CALIFORNIA ENERGY COMMISSION

California Energy Commission

Clean Transportation Program

FINAL PROJECT REPORT

The Disneyland Resort Destination Electric Vehicle Charging

Prepared for: California Energy Commission

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Gavin Newsom, Governor

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PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP). The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) reauthorizes the Clean Transportation Program through January 1, 2024, and specifies that the CEC allocate up to $20 million per year (or up to 20 percent of each fiscal year's funds) in funding for hydrogen station development until at least 100 stations are operational.

The Clean Transportation Program has an annual budget of about $100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and nonroad vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce-training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

To be eligible for funding under the Clean Transportation Program, a project must be consistent with the CEC's annual Clean Transportation Program Investment Plan Update. The CEC issued PON-13-606 to encourage the widespread adoption of plug-in electric vehicles by deployment of charging infrastructure, particularly in high-visibility destination sites. In response to PON-13-606, the recipient submitted an application which was proposed for funding in the CEC's notice of proposed awards July 3, 2014 and the agreement was executed as ARV-13-044 on August 12, 2014.

ABSTRACT

One of the most important strategies encouraging the widespread adoption of electric vehicles by the general public is the deployment of an extensive charging infrastructure, particularly in high-visibility destination sites, such as the Disneyland Resort. Expanding the number of electric vehicle charging sites allows electric vehicles to be used in place of conventional vehicles by encouraging the most electric vehicle miles of travel possible. Additionally, the presence of charging sites at common destinations can help demonstrate the viability of electric vehicles to prospective buyers. This report describes the planning and deployment of 33 dual port electric vehicles charging stations at the Disneyland Resort. Working together with the site hosts, four sites were selected within Disneyland Resort for the installation – one is a large parking structure for daily theme park visitors and the other three are hotel parking lots or garages, for self-parking and valet parking. Once installed, the usage data from the charging sites was collected for six months. The data monitoring showed that the usage of the charging stations was on average less than one charging event per day and we expect as electric vehicles adoption increases over time, the demand for charging will also increase. Additional awareness of electric vehicle supply equipment availability at Disneyland Resort, through marketing, by word of mouth, or electric vehicles charging apps, will also increase utilization over time. The data indicate the growing usage of the electric vehicle charging at the locations and potential for greater usage that can be supported through information and adjustment of charging policy.

Keywords: electric vehicle, EV charging stations, EVSE, Disneyland Resort, destination charging.

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EXECUTIVE SUMMARY

Disneyland Resort is a premier tourist destination with millions of visitors each year, making it an ideal location for destination electric vehicle charging. This project funded planning, design and installation of 64 electric vehicle charging ports at the resort (31 dual port and two single port). The partners on the project were CALSTART, Clean Fuel Connection, ChargePoint (providing the infrastructure, selected by the site host) and Disneyland Resort as the site host.

Four sites were selected, out of seven considered for installation of the electric vehicle infrastructure. The selection process was determined by site host priorities (see selection rationale in Table 1), availability of electrical capacity, and site-specific costs of construction. The final sites and number of ports are show in Table 1:

Table 1: Selected Sites and Number of Ports

Destination Site	Address	Parking Spaces (incl. ADA)	Selection Rationale	Dual Port EVSE (CT4000)	Total # of Ports
Mickey and Friends Parking Structure	1313 Disneyland Dr. Anaheim, CA 92802	11,206	High volume Theme Park parking	25	50
Disneyland Hotel	1150 Magic Way Anaheim, CA 92802	1,281	Overnight visits, mainly tourists	2 + 2[1]	6
Disney's Grand Californian Hotel & Spa	1600 Disneyland Dr. Anaheim, Ca. 92802	459	Overnight visits, mainly tourists	2	4
Disney's Paradise Pier Hotel	1717 Disneyland Dr. Anaheim, Ca. 92802	536	Overnight visits, mainly tourists	2	4

Two single-port charging stations were installed at Disneyland Hotel to accommodate the configuration of the ADA Compliant parking spaces.

Source: CALSTART

This execution of the project was much longer than initially planned (four years compared to one and a half years) and were in great part due to an underestimation of the steps involved in a construction project. Some important learnings associated with planning, design and construction are listed below.

- Load measurements are required for proper selection of sites to ensure adequate availability of power for the electric vehicle supply equipment.
- Designs, approval and permitting times need to account for the site host's internal processes and rules. Understanding the roles and processes ahead of time will help with the planning.

- Redesigns of the sites to include new ADA compliance requirements caused delays.
- At large sites where construction projects are very common, coordination with other construction may cause delays that should be taken into account in the planning and proposal phases.
- The timeline and project schedule should include maximum flexibility in anticipation of adjustments which are very common in projects involving construction.

Cumulative gallons of gasoline displaced over these 14 months is approximately 15,200 gallons. This is comparable to pulling 32 passenger vehicles off the road for a year. At the current usage, all 64 ports at the 4 charging sites would displace 18,000 gallons of gasoline per year – comparable to pulling 38 passenger vehicles off the road.

The six months of data monitoring showed that the usage of the charging stations was on average less than one charging event per day. We expect that the usage will increase as EV drivers become more aware of the availability of electric vehicle charging at the resort. Based on the information from the usage data and user feedback, we have the following conclusions and recommendations:

- Popular destination sites are excellent locations for electric vehicle charging that can encourage usage and adoption of electric vehicles.
- Site hosts should monitor the usage at regular intervals and consider adjusting the pricing policy and management of the charging stations. This will maximize the usage of the charging stations, decrease idle time, and provide reliability to electric vehicle drivers. We recommend annual review and updating of the management and operations plan.
- Monitoring the charging stations will ensure that broken devices are replaced and operational errors are corrected.
- Promotion and information about the available electric vehicle charging can be increased to ensure communication with the public.

Chapter 1: Introduction

The Disneyland Resort is one of California's premier tourist destinations with the single largest cumulative attendance, more than any other theme park in the world. In 2015, the annual attendance at the park was 18.2 million[1]

The high attendance and visibility makes this the ideal location for placement of electric vehicle (EV) charging stations that would be available to visitors driving EVs. It also represents an important opportunity to address one of the most important barriers to widespread EV adoption: range anxiety. Nationwide, fear that an EV might lack the range to reach its destination – or that when it does it will be unable to find a suitable charging station – is slowing the pace of EV adoption. This project will contribute to changing that perception by aiming to install public EV charging infrastructure at a very popular resort that sees millions of visitors each year. Availability of a larger number of EV charging stations at the resort will encourage use of EVs and displace petroleum and reduce greenhouse gas emissions. It will also have the additional benefit of demonstrating the viability and attractiveness of EVs to the resort's many guests.

At the end of 2013, Disneyland Resort installed ten publicly accessible dual port charging stations for visitors and five charging stations for staff. These charging stations were self-funded with the assistance of rebates and tax credits from Anaheim Public Utilities. The current project grows the existing EV charging network by adding 31 dual port and two single-port charging stations also called, electric vehicle supply equipment (EVSE). In addition, the project includes monitoring and evaluation of the installed EV charging stations to better understanding the usage and inform industry best practices.

This document is the final report of the project and is divided into several sections. Chapter 2 presents an overview of the project, describing the partners, charging equipment, selection of sites, and the steps of the installation process. Chapter 3 discusses the operation and maintenance of the charging equipment including training. Chapter 4 describes in more detail the process at each completed site. Chapter 5 includes the EVSE usage data and analysis of the data. Finally, Chapter 6 reviews challenges encountered and presents conclusions and recommendations for future projects of this sort.

1. Global Attraction Attendance Report, TEA/AECOM, 2015 (www.teaconnect.org/images/files/TEA_160_611852_160525.pdf)

Chapter 2:
Project Description

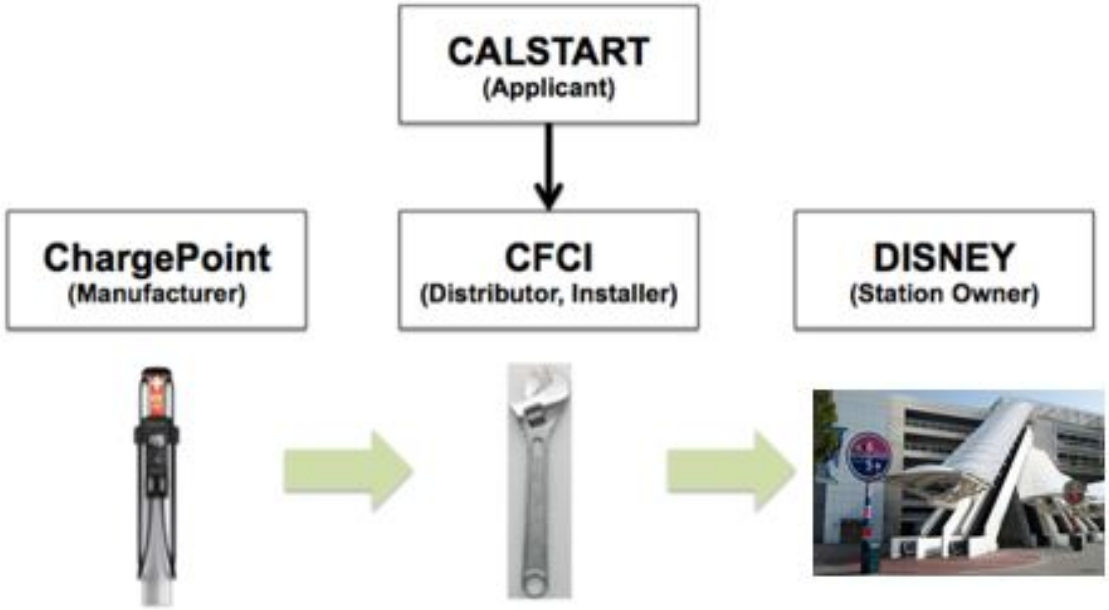
Project Partners

The project team includes the following organizations:

CALSTART	CALSTART	Project Manager, Administrator, Data Collection and Analysis of Performance
CFD	Clean Fuel Connection, Inc. (CFCI)	Coordination of Design and Installation Distributor of ChargePoint Equipment
The Walt Disney Company	The Disneyland Resort	Host and Site Owner of Charging Stations
chargepoint	ChargePoint	Supplier of EVSE Equipment – Chosen by Disneyland Resort as the Preferred Manufacturer

CALSTART managed the overall project while CFCI was responsible for coordinating the purchase, design and construction.

Figure 1: Project Team organizational chart.



Source: CALSTART

Charging Equipment

The charging equipment was selected by the site host, Disneyland Resort. The choice was made for ChargePoint CT4021, CT4023, and CT4011 Level-2 commercial charging stations shown in Figure 2. A total of 33 charging stations (64 ports), 31 dual port and two single-port, were installed.

Figure 2: The CT4021 Dual Port Bollard Charging Station (a), CT4023 Wall Mount Dual Port Charging Station (b), CT4011 Single-Port Charging Station (c)

a. **b.** **c.**

Source: CALSTART

The CT4021 dual port charging stations provide two 7.2 kW (208/240V @ 30A) Level-2 charging ports with locking holsters and are designed for public, outdoor usage for easy use by all plug-in vehicle drivers. Charging is delivered via standard SAE J1772 connectors. Currently the available software provides 24/7 driver assistance, controls access, enables reservations, updates displays, tracks usage, and monitors the station remotely. The CT4011 is the single-port version of the CT4021. Both charging station models were installed at the Disneyland Hotel and the Grand California Hotel.

The CT4023 has the same specifications as the CT4021 but in a wall-mount configuration. This charging station model was installed at the Mickey & Friends Parking Structure and the Paradise Pier Hotel.

Table 2: Electrical Input / Output and Functional Interface Specifications (ChargePoint, Inc.)

Electrical Input	Single Port (AC Voltage 208/240V AC)			Dual Port (AC Voltage 208/240V AC)		
	Input Current	Input Power Connection	Required Service Panel Breaker	input Current	Input Power Connection	Required Service Panel Breaker
Standard	30A	One 40A branch circuit	40A dual pole (non-GFCI type)	30A x 2	Two independent 40A branch circuits	40A dual pole (non-GFCI type) x 2
Standard Power Share	n/a	n/a	n/a	32A	One 40A branch circuit	40A dual pole (non-GFCI type)
Power Select 24A	24A	One 30A branch circuit	30A dual pole (non-GFCI type)	24A x 2	Two independent 30A branch circuits	30A dual pole (non-GFCI type) x 2
Power Select 24A Power Share	n/a	n/a	n/a	24A	One 30A branch circuit	30A dual pole (non-GFCI type)
Power Select 16A	16A	One 20A branch circuit	20A dual pole (non-GFCI type)	16A x 2	Two independent 20A branch circuits	20A dual pole (non-GFCI type) x 2
Power Select 16A Power Share	n/a	n/a	n/a	16A	One 20A branch circuit	20A dual pole (non-GFCI type)
Service Panel GFCI	Do not provide external GFCI as it may conflict with internal GFCI (CCID)					
Wiring - Standard	3-wire (L1, L2, Earth)			5-wire (L1, L1, L2, L2, Earth)		
Wiring - Power Share	n/a			3-wire (L1, L2, Earth)		
Station Power	8W typical (standby), 15W maximum (operation)					

Electrical Output		
Standard	7.2kW (240V AC @ 30A)	7.2kW (240V AC@30A) x 2
Standard Power Share	n/a	7.2kW (240V AC@30A) x 1 **or** 3.8kW (240V AC@16A) x 2
Power Select 24A	5.8kW (240V AC@24A)	5.8kW (240V AC@24A) x 2
Power Select 24A Power Share	n/a	5.8kW (240V AC@24A) x 1 **or** 2.9kW (240V AC@12A) x 2
Power Select 16A	3.8kW (240V AC@16A)	3.8kW (240V AC@16A) x 2
Power Select 24A Power Share	n/a	3.8kW (240V AC@16A) x 1 **or** 1.9kW (240V AC@8A) x 2

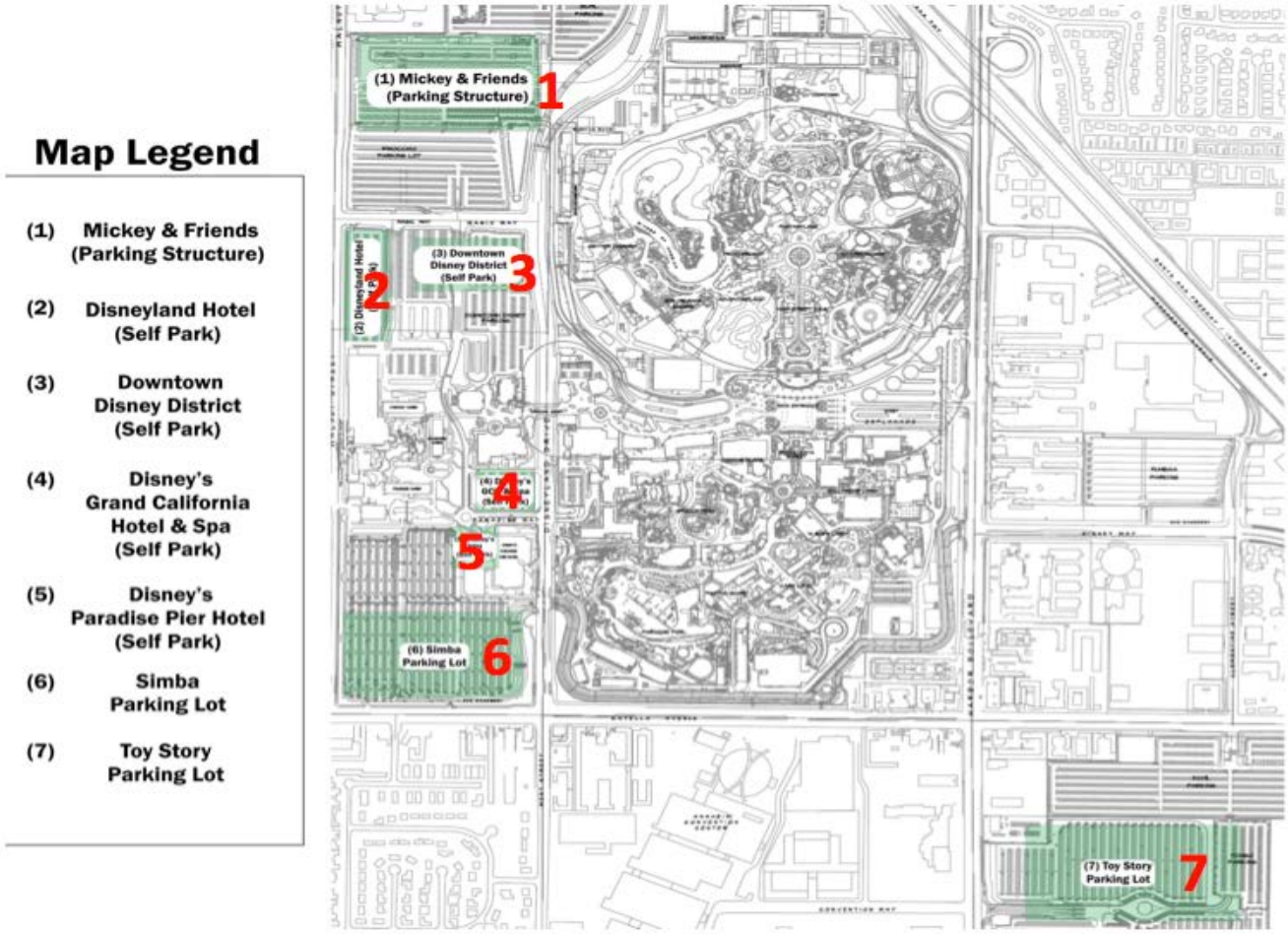
Functional Interfaces		
Connector(s) Type	SAE J1772™	SAE J1772™ x 2
Cable Length - 1830 mm (6') Cable Management	5.5 m (18')	5.5 m (18') x 2
Cable Length - 2440 mm (8') Cable Management	n/a	7 m (23')
Overhead Cable Management System	Yes	
LCD Display	145 mm (5.7") full color, 640x480, 30fps full motion video, active matrix, UV protected	
Card Reader	ISO 15693, ISO 14443, NFC	
Locking Holster	Yes	Yes x 2

Source: CALSTART

Site Selection

The initial project proposal included seven Disneyland Resort EVSE site locations. All potential site locations are in high-volume, American with Disabilities Act (ADA)-compliant parking lots, and collectively, contain a total of 13,482 parking spaces accessible to hotel and theme park guests. All locations are well lit with easy and safe ingress-egress routes for both vehicles and pedestrians with prominent signage. Planning incorporated installation of ADA-accessible EV spaces; the new spaces devoted to EV charging stations are not, however, ADA-exclusive. The nature of the locations, many of which have 24-hour ingress/egress, ensure that many of the charging stations will be used 24/7. Figure 3 below shows all seven initially proposed site locations on a map of Disneyland Resort.

Figure 3: Map of Proposed Potential Sites



Source: CALSTART

A total of four sites were strategically chosen for installation of the 33 charging stations throughout the 500-acre campus. Table 3 shows the names of each location and information on the parking spaces and number of ports and EVSEs installed.

Table 3: Final Destination Sites for EVSE installation

Destination Site	Address	Parking Spaces (incl. ADA)	Selection Rationale	Dual Port EVSE (CT4000)	Total # of Ports
Mickey and Friends Parking Structure	1313 Disneyland Dr. Anaheim, CA 92802	11,206	High volume Theme Park parking	25	50
Disneyland Hotel	1150 Magic Way Anaheim, CA 92802	1,281	Overnight visits, mainly tourists	2 + 2[a]	6
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Disney's Paradise Pier Hotel	1717 Disneyland Dr. Anaheim, Ca. 92802	536	Overnight visits, mainly tourists	2	4

a. Two single-port charging stations were installed at Disneyland Hotel to accommodate the configuration of the ADA Compliant parking spaces

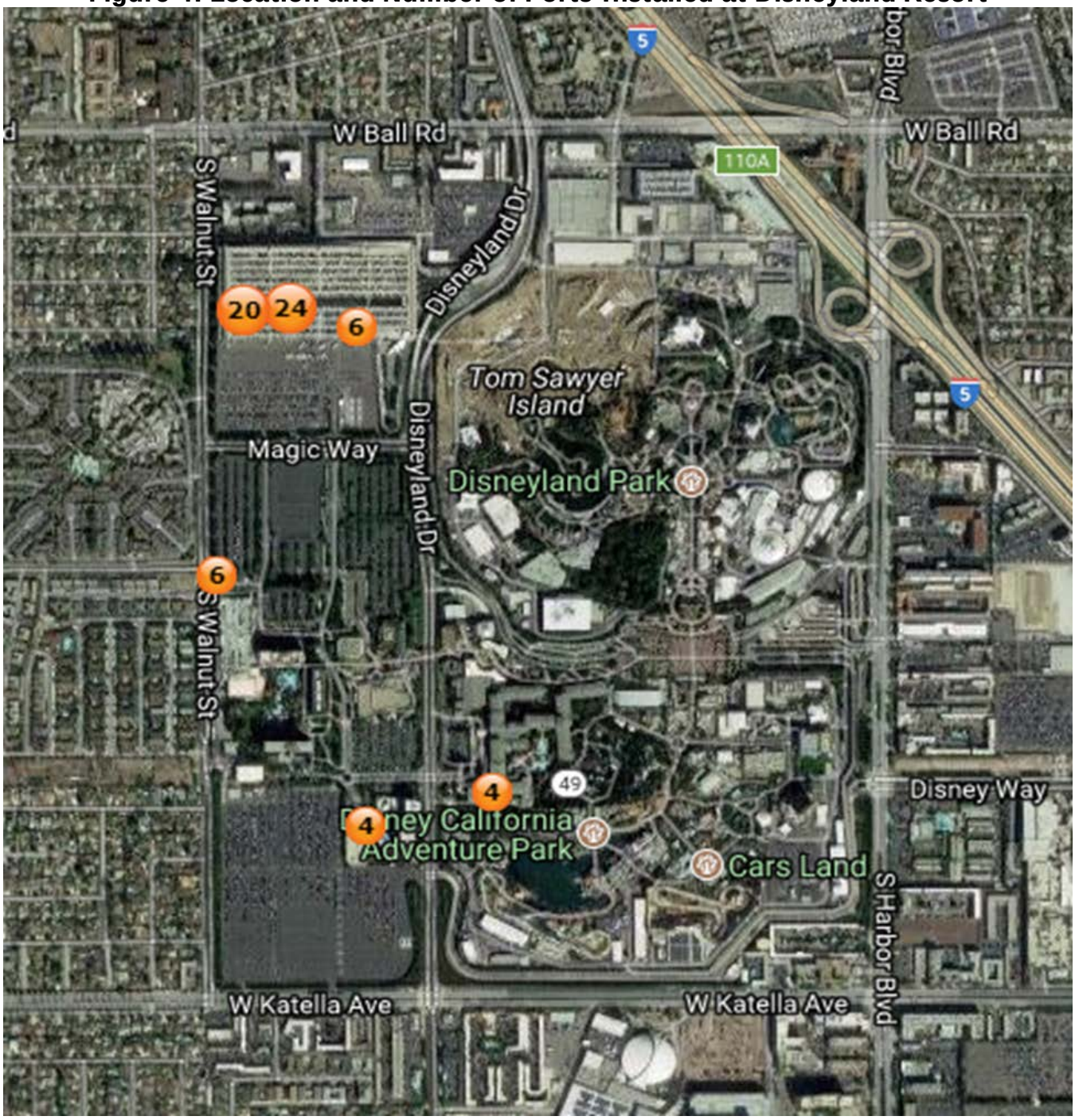
Source: CALSTART

All sites were chosen via an extensive and thorough site selection process coordinated by CFCI with CALSTART and Disneyland Resort. In addition to the criteria required by the California Energy Commission this site selection process considered other factors, including:

- Maximizing visibility to the public
- Ability to cluster stations
- High-usage locations
- Reducing installation cost
- Availability of electrical power
- Input and preference of site-host

The elimination of the other sites occurred primarily due to two reasons: 1) lack of sufficient power on-site and, 2) major redesign plans and changes that would not permit installation on the current timeline. The number of charging stations at each location was primarily determined by the need, the availability of power, and space to accommodate the design. The final site selection meets the purpose and goal of this project- increasing charging infrastructure in highly visible and high-demand locations.

Figure 4: Location and Number of Ports Installed at Disneyland Resort



Source: Google Map adopted by CALSTART

Installation Process

This section describes the stages that are included in the installation process. Figure 5 represents five important stages presented in the order as shown.

Figure 5: Five stages of installation

Source: CALSTART

Electrical Load Measurement

An important step for each potential site was to conduct a load measurement and ensure the availability of electrical power at the specific location that will serve the planned EVSEs. The electrical load measurements consisted of placing a load monitoring meter into the selected electrical panel and monitoring the usage of the panel over a period of seven days. Once the monitoring period ended, the load monitoring meter was removed from the panel and the data downloaded. A usage report was then generated and turned over to the Disneyland Resorts Project Management team for analysis and approval of the panel for the project. The installation and removal of the monitoring meter included a complete electrical shutdown of the panel being monitored as well as any associated downstream devices that were powered from the targeted panel[2]. This necessitated a high level of coordination with the resort as CFCI was shutting off power to parts of the resort in order to install and remove the meters.

Design Plan – Architectural and Electrical

The next step was to create accurate architectural and electrical drawings for each of the four sites. It was the responsibility of CFCI to prepare each design based on the agreed upon placement of EVSEs at each site. CFCI performed the measurements for each location and completed the architectural and electrical plans. The general building plans for the four sites can be found in Appendix A.

The design process involved using the computer aided design drawings provided by Disneyland project staff for each site and using them as building blocks to create both the architectural and electrical plans. The architectural part of the plans had to be completed first, designating the areas that work would be performed at each location. Following that step, the electrical engineer would use the architectural plans to design the electrical infrastructure to be installed. Once both the architectural and electrical drawings were completed, the set of plans was submitted to the Disneyland Resort project team for review and comment.

When the project was started in October 2015, there were no existing ADA building codes for EV charging. New ADA requirements for charging have since been added to the California

[2] The Grand Californian Hotel required a 30-minute power shutdown in order to install the charging stations.

Building Code and went into effect on January 1, 2017. Until then, the only guidance for EVSE installers and local jurisdictions were the guidelines adopted from the Division of State Architect in 1997 and updated by the Governor's Office of Planning and Research in 2013. CFCI constructed two previous projects for Disney—*Team Disney Anaheim* and the initial chargers at *Mickey and Friends Parking Structure*. In both cases, an accessible path of travel was not required, only a striped accessible parking space. The same design guidelines were used in the initial planning process for the current project.

As the project was being designed, Disneyland Resort reviewed all sites for accessibility and opted for an ADA compliant path of travel. This caused a re-design at *Mickey & Friends Parking Structure* since the only compliant path of travel was 300 feet from the initial charging location. The re-design also caused the installation cost to increase. Due to on-going questions of what was and was not required for ADA access to charging, CFCI kept Disneyland Resort apprised of the upcoming change in the CA Building Code and provided analyses of the current status and the changes under the new codes. After review by the legal department and ADA staff consultants, Disneyland Resort made the decision in May 2016 to comply with the upcoming code that would go into effect on January 1, 2017.

Approval and Permitting

The completed designs were submitted for review and approval by Disneyland resort staff. Plans for each site were reviewed by the following groups: Project Management staff, the Architectural staff, the Electrical Engineering staff, the individual facility staff where the projects were planned, and any other Disneyland departments involved in the project. Once that review was completed, a design review meeting was scheduled at Disneyland Resort with all parties to go over the plans and any corrections and additions to the plans. CFCI would complete any requested changes and resubmit the revised plans back to the Disneyland project staff for a further review and approval of the plans. The plans also followed Disneyland Resort's extensive design standards. Overall, there were several iterations before Disneyland Resort staff was ready to submit the plans to the City of Anaheim Building and Safety Department. City review took two to three weeks. The permits for each site are provided in Appendix B.

Construction

The construction phase of the project required formal bidding on the installation of EV chargers at all four locations by qualified electrical contractors who were approved by Disneyland Resort to be able to work on-site at the resort. All contractors needed to be union certified.

CFCI invited three contractors to the site walks at each location in order to inspect the proposed work and submit pricing based upon the approved project plans and the site walks. Once the bids were submitted, CFCI then evaluated them along with the qualifications of the three companies to perform the work. Once the all the bids were evaluated for completeness CFCI selected Morrow Meadows to perform the installations.

Physical construction consisted of installing the appropriate electrical infrastructure to support the EV chargers at each location. This included adding new transformers, new electrical panels

and circuit breakers, running conduit for the circuits to each charger, and installing the chargers. Some of the EV chargers were pedestal mounted which required underground work and sub-surface scanning to see if there were any obstructions in the path of the proposed trenches. Once the area was shown to be clear, the subcontractor proceeded to install underground conduit, pour new concrete bases for the chargers to be mounted to and restore the area around the work. The contractor also had to coordinate electrical shutdowns of the main electrical switchgear at each of the locations in order to make the final connections to the power source. This was a particularly challenging procedure at the resort as the electrical contractor had to coordinate shut downs at areas that impacted guest hotel accommodations. The last portion of the physical construction required inspections from the City of Anaheim Building and Safety Department.

Chapter 3:
Operation and Maintenance

Training

Training was conducted at each location with the Disneyland Resort Staff that are responsible for each location. CFCI provided a demonstration to the staff of how the EV charging stations worked in the field and included the following:

- Demonstration of the methods of how to initiate a charging session, both in person and remotely
- The steps of how to connect and disconnect the EVSE to a vehicle
- How the charging stations interface with the website
- Account management via the website for all of the charging stations installed
- CT4000 EV charging station features
- Information on how drivers access the network and use the charging stations

For the Grand Californian Hotel, the valet team needed to be trained in the use and operation of ChargePoint charging stations before they could use them.

See *Appendix C* for training documentation.

Operation and Maintenance

CFCI provided an operation and maintenance policy to the Disneyland Resort project manager. Disneyland Resort purchased a three year Assure warranty from ChargePoint. With Assure, ChargePoint takes responsibility for fixing hardware issues by providing parts, labor and orchestration of repairs by expert support specialists. Proactive monitoring, regular reports, and unlimited changes to station policies are also included with the Assure warranty.

If a charger goes down due to a hardware or software related issue, Disneyland Resort relies on guests to report it. Guests can either report issues to a nearby staff member or call a ChargePoint representative using a customer service phone number provided on the charging station. Once ChargePoint is notified of a problem, they will take the appropriate action to resolve it. Most software related issues can be addressed remotely while hardware issues may require a ChargePoint Technician to schedule an on-site repair.

Pricing Policy

Pricing policies for ChargePoint's stations are determined and set by the station owner, Disneyland Resort. CFCI assisted Disneyland Resort in setting up initial pricing procedures. Since Disneyland Resort already had chargers on site, they are already familiar with all the features of the network including pricing. The pricing was set at $0.35/kWh with a $1.50 minimum fee for guests. Disneyland Resort based this rate on three conditions:

1) It was the lowest possible point to recover costs – considering initial investment plus ongoing maintenance and service costs.

2) The goal was to avoid being the low-cost provider for EV charging and to encourage customers to charge at home as a first option. This meant aligning the kWh rate to the top consumer rate (which at the time was around $0.28 to $0.35 kWh).
3) Lastly, by setting minimum fees, EV drivers who don't need to charge (state of charge < 80 percent) would be discouraged from charging thus leaving the charging space open for those who need it.

A modified pricing structure was used for Grand Californian Hotel charging stations which were located in a 'valet only' parking structure for the hotel. A flat fee of $6.00 for charging is applied in addition to the normal valet parking rate. Using this structure allows the valet team to start a charging session without needing the driver's ChargePoint card. Instead, the valet team was provided a special ChargePoint card that would allow them to start a charging session as needed.

Chapter 4:
Description of Completed Sites

Mickey & Friends Parking Structure

Mickey & Friends is the largest on-site parking structure at the Disneyland Resort. The parking structure consists of six levels and can hold up to 10,000 vehicles. It is primarily used by guests visiting the theme park. Upon completion in 2000, it was the largest parking structure in the United States. Figure 6 below shows the pedestrian entrance to Mickey and Friends Parking Structure.

Figure 6: Mickey & Friends Parking Structure

Source: CALSTART

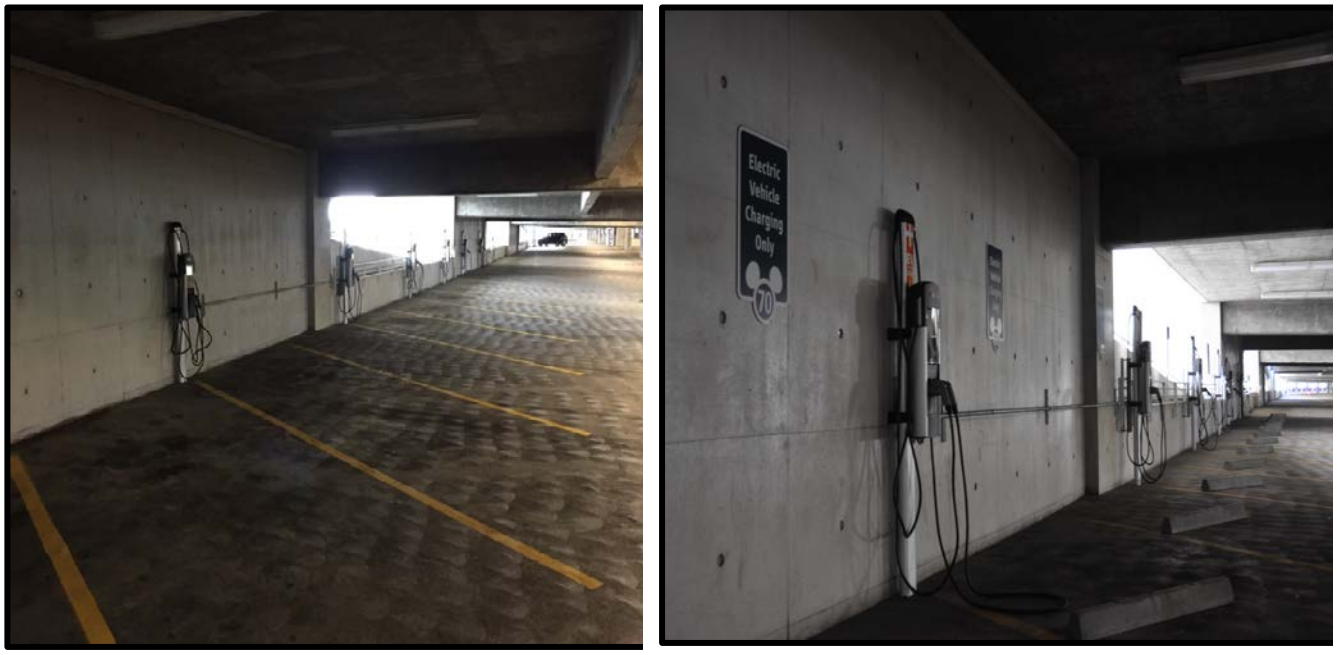
A total of 25 EVSE dual port charging stations were installed at Mickey & Friends Parking Structure. Due to parking layout changes, construction was split into two phases. The first phase of construction consisted of installing 22 chargers on Levels 1 and 2 of the parking structure - 12 chargers were placed on Level 1, and ten were placed on Level 2. The second phase, involving three ADA compliant EVSEs, was delayed while modifications and changes to the parking layout were completed. The final three EVSEs were installed on Level 1 of the parking structure.

In 2013, prior to the start of this project, Disney had installed a total of 20 charging ports for guests in the Mickey & Friends parking structure. Concluding the project, Mickey & Friends Parking Structure has a total of 70 ports. Figures 7, 8, and 9 show the photos of the newly installed EVSEs on Level 1 and Level 2 of the parking structure.

Figure 7: Installed EV charging stations on Level 1 at Mickey & Friends Parking Structure

Source: CALSTART

Figure 8: Installed EV charging stations on Level 2 Mickey & Friends Parking Structure



Source: CALSTART

Figure 9: Installed ADA Compliant EV charging stations on Level 1 Mickey & Friends Parking Structure

Source: CALSTART

Paradise Pier Hotel

Built in 1983, Paradise Pier Hotel is a 15-story high-rise structure that encompasses 481 guest rooms. It is the smallest of the Resort Hotels. A four-level parking garage is available for guests adjacent to the hotel (Figure 10). The installed EVSEs are shown in Figures 11 and 12.

Figure 10: Parking garage at Paradise Pier Hotel

Source: CALSTART

Two dual port charging stations were installed on Level 1 of the Paradise Pier parking garage. One of the four spaces were marked as ADA compliant.

Figure 11: Installed EV charging stations at Paradise Pier Hotel parking garage

Source: CALSTART

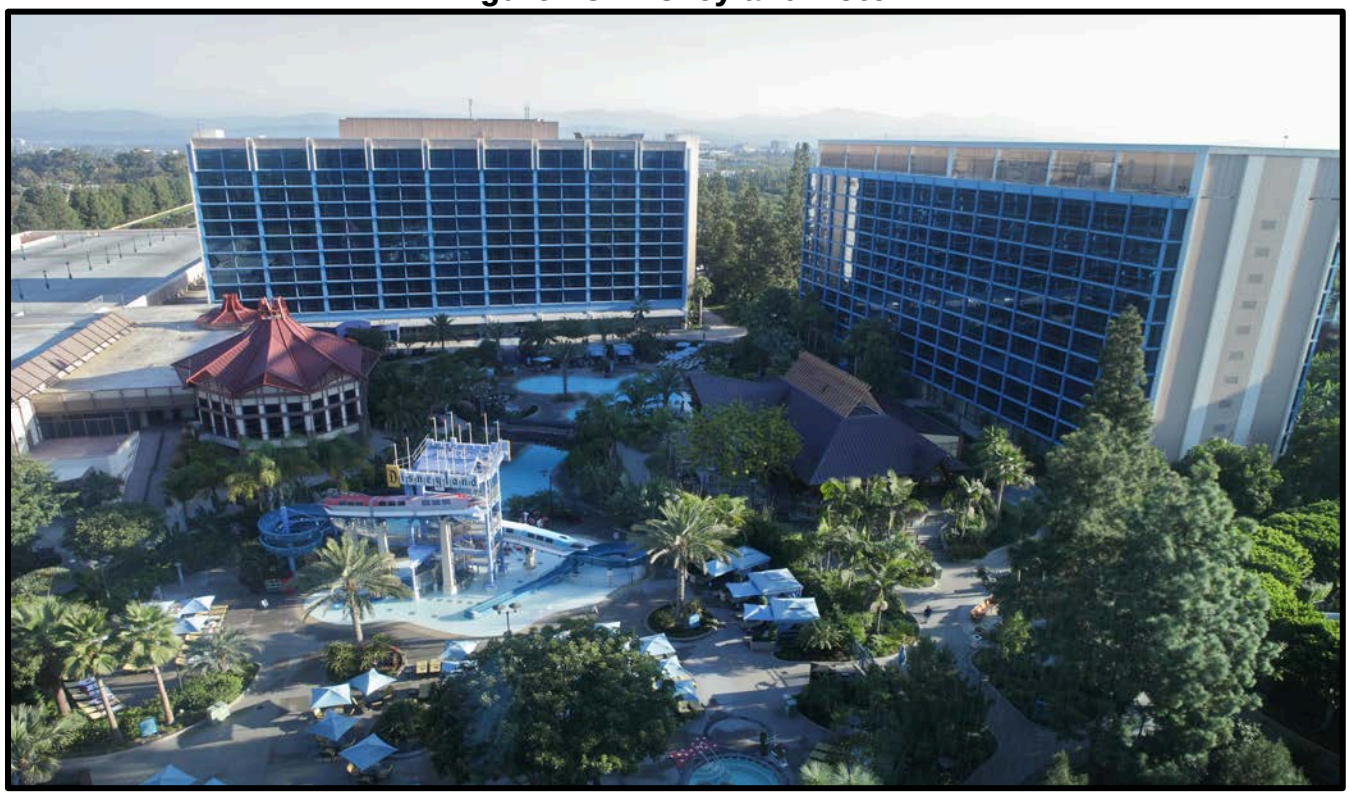
Figure 12: (Left) Charge ports 1 and 2 with ADA compliant space. (Right) Charge ports 3 and 4.

Source: CALSTART

Disneyland Hotel

The Disneyland Hotel consists of three high-rise towers and connects to Downtown Disney. The Disneyland Hotel has 973 rooms and suites (Figure 13). A self-parking lot for guests is located adjacent to the Disneyland Hotel Convention Center.

Figure 13: Disneyland Hotel



Source: CALSTART

The Disneyland Hotel installation consists of two EVSE dual port charging stations and two single-port charging station. The single-port stations are both placed in ADA compliant parking spaces.

Figure 14: Installed ADA compliant single-port EV charging stations at Disneyland Hotel, (Left) Port 5 and (Right) Port 6

Source: CALSTART

Figure 15: Installed EV charging stations at Disneyland Hotel parking

Source: CALSTART

Figure 16: (Left) Charge ports 1 and 2. (Right) Charge ports 3 and 4 at Disneyland Hotel

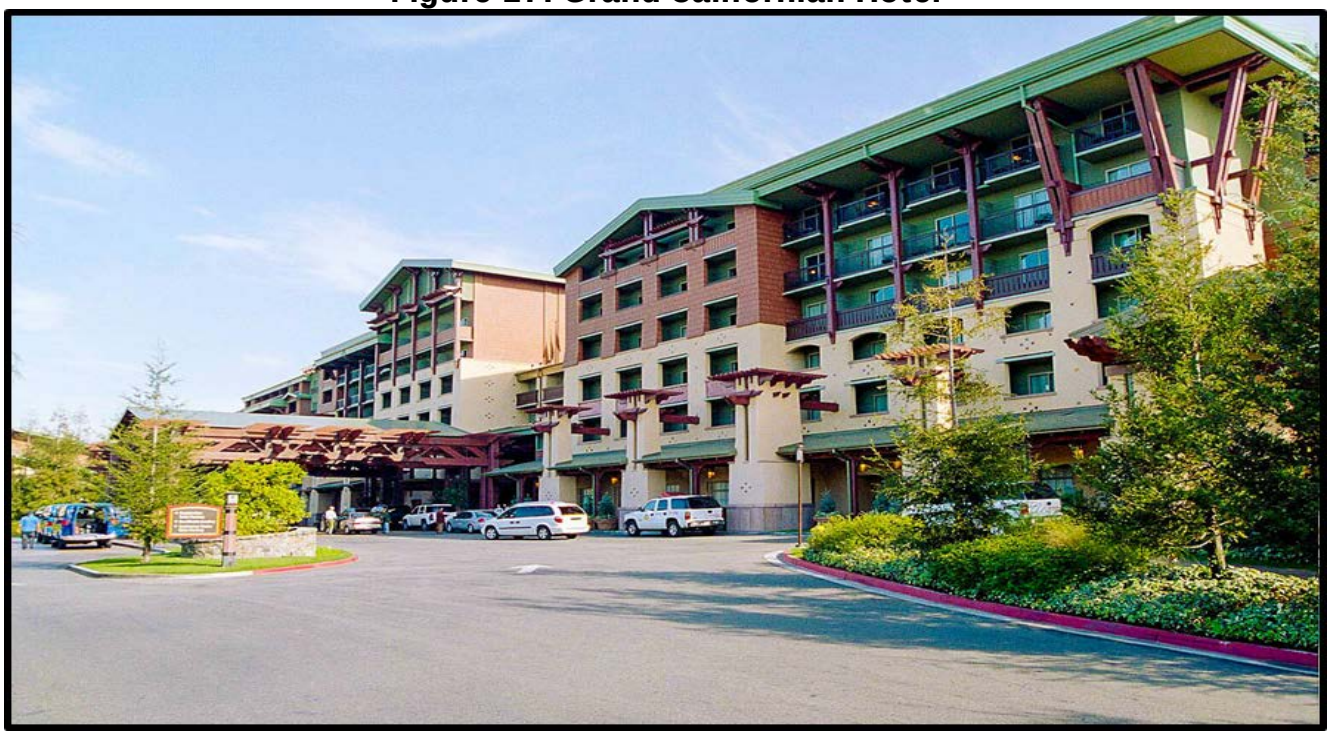
Source: CALSTART

Grand California Hotel

Disney's Grand Californian Hotel is located between Disney's California Adventure and Downtown Disney (Figure 17). The Grand Californian is the largest of the three hotels,

consisting of 948 rooms and suites. A total of four charging ports were installed in the valet parking area located in a parking garage underneath the hotel.

Figure 17: Grand Californian Hotel



Source: CALSTART

Figure 18: Installed EV Charging Stations at the Grand Californian Hotel

Source: CALSTART

Signage

Disneyland Resort created Disney-themed signage to both identify and communicate the availability of EV charging at the resort. Each charging site and station was to have clear signage, indicating where guests could charge their vehicles.

Figure 19: EVSE Signage at Mickey and Friends Parking Structure

Source: CALSTART

Signage shown in Figure 19 was placed at the front of each EV charging space. The number at the bottom indicates the charging port of that site.

Figure 20: EVSE Signage at Mickey and Friends Parking Structure

Source: CALSTSART

Signage shown in Figure 20 is placed on the parking booths of each installation site. When an EV driver inquires about charging, the parking attendant will direct guests to the nearest charging stations.

Chapter 5:
Data Collection and Analysis

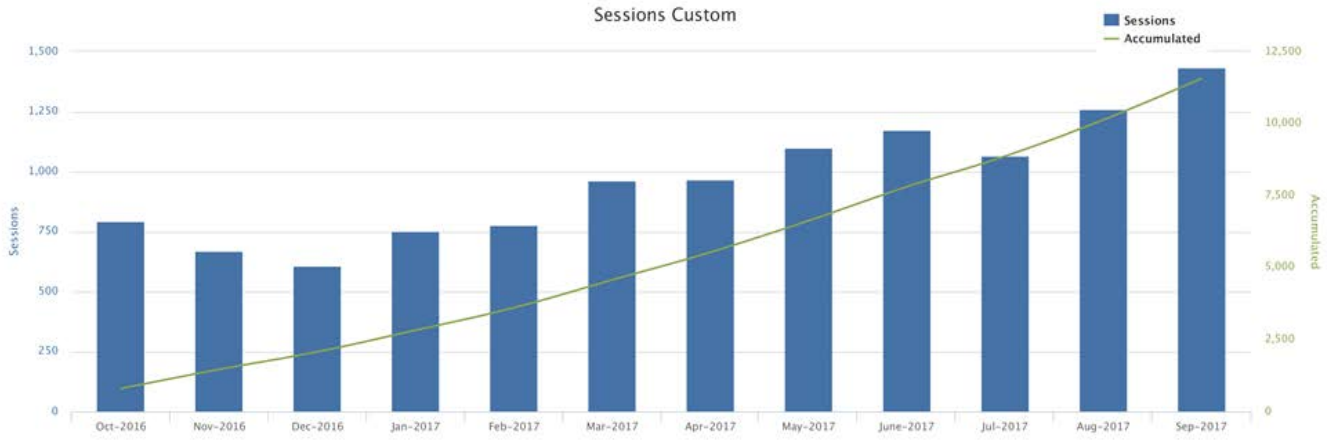
CALSTART collected operational data to analyze the economic and environmental impacts of installing EV infrastructure. The data was collected from the charging stations through ChargePoint's charging network and made available through the Network Operating System so usage patterns and trends can be monitored and analyzed.

In this next section, we analyze each site individually focusing on three types of data: daily charging sessions, greenhouse gas (GHG) emission savings, and energy dispensed.

Mickey & Friends Parking Structure

Mickey and Friends Parking Structure is Disneyland Resort's largest parking structure. The parking structure is primarily used by guests visiting the theme park. 50 charging ports were installed on the first and second level of the Mickey and Friends Parking Structure as part of this project.

Figure 21: Daily Charging Sessions by Month at Mickey and Friends Parking Structure, October 2016 – September 2017



Source: CALSTART

Figure 21 shows the number of daily charging sessions from October 1, 2016 to September 30, 2017 for the 25 dual port charging stations installed at the Mickey and Friends Parking Structure. Note that the three ADA charging stations were part of the second-phase of construction and were not installed until April 2017 therefore, the date from those stations is not included in the above figure.

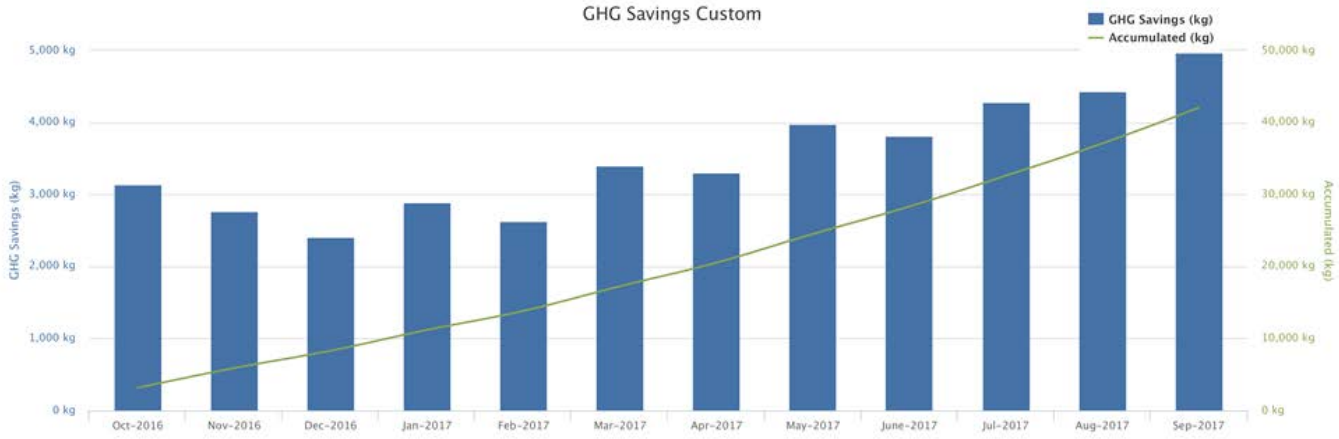
A charging session is a single instance of a car plugging in to charge. Number of sessions (y-axis) shows a range of 608 to 1,435 sessions per month over this 12-month timeframe. The total accumulated charging sessions, represented by the green line, shows total number of charging sessions was just over 11,200 for all 50 ports, or roughly 30 sessions per day across all 50 ports. This statistic reveals that not all ports are getting utilized on a daily basis. This is

expected since the number of charging stations were based on future demand of EV charging and not just what is needed today. For more information on this, a further analysis was performed on daily charging sessions per port and is shown in a later section (see Figure 33).

Compared to conventional, internal combustion engine vehicles, EVs have substantial environmental benefits. EVs help lower greenhouse gas emissions, improve air quality, increase electric grid efficiency, and reduce fuel costs. This project reduced GHGs and petroleum use throughout Southern California by providing access to electric refueling points. Emissions of GHGs are provided from the ChargePoint operating system and are estimates based on energy dispensed equivalents according to the Environmental Protection Agency (EPA). Actual emissions avoided may be higher or lower depending on how electricity is generated locally.

Figure 22 shows the GHG savings by month for the 50 ports at the Mickey and Friends Parking Structure. From October 1, 2016 to September 30, 2017, the accumulated GHG savings was approximately 42,000 kg, equating to roughly 3,500 kg per month. This is equivalent to an accumulated savings of 42 metric tons of CO_2e or 3.5 metric tons of carbon dioxide per month. According to the EPA[2], this reduction is comparable to pulling nine passenger vehicles off the road for one year.

Figure 22: Greenhouse Gas Emission Savings by Month at Mickey and Friends Parking Structure, October 2016 – September 2017



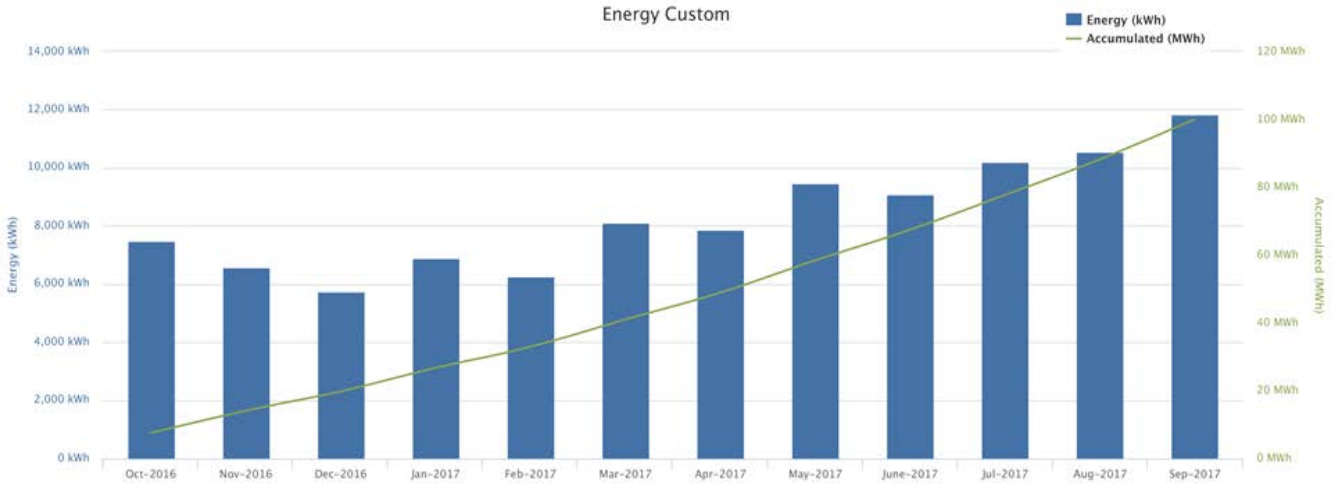
Source: CALSTART

Figure 23 shows the total amount of electricity dispensed across all 50 ports at Mickey and Friends Parking Structure from October 2016 to September 2017. The average amount of electricity dispensed over this 12-month timeframe was approximately 7,950 kWh (Kilowatts per hour) per month. The overall increase month over month in energy dispensed is the result

2 Greenhouse Gases Equivalencies Calculator - Calculations and References, Environmental Protection Agency, Accessed October 10, 2017 (www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references)

of two factors: (1) greater utilization of stations and (2) six additional ADA ports coming online in April 2017. Both the number of charging sessions and length of each charging session influence the amount of energy dispensed.

Figure 23: Energy Dispensed by Month at Mickey and Friends Parking Structure, October 2016 – September 2017



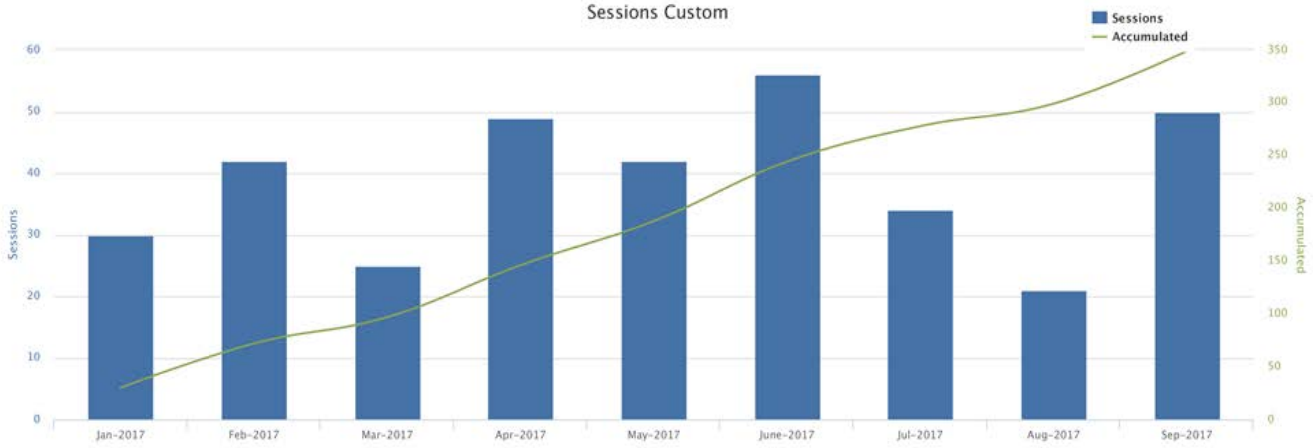
Source: CALSTART

Paradise Pier Hotel

Paradise Pier Hotel is the smallest of the Disneyland Resort Hotels. The 4-story parking structure is located next to the hotel and is primarily utilized by overnight hotel guests. A total of 4 charging ports were installed on the first level of the parking structure.

Figure 24 shows the number of daily charging sessions from January 1, 2017 to September 30, 2017 for the two dual port charging stations installed at Paradise Pier Hotel. Number of sessions ranged from 21 to 56 sessions per month over this nine-month timeframe. The total accumulated charging sessions, represented by the green line, shows total number of charging session were nearly 350 for all four ports, or roughly 1.3 sessions per day across all four ports. This tells us that not all ports are utilized each day. Lower utilization at the hotels is to be expected as most overnight guests are tourists, therefore less likely to be driving EVs.

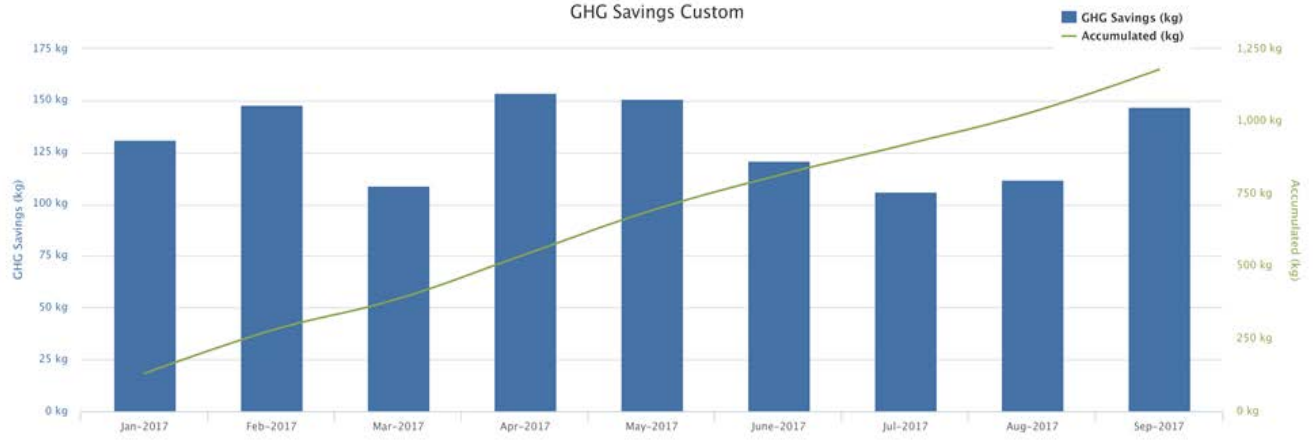
Figure 24: Daily Charging Sessions by Month at Paradise Pier Hotel, January 2017 – June 2017



Source: CALSTART

Figure 25 shows the GHG savings by month for all four ports at Paradise Pier Hotel. From January 1, 2017 to September 30, 2017, the accumulated GHG savings was approximately 1,179 kg, equating to roughly 131 kg per month. This is equivalent to an accumulated savings of 1.1 metric tons of CO_2e or 0.13 metric tons per month.

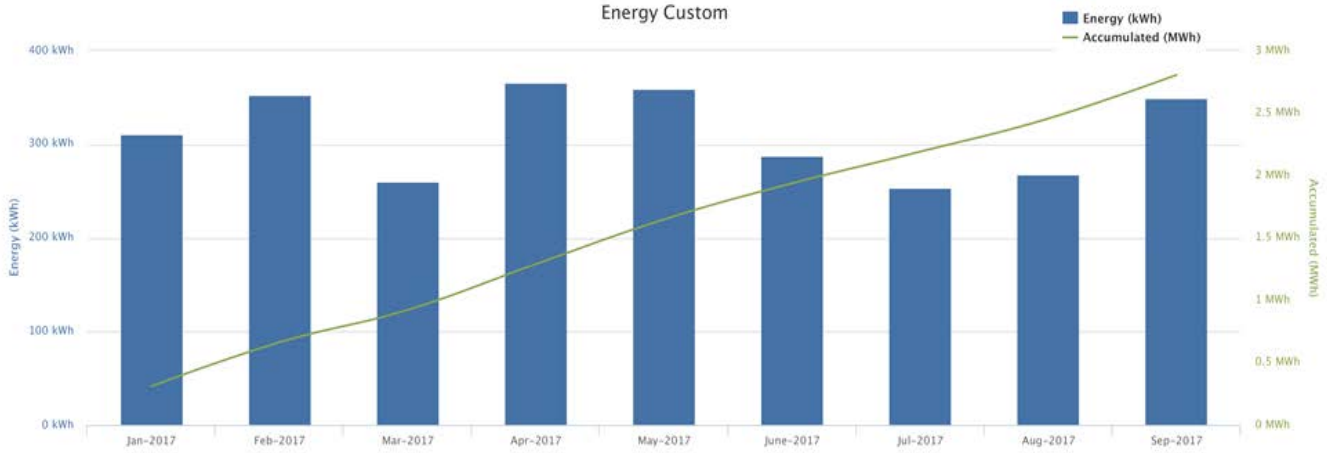
Figure 25: Greenhouse Gas Emission Savings by Month at Paradise Pier Hotel, January 2017 – September 2017



Source: CALSTART

Figure 26 shows the total amount of electricity dispensed by all 4 ports at Paradise Pier Hotel from January 1, 2017 to September 30, 2017. The average amount of electricity dispensed over this nine-month period was approximately 310 kWh per month. The overall trend of energy dispensed remained steady month over month.

Figure 26: Energy Dispensed by Month at Paradise Pier Hotel, January 2017 – September 2017



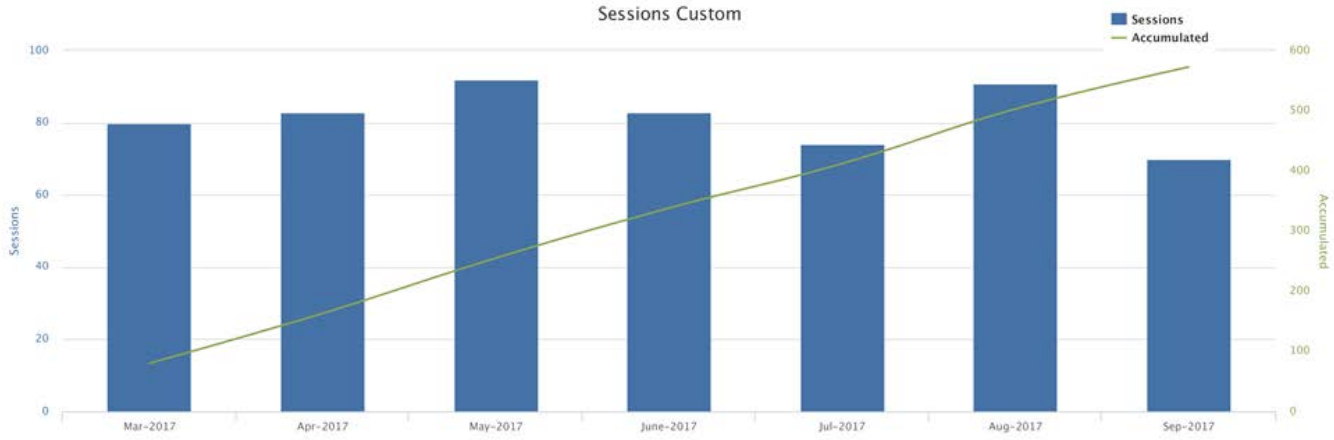
Source: CALSTART

Disneyland Hotel

The Disneyland Hotel is the second largest hotel at the Disneyland Resort. The charging stations are located in a flat parking lot located near the entrance of the hotel. A total of 6 charging ports were installed here as part of this project.

Figure 27 shows the number of daily charging sessions from March 1, 2017 to September 30, 2017 for all six ports installed at the Disneyland Hotel. The number of sessions ranged from 70 to 92 sessions per month over this seven-month timeframe. The total accumulated charging sessions, represented by the green line, shows the total number of charging session were nearly 570 for all 6 ports, or an average of 2.67 sessions per day across all 6 ports.

Figure 27: Daily Charging Sessions by Month at Disneyland Hotel, March 2017 – September 2017

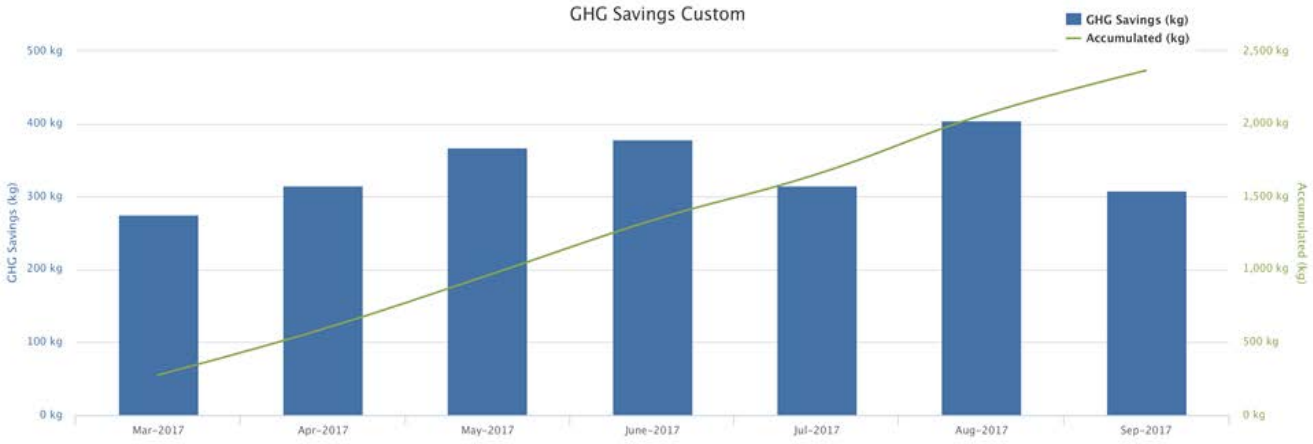


Source: CALSTART

Figure 28 shows the GHG savings by month for the six ports at the Disneyland Hotel. From March 1, 2017 to September 30, 2017, the accumulated GHG savings was approximately 2,376

kg, equating to roughly 340 kg per month. This is equivalent to an accumulated savings of 2.4 metric tons of CO_2e or 0.34 metric tons per month.

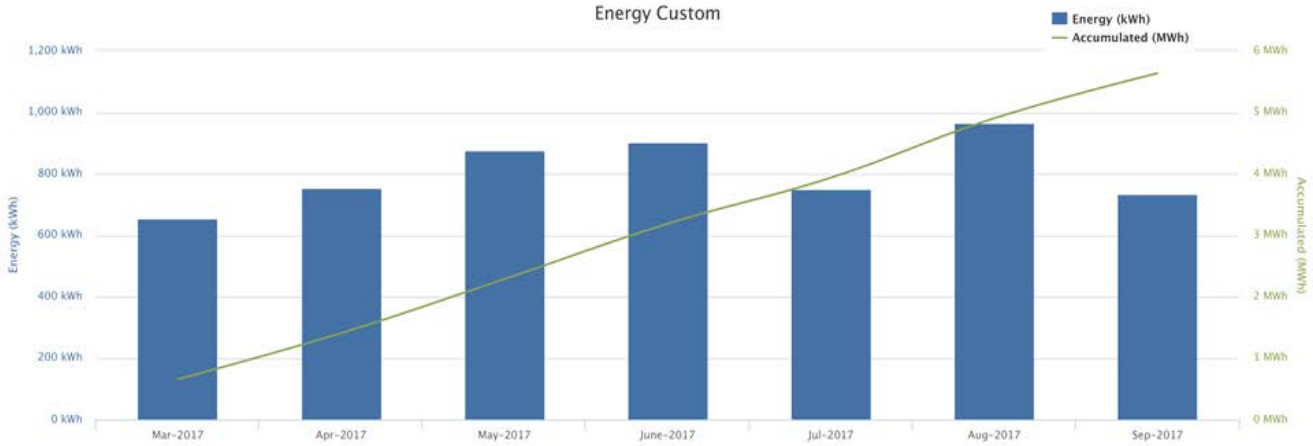
Figure 28: Greenhouse Gas Emission Savings by Month at Disneyland Hotel, March 2017 – September 2017



Source: CALSTART

In Figure 29, energy dispensed shows the total amount of electricity dispensed by all six ports at the Disneyland Hotel over the seven months. The average amount of electricity dispensed over the seven-month period was approximately 810 kWh per month. While fluctuations in energy dispensed were observed month to month, overall trend in energy dispensed remained flat.

Figure 29: Energy Dispensed by Month at Disneyland Hotel, March 2017 – September 2017



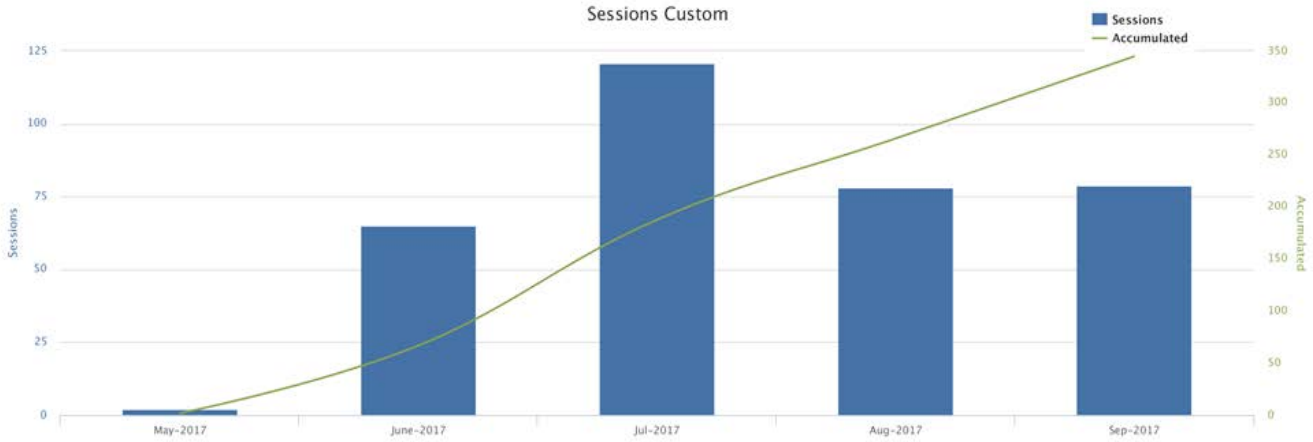
Source: CALSTART

Grand Californian Hotel & Spa

The Grand Californian Hotel & Spa is Disneyland Resort's largest hotel on the property. The charging stations are located in the hotel's underground valet parking garage. A total of four charging ports were installed at this location as part of this project.

Figure 30 shows the number of daily charging sessions from May 1, 2017 to September 30, 2017 for the two dual port charging stations installed at Disney's Grand Californian Hotel & Spa.

Figure 30: Daily Charging Sessions by Month at Grand Californian Hotel & Spa, May 2017 – September 2017

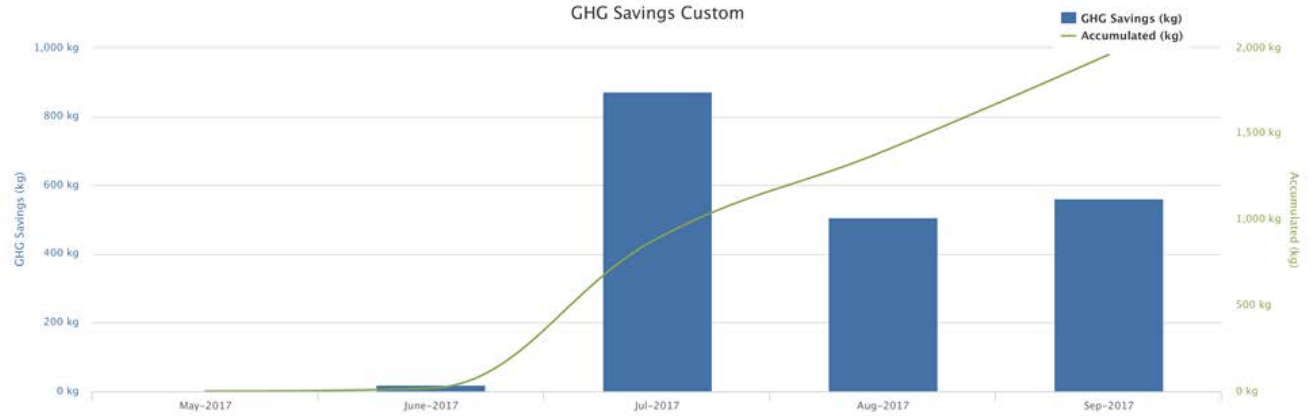


Source: CALSTART

The number of sessions ranged from 2 to 121 sessions per month over this five-month timeframe. A very low utilization was observed in May, the first month when they were installed. The Grand Californian Hotel & Spa, charging stations were installed in a valet parking garage, only accessible to staff. Therefore, staffs were required to have training before being allowed to operate the ChargePoint charging stations. Staffs of the Grand Californian Hotel & Spa were not fully trained until July 2017. The total accumulated charging sessions, represented by the green line, shows total number of charging sessions were nearly 345 for all four ports, or roughly 3.8 sessions per day across all four ports.

Figure 31 shows the GHG savings by month for the four ports at the Grand California Hotel. From July 1, 2017 to September 30, 2017, the accumulated GHG savings was approximately 4,622 kg, equating to roughly 1,540 kg per month. This is equivalent to an accumulated savings of 4.6 metric tons of CO_2e or 1.5 metric tons per month.

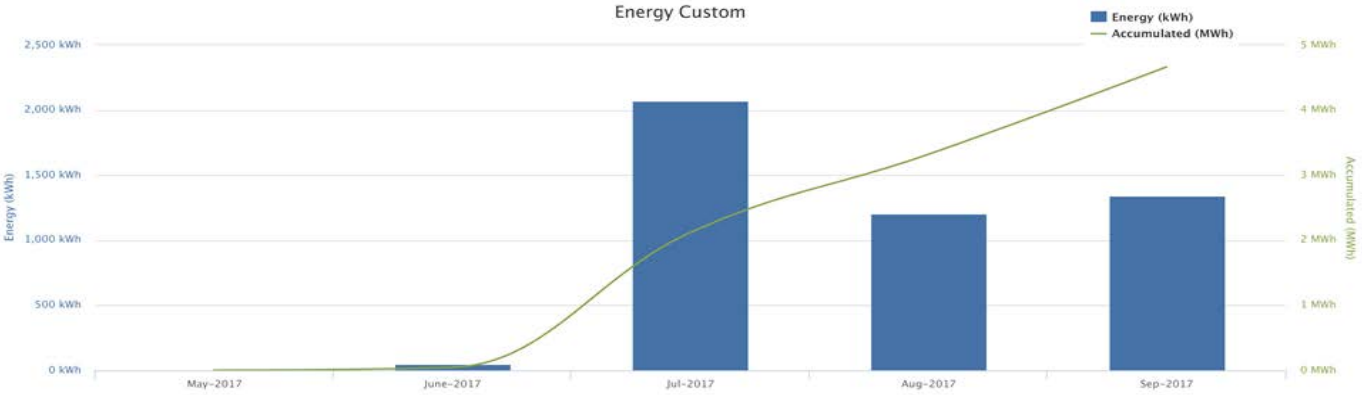
Figure 31: Greenhouse Gas Emission Savings by Month at Grand Californian Hotel & Spa, May 2017 – September 2017



Source: CALSTART

Figure 32 shows the total amount of electricity dispensed by all four ports at Disney's Grand Californian Hotel over the 5 months. The average amount of electricity dispensed from July 1, 2017 to September 30, 2017 was approximately 810 kWh per month. Again, we observed low utilization and therefore low energy dispensed in May and June since not all staff were trained to operate the ChargePoint charging stations until July.

Figure 32: Energy Dispensed by Month at Grand Californian Hotel & Spa, May 2017 – September 2017

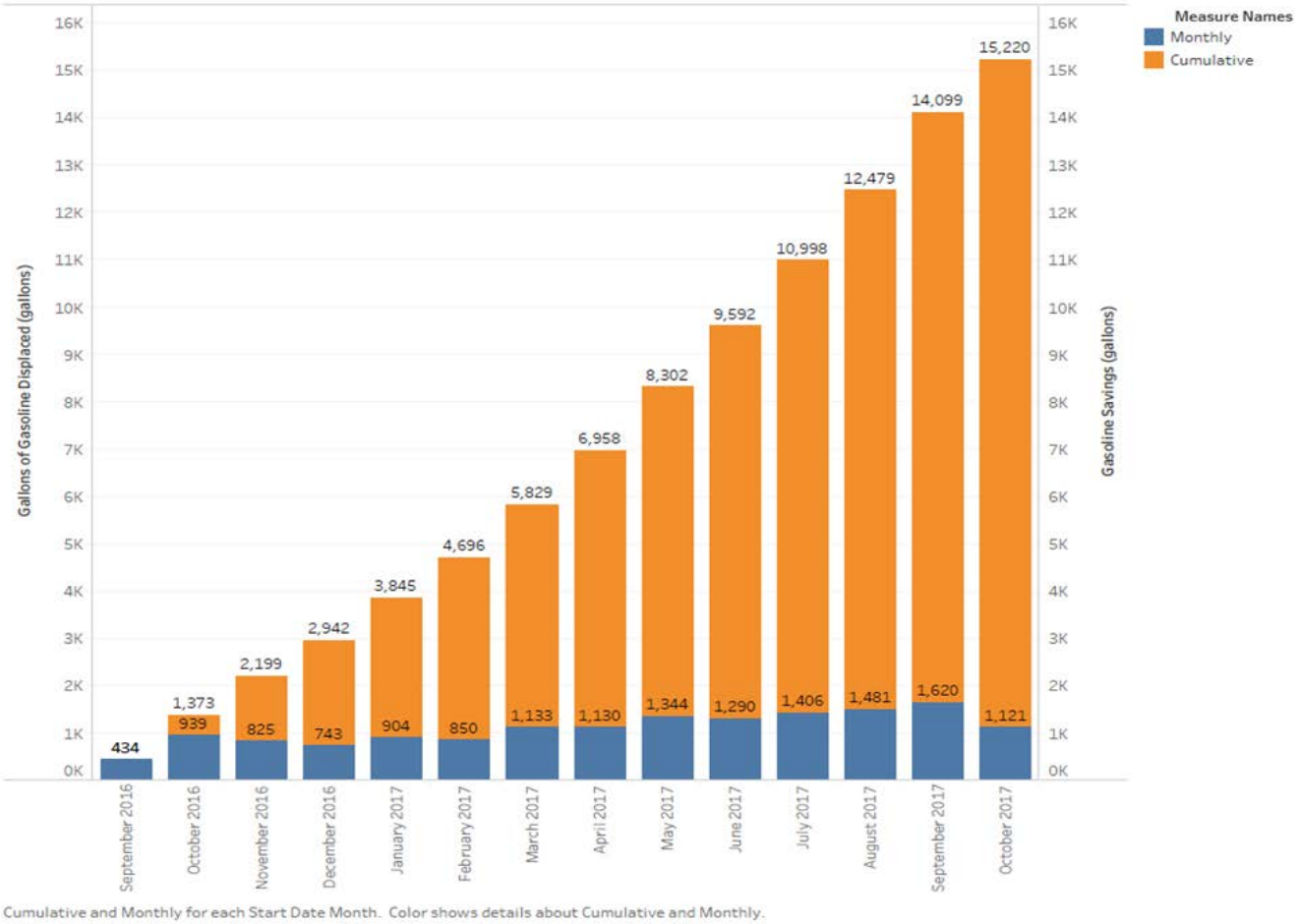


Source: CALSTART

Cumulative Data

In this section, we compare and analyze charging data across all four charging sites. Figure 33 shows the gallons of gasoline displaced, or saved, across all 64 ports from September 2016 to October 2017.

Figure 33: Gallons of Gasoline Displaced by Month across All Charging Sites, September 2016 – October 2017



Source: CALSTART

The monthly average amongst these 14 months is approximately 1,000 gallons displaced per month. All 64 ports were not active until early May 2017 which is why, starting with the month of May, we observe the monthly average increased to 1500 gallons displaced per month. Cumulative gallons of gasoline displaced over these 14 months is approximately 15,200 gallons. This is comparable to pulling 32 passenger vehicles off the road each year[3], assuming the average fuel economy is 23.9 mi/gal (mpg)[4]. At the current usage, all 64 ports at the four charging sites would displace 18,000 gallons of gasoline per year – comparable to pulling 38

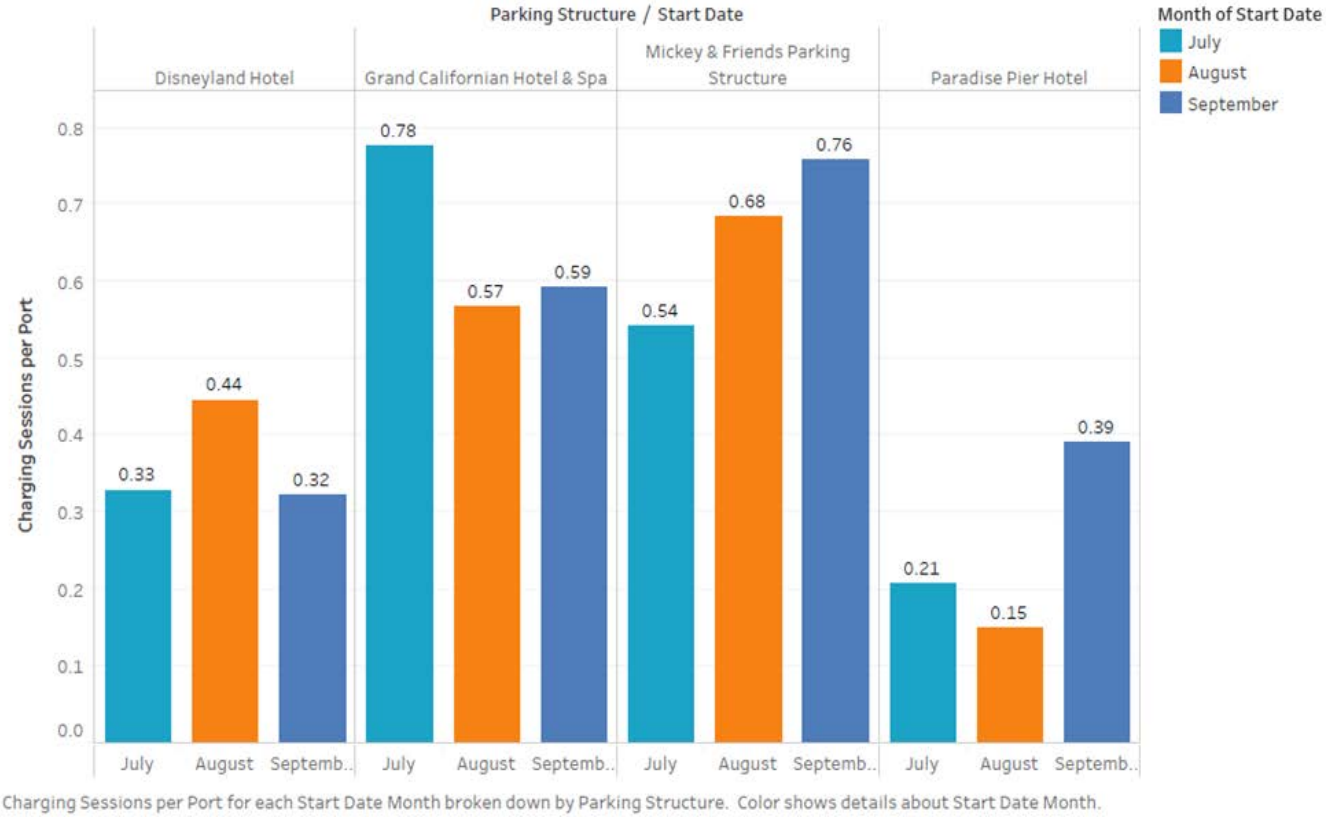
3 Assumes that the average annual vehicle miles traveled of a passenger car is 11,244 Federal Highway Administration and American Public Transit Association's Public Transportation Fact Book

4 Average fuel economy for a vehicle assumed is 23.9 mi/gal. Federal Highway Administration and American Public Transit Association's Public Transportation Fact Book

passenger vehicles off the road. We expect that the usage will increase as drivers become aware of the availability of EV charging at the park.

Figure 34 shows daily charging sessions per port across each site from July 2017 to September 2017.

Figure 34: Charging Sessions per Port per Day across All Charging Sites, July 2017 – September 2017



Source: CALSTART

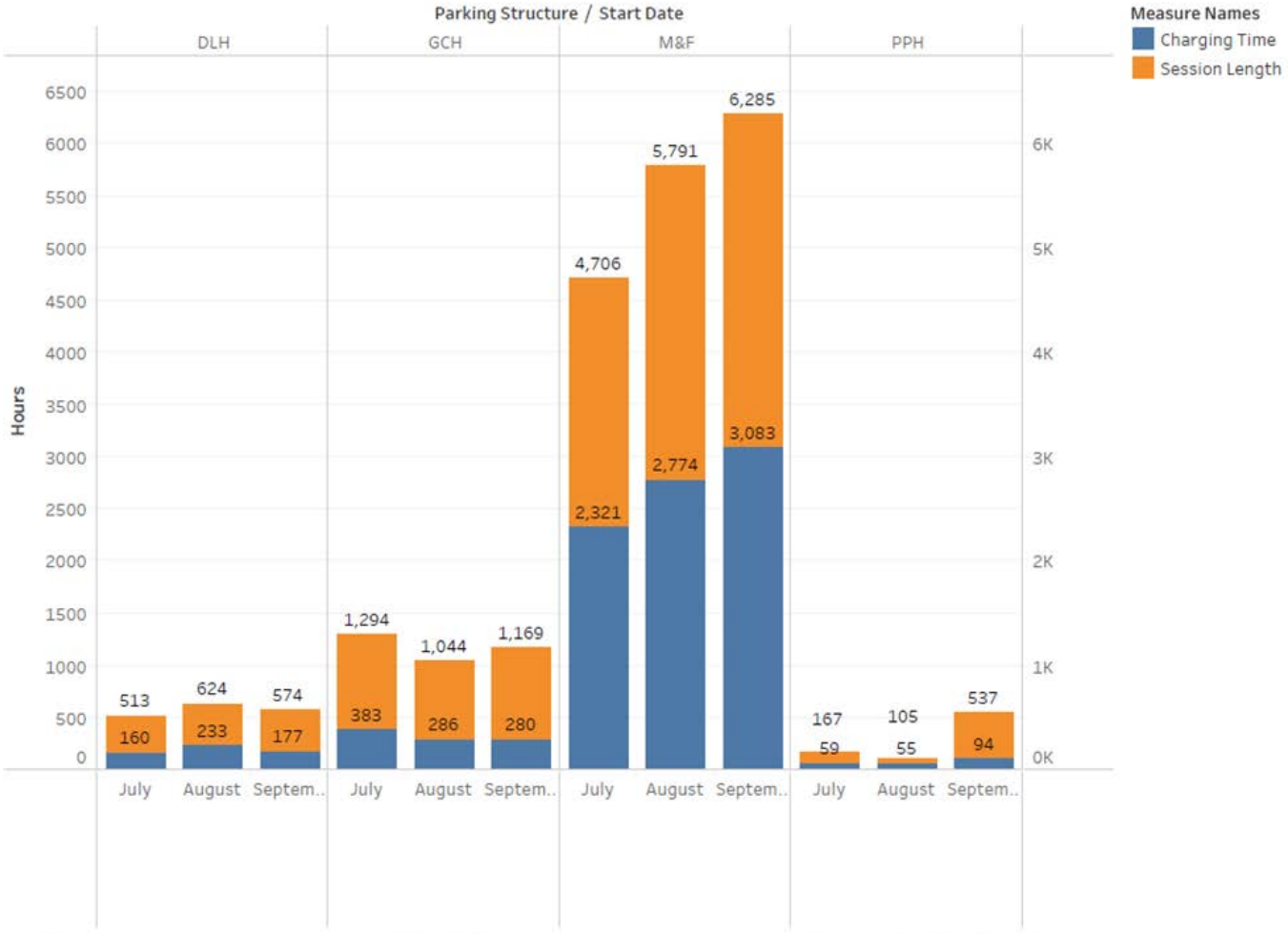
This chart shows that EVSEs at Mickey & Friends Parking Structure have the highest average utilization of the four sites. This is expected as Mickey & Friends Parking Structure is a high-volume parking structure for theme park guests, whereas parking at the hotels is primarily for overnight tourists. Tourists who stay overnight at a Disneyland Hotel are more likely to be visiting from out of town and perhaps not as likely to be driving an EV.

When we compared the charging events between the hotels, we observed that the Grand Californian Hotel & Spa had significantly higher utilization in comparison to the other hotels. This higher utilization could be attributed to the following reasons: (1) the Grand Californian Hotel is the largest hotel on property and experiences higher traffic volume, and (2) the spa and restaurants located in the hotel attract local non-overnight guests who are more likely to be driving EVs. These interpretations are not conclusive and there could exist other factors with varying degrees of influence.

There was an average of 0.61 charging sessions per port per day observed during this 3-month timeframe. This indicates that Disneyland Resort chargers are being under-utilized and as EV adoption increases over time, we expect the demand for charging to also increase. Additional awareness of EVSE availability at Disneyland Resort, through marketing, by word of mouth, or EV charging apps, will also increase utilization over time.

Figure 35 shows charging time relative to session length across all 64 ports from July 2017 to September 2017.

Figure 35: Charging Time vs Total Session Length across All Charging Sites, July 2017 – September 2017



Session Length and Charging Time for each Start Date Month broken down by Parking Structure. Color shows details about Session Length and Charging Time.

Source: CALSTART

Charging time is the amount of time a vehicle is plugged in and the battery is charging, while session length is the total amount of time a vehicle is plugged in, whether charging or not. The length of time a vehicle is plugged in and not charging is referred to as idle time. This bar graph shows that vehicles are in an idle state longer than a charging state. On average, vehicles were connected for an average of 6.6 hours but were only charging for 2.9 hours. In fact, vehicles are staying plugged in roughly 1.3 times longer than needed. If the hotels at

Disneyland Resort are looked at separately, idle times increase and vehicles stay plugged in 3.4 times longer than needed. Though ports at Disneyland Resort are averaging less than one charging session per day currently, the long idle times could become problematic as demands for charging increases over time.

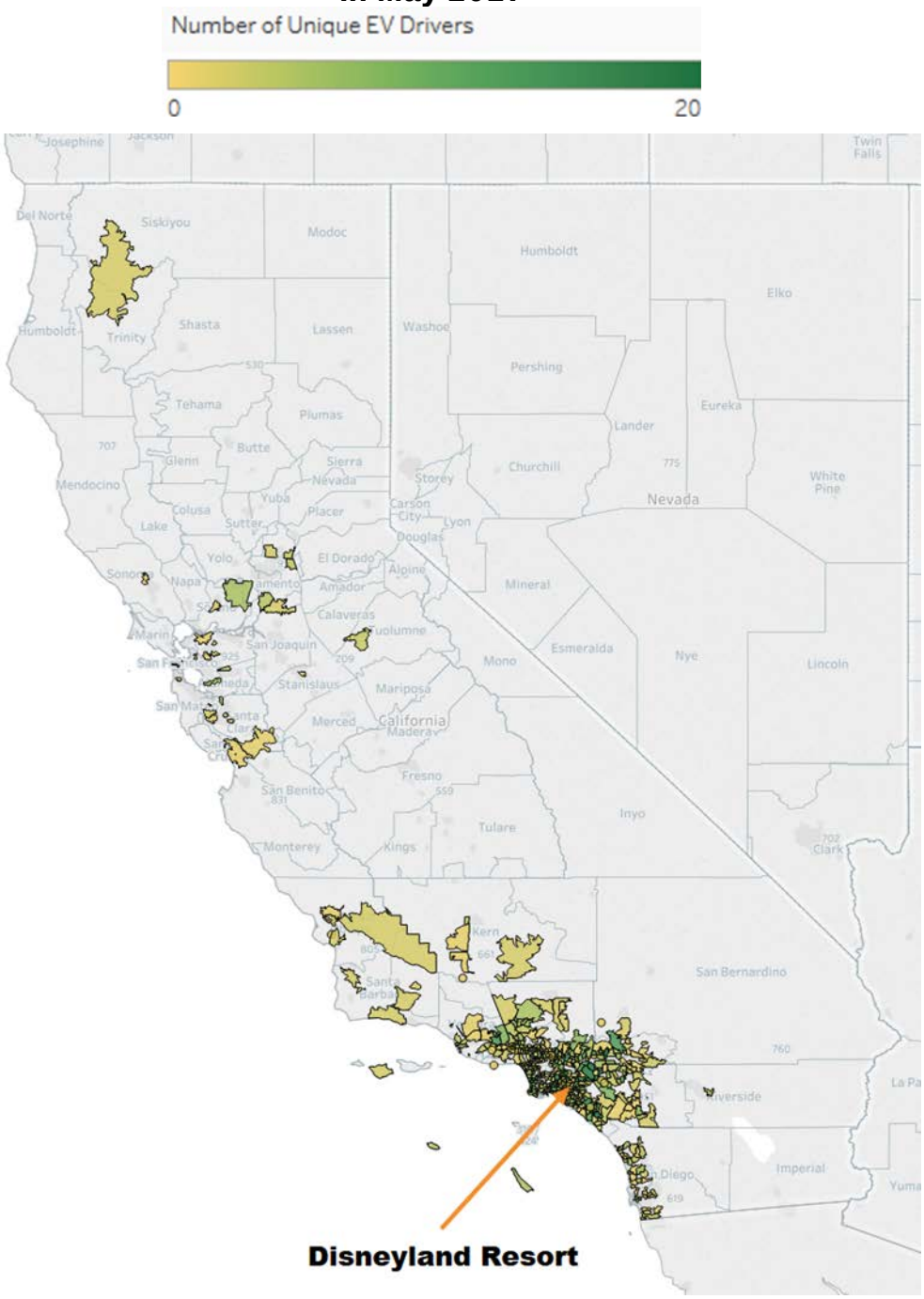
Long idle times can be mitigated by the station owner through pricing policy or other solutions that would manage the use of the charging stations. Variable pricing can be an effective tool for increasing utilization and ensuring EV drivers do not stay plugged in long after their vehicle has finished charging, since drivers will continue to pay for as long as they are connected.

While performing these analyses, we also identified 892 sessions with no energy dispensed. These 892 sessions accounted for 14 percent of the total charging sessions collected during this timeframe. This indicates vehicles were plugging into the charging station but not charging. We contacted ChargePoint and were informed that it may be one of two reasons: (1) when plugged in, the vehicle was not properly communicating with the charging station, therefore the station did not dispense energy or (2) a faulty hardware issue that requires attention from a technician. Since this event had many occurrences, issues were most likely contributed to the latter. As a result, ChargePoint generated tickets to replace hardware for the affected charging stations. This was covered under ChargePoint's warranty. The 892 charging sessions with no energy dispensed were considered errors and were removed from the data before performing the analysis.

Mapping EV Drivers

Using zip code data collected from the ChargePoint charging stations, we could infer which areas EV drivers were coming from. The zip code data is based on the registered address of the EV driver. We used the assumption that EV drivers were visiting the theme park from their registered ChargePoint address. Figure 36 is a map that highlights these areas for EV drivers who utilized the Mickey & Friends Parking Structure charging stations in May 2017.

Figure 36: Origins of EV Drivers Who Charged at Mickey & Fiends Parking Structure in May 2017

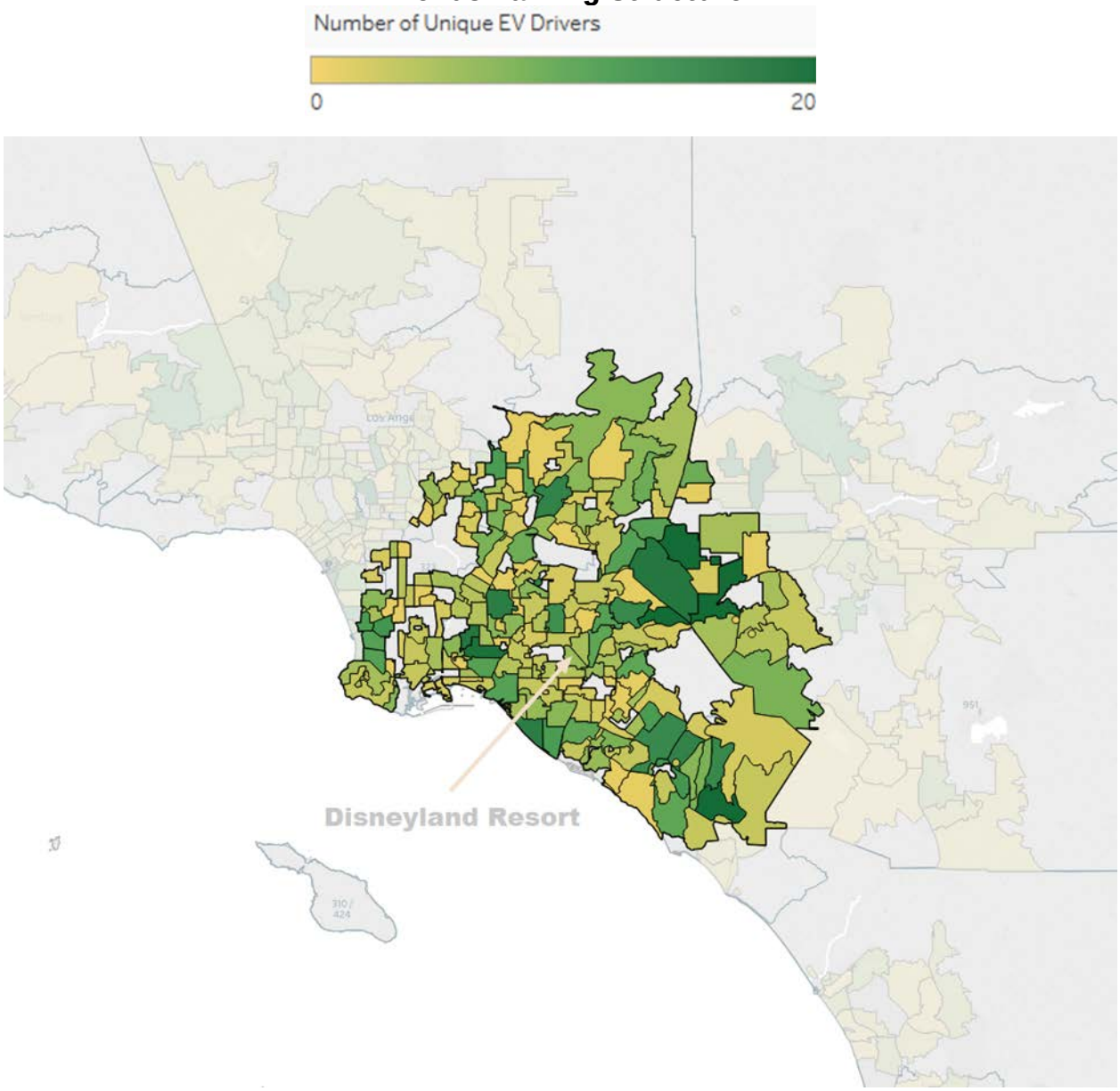


Source: CALSTART

Figure 37 shows that most EV drivers who charge at the Disneyland Resort are likely coming from local areas. A small number of EV drivers are from Northern California and a few are coming from outside California. It seems that range limitations of EVs play a factor here but these dense concentrations can also be attributed to the high volumes of local residents who

attend the theme park. As charging infrastructure expands throughout California and battery technology improves, we expect that Disneyland Resort will attract more EV drivers who live beyond the Southern California region.

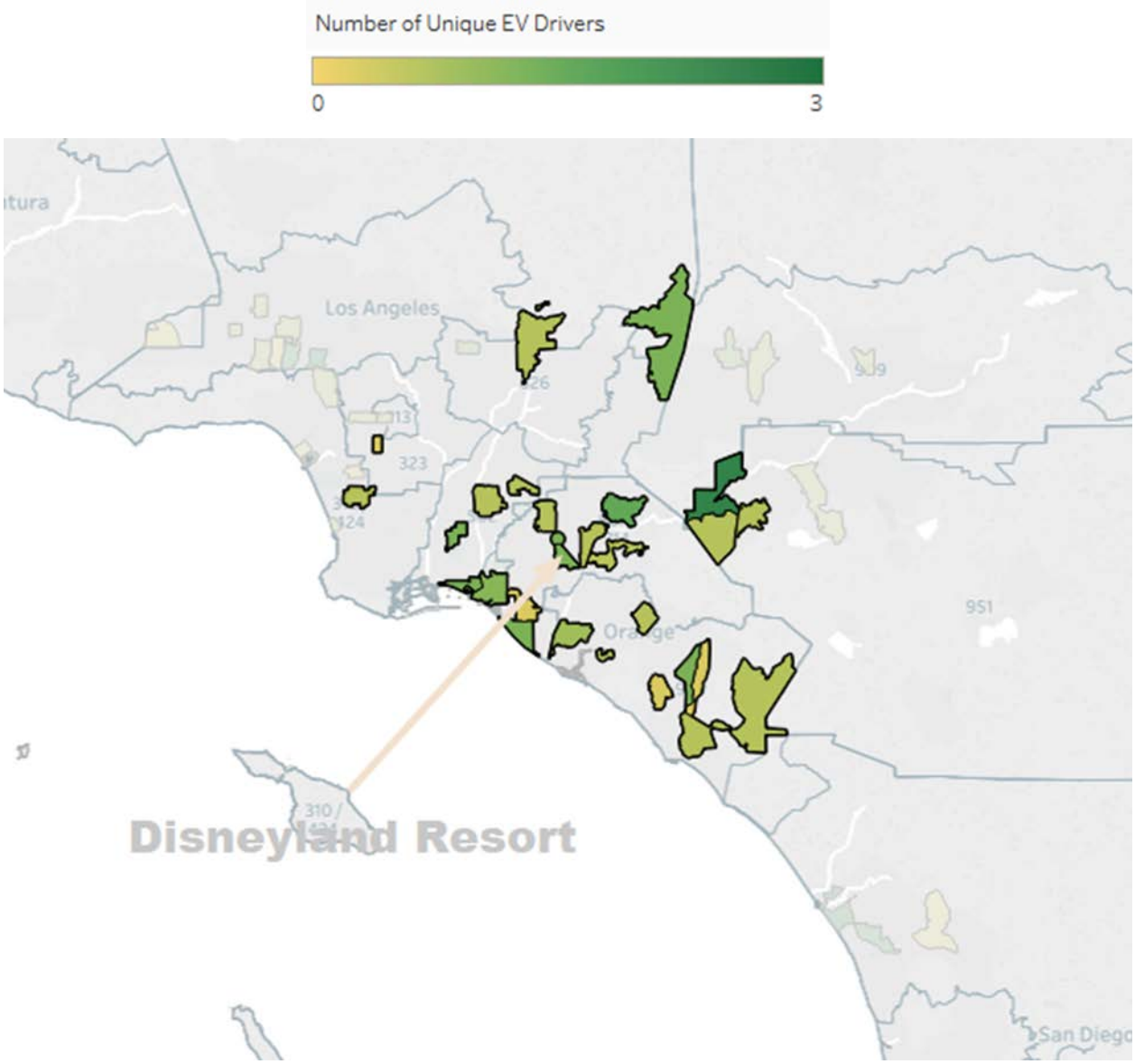
Figure 37: EV Drivers within 25 Mile Radius from Disneyland Resort – Mickey & Friends Parking Structure



Source: CALSTART

In comparison, Figure 38 is a map that highlights EV drivers who charged at Paradise Pier, Disneyland Hotel and the Grand Californian Hotel from July 2017 to September 2017. Only 41 percent of drivers who charged at one of the Disneyland Resort hotels came from within 25 miles of Disneyland Resort. As stated earlier, overnight guests are more likely visiting the resort from greater distances therefore less likely to be driving an EV.

Figure 38: EV Drivers within 25 Mile Radius from Disneyland Resort – Disneyland Hotel, Paradise Pier Hotel and the Grand Californian Hotel & Spa



Source: CALSTART

User Feedback

There is an abundance of EV driver communities that are actively sharing tips and reviews of charging stations. User feedback was collected from two EV communities, ChargePoint and PlugShare (Figure 39 & 40). Users can submit “Driver Tips” through the ChargePoint app or website. PlugShare, is a free app that allows EV drivers to find and review charging stations, and also allows users to post comments.

Figure 39: Driver Tips Submitted by ChargePoint Users

Driver Tip 10/30/2016

The first time we attempted to charge here with just our Charge Point app, we couldn't get reception because it's on the bottom floor of the parking structure. We ended up using Apple Pay. Using the physical Charge Point card on or key ring was MUCH easier!
tracyedmisten

Station Name: DLR / M&F 21&22
1313 Disneyland Dr, Anaheim, California 92802 United States

Driver Tip 9/29

Cord isn't long enough for vehicles with charging receptacle on the rear, specifically Tesla's, parked nose in (since the spaces are anhled forward). Backing in seems improper.
williamd314

Station Name: DLR / M&F 21&22
1313 Disneyland Dr, Anaheim, California 92802 United States

Driver Tip 9/8/2016

6 hybrid cars currently parked at chargers that arent even plugged in showing 6 open spots!!! please be courteous and leave spots for people who can't get home without charging!!
melissa500e

Station Name: DLR / M&F 05&06
1313 Disneyland Dr, Anaheim, California 92802 United States

Source: CALSTART

Figure 40: Comments Submitted by PlugShare Users for Mickey and Friends Parking Garage

Comment 1:	*Let them know you have an electric vehicle & they'll give you a tag so you can be directed to the EV parking. It is a ChargePoint you have to pay for.*
Comment 2:	*Charger for space 10 is broken. One side looks like it will work, but it won't. Looks like it has been broken for a while as one cable has a tag that says do not operate on it.*
Comment 3:	*Spot 38- charger 38 not working, had to use 37*
Comment 4:	*Given the location, I think we all understand if you don't go back to your car once charging is complete, but if you do return to your car to unplug it, please move the vehicle. They usually leave some empty spaces nearby now to accommodate this, but if not, it is not hard to go out and come back in.*
Comment 5:	*Thrilled that Disney has started to enforce patrons to actually charge and not allowing these spots to be exclusive parking spots just for buying an EV/Hybrid. But they need more enforcement. I counted at least 3 cars parked but not plugged in.*
Comment 6:	*So many charging stations now! Unfortunately, so many EVs that are parked but aren't even plugged in!*

Source: CALSTART

Feedback collected on the Disneyland Resort chargers was generally positive. Users were happy about the additional charging infrastructure made available through this project. In some instances, users identified issues such as a broken charger handle or a faulty charging session.

This feedback provides important learnings for the station owner and will be useful when planning future projects. Here is a list of key takeaways from the driver tips and comments:

1) Cellular service may not be available in the parking structures as chargers are usually located on the bottom floor. Therefore, a driver cannot initiate a charging session through the ChargePoint app. This affects many charging stations located in parking

garages and is not a unique problem to Disneyland Resort. In this scenario, EV drivers can either use their physical ChargePoint card or find an area with reception to call ChargePoint and initiate a charging session.

2) Charging cords may not be long enough when the charging receptacle is located at the rear of the car. This becomes problematic when parking spaces are angled and cars are unable to back into the space.
3) EVs parking in charging spaces without charging is another common issue that is not unique to Disneyland Resort. Users who needed charging were often frustrated when cars occupied a space without plugging in. It takes approximately 15 minutes for a guest to travel from the entrance of the theme park to the Mickey & Friends Parking Structure. This inconvenience is a barrier for guests who needs to leave the park and move their car when a charging space becomes available. Travel time also detracts guests from moving their car when it's finished charging. Developing signage and actively communicating that spaces are to be reserved for EVs needing to charge can help lower this occurrence. The station owner can also consider parking/charging enforcement.

Chapter 6:
Conclusions and Recommendations

The presence of charging sites at common destinations can help demonstrate the viability of electric vehicles to prospective buyers and support adoption of electric vehicles. The goal of this project was to install electric vehicle charging stations at the Disneyland Resort in Anaheim, CA – one of the most popular tourist destination sites. A total of 33 charging stations were installed at four location sites at Disneyland Resort and monitored for six months.

The initial duration of the project was 18 months, given that the EVSE were selected from ChargePoint and the candidate locations were available. The duration of the project was much longer and lasted 4 years. Some of the learning associated with planning, design and construction are listed below.

- Load measurements are required for proper selection of sites to ensure adequate availability of power.
- Designs, approval and permitting times need to account for the site host's internal processes and rules. Understanding the roles and processes ahead of time will help with the planning.
- Redesigns of the sites to include new ADA compliance requirements caused delays.
- At large sites where construction projects are very common, coordination with other construction may cause delays that should be taken into account in the planning and proposal phases.
- The timeline and project schedule should include maximum flexibility in anticipation of adjustments which are very common in projects involving construction.

The 6 months of data monitoring showed that the usage of the charging stations was on average less than one charging event per day and we expect the usage to increase over time. Based on the learnings from the usage data and user feedback, we have the following conclusions and recommendations:

- Popular destination sites are excellent locations for EV charging that can encourage usage and adoption of EVs.
- Site hosts should monitor the usage at regular intervals and consider adjusting the pricing policy and management of the charging stations. This will maximize the usage of the charging stations, decrease idle time, and provide reliability to EV drivers. We recommend annual review and updating of the management and operations plan.
- Monitoring the charging stations will ensure that broken devices are replaced and operational errors are corrected.
- Promotion and information about the available EV charging can be increased to ensure communication with the public.

GLOSSARY

ALTERNATIVE AND RENEWABLE FUELS AND VEHICLE TECHNOLOGY PROGRAM (ARFVTP) – Also known as the Clean Transportation Program, was created by Assembly Bill 118 (Nunez, Chapter 750, Statutes of 2007), the program with an annual budget of about $100 million supports projects that develop and improve alternative and renewable low-carbon fuels, improve alternative and renewable fuels for existing and developing engine technologies, expand transit and transportation infrastructures, and establishing workforce training programs, conduct public education and promotion, and create technology centers, among other tasks.

AMERICAN WITH DISABILITIES ACT (ADA) - ADA refers to the Americans with Disabilities Act of 1990 which is one of the most significant federal laws governing discrimination against persons with disabilities. This Act prohibits discrimination against individuals with disabilities in employment, housing, education, and access to public services. The ADA defines a disability as any of the following: 1. "a physical or mental impairment that substantially limits one or more of the major life activities of the individual." 2. "A record of such impairment." or 3. "Being regarded as having such an impairment."5

ASSEMBLY BILL 8 (AB8) - A proposed law, introduced during a session for consideration by the Legislature, and identified numerically in order of presentation; also, a reference that may include joint and concurrent resolutions and constitutional amendments, by Assembly, the house of the California Legislature consisting of 80 members, elected from districts determined on the basis of population. Two Assembly districts are situated within each Senate district.6

CLEAN FUELS CONNECTION, INC (CFCI) - Clean Fuel Connection, Inc. distributes low-emission and renewable infrastructure products. Its products comprise solar photovoltaic systems; battery charging equipment or shore power connections for on-road and off-road electric drive vehicles. 7

CARBON DIOXIDE (CO_2) - A colorless, odorless, non-poisonous gas that is a normal part of the air. Carbon dioxide is exhaled by humans and animals and is absorbed by green growing things and by the sea. CO2 is the greenhouse gas whose concentration is being most affected directly by human activities. CO2 also serves as the reference to compare all other greenhouse gases (see carbon dioxide equivalent).

ELECTRIC VEHICLES (EV) – A broad category that includes all vehicles that are fully powered by electricity or an electric motor.

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5 Americans with Disabilities Act (https://definitions.uslegal.com/)

6 Assembly Bill 8 (https://www.senate.ca.gov/glossary)

7 Clean Fuels Connection (https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=65283149)

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) - Infrastructure designed to supply power to EVs. EVSE can charge a wide variety of EVs including BEVs and PHEVs.

GREENHOUSE GASES (GHG) – Any gas that absorbs infra-red radiation in the atmosphere. Greenhouse gases include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), halogenated fluorocarbons (HCFCs), ozone (O3), perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs).

KILOWATT-HOUR (kWh) - The most commonly-used unit of measure telling the amount of electricity consumed over time. It means one kilowatt of electricity supplied for one hour. In 1989, a typical California household consumes 534 kWh in an average month.

MILES PER GALLON (MPG) **-** A measure of vehicle fuel efficiency. Miles per gallon or MPG represents "Fleet Miles per Gallon. “For each subgroup or "table cell," MPG is computed as the ratio of the total number of miles traveled by all vehicles in the subgroup to the total number of gallons consumed. MPGs are assigned to each vehicle using the EPA certification files and adjusted for on-road driving.

PLUG-IN ELECTRIC VEHICLE (PEV) - is a general term for any car that runs at least partially on battery power and is recharged from the electricity grid. There are two different types of PEVs to choose from - pure battery electric and plug-in hybrid vehicles.

APPENDIX A:
Final Design Plans

Disneyland RESORT

MICKEY AND FRIENDS PARKING
EV CHARGING STATION
INSTALLATION, PHASE 2
1313 S. DISNEYLAND DRIVE, ANAHEIM, CA 92802
PLAN CHECK - 05/23/16

PROJECT INFORMATION

PROJECT NAME:	MICKEY AND FRIENDS PARKING LOT – EV CHARGING STATION INSTALLATION
BUILDING ADDRESS:	1313 S. HARBOR BLVD
PROJECT SCOPE-OF-WORK:	INSTALLATION OF (27) DUAL EV CHARGERS IN EXISTING PARKING STRUCTURE AND MODIFY THE ADA STRIPING TO MEET CURRENT CODE

PROJECT CODE REFERENCES: THE APPLICABLE CODES ARE THE CURRENT VERSION OF THE CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, AS AMENDED BY THE CITY OF ANAHEIM. THIS INCLUDES, BUT IS NOT LIMITED TO, THE:
- 2013 CALIFORNIA BUILDING CODE, AS AMENDED BY THE CITY OF ANAHEIM
- 2013 CALIFORNIA ELECTRICAL CODE, AS AMENDED BY THE CITY OF ANAHEIM
- 2013 CALIFORNIA MECHANICAL CODE, AS AMENDED BY THE CITY OF ANAHEIM
- 2013 CALIFORNIA PLUMBING CODE, AS AMENDED BY THE CITY OF ANAHEIM
- 2013 CALIFORNIA ENERGY CODE, AS AMENDED BY THE CITY OF ANAHEIM
- 2013 CALIFORNIA FIRE CODE, AS AMENDED BY THE CITY OF ANAHEIM
- 2013 CALIFORNIA EXISTING BUILDING CODE
- 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE, AS AMENDED BY THE CITY OF ANAHEIM
- 2013 CALIFORNIA REFERENCE STANDARDS CODE
- 2013 CALIFORNIA RESIDENTIAL CODE AS AMENDED BY THE CITY OF ANAHEIM
- 2012 INTERNATIONAL SWIMMING POOL AND SPA CODE

THE PROJECT SHALL ALSO COMPLY WITH THE APPLICABLE CODES AND STANDARDS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), AND FM GLOBAL REQUIREMENTS

OCCUPANCY CLASSIFICATION – MIXED USE OR PRIMARY OCCUPANCY (CBC SECTION 301):	
GROUP X	
GROUP X	

OCCUPANCY SEPARATION REQUIREMENTS (CBC TABLE 508.4)	
OCCUPANCY	SEPARATION REQUIRED
GROUP X / GROUP X	LIST REQUIREMENT
GROUP X / GROUP X	LIST REQUIREMENT

ALLOWABLE HEIGHT AND BUILDING AREA (CBC TABLE 503) *		
CONSTRUCTION TYPE	OCCUPANCY	
TYPE XX	GROUP X	
	ACTUAL	ALLOWABLE
HEIGHT (FT)	#	#
NO. OF STORIES	#	#
AREA (PER STORY, FT ABOVE GRADE)	#	#

*NOT INCLUDING INCREASES FOR FIRE SPRINKLER SYSTEMS, SIDE YARDS, AND OTHER FACTORS

ALLOWABLE EXTERIOR WALL PROTECTION AND EXTERIOR WALL OPENING PROTECTION:

FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (CBC TABLE 601)	
CONSTRUCTION TYPE	TYPE XX
BUILDING ELEMENT	FIRE-RESISTANCE RATING REQUIREMENT (HOURS)
STRUCTURAL FRAME	#
BEARING WALLS – EXTERIOR	#
BEARING WALLS – INTERIOR	#
NONBEARING WALLS AND PARTITIONS – EXTERIOR	#
NONBEARING WALLS AND PARTITIONS – INTERIOR	#
FLOOR CONSTRUCTION – INCLUDING SUPPORTING BEAMS AND JOISTS	#
ROOF CONSTRUCTION – INCLUDING SUPPORTING BEAMS AND JOISTS	#

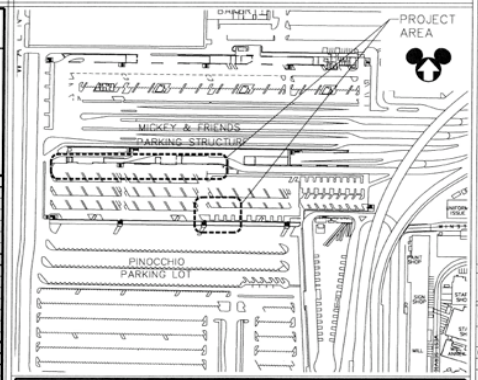
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE (CBC TABLE 602)	
FIRE SEPARATION DISTANCE = X (FEET)	FIRE-RESISTANCE RATING REQUIREMENT (HOURS)
X < 5	#
5 < X < 10	#
10 < X < 30	#
X > 30	#

MAXIMUM AREA OF EXTERIOR WALL OPENINGS (CBC TABLE 705.8)		
FIRE SEPARATION DISTANCE = X (FEET)	UNPROTECTED (% AREA OF EXT WALL)	PROTECTED (% AREA OF EXT WALL)
X < 3	NOT PERMITTED	NOT PERMITTED
3 < X < 5	NOT PERMITTED	15
5 < X < 10	10	25
10 < X < 15	15	45
15 < X < 20	25	75
20 < X < 25	45	NO LIMIT
25 < X < 30	75	NO LIMIT
X > 30	NO LIMIT	NO LIMIT

ACCESSIBLE PARKING REQUIREMENT

ACCESSIBLE PARKING IS PROVIDED AT OUR CAST MEMBER PARKING LOTS AND CAST MEMBERS ARE BROUGHT TO THIS FACILITY BY DESIGNATED SHUTTLES. PATH OF TRAVEL FROM THE SHUTTLE DROP-OFF ZONE TO PRIMARY ENTRANCE AND SANITARY FACILITIES ARE COMPLIANT. THE EXISTING ACCESSIBLE PARKING STALLS AND RELATED SIGNAGE AT THE OUR CAST MEMBER PARKING LOTS HAVE BEEN PREVIOUSLY REVIEWED / APPROVED FOR COMPLIANCE WITH TITLE 24, ACCESSIBILITY REQUIREMENTS.

PROJECT VICINITY MAP



INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY (CBC TABLE 803.9):						
	SPRINKLERED			NONSPRINKLERED		
GROUP	EXIT ENCLOSURES AND EXIT PASSAGEWAYS	CORRIDORS	ROOMS AND ENCLOSED SPACES	EXIT ENCLOSURES AND EXIT PASSAGEWAYS	CORRIDORS	ROOMS AND ENCLOSED SPACES
GROUP X	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C	A, B, C

FIRE PROTECTION SYSTEMS:

APPROVED AUTOMATIC SPRINKLER SYSTEMS SHALL BE PROVIDED IN THE LOCATIONS DESCRIBED IN CBC SECTION 903.

Automatic Fire Suppression System
Sprinkler Flow Switches
Sprinkler Flow Alarm Bell
Fire Alarm Control Panel
Smoke Detectors
Duct Smoke Detectors

STANDPIPE SYSTEMS SHALL BE PROVIDED IN NEW BUILDINGS AND STRUCTURES IN ACCORDANCE WITH CBC SECTION 905.

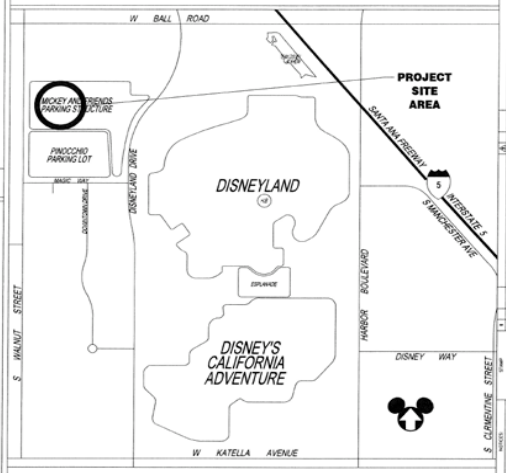
EXIT ACCESS TRAVEL DISTANCE (CBC TABLE 1016.2)		
OCCUPANCY	WITHOUT SPRINKLER SYSTEM (FEET)	WITH SPRINKLER SYSTEM (FEET)
GROUP X	#	#

MINIMUM ROOF COVERING CLASSIFICATION FOR TYPES OF CONSTRUCTION (CBC TABLE 1505.1)								
IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
B	B	B	B	B	B	B	B	B

FIRE DEPARTMENT REQUIREMENTS

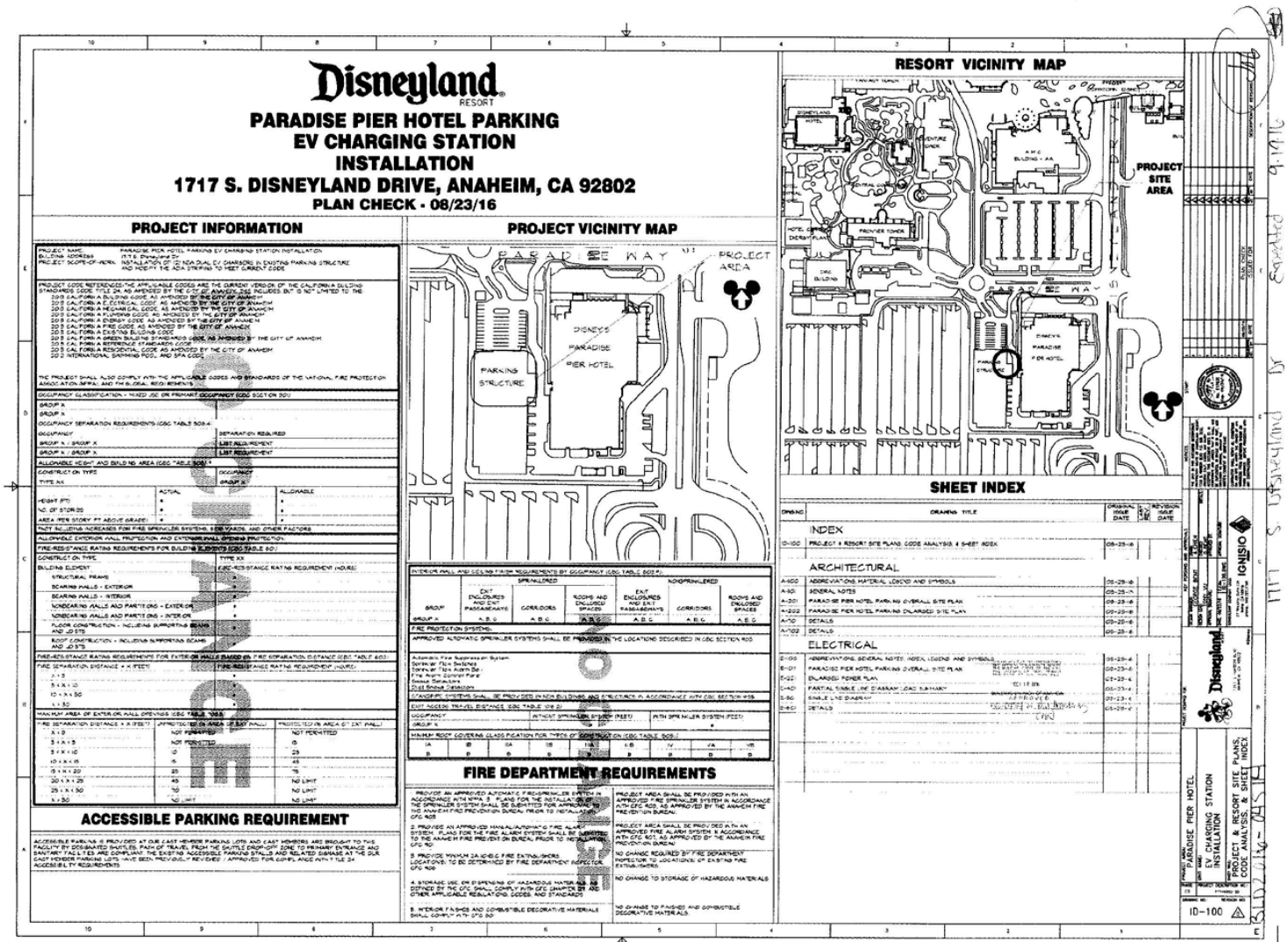
1. PROVIDE AN APPROVED AUTOMATIC FIRE-SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13. PLANS FOR THE INSTALLATION OF THE SPRINKLER SYSTEM SHALL BE SUBMITTED FOR APPROVAL TO THE ANAHEIM FIRE PREVENTION BUREAU PRIOR TO INSTALLATION. CFC 903	PROJECT AREA SHALL BE PROVIDED WITH AN APPROVED FIRE SPRINKLER SYSTEM IN ACCORDANCE WITH CFC 903, AS APPROVED BY THE ANAHEIM FIRE PREVENTION BUREAU.
2. PROVIDE AN APPROVED MANUAL/AUTOMATIC FIRE ALARM SYSTEM. PLANS FOR THE FIRE ALARM SYSTEM SHALL BE SUBMITTED TO THE ANAHEIM FIRE PREVENTION BUREAU PRIOR TO INSTALLATION. CFC 901	PROJECT AREA SHALL BE PROVIDED WITH AN APPROVED FIRE ALARM SYSTEM IN ACCORDANCE WITH CFC 907, AS APPROVED BY THE ANAHEIM FIRE PREVENTION BUREAU.
3. PROVIDE MINIMUM 2A:10-B:C FIRE EXTINGUISHERS. LOCATION(S) TO BE DETERMINED BY FIRE DEPARTMENT INSPECTOR. CFC 906	NO CHANGE REQUIRED BY FIRE DEPARTMENT INSPECTOR TO LOCATION(S) OF EXISTING FIRE EXTINGUISHERS.
4. STORAGE, USE, OR DISPENSING OF HAZARDOUS MATERIALS, AS DEFINED BY THE CFC, SHALL COMPLY WITH CFC CHAPTER 27, AND OTHER APPLICABLE REGULATIONS, CODES, AND STANDARDS.	NO CHANGE TO STORAGE OF HAZARDOUS MATERIALS
5. INTERIOR FINISHES AND COMBUSTIBLE DECORATIVE MATERIALS SHALL COMPLY WITH CFC 801.	NO CHANGE TO FINISHES AND COMBUSTIBLE DECORATIVE MATERIALS.

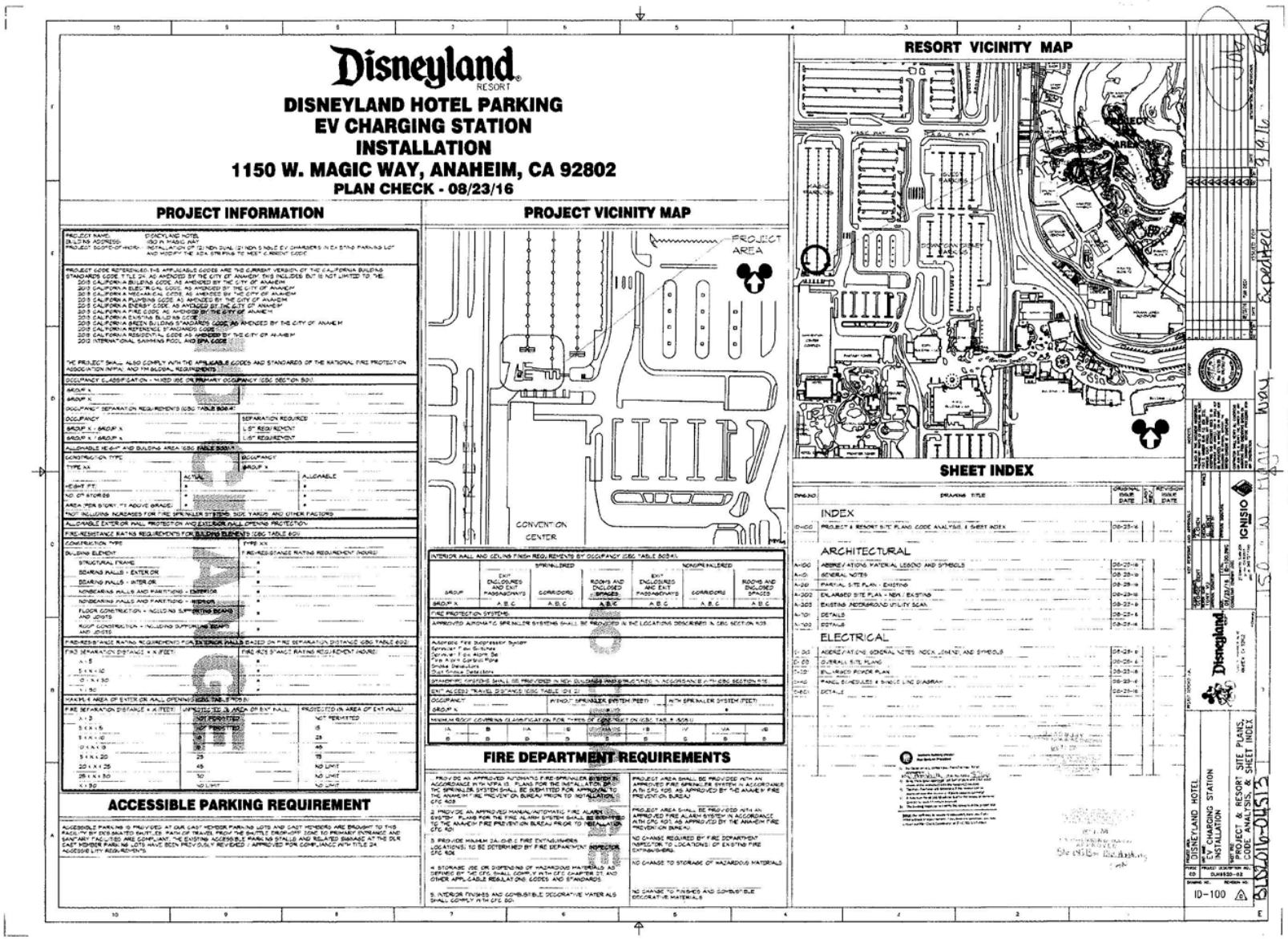
RESORT VICINITY MAP



SHEET INDEX

PROJECT NAME	MICKEY AND FRIENDS PARKING
PROJECT DESCRIPTION	EV CHARGING STATION INSTALLATION, PHASE 2
SHEET TITLE	PROJECT & RESORT SITE PLANS, CODE ANALYSIS, & SHEET INDEX
PHASE	CD
PROJECT DESIGNATION NO.	IFDCST-070-01
DRAWING NO.	ID-100
REVISION NO.	4


Disneyland RESORT
PARADISE PIER HOTEL PARKING
EV CHARGING STATION
INSTALLATION
1717 S. DISNEYLAND DRIVE, ANAHEIM, CA 92802
PLAN CHECK - 08/23/16
PROJECT INFORMATION
PROJECT VICINITY MAP
PARADISE WAY
PROJECT AREA
DISNEY'S PARADISE PIER HOTEL
PARKING STRUCTURE
RESORT VICINITY MAP
PROJECT SITE AREA
SHEET INDEX
INDEX
ARCHITECTURAL
ELECTRICAL
ACCESSIBLE PARKING REQUIREMENT
FIRE DEPARTMENT REQUIREMENTS
PROJECT & RESORT SITE PLANS, CODE ANALYSIS & SHEET INDEX
ID-100


Disneyland
RESORT
DISNEYLAND HOTEL PARKING
EV CHARGING STATION
INSTALLATION
1150 W. MAGIC WAY, ANAHEIM, CA 92802
PLAN CHECK - 08/23/16
PROJECT INFORMATION
PROJECT VICINITY MAP
PROJECT AREA
CONVENTION CENTER
RESORT VICINITY MAP
SHEET INDEX
INDEX
ARCHITECTURAL
ELECTRICAL
FIRE DEPARTMENT REQUIREMENTS
ACCESSIBLE PARKING REQUIREMENT
DISNEYLAND HOTEL
EV CHARGING STATION INSTALLATION
PROJECT & RESORT SITE PLANS, CODE ANALYSIS, & SHEET INDEX
ID-100

Disneyland RESORT

GRAND CALIFORNIAN HOTEL AND SUITES
EV CHARGING STATIONS INSTALLATION
1600 S. DISNEYLAND DRIVE, ANAHEIM, CA 92802
PLAN CHECK - 02/13/17

PROJECT INFORMATION

PROJECT NAME: GRAND CALIFORNIAN HOTEL AND SUITES, EV CHARGING STATIONS INSTALLATION
BUILDING ADDRESS: 1600 S. DISNEYLAND DRIVE, ANAHEIM, CA 92802
PROJECT SCOPE-OF-WORK: INSTALLATION OF (2) NEW DUAL EV CHARGERS IN EXISTING PARKING STRUCTURE

PROJECT CODE REFERENCES THE APPLICABLE CODES ARE THE CURRENT VERSION OF THE CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, AS AMENDED BY THE CITY OF ANAHIM. THIS INCLUDES, BUT IS NOT LIMITED TO, THE:

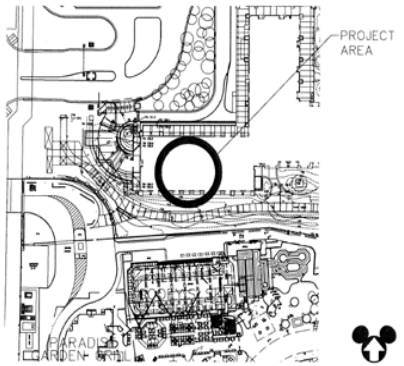
2016 CALIFORNIA BUILDING CODE, AS AMENDED BY THE CITY OF ANAHEIM
2016 CALIFORNIA ELECTRICAL CODE, AS AMENDED BY THE CITY OF ANAHEIM
2016 CALIFORNIA MECHANICAL CODE, AS AMENDED BY THE CITY OF ANAHEIM
2016 CALIFORNIA PLUMBING CODE, AS AMENDED BY THE CITY OF ANAHEIM
2016 CALIFORNIA ENERGY CODE, AS AMENDED BY THE CITY OF ANAHEIM
2016 CALIFORNIA FIRE CODE, AS AMENDED BY THE CITY OF ANAHEIM
2016 CALIFORNIA EXISTING BUILDING CODE
2016 CALIFORNIA GREEN BUILDING STANDARDS CODE, AS AMENDED BY THE CITY OF ANAHEIM
2016 CALIFORNIA REFERENCE STANDARDS CODE
2016 CALIFORNIA RESIDENTIAL CODE AS AMENDED BY THE CITY OF ANAHEIM
2016 INTERNATIONAL SWIMMING POOL AND SPA CODE

THE PROJECT SHALL ALSO COMPLY WITH THE APPLICABLE CODES AND STANDARDS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), AND FM GLOBAL REQUIREMENTS

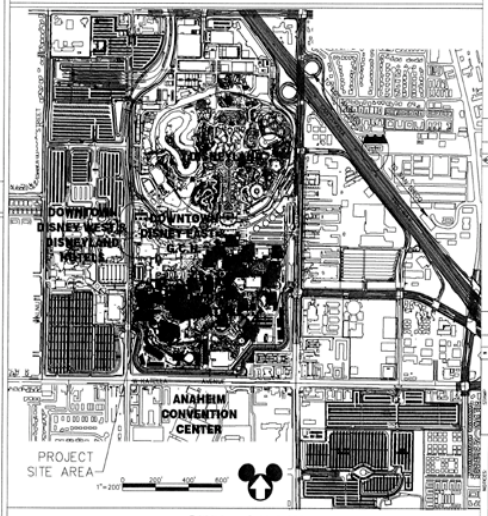
ACCESSIBLE PARKING REQUIREMENT

ACCESSIBLE PARKING IS PROVIDED AT OUR CAST MEMBER PARKING LOTS AND CAST MEMBERS ARE BROUGHT TO THIS FACILITY BY DESIGNATED SHUTTLES. PATH OF TRAVEL FROM THE SHUTTLE DROP-OFF ZONE TO PRIMARY ENTRANCE AND SANITARY FACILITIES ARE COMPLIANT. THE EXISTING ACCESSIBLE PARKING STALLS AND RELATED SIGNAGE AT THE OUR CAST MEMBER PARKING LOTS HAVE BEEN PREVIOUSLY REVIEWED / APPROVED FOR COMPLIANCE WITH TITLE 24, ACCESSIBILITY REQUIREMENTS.

PROJECT SITE PLAN



RESORT SITE MAP



SHEET INDEX

DWG.NO.	DRAWING TITLE	ORIGINAL ISSUE DATE	REVISION ISSUE DATE
	INDEX		
ID-100	PROJECT & RESORT SITE PLANS, CODE ANALYSIS, & SHEET INDEX	02-13-17	
	ARCHITECTURAL		
A-100	ABBREVIATIONS, MATERIALS, LEGEND AND SYMBOLS	02-13-17	
A-101	GENERAL NOTES CONTINUED	02-13-17	
A-201	PARTIAL SITE PLAN LOWER FLOOR- EXISTING	02-13-17	
A-202	ENLARGED SITE PLAN LOWER FLOOR- NEW	02-13-17	
A-701	DETAILS	02-13-17	
	ELECTRICAL		
E-100	ABBREVIATIONS, GENERAL NOTES, INDEX, LEGEND, AND SYMBOLS	02-13-17	
E-103	OVERALL SITE PLAN	02-13-17	
E-221	POWER PLANS	02-13-17	
E-401	PANEL SCHEDULE & SINGLE LINE DIAGRAM	02-13-17	
E-601	DETAILS	02-13-17	

PROJECT NO.: GRAND CALIFORNIAN HOTEL AND SUITES
EV CHARGING STATIONS INSTALLATION
SHEET TITLE: PROJECT & RESORT SITE PLANS, CODE ANALYSIS, & SHEET INDEX
PHASE: SD
PROJECT DESCRIPTION NO.: DCAGCH-48
DRAWING NO.: ID-100
REVISION NO.: 6

IGNISIO
Disneyland

APPENDIX B:
Permits

PERMITS FOR MICKEY & FRIENDS SITE.

City of Anaheim

BUILDING DIVISION

INSPECTION RECORD

Post In Conspicuous Place On the Job

ADDRESS: 1313 S DISNEYLAND DR (Mickey and Friends Parking Str
PERMIT #: BLD2016-00464 DATE ISSUED: 8/16/2016
OWNER: WALT DISNEY WORLD CO
DESCRIPTION: Disney Mickey and Friends Parking (27) Dual EV Charging Station Installation and (6) ADA signage poles with

Do not occupy this building until the final inspections have been made.

INSPECTION	Code	Date	Inspector
Do not pour concrete until the following applicable items have been signed:			
Plumbing (Ground/Underfloor Drain Waste)	202		
Electrical Ground Electrode/Ufer	306		
Setback/Forms/Trenches (Footings)	106		
Do not install subfloor or pour floor slab until the following applicable items have been signed:			
Plumbing (Ground/Underfloor Water)	204		
Underfloor Rough Gas	206		
Mechanical (Groundwork)	402		
Electrical (Underground Conduit)	308		
Pre-Slab (Compaction/Membrane/Reinf.)	110		
Floor Joist/Girders)	114		
Underfloor Insulation (Raised Foundation Only)	119		
Floor Nailing (Raised Foundation Only)	115		
1st Floor Shear	116		
Do not cover or conceal the work below until the following applicable items have been signed.			
2nd Floor Nailing	117		
2nd Floor Shear	118		
Firesprinkler (Rough) (Fire Dept.)			
Roof (Sheathing/Diaphragm/Frame)	102		
Masonry (Reinf./Bond Beam/Pre_Grout)	108		
Rough Plumbing (Top Out)	208		
Rough Duct (Mechanical)	406		
Rough Mechanical	408		
Rough Electrical	314		
Framing (Only after Plbg., Ele., Mec. & Fire)	104		
Insulation (Signed Energy)	120		
Do not lath or plaster until the following applicable items have been signed.			
Drywall	122		
Drywall Penetrations (Ele., Mec. & Plbg.)	126		
Interior Lath	124		
Exterior Lath	128		
Electrical Service Meter (Meter will be set within 2-3 business days after approval) Excludes New Construction	312		
Exterior Plaster (Brown Coat)	130		
T-Bar (Struct., Ele., or Mec.)	132		
Grease Interceptor (Do not backfill unless signed off)	211		
Sewer	212		
Water Engineering Backflow (Testable Only)			
Water Service	214		

All applicable items below must be signed before utilities are released

FINAL INSPECTIONS	Code	Date	Inspector
Final Gas Test	218/419		
Electrical Final	399		
Plumbing Final	299		
Mechanical Final	499		
Cross Connection Control 765-4280			
Engineering Final 765-5128			
Fire Sprinkler(ONLY) 765-5041			
Fire Dept. Final 765-5041			
Water Engineering 765-5331			
Sub Lic/Business License 765-5134 (Allow 10 business days for approval)			
CQA/Mitigation Measures			
Building Final (Last Inspection - Only After Above Completed)	199		

PARTIAL INSPECTIONS

Building Inspections

Mechanical Inspections

Plumbing Inspections

Electrical Inspections

Requests made prior to midnight will be scheduled on the following work day.

To schedule your building inspection online, please go to http://www.anaheim.net/InspectionRequest

You may also request your inspection by calling (714) 765-4626

To access your inspection timeframe, please go to www.anaheim.net/building after 7:30 am on the day of your inspection. Under Online Services, click on the "Inspection Timeframes" link or call (714) 765-5163 + 0.

PERMIT FOR DISNEYLAND HOTEL SITE

City of Anaheim

BUILDING DIVISION

INSPECTION RECORD

Post In Conspicuous Place On the Job

ADDRESS: 1150 W MAGIC WAY
PERMIT #: BLD2016-04613 DATE ISSUED: 10/11/2016
OWNER: WALT DISNEY WORLD CO
DESCRIPTION: Disneyland Hotel - Magic Parking Lot - Electrical for (4) Level 2 EV chargers in the outdoor parking lot. Modification

ELECTRICAL / MECHANICAL / PLUMBING

Inspection	Code	Date	Inspector
Temp Power	302		
Meter/Service	312		
Electric Rough Wiring	314		
Underground Conduit	[illegible]		
Final Electric	[illegible]		

Note:

Service Panel

Utility Department's Meter Spot Report must be onsite at the time of Building Division's Inspection for installation, relocation, replacement or upgrade of residential electrical service panel.

Underwriters Laboratories Product Listing Alert
Electric Metallic Tubing (E.M.T.) compression type fittings (Connectors and Couplings) are no longer listed for use in exterior locations where exposed to the weather. These can no longer be used in these locations until such time as the various Manufacturers obtain an Approved Testing Laboratory listing for the use of these fittings in these areas.
Effective September 2, 2008

Inspectors can normally be reached between 7:30 - 8:00 A.M. and 3:00 - 3:30 P.M. (714) 765-5153 + 0

OTHER INSPECTIONS		
INSPECTION	DATE	INSPECTOR

INSPECTION REQUESTS

Inspection requests made before 11:59 pm will be scheduled on the following workday.

To schedule your building inspection online, please go to http://www.anaheim.net/InspectionRequest.

You may also request your inspection by calling **(714) 765-4626** and continue with the following steps:

- Press 1 for inspection function.
- Press 1 to schedule inspection.
- Press 1 for Building Inspection.
- Enter the Code number for the inspection requested (indicated in blue.)
- Press 1 for next business day, or enter date preferred.
- Select time preference (Request is subject to inspector's schedule.)
- At the end of your request you will receive a confirmation number.

To access your inspection timeframe, please go to www.anaheim.net/building after 7:30 am on the day of your inspection. Under Online Services, click on the "Inspection Timeframes" link or call (714) 765-5153 + 0.

bldjobcards

PERMIT FOR PARADISE PIER HOTEL SITE.

City of Anaheim

BUILDING DIVISION

INSPECTION RECORD

Post In Conspicuous Place On the Job

ADDRESS: 1717 S DISNEYLAND DR
PERMIT #: BLD2016-04514 DATE ISSUED: 10/11/2016
OWNER: P C & RS CHAO FAMILY LTD
DESCRIPTION: Paradise Pier Hotel Parking - Electrical to add (2) Level 2 EV chargers and modified ADA striping to meet current

ELECTRICAL / MECHANICAL / PLUMBING

Inspection	Code	Date	Inspector
Temp Power	302		
Meter/Service	312		
Electric Rough Wiring	314		
Underground Conduit	502		
Final Electric	328		

Note:

Service Panel

Utility Department's Meter Spot Report must be onsite at the time of Building Division's inspection for installation, relocation, replacement or upgrade of residential electrical service panel.

Underwriters Laboratories Product Listing Alert

Electric Metallic Tubing (E.M.T.) compression type fittings (Couplers and Coupings) are no longer listed for use in exterior locations where exposed to the weather. These can no longer be used in those locations until such time as the various Manufacturers obtain an Approved Testing Laboratory listing for the use of these fittings in these areas.
Effective September 2, 2003

OTHER INSPECTIONS		
INSPECTION	DATE	INSPECTOR

INSPECTION REQUESTS

Inspection requests made before 11:59 pm will be scheduled on the following workday.

To schedule your building inspection online, please go to http://www.anaheim.net/ebir/Request.

You may also request your inspection by calling **(714) 765-4626** and continue with the following steps:

- Press 1 for Inspection function.
- Press 1 to schedule inspection.
- Press 1 for Building inspection.
- Enter the Code number for the inspection requested (Indicated in blue.)
- Press 1 for next business day, or enter date preferred.
- Select time preference (Request is subject to Inspector's schedule.)
- At the end of your request you will receive a confirmation number.

Inspectors can normally be reached between 7:30 - 8:00 A.M. and 3:00 - 3:30 P.M. (714) 765-5153 + 0

To access your inspection timeframe, please go to www.anaheim.net/building after 7:30 am on the day of your inspection. Under Online Services, click on the "Inspection Timeframes" link or call (714) 765-5153 + 0.

Bold objects

PERMIT FOR GRAND CALIFORNIA HOTEL SITE.

4-20-17

City of Anaheim

BUILDING DIVISION

INSPECTION RECORD

Post In Conspicuous Place On the Job

ADDRESS: 1600 S DISNEYLAND DR GRAND CALIFORNIAN
PERMIT #: BLD2017-00354 DATE ISSUED: 4/4/2017
OWNER:
DESCRIPTION: Disney - Grand Californian Hotel - EV Charger Level 2 installation of (2) dual in the [illegible] parking structure.

ELECTRICAL / MECHANICAL / PLUMBING

Inspection	Code	Date	Inspector
Temp Power	302		
Meter/Service	512		
Electric Rough Wiring	314	[illegible]	[illegible]
Underground Conduit	303		
Final Electric [illegible]	309	5/9/17	[illegible]

Note:

Service Panel

Utility Department's Meter Spot Record must be on site [illegible] of Building Division's [illegible] for installation, [illegible], replacement or upgrade of residential electrical service panels.

Underwriters Laboratories Product Safety Alert

Electrical Metallic Tubing (E.M.T.) compression type fittings (Connectors and Couplings) are no longer listed for use in exterior locations where exposed to the weather. These can no longer be used in these locations until such time as the various Manufacturers obtain an Approved Testing Laboratory listing for the use of these fittings in these areas.
Effective September 2, 2003

OTHER INSPECTIONS

INSPECTION	DATE	INSPECTOR
[illegible]	[illegible]	[illegible]
① [illegible] OK [illegible] FOR FINAL	5/9/17?	[illegible]

INSPECTION REQUESTS

Inspection requests made before 11:59 pm will be scheduled on the following workday.

To schedule your building inspection online, please go to http://www.anaheim.net/InspectionRequest.

You may also request your inspection by calling (714) 765-4626 and continue with the following steps:

- Press 1 for inspection function.
- Press 1 to schedule inspection.
- Press 1 for Building inspection.
- Enter the Code number for the Inspection requested (indicated in blue.)
- Press 1 for next business day, or enter date preferred.
- Select time preference (Request is subject to inspector's schedule.)
- At the end of your request you will receive a confirmation number.

Inspectors can normally be reached between 7:30 - 8:00 A.M. and 3:00 - 3:30 P.M. (714) 765-5153 + 0

To access your inspection timeframe, please go to www.anaheim.net/building after 7:30 am on the day of your inspection. Under Online Services, click on the "Inspection Timeframes" link or call (714) 765-5153 + 0.

APPENDIX C:
ChargePoint Training Materials

TRAINING, OPERATIONS, AND MAINTENANCE MATERIALS

Charger Operations

The following instructions provide an overview of how to operate a ChargePoint charger[8]. For more information, click on the link above. This information will be included in the hands-on training provided to Disney personnel.

- First, search for stations compatible with your EV on the ChargePoint map, mobile app or in the navigation units of many popular EVs. You can see in real-time if a station is available or in use, get turn-by-turn directions, view pricing policies and make charging reservations.
- Stations on the ChargePoint network are independently owned and each station owner sets pricing. If there is a fee to use a station, it will be clearly posted and the money will be transferred to the station owner.
- When you get to a station, turn off your car. You can start a charging session multiple ways. One option is to wave your free ChargePoint membership card in front of the station's card reader. You can also use the 'Start Charging' feature on the ChargePoint mobile app, or call the toll free 1-888 number printed on the station.
- Once you've started a session, the holster will unlock. Remove the connector and plug it into your car.
- While you're charging, log into your online account or use the mobile app to track the charging status of your car.
- To stop a charging session, simply wave your ChargePoint card in front of the station's card reader or use the 'Stop Charging' feature on the ChargePoint mobile app.
- Once you've ended the session, the station will display the duration and cost of your charging session. You can review all of your charging data through your ChargePoint account.

Maintenance and Service

Every ChargePoint charger comes with a full one-year Manufacturers' parts and labor warranty (see attached). Station Owner, Installation, and Partner Support is available U.S. and Canada

8 One can find the direct link to the EV charging video tutorial at https://www.chargepoint.com/how-to-charge/

Toll Free: 1-877-850-4562 (Mon - Fri, 5 AM PST - 6 PM PST). 24/7/365 support is provided via the Customer Service Call Center. 1-888-758-4389.

Many issues can be diagnosed and remedied remotely through the network operating system. Occasionally chargers require a service call. Warranty service is provided by ChargePoint.

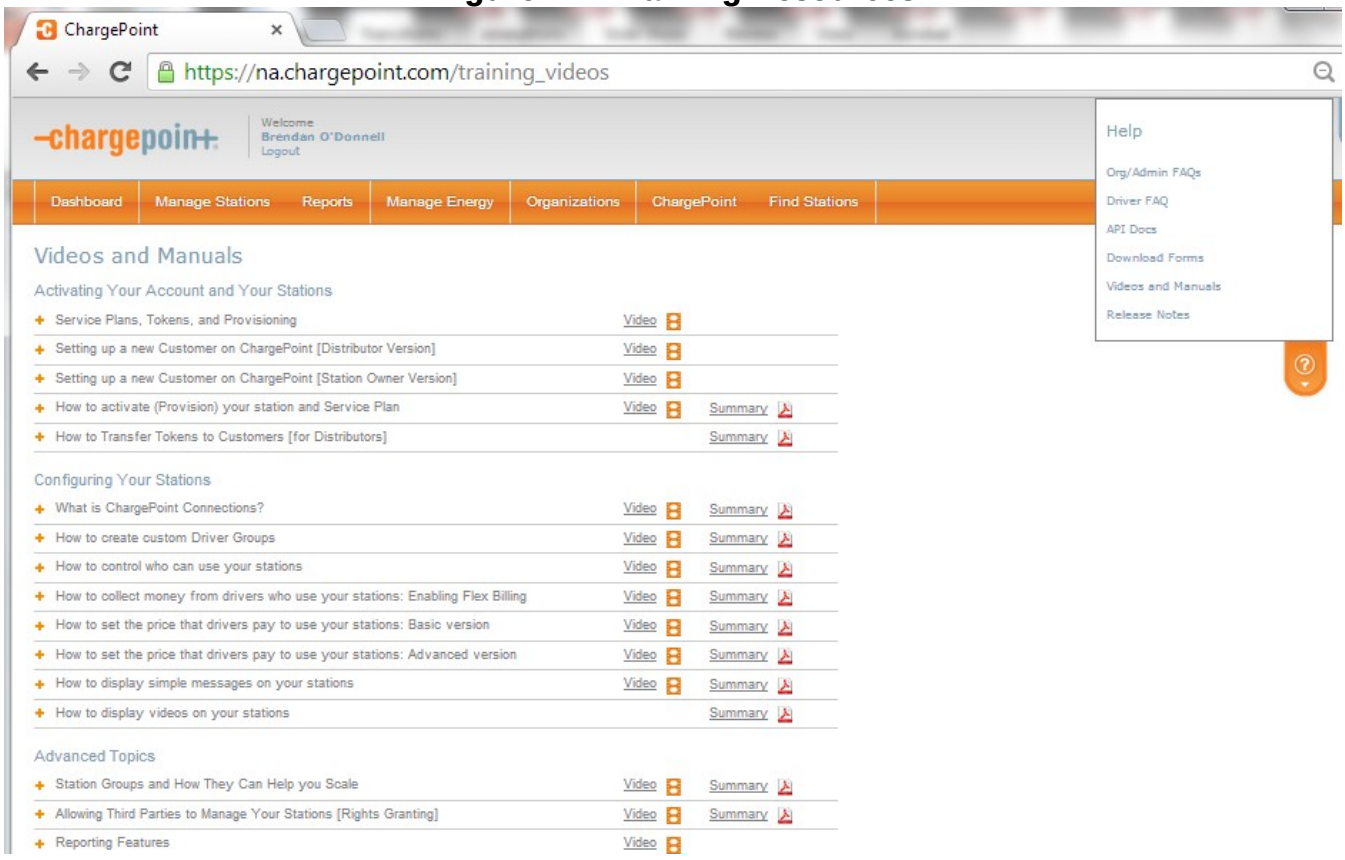
Disney has purchased a three year ChargePoint extended warranty. For non-warranty issues, Disney has been successfully maintaining its existing 30 charging units since 2013 and commits to do the same for the new units under the CEC grant program. CFCI provides Disney with non- warranty service on an as-needed basis with 24 hour response time.

Operating hours for the chargers are 24/7 for the hotel locations (Disneyland Hotel, Paradise Pier Hotel and Gran California Hotel) and coincide with the park operating hours for the Mickey & Friends location.

Training

ChargePoint has a very well-organized on-line resource library of training materials on any topic related to activating, configuring and troubleshooting charging stations. This library is already available to Disney under their existing ChargePoint organization ID. CFCI will utilize this library in providing hands on and on-line training resources for Disneyland Resorts charging locations. Figure 41 shows a screen shot of the training resources available.

Figure 41: Training Resources



Source: ChargePoint

The project consists of four sites in two types of locations--hotels and Disneyland parking. Each site will be offered a two hour startup training session covering the operation of the unit, charging courtesy and simple troubleshooting to assist drivers. Additional training will be provided to Disney's designated Network Operations personnel on how to check the portal for usage, adjust radio groups and changes pricing. A designated CFCI person will be available for follow up questions.

CFCI will be using a variety of training materials provided by the manufacturer to assist in training Disney personnel on the operation of the charging units and the network operating system. The initial activation of the stations will be performed by CFCI. In addition, CFCI will assist Disney in adding the new locations and chargers to its existing account on the ChargePoint network.

Table 4 summarizes the type of training to be provided to each category of personnel.

Table 4. Personnel Training

Site/Function	Valets	Parking Attendants	Facilities Personnel	Hotel Front Desk	Network Operations Personnel
Disneyland Hotel					
Operation of the charging unit	x	x	X	x	x
Simple troubleshooting at the site (RFID or credit cards not working)	x	x	X	x	
Driver Q and A	x	x	X	x	x
Overview of Network	x	x	X	x	x
Queuing and Charging Courtesy	x	x		x	
Fee Structure/Payment Options	x	x		x	x
Disabled Access	x	x	X	x	
Paradise Pier Hotel					
Operation of the charging unit	x	x	X	x	x

Simple troubleshooting at the site (RFID or credit cards not working)	x	x	X	x	
Driver Q and A	x	x	x	x	x
Overview of Network	x	x	x	x	x
Queuing and Charging Courtesy	x	x		x	
Fee Structure/Payment Options	x	x		x	x
Disabled Access	x	x	x	x	
Grand California Hotel					
Operation of the charging unit	x	x	x	x	x
Simple troubleshooting at the site (RFID or credit cards not working)	x	x	x	x	
Driver Q and A	x	x	x	x	x
Overview of Network	x	x	x	x	x
Queuing and Charging Courtesy	x	x		x	
Fee Structure/Payment Options	x	x		x	x
Disabled Access	x	x	x	x	
Mickey and Friends					
Operation of the charging unit		x	x		x
Simple troubleshooting at the site (RFID or credit cards not working)		x	x		
Driver Q and A		x	x		x
Overview of Network		x	x		x
Queuing and Charging Courtesy		x			

Fee Structure/Payment Options	x	x		x	x
Disabled Access	x	x	x	x	

Source: CALSTART

The two hour training program will include the following attached materials:

1. ChargePoint Training PowerPoint
2. Attached handout materials about the CT 4000 chargers
3. Video on charger usage and a hands-on demonstration with an installed charger Charging Station Usage Plans

Usage Plans

Disney already has existing ChargePoint chargers at Team Disney and Mickey and Friends so there is already an existing Disney organization on the ChargePoint network. Disneyland Resort has already established pricing policies for usage that recover the cost of operating and maintaining the stations. Pricing may be changed from time to time to accommodate different groups of drivers or to reflect changes in operating costs.

The three new charging locations are at Disneyland Resort hotels and are primarily for the use of hotel guests. In some cases the charging may be provided as part of valet services, particularly for disabled guests.

As part of the activation of the stations, CFCI will assist Disney in setting up separate pricing groups and usage policies for each of the four new locations. CFCI will also provide training for Disney personnel at each location on the following:

- how to operate the chargers
- how to set up separate groups of users on the network
- how to set up and change pricing
- how to view usage reports
- how to set up scrolling messages
- how to view and respond to station alarms
- how to provide assistance to drivers

Disney will be doing marketing to promote the new charging locations and providing information about the chargers staff and guests. Based on the current high usage levels for existing the chargers, we expect the chargers to be heavily used.

Limited Product Warranty

This Limited Product Warranty applies to you, a customer who has purchased CHARGEPOINT's Charging Stations and/or related products ("Products") from CHARGEPOINT, INC., or one of its authorized distributors and not for resale.

LIMITED ONE-YEAR WARRANTY: Subject to the exclusions from warranty coverage set forth below, CHARGEPOINT warrants that the Product will be free from any defects in materials and/or workmanship (the "Limited Warranty") for a period of one (1) year after the date of the initial installation of the Product (the "One-Year Warranty Period"). If the Product becomes defective in breach of the Limited Warranty, CHARGEPOINT will, upon written notice of the defect received during the One- Year Warranty period, either repair or replace, at ChargePoint's election, the Product if it proves to be defective; provided, that CHARGEPOINT will not be responsible for the cost of any labor associated with the repair or replacement of any defective Product.

TWO-, THREE-, FOUR- OR FIVE-YEAR EXTENDED WARRANTY (Additional Charge Applies): Subject to the exclusions from warranty coverage set forth below, if you have purchased an extended warranty, and if the Product becomes defective in breach of the Limited Warranty above at any time during the extended warranty period after the date of the initial installation of the Product, CHARGEPOINT will, upon written notice of the defect received during the extended warranty period, either repair, provide replacement parts for the defective parts of the Product or replace the Product, at ChargePoint's election, if it proves to be defective; provided, that CHARGEPOINT will not be responsible for the cost of any labor associated with the repair or replacement of any defective Product.

CHARGEPOINT's Options: You acknowledge that replacement products provided by CHARGEPOINT under each of the Limited Warranty and the Extended Warranty may be re-manufactured or reconditioned Products or, if the exact Product is no longer manufactured by CHARGEPOINT, a Product with substantially similar functionality ("Replacement Products"). Any Replacement Products so furnished will be warranted for the remainder of the original Warranty Period or ninety (90) days from the date of delivery of such Replacement Product, whichever is greater. Should CHARGEPOINT be unable to repair or replace the Product, CHARGEPOINT will refund the purchase price of the Product.

EXCLUSIONS FROM LIMITED WARRANTY AND EXTENDED WARRANTY

IMPORTANT: The Limited Warranty and, if purchased, the Extended Warranty on your Product shall not apply to defects, or service repairs, resulting from any of the following:

Alteration or modification of the Product in any way not approved in writing by CHARGEPOINT.

Vandalism.

Abuse, damage or otherwise being subjected to problems caused by negligence (including but not limited to physical damage from being struck by a vehicle) or misapplication, or use of the Products other than as specified in the applicable CHARGEPOINT documentation.

Installation or relocation of the Products unless performed by CHARGEPOINT or by a ChargePoint authorized installer or service provider.

Improper site preparation or maintenance.

Damage as a result of accidents, extreme power surge, extreme electromagnetic field, acts of nature or other causes beyond the control of CHARGEPOINT.

Use of the Product with software, interfacing, parts or supplies not supplied by CHARGEPOINT.

You are responsible for the proper installation and maintenance of the Product. Any service or repairs beyond the scope of the Limited Warranty or the Extended Warranty above are subject to CHARGEPOINT's then prevailing current labor rates and other applicable charges.

Third Party Products. The Limited Warranty and Extended Warranty are exclusive of products manufactured by third parties ("Third Party Products"). If such third party manufacturer provides a separate warranty with respect to the Third Party Product, CHARGEPOINT will include such warranty in the packaging of the CHARGEPOINT Product.

OBTAINING WARRANTY SERVICE

To obtain warranty service you must: (a) obtain a return materials authorization number ("RMA#") from CHARGEPOINT by contacting 1-877-370-3802 (or for customers outside the U.S., contact 408-370-3802) and ask for Customer Service, and (b) deliver the Product, in accordance with the instructions provided by CHARGEPOINT, along with proof of purchase in the form of a copy of the bill of sale including the Product's serial number, contact information, RMA# and detailed description of the defect, in either its original package or packaging providing the Product with a degree of protection equivalent to that of the original packaging, to CHARGEPOINT at the address below. You agree to obtain adequate insurance to cover loss or damage to the Product during shipment.

If you obtain an RMA# and return the defective Product as described above, CHARGEPOINT will pay the cost of returning the Product to CHARGEPOINT. Otherwise, you agree to bear such cost, and prior to receipt by CHARGEPOINT, you assume risk of any loss or damage to the Product. CHARGEPOINT is responsible for the cost of return shipment to you if the CHARGEPOINT Product is found to be defective.

Returned products which are found by CHARGEPOINT to be not defective, returned out-of-warranty or otherwise ineligible for warranty service will be repaired or replaced at CHARGEPOINT's standard charges and shipped back to you at your expense.

At CHARGEPOINT's sole option, CHARGEPOINT may perform repair service on the Product at your facility, and you agree to provide CHARGEPOINT with all reasonable access to such facility and the Product, as required. On-site repair service is not available outside the United States.

All replaced parts, whether under warranty or not, are the property of CHARGEPOINT.

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THE LIMITED WARRANTY SET FORTH ABOVE IS EXCLUSIVE AND NO OTHER WARRANTY, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED BY CHARGEPOINT, TO THE MAXIMUM EXTENT PERMITTED BY LAW. THERE ARE NO OTHER WARRANTIES RESPECTING THE PRODUCT AND DOCUMENTATION AND SERVICES PROVIDED UNDER THIS AGREEMENT,

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CHARGEPOINT SPECIFICALLY DOES NOT WARRANT THAT ANY SOFTWARE WILL BE ERROR FREE OR OPERATE WITHOUT INTERRUPTION.

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THE LIMITATIONS SET FORTH HEREIN ARE INTENDED TO LIMIT THE LIABILITY OF CHARGEPOINT AND SHALL APPLY NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

Some states or jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

THIS LIMITED PRODUCT WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE OR JURISDICTION TO JURISDICTION.

ADDITIONAL INFORMATION

This Limited Product Warranty is valid for U.S.A. and Canada only.

This Limited Product Warranty shall be governed by and construed in accordance with the laws of the State of California, U.S.A., exclusive of its conflict of laws principles. The U.N. Convention on Contracts for the International Sale of Goods shall not apply.

This Limited Product Warranty is the entire and exclusive agreement between you and CHARGEPOINT with respect to its subject matter, and any modification or waiver of any provision of this statement is not effective unless expressly set forth in writing by an authorized representative of CHARGEPOINT.

The Limited Product Warranty is not transferable by you to anyone else.

All inquiries or claims made under this Limited Product Warranty must be sent to CHARGEPOINT's address as follows:

ChargePoint, Inc.

1692 Dell Avenue

Campbell, California 95008-6901

Tel: 408-370-3802

Fax: 408-370-3847

Email: service@chargepoint.com