

Appendix 1. Alternatives Screening Report

1. Introduction and Purpose of Alternatives Screening

The Proposed Project is described in detail in Section B of the SEIR. This document describes the alternatives screening analysis that has been conducted for the Proposed Project, supplementing the information presented in Sections E of the SEIR.

Alternatives to the Proposed Project were identified by the SEIR team (the CPUC and consultants, and the BLM) based on their potential to avoid significant environmental impacts, and by public agencies and the general public during the scoping period. The alternatives screening analysis was completed in order to determine the range of alternatives that would be carried forward in the SEIR. This report documents: (1) the range of alternatives that have been suggested and evaluated; (2) the approach and methods used by the CPUC and BLM in screening the potential feasibility of these alternatives according to guidelines established under the California Environmental Quality Act (CEQA); and (3) the results of the alternatives screening process (i.e., which alternatives are analyzed in the SEIR).

This appendix is organized as follows:

- Section 1 is an overview of the alternatives screening process;
- Section 2 describes the methodology used for alternatives evaluation;
- Section 3 presents a summary of which alternatives have been selected for full SEIR analysis and which have been eliminated based on CEQA criteria;
- Section 4 describes the alternatives and determines whether each is carried forward for SEIR analysis and explains why each was eliminated.

The Alternatives Screening Report is incorporated as Appendix 1 to the SEIR, providing the basis and rationale for whether an alternative has been carried forward to full evaluation in the SEIR. For each alternative that was eliminated from further consideration, this document explains in detail the rationale for elimination. Since full consideration of the No Project Alternative is required by CEQA, this report does not address this alternative (it is defined in Section E.6 of the SEIR).

1.1 Alternatives Development and Screening Process

One of the most important aspects of the environmental review process is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a Proposed Project. In addition to mandating consideration of the No Project Alternative, CEQA Guidelines (Section 15126(d)) emphasize the selection of a reasonable range of technically feasible alternatives and adequate assessment of these alternatives to allow for a comparative analysis for consideration by decision-makers. CEQA Guidelines state that the discussion of alternatives shall focus on alternatives capable of eliminating or reducing significant adverse environmental effects of a Proposed Project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. However, CEQA Guidelines declare that an EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote or speculative.

The proposed CRS Project is described in detail in Section B of this SEIR. This section describes the alternatives screening analysis that has been conducted for the proposed CRS Project and provides a record of the screening criteria and results that were reached regarding alternatives carried forward for full

SEIR analysis and alternatives eliminated. This section documents: (1) the range of alternatives that was suggested and evaluated; (2) the approach and methods used to screen the feasibility of these alternatives according to guidelines established under CEQA; and (3) the results of the alternatives screening. For alternatives that were eliminated from SEIR consideration, Section 4 explains in detail the rationale for elimination.

Alternatives were developed by the CPUC, BLM and SEIR preparers. In total, the alternatives screening process has culminated in the identification and preliminary screening of eight potential alternatives. These alternatives include various locations for the CRS substation as well as rotated configurations on the proposed site and installation of a sand shield to reduce or avoid biological resources impacts within the sand transport corridor.

2. Alternatives Screening Methodology

The evaluation of the alternatives used a screening process that consisted of three steps:

- Step 1:** Clearly define each alternative to allow comparative evaluation
- Step 2:** Evaluate each alternative in comparison with the Proposed Project, using CEQA criteria (defined below)
- Step 3:** Based on the results of Step 2, determine the suitability of the each alternative for full analysis in the SEIR. If the alternative is unsuitable, eliminate it from further consideration.

2.1 CEQA Requirements for Alternatives

After completion of the steps defined above, the advantages and disadvantages of the alternatives are carefully weighed with respect to CEQA criteria for consideration of alternatives. CEQA provides guidance on selecting a reasonable range of alternatives for evaluation in an EIR. This alternatives screening and evaluation process satisfies State requirements, which are described below.

2.1.1 CEQA Guidelines

An important aspect of EIR preparation is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a Proposed Project. In addition to mandating consideration of the No Project Alternative, the State CEQA Guidelines (Section 15126.6(e)) emphasize the selection of a reasonable range of feasible alternatives and adequate assessment of these alternatives to allow for a comparative analysis for consideration by decision-makers. The State CEQA Guidelines (Section 15126.6(a)) state that:

An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decisionmaking and public participation.

In order to comply with CEQA's requirements, each alternative that has been suggested or developed for this project has been evaluated in three ways:

- Does the alternative accomplish all or most of the basic project objectives?
- Is the alternative potentially feasible (from economic, environmental, legal, social, technological standpoints)?
- Does the alternative avoid or substantially lessen any significant effects of the Proposed Project (including consideration of whether the alternative itself could create significant effects potentially greater than those of the Proposed Project)?

Each of these bullets is described in more detail in the following sections.

2.1.2 Consistency with Project Objectives

The State CEQA Guidelines require the consideration of alternatives capable of eliminating or reducing significant environmental effects “even if these alternatives would impede to some degree the attainment of project objectives” (Section 15126.6(b)). Therefore, each alternative must meet most, but not all, of the project objectives.

SCE’s stated objectives of constructing the Colorado Rivers Substation are:

- Objective 1: Provide transmission access to potential future renewable resources in the Blythe area;
- Objective 2: Help enable California to meet its renewable energy goals; and
- Objective 3: Complete substation construction in a timely fashion to interconnect with generation-tie lines from the two approved solar power projects (Blythe Solar Power Project¹ [BSPP] and Genesis Solar Energy Project² [GSEP]) by the Large Generator Interconnection Agreements (LGIA) target dates.

The original project objectives for the DPV2 project were listed in Section A.2 (Purpose and Need for the Proposed Project) of the DPV2 Final EIR/EIS (CPUC, 2006). However, in its Petition for Modification (PFM) submitted on May 14, 2008, SCE requested modifications to CPUC Decision D.07-01-040 to permit SCE to construct the California portion of DPV2 in advance of any approval to construct the Arizona portion of DPV2. The PFM states that such a modification of the CPUC’s decision regarding DPV2 is appropriate in light of the renewable resource potential in and around the California terminus of the DPV2 line, near Blythe, California. In the event that Arizona does not permit the portion of DPV2 in Arizona, DPV2 could be used to deliver renewable resources located in the Blythe area to California load centers. The PFM also requests authorization to construct the Midpoint Substation, near Blythe.

Therefore, the project objectives of the project have been revised from the original DPV2 EIR/EIS. CPUC Decision D.09-11-007, which modifies D.07-01-040, states that SCE sought to access “potential new renewable and conventional gas-fired generation in the Blythe, California area” and the PFM stated that “[s]uch authorization will help enable California to meet its renewable energy goals.” The PFM stated that “SCE is committed to constructing the DPV2 facilities in Arizona” notwithstanding ACC denial, and claimed that phasing the construction “does not change the cost-effectiveness of the DPV2 project DPV2 will still provide net benefits.”

¹ The BSPP is a 1,000 MW solar thermal project located approximately two miles north of I-10, eight miles west of the City of Blythe, and five miles northeast of the CRS site. A new double circuit 230 kV overhead gen-tie line, approximately 9.8 miles long, will connect the BSPP switchyard to CRS.

² The GSEP is a 250 MW solar thermal project located approximately 25 miles west of the city of Blythe, north of Ford Dry Lake and I-10, and 11 miles northwest of the CRS. An existing gen-tie line will be augmented by a new segment to connect the GSEP to the CRS.

SCE's Application for a Permit to Construct (PTC) the Colorado River Substation Expansion states that construction would be completed and commercial operation would begin in the third quarter of 2013. SCE's current schedule assumes that the substation would be operation on May 6, 2013 (SCE, 2011a).

SCE has further stated that in order to have timely completion of CRS to interconnect to GSEP and BSPP, the CRS should be online in a timely and ready fashion by the Large Generator Interconnection Agreements (LGIA) target dates with the solar power generators (i.e., BSPP and GSEP). Solar Millennium has stated that it plans to close financing in mid-2011 and to begin commercial operation of BSPP in November 2013 (Solar Millennium, 2011). Likewise, the BSPP LGIA has been executed by Solar Millennium, SCE and the California Independent System Operator (CAISO) with a Committed In-Service Date of November 1, 2013.

The planned operational date for GSEP is summer 2013 (CEC, 2010); however, the GSEP LGIA is still in negotiation. It is expected to be executed in the near future and will be equal to or later than the BSPP LGIA (SCE, 2011a).

2.1.3 Feasibility

The State CEQA Guidelines (Section 15364) define feasibility as:

... capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

The alternatives screening analysis is largely governed by what CEQA terms the "rule of reason," meaning that the analysis should remain focused, not on every possible eventuality, but rather on the alternatives necessary to permit a reasoned choice. Further, the EIR must fully analyze those alternatives that are potentially feasible, while still meeting most of the project objectives.

According to the State CEQA Guidelines (Section 15126.6(f)(1)), among the factors that may be taken into account when addressing the feasibility of alternatives include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or other regulatory limitations, jurisdictional boundaries, and proponent's control over alternative sites in determining the range of alternatives to be evaluated in the EIR. For the screening analysis, the feasibility of potential alternatives was assessed taking the following factors into consideration:

- **Economic Feasibility.** Is the alternative so costly that implementation would be prohibitive? The State CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly" (Guidelines Section 16126.6(b)). The Court of Appeals added in *Goleta Valley v. Board of Supervisors* (2nd Dist. 1988) 197 Cal.App.3d, p. 1181 (see also *Kings County Farm Bureau v. City of Hanford* (5th Dist. 1990) 221 Cal.App.3d 692, 736 [270 Cal. Rptr. 650]): "[t]he fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with project."
- **Environmental Feasibility.** Would implementation of the alternative cause substantially greater environmental damage than the Proposed Project, thereby making the alternative clearly inferior from an environmental standpoint? This issue is primarily addressed in terms of the alternative's potential to eliminate significant effects of the Proposed Project.

- **Legal and Regulatory Feasibility.** Does the alternative have the potential to avoid lands that have legal protection that may prohibit or substantially limit the feasibility of permitting a high voltage transmission substation? Do regulatory restrictions substantially limit the likelihood of successful permitting of a high-voltage transmission substation in a timely manner? Is the alternative consistent with regulatory standards for transmission system design, operation, and maintenance?

Lands that are afforded legal protections that would prohibit the construction of the project, or require an act of Congress for permitting, are considered less feasible locations for the project. These land use designations include wilderness areas, wilderness study areas, restricted military bases, airports and Indian reservations. Information on potential legal constraints of each alternative has been compiled from laws, regulations, and local jurisdictions, as well as a review of federal, State, and local agency land management plans and policies.

- **Social Feasibility.** Would the alternative cause significant damage to the socioeconomic structure of the community and be inconsistent with important community values and needs? Similar to the environmental feasibility addressed above, this subject is primarily considered in consideration of significant environmental effects.
- **Technical Feasibility.** Is the alternative feasible from a technological perspective, considering available technology? Are there any construction, operation, or maintenance constraints that cannot be overcome?

2.1.4 Potential to Eliminate Significant Environmental Effects

A key CEQA requirement for an alternative is that it must have the potential to “avoid or substantially lessen any of the significant effects of the project” (State CEQA Guidelines Section 16126.6(a)). If an alternative is identified that clearly does not have the potential to provide an overall environmental advantage as compared to the Proposed Project, it is usually eliminated from further consideration. At the screening stage, it is not possible to evaluate all of the impacts of the alternatives in comparison to the Proposed Project with absolute certainty, nor is it possible to quantify impacts. However, it is possible to identify elements of an alternative that are likely to be the sources of impact and to relate them, to the extent possible, to general conditions in the subject area.

As described in the Geomorphic Assessment and Sand Transport Impacts Analysis of the Colorado River Substation (Appendix 3; ESA PWA, 2010), construction of the proposed expanded CRS would cause 90 acres of direct disturbance impacts, as well as a reduction of sand transported to 1,365 acres downwind (east) of the Proposed Project area (see Figure D.2-1 in the SEIR). This resultant deflation would ultimately eliminate 1,365 acres of Mojave fringe-toed lizard (MFTL)³ sand dune habitat that comprises the easternmost extent of the Chuckwalla sand transport corridor and would result in a significant and unmitigable impact.

In addition, there would be three potential significant and unavoidable cultural resources impacts to: known historic properties; unknown significant buried prehistoric and historical archaeological sites or buried Native American human remains; and Traditional Cultural Properties.

³ MFTL is not a “listed” species, but is a California Department of Fish and Game “species of concern” and a BLM sensitive species.

2.2 Other Considerations for Alternatives

The final project decision by the CPUC will be guided by the Public Utilities Code in addition to the requirements of CEQA. The Public Utilities Code in Section 1002 states that:

Section 1002. (a) The commission, as a basis for granting any certificate pursuant to Section 1001 shall give consideration to the following factors:

(1) Community values.

(2) Recreational and park areas.

(3) Historical and aesthetic values.

(4) Influence on environment, except that in the case of any line, plant, or system or extension thereof located in another state which will be subject to environmental impact review pursuant to the National Environmental Policy Act of 1969 (Chapter 55 (commencing with Section 4321) of Title 42 of the United States Code) or similar state laws in the other state, the commission shall not consider influence on the environment unless any emissions or discharges therefrom would have a significant influence on the environment of this state.

2.3 Bureau of Land Management Process

Because the 500 kV transmission line and the Colorado River Substation (expanded as proposed) would be located on public lands managed by the BLM, SCE requires a Right-of-Way (ROW) Grant and Notice to Proceed from BLM to construct the Proposed Project. Prior to granting the ROW, BLM must comply with the National Environmental Policy Act (NEPA). The BLM and the U.S. Forest Service (a joint signatory due to the Devers-Valley 500 kV line passing through the San Bernardino National Forest) plan to issue a single Record of Decision (ROD) for the DPV2 project after the Final Supplemental EIR is published.

The contents and conclusions of BLM's ROD cannot be defined prior to its issuance, but it is expected to address the following issues: (a) elimination of the Palo Verde to Colorado River Substation from consideration, (b) the proposed new 500 kV transmission line from Colorado River Substation to Devers Substation and the 500 kV line from the Devers Substation to the Valley Substation, and (c) the Colorado River Substation and its proposed expansion. To support consideration of the expansion of the Colorado River Substation, the ROD will include a discussion of "New Information After the EIR/EIS." This discussion will present a summary of this SEIR, its analysis, and its conclusions. A Determination of NEPA Adequacy (DNA) may also be prepared to document the adequacy of the original EIR/EIS and its mitigation measures, along with the information in this SEIR. In addition to addressing the proposed substation expansion, the ROD will present the selected route alternative for the DPV2 line and the substation location for the Colorado River Substation, which may differ from the CPUC's environmentally superior and BLM's agency preferred alternatives in the Final EIR/EIS (BLM, 2011).

This SEIR, in addition to the Final EIR/EIS identifies alternatives for the CRS substation location. If an alternative location for the substation (and its proposed expansion) is found environmentally superior in this SEIR, and is ultimately selected/carried forward in the ROD for DPV2, the BLM may need to re-evaluate the Records of Decision (RODs) and/or amend the ROW grants for the for the Blythe Solar Power Project (BSPP) and the Genesis Solar Energy Project (GSEP) issued on October 25, 2010 and November 5, 2010, respectively. These RODs and ROW grants were inclusive of the necessary 220 kV gen-tie lines needed to connect the solar projects to the CRS.

2.4 California Energy Commission Process

The CEC approved the BSPP and GSEP projects on September 15 and September 29, 2010, respectively. The approvals included the solar fields and the 220 kV generation-tie (gen-tie) transmission lines that would connect the solar projects to the proposed CRS. If any alternative considered in Section C of this SEIR were implemented, the approved gen-tie routes could require modification. Accordingly, the revised gen-tie routes would need to be reviewed by the CEC per CCR Title 20, section 1769 (Post Certification Amendments and Change).

If project changes to project design, operation, or performance requirements occur after CEC approval and during the compliance process, the applicant is required to submit a petition for project modifications to the CEC. As listed in section 1769 of the CEC Siting Regulations (California Code of Regulations [CCR] Title 20, Section 1769, Post Certification Amendments and Changes), the request must include a description of the proposed modifications and the necessity for the proposed modifications. In addition, the request must state whether the modification is based on (1) information that was known during the certification proceeding along with an explanation why the issues was not raised at that time, or (2) new information that was not available during certification; and an analysis of potential impacts on the environment, nearby property owners, and the general public. The petition also must outline the project's continued ability to comply with applicable laws, ordinances, regulations, or standards (LORS) during construction and upon placing the modifications in service, and must demonstrate that the proposed modifications will not result in significant environmental impacts.

Within 30 days after the applicant files a petition, CEC staff must review the petition to determine the extent of the proposed modifications. Where staff determines that there is no possibility that the modifications may have a significant effect on the environment, and the modifications will not result in a change to or deletion of a condition of certification adopted by the CEC in the final decision, or make changes that would cause the project not to comply with applicable LORS, no Commission approval is required. The staff shall file a statement that it has made such a determination with the Commission docket and mail a copy of the statement to each commissioner and every person on the post-certification mailing list. Any person may file an objection to staff's determination within 14 days of service on the grounds that the modification does not meet the criteria in section 1769(a)(2) described above.

According to CCR Title 20, section 1769(a)(3), if staff determines that a modification does not meet the criteria in section 1769(a)(2) described above or if a person objects to a staff determination, the petition must be processed as a formal amendment to the decision and must be approved by the full Commission at a noticed business meeting or hearing. The Commission would issue an order approving, rejecting, or modifying the petition at the scheduled hearing, unless it decides to assign the matter for further hearing before the full Commission or an assigned committee or hearing officer.

As an example of a staff-approved modification, the Blythe Energy Project Transmission Line (BEPTL) was recently constructed adjacent to a portion of the DPV1 and proposed CRS-Devers corridor. Following CEC approval, BEPTL's applicant submitted at least five petitions for project modifications. All were approved by staff during the compliance proceeding. After the petition for project modification was submitted, each approval took approximately one to three months.⁴ However, the timeframe on any staff approval(s) would be based on staff's availability and the need for clarification or additional information (i.e., data requests, responses, etc.).

⁴ All notices, requests and approvals are posted on the CEC's Blythe Transmission Line Compliance Proceeding website at: <http://www.energy.ca.gov/sitingcases/blythetline/compliance/index.html>.

Thus, a modification to approved gen-tie routes resulting from implementation of an alternative Colorado River substation location may be able to be reviewed and approved at a CEC staff level without requiring further discretionary approvals.

3. Summary of Alternatives Screening Results

Alternatives are listed below according to the determination made for analysis. Alternatives considered included site alternatives, rotated configuration of the proposed substation, installation of a sand shield, and the No Project Alternative.

3.1 Alternatives Fully Analyzed in the SEIR

The substation site alternatives listed below have been chosen for detailed analysis in Section E of this SEIR through the alternative screening process, and each of these alternatives is evaluated by environmental issue area. The alternatives are illustrated on Figure Ap.1-1 (all figures are presented at the end of this section).

- Partial Avoidance Alternative
- Avoidance Alternative #1
- Avoidance Alternative #2
- Avoidance Alternative #3
- Southern Alternative

3.2 Alternatives Eliminated from Full Consideration in the SEIR

The alternatives listed below were eliminated from detailed evaluation in the SEIR; they are described and the reasons for their elimination are presented in Section 4 below. Figure Ap.1-1 depicts the alternatives eliminated from detailed evaluation.

- Original Midpoint Substation Alternative
- Sand Shield Alternative
- Rotation and Shield Alternative

Additional design options for the proposed substation (e.g., chain link fence) and potential performance standards for mitigation are discussed and evaluated in Section D.2 (Biological Resources) of the SEIR.

4. Alternatives Descriptions and Determinations

4.1 Introduction

Alternatives to the proposed CRS location were identified to avoid the significant and unmitigable impacts to the Mojave fringe-toed lizard (MFTL) that would occur at the proposed location, as described in Section D.2.1. In an effort to avoid or minimize direct and indirect impacts to MFTL, several different substation locations and configurations are evaluated. Alternatives were developed to impact the least amount of stabilized and partially stabilized sand dunes while avoiding impacts to other biological resources.⁵ All

⁵ Substation locations further north would result in direct impacts to several occurrences of Harwood's milkvetch (CNPS List 2.2) and Harwood's eriastrum (CNPS List 1B.2 and BLM Sensitive). Refer to Figure D.2-2 in Section D.2.1 of this SEIR.

of the alternative sites would be 1,600 feet by 2,400 feet (approximately 90 acres), which is the same size as the proposed CRS, but the configurations of substation equipment and transmission interconnections for each site would vary depending on the site location. For every alternative, the existing DPV access road would be widened between the substation site and Wiley Well Road, which would result in approximately 10 acres of permanent disturbance within the sand transport corridor in stabilized and partially stabilized sand dune habitat.

As discussed in Section 2, alternatives are assessed for their potential feasibility, their ability to reasonably achieve most project objectives, and their potential to reduce the significant environmental impacts of the proposed CRS expansion project.

Background on Gen-Tie Lines. One factor common to all alternatives is the requirement to interconnect the following two gen-tie lines for the two approved solar projects that would interconnect at the CRS. The interconnection situation for the BSPP and GSEP lines are as follows:

- **Blythe Solar Power Project.** The Blythe power plant requires a new double circuit 220 kV transmission line from the solar field to the Colorado River Substation. The gen-tie line would be entirely on BLM land; it was approved by the CEC and BLM in their decisions on the BSPP. It would exit the solar project to the south for about 3 miles, then turn west for about 3 miles into the CRS. The westernmost portion of the BSPP line is shown on Figure Ap.1-1.
- **Genesis Solar Energy Project.** FPL (now NextEra) constructed the Blythe Energy Project Transmission Line (BEPTL) on concrete poles located adjacent to the DPV1 transmission line. The existing BEPTL passes the CRS location as a single-circuit line, and connects with the gas-fired Blythe 1 power plant south of the Blythe Airport. The line was constructed with double circuit poles between Wiley Well Road and the CRS site to allow future addition of a 230 kV circuit to these poles.

As the operator of the Genesis Solar project, NextEra proposes to transfer the solar generation to the CRS via a new single circuit 230 kV line that would be constructed from the Genesis solar field east and south, crossing the Interstate 10 freeway. The new conductor would then be installed on the vacant position on the existing BEPTL. Upon reaching the CRS location, 6 new transmission poles would be constructed by GSEP to connect GSEP electricity from the BEPTL into the CRS. The BEPTL is illustrated on Figure Ap.1-1.

The routes of these approved gen-tie lines would have to be modified to interconnect with alternative substation sites. These revised routes would range from changes of only one or two towers, to changes of a few thousand feet of transmission line. The revised gen-tie routes could be installed within the DPV transmission corridor, which already has an access road and is a designated BLM utility corridor. In the discussion of each alternative below, the potential location of the gen-ties on private land or public land is identified.

4.2 Partial Avoidance Alternative

4.2.1 Description

Reason for Consideration: Moves substation site the smallest distance from proposed site and minimizes modifications required for gen-tie routes. Reduces direct effects on sand transport corridor.

Land Ownership: Substation would be on public land. SCE transmission lines and gen-tie lines looping into substation and gen-ties at east end may be on private land.

Effect on Sand Transport Corridor: 90 acres direct impact (80 acres for substation and 10 acres for access road) and 855 acres indirect impact.

Figure Ap.1-2 illustrates the Partial Avoidance Alternative. At this site, the substation would be rotated the substation approximately 135 degrees clockwise to a northwest-southeast orientation and shifted so its western corner would be approximately 650 feet southeast of the southeast corner of the proposed CRS. The alternative would remain north of the DPV2 transmission corridor and entirely on public (BLM) land, but it would be at the edge of the most active part of the sand transport corridor. It would be reoriented to 45 degrees to the prevailing wind to encourage sand to pass around the boundary. However, the Partial Avoidance Alternative study area is large enough to accommodate a substation orientation either parallel or perpendicular to the transmission corridor depending on final engineering.

The majority of the Partial Avoidance Alternative site is within the active sand transport corridor, which is occupied MFTL, ribbed cryptantha and Harwood's eriastrum habitat. The remainder of the site transitions into Sonoran creosote bush scrub, which has low to moderate potential to support desert tortoise. The transitional areas between partially stabilized sand dunes and creosote bush scrub are dominated by Asian mustard (*Brassica tournefortii*), an invasive perennial weed.

The Partial Avoidance Alternative was developed because of its proximity to the proposed substation site, because it would minimize the modifications to approved gen-tie line routes, and because the substation would remain entirely on BLM land. This alternative would reduce effects on MFTL habitat by about 35%. To interconnect this alternative, the gen-tie lines and/or DPV1 interconnection may need to be located on private land to the southeast of the alternative site.

4.2.2 Consideration of CEQA Criteria

Project Objectives

The Partial Avoidance Alternative would meet the first two project objectives by providing transmission access to potential future renewable resources in the Blythe area and by helping California meet its renewable energy goals.

The third project objective relates to the timing of the substation and transmission line being completed and operational. Factors in potential timing delays relate to (a) substation re-design at an alternative site, (b) potential regulatory delays that may result from revised gen-tie routes, and (c) eminent domain process required to obtain private land rights. These issues are addressed below.

Substation Re-design. If this alternative location is selected, the substation would require re-engineering by SCE because the engineering for the proposed site is based on specific topography and geology at that site. In addition to the changes to its orientation and configuration resulting from this alternative, moving to an alternative site would require additional geotechnical evaluations. Designs for site preparation and grading would have to be redone as well.

SCE has been designing the proposed CRS for 6 months, and SCE states that moving to an alternative site may cause a delay in its online date due to required re-engineering. Based on input received from the CPUC's independent engineering consultant, substation re-engineering would likely involve the following steps and timeframes:

1. **Complete geotechnical assessment and mapping.** Combined duration of 8 to 10 weeks. Geotechnical work usually takes longer than the surveying and mapping. This time could be reduced if the work at an alternative site is completed by the same firms or SCE teams that developed this data for the proposed substation.

2. **Coordinate with solar generators on gen-tie interconnections.** Re-routing of the incoming gen-tie lines based on desktop studies could be done in about 2 weeks. If there are any property issues to be resolved, it could take as long as 5 to 6 weeks. This activity could be initiated concurrently with the geotechnical and mapping efforts defined in Item 1 above.
3. **Re-design the substation and transmission connections.** The design process for 500 kV transmission line re-routing may take 3 to 4 weeks, and it cannot begin until the completion of Item 2. This work must incorporate the survey and geotechnical information resulting from Item 1, so it will require about 2 weeks after completion of Item 1 above. The substation re-arrangement could start in parallel with the transmission line re-design work, but it could not be finalized until after the transmission line routing is confirmed. Including these overlapping requirements, this component could take from 10 to 12 weeks.

In summary, the overall re-work effort could take from 12 to 14 weeks, according to the independent engineers. SCE has indicated a potential timeframe of up to 24 weeks. Even with re-engineering that could add this much time, the Colorado River Substation could be operational within a few weeks of the LGIA committed in-service date for the BSPP (November, 2013). As demonstrated above, it is assumed that the substation design and construction work would be done in parallel with construction of the CRS-Devers 500 kV line and would not affect the online date for the transmission line. However, an alternative substation may not be completed as soon as the proposed substation, so the solar projects planning interconnection with DPV1 may be delayed by up to 14 weeks, if SCE proceeds in an expedited manner.

CEC and BLM Approval of Substation and Gen-Tie Modifications. While the Partial Avoidance Alternative would create significant and unmitigable impacts to the MFTL like the proposed CRS location, the direct and indirect impacts would be reduced compared to the proposed site. The mitigation adopted in the ROD for the BLM GSEP EIS⁶ for the CRS expansion would apply to the alternative site, and therefore, it is expected that BLM would likely be able to approve the site location using this SEIR and a DNA.

The processes and timeframes for the BLM and CEC approvals are discussed in Sections 2.3 and 2.4 above, and also under Legal and Regulatory Feasibility below. These processes could be completed in time to potentially allow CRS to be online in 2013. A 2013 online date would allow this alternative to be constructed and still meet SCE's stated project objectives.

BLM regulations require that an amendment to the CDCA be evaluated under NEPA if the gen-tie lines do not remain within approved utility corridors. For purposes of this analysis, it is assumed that the BSPP gen-tie line would remain as currently defined to reach the proposed CRS site. To reach any of the alternatives, it is assumed to turn into the existing DPV corridor, which is a designated BLM corridor. The gen-tie line would access any substation from this corridor so no additional plan amendment would be required.

Acquisition of Rights to Private Lands. This alternative may require that SCE's transmission lines and the gen-tie lines at the east end of the substation to be located on private land. Negotiations with private property owners for easements or sale of property for these transmission lines could result in a delay of the online date for CRS, depending on the private landowners' willingness to sell or allow use of their lands. SCE has initiated inquiries to the affected landowners but has not yet received responses. How-

⁶ The CRS expansion is considered as part of the Proposed Action of GSEP, and it is specifically considered to be a Connected Action to GSEP in the BLM's Plan Amendment/Final EIS for Ford Dry Lake (Genesis) Solar Project (August 2010).

ever, if legal action to obtain eminent domain is necessary, these lawsuits can take between 9 and 18 months to complete and could delay SCE's 2013 online date.

If any properties for the CRS do have to be taken via an eminent domain action, then the first issue to be determined by the court would be if the properties could be properly condemned by the State and, second, a trial would determine the correct fair market valuation for the acquired properties.

Landowners of any private parcels that would be impacted would be compensated by SCE for use of its substation on the property based on the fair market value of the property taken.⁷ Should the CPUC be forced to condemn certain land parcel(s) for the substation, the California Eminent Domain Law (contained in California Code of Civil Procedure §123.010, et seq.) covers, in great detail, the procedural aspects of bringing eminent domain action in court. In an eminent domain action, the only issue tried before a jury is valuation, whereas all other issues (e.g., the right to take the property) are tried by the court. *People v. Volz*, 25 Cal.App.3d 480, 487 (1972).

Generally, all eminent domain proceedings must be commenced and prosecuted in Superior Court. *Cal. Civ. Proc. C. §1250.010*. The proper venue for an eminent domain action is the county in which the property sought to be taken is located. *Cal. Civ. Proc. C. §1250.010*. For trial setting purposes, proceedings under the Eminent Domain Law “take precedence over all other civil actions” so that they can “quickly heard and determined.” *Cal. Civ. Proc. C. §1260.010; Swartzman v. Sup. Ct.*, 231 Cal. App. 2d 195, 199 (1964). In general, these lawsuits can take between 9 and 18 months to complete.

A substantial additional delay could by itself render an alternative incapable of being “successfully accomplished within a reasonable period of time,” and hence potentially infeasible. (15 CCR §15364.) Therefore, as discussed under Project Objectives, depending on the willingness of private landowners to sell could cause a substantially longer delay by forcing SCE to undertake condemnation proceedings and could delay the substation operational date by slightly more than a year, which would be 6 months after the LGIA committed in-service date of November 1, 2013 (SCE, 2011a). For SCE to acquire rights to private lands, the steps are as follows:

- A four-month period would generally be required to prepare title reports, legal descriptions and surveys, appraisals and related documents.
- Another four months would be required to present offers and fairly negotiate in good faith with property owners (SCE, 2011a).

SCE estimates that with a willing seller that the operational date for the substation would be delayed by approximately 6 months, but it would still be forecasted to be operational within a few weeks of the LGIA in-service date.

If the parties could not come to a reasonable agreement, the substation acquisition would require the use of a judicial eminent domain proceeding as SCE's only remaining option to acquire the property. SCE points out that the time to acquire property through an eminent domain action can vary as a result of

⁷ “Fair market value” is a term defined by California Code of Civil Procedure section 1263.320(a) as “. . . the highest price on the date of valuation that would be agreed to by a seller, being willing to sell but under no particular or urgent necessity for so doing, nor obliged to sell, and a buyer, being ready, willing, and able to buy but under no particular necessity for so doing, each dealing with the other with full knowledge of all the uses and purposes for which the property is reasonably adaptable and available.” In addition, where the property acquired is a part of a larger parcel, the payment of severance damages may be required if the remaining property (remainder), after the portion acquired, has been diminished in market value when compared with the same remainder before the taking.

any number of uncontrollable factors, including delays in court proceedings. However, SCE expects that it might be able to obtain a pre-condemnation court order granting access to the property for due diligence work within approximately four months if the owner refuses to grant SCE access to the property during negotiations. (This process is assumed to start after the initial four month period associated with title reports, legal descriptions and surveys, etc. based on prior SCE experience) (SCE, 2011a).

After that point, if due diligence determines that the property is suitable for the project, SCE might be able to obtain a court order for prejudgment possession of the property to construct the project within approximately another eight to twelve months after the filing of an eminent domain complaint for condemnation (even though the condemnation proceeding itself may not yet be final and SCE would not yet have title to the property). (SCE, 2011a)

Overall, condemnation proceedings could delay the substation operational date by more than a year, which would be 6 months after the LGIA committed in-service date of November 1, 2013 (SCE, 2011a).

If the gen-tie lines owned by the solar developers have to cross private lands, they would either have to use land over which SCE has already obtained rights (in the process defined above), or they would have to reach an agreement with cooperative landowners. Solar developers do not have eminent domain rights, so they would have to either use SCE's acquired lands or work with cooperative sellers.

Conclusion Regarding Project Objectives. It is likely that re-design and required regulatory approvals could occur within the required timeframe set by SCE in its objectives. Acquisition of private lands for gen-tie interconnections may require an additional 6 months beyond SCE's LGIA date. If delays affected the online date for CRS, the timing objective (Objective 3) would not be met, but given the attainment of Objectives 1 and 2 (transmission access for renewable resources and support in meeting California's renewable energy goals), the alternative would still meet most of SCE's project objectives.

Feasibility

Technical Feasibility. There are three related aspects of technical feasibility: (a) substation re-design, (b) transmission line crossings, and (c) substation configurations. Each is addressed below.

Substation Re-design. There are no substantial technical challenges associated with moving the substation to the Partial Avoidance Alternative site. The transmission lines entering and leaving the substation would require different configurations than those assumed for the proposed site. SCE would need to determine the appropriate orientation of the substation and line routes to allow sufficient access for the proposed and future 500 kV and 220 kV transmission lines. It is expected that the transmission engineering work in proximity of the substation would be done in parallel with construction of the remainder of the line and completed in sufficient time to order materials and construct in advance of the substation operation date.

Transmission Line Crossings. As shown in Figures Ap.1-2A and Ap.1-2B, the future DSWTP 500 kV line, if constructed, would be located north of the existing NextEra (GSEP) 220 kV line and thus it would likely need to cross the existing NextEra (GSEP) 220 kV line for both the parallel and perpendicular configurations of this alternative, as well as for all of the studied substation alternatives and orientations. The crossing is technically feasible but could also be avoided if the future 500 kV line were moved from the north side to the south side of the transmission corridor, or just south of the 220 kV line.

Crossings of 500 kV and 220 kV lines to allow substation access are technically feasible and occur in many locations. The higher voltage circuit would cross above the lower voltage circuit by raising the tower

height for the higher voltage line and shortening the lower voltage towers. These crossings are often done aerially; however, for large high voltage transmission lines, there is a reliability concern if the 500 kV line were to fail, falling onto the lower line and resulting in dual outage.

This concern about overhead line crossings could be addressed by placing the 220 kV underground for a short distance, which is also feasible but increases construction and maintenance costs. The length of the underground section would only need to be about equal to the ROW width of the 500 kV line, or a few hundred feet. The gain in reliability of the avoided aerial crossing would need to be weighed against the loss of reliability by the use of underground insulated cable in the transmission line.

Substation Configurations. The design of the substation at the alternative site, and the substation orientation could change the transmission line routing into the substation. However, there is often a great deal of flexibility in arranging the 220 kV and 500 kV yards within a substation, which allows transmission line routing that would minimize the need for crossing of transmission lines. The line terminals, bus work and interconnecting power transformers within the substation would be located and arranged to best accommodate the positions of the lines within the transmission corridor.

Although the interconnection of DPV2 and the gen-ties from GSEP and BSPP to the appropriate substation switchracks would require some modifications (as shown in Figures Ap.1-3A and Ap.1-3B) and there may be some minor cost differences between the alternatives in terms of how many transmission structures or new access roads will be needed to route the lines from the transmission corridor and into the substation, it is potentially technically feasible to interconnect to the CRS in either the parallel or perpendicular configuration at the Partial Avoidance Alternative site.

Legal and Regulatory Feasibility. The legal and regulatory concerns for this substation site include: (a) required BLM and CEC approval of modified gen-tie routes, (b) BLM approval of the alternative substation site, and (c) the potential for the gen-tie and SCE transmission lines to cross private lands, requiring acquisition of land rights.

BLM Process. The Partial Avoidance Alternative substation would be located primarily on public land. Given the existing BLM and NEPA processes for reviewing and approving projects on public lands, there are no legal constraints to feasibility related to BLM's approval. BLM has researched other encumbrances on its land in the vicinity and there are none that would impede development of this alternative (BLM, 2010). The minor changes required to the gen-tie lines to reach the Partial Avoidance Alternative would remain within approved utility corridors with already approved plan amendments.

As described in Section 2.3, when the BLM ROD is issued, it is expected that it would incorporate the information on the expansion of the Colorado River Substation that is included in this SEIR. If the Partial Avoidance Alternative is selected, BLM would likely identify it in the ROD and would likely be able to complete a DNA. Given the minor modifications required for the gen-ties to serve this alternative substation site, the environmental impacts are not likely to differ from those of the approved routes. Therefore, the BLM is likely to be able to approve the changes within a simple and defined regulatory process.

CEC Process. The CEC process is described in Section 2.4. A change in the substation site and any resulting change needed to the connecting gen-tie lines would be evaluated by the CEC for the severity of the impacts associated with the change. A staff-level approval could be made if the CEC finds that the changes to the gen-tie lines would not create a new significant impact and would comply with applicable LORS. If new significant impacts do not arise as a result of modifications to the gen-tie lines, CEC proceedings for GSEP and BSPP would not need to be re-opened.

Acquisition of Rights to Private Lands. The process for SCE or a solar developer to acquire rights to private lands is defined under Project Objectives, above. This process is defined in California law, so it is clearly legally feasible. However, it can take time and cause project delays. Therefore, this process is addressed under Project Objectives.

Conclusion for Legal and Regulatory Feasibility. The Partial Avoidance Alternative is feasible under current laws and regulations.

Economic Feasibility. SCE has stated that development of CRS at an alternative site appears to be economically feasible, in that it does not appear to present additional costs to SCE of an order of magnitude that would render it impractical from SCE's perspective to proceed with the project (SCE, 2011a).

Social Feasibility. Development at this or any alternative site would not cause significant damage to the socioeconomic structure of the community, be inconsistent with important community values and needs, or have a significant impact on the community's population, housing, or public services in any way substantially different from the current proposed location. Development of Partial Avoidance Alternative would be socially feasible.

Environmental Advantages

The Partial Avoidance Alternative has the potential to lessen environmental impacts as follows.

- **Biological Resources.** As discussed in Section 2.1.4, construction of the proposed expanded CRS would cause approximately 98 acres of direct impacts to MFTL, as well as a reduction of sand transported within MFTL habitat to 1,365 acres downwind (east) of the Proposed Project area. This would create a significant and unmitigable impact to the MFTL and its habitat. Construction and operation of the CRS at the Partial Avoidance Alternative location would result in approximately 90 acres of direct impacts to sand dunes, approximately 10 acres of direct impacts to sandy creosote scrub, and approximately 855 acres of indirect impacts to downwind MFTL habitat from obstruction of Aeolian sand transport (Appendix 3; ESA PWA, 2010). This is a 35 percent reduction in the acreage affected by the proposed CRS. This alternative would substantially reduce MFTL impacts within the strong sand migration zone of the active sand corridor, but impacts would still be significant and unmitigable.

In addition, although impacts to Harwood's eriastrum, Harwood's milk vetch, and flat-seeded spurge would be less than significant with mitigation for both the proposed site and this alternative, it is anticipated that there would be slightly reduced impacts with the Partial Avoidance Alternative (approximately 90 acres of direct impacts for this alternative versus approximately 98 acres for the Proposed Project). At the alternative site, fewer rare plant occurrences would be directly impacted and fewer acres of suitable habitat (stabilized and partially stabilized sand dunes) would be impacted.

- **Cultural Resources.** Three archaeological cultural resources and two isolates (not yet evaluated for eligibility for formal listing on the California Register of Historic Resources [CRHR] or National Register of Historic Places [NRHP]) are within the current footprint of the proposed Partial Avoidance Alternative. In addition, one additional resource that has not yet been evaluated for register status is located in the study area buffer around the substation site for the gen-tie/transmission interconnections and access road. Most of the sites are in locations that cannot be easily avoided by a minor shift in project location. In comparison, four archaeological resources and three isolates (also not yet evaluated for eligibility) have been identified in the proposed CRS project location. Most resources are centrally located and additional resources are located in close proximity, so minor adjustments to the project footprint would not alter the number of affected resources. Overall the Partial Avoidance Alternative would affect slightly fewer historical and archaeological resources than the proposed CRS.

Environmental Disadvantages

The Partial Avoidance Alternative has the potential to cause the following environmental impacts that would be more severe than those of the proposed substation.

- **Biological Resources.** There is higher potential for desert tortoise to occur at the Partial Avoidance Alternative site than in the sandy habitat at the proposed CRS site. The Partial Avoidance Alternative site encompasses approximately 10 acres of creosote scrub, which is better suitable desert tortoise habitat and of higher habitat quality than sand dunes (although no desert tortoises were observed during surveys). Therefore, construction and operation of the CRS at this alternative location would result in increased impacts to desert tortoise habitat (creosote scrub). Impacts to desert tortoise would be less than significant with implementation of standard mitigation for desert tortoise. This mitigation would reduce impacts to less than significant levels and would require acquisition of mitigation lands, as defined in the DPV2 Final EIR/EIS (2006), as well as specific methods for avoiding and minimizing harm to tortoise that are found on the project site during construction and operation.

4.2.3 Alternative Conclusion

RETAINED FOR ANALYSIS. Impacts to desert tortoise would be greater at the Partial Avoidance Alternative than at the proposed CRS location, but would be less than significant with standard mitigation. The alternative would reduce both direct and indirect impacts to Mojave fringe-toed lizard and sand dune habitat as well as impacts to ribbed cryptantha and Harwood's eriastrum. Fewer cultural resources would also be impacted as well.

The Partial Avoidance Alternative is feasible since it could likely be constructed and permitted at the alternative site. The first two project objectives would be met by this and all alternatives. The third project objective, requiring an online date by the end of 2013, could be affected by several processes, but the one with most potential for creating a delayed online date is landowner negotiations for property rights for the transmission interconnections. Land acquisition could require time-consuming eminent domain proceedings. For the gen-tie lines, the solar developers do not have eminent domain rights. If the gen-tie lines cannot be installed on lands for which SCE has obtained rights and the affected property owners are not cooperative, then rerouting of the gen-tie lines may be necessary to avoid the private parcels, which may also result in schedule delays. It is uncertain whether the Partial Avoidance Alternative could meet the third objective related to meeting SCE's online date.

The Partial Avoidance Alternative is carried forward for analysis because it has the potential to reduce environmental impacts, it is feasible, and it would meet most (two of three) project objectives.

4.3 Avoidance Alternative #1

4.3.1 Description

Reason for Consideration: Moves substation site the smallest distance from proposed site while still eliminating all direct effects on sand transport corridor.

Land Ownership: Substation would be primarily on private land but would also require rights of way across public lands. SCE transmission lines looping into substation and gen-tie lines would be on both private land and public land.

Effect on Sand Transport Corridor: No direct or indirect effect from substation; western transmission and gen-tie lines would be within the sand transport corridor; widening of existing access road would result in approximately 10 acres of direct impact, but no indirect impacts from obstruction of sand transport.

Figure Ap.1-4 illustrates the Avoidance Alternative #1, which was developed and designed to move the substation site as little as possible from the proposed site while completely avoiding direct effects on the sand transport corridor. The Avoidance Alternative #1 would rotate the substation approximately 135 degrees clockwise to a northwest-southeast orientation and would shift the center of the site approximately 0.9 miles (5,000 feet) southeast of the proposed CRS. The alternative would remain north of the DPV2 transmission corridor, it would be located on both public (BLM) and private land, and it was considered because it would be entirely outside of the active sand transport corridor. However, the connecting transmission and gen-tie lines would cross through the sand corridor on the northwest and north sides of the alternative site.

The area considered and analyzed for Avoidance Alternative #1 is large enough to accommodate a substation orientation either parallel or perpendicular to the transmission corridor depending on final engineering.

The habitat at the Avoidance Alternative #1 substation site consists of Sonoran creosote bush scrub. Soils are relatively compacted and gravelly and considered unsuitable for ribbed cryptantha, Harwood's eriastrum, and MFTL, but potentially suitable for desert tortoise. The site is bordered to the northwest by the margins of stabilized sand dunes supporting Asian mustard.

4.3.2 Consideration of CEQA Criteria

Project Objectives

Avoidance Alternative #1 would meet the first two project objectives since it would provide transmission access to potential future renewable resources in the Blythe area and would help enable California to meet its renewable energy goals.

The following issues relating to project delay addressed for the Partial Avoidance Alternative (Section 4.2.2) also apply to the Avoidance Alternative #1, so are not repeated here in detail: (a) substation redesign at an alternative site, (b) potential regulatory delays that may result from revised gen-tie routes, and (c) eminent domain process required to obtain private land rights. As for the transmission interconnections for the eastern end of the Partial Avoidance Alternative, use of this alternative substation site would require acquisition of rights to private lands. The eminent domain process could result in a delay beyond the currently proposed in service date. SCE is researching the willingness of private property owners to discuss land acquisition. The private properties in the affected area are owned by individuals, trusts and an energy company.

Therefore, while this alternative may not meet the third project objective, it would still meet two of three of the stated objectives defined by SCE for the Proposed Project.

Feasibility

Technical Feasibility. Given the location of the future DSOTP 500 kV line in the transmission corridor, the new 500 kV line will likely need to cross the existing 220 kV line for both the parallel and perpendicular configurations of this alternative. See the Technical Feasibility discussion in Section 4.2.2. The interconnection of DPV2 (the new line from the CRS to the Red Bluff and Devers Substation) and the gen-ties from GSEP and BSPP to the appropriate substation switchracks would require some modifications from

SCE's current design. The EIR Team's engineers have developed potential design options to show that interconnection at this location would be feasible, illustrated in Figures Ap.1-3A and Ap.1-3B. Therefore, it is potentially technically feasible to interconnect to the Avoidance Alternative #1 in either the parallel or perpendicular configuration.

Legal and Regulatory Feasibility. The potential concerns for legal and regulatory feasibility of the Avoidance Alternative #1 are the same as those for the Partial Avoidance Alternative (see Section 4.2.2). The following issues are not repeated here: (a) required BLM and CEC approval of modified gen-tie routes, (b) BLM approval of the alternative substation site, and (c) the potential for the gen-tie and SCE transmission lines to cross private lands, requiring acquisition of land rights.

There is one additional legal concern at this site is that SCE has identified. One parcel affected by the southern portion of the alternative site is subject to a reservation of rights by the Palo Verde Land and Water Company affecting the entire parcel. The reservation provides for the use of telephone and irrigation ditches, canals, laterals, etc., over any portion of Assessor Parcel 879-080-034, with a reversionary right if said rights are violated (SCE, 2011a). Construction on the parcel would require approval by the Palo Verde Land and Water Company, which could take several months for resolution. Other than that reservation, the parcels do not appear to have a legal restriction that would render development at the Avoidance Alternative #1 site infeasible.

Other Feasibility Factors. SCE has stated that development of CRS at an alternative site would appear to be economically feasible, in that it does not appear to present additional costs to SCE of an order of magnitude that would render it impractical from SCE's perspective to proceed with the project (SCE, 2011a). Delays in the project schedule as a result of the development of an alternative, which would affect project costs, are discussed under Project Objectives above.

Development at this alternative would not cause significant damage to the socioeconomic structure of the community, be inconsistent with important community values and needs, or have a significant impact on the community's population, housing, or public services in any way substantially different from the current proposed location. Development of Avoidance Alternative #1 would also be potentially socially feasible.

Environmental Advantages

This alternative has the potential to lessen environmental impacts as follows.

- **Biological Resources.** As discussed in Section 2.1.4, construction of the proposed expanded CRS would cause 98 acres of direct impacts to MFTL habitat, as well as a reduction of sand transported within MFTL habitat to 1,365 acres downwind (east) of the Proposed Project area. This would create a significant and unmitigable impact to MFTL. Construction and operation of the CRS at this location would eliminate most direct impacts to sand dunes as well as 1,365 acres of indirect impacts to downwind MFTL habitat from obstruction of Aeolian sand transport (Appendix 3; ESA PWA, 2010). Significant impacts to MFTL would only occur from construction/widening of the access road, which is the same as the Proposed Project and would be reduced to less than significant with mitigation.

In addition, although impacts to Harwood's eriastrum, Harwood's milk vetch, and flat-seeded spurge would be less than significant with mitigation for both the proposed site and this alternative, fewer acres of suitable special-status plant habitat (stabilized and partially stabilized sand dunes) would be impacted.

Environmental Disadvantages

This alternative has the potential to cause the following environmental impacts.

- **Ground Disturbance.** Increased ground disturbance would result from less than one mile of additional 220 kV gen-tie transmission lines to connect from BSPP and GSEP to this alternative substation site. Increased length of the gen-tie lines and associated construction time will affect the length and intensity of short-term construction impacts and ground disturbance, increasing impacts in air quality, noise, transportation and traffic, hazardous materials related to environmental contamination, and geologic resources related to soil erosion. The potential to disturb unknown cultural resources and impact vegetation and wildlife is also increased with more ground disturbance. Increased disturbance and removal of vegetation could increase the chance of noxious weed introduction as well as the removal of more native desert vegetation.
- **Biological Resources.** There is low potential for desert tortoise to occur in the sandy habitat at the proposed CRS site compared to Avoidance Alternative #1. The alternative has a higher potential for tortoise effects due to 90 acres of direct impacts to creosote scrub. Therefore, construction and operation of the CRS at this alternative location would result in increased impacts to desert tortoise habitat (creosote scrub). Impacts would be less than significant with implementation of standard mitigation requiring acquisition of mitigation lands that was included in the DPV2 Final EIR/EIS (2006).
- **Cultural Resources.** Three archaeological cultural resources (not yet evaluated for archaeological registers) are located within the current boundaries of the Avoidance Alternative #1 substation area and 3 additional resources would be impacted within the study area buffer for gen-tie/transmission interconnections and the access road (6 total documented resources not yet evaluated for register status). In comparison, four archaeological resources and three isolates (also not yet evaluated) have been identified in the proposed CRS project location. Therefore, overall the Avoidance Alternative #1 would affect slightly greater historical and archaeological resources than the proposed CRS.

4.3.3 Alternative Conclusion

RETAINED FOR ANALYSIS. Impacts to desert tortoise would be greater at the Avoidance Alternative #1 than at the proposed CRS location, but would be less than significant with standard mitigation. The alternative would reduce both direct and indirect impacts to Mojave fringe-toed lizard sand dune habitat as well as impacts to ribbed cryptantha and Harwood's eriastrum. Fewer total documented cultural resources would also be impacted; however, a greater number of them have not been formally evaluated for eligibility for listing on the NRHP or the CRHR.

Avoidance Alternative #1 is likely to be technically feasible since it could likely be constructed and there are no regulatory obstructions to permitting at the alternative site. There would be potential legal feasibility issues with the reservation rights on the energy company parcel, because approval would be required by the Palo Verde Land and Water Company.

The first two project objectives would be met by this and all alternatives. The third project objective, requiring an online date by the end of 2013, could be affected by several processes, but the one with most potential for creating a delayed online date is land owner negotiations for property rights for the transmission interconnections. Land acquisition could require time-consuming eminent domain proceedings. For the gen-tie lines, the solar developers do not have eminent domain rights. If the gen-tie lines cannot be installed on lands for which SCE has obtained rights and the affected property owners are not cooperative, then rerouting of the gen-tie lines may be necessary to avoid the private parcels, which

may also result in schedule delays. It is uncertain whether Avoidance Alternative #1 could meet the third objective related to meeting SCE's online date.

Avoidance Alternative #1 is carried forward for analysis because it has the potential to reduce environmental impacts, it is feasible, and it would meet most (two of three) project objectives.

4.4 Avoidance Alternative #2

4.4.1 Description

Reason for Consideration: Eliminates all direct effects on sand transport corridor and moves substation entirely onto private lands.

Land Ownership: The substation would entirely on private land. SCE transmission lines looping into substation and gen-tie lines would likely be located on both private land and public land.

Effect on Sand Transport Corridor: No direct or indirect effect except for gen-tie lines and access roads.

Figure Ap.1-5 illustrates Avoidance Alternative #2, which would rotate the substation approximately 135 degrees clockwise to a northwest-southeast orientation and would shift the center of the site approximately 1.2 miles (6,500 feet) southeast of the proposed CRS. The alternative would remain north of the DPV2 transmission corridor, would be entirely on private land, and would be entirely outside of the active sand transport corridor. However, the connecting transmission and gen-tie lines may cross through the sand corridor on the northwest and north sides of the alternative site.

The area considered and analyzed for Avoidance Alternative #2 would be large enough to accommodate a substation orientation either parallel or perpendicular to the transmission corridor depending on final engineering.

The majority of the habitat at Avoidance Alternative #2 site is Sonoran creosote bush scrub with the exception of a portion of the eastern part of the site (approximately 20 acres) that is an isolated accumulation of fine sands among sparse creosote bushes. This sandy area is suitable MFTL, ribbed cryptantha and Harwood's eriastrum habitat. The remainder of the site is relatively compacted with gravelly soils has low to moderate potential to support desert tortoise.

4.4.2 Consideration of CEQA Criteria

Project Objectives

Avoidance Alternative #2 would meet the first two project objectives by providing transmission access to potential future renewable resources in the Blythe area and by helping California meet its renewable energy goals.

The third project objective relates to the timing of the substation and transmission line being completed and operational. Factors in potential timing delays relate to (a) substation re-design at an alternative site, (b) potential regulatory delays that may result from revised gen-tie routes, and (c) eminent domain process required to obtain private land rights. These issues are addressed in Section 4.2.2 above, and are not repeated here.

It is likely that re-design and required regulatory approvals could occur within the required timeframe set by SCE in its objectives. Acquisition of private lands for gen-tie interconnections may require an additional 6 months beyond SCE's LGIA date. If delays affected the online date for CRS at this alternative

location, the timing objective (Objective 3) would not be met, but given the attainment of Objectives 1 and 2, Avoidance Alternative #2 would still meet most of SCE's project objectives.

Feasibility

Technical Feasibility. Given the location of the future DSWTP 500 kV line in the transmission corridor, the line will likely need to cross the existing 220 kV line for both the parallel and perpendicular configurations of the Avoidance Alternative #2. See the Technical Feasibility discussion under Section 4.2.2. Although the interconnection of DPV2 and the gen-ties from GSEP and BSPP to the appropriate substation switchracks would require some modifications, as shown in Figures Ap.1-3A and Ap.1-3B, it is potentially technically feasible to interconnect to the CRS in either the parallel or perpendicular configuration.

Legal and Regulatory Feasibility. The potential concerns for legal and regulatory feasibility of the Avoidance Alternative #2 are the same as those for the Partial Avoidance Alternative (see Section 4.2.2). The following issues are not repeated here: (a) required BLM and CEC approval of modified gen-tie routes, (b) BLM approval of the alternative substation site, and (c) the location of the gen-tie, SCE transmission lines, and the substation on private land, requiring acquisition of land rights.

In order for the BSPP gen-tie to reach this alternative site, it could remain within an approved utility corridor if it followed the DPV1 corridor from the end of its approved route at the proposed CRS site. With this route, no additional plan amendment would be required. The private parcels affected by this alternative are the same as those defined for Avoidance Alternative #1. Other than the land and water company reservation, the parcels do not appear to have legal restrictions that would render development at the Avoidance Alternative #2 site infeasible.

As described in Section 2.4, a change in the substation location is not likely to trigger a re-opening of the CEC proceedings for GSEP and BSPP. An alternative site and the connecting gen-tie line would likely be a staff-level approval so long as the CEC finds that the changes to the gen-tie lines would not create a new significant impact and would comply with applicable LORS. The process for BLM approval of this alternative would be the same as that defined in Section 2.3.

Other Feasibility Factors. SCE has stated that development of CRS at an alternative site would appear to be economically feasible, in that it does not appear to present additional costs to SCE in an order of magnitude that would render it impractical from SCE's perspective to proceed with the project (SCE, 2011a).

Development at this alternative would not cause significant damage to the socioeconomic structure of the community, be inconsistent with important community values and needs, or have a significant impact on the community's population, housing, or public services in any way substantially different from the current proposed location. Development of Avoidance Alternative #2 would also be potentially socially feasible.

Environmental Advantages

This alternative has the potential to lessen environmental impacts as follows.

- **Biological Resources.** As discussed in Section 2.1.4, construction of the proposed expanded CRS would cause 98 acres of direct disturbance to MFTL, as well as a reduction of sand transported within MFTL habitat to 1,365 acres downwind (east) of the Proposed Project area. This would create a significant and unmitigable impact to the MFTL and its habitat. Construction and operation of the CRS at this location would eliminate most direct impacts to sand dunes as well as 1,365 acres of indirect impacts

to downwind MFTL habitat from obstruction of Aeolian sand transport (Appendix 3; ESA PWA, 2010). Direct impacts to 20 acres of low-quality MFTL habitat would occur from construction of the substation; loss of this marginal MFTL habitat would be adverse, but less than significant and would not require mitigation. However, construction/widening of access roads in stabilized and partially stabilized dune habitat would require mitigation to reduce impacts below the level of significance. In addition, because this alternative would be out of the sand transport corridor, it would not have the extensive indirect impacts from sand transport obstruction.

Although impacts to Harwood's eriastrum, Harwood's milk vetch, and flat-seeded spurge would be less than significant with mitigation for both the proposed site and this alternative, there would be reduced impacts with Avoidance Alternative #2 due to the presence of fewer acres of suitable/occupied habitat (only 30 acres of sandy areas versus 90 acres for the proposed CRS project). Rare plants were not observed in applicant surveys or Aspen surveys (Aspen surveys were late-season); however, suitable habitat is present in sandy portions of the site (approximately 20 acres) and along the access road that would be widened (approximate 10 acres).

- **Cultural Resources.** One archaeological cultural resource (not yet evaluated for register status) is located in the Avoidance Alternative #2 substation site and three resources that have not yet been evaluated for register status are located within the study area buffer for the gen-tie/transmission interconnections and access road. Overall the Avoidance Alternative #2 would affect fewer historical and archaeological resources than the proposed CRS, which would affect four archaeological resources and three isolates (also not yet evaluated for register status).

Environmental Disadvantages

This alternative has the potential to cause the following environmental impacts.

- **Ground Disturbance.** Increased ground disturbance would result from approximately 1.2 miles of additional 220 kV gen-tie transmission lines to connect from BSPP and GSEP to this alternative substation site. Increased length of the gen-tie lines and associated construction time will affect the length and intensity of short-term construction impacts and ground disturbance, increasing impacts in air quality, noise, transportation and traffic, hazardous materials related to environmental contamination, and geologic resources related to soil erosion. The potential to disturb unknown cultural resources and impact vegetation and wildlife is also increased with more ground disturbance. Increased disturbance and removal of vegetation could increase the chance of noxious weed introduction as well as the removal of more native desert vegetation.
- **Biological Resources.** There is low potential for desert tortoise to occur in the sandy habitat at the proposed CRS site compared to Avoidance Alternative #2. The alternative has a higher potential for tortoise effects due to 70 acres of direct impacts to creosote scrub. Therefore, construction and operation of the CRS at this alternative location would result in increased impacts to desert tortoise habitat (creosote scrub). Impacts would be less than significant with implementation of standard mitigation requiring acquisition of mitigation lands that was included in the DPV2 Final EIR/EIS (2006).

4.4.3 Alternative Conclusion

RETAINED FOR ANALYSIS. Impacts to desert tortoise would be greater at the Avoidance Alternative #2 than at the proposed CRS location, but would be less than significant with standard mitigation. The alternative would reduce both direct and indirect impacts to Mojave fringe-toed lizard sand dune habitat as well as impacts to ribbed cryptantha and Harwood's eriastrum. Fewer cultural resources would also be impacted as well.

Avoidance Alternative #2 is likely to be technically feasible since it could likely be constructed and there are no regulatory obstructions to permitting at the alternative site. There would be potential legal feasibility issues with the reservation rights on the energy company parcel, because approval would be required by the Palo Verde Land and Water Company.

The first two project objectives would be met by this and all alternatives. The third project objective, requiring an online date by the end of 2013, could be affected by several processes, but the one with most potential for creating a delayed online date is land owner negotiations for property rights for the transmission interconnections. Land acquisition could require time-consuming eminent domain proceedings. For the gen-tie lines, the solar developers do not have eminent domain rights. If the gen-tie lines cannot be installed on lands for which SCE has obtained rights and the affected property owners are not cooperative, then rerouting of the gen-tie lines may be necessary to avoid the private parcels, which may also result in schedule delays. It is uncertain whether Avoidance Alternative #2 could meet the third objective related to meeting SCE's online date.

Avoidance Alternative #2 is carried forward for analysis because it has the potential to reduce environmental impacts, it is feasible, and it would meet most (two of three) project objectives.

4.5 Avoidance Alternative #3

4.5.1 Description

Reason for Consideration: Eliminates all direct effects on sand transport corridor. Substation would be entirely onto public land, but gen-tie lines would cross private lands.

Land Ownership: Substation would entirely on public land. SCE transmission lines looping into substation and gen-tie lines would likely be on both private land and public land.

Effect on Sand Transport Corridor: No direct or indirect effect except for access roads.

Figure Ap.1-6 illustrates Avoidance Alternative #3, which would rotate the substation approximately 135 degrees clockwise to a northwest-southeast orientation and would shift the site almost 1.9 miles (10,000 feet) southeast of the proposed CRS. The alternative would remain north of the DPV2 transmission corridor. However, the connecting transmission and gen-tie lines would likely need to cross private land on the northwest and southeast sides of the alternative site.

The area considered and analyzed for Avoidance Alternative #3 would be large enough to accommodate a substation orientation either parallel or perpendicular to the transmission corridor depending on final engineering.

This alternative site has areas of the fine isolated sands amongst sparse creosote covering roughly 45 acres; these sandy areas are suitable habitat for MFTL and Harwood's eriastrum and support ribbed cryptantha, which was observed during surveys. The remainder of the site's habitat is Sonoran creosote bush scrub, which is considered unsuitable for ribbed cryptantha, Harwood's eriastrum, and MFTL, but potentially suitable for desert tortoise. A State-jurisdictional drainage occurs on site that may act as a sand source.

4.5.2 Consideration of CEQA Criteria

Project Objectives

Avoidance Alternative #3 would meet the first two project objectives by providing transmission access to potential future renewable resources in the Blythe area and by helping California meet its renewable energy goals.

The third project objective relates to the timing of the substation and transmission line being completed and operational. Factors in potential timing delays relate to (a) substation re-design at an alternative site, (b) potential regulatory delays that may result from revised gen-tie routes, and (c) eminent domain process required to obtain private land rights. These issues are addressed in Section 4.2.2 above, and are not repeated here.

It is likely that re-design and required regulatory approvals could occur within the required timeframe set by SCE in its objectives. Acquisition of private lands for gen-tie interconnections may require an additional 6 months beyond SCE's LGIA date. If delays affected the online date for CRS at this alternative location, the timing objective (Objective 3) would not be met, but given the attainment of Objectives 1 and 2, Avoidance Alternative #2 would still meet most of SCE's project objectives.

Feasibility

Technical Feasibility. Given the location of the future DSWTP 500 kV line in the transmission corridor, the line will likely need to cross the existing 220 kV line for both the parallel and perpendicular configurations of this alternative. See the Technical Feasibility discussion under Section 4.2.2. Although the interconnection of DPV2 and the gen-ties from GSEP and BSPP to the appropriate substation switchracks would require some modifications, as shown in Figures Ap.1-3A and Ap.1-3B, it is potentially technically feasible to interconnect to the CRS in either the parallel or perpendicular configuration of this alternative.

Legal and Regulatory Feasibility. The potential concerns for legal and regulatory feasibility of the Avoidance Alternative #3 are the same as those for the Partial Avoidance Alternative (see Section 4.2.2). The following issues are not repeated here: (a) required BLM and CEC approval of modified gen-tie routes, (b) BLM approval of the alternative substation site, and (c) the potential for the gen-tie and SCE transmission lines to cross private lands, requiring acquisition of land rights.

The routing of the BSPP gen-tie line could remain within an approved BLM utility corridor if the transmission line remained within the DPV corridor from its proposed terminus at the CRS site to this alternative site.

Other Feasibility Factors. SCE has stated that development of CRS at any alternative site would appear to be economically feasible, in that it does not appear to present additional costs to SCE in an order of magnitude that would render it impractical from SCE's perspective to proceed with the project (SCE, 2011a).

Development at this alternative would not cause significant damage to the socioeconomic structure of the community, be inconsistent with important community values and needs, or have a significant impact on the community's population, housing, or public services in any way substantially different from the current proposed location. Development of Avoidance Alternative #3 would also be potentially socially feasible.

Environmental Advantages

This alternative has the potential to lessen environmental impacts as follows.

- **Biological Resources.** As discussed in Section 2.1.4, construction of the proposed expanded CRS would cause 98 acres of direct disturbance to MFTL, as well as a reduction of sand transported within MFTL habitat to 1,365 acres downwind (east) of the Proposed Project area. This would create a significant and unmitigable impact to the MFTL and its habitat. Construction and operation of the CRS at this location would eliminate most direct impacts to sand dunes as well as 1,365 acres of indirect impacts to downwind MFTL habitat from obstruction of Aeolian sand transport (Appendix 3; ESA PWA, 2010). Direct impacts to 45 acres of low-quality MFTL habitat would occur from construction of the substation; loss of this marginal MFTL habitat would be adverse, but less than significant and would not require mitigation. However, construction/widening of access roads in stabilized and partially stabilized dune habitat would require mitigation to reduce impacts below the level of significance. In addition, because this alternative would be out of the sand transport corridor, it would not have the extensive indirect impacts from sand transport obstruction.

Although impacts to Harwood's eriastrum, Harwood's milk vetch, and flat-seeded spurge would be less than significant with mitigation for both the proposed site and this alternative, there would be reduced impacts to rare plants with Avoidance Alternative #3 due to the presence of fewer acres of suitable/occupied habitat (only 45 acres of sandy areas in the substation site versus 90 acres for the proposed CRS project). Both the proposed project and this alternative would result in direct effects to approximately 10 acres of suitable/occupied sand dune habitat for rare plants from construction/widening of access roads; these effects would be less than significant with implementation of mitigation.

Environmental Disadvantages

This alternative has the potential to cause the following environmental impacts.

- **Ground Disturbance.** Increased ground disturbance would result from approximately almost two miles of additional 220 kV gen-tie transmission lines to connect from BSPP and GSEP to this alternative substation site. Increased length of the gen-tie lines and associated construction time will affect the length and intensity of short-term construction impacts and ground disturbance, increasing impacts in air quality, noise, transportation and traffic, hazardous materials related to environmental contamination, and geologic resources related to soil erosion. The potential to disturb unknown cultural resources and impact vegetation and wildlife is also increased with more ground disturbance. Increased disturbance and removal of vegetation could increase the chance of noxious weed introduction as well as the removal of more native desert vegetation.
- **Biological Resources.** This alternative would create new impacts to State-jurisdictional desert wash, which also provides important habitat for wildlife and plants. With incorporation of mitigation required in the DPV2 Final EIR/EIS (2006), impacts would be less than significant.

There is lower potential for desert tortoise to occur in the sandy habitat at the proposed CRS site compared to Avoidance Alternative #3. The alternative has a higher potential for tortoise effects due to 45 acres of direct impacts to creosote scrub. Therefore, construction and operation of the CRS at this alternative location would result in increased impacts to desert tortoise habitat (creosote scrub). Impacts would be less than significant with implementation of standard mitigation requiring acquisition of mitigation lands that was included in the DPV2 Final EIR/EIS (2006).

- **Cultural Resources.** Eight archaeological resources (not yet evaluated for register status) were identified within the Avoidance Alternative #3 site and 7 resources that have not yet been evaluated for register status are located in the study area buffer for the gen-tie/transmission interconnections and substation access road. These cultural resources are centrally located and more complex than sites

identified in any of the other alternatives site or at the proposed CRS. Also, it is likely that access to the alternative site from the existing access road and potential tie-in corridors would require avoiding additional archaeological cultural resources.

4.5.3 Alternative Conclusion

RETAINED FOR ANALYSIS. Impacts to desert tortoise would be greater at the Avoidance Alternative #3 than at the proposed CRS location, but would be less than significant with standard mitigation. The alternative would reduce both direct and indirect impacts to Mojave fringe-toed lizard sand dune habitat as well as impacts to ribbed cryptantha and Harwood's eriastrum. Fewer cultural resources would also be impacted as well.

Avoidance Alternative #3 is likely to be technically feasible since it could likely be constructed and there are no regulatory obstructions to permitting at the alternative site.

The first two project objectives would be met by this and all alternatives. The third project objective, requiring an online date by the end of 2013, could be affected by several processes, but the one with most potential for creating a delayed online date is land owner negotiations for property rights for the transmission interconnections. Land acquisition could require time-consuming eminent domain proceedings. For the gen-tie lines, the solar developers do not have eminent domain rights. If the gen-tie lines cannot be installed on lands for which SCE has obtained rights and the affected property owners are not cooperative, then rerouting of the gen-tie lines may be necessary to avoid the private parcels, which may also result in schedule delays. It is uncertain whether Avoidance Alternative #3 could meet the third objective related to meeting SCE's online date.

Avoidance Alternative #3 is carried forward for analysis because it has the potential to reduce environmental impacts, it is feasible, and it would meet most (two of three) project objectives.

4.6 Southern Alternative

4.6.1 Description

Reason for Consideration: Eliminates all direct effects on sand transport corridor. Substation would be entirely onto public land and would remain in close proximity to proposed site, minimizing need to modify gen-tie routes.

Land Ownership: Substation would entirely on private land. SCE transmission lines looping into substation and gen-tie lines would remain entirely on public land

Effect on Sand Transport Corridor: Small amounts of direct effects resulting from access road construction/widening and transmission tower foundations between the substation and DPV corridor. No indirect effects.

Figure Ap.1-7 illustrates the location of the Southern Alternative, which was designed to remain entirely on public (BLM) land and be outside of the active sand transport corridor. The layout of the Southern Alternative would be almost identical to the layout already engineered for the proposed CRS, if DPV1 and DPV2 exit to the south of the site. The Southern Alternative would shift the site approximately 4,000 feet (0.75 miles) south of the proposed CRS and in order to avoid direct effects on the sand transport corridor, the substation would be separated from the DPV1 transmission line by about 1,300 feet. Due to this separation, the connecting transmission and gen-tie lines would cross through BLM land within the sand corridor between the alternative substation site and the transmission corridor. However, as shown

on Figure Ap.1-7, to minimize sand corridor and ground disturbance, SCE has preliminarily designed the routes for DPV1 and DPV2 500 kV to be as perpendicular to the sand corridor boundary as possible. This routing would also leave room for the 230 kV gen-tie lines to connect into the substation from the north.

~~Because the substation would be south of the DPV2 corridor, the orientation of the components within the substation site would flip approximately 180 degrees in order to minimize transmission line cross-overs of the gen-tie and 500 kV lines. Thus, the 220 kV switchrack would be north of the 500 kV switchrack within the substation, as is shown on Figures Ap.1-3A-8A and Ap.1-3B-8B.~~

The alternative site analyzed herein would be large enough to accommodate a substation orientation either parallel or perpendicular to the transmission corridor depending on final engineering; however, it an east-west orientation may require 2 to 4 additional 500 kV towers. As described above, SCE has stated in its comment letter on the Draft SEIR (Comment Letter D01) that its engineers have determined that practically the exact same substation layout already completed for the proposed CRS location could also be used at the Southern Alternative location.

This Southern Alternative site is covered with Sonoran creosote bush scrub with relatively compacted, gravelly soils. Numerous potentially jurisdictional washes transect the alternative site, with the majority oriented roughly north to south. An active kit fox complex and other mammalian burrows were also observed on site.

Between the northern boundary of this alternative and the transmission corridor to the north there is stabilized and partially stabilized sand dune habitat, which is known to support MFTL and ribbed cryptantha and has high potential for occurrence of Harwood's eriastrum.

4.6.2 Consideration of CEQA Criteria

Project Objectives

The Southern Alternative would meet the first two project objectives by providing transmission access to potential future renewable resources in the Blythe area and by helping California meet its renewable energy goals.

The third project objective relates to the timing of the substation and transmission line being completed and operational. Factors in potential timing delays relate to (a) substation re-design at an alternative site, and (b) potential regulatory delays that may result from revised gen-tie routes. These issues are addressed in Section 4.2.2 above, and are not repeated here. This alternative would not affect any private land, so there would be no potential delay resulting from acquisition of private lands

It is likely that re-design and required regulatory approvals could occur within the required timeframe set by SCE in its objectives. Therefore, it is considered unlikely that delays affecting the online date for CRS would occur at this alternative location. It is likely that the timing objective (Objective 3) could still be met, but if not, given the attainment of Objectives 1 and 2, the Southern Alternative would still meet most of SCE's project objectives.

Feasibility

Technical Feasibility. There are three related aspects of technical feasibility: (a) substation re-design, (b) transmission line crossings, and (c) substation configurations. Each of these issues is addressed in Section 4.2.2 (Partial Avoidance Alternative), and is not repeated here.

Legal and Regulatory Feasibility. The legal and regulatory concerns for the Southern Alternative site are the same as those addressed for the Partial Avoidance Alternative in Section 2.4.4. They include: (a) required BLM and CEC approval of modified gen-tie routes, and (b) BLM approval of the alternative substation site.

There are no other encumbrances on the BLM land in this area, so it is potentially legally feasible for the alternative to be constructed at this BLM site (BLM, 2010).

Other Feasibility Factors. SCE has stated that development of the CRS at an alternative site would appear to be economically feasible, in that it does not appear to present additional costs to SCE of an order of magnitude that would render it impractical from SCE’s perspective to proceed with the project (SCE, 2011a).

Development at the Southern Alternative would not cause significant damage to the socioeconomic structure of the community, be inconsistent with important community values and needs, or have a significant impact on the community’s population, housing, or public services in any way substantially different from the current proposed location. Development of the Southern Alternative would also be potentially socially feasible.

Environmental Advantages

This alternative has the potential to lessen environmental impacts as follows.

- **Biological Resources.** As discussed in Section 2.1.4, construction of the proposed expanded CRS would cause 98 acres of direct disturbance to MFTL, as well as a reduction of sand transported within MFTL habitat to 1,365 acres downwind (east) of the proposed project area. This would create a significant and unmitigable impact to the MFTL and its habitat. Construction and operation of the CRS at this location would eliminate most direct impacts to sand dunes as well as 1,365 acres of indirect impacts to downwind MFTL habitat from obstruction of Aeolian sand transport (Appendix 3; ESA PWA, 2010). Impacts to MFTL would be reduced and would not require mitigation for the substation site itself, but mitigation would be required for approximately 10 acres of direct impacts resulting from construction/widening of access roads in stabilized and partially stabilized sand dunes. If the gen-tie transmission interconnections would cross through the active sand dunes, then mitigation included in the past CEC and BLM documents for BSPP and GSEP would ensure that impacts would be less than significant.

Construction of the Southern Alternative site would eliminate impacts to ribbed cryptantha and Harwood’s eriastrum, Harwood’s milk vetch, and flat-seeded spurge, but construction/widening of access roads in stabilized and partially stabilized sand dunes would result in impacts to rare plants that could be reduced below the level of significance with implementation of mitigation.

Environmental Disadvantages

This alternative has the potential to cause the following environmental impacts.

- **Ground Disturbance.** Increased ground disturbance would result from approximately 4,000 feet of additional 220 kV gen-tie transmission lines to connect from BSPP and GSEP to this alternative substation site. The line would also need to cross over the DPV2 and existing DPV1 lines. Increased length of the gen-tie lines and associated construction time will affect the length and intensity of short-term construction impacts and ground disturbance, increasing impacts in air quality, noise, transportation and traffic, hazardous materials related to environmental contamination, and geologic resources related to soil erosion. The potential to disturb unknown cultural resources and impact vegetation and wild-

life is also increased with more ground disturbance. Increased disturbance and removal of vegetation could increase the chance of noxious weed introduction as well as the removal of more native desert vegetation.

- **Biological Resources.** There is lower potential for desert tortoise to occur in the sandy habitat at the proposed CRS site compared to the Southern Alternative. The alternative has a higher potential for tortoise effects due to 90 acres of direct impacts to creosote scrub. Therefore, construction and operation of the CRS at this alternative location would result in increased impacts to desert tortoise habitat (creosote scrub). Impacts would be less than significant with implementation of standard mitigation requiring acquisition of mitigation lands that was included in the DPV2 Final EIR/EIS (2006).

There would be new impacts to ~~State-potential~~ jurisdictional washes because many ephemeral desert washes transect the alternative site. If these waters are determined by USACE and/or CDFG to be jurisdictional, With incorporation of mitigation required in the DPV2 Final EIR/EIS, would reduce impacts ~~would be~~ to a less than significant level.

An active desert kit fox den and other mammalian burrows occur onsite, and therefore, the Southern Alternative would also have increased impacts to desert mammals. Implementation of mitigation presented in Section D.2 of this SEIR would reduce potential impacts to desert kit fox to less than significant levels.

- **Cultural Resources.** Five archaeological resources and two isolated artifacts (not yet evaluated for register eligibility) have been identified at the Southern Alternative site and 6 resources are located in the study area buffer for the gen-tie/transmission line interconnections and substation access road. The resources are located in an area that cannot be easily avoided by a minor shift in location. In comparison, four archaeological resources and three isolates (also not yet evaluated) have been identified in the proposed CRS project location. Therefore, overall the Southern Alternative would likely affect more historical and archaeological resources than the proposed CRS.

4.6.3 Alternative Conclusion

RETAINED FOR ANALYSIS. Impacts to desert tortoise and desert kit fox could be greater at the Southern Alternative than at the proposed CRS location, but would be less than significant with standard mitigation. The alternative would reduce both direct and indirect impacts to Mojave fringe-toed lizard sand dune habitat as well as impacts to ribbed cryptantha and Harwood's eriastrum. While there is the potential for more cultural resources to be impacted at the Southern Alternative, impacts would be less than significant with mitigation already incorporated in the DPV2 Final EIR/EIS.

The Southern Alternative is likely to be technically feasible since it could likely be constructed and there are no regulatory obstructions to permitting at the alternative site.

The first two project objectives would be met by this and all alternatives. The third project objective, requiring an online date by the end of 2013, could be affected by several processes, but because this site would not require acquisition of rights to private land, the Southern Alternative would be unaffected by the potential land acquisition delays that could affect the Partial Avoidance Alternative and the three Avoidance Alternatives. The only remaining uncertainty is whether the Southern Alternative could meet the third objective related to meeting SCE's online date, and with no private lands to acquire, this would be much more likely at this site than the other alternatives.

The Southern Alternative is carried forward for analysis because it has the potential to reduce environmental impacts, it is feasible, and it would likely meet all project objectives.

4.7 Original Midpoint Substation Alternative

4.7.1 Description

Reason for Consideration: The Original Midpoint Substation Alternative was SCE’s proposed substation site in the Final EIR/EIS, and it would eliminate all direct effects on sand transport corridor. The substation would be entirely onto public land.

Land Ownership: The Substation would be entirely on public land. However, in order for the BSPP gen-tie line to reach this site, it may have to cross private lands between the proposed CRS site and the Midpoint site.

Effect on Sand Transport Corridor: No direct or indirect effects.

Figure Ap.1-9 shows the location of the original Midpoint Substation, considered here as the Original Midpoint Substation Alternative. This alternative would include construction of the 90-acre expanded CRS at the location of the originally proposed SCE Midpoint Substation. The original 44-acre area (approximately 1,000 feet by 1,900 feet) was described as the SCE Midpoint Substation and evaluated for every issue area in the DPV2 Final EIR/EIS. This alternative would be located approximately 10 miles southwest of Blythe, California, adjacent to SCE's DPV1 ROW. The site is located on public (BLM) land immediately west of Imperial Irrigation District's Blythe-Niland 161 kV transmission line and Western Area Power Administration’s Blythe-Knob 161 kV transmission line. It would be approximately 4.5 miles southeast of the proposed CRS along the DPV2 corridor. It is likely that the gen-tie lines and transmission interconnections at the substation could be routed to remain entirely within utility corridors on public (BLM) land. However, the BSPP line would have to acquire rights to cross several parcels of private lands along the DPV corridor in the 4.5-mile segment between the proposed CRS and this alternative site.

4.7.2 Consideration of CEQA Criteria

Project Objectives

The Original Midpoint Substation Alternative would meet the first two project objectives by providing transmission access to potential future renewable resources in the Blythe area and by helping California meet its renewable energy goals.

The third project objective relates to the timing of the substation and transmission line being completed and operational. Factors in potential timing delays relate to (a) substation re-design at an alternative site, (b) potential regulatory delays that may result from revised gen-tie routes, and (c) eminent domain process required to obtain private land rights for the BSPP gen-tie line. These issues are addressed in Section 4.2.2 above.

The Midpoint Substation Alternative would likely present a more substantial challenge to interconnection of gen-tie lines. This location is approximately 4.5 miles southeast of the already-approved gen-tie line terminations for the GSEP and BSPP solar generation projects, so additional generation-tie lines would need to be constructed to access this site. Given the substantial length of the additional lines compared to the proposed CRS and other alternative sites, a substantial change in the project design may trigger further discretionary actions for the CEC and BLM under CEQA and NEPA, respectively, because the gen-tie line routes would have to be substantially revised. The resulting environmental review process could significantly delay the project schedule beyond the other above alternatives carried forward as well as the interconnections of the already-approved power generation projects (e.g., GSEP and BSPP).

The Original Midpoint Substation Alternative would allow meeting two of the three project objectives. However, the potential for regulatory permitting delays related to interconnection of revised gen-tie line routes may significantly affect SCE's 2013 online date.

Feasibility

A substation at this location was approved by the CPUC its original decision on the DPV2 project (D.07-01-040) in January 2007. While construction of the approved Midpoint Substation would have been feasible, the current substation design requires interconnection of gen-ties from renewable generators. Therefore, new feasibility concerns exist for this alternative that did not exist when the site was initially approved.

Technical Feasibility. There are three related aspects of technical feasibility: (a) substation re-design, (b) transmission line crossings, and (c) substation configurations. These issues are addressed in Section 4.2.2 and are not repeated here.

Legal and Regulatory Feasibility. Construction of the CRS at this location would result in the need to construct approximately 4.5 miles of additional 220 kV transmission lines to connect to the BSPP gen-tie. In addition, the GSEP gen-tie would have to be re-built to accommodate a second circuit for the 4.5-mile distance. Given the substantial length of the additional gen-tie lines compared to the proposed CRS and other alternative sites, a substantial change in the project design may trigger further discretionary actions for the CEC and BLM under CEQA and NEPA, respectively, which could significantly delay the project schedule beyond the other above alternatives carried forward and affect its ability to meet project objectives (see discussion in Section 4.2.2).

Environmental Advantages

This alternative has the potential to lessen environmental impacts as follows.

- **Biological Resources.** As discussed in Section 2.1.4, construction of the proposed expanded CRS would cause 98 acres of direct disturbance to MFTL, as well as a reduction of sand transported within MFTL habitat to 1,365 acres downwind (east) of the proposed project area. This would create a significant and unmitigable impact to the MFTL and its habitat. Construction and operation of the CRS at this location would eliminate direct impacts to sand dunes as well as 1,365 acres of indirect impacts to downwind MFTL habitat from obstruction of Aeolian sand transport (Appendix B; ESA PWA, 2010). Impacts to MFTL would be reduced in comparison to the proposed CRS project and would not require mitigation.

Environmental Disadvantages

This alternative has the potential to cause the following environmental impacts.

- **Ground Disturbance.** Increased ground disturbance would result from an additional 4.5 miles of 220 kV gen-ties transmission lines to connect to the Original Midpoint Substation Alternative. Increased length of the gen-tie lines and associated construction time will affect the length and intensity of short-term construction impacts and ground disturbance, increasing impacts in air quality, noise, transportation and traffic, hazardous materials related to environmental contamination, and geologic resources related to soil erosion. The potential to disturb unknown cultural resources and impact vegetation and wildlife is also increased with more ground disturbance. Increased disturbance and removal of vegetation could increase the chance of noxious weed introduction as well as the removal of more native desert vegetation.

- **Biological Resources.** There is lower potential for desert tortoise to occur in the sandy habitat at the proposed CRS site compared to the Original Midpoint Substation site. Creosote scrub suitable for desert tortoise would be directly impacted by this alternative. Therefore, similar to the other alternatives, construction and operation of the CRS at this alternative location would result in increased impacts to desert tortoise habitat (creosote scrub). Impacts would be less than significant with implementation of standard mitigation requiring acquisition of mitigation lands and other protective measures (as defined in the DPV2 Final EIR/EIS).
- **Cultural Resources.** This alternative was completely surveyed during early phases of the DPV2 project (Eckhardt, 2009). As discussed in the DPV2 Final EIR/EIS, a single prehistoric site (P33-14387) is located on the site of the original 44-acre Midpoint Substation. Site P33-14387 is a cobble assay located within the footprint of the substation and thus would be directly affected by construction of a substation at this location. In addition, there were two isolated finds (one historic and one prehistoric) within the 44-acre site as well. The isolates are not eligible, and the archaeological site, an assayed/ tested cobble, would probably not be eligible for NRHP or CRHR listing.

Following publication of the DPV2 Final EIR/EIS, additional surveys were completed for the expanded 90-acre Midpoint Substation at this location. Two archaeological sites were found in the new area (two possible hearths and a substantial lithic and ceramic scatter). These are both likely eligible for the NRHP/CRHR. As well, the new survey identified two more archaeological sites in the original 44 acres. One is a trail, and the other is a lithic scatter that had originally been reported as an isolated artifact. Both of these resources would have to be evaluated for eligibility.

In summary, five archaeological cultural resources and one isolate (not yet evaluated for register status) would be within the footprint of the Original Midpoint Substation Alternative. These resources are located in areas that could not easily avoided by either minor shifts in the substation location or avoidance areas. Moreover, two of these are likely eligible for the NRHP/CRHR, and two others may also be eligible. In comparison, four archaeological resources and three isolates (also not yet evaluated) have been identified in the proposed CRS project location. Overall the Original Midpoint Substation Alternative would affect more cultural resources on the site itself compared to the footprint of the CRS. Furthermore, the site types at the Original Midpoint Substation Alternative (i.e., prehistoric camp and trails) appear to be more sensitive, and likely eligible for the NRHP/CRHR, than the resources in the CRS footprint.

In addition, construction of the CRS in this location would further increase the potential to impact known and unknown cultural resources due to the construction of an additional 4.5 miles of 220 kV gen-ties transmission lines from the GSEP and BSPP.

4.7.3 Alternative Conclusion

ELIMINATED. Impacts to desert tortoise and cultural resources would be greater at the Original Midpoint Substation Alternative than at the proposed CRS location. While these impacts would be less than significant with standard mitigation, the impacts to cultural resources would be substantially more severe at this site. The alternative would reduce both direct and indirect impacts to Mojave fringe-toed lizard sand dune habitat as well as impacts to ribbed cryptantha and Harwood's eriastrum.

The Original Midpoint Substation Alternative is likely to be technically and legally feasible since it could likely be constructed.

The first two project objectives would be met by this and all alternatives. The third project objective, requiring an online date by the end of 2013, could be affected by several processes, with the most sig-

nificant being the requirement for extended additional gen-ties to reach this alternative site. Even if the CEC and BLM could approve the gen-tie line modifications in a timely manner, it appears that acquisition of rights across private lands would also be required, which could require substantial additional time. The solar generators do not have eminent domain rights, so lands owned by uncooperative sellers could not be acquired through court proceedings and revised routes would have to be developed, if possible, to avoid any unwilling sellers.

The Southern Alternative would meet two of three project objectives. It is eliminated from analysis because it has the potential to increase cultural resources impacts, and because of the additional time that could be required to permit and acquire land for gen-tie lines.

4.8 Sand Shield Alternative

4.8.1 Description

The Sand Shield Alternative would be at the proposed CRS location. A pointed and west-facing sand deflector wall/shield would be installed to the upwind side of the substation. This deflector would encourage sand to pass around the substation boundary wall and replenish sands in the downwind corridor. This alternative would result in a 120-acre substation footprint and 1,280 acres of indirect impacts to downwind sand dune habitat.

4.8.2 Consideration of CEQA Criteria

Project Objectives

The Sand Shield Alternative would meet all project objectives, because it would provide transmission access to potential future renewable resources in the Blythe area and would help enable California to meet its renewable energy goals in a timely fashion to interconnect with GSEP and BSPP.

Feasibility

The Sand Shield Alternative would be constructed entirely on public lands, and has the potential to be technically, regulatorily, socially, economically, and legally feasible.

Environmental Advantages

This alternative has the potential to lessen environmental impacts as follows.

- **Biological Resources.** Indirect impacts to downwind sand dune habitat would be reduced from 1,365 acres to 1,280 acres with the Sand Shield Alternative.

Environmental Disadvantages

This alternative has the potential to create the following environmental impacts.

- **Ground Disturbance.** The Sand Shield Alternative would create a larger area of disturbance associated with construction of the pointed wall, which will affect the length and intensity of short-term construction impacts and ground disturbance, increasing impacts in air quality, noise, transportation and traffic, hazardous materials related to environmental contamination, and geologic resources related to soil erosion. The potential to disturb unknown cultural resources and impact vegetation and wildlife is also increased with more ground disturbance. Increased disturbance and removal of vegetation could increase the chance of noxious weed introduction as well as the removal of more native desert vegetation.

- **Biological Resources.** Construction and operation of the CRS at this location would result in 120 acres of direct impacts to sand dunes due to the design of the sand shield, which would be 30 acres more than the amount of acreage directly impacted by the proposed CRS. Some species, such as Swainson's hawk and northern harrier, would still be able to forage in deflated dunes that were indirectly impacted, but direct impacts would result in loss of foraging habitat for these species. Therefore, more special-status species would be affected by the increase in direct impacts under the Sand Shield Alternative than would be benefited by its decrease in indirect effects.
- **Cultural Resources.** Expanding the area of disturbance by 30 acres would increase the potential to impact known and unknown cultural resources.

4.8.3 Alternative Conclusion

ELIMINATED. The Sand Shield alternative would meet all project objectives and would be potentially feasible. Although indirect impacts to downwind sand dune habitat would be reduced from 1,365 acres to 1,280 acres, the Sand Shield Alternative would increase the size of the substation, which increases the amount of ground disturbance and direct sand dune impacts of the CRS by 30 acres (30 percent). Additional construction associated with installation of the sand shield would also increase the duration of construction and associated short-term impacts as well. Therefore, the Sand Shield Alternative was eliminated from consideration in this SEIR.

4.9 Rotation and Shield Alternative

4.9.1 Description

This alternative would rotate the CRS layout 90 degrees clockwise so that the length of the substation would extend east-west instead of north-south, and its shorter fence line (approximately 1,530 feet long) would face the prevailing wind and the active sand transport corridor. There would be an option to add a pointy sand deflector wall/shield to the western (upwind) side, which would encourage sand to pass around the substation boundary wall (see Figure Ap.1-10).

The rotated substation layout would result in the same direct acreage impacts as the proposed CRS. Installation of a sand shield would increase the direct footprint of the substation site to 120 acres. Indirect impacts to downwind sand dune habitat would be 1,193 acres with the rotated substation and 1,010 acres with the rotated substation and installation of the sand shield.

4.9.2 Consideration of CEQA Criteria

Project Objectives

The Rotation and Shield Alternative would provide transmission access to potential future renewable resources in the Blythe area and would help enable California to meet its renewable energy goals in a timely fashion by being online in 2013. Therefore, this alternative substation site would meet all of the stated objectives defined by SCE for the Proposed Project.

Feasibility

Technical Feasibility. Although potentially technically feasible, rotating the substation would require SCE to readjust the equipment within the substation and may require rerouting the 500 kV and 220 kV lines entering the substation so that the DPV2 and gen-tie lines would connect to the appropriate voltage switchrack.

Other Feasibility Factors. The Rotation and Shield Alternative has the potential to be regulatorily, economically, socially and legally feasible.

Environmental Advantages

This alternative has the potential to lessen environmental impacts as follows.

- **Biological Resources.** Indirect impacts to downwind sand dune habitat would be 1,193 acres with the rotated substation and 1,010 acres with the rotated substation and installation of the sand shield, both of which are reduced from 1,365 acres that would be indirectly impacted by the proposed CRS.

Environmental Disadvantages

This alternative has the potential to cause the following environmental impacts.

- **Biological Resources.** Construction and operation of the CRS rotated with an east-west orientation would result in the same amount of direct impacts to sand dunes as the Proposed Project (90 acres). If a sand shield is installed then there would be 120 acres of direct impacts to sand dunes, which would be 30 acres more than the amount of acreage directly impacted by the proposed CRS. Some species, such as Swainson's hawk and northern harrier, would still be able to forage in deflated dunes that were indirectly impacted, but direct impacts would result in loss of foraging habitat for these species. Therefore, more special-status species would be affected by the increase in direct impacts under the Rotation and Shield Alternative than would be benefited by its decrease in indirect effects.
- **Greater Ground Disturbance.** With installation of the optional sand shield, the Rotation and Shield Alternative would create a larger area of disturbance associated with construction of the pointed wall, which will affect the length and intensity of short-term construction impacts and ground disturbance, increasing impacts in air quality, noise, transportation and traffic, hazardous materials related to environmental contamination, and geologic resources related to soil erosion. The potential to disturb unknown cultural resources and impact vegetation and wildlife is also increased with more ground disturbance. Increased disturbance and removal of vegetation could increase the chance of noxious weed introduction as well as the removal of more native desert vegetation.

4.9.3 Alternative Conclusion

ELIMINATED. The Rotation and Shield Alternative would meet all project objectives and would be potentially feasible. Although technically feasible, rotation of the CRS site would increase the engineering requirements compared to the proposed CRS, because the substation equipment layout would need to be adjusted. Although indirect impacts to downwind sand dune habitat would be reduced from 1,365 acres to 1,193 acres with the rotated substation or 1,010 acres with the rotated substation and the sand shield, the Rotation and Shield Alternative would increase the amount of ground disturbance and direct sand dune impacts of the CRS by 30 acres (30 percent) if the sand shield is installed. Additional construction associated with installation of the sand shield would also increase the duration of construction and associated short-term impacts as well. Therefore, the Rotation and Shield Alternative was eliminated from consideration.

5. References

- BLM (Bureau of Land Management). 2011. Personal communications between Holly Roberts (BLM Palm Spring-South Coast Field Office) and Susan Lee (Aspen Environmental Group). January 18.
- _____. 2010. Email communication from Allison Shaffer (BLM Palm Spring-South Coast Field Office) to Hedy Koczwara (Aspen Environmental Group). December 3.
- CEC (California Energy Commission). 2010. Commission Decision on Genesis Solar Energy Project. Docket Number 09-AFC-8. <http://www.energy.ca.gov/2010publications/CEC-800-2010-011/CEC-800-2010-011-CMF.PDF>. September.
- SCE (Southern California Edison). 2011. Responses to California Public Utilities Commission Data Request for the Colorado River Substation Expansion. Data Requests were submitted between October 2010 and January 2011. Key responses from SCE were submitted January 14, 2011.
- Solar Millennium (Solar Millennium, LLC). 2011. Statement made by Ralph Hollenbacher (Solar Millennium) in a meeting between Solar Millennium, Southern California Edison and the California Public Utilities Commission. January 11, 2011.

Figure Ap.1-1. Colorado River Substation Alternatives

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-2. Partial Avoidance Alternative

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-3A. Avoidance Alternatives – Substation Configuration (Parallel Configuration)

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-3B. Avoidance Alternatives – Substation Configuration (Perpendicular Configuration)
[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-4. Avoidance Alternative #1

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-5. Avoidance Alternative #2

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-6. Avoidance Alternative #3

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-7. Southern Alternative

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-8A. Southern Alternative – Substation Configuration (Parallel Configuration)

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-8B. Southern Alternative – Substation Configuration (Perpendicular Configuration)

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-9. Original Midpoint Substation Alternative

[CLICK HERE TO VIEW](#)

This page intentionally blank.

Figure Ap.1-10. Sand Shield Alternative

[CLICK HERE TO VIEW](#)

This page intentionally blank.