An Application of SHRP2’s
Transportation for Communities Advancing Projects through Partnerships (TCAPP):
A Case Study in Colorado Springs

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Abstract

In 2011, the MPO of the Colorado Springs region volunteered to test an innovative web-based approach to planning called Transportation for Communities Advancing Projects through Partnerships (TCAPP). This tool was developed and launched by Strategic Highway Research Program (SHRP2) funding. The process of learning, testing, applying and assessing the TCAPP for long range planning allowed PPACG staff to gain insights and recommendations on advancing TCAPP. PPACG also integrated a set of land use, conservation, and decision support tools with the TCAPP. Since the SHRP2’s TCAPP is transferable to other MPOs and regions, the information gathered in this report can extend the reach of this important web-based tool.

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INTRODUCTION

As web-based applications become more common for planning, education, communication and many other processes, it was simply a matter of time before a web-based decision-making tool was developed and tested for transportation planning. Just such a tool was the focus of a 2010-2011 effort by the Strategic Highway Research Program (SHRP 2) Capacity Project C01: A Framework for Collaborative Decision Making on Additions to Highway Capacity. A web-based tool called Transportation for Communities Advancing Projects through Partnerships (TCAPP) was designed in 2011 to improve how agencies develop, prioritize, and inform transportation plans and projects. Information and research reports about these and other SHRP2 projects are available at www.trb.org/shrp2.

The goal of the TCAPP website tool is providing a systematic approach for reaching collaborative decisions about adding highway capacity that enhance the environment, the economy, and the community and improve transportation. The TCAPP tool identifies key decision points in four phases of transportation decision making: long-range transportation planning, corridor planning, programming, and environmental review and permitting. TCAPP provides a framework for improving how to develop, prioritize, and inform transportation plans. Ideally, using TCAPP helps transportation and resource agencies work in collaboration to develop and deliver ‘the best’ projects, quicker. Information and the TCAPP program can be found at http://www.transportationforcommunities.com/shrpC01/. The live TCAPP program is available at this site; opening and navigating it while reading this paper will help to orient the reader and is recommended.

Since the TCAPP approach and associated web-based tool were new, a webinar demonstration was held to solicit volunteers to participate in a pilot test. Among the first volunteers was the Metropolitan Planning Organization (MPO) for the Colorado Springs region, the Pikes Peak Area Council of Governments (PPACG). The PPACG envisioned TCAPP as an innovative way to conduct the long range transportation planning process for an upcoming update to the MPO’s 2035 Regional Transportation Plan (RTP), the 2035 Moving Forward Update.

During 2010-2012, TCAPP was used by the PPACG to develop the 2035 Moving Forward Update. As a pilot test participant, the PPACG also stepped forward to volunteer to provide feedback on the specifics of how the TCAPP worked and did not work in the context of the PPACG planning process. The focus of PPACG feedback, and the focus of this paper, is on the procedural and technical aspects of utilizing the TCAPP tool to carry out the PPACG planning effort. An understanding of strengths and weaknesses of TCAPP, as implemented by PPACG for the 2035 Moving Forward Update, was developed by conducting a series of verbal interviews and requesting written comments from technical leads involved in the planning process throughout each step of the process. Feedback on TCAPP performance was also solicited from lead MPO planning staff. Input was received from the following entities: PPACG, U.S. Fish and Wildlife Service (USFWS), Colorado Natural Heritage Program (CNHP), as well as from each of the private firms that assisted in the process.

This paper provides a summary of general observations from both PPACG staff and technical leads, as well as specifics from the technical leads. Staff and technical lead input addresses which TCAPP aspects worked and which didn’t work in the context of the PPACG pilot test.
The paper is organized in six sections as follows:

1. Introduction
2. The PPACG TCAPP Pilot Test
3. PPACG TCAPP Self-Assessment
4. PPACG TCAPP Application Assessment
5. PPACG Integration of Technical Tools with TCAPP
6. Final Summary and Recommendations

1.1 BACKGROUND

The Pikes Peak Area Council of Governments is a voluntary organization of 16 counties and municipalities in southern Colorado. Its mission is to provide a forum for local governments to discuss issues that cross political boundaries, identify shared opportunities and challenges, and develop collaborative strategies for action. PPACG was designated the Metropolitan Planning Organization (MPO) for the Colorado Springs Urbanized Area in 1977. The population of the region is just over 600,000. In 2004, the City of Colorado Springs was noted by the Texas Transportation Institute as the most congested city under 500,000 in the nation. In response, the region approved a one cent sales tax dedicated to transportation improvements that is administered by PPACG. This generates approximately $65 million per year for the region. This contrasts with approximately $8 million annually in federal funds programmed through the MPO.

In 2008, PPACG completed its previous regional transportation plan. In part due to the public process, that plan was selected for Honorable Mention by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). Since that time, the Pikes Peak region has been losing high-tech manufacturing jobs, replacing them with much lower paying service based jobs. At present, military (five bases) and service sectors dominate the local economy. This change, combined with the recession, has created severe budget issues for local governments and has led to cuts in staffing. For example, two out of seven MPO staff positions at PPACG have been cut. Since the adoption of the 2008 plan, over half of the Transportation Advisory Committee (TAC) has turned over, with the most experienced members, including two with over twenty years on the TAC, leaving the committee. The result is a TAC with little knowledge of regional transportation planning.

The Colorado Springs Urbanized Area, situated in an alpine desert eco-tome, originally consisted of a mix of forested, riverine, wetland, and native prairie land types. Of the nearly 200 soils found within PPACG, only two have been identified as potential restoration soils, and thus suitable mitigation locations. Potential vegetation mitigation locations are closely tied to the type of wildlife they are able to support. Colorado Natural Heritage Program (CNHP) designates Potential Conservation Areas (PCAs), which are areas that can provide habitat and ecological processes upon which a species or community depends for its continued existence. These are also the areas with proposed future suburban development.

PPACG’s TCAPP planning process utilized creative approaches to try to engage resource agencies that were respectful of their time and budgets, and consistent with each participant’s preferred communication style. The desired outcome of this enhanced, long-range planning process was to identify and address complex dilemmas as early in the planning process as possible, and to ensure that decisions were supported through programming and project development.
1.2 Planning Challenges and Key Issues

In addition to addressing congestion and roadway maintenance, a key motivator of new roadway investments in the Pikes Peak region is economic development. As a result of several court cases and a large water supply project, there is a growing concern from stakeholders and regulatory agencies about water quality, quantity, and storm water runoff both within and downstream of the urbanized area. In addition, other key issues that have 'slowed down' new roadway investments in the region include protected species habitats. The aim of the 2035 RTP process was to actively solicit community and agency feedback on goals for interests that impact or are impacted by transportation investments. It was hoped that comprehensive analysis of the interrelatedness of these issues early in the long-range process could determine the investments that achieve or contradict adopted goals. The overriding goal was to plan so as to maintain a sustainable approach to transportation decision-making as described in FHWA’s ecosystem approach to developing infrastructure projects called ‘Eco-Logical’ – see: http://www.environment.fhwa.dot.gov/ecological/eco_index.asp.

1.3 Partners & Stakeholders

Figure 1 shows the organizational structure of PPACG’s planning process. It lays out the decision-making and working groups, and how they interrelate. Generally, information and products are developed by the advisors with support from the technical analysts and this information is then provided to the PPACG Board for final review and implementation.

FIGURE 1: Decision-Making Structure for PPACG’s 2035 Moving Forward Update

To better account for the needs and desires of agencies that impact, or are impacted by, transportation investments, PPACG requested and received participation in the process by agencies that
have not traditionally participated. The RTP advisory group that included these agencies, the Extended Transportation Advisory Committee (ETAC), included representation from Colorado Division of Wildlife, Colorado Department of Public Health and Environment, Colorado Department of Transportation, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Colorado Springs Housing Authority, El Paso County Departments of Economic Development and Community Services, El Paso County Department of Health, and other local or neighborhood organizations. The ETAC also included representation from PPACG’s Transportation Advisory Committee, which is made up of the transportation staff from local, member governments.

To support a small PPACG staff and to generate unbiased process results, all TCAPP visioning, goal-setting and scenario planning activities were led by a professional third party facilitator. The neutral facilitator’s approach was familiar to participants because the facilitator had facilitated various, unrelated activities with other governmental entities within the Pikes Peak region. The decision-making process used for all facilitated sessions was based on consensus versus rule by majority.

PPACG incorporated economic and land development planning throughout the transportation planning process beginning at the earliest stage, during socioeconomic forecasting as part of the regional modeling system. Coordination with each entity occurred through the committee structure in Figure 1 and during working meetings necessitated by the forecasting process.

2 THE PPACG TCAPP PILOT TEST

During development of the 2035 RTP update, PPACG followed the process outlined in the TCAPP for long-range planning. This included developing a timeline for the participants and TCAPP tasks. The PPACG also developed a work plan that included each of the TCAPP steps to be tested. These documents were used throughout the planning process by PPACG staff and consultants to ‘check’ that they were following each step documented in TCAPP. The participants used the timeline and work plan up to the point of drafting the final PPACG RTP document. A comment was made by a team member that all the steps documented in TCAPP are things they ‘already did anyway,’ but what was different was the focused inclusion of other agencies’ goals and desires for the social, economic and environmental outcomes in the transportation planning process. These elements are outlined in the Integrated Ecological Framework (IEF), a module of TCAPP.

While the TCAPP website was not used consistently by all participants, it was used by each of the planning process technical leads. These people were familiar with the different aspects of the TCAPP process including the use of the Integrated Ecological Framework (IEF) whereby conservation targets and goals were considered alongside transportation targets and goals early in the planning process. Specific comments regarding various individual aspects of the TCAPP website are difficult to make due to the evolutionary nature of the website during the project. PPACG put considerable effort into recruiting non-transportation agency stakeholders. This included writing formal invitation letters to the agencies to incentivize their participation. Many participants commented that the IEF/Eco-Logical concept helped bring the environmental staff into the long range process much more than previously. For instance, the U.S. Fish and Wildlife Service participated in the PPACG planning process for the first time ever. The invitation to join in the MPO planning process was the first that one USFWS employee had seen in her career. Some agencies participated beyond doing a test of the TCAPP website; they were also involved in
some TCAPP sponsored collaboration training which helped to familiarize them with the TCAPP website and concepts.

3 PPACG TCAPP SELF-ASSESSMENT

The TCAPP procedure involves a first step of gathering information on the various participants by engaging them in a self-assessment survey regarding their agency’s concerns. In general, the website was understandable and useful in this regard. Everyone interviewed was aware of TCAPP, and most had utilized some of its content. It was commented that the ‘materials were good’ and that it was a ‘very good process’ but that ‘some people are obviously not (philosophically) ready for it yet.’ Most commented that the information on the site was helpful in communicating the value of an enhanced planning process. It seemed as though TCAPP was helpful in a general sense of documenting a planning process that PPACG had already been using in some form, and therefore gave them more leverage to gain stakeholder input from agencies that impact or are impacted by transportation investments and conduct more rigorous analyses of these inputs and their consequences. In addition, the consultants involved in aggregating data and building the scenarios for evaluation also utilized TCAPP in carrying out ecosystem scale analyses and decision-making.

3.1 PPACG Self-Assessment Process

The online self-assessment survey was provided to advisory committee and partnering agency representatives in late October 2010. On November 10, 2010, after receiving numerous calls with questions from those filling out the survey, PPACG sent out a customized email as a reminder for participants to follow up.

3.2 PPACG Self-Assessment Recommendation

It is recommended that some other way of assembling the individual results for examination by planning staff be implemented. It also became apparent that the phrasing of the initial version of this survey began to disfranchise local entity planning staff. They communicated that they are significant decision-makers in the transportation planning process and didn’t believe that this was reflected on the website descriptions. This issue has been, to some degree, addressed in the ongoing improvement of the website.

4 PPACG APPLICATION OF THE TCAPP TOOL

4.1 PPACG TCAPP Application

The following section steps through each of the core elements on the TCAPP website (see Figure 2) and describes how the PPACG and project participants handled and reacted to the web-based tool. Recommendations are provided where they emerged from the process. Note that the TCAPP website has evolved in some areas from the version used by the PPACG.

LRP-1: Approve Scope of LRTP Process: This was completed prior to beginning the SHRP2 project.

Recommendation: This is a standard planning step that is well-established within MPO and local planning agencies. FIGURE 2: TCAPP Long Range Plan Website Step Structure
LRP-2: Approve Vision and Goals: To kick-off the PPACG planning process, a series of four workshops were held to obtain input early in the process of developing goals and performance measures, and to learn about local issues, community characteristics, and community contacts. The workshop topics included transportation, social/community, economic development, and environment/conservation. Participants were recruited from PPACG advisory committees and member government commissions and boards interested in transportation planning in the Pikes Peak region. They were also open to the public. One unaddressed comment made during this process was that the website seemed to assume that this was a new, ‘from scratch’ process and not the next iterative update of the RTP through an existing, established process. The stakeholder process resulted in the proposal of thirty four goal areas. A hard copy handout was created to assist with this effort because it became apparent that somewhere around 25% of participants were regularly accessing the TCAPP website. It also became necessary to have hardcopy information available at the meetings to keep ‘walk-ins’ on the same playing field.

Recommendation: It is recommended that some sort of downloadable hard-copy or suggestions on how to create a hard-copy, of key information be developed. At the end of the process seventeen goals and associated performance measures were adopted by the PPACG Board. This is an increase of eight goals over the nine goals that had been developed during the previous Regional Transportation Plan. All of the new eight goals are only indirectly related to traditional transportation planning. There were several comments made that the consistency in involvement by stakeholders and the regular communication between the committees and the various task forces resulted in more buy-in, trust and confidence in the outcomes and results than in previous years. Generally, there was good involvement by the natural resource stakeholders in the region especially for the planning scenario workshops.

LRP-3 Approve Evaluation Criteria, Methods and Measures: There was some confusion about what exactly this step entailed. At PPACG this has traditionally been asking: “What is the relative importance of each of the goals in selecting projects?” PPACG staff sought evaluation criteria weighting input from both the technical and non-technical advisory committees. Due to the polar discrepancy between certain factions about the importance of non-transportation criteria in selecting transportation projects, a statistically-valid random public phone survey of 500 cell phone and land-line users, based on geography, age, income, and race was also conducted to query the public on how they would rank the importance of each evaluation criteria. The results from the survey were then averaged with results from PPACG’s standing Transportation (technical) and Community (non-technical) Advisory Committees. It is interesting to note that every criterion was selected as most important and every criterion was selected as least important by individual survey respondents.

A concern that began to surface at this point was linking RTP analyses to National Environmental Policy Act (NEPA) analyses. Neither the PPACG, nor the TCAPP differentiates between projects that may be funded by local funds and projects that may be funded by state or federal funds. All projects were analyzed equally, with knowledge and participation by resource and regulatory agencies. There were several comments that what this process was doing was making permitting of federal projects harder because those agencies could see the much higher ‘damage levels’ that were occurring and were going to occur from locally funded projects that they had had no idea about before.
The meaningful inclusion (impacting which projects do and don’t get selected into the fiscally constrained plan) of non-transportation factors really began to impact local entity participation at this point. During one ‘collaborative workshop’ the chair of the technical advisory committee announced that while she expected her desires to be incorporated in the final recommendation, there was no outcome that would actually result in her voting to approve the recommendation. It was also at this point that the traffic engineer from one entity stopped participating and began sending a planner from the Comprehensive Planning Department to the meetings. It is interesting to note that both of these individuals had publically stated that they were very supportive of a collaborative process prior to actually participating in the process.

**Recommendation:** The perception of risk associated with including non-transportation criteria and resources agencies in the process was due to uncertainty. This can be overcome with better inclusion of risk assessment addressing both transportation and non-transportation goals and impacts.

**LRP-4 Approve Transportation Deficiencies:** Due to local entity recommendations, the PPACG Board directed PPACG staff to not identify deficient facilities. The reasoning for this was that local entity staff had, in their individual local processes, already identified needed projects and any analysis by PPACG would create confusion.

**Recommendation:** Incorporation of local of local analysis results and/or consistent PPACG analysis of deficiencies is essential for risk assessment recommended per step LRTP-3.

**LRP-5 Approve Financial Assumptions /PRO-1 Approve Revenue Sources:** In Colorado, the MPO is decision-maker in name only. The Colorado CDOT provides ‘control totals’ that are the precise funding level by year for state and federal funds for both the RTPs and the Transportation Improvement Programs (TIPs). This RTP/TIP linkage was made stronger during the on-going enhancement of the TCAPP website.

**Recommendation:** There are no recommendations.

**LRP-6 Approve Strategies:** In lieu of a formal strategy development effort, local entities decided to submit projects that they had determined to be necessary during their local planning efforts. PPACG hosted a workshop on developing ‘green infrastructure’ as a mitigation method for the RTP. There was a coordinated boycott of this effort by several local governments. One potentially related aspect was that it became apparent during the scenario development that there are enough approved developments that continue ‘sprawl’ in the region to accommodate the majority of growth over the next 25 years and that entities were not willing or given authority to collaborate to find more suitable areas for this development.

**Recommendation:** There are no recommendations.

**LRP-7 Approve Plan Scenarios:** PPACG staff scored all submitted projects against all four future land use scenarios developed using the technical tools as described below. Approximately one fourth of the submitted projects were able to be included in the fiscally constrained long range plan. No funds were allocated to conduct the mitigation that will be required to implement the projects. It was found that the
projects that scored best did so regardless of the land use scenario under which they were scored, such that approximately 75% of the funding would be allocated to the same core set of projects irrespective of which land-use future was used. This is because these projects address current issues that are exacerbated by future development no matter where that development occurs.

Recommendation: There are no recommendations.

LRP-8 Adopt Preferred Plan Scenario: The three finalist scenarios were presented at the PPACG’s Scenario Planning Workshop on June 28, 2011. A set of innovative planning software and tools were used to develop and visualize these scenarios. A discussion of these tools is provided in Section 5 below –Integration of the TCAPP Technical Tools. Based on input from the workshop participants, these three scenarios were refined and then combined to create a single ‘preferred growth’ scenario. Despite the extremely collaborative nature of the effort, for the first time in memory the Preferred Scenario was not adopted unanimously. This is likely due to political issues unrelated to the TCAPP process. It is interesting to note that many of the projects submitted by the local entities for programming in the TIP (PRO-3) and subsequently funded by the PPACG Board of Directors had not been included in the RTP project list due to negative impacts upon non-transportation interests. This necessitated PPACG preparing an RTP amendment to include those projects selected for funding and removal of a similar costing set of projects from the fiscally constrained RTP list; thereby effectively negating the effort to include non-transportation considerations in the RTP process.

Recommendation: There are no recommendations.

4.2 Overall Findings

Benefits

The change in the PPACG planning process to integrate more non-transportation considerations not only resulted in utilization of more comprehensive data and analyses, but also resulted in consideration of issues that wouldn’t have come out without having partner agency experts participating in the decision-making process. One example of this was consideration of the impact of noise on particular species. In addition, it was commented that participating in the planning process, the natural resource agency staff ended up with a better understanding of the transportation planning process, and saw how their input was influencing the planning outcomes which kept them engaged. Some PPACG staff felt that the increased stakeholder involvement resulted in significant improvement to the outcomes of the 2035 planning effort. Stakeholder input was taken and integrated into the planning process at several points, which resulted in the stakeholders being more confident that their input was being utilized at the regional level and thus they felt more invested in the process. In addition, when the selection of the preferred scenario was completed most stakeholders felt comfortable with the decision, even though there were shortcomings to the final scenario, because they understood why and how this scenario was selected.

Other Identified Issues

Delays in the RTP process occurred due to issues such as reduced funding resulting from the recession, turnover of technical staff, reorganization and consolidation of state agencies, and a significant turnover of Board of Director members at PPACG. These realities greatly impacted the ability of PPACG
to keep some stakeholders engaged throughout the process. In addition, some felt that participation by federal staff was sometimes lacking because the stakeholders meetings were held in Colorado Springs and most of the federal staff are located in Denver. PPACG discussed the possibility of having one of the meetings in Denver but the number of staff that would have had to travel to Denver would have been prohibitive.

In addition, although most of the stakeholders felt that collaboration opportunities were improved during the 2035 LRP process, some of the contractors involved in the technical analyses felt that the process of developing the scenarios would likely have gone smoother if the various technical teams had met on a regular basis and if coordinated results from these technical teams were communicated regularly to the PPACG advisory group.

Also, at least two people interviewed commented that a major challenge was the different and continually evolving perspective of local entities (county, city, parks, etc) versus state and federal agencies. While at the outset there was universal approval of a collaborative approach to planning, it became apparent during the conduct of the process that a growing number of the local entities did not actually like the results from the changes in the planning process. They made statements that they didn’t ‘understand the point’ and didn’t see any potential benefits to transportation projects. They also were not comfortable with having federal resource and regulatory agencies involved in the long range planning process, especially when the vast majority of the projects are funded using the local sales tax initiative and therefore have no state or federal action. Whereas, the federal and state agencies, as well as PPACG staff, believed that there will be better overall outcomes from the new process due to the comprehensive discussion of desired outcomes and much more inclusive analyses.

It was not clear what the core reservations were from the local entities but it seemed to be a combination of lack of understanding about the potential benefits of the new planning process and the fact that the new process required ‘extra work’ (they were more comfortable continuing with the planning processes done previously). PPACG staff tried to do outreach and education with local entities but found resistance. Despite voiced support, in action, most local entities did not want to include non-transportation considerations into transportation planning and therefore did not attend workshops at the end of the process, despite PPACG outreach efforts. Some of this may stem from the local entities not being specified as having a ‘Partner’ role in the decision-guide. To address these perceptions, it is recommended that ‘Local Entity’ receive a separate called-out role in addition to the MPO, FHWA, State DOT, and Resource Agency.

Lastly, the process included in TCAPP of developing a vision, goals and criteria for measuring progress was the most difficult because most stakeholders has different opinions related to the environmental, socioeconomic, and cultural issues, etc. In addition, the process of developing goals resulted in too many (seventeen) goals that included overlap/duplication. Eventually, the goals were made more specific and duplication was eliminated but it was a challenging process. This is not a weakness in TCAPP but more just a factor of the challenges of collaboration.
5 INTEGRATION OF TECHNICAL TOOLS WITH THE TCAPP PROCESS

In this section, discussion will center on the tools provided or recommended by the Communities Advancing Projects through Partnerships (TCAPP). Similar to the advent of web-based decision tools epitomized by TCAPP, conservation, ecology and ‘place-making’ tools have proliferated in the planning field. Many of these tools are university or research center-based and are provided and supported at no charge. Others have shifted from free developmental tools to private enterprises. Specific information on the for-profit tools and the developmental work and reports fed into TCAPP can be obtained from the author of this report. The free tools/software included:

- N-SPECT - [http://www.ebmtoolsdatabase.org/node](http://www.ebmtoolsdatabase.org/node) - non-point source pollution and erosion comparison tool.

Most of the scientific and technical analyses done under the C18 project were done collaboratively to inform the Long Range Planning Step 8 (Adopt Preferred Plan Scenario) in TCAPP. This integrative work also built out from the TCAPP’s Integrated Ecological Framework (IEF).

The three analytical tools (NatureServe Vista, Marxan and N-SPECT) were used to analyze the ecological impacts of various transportation scenarios within the planning region of the Pikes Peak Area, and to assist PPACG in developing their preferred future development scenario. Detailed information on how they were used is available from the corresponding author. The results of all three analyses contributed to the development of PPACG’s preferred development scenario.

A place-making firm then created three future growth scenarios for the Pikes Peak region including (1) current growth trend scenario (utilizing past patterns and the existing Small Area Forecast); (2) an infill/cluster scenario that added density to downtown corridors and changed low-density subdivisions into clusters with higher density and mixed use included, and (3) a conservation scenario that avoided development in areas of high conservation value based on analyses described above. The three scenarios were presented at the PPACG’s Scenario Planning Workshop in June 2011. Based on input from the workshop participants, these three scenarios were refined and then combined to create a single ‘preferred growth’ scenario.

5.1 Challenges of using the Technical Tools

Although participants reported that it was clear that the PPACG staff had utilized the TCAPP and IEF steps to guide their ‘internal’ planning process, these connections between the TCAPP framework and the planning process were not clear to the natural resource agencies involved in the planning effort.

It was commented by one natural resource agency that looking after-the-fact at the TCAPP and IEF steps; it seemed that PPACG did follow the steps described. This agency practitioner commented that their involvement was included for the following two IEF steps, and not some of the earlier or later steps. They commented that they didn’t get involved in some of the earlier steps because these steps were a bit out of their ‘range of understanding or interest’ and that some of the visioning and data integration work...
was done prior to their involvement. This person was unaware of the status of the steps beyond Step 5. Thus, it sounded like an in-person training to make the transportation planning process clearer to the natural resource agencies would have helped them understand why they were only involved in parts of the process and how their input influenced the outcomes. Based on input received, one weakness in the stakeholder involvement process was the absence of input from some of the contractors that led the conservation analyses. These contractors felt that they had a great deal of expertise that could have contributed to the scenario review and selection process, and felt the opportunities to provide input could have improved the final outcome. Because of this it was unclear how much the conservation analyses contributed to the final decisions.

5.2 Benefits

Using Integrated Ecological Tools = Better Environmental Outcomes: From the perspective of one natural resource agency that was involved in the PPACG planning effort, following the IEF steps likely resulted in a ‘better understanding of the effects of the different transportation scenarios and environmental outcomes that were somewhat surprising.’ They commented that they were not sure if following the IEF resulted in the scenario development process being ‘more efficient’, but they felt that the process ‘improved the environmental outcomes’, and made the planners from the region ‘re-think some assumptions.’ One participant, who has been involved in long range planning around the country for several decades, commented that the PPACG staff made ‘much stronger attempts to reconcile transportation and environmental needs and impacts’ than any other planning effort in which he had been involved.

Better Collaboration Created Understanding, Buy-in and Trust: As described in the ‘PPACG TCAPP Involvement Process’ section of this report, there were significant efforts made to ensure that stakeholders, particularly natural resource agencies, had full understanding of the transportation planning process. This inclusion resulted in the natural resource agencies having a better understanding of the transportation planning process, and resulted in the consideration of important natural resources issues because natural resource experts were involved in the review of land use analyses. Also, since these stakeholders saw how their input influenced the planning process, the fact that there were constraints that prevented the selection of the most beneficial scenario did not cause discontent. The stakeholders understood and agreed to the selection of the scenario that yielded the best outcomes within the limitations that were presented during the scenario evaluation process. Thus, there was a sense of informed consent and satisfaction on the final planning outcomes due to the inclusive and transparent collaborative planning process.

Interactive tools & scenario modeling supported collaboration and more effective decision-making:

The conservation and land use analyses conducted (and available from the corresponding author), were done under the guidance of the Integrated Ecological Assessment documented in TCAPP. These analyses provided the PPACG planning decision-makers with very good information on which to base their reviews and decisions. Furthermore, PPACG utilized scenario modeling as recommended under the TCAPP guidance and this supported a clear demonstration of the costs and benefits of each scenario being considered and vastly helped the evaluation and selection of the preferred scenario by stakeholders. Being able to provide stakeholders with an interactive view of scenario models allowed them to make changes/decisions and then ‘test’ the outcomes of various models. This sequencing was very supportive to
the selection of the preferred scenarios. Overall, scenario planning was the most helpful part of the process in terms of engaging stakeholders and making better informed decisions. In selecting the final preferred scenario Community Viz was very helpful in visualizing various options and supported the creation of a combined scenario that addressed transportation constraints while achieving the most environmental benefits.

6 FINAL SUMMARY & RECOMMENDATIONS

The following final set of recommendations has been collected from the overall TCAPP and technical tool integration process.

1) Collaboration Training: It was discovered that there are several definitions of collaboration; therefore, it is beneficial to provide all participants a working definition of ‘collaboration’ and to remind them of that definition prior to each meeting.

2) TCAPP Could be More Streamlined: One consultant commented that the TCAPP and IEF processes were ‘not as clean step-wise as the descriptions seem to suggest they should be;’ rather, the process was much more ‘iterative.’ They suggested that the process recommendations could be more streamlined, and suggested something similar to the FHWA scenario planning process guidebook, which includes six easy-to-understand phases. Especially as we begin to communicate the IEF to broader audiences, this consultant recommended something like the FHWA scenario planning guidebook with broader, easier to understand phases.

3) Challenge of getting input that is representative of all stakeholders: TCAPP could provide more specific guidance or case studies on processes that are effective for getting input from stakeholders. For example, PPACG utilized a workshop, focus groups and an online survey to get input from different parts of the public and private sectors. But due to the structure of the workshop certain views were dominant and some at PPACG felt that utilizing a general public forum may have supported better input from a wider variety of public and private groups than the workshop did. The workshop format, even with third party neutral facilitation, tended to result in input mainly from the stakeholders with strong personalities. It was noted that it is very challenging to engage local jurisdictional agencies during the selection of the preferred scenario because their interests lie with wanting to preserve funding going to their jurisdiction over most of the other considerations. Natural resource agencies had more incentive to participate and were happier with the collaboration process. Thus we need to have ideas in TCAPP on how to help local jurisdictions move beyond their individual funding needs.

4) Selecting the right mix of expertise and stakeholders: Presenting case studies or links to other resources with guidance in TCAPP would ensure that the correct experts and stakeholders are involved and invested in decision.

5) Key decision points: TCAPP could provide guidance for agencies leading planning efforts to outline and review key decision points to all stakeholders at initial planning meetings and ensure that all stakeholders are notified of meetings that will involve making these decisions to ensure the proper level of participation at the right time. In addition, TCAPP should recommend that a clear and formalized decision-making process related to natural resource goals and inputs is critical.
6) Collaboration & communication structure: TCAPP could list case studies or guidance on the creation of working groups (or subcommittees) to tackle specific issues and ensure that the outcomes feed back into the advisory team decision-making processes.

7) Data and Modeling Limitations: Based on comments related to data limitations it may be useful for TCAPP to include some requirements around data, including the types of data that should be utilized and how current it should be. Three types of impacts are described below.

7a) Goal Setting: In general, many of the stakeholders felt that baseline data was often not sufficient to support specific goal setting. For example, without knowing the current level of Total Maximum Daily Load (TMDL) of an agent, it was difficult to say what the level of (TMDL) reduction (5%, 10%, etc.) should be. Baseline data is needed in order to set meaningful, quantitative goals.

7b) Usefulness of Analyses for Project-level Decisions: A significant challenge to being successful in implementing an Eco-Logical approach to decision-making included the fact that the data used for the PPACG planning is neither current nor complete enough to guide regulatory decision-making. The data that is available is good for an initial evaluation and prioritization of conservation areas, but the development of more precise and complete data would be necessary to inform project-level decisions. One consultant commented that the ‘region-wide environmental sensitivity heat map was pretty good, but when it actually came down to deciding whether to put development in one particular place or another, the best thing was an expert or two who could advise on priorities and trade-offs.’

7c) Accuracy of Analyses: TCAPP may need to suggest some data standards and/or a more formalized process for decision-making for selecting conservation targets, goal setting, determining compatibility of species with specific land uses, and other similar inputs. A major challenge is the lack of time by experts to provide the best input and knowledge. In addition, these decisions are difficult due to the lack of relevant scientific research. The real or perceived uncertainty of the validity of this knowledge can greatly impact the assessment process. Currently, who and how these decisions are made vary across planning processes. For example, data necessary for determining most of the required parameters for environmental analyses, like minimum area required for a species to be viable, are rarely available, resulting in the use of proxies based on expert opinion. Often these experts are perceived to have bias by stakeholders who feel that their interests are negatively impacted by the information. In addition, the question of ‘how much of a species habitat can we lose (or should we preserve)?’ is a critical question that should be looked at on a state level, and then brought to each region. One strong objection that was emphatically provided is that there is not state level goal and so the region has to protect an inordinate amount of land to make up for it. Specifically, local stakeholders would like a statewide species protection plan and Colorado does not have this and there is no path or process for developing one. In the absence of a formalized process, these decisions were left on the shoulders of a few key experts or left to transportation planners.
In addition, the data analysts involved felt that rather than relying on the same datasets repeatedly, there should be some level of initial data requirements for TCAPP. Participants should be made aware of data deficiencies and gaps early on so that data development priorities can be identified and data development investments can be agreed upon and made over time. Data development goals should be met in concert with ground-truthing and model verification exercises to ensure the models actually work. In addition, it is critical to make clear what type of decisions the scenarios can inform based on the precision, currency and completeness of the data used. One consultant commented that they would like to see more data on ‘compatibility of species with different land-use types’ so that we know what kinds of impacts different species can tolerate.

In all these cases, it is very challenging due to the lack of data that exists in most places across the state that would support a scientifically-based decision that is quantifiable. It was suggested that TCAPP should suggest a way to ‘capture’ the information that is brought into the planning process via expert opinion so that this information would be documented and could inform future analyses.

8) Tools: TCAPP could include more specific guidance on the types of analyses that could improve decision-making processes and outcomes. On C-18 for example, in addition to the tools (NatureServe Vista, Marxan, N-SPECT) and analyses that were used, other recommended analyses that could be supported by tools include: predictive species habitat modeling, landscape permeability modeling, land use and natural resource compatibility modeling, and wildlife corridor modeling. It is important to note that even with tools that could assist with these types of modeling efforts they all would require data development needs.

Other (Non-TCAPP) related Challenges and Recommendations

The following are a few other challenges and related recommendations that came up during the evaluation process that cannot be addressed within the TCAPP related efforts.

Land use constraints limit ability to select least impact scenario: Although PPACG was able to more fully engage natural resource and local agencies, there were areas where master land use plans had already been approved and development rights secured, thus preventing the stakeholders from selecting the scenario that had the least environmental impacts. It is not clear that this kind of constraint could be addressed in TCAPP or other process guidance.

On-going involvement by natural resource agencies: Need to ensure that natural resource staff from federal and state agencies see the short-term and long-term benefits to their participation in planning, are mandated by their agency’s management, and have funding to support their involvement. Without this, ongoing participation and input will be very challenging since planning will be perceived as a non-trivial investment in time that will not result in any meaningful results. Agencies must view this work as intrinsic to their mission. The biggest challenge is continuing to get input from key stakeholders throughout the process especially from natural resource agencies.

Clearer and More Selective Engagement by Natural Resource Agencies: One natural resource agency commented that they had been pulled into so many different meetings around transportation and TCAPP
that they felt were not directly relevant to their work. It was not always clear how these different projects were connected.

In summary, the SHRP2 web-based tool Transportation for Communities Advancing Projects through Partnerships (TCAPP), integrated with a small set of freeware and related planning and environmental software tools, provides a modern and innovative means of taking long range planning to a deeper and more collaborative level.