

[FINAL]

Eldorado – Lugo – Mohave Series Capacitor Project

Cactus and Yucca Salvage and Relocation Plan

**Prepared for
Southern California Edison**

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Applicable agencies

Bureau of Land Management

National Park Service

California Public Utilities Commission

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Acronyms and Abbreviations

°F	Degrees Fahrenheit
APM	Applicant-Proposed Measure
Applicant	Southern California Edison
BLM	Bureau of Land Management
CAISO	California Independent System Operator
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CMA	Conservation Management Actions
CNPS	California Native Plant Society
CPUC	California Public Utilities Commission
CRPR	California Rare Plant Ranks
CYSRP	Cactus and Yucca Salvage and Relocation Plan
DRECP	Desert Renewable Energy Conservation Plan
GPS	Global Positioning System
FESA	Federal Endangered Species Act
HRRP	Habitat Restoration and Revegetation Plan
IWMP	Integrated Weed Management Plan
kV	Kilovolt
MM	Mitigation Measure
NEPA	National Environmental Policy Act
NPS	National Park Service
OPGW	Optical ground wire
Plan	Cactus and Yucca Salvage and Relocation Plan
Project	Eldorado-Lugo-Mohave Series Capacitor Project
ROW	Right-of-Way

SCE	Southern California Edison
SSPSRP	Special-Status Plant Salvage and Relocation Plan
TSP	Tubular steel pole
USFWS	U.S. Fish and Wildlife Service

1 Introduction

Southern California Edison (SCE) is proposing to construct two new mid-line series capacitors and make other improvements to increase capacity and power flow along three existing 500-kilovolt (kV) transmission lines under the Eldorado-Lugo-Mohave Series Capacitor Project (Project). This Cactus and Yucca Salvage and Relocation Plan (CYSRP or Plan) has primarily been prepared in response to mitigation measures required by authorizing agencies for the Project. The CYSRP and the separate Special-status Plant Salvage and Relocation Plan (SSPSRP) are complementary to each other and have been prepared to avoid redundancy and overlap in specific mitigation actions.

The CYSRP prescribes methods and procedures to avoid impacts to cacti and yuccas, salvage suitable cacti and yuccas that cannot be avoided, and either relocate those plants outside of work areas or maintain them in nurseries in preparation for replanting during the restoration phase of the Project. SCE and/or its designees or contractors will be responsible for carrying out the methods and procedures described in this Plan.

1.1 Project Description

1.1.1 Project Purpose Statement

SCE is a public utility that provides electric service to a population of approximately 15 million people within an approximately 50,000-square-mile service area that encompasses 180 cities throughout Southern California. SCE's Project was approved by the California Independent System Operator (CAISO) following recommendations for approval as a policy-driven upgrade through the CAISO's Transmission Planning Process. As a policy-driven upgrade, the purpose of the Project is to integrate renewable generation and relieve area deliverability constraints. The capability of the existing infrastructure is limited by the existing series capacitors and terminal equipment and needs to be upgraded to meet the Project objectives by increasing the import capability of the existing transmission lines. These upgrades have been approved as CAISO policy-driven upgrades in the 2012-2013 and 2013-2014 Transmission Plans.

1.1.2 Project Description

This Project will increase capacity and power flow between SCE's existing Eldorado, Lugo, and Mohave Substations to safely deliver renewable power to the Los Angeles Basin from the Eldorado and Mohave Substations. SCE's Proposed Project would:

- Construct 2 new 500 kV mid-line series capacitors (i.e., the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor) and associated equipment.
- Provide 2 communication paths between the series capacitor sites.
 - Install approximately 2 miles of overhead and 700 feet of underground telecommunications facilities as one path to connect the proposed series capacitors to SCE's existing communication system.
 - Install approximately 2 miles of underground telecommunications facilities as a second communication path to connect the series capacitors to SCE's existing communication system.

- Provide station light and power to the proposed series capacitors by extending and/or rerouting existing lines to create approximately 2 miles of overhead and 700 feet of underground 12 kV distribution circuits. (The new distribution poles would support overhead telecommunication facilities as well as the electric distribution lines.)
- Construct 3 new fiber optic repeater facilities (Barstow, Kelbaker, and Lanfair) within the Lugo-Mohave right-of-way (ROW).
- Install distribution lines for light and power at the 3 proposed fiber optic repeater sites.
- Install underground telecommunications facilities from existing transmission structures to the Barstow, Kelbaker, and Lanfair fiber optic repeater sites.
- Address 16 potential overhead clearance discrepancies at 14 locations by:
 - Relocating, replacing, or modifying existing transmission, subtransmission, and distribution facilities at approximately 12 locations along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV transmission lines to address 14 of the overhead clearance discrepancies. Tower modifications would include raising 9 towers up to approximately 18.5 feet by inserting new lattice-steel sections in tower bodies.
 - Performing minor grading at 2 locations along the Lugo-Mohave 500 kV transmission line to address 2 of the overhead clearance discrepancies.
- Install approximately 232 miles of optical ground wire (OPGW) (approximately 59 miles on the Eldorado-Mohave transmission line and approximately 173 miles on the Lugo-Mohave transmission line and approximately 3 miles of underground telecommunications facilities in the vicinity of the Mohave Substation).
- Modify and strengthen the ground wire peak of existing suspension towers where OPGW splices would occur. (Some of these towers would also require minor modifications to the steel in the tower body.)
- Install approximately 2,000 feet of underground telecommunications facilities within the existing Lugo, Mohave, and Eldorado substations.
- Within Lugo Substation, perform modifications on the existing series capacitors and install new terminating equipment and remove 2 existing tubular steel poles (TSP) and install 2 new TSPs on the Eldorado-Lugo and Lugo-Mohave 500 kV transmission lines.
- Within the Eldorado Substation, perform modifications on the existing series capacitors and upgrade the terminal equipment on the Eldorado-Lugo 500 kV transmission line.
- Within the Mohave Substation, replace existing series capacitors on the Lugo-Mohave 500 kV transmission line and install new terminal equipment on the Eldorado-Mohave and Lugo-Mohave 500 kV transmission lines.
- Install (if necessary) cathodic protection on approximately 60 miles of SoCalGas's natural gas pipelines parallel to SCE's Lugo-Mohave 500 kV transmission line and on other pipelines as needed.

1.1.3 Project Habitat Description

The existing transmission lines associated with the Project transect the Mojave Desert Geomorphic Province. The elevation of the Project ranges from 780 feet near the Mohave Substation to 4,000 feet

above mean sea level at various points. Between 1981 and 2010, rainfall records from the nearest climatological station to Eldorado Substation show an average annual rainfall of approximately 4.9 inches. Between 1981 and 2010, the average annual high temperature was approximately 80.1 degrees Fahrenheit (°F) and the average annual low temperature was 58.7°F.

The Project is within the Southern Mojave and Piute Wash Hydrological Units. With the exception of the Mojave River and several smaller intermittent streams, streams consist almost exclusively of ephemeral dry washes that only hold water for a short period of time as the result of seasonal precipitation. Major drainages crossed by the Project include the Mojave River, Budweiser Wash, and Piute Wash. Within the vicinity of the Lugo Substation, water generally flows from south to northeast, toward the Mojave River, and from there to closed basins in the interior of the Mojave. Near the Mohave Substation, water flows from west to east, toward the Colorado River. The Colorado River eventually empties to the Gulf of California, south of the United States-Mexico border. In the vicinity of the Eldorado Substation, water generally flows from southwest to northeast and into the Eldorado Dry Lake, a closed basin.

Botanical surveys were conducted during the planning and permitting phase of the Project (Insignia Environmental 2017, 2020). The purpose of these surveys was to document vegetation alliances within areas that would be affected by the Project and to document the presence or potential presence of special-status plant species. Detailed descriptions of vegetation alliances are presented in those reports. Focused surveys for cacti and yuccas were conducted in 2020 and are described in Section 2.

1.2 Lead, Cooperating, and Consulting Agencies

1.2.1 Lead Agencies

Lead agencies have discretionary approval over the Project and are responsible for reviewing aspects of the measures documented in this Plan. The California Public Utilities Commission (CPUC) is the state lead agency responsible for compliance with the California Environmental Quality Act (CEQA) for Project areas on non-federal lands. The CPUC issued an Initial Study/Mitigated Negative Declaration for the Project under CEQA. The Bureau of Land Management (BLM) Desert District Office is the federal lead agency responsible for compliance with National Environmental Policy Act (NEPA) for the Project areas on federal lands.

1.2.2 Cooperating Agencies

Because the Project also crosses the Mojave National Preserve, the National Park Service (NPS) elected to participate as a Cooperating Agency for the environmental review of the Project. Although the existing transmission lines associated with the Project also cross lands administered by the Bureau of Reclamation and the Department of Defense, the NPS represents the only federal cooperating agency at this time.

1.2.3 Consulting Agencies

Consulting agencies are public agencies, other than the lead agencies, that may provide guidance or information needed to satisfy the requirements of the measures contained in this Plan. Consulting agencies for select mitigation measures listed in Table 1 may include U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and Nevada Department of Wildlife.

1.3 Regulatory Setting

There are a number of federal and state regulations and policies that address protection and management of native plants, including cacti and yuccas. The applicable regulations and permits are summarized below, along with the applicable environmental document(s), Applicant-Proposed Measures (APM), and Mitigation Measures (MM), which together provide the regulatory framework within which Project activities must comply.

1.3.1 Federal Regulations

1.3.1.1 National Environmental Policy Act

Title I of NEPA (42 United States Code Section 4321) requires federal agencies to incorporate environmental considerations in their planning and decision-making processes. Federal agencies are to prepare detailed statements, Environmental Impact Statements, and Environmental Assessments assessing the environmental impact of and alternatives to federal actions with the potential to significantly affect the environment. Title II of NEPA established the Council on Environmental Quality (40 Code of Federal Regulations Parts 1500-1508) to oversee NEPA implementation by ensuring that federal agencies meet their obligations under NEPA, overseeing federal agency implementation of the environmental impact assessment process, and issuing regulations and other guidance to federal agencies regarding NEPA compliance.

The BLM, with the NPS as a federal cooperating agency, analyzed the Project's impacts under NEPA through an Environmental Assessment and issued a Finding of No Significant Impact. This analysis included documentation of how the Project would comply with BLM and NPS land management planning, and included mitigation measures that would address potential impacts of the Project and ensure that impacts would be less than significant.

1.3.1.2 Bureau of Land Management Special-Status Species Policy

The BLM's Manual 6840 – Special-Status Species Management sets policies for managing species listed under the FESA and species proposed or candidates for listing. Manual 6840 also requires that each State Office director designate BLM Sensitive species, which are defined, in summary, as species with the potential to eventually require listing under FESA that may also be affected by BLM actions. Consideration of BLM Sensitive species in agency decisions and land-management actions has the potential to preclude the need for eventual FESA listing.

1.3.1.3 Desert Renewable Energy Conservation Plan

The Desert Renewable Energy Conservation Plan (DRECP) represents the BLM's land management planning document for the California Deserts District. The DRECP contains specific Conservation Management Actions (CMA) that may apply to activities on BLM lands. The DRECP requires that temporary ground disturbance resulting from authorized activities be revegetated after the activity is complete (CMA LUPA-BIO-7) and specifically addresses management of cacti and yuccas (CMA LUPA-BIO-VEG-1). The DRECP also requires avoidance of certain unique vegetation features, including clonal yucca rings over 3 meters in diameter (CMA LUPA-BIO-SVF-1, 2, and 5).

1.3.1.4 BLM Nevada Cactus and Yucca Policy

The BLM in Nevada provided a summary of their cactus and yucca policies as they would apply to the Project. The BLM in Nevada requires that all cacti and yucca in temporary disturbance areas (unless plants can be avoided, such as in drive-and-crush areas), will be salvaged and moved to a temporary nursery or other holding location, either onsite or in a BLM-approved, weed-free, offsite location. After construction, plants will be transplanted back into the temporary disturbance areas in a natural pattern with a targeted survival rate of 80 percent. If additional cacti or yucca are needed to meet this survival objective, cacti and yucca can be salvaged from permanent disturbance areas. Cacti and yuccas will otherwise not be transplanted between disturbance areas in Nevada.

Prior to construction, BLM Nevada will be provided with the number of cacti and yucca, by species, in permanent disturbance areas that will not be salvaged for replanting in temporary disturbance areas. BLM Nevada IM No. NV-2019-036 requires that forest products, which include cacti and yuccas, "will be sold at no less than their appraised price and/or the minimum price." SCE will pay for a plant permit per BLM forestry regulations and according to the appraised price schedule currently in effect for all cacti and yucca destroyed during construction.

1.3.2 State of California Regulations

1.3.2.1 California Environmental Quality Act

The CEQA (Public Resources Code Section 15000, et seq.) requires identification of significant environmental effects of proposed projects (including impacts on biological resources) and avoidance (where feasible) or mitigation of the significant effects. CEQA applies to "projects" proposed to be undertaken or requiring approval by state and/or local governmental agencies. "Projects" are activities that have the potential to have a physical impact on the environment. For this Project, an Initial Study was conducted pursuant to Section 15063 of the CEQA Guidelines (Sections 15000–15387 of the California Code of Regulations), and it resulted in a Mitigated Negative Declaration.

1.3.2.2 California Fish and Game Code

California Endangered Species Act

The California Endangered Species Act (CESA) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. It generally prohibits the take of any species that the California Fish and Game Commission determines to be a threatened or endangered species and is administered by the CDFW, but permits may be issued for take under some circumstances. The CESA also mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy.

1.3.2.3 California Native Plant Protection Act

The California Fish and Wildlife Commission has designated certain native plants as endangered or rare under the Native Plant Protection Act of 1977 (Fish and Game Code Sections 1900–1913). Qualifying species listed as endangered or rare include those identified by the California Native Plant Society (CNPS) through the California Rare Plant Ranks (CRPR) 1A, 1B, and 2. Plants with CRPRs of 3 and 4 are not provided

automatic legal protection but may be given case-by-case protections under CEQA. CRPR definitions are as follows:

- 1A: Plants presumed to be extinct because they have not been seen or collected in the wild in California for many years. This rank includes plants that are both presumed extinct in California, as well as those plants that are presumed extirpated in California. A plant is extinct in California if it no longer occurs in or outside of California. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in its range.
- 1B: Plants that are rare throughout their range with the majority of them endemic to California. Most of the plants of RPR 1B have declined significantly over the last century.
- 2A: Plants presumed extirpated in California but common elsewhere.
- 2B: Plants rare, threatened, or endangered in California but more common elsewhere. Together, RPR 2A and 2B recognize the importance of protecting the geographic range of widespread species.
- 3: A review list for plants for which there is inadequate information to assign them to one of the other lists or to reject them.
- 4: A watch list for plants that are of limited distribution or infrequent throughout a broader area in California and their vulnerability or susceptibility to threat appears relatively low at this time.

1.3.3 State of Nevada Regulations

1.3.3.1 Nevada Revised Statutes

Chapter 527 (Protection and Preservation of Timbered Lands, Trees and Flora)

Nevada Revised Statutes 527.050 provides requirements related to the destruction and removal of native plants on private lands without permission, and 527.060 provides requirements related to tagging of cacti and yuccas that are transported off of the originating property. Nevada Revised Statutes 527.270 authorizes the State Forester Firewarden to list plants threatened with extinction as fully protected.

1.4 Measures and Conditions from Environmental Documents and Permits

The mitigation measures addressed in this Plan are listed in Table 1. Implementation of these measures is a commitment of the Applicant.

Table 1 Mitigation Measures and Conservation Measures Addressed	
Measure	Description
CPUC Mitigation Measures	
CPUC BR-6	Minimize and mitigate impacts to special-status plants. [Supersedes APM BIO-02.] Pre-construction survey. SCE shall conduct focused pre-construction surveys for federal- and state-listed and other special-status plants within suitable habitat. All special-status plant species (including listed threatened or endangered species, and CNPS California Rare Plant Rank (CRPR) 1 and 2 ranked species likely to be impacted by project activities shall be documented in pre-construction survey reports. Surveys shall be conducted by a qualified botanist during the appropriate season in all suitable habitat within 50 feet of disturbance areas. The field surveys and reporting must conform to current CDFW botanical field survey protocol (CDFG 2018). Where

Table 1 Mitigation Measures and Conservation Measures Addressed	
Measure	Description
	<p>any special-status plants may be discovered, the survey area will extend beyond the ROW to determine the extent of the local occurrence, to evaluate the significance of any project impacts. The reports will describe any conditions that may have prevented target species from being located or identified, even if they are present as dormant seed or below-ground rootstock. If pre-construction survey areas conducted in years of poor rainfall or following other extreme events (e.g., recent intense overgrazing or wildfire), then the project shall use data from 2016/2017 and 2019 surveys to define population area and maximum number of individuals (Note, the unusually high rainfall in 2017 and 2019 are likely to better define rare plant locations and have more accurate results than subsequent years with lower rainfall). For species not previously detected on surveys but for which have a high potential to occur, reference populations will be used to determine if the species is detectable for pre-construction surveys conducted in suitable habitat. Prior to initial ground disturbance at individual construction work areas, SCE shall submit pre-construction field survey reports along with maps showing locations of survey areas and special-status plants to the CPUC and BLM for review and approval in coordination with CDFW.</p> <p>Native cactus and Yucca. Most native cactus and shrubby <i>Yucca</i> species (Joshua tree and Mohave yucca) can be successfully salvaged and transplanted, and yuccas often provide an important vertical component to wildlife habitat. Therefore, native cactus (excluding chollas in the genus <i>Cylindropuntia</i>) and yuccas (including Joshua trees, <i>Y. brevifolia</i>), shall be avoided or salvaged as follows:</p> <p>SCE will prepare and implement a cacti and yucca salvage plan. The goal shall be maximum practicable survivorship of salvaged plants. The Plan will include at minimum: (a) species and locations of plants identified for salvage; (b) criteria for determining whether an individual plant is appropriate for salvage; (c) the appropriate season for salvage; (d) equipment and methods for collection, transport, and re-planting plants or seed banks, to retain intact soil conditions and maximize success; (e) a requirement to mark each plant to identify the north-facing side prior to transport, and replant it in the same orientation; (f) details regarding storage of plants or seed banks for each species; (g) location of the proposed recipient site, and detailed site preparation and plant introduction techniques for top soil storage, as applicable; (h) a description of the irrigation, weed control, and other maintenance activities; (i) success criteria, including specific timeframe for survivorship and reproduction of each species; and (j) a detailed monitoring program, commensurate with the Plan's goals.</p> <p>Mitigation. SCE shall mitigate impacts to any state or federally listed plants or CRPR 1 or Nevada ranked S1, S2, or S3 species that may be located on the project disturbance areas or surrounding buffer areas through one or a combination of the following strategies. Additionally, impacts to CRPR 2 ranked plants occurring in California will be similarly mitigated.</p> <p>Avoidance of special-status plants will be the preferred strategy wherever feasible. Where avoidance is not feasible, and the project would directly or indirectly affect more than 10 percent of a local occurrence,¹ by either number of plants (shrubs and trees) or extent of occupied habitat (annuals or perennial herbs), SCE shall prepare and implement a mitigation plan to consist of off-site compensation, salvage, horticultural propagation/off-site introduction, or a combination of these.</p> <ul style="list-style-type: none"> ● Avoidance. Work areas shall be located to avoid or minimize impacts to special-status plants to the greatest extent possible. Effective avoidance through project design shall include a buffer area surrounding each avoided occurrence, where no project activities will take

¹An occurrence for a plant is defined as any population or group of nearby populations located more than 0.25 miles from any other population (CDFW, 2009).

Table 1 Mitigation Measures and Conservation Measures Addressed

Measure	Description
	<p>place. The buffer area will be clearly staked, flagged, and signed for avoidance prior to the beginning of ground-disturbing activities, and maintained throughout the construction phase. At minimum, the buffer for shrub species shall be equal to twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems. The buffer for herbaceous species shall be a minimum of 50 feet from the perimeter of the occupied habitat or the individual(s). However, for locations in the mountains, a larger buffer may need to be applied to shrub and herbaceous species if the construction monitors determine there is a risk of indirect effects from erosion or inundation. If a smaller buffer is necessary due to other project constraints, SCE will develop and implement site-specific monitoring and put other measures in place to avoid the take of the species, with the approval of the CPUC and BLM, in coordination with CDFW.</p> <ul style="list-style-type: none"> ● Off-site compensation. SCE shall provide compensation lands consisting of habitat occupied by the impacted CRPR 1 or 2 ranked plant populations at a 1:1 ratio of acreage and number of plants for any occupied habitat directly impacted (whether temporary or permanent) by the project. Occupied habitat will be calculated on the project site and on the compensation lands as including each special-status plant occurrence and a surrounding 50-foot buffer area. If compensation is selected as a means of mitigating special-status plant impacts, it may be accomplished by purchasing credit in an established mitigation bank, acquiring conservation easements, or direct purchase and preservation of compensation lands. Compensation for these impacts may be “nested” or “layered” with compensation for habitat loss described in Mitigation Measure BR-8. ● Salvage. SCE shall consult with a qualified restoration ecologist or horticulturist regarding the feasibility and likely success of salvage efforts for each species. If salvage is deemed to be feasible, based on prior success with similar species, then SCE shall prepare and implement a Special-status Plant Salvage and Relocation Plan, to be reviewed and approved by the CPUC and BLM, in consultation with CDFW and USFWS, prior to direct or indirect disturbance of any occupied habitat. For special-status plants, excluding cacti and Yuccas (see above), the goal shall be to improve existing populations or establish new populations. For cacti and yuccas, the goal shall be maximum practicable survivorship of salvaged plants. The Plan will include at minimum: (a) species and locations of plants identified for salvage; (b) criteria for determining whether an individual plant is appropriate for salvage; (c) the appropriate season for salvage; (d) equipment and methods for collection, transport, and re-planting plants or seed banks, to retain intact soil conditions and maximize success; (e) for shrubs, cacti, and yucca, a requirement to mark each plant to identify the north-facing side prior to transport, and replant it in the same orientation; (f) details regarding storage of plants or seed banks for each species; (g) location of the proposed recipient site, and detailed site preparation and plant introduction techniques for top soil storage, as applicable; (h) a description of the irrigation, weed control, and other maintenance activities; (i) success criteria, including specific timeframe for survivorship and reproduction of each species; and (j) a detailed monitoring program, commensurate with the Plan’s goals. <p>Annual monitoring reports shall be submitted to CPUC and BLM for five years or until the relocation effort is deemed successful on agreement of SCE and the CPUC. Reports shall include, but not be limited to, details of plants salvaged, stored, and transplanted (salvage and transplanting locations, species, number, size, condition, etc.); adaptive management efforts implemented (date, location, type of treatment, results, etc.); and evaluation of success of transplantation.</p> <p>Horticultural propagation and off-site introduction. If salvage and relocation is not believed feasible for special-status plants, then SCE shall consult with a qualified entity to develop an</p>

Table 1 Mitigation Measures and Conservation Measures Addressed	
Measure	Description
	appropriate experimental propagation and relocation strategy, based on the life history of the species affected. The Plan will include at minimum: (a) collection and salvage measures for plant materials (e.g., cuttings), seed, or seed banks, to maximize success likelihood; (b) details regarding storage of plant, plant materials, or seed banks; (c) location of the proposed propagation facility, and proposed methods; (d); time of year that the salvage and other practices will occur; (e) success criteria; and (f) a detailed monitoring program, commensurate with the Plan’s goals.
NPS Mitigation Measures	
Unnumbered Measures	<p>Construction Areas where “drive and crush” is practiced require no restoration.</p> <p>Construction Areas where “clear and grade” is practiced require the following measures:</p> <ul style="list-style-type: none"> • The area to be graded will be surveyed to determine the extent of perennial vegetation that will be removed and the number of plants that must be replanted. • Seeds from those plants or surrounding plants of the same species will be collected for nursery propagation and rearing. • Yucca and cacti species under 4 feet will be salvaged and transplanted back into the site once project activities are completed. • During project activities, graded topsoil will be piled on the edge of the construction area. • Once project activities are complete, top soil will be redistributed back into the disturbed area in a uniform manner. • Nursery stock will be reared for at least 6 months and planted back into the disturbed area. • Protective wire-mesh cages will be built around them to prevent herbivory • Transplants will be watered for one year. Once every two weeks from March – September and once per month from October – February. • After watering is complete, wire-mesh will be removed. <p>Success will be determined by at least 50% survival rate.</p>
BLM Mitigation Measures	
BR-2	Locations of any special-status plants shall be flagged and avoided as possible, and monitored by a qualified biologist during construction. Dust control measures will also be implemented to minimize fugitive dust impacts on plants. A Special Status Plant Salvage Plan and Relocation Plan will be prepared and implemented.
BR-15	A Cacti and Yucca Salvage Plan shall be prepared and implemented.

1.5 Applicability of Mitigation Measures

1.5.1 Timing

The measures described in this Plan and listed in Table 1 are applicable for the following periods of the Project, as shown in Table 2.

Table 2 Timing of Mitigation Measure Applicability			
Measure	Period		
	Preconstruction (Mobilization)	During Construction (Active)	Post-construction (Restoration)
CPUC BR-6	☒	☒	☒
BLM BR-2	☒	☒	☒
MM BR-9 (10)	☒	☒	☒

1.5.2 Location

This Plan applies to the entire Project area, although BLM and NPS mitigation measures will only be implemented within each agency's respective federal jurisdiction.

1.5.3 Species

Most cacti and yuccas within the Project area are not special-status plants as defined by CPUC MM BR-6, including most Mojave yuccas (*Yucca schidigera*). However, clonal yucca rings are provided protection by BLM and state policy in California, and several Mojave yucca rings were recorded between Lucerne Valley and the series capacitor stations during special-status plant surveys. The short-jointed beavertail pricklypear (*Opuntia basilaris* var. *brachyclada*) is a special-status variety of a widespread species. Short-jointed beavertail pricklypears are present near the Lugo Substation at the western terminus of the Project, but none were recorded in Project features, so the special-status variety is not addressed by either the CYSRP or SSPSRP. If any are found within Project features and if transplant is required, procedures within the CYSRP would be used. Mojave yucca clonal rings are addressed within the CYSRP because mitigation would use the same approach as for all other members of that species.

Joshua trees are considered by some authorities to represent two distinct species (Lenz 2007), the Western Joshua tree (*Yucca brevifolia*) and Eastern Joshua tree (*Yucca jaegeriana*), although this is not uniformly recognized, and the two populations may also be considered subspecies. The CNPS currently recognizes a single species with multiple subspecies, and this approach is generally reflected in the CYSRP. In September 2020, the CDFW determined that the Western Joshua tree as a separate species is a Candidate for protection under CESA. This determination provides 1 year of interim protections while a full review is completed, at which time a final determination regarding CESA listing will be made. Western Joshua trees, whether considered a species or subspecies, are present within the westernmost 30 miles of the Project area. Any practices related to avoidance, salvage, and transplant would be similar to other *Yucca* species, including the eastern species or subspecies. All *Yucca* species are addressed within the CYSRP.

All other special-status plants are addressed in the SSPSRP.

1.6 Plan Goals and Objectives

The goal of this Plan is to minimize the Project's impacts to vegetation by effectively implementing mitigation measures listed in Section 1.4 and other applicable conditions from the Project's authorizations. The objective of this Plan is to provide information that will support the Project's construction personnel and the salvage and revegetation contractor in avoiding plants where possible, and in achieving maximum survivorship of plants that must be salvaged. This Plan also complements the Project's Habitat Restoration and Revegetation Plan (HRRP). The HRRP addresses actions such as topsoil salvage and segregation to preserve the natural seedbank, as well as reseeding during restoration, that may benefit cacti and yuccas.

2 Cactus and Yucca Surveys

2.1 Summary of Methods

A comprehensive inventory of all cacti and yuccas that may be affected by the Project was conducted in the spring of 2020. The purpose of this inventory was to provide advance information on the locations, counts, and sizes of plants that may be salvaged to allow planning for materials and labor associated with the salvage effort. This inventory will not substitute for the results of a final preconstruction survey and avoidance efforts immediately prior to the initial salvage effort at the start of construction (Sections 3.1 and 3.2).

Biologists conducted pedestrian surveys of each Project feature and recorded locations for all cacti and yuccas. The boundaries of Project features were provided in Trimble Geo-7x and Geo-XT professional-grade Global Positioning System (GPS) units, and a field form was used to record consistent data for each plant. Surveyors recorded the following information:

- Species
- Size (subjective based on estimated pot or container size: small, medium, large, extra-large)
- Health
- Comments
- Surveyor name

Surveyors recorded all cacti and yuccas within the boundaries of each Project feature, as well as cacti and yuccas within 6 feet of each Project feature. The inventory data were mapped, and a series of map panels are attached to the CYSRP as Appendix A. Although surveyors recorded all cacti, including chollas, most chollas are not subject to salvage requirements in California and are not included in the inventory results in the CYSRP or shown in Appendix A. Chollas were not inventoried in California or Nevada but will be addressed as required by the BLM in each state (Section 3.3.3.3). Salvage of the matted cholla (*Grusonia parishii*) is required, however, and this species is shown in Appendix A.

2.2 Summary of Results

Eleven species of cacti and yuccas potentially requiring salvage totaling 759 individuals were found within Project features (Table 3), with 1 plant of an additional species (banana yucca, *Yucca baccata*) found outside of and adjacent to a Project feature. The banana yucca is not likely to be affected by Project activities but would be treated according to the measures for other yuccas presented in this Plan if necessary. Table 3 provides the results by size class, limited to species requiring salvage and plants within Project features.

Species		Size Class ¹				Total
Common Name	Scientific Name	Small	Medium	Large	Extra-Large	
Beavertail Pricklypear	<i>Opuntia basilaris</i>	77	27	1	1	106
California Barrel Cactus	<i>Ferocactus cylindraceus</i>	23	10	2	0	35
Chaparral Yucca	<i>Yucca whipplei</i>	25	17	24	5	71
Common Fishhook Cactus	<i>Mammillaria tetrancistra</i>	2	0	0	0	2

Species		Size Class ¹				Total
Common Name	Scientific Name	Small	Medium	Large	Extra-Large	
Engelmann's Hedgehog Cactus	<i>Echinocereus engelmannii</i>	63	53	16	2	134
Joshua Tree	<i>Yucca brevifolia</i>	8	11	4	0	23
Matted Cholla	<i>Grusonia parishii</i>	0	1	0	0	1
Mojave Mound Cactus	<i>Echinocereus polyacanthus</i>	18	7	4	0	29
Mojave Yucca	<i>Yucca schidigera</i>	133	156	58	3	350
Plains Pricklypear	<i>Opuntia polyacantha</i>	6	1	0	0	7
Tulip Pricklypear	<i>Opuntia phaeacantha</i>	1	0	0	0	1

¹Note: See Subsection 2.1 (Summary of Methods) for additional information

3 Avoidance, Minimization, and Salvage

3.1 Preconstruction Impact and Avoidance Assessment

The initial step of construction involves preparation of each work area for use. This would include any vegetation removal or grading (when drive-and-crush is not feasible), removal of obstacles, and salvage of natural materials to be used in restoration or revegetation of the site. Prior to site preparation, a plant salvage contractor will conduct a final survey to verify the results of the cactus and yucca inventory (Section 2 and Appendix A) against the staked boundaries of the work area. The salvage contractor will then work with construction personnel to determine which plants within the work area can be preserved in place, and those plants will be flagged or staked if appropriate to ensure avoidance by construction activities. Plants that cannot be preserved in place will be assessed for salvage suitability.

Within the range of the Western Joshua tree, a preliminary review has determined that avoidance of all individuals present within Project work areas is likely to be feasible. A final determination regarding individual plants will be made at the time the Project boundaries are staked. If transplant is necessary, methods will follow those described in Section 3.3.3.4.

3.2 Salvage Suitability Evaluation Criteria

The salvage contractor will assess the health of each cactus and yucca that cannot be avoided, to determine whether live salvage will be attempted. The determination to attempt transplant will be made by the salvage contractor with the objective of achieving at least 80 percent survival of transplanted plants. The following factors and others may be considered for each plant:

- Percentage of live and dead tissue (plants with significant amount of dead tissue may not be transplanted)
- Species (e.g., pricklypears will be transplanted as stem segments rather than excavated)
- Size (e.g., yuccas over 6 feet tall will not be salvaged)
- Health
 - **Good:** Plant is primarily normal and healthy growth, less than 10 percent dead or yellowed leaves and tissue; no damage from drought, pests or disease.
 - **Fair:** Plant shows signs of stress but is primarily live growth, 10 to 40 percent dead or yellowed leaves and tissue; some pest, drought, or disease damage may be present but not significant.

- **Poor:** Plant shows signs of severe stress or disease, more than 40 percent dead or yellowed leaves and tissue.

Cacti or yuccas in poor health are not likely to survive the transplant process and will be preserved in place when possible. Cacti or yuccas in poor health may be salvaged at the salvage contractor's discretion, if there is reasonable potential for the plant to survive transplant and recover with supplemental watering. Cacti or yuccas in fair health will be salvaged unless the salvage contractor determines that survival is unlikely. Dead cacti and yuccas, and those that cannot be salvaged, will be stockpiled for use as vertical mulch.

3.3 Salvage and Relocation Process

The following subsections present the methods that will be implemented when avoidance of cactus or yucca species is not feasible, and the plant meets the salvage suitability criteria.

3.3.1 Location and Timing Considerations

The Project's construction differs significantly from that of a new transmission line in most locations. Work at Project substations and the new series capacitor locations will take place over a period of months. Yards prepared for the Project will also be in use for several months each, supporting work along nearby portions of the Project's transmission lines. However, work at most individual OPGW and discrepancy locations will be completed within less than 2 weeks and generally result only in temporary disturbance. The duration of work in a given location affects the methods proposed for handling salvaged plants in this Plan.

Seasonal considerations will be incorporated into the salvage effort when feasible, such as attempting to prioritize the salvage of cacti and yuccas during cool weather. Salvage of plants will generally take place as site preparation crews and the salvage contractor work just in advance of construction crews.

The locations chosen to receive transplanted cacti and yuccas will be selected consistent with the overall objective of applicable mitigation measures for the CYSRP to maximize long-term survival of salvaged plants. The survival of salvaged plants decreases if the plants must be translocated multiple times, such as to a temporary nursery and then back to the original location after construction. Additionally, cacti and yuccas can benefit from a period of several days between excavation and replanting to allow injuries to roots to heal. This decreases the risk of root infections following transplanting, particularly when supplemental water is required. Thus, salvaged plants will be held onsite long enough to allow roots to heal but no longer than necessary, unless the health of the plant would not be compromised.

In most cases, survival of transplanted plants will be maximized by allowing the roots to heal and then transplanting the plants into a nearby suitable location within or adjacent to the Project area, such as undisturbed margins of work areas or outside of but adjacent to the work area in undisturbed vegetation. Similar sites include those with similar soil type, slope, and presence of other shade plants. In cases where a given work area is in use for a very short-time period, and there is limited risk of future Project-related or other disturbance after restoration of that area occurs, salvaged plants may also be temporarily held onsite and replanted in their approximate original location after work activities are complete. In Nevada, cacti and yuccas will be replanted within the boundaries of the Project's disturbance whenever feasible.

3.3.2 Transplant Site Selection

When cacti and yuccas are transplanted outside Project disturbance areas, the salvage contractor will evaluate the planned transplant location with respect to existing undisturbed cacti and yuccas. The salvage contractor will attempt to ensure that each transplant site is similar to the plant's original location with respect to vegetation community, soil type, slope, aspect, and degree of shade or sun exposure. Transplant sites will be located within the study area for the Project. A desktop analysis and field survey will be conducted prior to conducting transplanting activities to facilitate avoidance of sensitive resources (e.g., desert tortoise burrows, cultural resources). The salvage contractor will ensure that the transplanted cactus and yucca will not result in artificially high densities or cause water competition between transplanted and naturally growing cacti and yuccas to the degree that survival rates are likely to decrease.

3.3.3 Salvage Methods

Plants eligible for salvage based on the evaluation criteria defined above will be tagged with a unique identifier, the north side of the plant will be marked, and the following information will be recorded for each tag number:

- Location
- Species
- Size
- Health
- Disposition
 - Transplant to adjacent habitat (preferred)
 - Hold onsite or transplant to temporary nurseries and restore to original location
- Final location (data to be collected after final transplant)

For all salvaged plants, materials and tools that come in contact with plant tissue (e.g., burlap, shovels used for excavations) will be rinsed in a 10 percent bleach solution before use on another plant. During the period that plants are held to allow the roots to heal, the salvage contractor and construction contractor will determine where plants can be safely held. Examples of potential locations may be at the edge of work areas where adequate space is present or at nearby Project features with available space. The salvage contractor will determine whether weather conditions and plant health warrant protection of the plants with shade cloth.

3.3.3.1 Globular Cacti

Globular cacti (species of barrel, fishhook, and hedgehog cacti) will be excavated with enough of a soil mass to contain a viable root system, using the following general methods.

Small cacti (under 8 inches) in suitable soil may be excavated directly with a shovel, with a soil and root mass extending outward 3 to 6 inches beyond the base of the plant. Cacti larger than 8 inches will be prepared by excavation of a trench around the plant, approximately 12 inches from the base and 12 inches deep. A larger excavation may be appropriate for the largest individual cacti.

Hand tools will be used to undercut the root mass to a point near where it can be detached. The root mass will be wrapped in canvas or burlap, and if needed, the cactus will be stabilized with staking. Cacti will be

removed by hand or with hand tools and carts where possible. The largest cacti may require assistance of heavy equipment such as an excavator to lift them out of the trench.

Immediately after removal from the trench, the root mass will be inspected. Damaged roots will be trimmed back, and the root mass will be treated with sulfur to minimize infection risk. Excavated cacti will then be stored onsite under shade cloth for several days to allow root healing. Shade cloth will be supported by a framework to avoid entanglement with spines as appropriate.

After the root healing period, cacti from short-term temporary disturbance areas will be replaced in approximately their original location after completion of construction activities and any site stabilization actions that would injure the plants. Replanting will require an excavation adequate to contain the root mass. The cactus will be replanted with its original compass orientation, and immediately watered. Watering should be adequate to saturate and compact the soil around the transplant, and additional soil will be added as needed. Cacti should not be buried with the base of the stem deeper than its original predisturbance depth.

3.3.3.2 Pricklypears

Small pricklypears may be salvaged using methods described for other cacti at the discretion of the salvage contractor. Pricklypears that cannot be salvaged whole without substantial stem fragmentation will be salvaged as cuttings, with supportive methods used to encourage rooting and cutting survival.

Pricklypear pads will be salvaged from each individual that cannot be salvaged. Pads from each plant will be kept together throughout the salvage and transplant process, and data will be recorded through the process as for other species. Three to five healthy pads will be selected from each pricklypear and cut off the original plant. Cuttings will be dusted with sulfur and allowed to heal for approximately 7 days. Cuttings will be planted as a group from the original plant, buried standing vertically to approximately half the depth of the pad with the cut side down. Pads will be watered after transplant. The location may be staked with the plant's unique identification as tagging separate pads will not be effective.

Remaining pricklypear material will be salvaged for use as vertical mulch during restoration or revegetation.

3.3.3.3 Chollas

Transplanting of most chollas is not required by the CPUC, but is required by the BLM in California and Nevada. Chollas grow with segmented stems that easily detach and fragment, and larger plants often cannot be salvaged intact. However, chollas also readily root from the fragmented stem segments. Throughout the Project area, live cholla material will be salvaged and stockpiled for use as vertical mulch during restoration or revegetation. Rooted chollas under 3 feet tall will be salvaged using methods described for other small cacti. Larger chollas may also be salvaged with the root ball intact, although the plant's stems may be trimmed or allowed to fragment if intact transplant cannot be achieved. If chollas fragment during the salvage attempt, the root ball will be planted, and the stems will be scattered to provide an opportunity for regrowth.

3.3.3.4 Yuccas, Including Joshua Trees

Yuccas, including Joshua trees under 6 feet tall, will be salvaged. Joshua trees over 6 feet tall are less likely to survive the transplant process, require large excavations and heavy equipment for transplant, and will be salvaged for use as vertical mulch during restoration or revegetation rather than transplanted live.

Yuccas will be salvaged using methods similar to those described for globular cacti. Yuccas have lower internal water reserves than cacti, and survival and reestablishment can be lower than for cacti of a comparable size. Yuccas are also sensitive to replanting depth and should not be planted with the base of the rosette any deeper than the original predisturbance growth.

3.3.4 Temporary Nurseries

Use of temporary nurseries will be avoided. Temporary nurseries would require transplanting individual plants multiple times, which decreases the survival of salvaged plants. However, a temporary nursery may be considered if there is no suitable transplant location nearby. Some locations on the Project have very high densities of cacti, and the surrounding habitat may not support the addition of cacti from within the Project feature. If a suitable permanent location is not available in the adjacent habitat, a temporary nursery will be considered.

Temporary nurseries would be onsite if adequate space with level ground and adequate access is available, at a nearby Project feature, or if necessary, at the nearest yard. Temporary nurseries would consist of a raised bed with native soils if onsite or clean sand if in a yard. Cacti and yuccas would be transplanted as described, cared for with supplemental watering during the construction process, and replanted into the original site once construction has ended. Prior to the final transplant from the temporary nursery back into the Project site, the health of the plant will be evaluated. Plants in poor condition will only be transplanted and/or used as vertical mulch at the discretion of the salvage contractor based on the health of the plant and probability of survival.

If feasible, plants held in temporary nurseries would be replanted in the fall, as cooler weather and winter rainfall may limit stress on the plants until they are established. After removal of plants from temporary nurseries, the above-ground frame and soil would be removed. Native soils would be used in the recontouring of the site after construction is complete.

3.3.5 Maintenance

When transplants are planted in the receptor sites, depressions or small berms (depending on the species, size of plant, soil conditions, etc.), which may require maintenance over time, will be created at the base of the plants to capture rain and irrigation water to better allow the soil to become and remain saturated. During hot, dry weather, replanted cacti and yuccas will be watered approximately every 14 days for one year after their final transplanting. Cacti and yuccas will be watered monthly from November through March and will not be watered during rainy periods in cool weather to minimize the risk of root infections.

Supplemental watering of replanted cacti and yuccas may be needed to account for transplant shock to help the plants establish. Irrigation can be conducted near sites with a permanent water source, and near permanent access roads, through the installation of a temporary system that can be fed by a water truck. Direct watering with a hose fed by a water truck may also be appropriate near access roads, if the process can be accomplished without damaging restored vegetation. In cases of very small or remote planting

sites, DRiWATER or equivalent gel water product or hand watering using buckets may be used to irrigate the transplanted plants.

Plants transplanted in spring or summer may be covered with shade cloth during the supplemental watering period to minimize drought stress until the root system recovers adequate function. Any transplanted cactus or yucca may be covered with shade cloth if drought stress is apparent or suspected.

Weed treatment around salvaged plants will be limited to hand-pulling or other mechanical methods.

Monthly maintenance reports will be prepared and provided to SCE based on information provided by the salvage contractor during the initial establishment period (1 year of supplemental watering). These monthly reports will include information on watering provided, plant survival, additional maintenance actions, and recommendations for any further remedial actions to increase plant survival.

A final maintenance summary report will be prepared and provided to the CPUC, BLM, and NPS. The final report will include documentation of the removal of all supporting material such as shade cloth or staking.

4 Monitoring

Annual monitoring will occur for up to 5 years after transplantation or when the salvage effort has demonstrated success. Annual monitoring surveys may be conducted concurrently with monitoring surveys performed as required by the HRRP by qualified botanists with experience identifying native and non-native plants present in the Mojave Desert. Monitoring data will include the following:

- Survivorship
- Health status of each plant
- Observed new growth
- Cause of health decline of each plant, if apparent
- Signs of vandalism, other human-caused injury, fire, and other events affecting plant health outside of SCE's control
- Representative photographs
- Recommendations for maintenance actions

Monitoring reports will summarize all maintenance and monitoring data collected and will provide information on survival and success rates through the duration of the monitoring period. Monitoring reports will discuss maintenance actions conducted in the previous year, weather-related effects on plant survival, and recommendations for future actions. Annual monitoring reports will be submitted to the CPUC, BLM, and NPS.

4.1 Success Criteria

Transplanted cacti and yuccas will be subject to a success standard of 80 percent survival for each species after 5 years of post-transplant monitoring. The assessment and salvage process described in Section 3 will be conducted with the objective of maximizing the survival of transplanted plants.

Individual transplanted cacti and yuccas may be considered successful prior to the 5-year requirement if after 2 consecutive years the transplants achieve and maintain presalvage health. For example:

- Plants identified as good health presalvage are monitored and determined to be in good health during years one and two (consecutive years) post-transplanting
- Plants transplanted in fair health presalvage are in good or fair health during years three and four (consecutive years).

Individual species may be considered successful when 80 percent of transplanted individuals are successful as described above. The salvage effort can be considered successful before 5 years when all species are successful. If species have not achieved success as described above before 5 years, 80 percent survivorship (not dead) is required.

5 References

- Insignia Environmental. 2020. Special-Status Plant Species Survey Report II for the Eldorado-Lugo-Mohave Series Capacitor Project. 36 pp. + attachments.
- Lenz, L.W. 2007. Reassessment of *Yucca brevifolia* and recognition of *Y. jaegeriana* as a distinct species. *Aliso: A Journal of Systematic and Evolutionary Biology* 24 (1): 97-104.
- _____. 2017. Special-Status Plant Species Survey Report for the Eldorado-Lugo-Mohave Series Capacitor Project. 33 pp. + attachments.

Appendix A. Cactus and Yucca Inventory Maps