



LOS ANGELES DEPARTMENT OF WATER AND POWER

UTILITY SECURITY PLAN FOR DISTRIBUTION FACILITIES

**IN ACCORDANCE WITH CALIFORNIA PUBLIC UTILITIES
COMMISSION'S PHYSICAL SECURITY DECISION (D.)19-01-018**



August 2022

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**Los Angeles Department of Water and Power
Utility Security Plan for Distribution Facilities
Signature Sheet**

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I. EXECUTIVE SUMMARY


In 2013, an attack on Pacific Gas and Electric Company's (PG&E) Metcalf Substation was executed by one or more snipers that resulted in significant and costly equipment damage and posed potential safety risks to PG&E's distribution system, employees, and the communities served by that facility. The attack prompted responses from federal and state legislative bodies and regulatory agencies aimed at safeguarding electrical substations to address any existing physical security vulnerabilities. At the state level, California Senate Bill 699 (Hill, 2014) amended Public Utilities Code (PUC) 364 to require the California Public Utilities Commission (CPUC) to consider adopting rules to address physical security risks to the distribution system of electrical corporations. To implement SB 699, the California Public Utilities Commission (CPUC) approved Decision 19-01-018 (CPUC Decision) proposing that all electric utilities, including LADWP, develop and implement a Utility Security Plan that (1) identifies electric distribution assets that require greater protection; and (2) specifies measures to reduce the identified risks and threats to those facilities.

The CPUC Decision required electric utilities to perform the following steps in developing their Utility Security Plans: 1a) identification of certain facilities requiring detailed assessments; 1b) performance of risk assessments and 1c) development of Mitigation Plans as needed; 2) securing an unaffiliated third-party review and 3) a "qualified authority" review; 4) adoption of the Utility Security Plan by a governing body and sending a notice of the adoption to the CPUC; and, finally, 5) implementation, refinement, and updating of the Utility Security Plan as necessary and 6) repeating the foregoing process and steps every 5 years from the initial Utility Security Plan adoption.

Given that the CPUC Decision promotes public safety, improved system reliability, protection of utility assets and infrastructure, and safety of utility employees, as the largest Publicly Owned Utility in California, LADWP has chosen to follow the processes described in the CPUC Decision.

LADWP controls one hundred ninety-nine (199) Distribution Substations that are subject to the scope of the CPUC Decision. The CPUC Decision set forth an identification analysis process whereby seven screening factors are utilized to narrow a utility's focus to its most critical Distribution Substations. As a result of performing the identification analysis, 42 of LADWP's 199 Distribution Substations met one or more of the CPUC Decision's screening factors, thus meeting the higher standard of being referred to as "Covered Distribution Facilities", consistent with the provisions of the CPUC Decision. LADWP subsequently performed an evaluation to determine which facilities needed further assessment and mitigation based on the criticality of each distribution facility and allocation of budget and internal resources. Based on LADWP's overall evaluation of the "Covered Distribution Facilities", LADWP has determined that mitigation measures were necessary at 19 of the 42 facilities and has thoroughly documented the assessments and measures in facility-specific Mitigation Plans.

Consistent with the Mitigation Plans and LADWP's priorities, LADWP will be aggressively upgrading its facility perimeters (walls and fencing) in the coming years, prioritizing the Covered Distribution Facilities. In addition to upgrading facility perimeters, LADWP intends to implement all necessary mitigation measures at a minimum of seven facilities over a ten-year period. This target will be



reevaluated at least every five years to determine an appropriate implementation schedule based on facility priority and resource availability. LADWP fully intends to implement all necessary mitigation strategies at the Covered Distribution Facilities, consistent with the CPUC Decision.

The 19 Mitigation Plans were reviewed by a Third-Party Reviewer pursuant to the CPUC Decision. All recommendations provided by the Third-Party Reviewer were accepted and incorporated. After a thorough review, the Third-Party Reviewer concluded that LADWP's Utility Security Plan, including all 19 Mitigation Plans, meets the requirements under the CPUC Decision. This document, all resulting facility-specific Mitigation Plans, and resulting Third-Party Reviewer Reports (collectively referred to as "Utility Security Plan" or "Plan" throughout this document) was then prepared for: 1) a Qualified Authority review; and 2) LADWP Board of Commissioners review and adoption.

Consequently, pursuant to a complementary review process prescribed in the CPUC Decision, LADWP secured the City of Los Angeles Emergency Management Department (LAEMD) as a Qualified Authority reviewer to determine the adequacy of LADWP's Utility Security Plan. LAEMD has deemed LADWP's Utility Security Plan adequate to provide an appropriate level of physical security protection for the applicable Covered Distribution Facilities, consistent with the CPUC Decision. Furthermore, LAEMD executed a Memorandum on June 1, 2022, in which "LAEMD deems the LADWP's Utility Security Plan is adequate and recommends that the LADWP Board of Commissioners adopt the LADWP Utility Security Plan."

In accordance with the terms of the CPUC Decision, LADWP will repeat the entire evaluation process and steps every five years and adjust its activities accordingly.

II. OVERVIEW

A. BACKGROUND


On April 16, 2013, one or more individuals attacked equipment located within Pacific Gas and Electric Company's (PG&E) Metcalf Substation, near the City of San Jose in Coyote, California, ultimately damaging 17 transformers. The perpetrators also cut nearby fiber-optic telecommunication cables owned by AT&T. In response to the attack, the Federal Energy Regulatory Commission (FERC) directed the North American Electric Reliability Corporation (NERC) to develop new physical security requirements, resulting in the creation of the NERC Critical Infrastructure Protection (CIP) CIP-014 Reliability Standard that generally applies to facilities within the Bulk Electric System (electric grid connected or operated at 100kV or higher).

Similarly, in California, State Senator Jerry Hill authored Senate Bill SB 699 in 2014, directing the CPUC to "consider adopting rules to address physical security risks to distribution systems of electrical corporations." In response to SB 699, the CPUC's Safety and Enforcement Division, Risk Assessment and Safety Advisory Section (RASA) prepared a white paper proposing a new requirement for investor owned utilities (IOUs) and publicly owned utilities (POUs) to develop security plans that would identify security risks to their distribution systems, and propose methods to mitigate those risks. As part of the process, the CPUC hosted a series of workshops to better understand the state of utility physical security protection programs and to seek input on refining the RASA proposal.

In order to support a statewide improvement of how utilities address distribution level physical security risks, the California Municipal Utilities Association (CMUA), which is the statewide trade association for POUs, coordinated with the state's IOUs to develop a comprehensive Straw Proposal (Joint IOU/POU Straw Proposal) for a process to identify at-risk facilities and, if necessary, develop physical security mitigation plans. As a member of CMUA, LADWP staff participated in the development of the Joint IOU/POU Straw Proposal through a CMUA working group as well as through direct meetings with IOUs. The Joint IOU/POU Straw Proposal set out a process for the following:

- 1) Identifying if the utility has any high priority distribution facilities;
- 2) Evaluating the potential risks to those high priority distribution facilities;
- 3) Developing a mitigation plan for distribution facilities where the identified risks are not effectively mitigated through existing resiliency/security measures;
- 4) Obtaining third party reviews of mitigation plans;
- 5) Adopting a document retention policy;
- 6) Ensuring a review process established by the POU governing board; and
- 7) Implementing information sharing protocols.

Following that, RASA filed a response to the Joint IOU/POU Straw Proposal that recommended various modifications and clarifications, including a six-step process. RASA recommended that utility



mitigation plans shall include: (1) an assessment of supply chain vulnerabilities; (2) training programs for law enforcement and utility staff to improve communication during physical security events; and (3) an assessment of any nearby communication utility infrastructure that supports priority Distribution Substations.

In early 2019, the CPUC approved Decision 19-01-018, which adopted the Joint IOU/POU Straw Proposal as modified by the RASA proposal, with additional clarifications and guidance. The CPUC Decision clarified that, if there is a conflict between the Straw Proposal and the RASA proposal, the RASA proposal will govern.


The CPUC Decision asserted that the POU's should utilize the Utility Security Plan process as described in Decision 19-01-018. LADWP is therefore following a process in accordance with the CPUC Decision and issuing this Utility Security Plan and associated Mitigation Plans to underscore its commitment to implement robust physical security measures to promote public safety, protect its ratepayers' investment, and safeguard its key distribution system assets by taking reasonable and cost-effective actions.

B. PURPOSE OF LADWP'S UTILITY SECURITY PLAN

One of LADWP's top priorities is to ensure the safety of the public, its employees, and its assets. LADWP prioritizes safety in all aspects of its planning, design, operations, and maintenance practices. The overarching purpose of this Utility Security Plan is to describe LADWP's risk management approach toward improving the distribution system's physical security with appropriate consideration to public safety, system reliability and resiliency, and availability of resources.

This Utility Security Plan is intended to be a guidance document for enhancing the physical security of LADWP's distribution facilities, providing mitigation strategies for identified physical security risks. The Utility Security Plan applies to specific LADWP distribution facilities based on their functions and profile of customers they serve. Taking into consideration the large number of LADWP distribution facilities and the evolving landscape of potential threats, this Utility Security Plan is intended to lay a foundation for an iterative process that will significantly improve the physical security of LADWP's distribution facilities over the course of many years.

LADWP recognizes the importance of safeguarding its electric system and chose to participate in CPUC's Physical Security proceeding and developed a Utility Security Plan in response to the CPUC Decision.



C. DESCRIPTION OF LADWP AND ITS ELECTRICAL SUBSTATIONS

The City of Los Angeles is a municipal corporation and charter city organized under the provisions set forth in the California Constitution. LADWP is a department of the City of Los Angeles, pursuant to the Los Angeles City Charter, whose governing structure includes a mayor, a fifteen-member City Council, and a five-member Board of Water and Power Commissioners (Board). LADWP is the third largest electric utility in the state, one of five California Balancing Authorities, and the nation's largest municipal utility, serving a population of over four million people within a 478 square mile service territory that covers the City of Los Angeles and portions of the Owens Valley. LADWP exists to support the growth and vitality of the City of Los Angeles, its residents, businesses and the communities it serves, providing safe, reliable and cost-effective water and power in a customer-focused and environmentally responsible manner. LADWP's Utility Security Plan was developed in alignment with its mission.

LADWP is a vertically-integrated utility that owns and/or operates the majority of its generation, transmission, and distribution systems. As a vertically-integrated utility, LADWP controls several types of facilities, such as Generating, Converter, Collector, Switching, Receiving, and Distributing stations. Considering the scope of the CPUC Decision, LADWP determined that its Receiving Stations and Distributing Stations dedicated to delivering electric energy to its commercial, industrial, and/or residential customers (collectively "Distribution Substations") are subject to the Identification Analysis step of the Utility Security Plan. Distributing Stations are the primary means for providing electrical energy directly to all LADWP customer classes, while Receiving Stations serve Distributing Stations and, in some cases, directly serve large commercial and industrial customers. As of June 2022, LADWP operates and maintains 23 Receiving Stations, 128 Distributing Stations, and 48 Pole Top Distributing Stations, resulting in a total of 199 Distribution Substations within the City of Los Angeles and the Owens Valley. For the purposes of this plan, all 199 Distribution Substations are in scope since they serve customers and are subject to the Identification Analysis step.

III. UTILITY SECURITY PLAN DEVELOPMENT PROCESS

A. PHYSICAL SECURITY PRINCIPLES

The Joint IOU/POU Straw Proposal was intended to support the development of a risk management approach toward distribution system physical security, with appropriate consideration to resiliency, impact, and cost. In order to effectively apply a risk-based approach, the Joint IOU/POU Straw Proposal identified several principles to guide the development of each utility's plan. The principles are as follows:

1. Distribution systems are not subject to the same physical security risks and associated consequences, including threats of physical attack by terrorists, as the transmission system.
2. Distribution utilities will not be able to eliminate the risk of a physical attack occurring, but certain actions can be taken to reduce the risk and/or consequences, of a significant attack.
3. A one-size-fits-all standard or rule will not work. Distribution utilities should have the flexibility to address physical security risks in a manner that works best for their systems and unique situations, consistent with a risk management approach.
4. Protecting the distribution system should consider both physical security protection and operational resiliency or redundancy.
5. The focus should not be on all Distribution Facilities. Risk assessments of Distribution Facilities will determine which facilities need to have a Mitigation Plan.
6. Planning and coordination with the appropriate federal and state regulatory and law enforcement authorities will help prepare for attacks on the electrical distribution system and thereby help reduce or mitigate the potential consequences of such attacks.

In addition to the principles identified in the Joint IOU/POU Straw Proposal, LADWP employed physical security principles known as "Deter, Detect, Delay, Assess, Communicate, and Respond to any physical security attack to a site" to represent a collective and strategic approach to physical security.

B. UTILITY SECURITY PLAN DEVELOPMENT PROCESS STEPS

LADWP utilized a multi-step process to develop its Utility Security Plan consistent with the Joint IOU/POU Straw Proposal and the CPUC Decision. The six steps prescribed by the CPUC Decision and implemented by LADWP for the development of a Utility Security Plan are provided in the following Table (Table 1).

Step	Description of Steps
Step 1	Assessment and Plan Development <ul style="list-style-type: none">▪ Step 1A: Identification of Covered Distribution Facilities▪ Step 1B: Performance of Risk Assessment▪ Step 1C: Development of a Mitigation Plan
Step 2	Independent Review by a Third-Party Reviewer
Step 3	Validation by a Qualified Authority
Step 4	Adoption by LADWP Board of Commissioners
Step 5	Maintenance of LADWP's Utility Security Plan
Step 6	Repeat of the Utility Security Plan Development Process

Table 1: Overview of Utility Security Plan Development Steps

A detailed description of the six steps is provided in the sections that follow.

IV. IDENTIFICATION OF COVERED DISTRIBUTION FACILITIES (STEP 1A)

LADWP's Utility Security Plan development process commenced with the Identification Analysis, which included the assessment of all 199 Distribution Substations in operation during 2022 and that are owned and/or controlled by LADWP to determine which facilities meet one or more of the seven CPUC screening factors (as clarified in the Joint IOU/POU Straw Proposal), thus making them Covered Distribution Facilities. As part of the Identification Analysis, LADWP gathered and evaluated data related to each facility and the customers it serves to assess those facilities against the screening factors. Further details on the analysis is provided within this section, and the resulting Covered Distribution Facilities can be seen in Table 3.

A. SCREENING/IDENTIFICATION FACTORS

The Joint IOU/POU Straw Proposal defined seven screening factors to determine if a facility is a "Covered Distribution Facility." Some factors require additional definitions and/or clarifications in order to be applied to LADWP's facilities. The following Table (Table 2) provides the Joint IOU/POU Straw Proposal's seven screening factors as modified/clarified by LADWP.

Factor	Joint IOU/POU Straw Proposal Description	Additional Clarification
1	Distribution facility necessary for crank path, black start or capability essential to the restoration of regional electricity service that are not subject to California Independent System Operator's (CAISO) operational control and/or subject to the North American Electric Reliability Corporation (NERC) Reliability Standard CIP-014-2 or its successors	No additional clarification.
2	Distribution facility that is the primary source of electrical service to a military installation essential to national security and/or emergency response services (may include certain airfields, command centers, weapons stations, emergency supply depots)	No additional clarification.
3	Distribution facility that serves installations necessary for the provision of regional drinking water supplies and wastewater services (may include certain aqueducts, well fields, groundwater pumps, and treatment plants)	No additional clarification.
4	Distribution facility that serves a regional public safety establishment (may include County Emergency Operations Centers;	LADWP defines "regional public safety establishment" as any of the following: (1) Headquarters of a major

Factor	Joint IOU/POU Straw Proposal Description	Additional Clarification
	county sheriff's department and major city police department headquarters; major state and county fire service headquarters; county jails and state and federal prisons; and 911 dispatch centers)	police or fire department serving 1.5 million population with at least 1,000 sworn officers; (2) County Sheriff's Department Headquarters; (3) Emergency Operations Center; (4) Fire headquarters; (5) Jails, Penitentiaries, or Correctional Institutes; and (6) 911 dispatch centers.
5	Distribution facility that serves a major transportation facility (may include International Airport, Mega Seaport, other air traffic control center, and international border crossing)	In addition to the facilities listed in the Joint IOU/POU Straw Proposal, LADWP defines a "major transportation facility" as any transportation facility that has (1) an average of 600 or more flights per day; or (2) over 50,000 passengers arriving or departing per day.
6	Distribution facility that serves as a Level 1 Trauma Center as designated by the Office of Statewide Health Planning and Development	No additional clarification.
7	Distribution facility that serves over 60,000 meters	No additional clarification.

Table 2: Seven Screening Factors

B. IDENTIFICATION ANALYSIS

In performing the Identification Analysis, LADWP evaluated all distribution level facilities that are subject to its exclusive control and also facilities that are jointly owned if the joint ownership agreement identifies LADWP as the entity responsible for operation and maintenance. In order to determine which of the 199 facilities met one or more of the seven screening factors listed above in Table 2, LADWP reviewed customer and facility data available internally and from other local agencies that relates to the screening factors. Below are some of the key steps taken.

- LADWP gathered a list of all military installations, water facilities, public safety establishments, major transportation facilities, trauma centers, and other buildings that could potentially meet the screening factors. All of these critical buildings were mapped to one or more Distribution Substations so it was clear which facility or facilities were serving these critical customers.
- LADWP utilized its latest Black-Start Restorations Plan to determine which facilities are a part of its cranking path for system restoration.

- LADWP queried its internal data management systems to determine the number of customers who depend on each Distribution Substation during 2021.

The data gathering and analysis allowed LADWP to clearly identify which facilities meet the screening factors. Forty-two (42) of the 199 facilities met one or more of the seven screening factors listed in Table 2. The 42 facilities are listed in the second column of the Table below (Table 3) representing a complete listing of LADWP's Covered Distribution Facilities.

Table 3 summarizes the results of LADWP's Identification Analysis, with a "Y" symbol indicating that a screening factor was met for the respective facility. During the Identification Analysis, it was determined that none of LADWP's Pole Top Distributing Stations met the CPUC screening factors. Note that the first Column, "Line No." was added to show priority based on LADWP's physical security risk assessment of its facilities, and this is discussed in further detail within Section V.C, "Preliminary Risk Assessment Performed by LADWP".

Line No.	Facilities ID	1. Crank Path, Black Start	2. Military Installation	3. Regional Drinking Water/ Wastewater	4. Regional Public Safety	5. Major Transportation Facility	6. Level 1 Trauma Center	7. Over 60,000 Meters
1		Y		Y				Y
2		Y		Y		Y		
3		Y		Y	Y			
4		Y		Y	Y			Y
5		Y		Y			Y	Y
6		Y			Y		Y	
7		Y			Y			Y
8		Y						
9		Y		Y			Y	Y
10		Y						Y
11				Y				Y
12		Y		Y				
13				Y	Y			
14				Y				
15				Y	Y			
16				Y				
17				Y	Y		Y	Y
18							Y	Y
19							Y	

Line No.	Facilities ID	1. Crank Path, Black Start	2. Military Installation	3. Regional Drinking Water/ Wastewater	4. Regional Public Safety	5. Major Transportation Facility	6. Level 1 Trauma Center	7. Over 60,000 Meters
20		Y						
21						Y		
22					Y			
23				Y				
24				Y	Y			Y
25				Y				
26				Y	Y			
27				Y				
28							Y	
29				Y				
30					Y			
31				Y				
32				Y				
33					Y			
34				Y				
35				Y				
36				Y				
37				Y				
38				Y				
39				Y				
40				Y				
41				Y				
42				Y				

Table 3: LADWP's List of Covered Distribution Facilities

V. RISK ASSESSMENT (STEP 1B)

A. METHODOLOGY

Pursuant to the process identified in the Joint IOU/POU Straw Proposal and the CPUC Decision, LADWP assessed the potential risks associated with a successful physical attack on each of the identified Covered Distribution Facilities, and whether existing grid resiliency, back-up generation, and/or physical security measures appropriately mitigate identified risks.

For the purpose of this analysis, a physical attack is limited to the following incidents: (1) theft; (2) vandalism; and (3) ballistic attack (small arms). A “successful physical attack” is limited to circumstances where a theft, vandalism, and/or ballistic attack (small arms) directly leads to failure of any element within the Covered Distribution Facility that is necessary to provide uninterrupted service to the types of customer loads identified in Section IV.A.

In order to perform the risk analysis, LADWP evaluated the following relative risks: (1) whether a physical attack on a Covered Distribution Facility will be successful considering the protective measures in place; or (2) whether the impacts of a successful attack will be mitigated due to resiliency and other measures in place.

LADWP’s approach was consistent across all facilities assessed. To determine appropriate mitigation measures, LADWP utilized a hybrid approach taking into consideration both “Defense in Depth” and “Crime Prevention Through Environmental Design (CPTED)” approaches where physical and electronic measures were examined along with operational resiliency. The six security principles (for example, “Detect” and “Deter”) are organized consistently to assess each facility’s physical security vulnerabilities and necessary mitigation measures to address any applicable threats.

In addition, several security standards were considered as part of the assessment. Such standards provided the framework for achieving and keeping a desired security level for each facility taking into consideration unique vulnerabilities of each location, deciding how to mitigate identified vulnerabilities, and planning how to bolster each facility’s security posture. Below are some of the security standards that were considered:

- 1) ASTM International Fence Standards
- 2) ASIS International Facilities Physical Security Measures Guidelines
- 3) NERC Security Guideline for the Electricity Sector: Physical Security
- 4) IESNA Lighting Standards

B. ASSESMENT CRITERIA

The CPUC Decision identified specific assessment criteria that a utility should consider while performing various risk analyses. The following Table (Table 4) lists such assessment criteria and provides LADWP's additional clarifications that may be necessary for application within LADWP's service territory.

Measure	CPUC D.19-01-018 Description	Additional Clarification
1	The existing system resiliency and/or redundancy solutions (e.g., switching the load to another substation or circuit capable of serving the load, temporary circuit ties, mobile generation and/or storage solutions).	No additional clarification.
2	The availability of spare assets to restore a particular load.	No additional clarification.
3	The existing physical security protections to reasonably address the risk.	No additional clarification.
4	The potential for emergency responders to identify and respond to an attack in a timely manner.	Each facility is evaluated based on the likelihood that a law enforcement officer would generally be able to arrive at the Covered Distribution Facility within 15 minutes of a report from the public of a break-in or attack, or of LADWP notifying the law enforcement agency of triggering of an alarm at the facility.
5	Location and physical surroundings, including proximity to gas pipelines and geographical challenges, and impacts of weather.	LADWP evaluated this element based on the proximity of the Covered Distribution Facility to populated areas and the extent to which the interior of the facility is shielded from view and access due to walls, vegetation, or other physical obstructions.
6	History of criminal activity at the Distribution Facility and in the area.	LADWP evaluated the property crime rates in the immediate vicinity of the Covered Distribution Facility and compared those crimes rates to property crime rates for the county and the state to determine if the area is subject to a higher than average incidence of property related crimes.

Measure	CPUC D.19-01-018 Description	Additional Clarification
7	The availability of other sources of energy to serve the load (e.g., customer owned back-up generation or storage solutions).	No additional clarification.
8	The availability of alternative ways to meet the health, safety, or security.	No additional clarification.
9	Requirements served by the load (e.g., back up command center or water storage facility).	No additional clarification.

Table 4: Assessment Criteria Applied to Prioritized Covered Distribution Facilities


C. PRELIMINARY RISK ASSESSMENT PERFORMED BY LADWP

As shown in Table 3, LADWP identified a relatively large number of Covered Distribution Facilities. In order to prudently assess and mitigate physical security risks at these facilities, LADWP performed a preliminary risk assessment to prioritize the most critical facilities that require physical security enhancements.

Over the past several years, prior to the CPUC Decision, LADWP had proactively monitored and assessed physical security risks at its Distribution Substations. Building on its prior assessment efforts, LADWP undertook this initiative to inventory, evaluate, and prioritize physical security at its 199 Distribution Substations. As part of the initiative, LADWP performed a preliminary assessment based on five critical factors that are essentially consistent with the CPUC Decision. These critical factors included Public Safety, Employee Safety, Intrusion History, System Impact, and whether the facility is regulated by Federal Energy Regulatory Commission (FERC) approved Reliability Standards.

The Public Safety factor considered station equipment posing a hazard to the public; Employee Safety considered employee reporting locations, need to get out of vehicle in potentially dangerous area in order to enter station, etc.; Intrusion History considered the frequency of break-ins; the System Impact factor considered the potential, including cascading, impact(s) that any incapacity or destruction of such facilities and assets would have on the distribution of electrical energy, public safety, the security of the distribution grid, system resiliency, economic security, system reliability, and public health; and, finally, the FERC criterion considered whether a facility is classified as a Critical Infrastructure Protection (CIP) medium impact facility, connected to the LADWP 500kV system, or connected to the LADWP 287kV system.

These considerations essentially align with the intent of the CPUC Decision's assessment criteria, with substantial overlapping of several criteria, such as criminal history, system impact considering resiliency and/or redundancy, and surroundings. The results of the preliminary assessment assigned a score to each facility to aid in prioritizing the facilities with the highest



physical security risks. Additionally, facilities were prioritized based on the function they serve and criticality to the reliability of LADWP's Power System.

Due to the large volume of identified Covered Distribution Facilities, LADWP leveraged its preliminary assessment as a tool to determine which Distribution Substations require a more detailed on-site assessment and potential development of a Mitigation Plan (specific to each identified facility) for a ten-year implementation period. LADWP fully intends to implement all necessary mitigation strategies at the Covered Distribution Facilities, consistent with the CPUC Decision. Considering LADWP's existing competing initiatives (such as the Power System Reliability Program, Wildfire Mitigation Plan implementation, and other system modernization projects), the results from LADWP's preliminary assessment, and allocation and availability of budget and resources, LADWP has determined that it is feasible to implement the facility-specific Mitigation Plan, at a minimum of seven facilities, within a ten-year implementation period while following a more aggressive annual schedule to upgrade the walls and/or fencing of those facilities listed in Table 3.

As a result, for the inaugural iteration of its Utility Security Plan, LADWP performed detailed assessments for the top 19 Covered Distribution Facilities. These detailed assessments and their results will inform LADWP's ongoing planning and prioritization of its implementation activities. During each subsequent five-year period, LADWP will perform detailed re-evaluation or assessments of its Distribution Substations based on the prioritization resulting from its preliminary assessment to address any gaps in existing physical security measures. Furthermore, the five-year re-evaluation will seek to determine the feasible timeline to complete the remaining mitigation strategies based on lessons learned and LADWP's projected resources at that time.

All LADWP Distribution Substations have some level of physical security measures already implemented as part of LADWP's standard practices when designing or upgrading its facilities. The narrative provided under Section XII titled "Additional Aspects of LADWP's Utility Security Plan" discusses some of the programs and processes in place that contribute to the implementation and maintenance of adequate physical security measures. LADWP evaluated whether the existing programs and measures effectively mitigate the risks of a physical attack and determined that all of the top 19 Covered Distribution Facilities required a Mitigation Plan. While only a minimum of the top seven Covered Distribution Facilities will receive complete physical security upgrades within the ten-year period, it is LADWP's goal to aggressively address any perimeter vulnerabilities at all 19 facilities.

The top 19 Covered Distribution Facilities collectively serve a large portion of critical facilities in LADWP's service territory, and/or they are a part of a cranking path. The Covered Distribution Facilities serve several critical facilities, including major regional drinking water or wastewater services, regional public safety, one of the nation's largest transportation hubs, and Level 1 Trauma Centers, and most serve over 60,000 meters.

Further details on each facility can be found in the facility-specific Mitigation Plans; however, an overview of the assessment and mitigation measures for the top 19 Covered Distribution Facilities is provided in the section that follows.

VI. COVERED DISTRIBUTION FACILITY MITIGATION PLANS (STEP 1C)

For each of the top 19 Covered Distribution Facilities where a detailed on-site Threat Vulnerability Assessment was performed and the existing mitigation and/or resiliency measures do not effectively reduce or mitigate identified risks of a physical security attack, LADWP has developed a Mitigation Plan. Each Mitigation Plan uses a risk-based approach to select reasonable and cost-effective measures that are security focused. This section describes the Mitigation Plan that LADWP has developed for each of these Covered Distribution Facilities.

A. DEVELOPMENT OF FACILITY-SPECIFIC MITIGATION PLANS

LADWP performed an assessment of each facility's current condition, identified vulnerabilities (if present), and developed mitigation strategies for each vulnerability. As part of the assessment, LADWP evaluated the following 11 elements for every facility: Physical Location, Perimeter, Access Control, Gates, Intrusion Detection, Terrain and Vegetation, Signage, Closed-circuit television (CCTV) or video surveillance, Lighting, Procedures, and Personnel. In order to assess the extent of the physical security risks associated with the 11 elements of each facility, LADWP utilized the *Criticality, Accessibility, Recoverability, Vulnerability, Effect, and Recognizability* (CARVER) methodology – CARVER is a numerical ranking methodology to identify targets most attractive to attack by an adversary. As part of the CARVER assessment, critical assets received “pre” and “post” mitigation ratings showing a reduction in risk and probability of physical attack. Some of the questions used to evaluate each Covered Distribution Facility include:

- 1) Can LADWP personnel consistently detect an adversary at or beyond the perimeter?
- 2) Can an adversary view critical assets within 100 meters of the asset from beyond the perimeter?
- 3) What is the response time by law enforcement, security, or operations staff?
- 4) What are the existing capabilities to deter an adversary, such as a Public Address (PA) system, strobes, or sirens?
- 5) Is there 360-degrees camera coverage, especially of the perimeter and critical assets?
- 6) Is there sufficient delay due to perimeter protection?

The goal of these questions is to ensure that the security standards related to Deterrence, Detection, Delay, Assessment, Communication, and Response are appropriately implemented. Further details on the assessment approach are found in each Mitigation Plan.

The vulnerabilities identified as a result of facility-specific on-site assessments are itemized in their respective Mitigation Plans. Some vulnerabilities, such as the following were found at one or more of the assessed facilities:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

For all identified vulnerabilities, mitigation measures were proposed by LADWP’s Security Services Division to address identified physical security risks, and were added to the respective Mitigation Plans. Implementation of the identified measures will decrease physical security risks at each Covered Distribution Facility.

B. IMPLEMENTATION OF MITIGATION PLANS

It is LADWP’s intention to address each vulnerability as early as possible. As mitigation strategies are implemented, LADWP will reevaluate and update its Mitigation Plans accordingly to ensure that all identified vulnerabilities are addressed.

LADWP will consider various solutions to address each facility’s unique vulnerabilities. Such solutions will evolve as better methods or technology become available. Consistent with the CPUC Decision, LADWP will re-evaluate its Utility Security Plan every five years. LADWP will utilize a ten-year implementation horizon to allow for full harmonization with existing physical security upgrade cycles and other factors that may impact the execution of physical security projects. The ten-year time horizon will also be sufficient for aligning the Utility Security Plan with potential budgeting constraints, challenges related to allocation of resources, development of project scoping packages, scheduling and issuance of construction work packages, and other unforeseen circumstances.

Currently, as indicated in Section XII, LADWP implements several physical security-related plans to safeguard critical equipment and facilities, including preventative maintenance processes, to ensure security equipment are properly monitored, inspected, and maintained. Beyond the security equipment at each facility, there are multiple methods in place to detect adversaries. For example, additional security personnel patrol key facilities to help minimize physical security risks. In addition, personnel are trained to take actions in accordance with LADWP’s Emergency Response Plan in preparing, responding to interruptions, and restoring services within the City. Furthermore, LADWP’s Security Services Division performs regular patrols of LADWP’s Distribution Substations and has agreements with the LAPD to perform

additional patrols. LADWP also utilizes its helicopters to patrol its critical facilities. Refer to the Appendices section for each Covered Distribution Facility's specific Mitigation Plan.

As a measure of internal control, LADWP has defined the roles and responsibilities of the various stakeholders that are accountable for the implementation of its Utility Security Plan – refer to the Table (Table 5) below. The project management team, as specified in Table 5, is responsible for facilitating the successful implementation of the Utility Security Plan. Periodic meetings will be scheduled throughout the project life to assess progress, to document the status of each Mitigation Plan, and to ensure continuous monitoring for vulnerabilities and the implementation of individual measures. During these periodic meetings, any delays in the implementation of mitigation measures will be reported to Power System's Senior Assistant General Managers to seek additional guidance and to facilitate solutions. As a mandatory step, at least once a year, a comprehensive progress report will be provided by the respective project manager for each Mitigation Plan to the Power System Executive Office.

Task	Responsible Division	Description
Facility Assessments	Security Services Division (SSD)	<ul style="list-style-type: none"> Office of Special Investigations will perform security assessments of Covered Distribution Facilities as prioritized by LADWP's 2019 strategic initiatives. The Security Planning Office will support security assessments of security equipment at each facility.
Design (Mitigation Measures)	Power Engineering and Technical Services Division (PETS) Power Construction and Maintenance Division (PCM) Power Integrated Support Services (ISS) Security Services Division (SSD)	<p>PETS (in collaboration with SSD, PCM, and ISS) will identify the most feasible solution to mitigate each vulnerability. Engineering support is expected from groups such as Civil Engineering, Structural Engineering, and Substation Design (such as fence design and substation grounding). The Security Planning Office at SSD will be responsible for identifying the most feasible security equipment to install, as applicable. Construction Work Packages (CWPs) will be issued by the appropriate design and engineering group(s) to address the identified mitigation solution.</p> <p>Personnel from PCM, in consultation with ISS, will implement these measures in the field. Scope of work may include installing or upgrading fencing, signage, and other identified security measures.</p> <p>All 42 Covered Distribution Facilities within the scope of this Plan fall under the jurisdiction of the Electric Station Maintenance (ESM) Section within the ISS Division. As the facility managers, ESM will monitor and maintain physical security procedural controls, coordinating with LADWP's Vegetation Management, as well as performing</p>

Task	Responsible Division	Description
		<p>any ongoing measures to maintain an appropriate level of physical security protection.</p> <p>Security Planning Office's scope of work may include upgrading cameras, card readers, padlocks, monitoring systems, broadcast systems, and etc.</p>
Project Management	<p>Power Engineering and Technical Services Division (PETS)</p> <p>Power Construction and Maintenance Division (PCM)</p> <p>Power Integrated Support Services (ISS)</p>	<p>PETS, in collaboration with PCM and ISS, will be responsible for core project management activities to ensure the successful implementation of SSD's recommended mitigation measures for each Distribution Substation. As such, the following project management tasks should be performed:</p> <ul style="list-style-type: none"> • Create resource projection plan • Set and track scope, schedule, and budget • Prioritize the implementation of Mitigation Plans • Coordinate/manage/facilitate all design, project planning, material selection, engineering process, and project coordination activities • Prepare status reports for facilities under this plan • Conduct project management meetings • Report to management and relevant stakeholders • Monitor and track the implementation of each mitigation measure • Document changes to roles and responsibilities • Manage overall project risks <p>ISS, in coordination with PCM, may reprioritize the Plan implementation scope based on resource availability. If the mitigation measures in scope of this Utility Security Plan are met or anticipated to be met during a given period, ISS can accelerate the implementation of Mitigation Plans within the ten-year implementation horizon.</p>

Task	Responsible Division	Description
Regulatory Support	Power Transmission Planning, Regulatory, and Innovation Division (PTPRI)	<p>The core mission of PTPRI is to foster a strong culture of compliance throughout LADWP's Power System and to ensure that LADWP remains compliant with all reliability-related and legislative-mandated standards and regulations including the CPUC Decision. Weekly meetings are hosted by the Power Regulatory, Standards, and Compliance Group within the PTPRI Division to inform LADWP management of all federal, state, and city regulatory updates. With respect to this plan, PTPRI's role includes, but is not limited to, the following:</p> <ul style="list-style-type: none"> • Monitor any new guidance related to local publicly owned electric utilities' Utility Security Plans • Ensure compliance with sections of California law and regulations as they may relate to local publicly owned utilities' Utility Security Plans • Coordinate with LADWP stakeholders to incorporate relevant information into the plan • Request regular updates on the status of this Plan <p>Although PTPRI is not a part of the plan's implementation, PTPRI will continue to provide awareness of relevant activities that may impact the plan and will coordinate updates to the Utility Security Plan, as needed.</p>

Table 5: Utility Security Plan – Roles and Responsibilities of Implementation Stakeholders

LADWP's organizational structure, as illustrated in the Figure (Figure 1) below, facilitates proper coordination among all internal stakeholders to ensure a successful implementation of the Utility Security Plan.

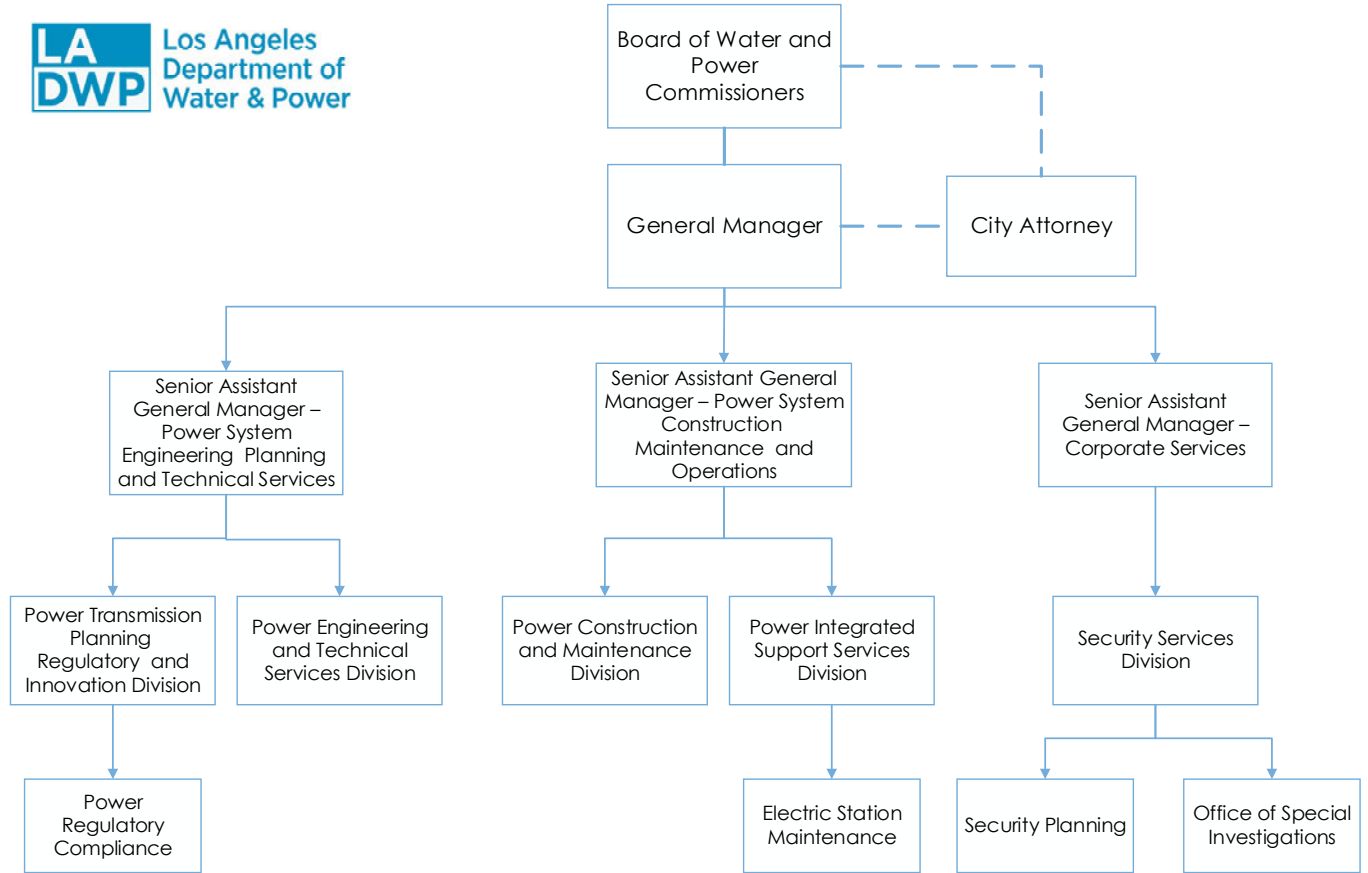


Figure 1: LADWP's Organizational Chart

VII. INDEPENDENT EVALUATION – THIRD-PARTY REVIEW (STEP 2)

LADWP’s Utility Security Plan was submitted to a Third-Party for an independent review. At that stage, the Plan included this document and the facility-specific Mitigation Plans. The Third-Party Reviewer issued an evaluation of the Utility Security Plan as well as recommendations for improvements. As part of this process, the Third-Party Reviewer generated reports for all 19 Mitigation Plans. LADWP accepted all recommendations provided by the Third-Party Reviewer. At the conclusion of the Third-Party review, all resulting Third-Party Reviewer Reports were incorporated into and made a part of LADWP’s Utility Security Plan.

A. REQUIREMENTS FOR THIRD-PARTY REVIEW

The CPUC Decision specified the following criteria for a Third-Party Reviewer:

Independence: A Third-Party Reviewer cannot be a division of the POU. A governmental entity can select as the Third-Party Reviewer a private entity or another governmental entity within the same political subdivision, so long as the selected governmental entity has the appropriate expertise and is not a division of the POU that operates as a functional unit.

Adequate Qualifications: A Third Party Reviewer must be an entity or organization with electric industry physical security experience and whose review staff has appropriate physical security expertise, which means that it meets at least one of the following: (1) an entity or organization with at least one member who holds either an ASIS International Certified Protection Professional (CPP) or Physical Security Professional (PSP) certification; (2) an entity or organization with demonstrated law enforcement, government, or military physical security expertise; or (3) an entity or organization approved to do physical security assessments by the CPUC, Electric Reliability Organization, or similar electrical industry regulatory body.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]

[REDACTED]

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- [REDACTED]
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- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

C. THIRD-PARTY EVALUATION, FINDINGS, AND RECOMMENDATIONS

[REDACTED] is a credentialed, independent security consultant that was contracted through Worley Parsons to conduct an unaffiliated Third-Party review of Mitigation Plans for LADWP’s Covered Distribution Facilities as required by the CPUC Decision.

The Third-Party Reviewer recognized that LADWP utilized the CARVER methodology, a functional tool and matrix that determines vulnerabilities and assesses target values for risk rating.

[REDACTED]

The responsibility of the Third-Party review was to:

- Provide a documented review of LADWP's Security Assessments and associated Mitigation Plans for Covered Distribution Facilities.
- Provide quality review functions in the form of observations and recommendations that will enhance and strengthen each Security Assessment and Mitigation Plan.
- Complete the review and provide LADWP a written report within the agreed upon timeframe.

[REDACTED] performed a virtual assessment and thorough review of each facility's Mitigation Plan during April and October 2021. A detailed comparison of the CPUC Decision was made against documentation provided by LADWP.

According to the Third-Party Reviewer Reports, LADWP's Mitigation Plans for the top 19 Covered Distribution Facilities met the requirements of CPUC D.19-01-018. Below is a list of positive observations provided by the Third-Party Reviewer in various reports:

[LADWP ...]

1. *Has properly identified each seven facilities as meeting the criteria for a Covered Distribution Facility requiring assessment.*
2. *Has demonstrated they have a robust resiliency program with sufficient backup generation capabilities, spare inventory on-site or in proximity within their service territory that can be deployed rapidly.*
3. *Has the highest level of reliability adhering to N-1 criterion that enables facilities to remain in operation after an occurrence if any single component fails.*
4. *Has redundancy with various paths to serve a portion of the load and can reroute power across circuit ties to adjacent facilities switched remotely or manually.*
5. *Has performed a detailed assessment identifying the site's vulnerabilities and gaps in security protection in similar fashion to NERC CIP-014-2.*
6. *Has completed a risk-based security assessment using an industry standard methodology (CARVER) for their critical assets providing "pre" and "post" mitigation ratings showing a reduction in risk and probability of physical attack.*
7. *Has analyzed the entire threat spectrum and determined through a Design Basis Threat (DBT) process concluding that theft, vandalism, and ballistic attack-small arms are realistic threats to the site.*
8. *Has documented proposed measures in their mitigation section consisting of a hybrid approach that addresses their DBTs and vulnerabilities by using CPTED principles, physical and electronic security measures to improve deterrence, delay,*

detection, assessment, communication, response, and recovery which are effective for site hardening and minimizing the potential risk for a physical attack.

9. *Has committed to Crime Prevention Through Environmental Design principles in their mitigation strategies for territorial ownership, natural surveillance, and maintenance of the site that will greatly deter criminal activity.*
10. *All the sites' vulnerabilities were accurately documented, reasonable security measures were proposed that will mitigate all the stated threats. All the proposed mitigation measures were clearly organized to address security principles of deterrence, detection, delay, assessment, communicate and response making this mitigation plan effective in reducing the risk of a physical attack for this site.*
11. *Has a comprehensive Utility Security Plan for Distribution Facilities that details their Physical Security Principles, Plan Development Process covering the required six steps, Identification Process, and Risk Assessment Methodology. Some other key elements included in the Utility Security Plan are:*
 - *Asset Management Program*
 - *Workforce Training & Retention Program*
 - *Preventative Maintenance Program*
 - *Physical Security Event Training*
 - *Communication Infrastructure Risk*
 - *Facility Design Features*

D. LADWP's RESPONSE

LADWP is committed to protecting the safety of its customers, employees, and the Power System assets that serve the City of Los Angeles and its diverse communities. In that spirit, all suggestions, considerations, or recommendations from the Third-Party Reviewer were highly valued and incorporated in the Mitigation Plans.

As a summary of the review process and LADWP's response, LADWP first provided this document and Mitigation Plans to the Third-Party Reviewer; the Third-Party Reviewer then engaged with LADWP personnel who developed each Mitigation Plan and collaborated on several enhancements; the Third-Party Reviewer then provided final review reports containing Recommendations and Best Practices; LADWP then addressed, in consultation with the Third-Party Reviewer, those Recommendations and Best Practices. The "Revision History" section of each Mitigation Plan summarized all modifications resulting from LADWP's engagement with the Third-Party Reviewer. Refer to the Appendices section for each of the 19 Covered Distribution Facility's specific Mitigation Plans.

Working in collaboration with the Third-Party Reviewer, LADWP implemented several revisions to this document and each of the 19 Mitigation Plans. Within each Mitigation Plan, LADWP expanded on the 'layered security system' to protect employees, facilities, and infrastructure following the 'defense in depth' concept; elaborated on its security principles to show how LADWP will mitigate threats by addressing the site's vulnerabilities with proposed

security measures; provided more guidance on planned implementations; and made other errata changes. Furthermore, LADWP updated its Utility Security Plan to clearly define the associated roles and responsibilities of implementation stakeholders, as well as memorialized in the Utility Security Plan several relevant activities that LADWP is currently performing.

Within the final executed Third-Party Review Report, there were two recommendations and three suggested best practices which LADWP accepted and incorporated into this document and each of the 19 Mitigation Plans. An outline of the Third-Party Reviewer’s final recommendations, best practices, and corresponding LADWP responses are shown below in the following Table (Table 6).

Final Recommendations and Best Practices	Applicable Facility	LADWP’s Response
Recommendation #1: The Security Assessment Team and internal SMEs need to reconvene after security measures are deployed to verify post-mitigation ratings. This verification needs to be documented on the revision block.	[REDACTED]	Addressed in all Mitigation Plans. LADWP plans to reassess the CARVER risk rating once the identified mitigation measures have been implemented with consideration given to evolving threats. Any changes in the CARVER post-mitigation ratings will be reflected in a subsequent revision of this plan and will be documented in the respective Mitigation Plan.
Recommendation #2: Do a CARVER rating for Critical Asset #12 on page 8 “500kV Gas Insulated Switchgear located in [REDACTED]” that is missing from the Risk Reduction Section.	[REDACTED]	Addressed in the [REDACTED] Mitigation Plan. The CARVER rating was added for the asset in question.
Best Practice #1: The CPUC Order (p. 35) has an additional “optional requirement” for outreach training opportunities to local law enforcement that optimizes communication during a physical attack.	[REDACTED]	LADWP’s Utility Security Plan was updated to include training opportunities for local law enforcement that optimizes communication during a physical attack. LADWP’s existing practices, such as Incident Response exercises are used to meet this objective.

Best Practice #2: The CPUC Order (p. 35) has an additional “optional requirement” for determining vulnerabilities associated with communication utility infrastructure that supports priority distribution assets.	[REDACTED]	LADWP’s Utility Security Plan was updated to include a discussion of its processes for determining vulnerabilities associated with communication utility infrastructure that supports priority distribution assets. Please see Section XII.E covering Communication Infrastructure.
Best Practice #3: The CPUC Order (p. 36) has an additional “optional requirement” for new, renovated or upgraded utility facilities that recommend features that promote a sense of order and ownership (CPTED) with being strategic with placement of assets to maximize opportunities for defensibility and defense in depth concepts to thwart attackers.	[REDACTED]	LADWP’s Utility Security Plans was updated to include a discussion of its plan to ensure new, renovated or upgraded utility facilities that recommends features that promote a sense of order and ownership (CPTED) with being strategic with placement of assets to maximize opportunities for defensibility and defense in depth concepts to thwart attackers. Please see Section XII.F covering Design Features.

Table 6: Final Recommendations, Best Practices, and LADWP Responses

VIII. COMPLEMENTARY EVALUATION – QUALIFIED AUTHORITY REVIEW (STEP 3)

Consistent with the provisions of the CPUC Decision, LADWP will submit its Utility Security Plan for review to a Qualified Authority. The Qualified Authority is expected to provide additional feedback and evaluation of LADWP’s Utility Security Plan and, to the extent that it is authorized based on its expertise, it should deem the Utility Security Plan as adequate.

A. SELECTION OF QUALIFIED AUTHORITY

LADWP secured the City of Los Angeles Emergency Management Department (LAEMD) as a Qualified Authority reviewer to determine the adequacy of LADWP’s Utility Security Plan, which includes the 19 Mitigation Plans, and 19 unaffiliated Third-Party Reviewer Reports. LADWP has determined that LAEMD has sufficient familiarity with relevant federal, state, and local standards relating to public safety, emergency preparedness, and emergency response in order to serve as the “qualified authority” for the review of LADWP’s Utility Security Plan. LAEMD has relevant experience in coordinating the City’s emergency planning, training, response, and recovery efforts during major disasters, such as fires, floods, earthquakes, acts of terrorism, and for major planned events in the City that require involvement of multiple City departments.

B. RESULTS OF QUALIFIED AUTHORITY REVIEW

During April through May 2022, LADWP provided its Utility Security Plan and all documents listed in the Appendices to LAEMD for review. The scope of LAEMD's review is to assess the overall adequacy of the entire package, based on their expertise.

Based on this review, LAEMD deems the LADWP's Utility Security Plan is adequate, consistent with the CPUC Decision, and recommends that the LADWP Board of Commissioners adopt the LADWP Utility Security Plan.

C. LADWP RESPONSE TO QUALIFIED AUTHORITY REVIEW

As the review progressed, LADWP shared all requested information necessary to complete the review and offered access to all relevant personnel that developed each Mitigation Plans, if needed, so that LAEMD could confidently provide a determination that LADWP's Utility Security Plan and Appendices are, at a minimum, adequate. On June 1, 2022, there were no pending recommendations or questions from LAEMD regarding LADWP's Utility Security Plan and Appendices; therefore, LAEMD executed a Memorandum to finalize their review and recommend adoption of the Utility Security Plan.

IX. ADOPTION OF THE UTILITY SECURITY PLAN (STEP 4)

LADWP's Utility Security Plan will be presented to and recommended for adoption by LADWP's Board. During the Board Adoption step, LADWP's Board will be given the opportunity to review the confidential details of the Utility Security Plan in a "closed setting", and the overview of the Utility Security Plan will be presented at a Public Board Meeting.

X. MAINTENANCE OF THE UTILITY SECURITY PLAN (STEP 5)

LADWP will refine, enhance, and update its Utility Security Plan as appropriate and as necessary to preserve the integrity and effectiveness of the plan. LADWP's goal is to have all security plans be concurrent with and integrated into its current and future resiliency plans and activities.

As an example, LADWP intends to reevaluate the CARVER ratings within each Mitigation Plan following the implementation of the specified mitigation strategies. The new ratings, if any, will be reflected in the respective Mitigation Plan and its Revision History. The updating of the Mitigation Plans to reflect existing physical security risk ratings will be an added internal control and will serve as a guide for ongoing efforts.

XI. REPEAT OF THE UTILITY SECURITY PLAN DEVELOPMENT PROCESS (STEP 6)

LADWP will repeat the six-step Utility Security Plan cycle process at least once every five (5) years. Every five (5) years from the last Utility Security Plan Board adoption, LADWP will seek out opportunities to overhaul and improve all aspects of the Utility Security Plan.

XII. ADDITIONAL ASPECTS OF LADWP'S UTILITY SECURITY PLAN

The CPUC Decision includes specific requirements and recommendations to be addressed in each POU's Utility Security Plan. These additional requirements and recommendations include the implementation of an asset management program, workforce training and retention programs, a preventative maintenance plan, collaboration with law enforcement agencies, assessment of utility communication infrastructure, and improved design features. The following sections describe LADWP's current status with regard to these requirements and recommendations. LADWP will strive to make improvements in these areas as part of its Utility Security Plan implementation efforts.


A. ASSET MANAGEMENT PROGRAM

LADWP maintains an inventory of spare parts to provide operational resiliency and redundancy. These spare parts allow for rapid response and dispatch and provide the ability to quickly restore power to customers following an equipment failure or a physical security attack. Engineering groups within LADWP maintain inventories of spare transformers and plan procurement of new transformers. Planning, operations, engineering, and field groups closely collaborate to track additional LADWP spare parts.

To effectively manage reliability risks, utilities typically assess the supply of spare transformers and other equipment. In general, LADWP's critical assets within Distribution Substations share similar characteristics (e.g., high and low side voltage and MVA rating), allowing spare parts to be interchangeable between stations and further increasing flexibility. Spare parts for these critical assets are stored on-site at the Distribution Substation or at other stations in close proximity within LADWP's service territory.

In addition to managing spare parts, LADWP has several alternative methods for accessing and procuring critical equipment. For example, in the event LADWP requires additional resources because of a major emergency, it can utilize LADWP's Office of Emergency Management (OEM) to contact external utility agencies and associations for assistance. LADWP is a signatory to agreements with the following associations:

- Southern California Public Power Association (SCPPA)
- California Utilities Emergency Association (CUEA)
- American Public Power Association (APPA)
- Western Region Mutual Assistance Group (WRMAG)



An annual review of mutual aid agreements is performed to ensure that LADWP is capable of addressing all hazards and threats. LADWP's participation in these mutual assistance associations provides additional opportunities for rapidly obtaining and dispatching spare parts.

B. WORKFORCE TRAINING AND RETENTION PROGRAMS

LADWP's Electric Station Operators, Electrical Mechanics, Protection and Test Engineers, and Electrical Test Technicians are highly-qualified personnel that are on stand-by 24/7 and are capable of making repairs in short order throughout LADWP's service territory. Employees in the first two foregoing job classes go through LADWP's onboarding apprentice programs, annual refresher trainings, and various supplemental trainings to ensure these highly-qualified service technicians are able to respond during emergencies.

Trainees in the first two foregoing job classes enter into either a two-year program for Electric Station Operators or a four-year program for Electrical Mechanics. During the program, trainees are given extensive hands-on and classroom training to prepare them to become a journey-level worker. Periodically, trainees are given practical exams designed to ensure that they are mastering the skills required to succeed.

Journey-level workers receive an Annual Refresher Course (ARC) each year. ARC training includes many of the regulatory required classes, such as Hazardous Material and Waste refreshers, Operating Order review, safe entry procedures, Electric Safety Observer refresher, etc. Other topics covered in ARC include discussions on recent accidents, lessons learned, and safety notices about materials and equipment currently in use.

LADWP staffs its distribution facilities with journey-level operations and maintenance personnel that completed the above-mentioned multi-year training programs. Journey-level personnel perform both routine maintenance and emergency repairs of equipment as needed.

In addition, LADWP has a centralized Laboratory and Technical Services Section that employs Electrical Engineers and Electrical Test Technicians who are able to respond to electric grid disturbances. Electrical Test Technicians go through an Apprenticeship Program for three years. The program includes months of intensive classroom training with full rotation in all areas, including electrical substation commissioning, relay protection support, power quality investigation and troubleshooting, corrosion control studies and ground systems testing, material and major apparatus acceptance testing, power substation emergency testing support, and meter testing.

To bolster LADWP's various training programs, a significant budget is set aside each year for technical and safety training to help ensure that employees stay current with regulatory changes, best practices, and advances in power substation equipment testing techniques.

C. PREVENTATIVE MAINTENANCE PLAN

As a NERC Registered Entity, LADWP is subject to numerous NERC Reliability Standards. These Reliability Standards include, among other things, requirements to maintain security equipment that protects the Bulk Electric System, as defined by NERC. For LADWP facilities subject to the Reliability Standards, LADWP performs periodic inspection and maintenance activities to ensure that physical security mitigation measures are functional and performing adequately. For example, per CIP-006 Physical Access Control System Maintenance and Testing Program, LADWP performs maintenance and testing of each physical access control system and locally mounted hardware or devices at the physical security perimeter of applicable facilities.

Furthermore, for Distribution Substations not subject to NERC Reliability Standards (typically, facilities where the highest voltage is under 100kV), LADWP performs inspection and maintenance activities at a level it deems necessary based on the facility type and criticality by utilizing many of the same security strategies applied to Bulk Electric System stations. Specifically, LADWP facility operators or managers monitor and notify all applicable groups of any operational issues related to security equipment.


Furthermore, LADWP utilizes a Central Monitoring Station (CMS) to remotely monitor security systems installed at its various facilities. If any security equipment fails, CMS security officers will report the issue promptly so that the anomaly can be resolved. To continuously improve LADWP's security posture, upgrades to security equipment are triggered through a number of projects and replacement programs – often times leveraging opportunities where security upgrades can be performed concurrently with other projects.

D. PHYSICAL SECURITY INCIDENT RESPONSE AND RESPONSE TRAINING

LADWP periodically conducts a cyber and physical security incident response and recovery exercise. The exercise simulates current and emerging security threats that can potentially impact the reliable operation of the Bulk Electric System. The tabletop exercise tests scenarios and conditions that include the availability of resources and spare parts.

The exercise is a collaboration among subject matter experts (SMEs) within LADWP, other City of Los Angeles departments such as LAPD and the Los Angeles Fire Department (LAFD), external agencies such as the Federal Bureau of Investigation (FBI), the Electricity Information Sharing and Analysis Center (E-ISAC), and other neighboring electric utility companies. In addition, LADWP participates in drills with other local entities such as the City of Burbank and the City of Glendale along with local law enforcement to ensure utility personnel and law enforcement are both prepared to respond effectively to potential malicious actions by adversaries.

Incident response and recovery exercises strengthen LADWP's readiness and ability to detect, respond to, and recover from cyber and physical security threats targeting critical assets.



Such exercises also increase awareness and understanding of threats and offer SMEs opportunities to further evaluate and identify deficiencies. In addition, such exercises foster better communication and coordination among the various SMEs and external agencies to help clarify roles and responsibilities in managing real incidents.

E. COMMUNICATION INFRASTRUCTURE RISK ASSESSMENT

The communication infrastructure that supports LADWP's Distribution Substations is comprised of various telecommunications networks that provide corporate, supervisory control and data acquisition (SCADA), system/relay protection, and telemetry network communications. These network systems vary in usage depending on the particular Distribution Substation and the level of automation available at the location.

Distribution Substation communication systems rely on some form of infrastructure medium (copper, fiber, and wireless) depending on the maturity and progression of their upgrades. As much redundancy is designed into these systems as possible with the aim of maintaining system reliability and resiliency. For example, if all cable communications are lost at a substation, operators can still communicate on-site through wireless systems (i.e., cell phones and 900 MHz radios).

LADWP monitors its telecommunication infrastructure 24/7 and is able to respond in real-time to any communication incident. LADWP's extensive real-time monitoring ensures the integrity, redundancy, and continued operation of its communication networks.

F. FACILITY DESIGN FEATURES

LADWP's primary goal is to design and build electrical facilities with safety and reliability in mind. To achieve this, LADWP considers and incorporates the latest standards and industry best practices in the design of its Distribution Substations. In the design stage, LADWP substation engineers collaborate with LADWP Security Planning and Engineering Services to ensure a facility is designed with the latest security and surveillance technology. In this process, LADWP adheres to its internal design and equipment standards, with additional consideration given to applicable industry standards.

Throughout the preliminary design stage, input is gathered from various groups throughout LADWP to ensure equipment placement and layout accounts for the safety of the public and LADWP employees, while considering the physical security of critical equipment. This is done by placing equipment strategically away from property lines to provide proper physical distancing for public safety and increased physical security. LADWP also designs the perimeter around Distribution Substations to allow for appropriate levels of accessibility. These safety and reliability measures are considered in the planning and design phases and are further assessed during the construction and commissioning phases of a project. Incorporating these principles in the design phase contributes to the overall deterrence of security incidents, improvement of

a facility's defensibility profile, and establishment of a sustainable and sound security posture for LADWP's Distribution Substations.

XIII. LADWP INITIATIVES APART FROM THE CPUC DECISION 19-01-018

LADWP is committed to enhancing its physical security posture at all levels by taking into consideration inherent challenges, risks, and opportunities. As such, LADWP has several ongoing initiatives apart from that of the CPUC Decision, while reinforcing similar security principles and representing a cohesive strategy to further ensure the physical security of LADWP's facilities.

LADWP is implementing two additional major initiatives – namely, the NERC CIP-014 Program and LADWP's Infrastructure Renewal Program. LADWP's Infrastructure Renewal Program entails performing inspections of Power System substations within the City of Los Angeles and implementing any necessary mitigation measures. At the beginning of each ten-year period, a reevaluation of facilities is performed to ensure existing conditions are consistent with LADWP's practices. The ultimate goal of the Infrastructure Renewal Program is to maintain a robust, reliable, and safe Power System.

The NERC CIP-014 Program requires the most robust assessment and implementation of mitigation measures, and it is applied at LADWP's Bulk Electric System facilities in accordance with federally approved NERC Reliability Standard requirements.

Physical security of LADWP distribution facilities that do not meet the eligibility criteria either for Covered Distribution Facilities in LADWP's Utility Security Plan or for the NERC CIP-014 Program are managed through LADWP's Infrastructure Renewal Program.

XIV. REVISION HISTORY

The Revision History table shown below (**Table 7**) is reserved for capturing and summarizing the various revisions and changes made to the Utility Security Plan.

Date	Version	Summary of Changes
July 2022	V0	Initial Draft

Table 7: Revision History

XV.APPENDICES

A. ATTACHMENTS

The List of Appendices shown in the Table below (Table 8) includes each Appendix Section attached to the Utility Security Plan. The Appendix Sections consist of facility-specific Mitigation Plans and associated Third-Party Review Reports.

Appendix Section	Title		
A			
B			
C			
D			
E			
F			
G			
H			
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W			
X			
Y			
Z1			
ZA			
ZB			
ZC			
ZD			
ZE			
ZF			
ZG			
ZH			
ZI			


ZJ					
ZK					
ZL					

Table 8: List of Appendices

B. GLOSSARY OF TERMS

Below are relevant definitions of terms used in the Utility Security Plan:

- **California Public Utilities Commission (CPUC or PUC):** A regulatory agency that regulates privately owned public utilities in the state of California, including electric power, telecommunications, natural gas and water companies. In addition, the CPUC regulates common carriers, including household goods movers, passenger transportation companies such as limousine services, and rail crossing safety. The CPUC has headquarters in the Civic Center district of San Francisco, and field offices in Los Angeles and Sacramento.
- **CARVER:** An acronym that stands for Criticality, Accessibility, Recoverability, Vulnerability, Effect, and Recognizability. CARVER methodology addresses physical security of a facility. It uses a numerical ranking methodology to identify targets most attractive to attack by an adversary. CARVER was developed in World War II by the OSS for the French field agents as a simple, uniformly and somewhat quantifiable means of selecting targets for possible interdiction. CARVER can be used from an offensive (what to attack) or defensive (what to protect) perspective.
- **Covered Distribution Facility:** A facility that serves an electric utility's customers and meet one or more of the CPUC's seven screening factors such as whether the facility is a part of a cranking path or serves major transportation facilities, a regional public safety establishment, water facilities, a Trauma Center, military facilities, or 60,000 or more meters. See CPUC Decision for full list of screening factors and further details.
- **Crime Prevention Through Environmental Design (CPTED):** A multi-disciplinary approach of crime prevention that uses urban and architectural design and the management of built and natural environments. CPTED strategies aim to reduce victimization, deter offender decisions that precede criminal acts, and build a sense of community among inhabitants so they can gain territorial control of areas, reduce crime, and minimize fear of crime.
- **Critical Infrastructure Protection (CIP) Standards:** A set of requirements designed, in part, to secure the assets required for operating North America's bulk electric system.
- **Decision:** An opinion or judgment of the PUC that decides the resolution of a proceeding, usually written in the format D.01-02-003. A proposed decision is usually written by a PUC Administrative Law Judge (ALJ); it is then reviewed and voted upon by the Commissioners.
- **Distribution Substation:** LADWP's Receiving Stations and Distributing Stations dedicated to delivering electric energy to LADWP's commercial, industrial, and/or residential customers.
- **Distribution System:** The portion of an electric system that is dedicated to delivering electric energy to an end user.

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- **Mitigation Plan:** Outlines the planning process for identifying and implementing actions to reduce or eliminate facility-specific physical security risks. The Mitigation Plan is the result of a risk assessment performed at specific facilities that uses a risk-based approach to select reasonable and cost-effective measures that can either be security focused (e.g., walls or alarms) or resiliency focused (e.g., adequate spare parts).
 - **North American Electric Reliability Corporation (NERC):** A not-for-profit international regulatory authority whose mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.
 - **Qualified Authority Reviewer or Qualified Authority:** An entity designated by an applicable local governance body, specifically the Los Angeles Board of Water and Power Commissioners, primarily responsible for deeming LADWP's final Utility Security Plan adequate.
 - **Third-Party Reviewer:** An independent third party with requisite qualifications that would review a utility's Utility Security Plan prepared with regard to the CPUC Decision, including making recommendations that assess and appraise the appropriateness of the plan's risk assessment, proposed mitigation measures, and other plan elements.
 - **Utility Security Plan:** A guide document prepared with regard to the CPUC Decision that describes LADWP's risk management approach toward the distribution system's physical security with appropriate consideration for public safety, system reliability and resiliency, availability of resources, and overall impact on budget, operations, and maintenance cost.