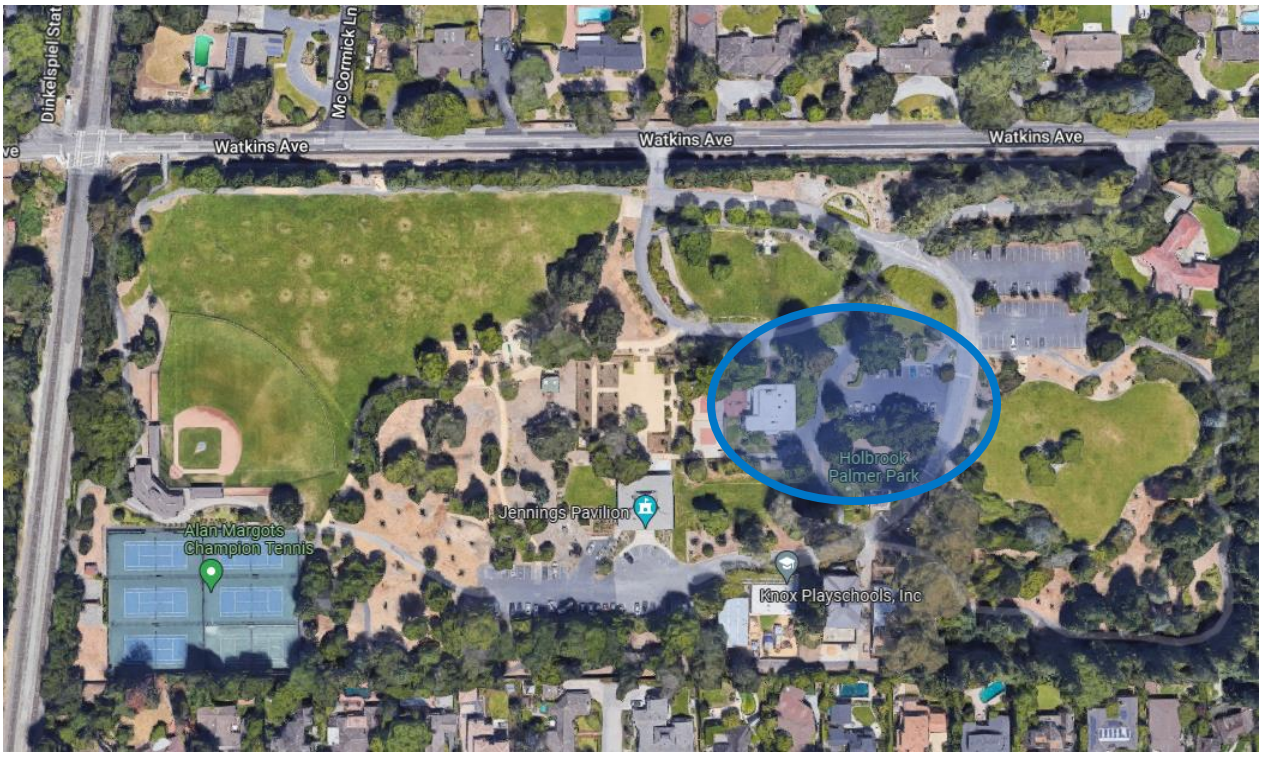
Charging Evaluation Report



150 WATKINS AVE. (MAIN HOUSE)
SOLUTION 1
2 LEVEL 2 EV PORTS

PROJECT # 002518025

4/28/2022

PREPARED FOR Town of Atherton

PREPARED BY CLEAResult

WITH SUPPORT FROM Peninsula Clean Energy

Introduction

Peninsula Clean Energy is San Mateo County's not-for-profit, community led electricity provider. Peninsula Clean Energy's mission is to reduce greenhouse gas emissions by expanding access to sustainable and affordable energy solutions. As part of this mission, Peninsula Clean Energy provides a robust set of community programs to support clean transportation and buildings, as well as renewable generation and storage. This site evaluation is provided as part of the Electric Vehicle (EV) Ready program which provides incentives and technical assistance for accelerated deployment of EV charging, facilitating adoption of EVs which save money and reduce pollution. CLEAResult is Peninsula Clean Energy's partner for site technical assistance.

Overview

The purpose of this document is to define one of the two EV charging solutions for Town of Atherton's site at 150 Watkins Ave. After selection of a preferred solution, the document can also be used to obtain bids for installation from qualified contractors.

There are three sections of the document:

1. **Project Information.** This section provides details about the existing site conditions that informed the solutions

2. **Charging Solution.** This defines the solution scope with the number of chargers by type and location

3. **Bid Request.** A template to be used by Contractors to submit bids for installation of Town of Atherton's chosen solution

Charging Solution Summary

The 150 Watkins Ave. site is a good candidate for new EV parking spaces. After conducting a site walk and electrical capacity estimate, we have determined that the technical feasibility of installing new EV parking spaces is good and have identified the following three charging solutions:

Solution #1: This solution is exactly what you asked for.

- **Install 2 Level 2 EV ports.**

Solution #2: This solution optimizes the port quantity, balancing available incentives and the existing electrical infrastructure to provide the best deal.

- **Install 2 Level 2 EV ports and 2 Make Ready Level 2 EV ports.**

The remainder of this document will describe Solution 1 in further detail.

Resources

You can review estimates of this solution's installation cost and incentives available to your project on the EV Program Portal at http://pceev.clearesult.com.

You can also find these resources to help you as you proceed to installation.

- Qualified Product List: https://calevip.org/sites/default/files/docs/calevip/CALeVIP_Eligible_Equipment.pdf

Remember, your Program Advisor is also available to assist you with the review of bids, incentive application, and troubleshooting any issues that arise during installation.

Terms

The following defined terms are used in this document:

Activation Date – The date that the chargers are fully available to provide EV charging for the intended users

Accessible – A space or equipment conforming to the requirements of the Americans with Disabilities Act (ADA)

DCFC – A direct current fast charger provides rapid charging, typically delivering a full charge in less than one hour. For CALeVIP, DCFC must be capable of 50 kW or greater.

Electricity Cost – Estimated electricity usage cost based on the site's $/kWh rate

Electricity Demand Charges – Estimated electricity demand charge based on the site's peak demand rate

EV – An electric vehicle (EV) uses electric motors for propulsion. The two types of electric vehicles are Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV).

EVSE – Electric Vehicle Supply Equipment, also referred to as an EV charger, safely delivers power to charge the battery of an electric vehicle

EVSE Network Fees – Estimated annual cost paid to an EVSE network provider for managing charger access, transactions, usage, data collection, and other agreed upon services

Level 1 Outlet– A level 1 charger provides power equivalent to a standard wall outlet, typically delivering a full charge overnight

Level 2 – A level 2 charger provides power equivalent to a large appliance outlet, typically delivering a full charge in 4-6 hours. For CALeVIP Level 2 must be capable of 6.2 kW or greater per connector.

Make Ready – This is the infrastructure required to be added to the site to make installation of an EVSE possible; it may include everything from a new/upgraded electric utility service, to a concrete pad on which to install the EVSE

Power Management – A device or software that allows more EVSE to operate within a site's electrical capacity by reducing the power output of the EVSE when multiple EVSE are in use. The PCE EV Ready Program typically uses one of the two following approaches to Power Management:

1. Circuit Sharing: Allowing 3 or more EV charging ports to share a single branch circuit without exceeding the rated load capacity of the circuit using control through the use of an ALMS.

2. Panel Sharing: Allowing 3 or more EV charging ports on independent branch circuits to share a single electrical panel without exceeding the rated load capacity of the panel using control through the use of an ALMS.

Qualified Product List (QPL) – This is the list of EVSE that have been vetted to confirm they meet the technical requirements of the program and are approved for recommendation and incentives, where available. You may find a copy of the QPL here:

https://calevip.org/sites/default/files/docs/calevip/CALeVIP_Eligible_Equipment.pdf

1. Project Information

General Information

The following general information applies to all solutions.

Site Contact	Robert Ovadia Town of Atherton rovadia@ci.atherton.ca.us (650)752-0541
Program Advisor	Michael Martin CLEAResult michael.martin@clearesult.com (415) 860-1564
Site Address	150 Watkins Ave., Atherton, CA 94027
Site Type	Public Park
Intended Charging Use	The chargers will be used by members of the public
Target Activation Date	1/31/2023

Site Evaluation

The site evaluation included the following steps:

- Discussion with Town of Atherton started on 2/2/2022 to identify objectives for the project
- Remote data collection and review, including:
    a. Information submitted by Town of Atherton in the program application
    b. Aerial/satellite imagery from Google Earth
    c. Annual energy and demand data from Peninsula Clean Energy
    d. Local distribution system electrical infrastructure published by PG&E
- A site walk by CLEAResult staff that gathered the following additional detail:
    a. Electrical panel location, capacity and utilization
    b. Candidate charging locations and surface conditions
    c. Distance measurements
- “As Built” architectural drawings were available
- An available capacity estimate was completed by CLEAResult Engineer, Andy Lentz

The Solutions recommended have also been designed to address the following utility needs:

- The available capacity of the utility service is calculated to be sufficient
    a. No engagement with the utility is required.

Site Overview

150 Watkins Ave. is a public park established in 1958. It is owned by Town of Atherton and its primary interest for installing electric vehicle charging is to meet the current and future demand for EV charging stations.

Parking Layout

Holbrook Palmer Park is bordered by Watkins Ave to the West, residential buildings to the North and East, and train tracks to the South. The main parking entrance is located on Watkins Ave. Parking areas are accessible to members of the public and consists of the following numbers of parking categories and spaces.

Type	Non-EVSE	L1	L2	DCFC
Standard	21	0	0	0
Van ADA	1	0	0	0
Standard ADA	0	0	0	0
Ambulatory	0	0	0	0

EV Charging Projection

Electric vehicles currently make up approximately 4% of private vehicles in San Mateo County. Projections suggest electric vehicles will exceed 10% by 2025 and 20% by 2030.

The recommended Solutions are designed to prepare 150 Watkins Ave. for its likeliest daily charging needs through 2025 and beyond.

Electrical Infrastructure

The following is a simple description of the site electrical infrastructure most relevant to the EV charging project.

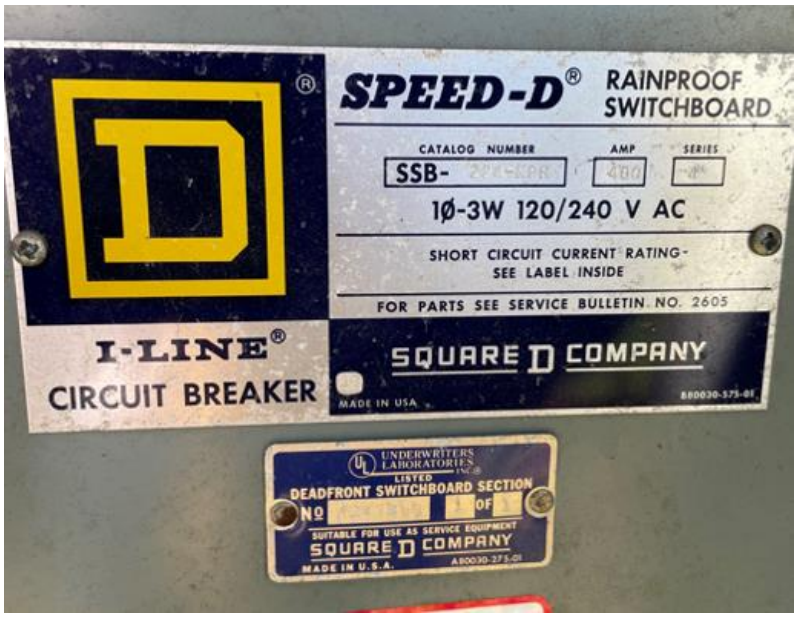
Utility Service

150 Watkins Ave.'s main service is 1 phase/3-wire 120/240V. The power enters from a dedicated transformer located underground across from the historic water tower and has an unknown kVA capacity. We do not anticipate service capacity being an issue because the building side infrastructure already has sufficient capacity, however we encourage the selected contractor to confirm transformer service capacity details from PG&E.

Main Switchboard (Water Tower)

The Main Switchboard (Water Tower) is located in an exterior electrical cabinet adjacent to the historical Water Tower. The 1 phase/3-wire 120/240V panel has a 400A rating and was installed in 1982. The manufacturer is Square D and it has an estimated available capacity of 343A.

Figure 1: Main Switchboard (Water Tower)



Exterior Panel

EVSE circuits can be placed in the Exterior Panel which is mounted on the right side of the Main Switchboard cabinet. The 1 phase/3-wire 120/240V panel has a 200A rating and was installed in an unknown date. The manufacturer is Square D. The Exterior Panel has an estimated available capacity of 143A. There is also physical space for new EVSE dedicated circuits. The contractor shall confirm the available capacity on Exterior Panel.

Figure 2: Exterior Panel

2. Charging Solution

Solution #1

Solution #1 is designed to meet Town of Atherton's initial request for 2 Level 2 EV ports. We highly recommend, however, that Town of Atherton choose one of the additional solutions that meets the site's future EV charging needs while simultaneously providing superior project cost performance. Leveling for Van ADA, access aisle, and paving new walkway will be required.

Chargers

The following quantities of charging are included.

Type	Quantity	Installation Specifications
Level 2 EVSE	2 ports	• 1 qty dual port Level 2 pedestal mounted 208-240V 32A EVSE • Preferred Pricing: The project cost estimate utilizes preferred pricing available to Peninsula Clean Energy customers for the Enel X JuicePedestal Pro 32 pedestal mount EVSE • Requires credit card reader connection if public parking access is allowed

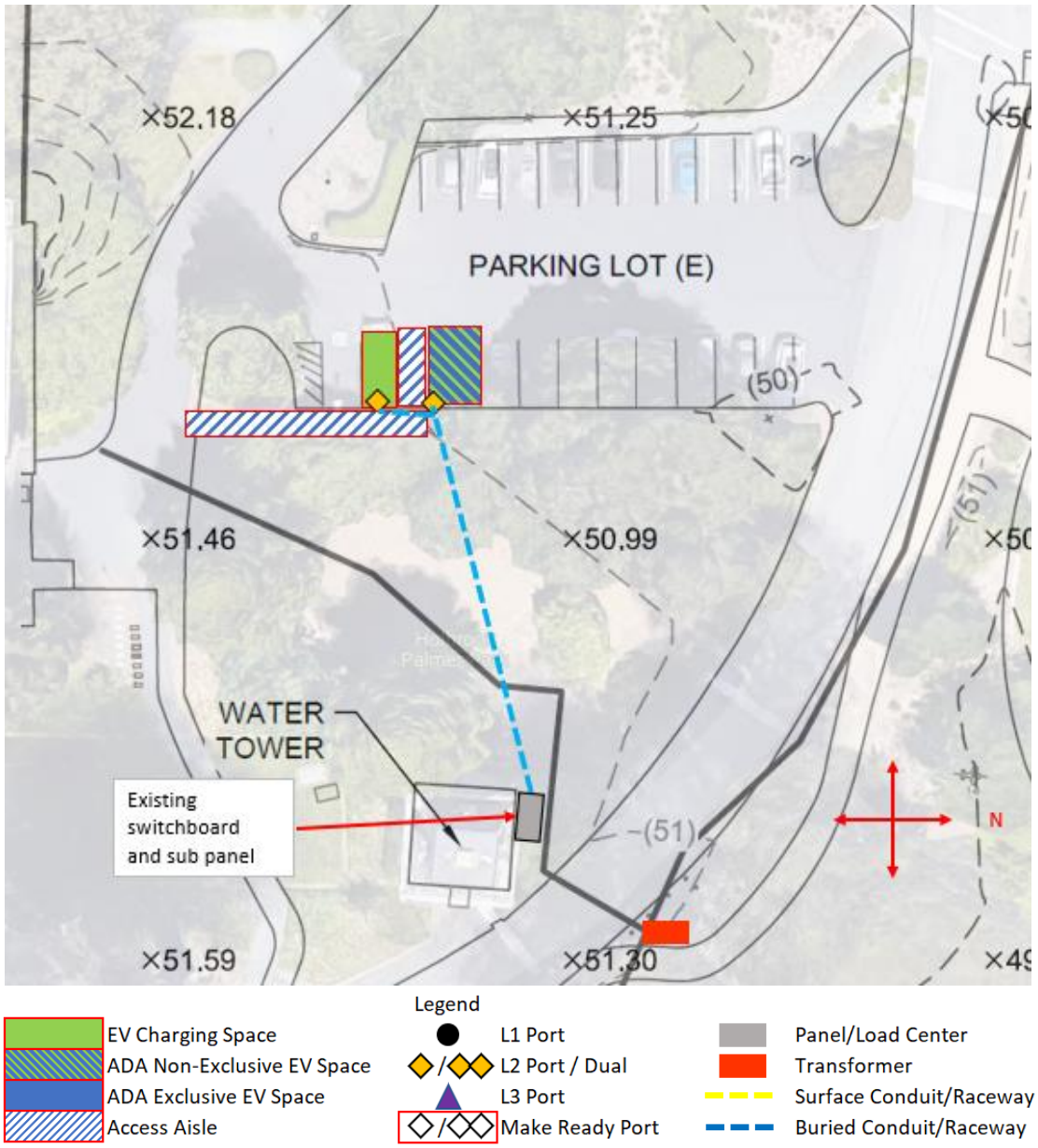
Installation Requirements

1. Requires use of existing 200A Exterior Panel
2. Requires 2 qty Level 2 ports that are connected to 2 qty 40A circuits in Exterior Panel as follows:
    a. Install 2 qty 40A circuits in Exterior Panel
        i. Pull power via new conduit routed underground for 2 qty Level 2 ports
    b. Total of 3 existing parking spaces converted to 2 EV parking spaces
        i. 1st new EV space must be a van width combination ADA/EV space (placard not required to charge)

Layout

The drawing below includes the new proposed EV parking space locations. Based on the recommended quantity of ports in this solution, 1 new ADA space will be required based on California Building Code 2016 Chapter 11B-228.3.2.1. The first EV space must be a van-width (12-ft) combination ADA EV space (placard not required for charging) with an access aisle (5-ft).

Figure 3: Proposed EVSE & ADA EVSE Layout



Infrastructure Requirements

The following site electrical infrastructure will be necessary to enable this solution. Some "existing" equipment is identified in the table. If a connection to the existing equipment is required, the existing equipment type has been identified. The capacity of that existing equipment is expected to be adequate to support this solution.

	System Name	Level 2 EVSE
EVSE Circuits	*New/Existing*	New
	Circuit Type	240V, 40A
	Circuit Quantity	2
	Placement	Conduit routed underground
Exterior Panel	*New/Existing*	Existing
	Panel Type	1P, 3W, 120/240V, 200A
Switchboard (Water Tower)	*New/Existing*	Existing
	Panel Type	1P, 3W, 120/240V, 400A
Utility Service	New/Existing	Existing

Additional Requirements

In addition to electrical upgrades, the following additional requirements are necessary for safety and accessibility.

Category	Description of Requirements
Structural	The following list provides some of the requirements that will be needed at the time of the installation: 1. 1 qty 2'x2' concrete pad must be poured to support the pedestal mounted charging station.
Painting and Signage	The following list provides some of the requirements that will be needed at the time of the installation: 1. 1 parking space will require EV Charging Only signage 2. 1 parking space will require EV charging van width Accessible ADA signage 3. Due to the additional ADA space, the 2 new charging spaces will replace a total of 3 existing parking spaces 4. 3 spaces will need re-striping to reflect their new parking use types
Landscaping	Landscaping remediation is not anticipated for this project
Other	A contractor or EVSE vendor is recommended to determine if a network signal booster is needed to ensure EVSE connectivity.

Operating Model

There are many ways an EVSE site host may structure access and fees to shape the operating cost for their site. Many site hosts choose to provide EVSE as a site amenity, charging little or nothing and recouping their costs from other business activities. Others set fees to break even or even produce net operating income from the chargers.

Based on information Town of Atherton provided about the intended use of the chargers, the program staff has estimated likely annual usage and costs. The following tables present Town of Atherton's estimated annual operating costs followed by a potential revenue break-even operating model.

Assumptions

Electric vehicles currently make up approximately 4% of private vehicles in San Mateo County. Projections suggest electric vehicles will exceed 10% by 2025 and 20% by 2030. The table below calculates the likely usage and operational costs based on this rapid growth over the next 5 years.

Forecast Operations				
	Off Peak	**Partial Peak**	**Peak**	**Total**
Annual Charge Port Utilization (kWh)				
Level 2 EVSE	6,947	14,953	3,650	25,550
Annual Operating Costs				
Electricity Rate	B-1-B			
L2 Electricity Cost	$651	$1,471	$470	$2,591
Electricity Demand Charges	$0			
L2 EVSE Network Fees[1]	$480			
Total Annual Operating Cost	**$3,071**			
Other Annual Costs				
L2 Other Maintenance Costs	$319			
Potential Revenue Scenario				
Revenue Model				
L2 User Fees[2]	Average per kWh	$0.12		
L2 Estimated Revenues				**$3,071**
Annual Net Operating Revenue				**$0**

[1]The first 3 years of Level 2 EVSE Network Fees are bundled into the project cost estimate, and therefore these fees would not be added to your annual operating costs until the 4th year of operation.

[2]The L2 User Fees reflects the hypothetical cost per kWh usage charge necessary to break even against the estimated annual operating costs shown in the table above. Typically, public EV charging costs may be $1 connection fee plus $0.25 per kWh. You may also wish to add an additional charge after a certain duration of time to encourage those who have completed their charging to move their vehicle and allow others to charge. These price settings are configurable in the EVSE network software, however there are certain regulations governing EVSE pricing for public charging that must be followed. Your Program Advisor is available to help set pricing, should you choose to use that capability.

3. Bid Request

Instructions to Contractor

1. Carefully review the preferred solution description and Site Assessment above
2. Contact the Town of Atherton and Program contacts identified above if additional information is needed
3. Complete the bid response template below
4. Proposed EVSE pricing shall not be based on capturing California's Low Carbon Fuel Standard (LCFS) credits as they shall be assigned to Peninsula Clean Energy
5. Submit your bid response by email to the Town of Atherton and Program contacts **before 5pm on the 20th business day** after receipt of the bid request email
6. Please ensure the power management specification in the above Installation Requirements section is in your proposed scope

Scope

The scope of your response should encompass all items marked with an "Y" in the following table:

Include?	Scope Item
Y	Design and permitting including additional site visits
Y	All infrastructure and additional requirements
Y	If a new or upgraded utility service is required, contractor shall request and facilitate upgrades but will not be responsible for any utility fees
Y	Purchase, installation and commissioning of the EVSE, especially for prescribed power management approach*
N	Load study to specify additional project infrastructure support

**For avoidance of doubt, this does not include software licenses that may be required for ongoing EVSE operation*

Response Template

Please populate this exact template and include in your bid response. You may also include additional information to elaborate on your qualifications or proposed solution, but this chart is **REQUIRED** to be included.

Task	**Materials**			**Labor**		
	Units	*Unit Rate*	*Price*	*Hours*	*Hourly Rate*	*Price*
Level 1 Outlets						
Level 2 EVSE						
EVSE Circuits						
Subpanel						
Transformer						
Main Panel						
Design and Permitting						
Utility Service						
Additional Tasks*						
Subtotal						
Total Bid Price						
Please note any assumptions here that you feel are important:						

*Additional Tasks are proposed tasks that you deem as required for project success but are not found in the chart's standard task list above.