

PPACG

State Highway Research Project (2013 – 2015)

Planning Challenges and Key Issues

The SHRP2 advisory committee provided agency feedback on the identification and prioritization of species and habitat, provided feedback on the methodology, and information regarding projects they were working on. This project was very successful, although there were specific stages where problems and difficulties were encountered. Through identification of these issues hopefully other projects can apply this information which might enable their project to be smoother. The planning challenges and key issues are broken down into different categories.

Advisory Group Meetings

- The engagement of the Advisory Committee in the planning process was extremely helpful and allowed PPACG to anticipate and address several potential shortcomings in the data and methodology for the environmental impact analysis. However, the Advisory Committee's involvement did result in a few challenges of its own. Primary among these was aligning the vocabulary of the CNHP experts and PPACG staff with the terminology of the Advisory Committee members. When either CNHP or PPACG were discussing "projects," there was often confusion about whether they were referring to transportation projects or mitigation projects; the confusion emerged largely due to the verbal shorthand use of "projects" but the facilitator provided regular reminders that all participants should clarify which type of project they were referencing.
- Another challenge stemmed from the nature of collaborative processes, which is the logistical issue of scheduling Advisory Committee meetings at appropriate intervals in the process to ensure that they could provide meaningful feedback to CNHP and NatureServe in a timely fashion. Getting high-level conservation professionals together for a meeting is in itself a challenge, but sequencing these meetings with the deliverables of two teams of experts working to meet a contractual scope of work and a larger project timeline sometime proved difficult. PPACG was committed to ensuring that all Advisory Committee meetings would add value to the work of the experts and the advancement of the plan, but this often resulted in cancelling and rescheduling meetings in order to accommodate the changing deliverable schedule and/or changing plan schedule. This is a common issue in collaborative processes with fluid timelines and certainly no one is to blame, but it may have become tiresome for members of the Advisory Committee who would hold times in their calendars for months and then have a meeting cancelled for lack of sufficient content.
- Getting participation from some of the SHRP2 stakeholders was difficult because several entities could not participate due to the potential time commitment. This combined with

the delays in the RTP process made it difficult to have consistent meetings and to keep some stakeholders engaged throughout the process.

Data

Spatial data for conservation elements is often sensitive and not available for use in public planning processes (where precise locations of such elements would be revealed). Some of CNHP's sensitive species data are only available to public users at a resolution of four square miles, which is not sufficient for PPACG's planning needs. Data license agreements can ameliorate this issue somewhat, but not for observations recorded on some private lands. Colorado Parks and Wildlife (CPW) has an extensive database of fish collection points, but these data are also not freely available. The process for obtaining CPW fish data is laborious, and success is not guaranteed. This issue extends to some other CPW species data (e.g., black-tailed prairie dog) as well. Similar to CNHP data, protection of CPW data collected on private land is of paramount concern to the agency. Along this same line, mapped locations of significant cultural sites (archaeological, historical), when they exist, are also considered sensitive and very difficult to acquire. Other issues associated with data are:

- The IRMP only provides mitigation candidate sites for transportation projects, not other cumulative impacts from other development activities or potential impacts of climate change.
- Accessibility and quality of distribution data for conservation elements (e.g., fish, cultural sites).
- Data to support inclusion of cost in mitigation site selection.
- Availability of spatial data to represent "other ecosystem services."
- Complications regarding use of google maps or other online data serving platforms.
- Maintenance of the system (e.g., new data, "used" mitigation sites, new scientific information).
- Ecosystem services (e.g., wetlands for pollution filtration and flood control, carbon sequestration, nutrient cycling, and so on) are of crucial importance in supporting human communities. Thus, understanding impacts to ecosystem services and/or supplemental benefits of ecosystem services from mitigation projects is a highly desirable component of any regional mitigation plan. However, spatial data to represent these services is often lacking at regional scales. Mapping and/or modeling of some ecosystem services could be completed for future plan revisions, as time, funding, and scientific understanding allow.

Cost

Cost is, obviously, a very significant component of transportation improvements and associated mitigation activities. Ideally, land acquisition and mitigation project cost information would be

included in the regional analysis. However, ultimately any on-the-ground mitigation will necessarily be tied to one or more real estate parcels. Dollar value at the parcel scale is highly volatile, and sometimes not available at all. When parcel value data are available, they can be quite expensive to acquire. Alternatives to official parcel value data include modeling of market value (which may be more indicative of actual acquisition cost) or use of habitat condition as a coarse, non-monetary surrogate for restoration cost. This approach is based on the assumption that disturbed habitats will be more expensive mitigation options, since restoration will be required. Detailed indicators of habitat condition may not be available as spatial data at a regional scale, but level of disturbance models can be used.

Google Earth and On Line Mapping

The initial SHRP2 website was initially developed for a Google Earth platform but the Google Earth API has been deprecated as of December 15, 2014 and will remain supported until mid-December of 2015. Because of this, a decision was made within PPACG to pursue an Open Source solution to mapping to replace the Agency's Google Earth web mapping. PPACG is in the process of developing a new web mapping interface using GeoServer, a Java-based, Open Standards and OGC compliant web mapping tool that utilizes several Open Standards such as Web Map Service, Web Coverage Service and Web Feature Service.

The use of GeoServer will allow PPACG to maintain control over the spatial data within it's own data servers, which is an important requirement given the sensitive nature of some of the Agency's datasets. GeoServer utilizes PostgreSQL, an Open Source object-relational database and Post GIS, an Open Source spatial database extender for PostgreSQL that adds spatial functionality.

It is anticipated that the early versions of the PPACG GeoServer-based web mapping interface should be available for testing in the first quarter of 2016.