a regional planning process when perspectives are different. Natural resource considerations are generally considered during transportation infrastructure project development, not during the development of long- range planning.

Caltrans evaluated their program to find opportunities to take a more ecological approach to long range planning. In the process, the CA Transportation Plan and Regional Transportation Planning Guidelines were revised to reflect the policies associated with early considerations for environmental resources as well as best practices and available tools. This exploration encouraged the FWS Regional Office in California to prepare a guidance document for planning agencies to help integrate conservation with infrastructure plans. The California Essential Habitat Connectivity (CEHC) project was a multi-agency collaborative project to develop a statewide wildlife habitat connectivity map and strategy. Regional Advance Mitigation Planning (RAMP) and Statewide Advance Mitigation Initiative (SAMI) are collaborative multi-agency groups who explore scientific innovations and policy hurdles in developing and implementing a landscape-level framework and mitigate environmental impacts far in advance of projects.

Modifications to policies and guidelines indicate to the practitioners that long range planning is not business as usual. Multi-agency partnerships among are the key to building trust to achieve an ecosystem/landscape approach to natural resource conservation. It takes time to frontload conservation planning and transportation planning at a regional scale and to institutionalize practices and understanding. Using a regional conservation strategy early in transportation planning will result in better informed infrastructure planning and greater flexibility in meeting regulatory mitigation/conservation needs.

INTEGRATING LONG TERM TRANSPORTATION PLANNING, CONSERVATION, AND REGULATORY ACTIONS

INTRODUCTION

In 2005, Congress passed a new surface transportation law known as SAFETEA-LU, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. Implementing Section 6001 obligations of SAFETEA-LU requires that long-range statewide transportation plans and metropolitan transportation plans shall include a discussion of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the long-range statewide transportation plan. It further states that the discussion may focus on policies, programs, or strategies, rather than focusing at the project level and that the discussion shall be developed in consultation with Federal, State, and Tribal land management, wildlife, and regulatory agencies. Natural resource considerations are generally considered project by project, not during long-range planning. Additionally, compliance with federal regulations, such as the Endangered Species Act, requires offsetting adverse effects from project activities through avoidance and minimization conservation measures, and may include off-site land acquisitions as compensation/mitigation, but these considerations typically occur later in the project development process. Advancing the analysis of these considerations in new ways is consistent with the intent of SAFETEA-LU. This can include considerations of scale, coordination between planners and biologists and translating regulatory needs into the planning level.

Given that SAFETEA-LU 6001 is not prescriptive in how its requirements might be accomplished, the California Department of Transportation (Caltrans) works collaboratively with partner agencies and internally to institutionalize these requirements. This collaboration has stimulated discussion and a blended recognition of different perspectives and has resulted in revisions to policy, development of guidance, identification of the need for technology and an understanding where difficulties may exist. This paper will discuss specific examples of procedural improvements Caltrans and U.S. Fish and Wildlife FWS (FWS) have implemented and what we have learned along the way.

CHALLENGES AND DILEMMAS

With the onset of SAFETEA-LU, transportation agencies need to develop a consistent and meaningful approach to considering natural resources early in planning and to integrate natural resources into all phases of long range planning. For Federal agencies there is also the challenge of addressing the Endangered Species Act Section 7 (a)(1) duty of conserving endangered and threatened species and the ecosystems and habitat on which they depend. This program level goal is consistent with the SAFETEA-LU 6001 intent of addressing broader conservation goals such as recovery of species early and in a regional or larger planning scale.

Why is this a difficult challenge? Let's consider the basic structure of transportation planning with California as our case example. The California Transportation Plan (CTP) develops the policy at the state level, the Regional Transportation Plan (RTP) Guidelines provide guidance to implement the policy set by the CTP, the System Plans inform the RTPs, and the Metropolitan

Planning Organizations (MPOs) work with the public on developing the RTPs. System plans include the Transportation Corridor Report (TCR), Corridor System Management Plans (CSMP's) or Route Concept Report (RCR), the District System Management Plans (DSMPs) and the Transportation System Development Plan (TSDP) which then inform the RTPs. If you have kept up with this alphabet soup you are likely a Transportation Planner. The transportation planner hears this and says "That's Right". The natural resource regulatory biologist says "Huh? Where do our concerns fit in?" Sometimes it is all about understanding each other's mission, processes, and terminology. Major challenges include difference in perspectives, terminology and the educational gap in terms of understanding the procedures within transportation planning in order for the agency staff to understand how and where they might fit in to the process. For Caltrans planning staff understanding all the nuances of environmental regulation helps clarify the need for early participation of FWS staff.

Perspectives

A major dilemma stems from different perspectives; mission statements and objectives are at odds with one another. Transportation planning agencies are focused on moving people and goods efficiently and economically. Natural resource agencies have the mission of conserving the natural environment and habitats necessary for the protection of plants, fish, and animals. Environmental considerations do not inform transportation solutions. Natural resource conservation is an externality; it is not currently one of the drivers that dictates what highway improvements are needed. Conversely, conservation strategies developed by regulatory agencies typically focus on recovery of the species and habitat conservation and not necessarily on the anticipated travel demand.

The FWS Regional Office in California prepared a guidance document, "A Guide to Integrating Conservation Planning and Transportation Planning and SAFETEA-LU 6001- metropolitan/local regional planning," (Gerson 2011) for planning organizations to help integrate conservation into infrastructure plans. This guidance paper shares FWS's perspective of SAFETEA-LU concepts with Caltrans planning staff and transportation planning organizations. It is the first step in translating regulations at a local level scale to the regional level and making the transportation planner more familiar with the regulatory demands at the project delivery end of transportation projects.

Traditionally it may have been thought that FWS can meet their mission at the project level. However, to aid in the survival and recovery of threatened and endangered species, it is more effective to evaluate the species across their geographic distribution range and to include a larger regional conservation perspective.

Perspectives also differ within Caltrans depending on what professional background people have. This was highlighted recently during a brainstorming session between transportation planners and environmental biologists, while evaluating a new transportation corridor planning method. This method would include a concise narrative describing any major environmental issues and conditions found along the corridor route. Categories would include, but are not be limited to, environmental functions such as habitat connectivity, special status species, wetlands, climate change issues such as sea-level rise, and special land designations. Each category would then be

rated (low, medium or high) as to probability of issues related to that environmental function arising during project development and environmental analysis.

During the conceptual development of this planning aid, different perspectives within Caltrans rapidly became evident between the environmental analysis branch and the transportation planning branch in determining environmental categories. For example, as environmental function categories were developed, the transportation planners identified 'bodies of water', immediately thinking of water quality and stormwater issues during project construction. Although relevant, the biologists, who typically work at the project level and deal with natural resource agencies, were inclined to replace that term 'bodies of water' with 'wetlands', associated with Endangered Species Act (ESA) species and Clean Water Act categorizations.

There is a knowledge gap in how resource agencies understand the transportation process and how transportation planners understand resource agencies' needs and requirements. For example, a regulatory biologist for a resource agency generally interacts at the project development and permitting stages, long after long-range planning is completed, and often past the CEQA/NEPA document development. This current sequencing may result in the resource agency staff having to deal with a transportation corridor bisecting an important wildlife movement corridor or going through important special status species habitat. The resource agency recommends a remedy like a wildlife crossing as part of the project and might wonder why they are told it can't be done. The transportation agency says there is no funding programmed in the project for what they consider a major modification to the project funding and scope.
Regional transportation planning has the same benefits and objectives as regional conservation strategy planning—looking at the big picture of an area and identifying a plan that allows for optimum strategies for the area to achieve the goal efficiently and economically.

Funding/'It's Too Late'
This leads us to funding and the 'it's too late' dilemma. Pursuant to the ESA, the FWS may need to permit or authorize proposed projects that may affect threatened and endangered species or critical habitat. This permitting/authorization occurs at the project approval phase of transportation project. But by that phase, regional planning is complete and design alternative selections of the individual project are either completed or nearly completed. Long-range planning and project funding have been allocated and costs of the project have been estimated. It is generally at this point when the transportation agency requests an ESA consultation to receive a permit or authorization from a regulatory agency.

The FWS biologist consults on the project, conducts an analysis of impacts of the project to listed species, and reviews and recommends possible avoidance and minimization (conservation) measures to reduce natural resource adverse effects from the proposed project. The dilemma occurs when: planning, programming and preliminary design has been developed throughout the planning stages, with little consideration of the need to incorporate conservation measures. Now, at the project delivery stage there is less flexibility in the design to incorporate certain conservation measures. The ideal situation is where natural resource areas of concern are identified and conservation becomes part of the transportation planning process. As a result

there is more predictability of the issues at hand which can yield time and cost savings "down the road".

Incorporating conservation measures to avoid or minimize adverse effects to threatened and endangered species or sensitive habitats when possible at the regional planning level or long range planning level may help expedite the subsequent permitting process while promoting the conservation of natural resources and may be more reasonable economically. The programmatic scale of the planning effort allows for the application of a consistent set of avoidance and minimization measures at the individual project level. To effectively mitigate for potentially significant adverse effects due to habitat fragmentation, careful planning is needed in the placement, configuration, and design of transportation corridors. Thoughtful planning for listed species such as San Joaquin kit fox, desert tortoise and bighorn sheep that require vast acreages to maintain viable populations would likely confer conservation benefits to less widely distributed species as well.

Thinking about avoidance, minimization or mitigation measures at the regional or transportation corridor level may also help resolve the Funding/It's too late dilemma. Infusing initiation of the discussion of environmental considerations early in planning can inform programming decisions and allow transportation agencies to realize the costs to address regional and cumulative effects of the transportation system. Developing avoidance or minimization measures at the project delivery phase may be cost prohibitive or have engineering constraints, leading to higher costs for mitigation. Early engagement may also provide opportunities for partnering on conservation strategies with other agencies.

Early Coordination

The last dilemma: although resource agencies promote early coordination and early conservation planning, many have no funding mechanism to provide meaningful input at early stages of transportation planning. In a recent government report, *Highways and Environment: Transportation Agencies Are Acting to Involve Others in Planning and Environmental Decisions,* (Government Accountability Office 2008), several challenges were cited in getting such input, including (1) the limited availability of funding and staff at resource agencies; (2) limited incentives for resource agencies to contribute during planning, since early involvement is not part of these agencies' missions or experience; and (3) unfamiliarity on the part of resource agencies and planners with each other's roles and processes. State Department of Transportation and Metropolitan Plan Organization (MPO) planners' progress in developing consultation relationships with resource agencies has varied, and those that had strong prior relationships with resource agencies are advancing more quickly.

But, getting resource agencies to the table to participate in early coordination at landscape level planning can be difficult. The regulatory aspect of the ESA can promote a reactive, rather than a proactive, approach. It may be helpful for the planning agency to provide the FWS with opportunities for early engagement, including orienting meetings specifically to address the FWS's responsibilities and issues. As a part of active engagement, we suggest MPOs think about what information they are looking for, and outline how and when the natural resource agencies

will participate. Interaction needs to be an iterative process throughout the development of long-range plans, and goals generated must be reflected in the planning documents.

Data Needs

Understanding what data are appropriate to use in a regional level analysis is another area that needs to be better understood. Understanding why an individual travels down a road might be important to know for transportation planning but it doesn't directly inform planners as to what freeway improvements are needed. Similarly, knowing a specific observed location of a species doesn't necessarily translate directly into a Route Concept Report in terms of what potential considerations are needed for that particular species. A lot of traffic data are collected and analyzed and demand is modeled in order to provide information for a 20 year horizon; natural resource considerations at the regional level have similar data needs. Also, different regions have different data available which may result in the different types of data used early in planning. The issue of scaling up data to help support or inform regional scenarios is something that takes time and additional effort. Since natural resource data often reflects systems or species that may move or change over time, identifying the appropriate level of data and how it should be used in a 20 year planning horizon requires collaboration and coordination between the Transportation Planners, Resource Agency Staff and Biologists. The following are some California initiatives that Caltrans and FWS, and others, are implementing, to bridge the data gap between regional approaches to transportation planning and project-specific conservation measures.

ELEMENTS OF THE SOLUTION

California has collaborated on a set of solutions to address the challenges of differing perspectives, early coordination, data needs, advancing the considerations of environmental resources in transportation planning policy and practice,

California Essential Habitat Connectivity Project (CEHC)

One issue that is difficult to address at a project by project level is habitat connectivity. Since much of the infrastructure built in California and other states preceded environmental laws and regulations and fragmented important wildlife habitat, we now find ourselves in the position of having to modify existing infrastructure to address habitat fragmentation and to provide habitat connectivity for species movement. Identifying important movement corridors facilitates planning infrastructure improvements. Therefore, Caltrans partnered with CA Department of Fish and Game (DFG) in scoping a State Planning and Research Special Project to model essential habitat connectivity in the state. This was a multi-agency collaborative project to develop a statewide wildlife habitat connectivity map and strategy (Spencer, 2010). This effort highlighted several different ideas on how this could be done for the state and provided an opportunity to develop a framework that would consider these different perspectives. Using innovative Geographic Information System (GIS) modeling technology, a technical advisory team identified large blocks of existing natural ecosystems and modeled potential linkages to provide spatial and functional connectivity for long-term species protection and biodiversity. A map was created and the team developed a strategy framework for the next steps for planning at the regional and project level.

Regional Advance Mitigation Planning and Statewide Advance Mitigation Initiative Efforts
Development of a method for advancing mitigation considerations in regional planning is a new challenge. Caltrans along with other infrastructure and regulatory agencies in CA are evaluating ways to advance the analysis and implementation of mitigation for laws such as Endangered Species Act (state and federal), Clean Water Act, National Environmental Policy Act, and California Environmental Quality Act through two initiatives.

Regional Advance Mitigation Planning (RAMP) is a collaborative multi-agency group who explores scientific innovations and policy hurdles in developing a statewide strategy for long term conservation and to mitigate environmental impacts far in advance of project activities, using a landscape/ecosystem strategy and spatial modeling and mapping. The development of a MARXAN model GIS analysis is being used in concert with a planning framework (Thorne 2009). This is another example of trying to create ways to scale natural resource data up in a way that is useful for planning at the regional level and trying to consider environmental resources, consultation and mitigation opportunities early in the planning process. Implementing mitigation in advance of infrastructure projects does present some challenges that the multi-agency group is trying to address, including: funding, responsibilities of implementation and regulatory assurances, and a process to account for mitigation credit and debit.

Statewide Advance Mitigation Initiative (SAMI), led by Caltrans, is a collaborative multi-agency effort which focuses on the implementation of project mitigation in advance of project development through the preservation and/or restoration of acquired lands and is designed to compensate/mitigate project impacts that cannot be avoided or minimized to a reasonable level on-site.

These efforts will be achieved through the establishment of mitigation banks, conservation banks, and/or in-lieu fee programs. Memorandums of Understanding have been signed by multi-agencies for collaboration which have fostered the institutional support to work collaboratively internally and externally to develop this initiative. Frameworks are being developed and/or finalized to identify proposals for supportive policy and legislative revisions, and developing procedural guidance documents and pilot projects. New, innovative GIS modeling techniques are being developed and tested and will provide an opportunity for institutionalizing advance mitigation procedures within Caltrans and perhaps other agencies.

With all the new GIS technology being developed, it is getting easier to identify environmental resources and develop alternatives that have fewer impacts on special status species and ecosystems. GIS analysis can help identify those areas of environmental concern and help compare proposed plans to help inform Blueprint Plans or Scenario Planning.

Planning Policy and Guidelines, Blueprint Planning and Scenario Planning
In addition to the initiatives described above, Caltrans is working on several fronts to institutionalize and provide guidance on SAFETEA-LU 6001 requirements. The Draft Update of the California Transportation Plan 2030 was specifically updated to reflect new SAFETEA-LU

requirements. This document helps sets the policy for the state and promotes an integrated approach to transportation planning through various planning approaches, data considerations and identification of agencies to consult with and methods for engagement. Future iterations of the CA Transportation Plan will likely continue to discuss new policies, strategies and best practices associated with environmental considerations. Utilizing data in statewide planning is a new idea that is being explored in a statewide planning effort called the California Interregional Blueprint (CIB). The CIB intends to integrate statewide and regional transportation and land use goals and provides a new opportunity to further integrate environmental considerations early in statewide planning.

Two Senate Bills passed in California are furthering the integration of environmental considerations into long-range transportation planning. Senate Bill (SB) 375 (Steinberg 2008) establishes the requirement for MPOs to develop sustainable community strategies (SCS) and alternative planning strategies (APS) to promote compact and infill development and Greenhouse Gas (GHG) emission reduction. SB 391 (Liu 2009) also requires the State's long-range transportation plan to meet California's climate change goals under Assembly Bill (AB) 32 (Nunez 2006). These two bills primarily promote the integration of land use, transportation and GHG reduction planning. However, these considerations are likely to have additional conservation benefits associated with sustainable planning strategies that include conservation of habitat, wetlands, and farmland. In response, the Regional Transportation Planning (RTP) Guidelines were updated in 2010 to reflect the new requirement for MPO's to develop strategies for regional GHG reduction in RTPs.

Specific consideration of natural resources as a component of the Sustainable Communities Strategies and the Regional Transportation Plan Checklist was revised with specific references to SAFETEA-LU: Consultation/Cooperation and specifying mitigation activities. These considerations may include early consideration of neighboring land uses and/or integrating other plans such as existing Habitat Conservation Plans or recognized protected conservation areas and taking an ecosystem strategy approach into transportation corridor studies expected over the life of the long range transportation plan. Project by project conservation measures often overlook regional and ecosystem scale impacts to sensitive species and habitat, thereby missing critical opportunities for efficient and biologically relevant conservation. The key is to identify ecologically important natural resources that should be protected and avoided, while flexibility still exists in how the region is planning to grow. For example, scenario planning was used by several counties in the San Joaquin Valley, which entered into a partnership with the University of California (UC) Davis. The Information Center for the Environment (ICE) at UC Davis provided geographic information system (GIS) data and growth allocation build-out scenarios. The region faces many challenges with respect to its capacity to accommodate a dramatic increase in population while maintaining its environmental infrastructure and preserving its diminishing natural resources. In this study, all scenarios applied the same set of parameters, including specifically identified natural resource conservation/protection parameters (Beardsley, Roth, and McCoy 2007). The use of natural resource data in scenario planning and outreach during the RTP process can help integrate natural resources into the decision making process early. Caltrans also has a Blueprint Planning Grant Program that provides additional funds to regional transportation authorities to improve integrated planning. System Planning Guidelines

are also being evaluated to further institutionalize similar environmental analysis procedures to inform route concept reports and long range corridor plans.

DISCUSSION

It is not business as usual. Conservation lands acquired early in the planning stage of projects can use a regional conservation strategy, resulting in less time and less cost for the action agency during the regulatory process. While advancing environmental planning and mitigation for transportation has these anticipated savings, changes in programming estimation practices as well as fiscal assurance discussions and contractual agreements with the resource agencies may be necessary to codify the investment.

For resource agencies, it results in greater conservation value, effective linkages for species movement, and no temporal loss from construction activities. Using the FWS' MPO guidance paper will assist transportation planners by understanding natural resource regulatory needs and be able to anticipate and incorporate avoidance, minimization, and mitigation measures when possible in the early planning stages of transportation plans and projects. Understanding perspectives will likely help the conversation early on and will help identify the challenges that may still exist with early considerations, funding, or advancing mitigation activities.

The CEHC is the first step identifying species movement linkages statewide; advance mitigation develops the framework to conserve important habitat on a regional scale while achieving transportation objectives and providing compensation for potential adverse effects of those projects' activities; and the FWS' MPO guidance paper introduces long-range transportation planning agencies to regulatory resource agency needs. All steps build on each other.

There is a need to institutionalize these practices so considering environmental resources early, coordination/consultation, and identifying mitigation strategies become business as usual. Continuing to promote Blueprint Planning, scenario planning, data development, education/training, time for coordination and associated funding is essential. Truly integrating the goals of transportation planning, goals of conservation planning, and developing communities requires time, money, expertise and an understanding of different perspectives.

State regulation may further the implementation of SAFETEA-LU 6001 considerations. SB 375 and SB 391 are fueling state priorities for discretionary planning funding as well as providing a framework for regional and local land use decisions to trend towards compact development and sustainable strategies in growth decisions.

Once techniques, tools, data, and procedures are developed, outreach and training of the different professions involved in integrated planning should be conducted. Each profession has something to contribute to these considerations in long range planning.

These steps taken to improve procedures, policy, practice and collaboration for environmental considerations in long range planning have proven to provide benefits in the short term. Through collaboration the transportation and resource agency communities and professionals in California have developed common approaches to understanding difficult conservation issues, to bridge the

gap in understanding of missions and goals, and to partner on research, analysis frameworks and procedures.

CONCLUSION

Multi-agency partnerships among resource/regulatory/and infrastructure agencies are the key to building trust to achieve an ecosystem/landscape approach to natural resource conservation. It takes time to frontload conservation planning and transportation planning at a regional scale and to institutionalize practices and understanding. Using a regional conservation strategy early in transportation planning will result in better informed infrastructure planning and greater flexibility in meeting mitigation/conservation needs. Lastly, as professionals attempt to address environmental concerns early in planning, the expertise, tools, and the institutional support will likely improve. These initial short term successes will help fuel the long term process of integrating the broad goals of conservation and transportation needs.

Biographical Sketch

Roberta Gerson
Regional Transportation Coordinator
U.S. Fish and Wildlife Service
Pacific Southwest Regional Office

Roberta Gerson is the U.S. Fish and Wildlife Service's (FWS) Regional Transportation Coordinator, Sacramento, California. She is responsible for administering the California Department of Transportation (Caltrans)/FWS reimbursable agreement, troubleshooting and negotiating Caltrans project issues under Section 7 of the Endangered Species Act when issues are elevated, and working with Caltrans and FWS Field Offices for better coordination and collaboration. Roberta has a B.S. in Biology and an M.S. in Forestry. She has worked in a myriad of positions, as a University of California and Florida research biologist, to a timber forester and investigator with the U.S. Forest Service, to her past 11 years in Section 7 with the U.S. Fish and Wildlife Service in California.

Amy Pettler Bailey
Senior Endangered Species Coordination
California Department of Transportation

Amy Pettler Bailey is currently a senior wildlife biologist for the California Department of Transportation Division of Environmental Analysis. She acts as a liaison to Caltrans district biologists by providing technical assistance, guidance on policy and regulations, and tool and handbook development. This includes overseeing and setting guidance and guidelines for endangered species coordination and wildlife biology as they pertain to transportation project development and implementation process. A more recent focus has been on finding ways to integrate statewide and regional planning efforts as they related to natural resources per SAFETEA-LU. Prior to her current position, Amy has had experience in planning with city, state and federal entities and is a certified planner. She graduated from University of California at Santa Barbara with a degree in Environmental Studies and Business Economics.

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