City of Murrieta

Electric Vehicle Charging Stations Project Final Report

MSRC Contract ML18087

Submitted July 27, 2020

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City of Murrieta Department of Public Works/Engineering

Prepared for the Mobile Source Air Pollution Review Committee (MSRC) under the AB 2766 Discretionary Fund Work Program.

Acknowledgements

The City of Murrieta would like to thank several partners that were instrumental in making this project a success:

- Mobile Source Air Pollution Reduction Review Committee
- Center for Sustainable Energy
- Southern California Edison

This report was submitted in fulfillment of MSRC Contract ML18087 and the Electric Vehicle Charging Station Project by the City of Murrieta under the (partial) sponsorship of the Mobile Source Air Pollution Reduction Review Committee (MSRC). Work was completed as of December 16, 2019.

Disclaimer

The statement and conclusions in this report are those of the contractor and not necessarily those of the Mobile Source Air Pollution Reduction Review Committee (MSRC) or the South Coast Air Quality Management District (South Coast AQMD). The mention of commercial products, their sources or their uses in connection with material reported herein is not to be construed as either an actual or implied endorsement of such products.

Project Overview

The City of Murrieta has completed a lengthy project to install electric vehicle charging stations (EVCS) at two city facilities, City Hall and the Senior Center in December 2019. At each location, a dual head Level 2 charger and three Level 3 DC Fast Chargers were purchased and installed.

The process began in March 2018, when an EVCS vendor that the City has previously purchased stations from, ChargePoint, informed staff of the funding opportunity from MSRC. City staff proceeded with the application process and was informed by MSRC that funding would be reserved for the City's project. Initially, the project consisted of one Level 2 and one Level 3 EVCS at each City location, and in June 2018, the City Council authorized staff to proceed based on that information. However, an additional funding opportunity became available through another organization, the Center for Sustainable Energy's California Electric Vehicle Infrastructure Project (CALeVIP). A decision was made to increase the scope of the project to install an additional two Level 3 EVCS at each location, for a total of one Level 2 and three Level 3 at each location. Funding for the CALeVIP grant opportunity was secured in September 2018. Increasing the scope of the project required that the City treat the project as a formal public works project since the estimated cost of the project was going to approach $700,000.

The first requirement for the project was to develop a civil and electrical design plan that would be part of a formal bid packet. The City engaged an engineering design firm in February 2019. There were several delays due to later changes in the design. First, the City changed the parameters for the electrical requirements to ensure that the new electrical switchgear would be able to accommodate additional EVCS in the future. Normally, new EVCS at an existing facility might be able to connect to existing facility infrastructure. However, for this project, the existing infrastructure would not be able to accommodate the new stations. The City would need new switchgear, a new meter connection, step down transformers and in the case of both locations a brand new transformer from Southern California Edison (SCE) which would be dedicated to serving the new EVCS. The new infrastructure required considerable coordination between the engineering design firm and SCE. There was also an additional unknown variable, which was how much the new transformer connection from SCE would cost. In the end, for both locations, SCE absorbed all the additional capital equipment costs on their side of the new meter and only charged the City approximately $2,500. SCE will recoup their capital outlay costs over several years via the monthly billing for the new meters.

While the design work was progressing, staff elected to purchase the EVCS equipment directly from the vendor, ChargePoint. Normally, for a public works project, the bid packet will include requirements for all equipment and then it would be left up to the bidders to include a cost for furnishing the conforming equipment with their bid, no matter what brand of equipment they select. However, since the City already had two Level 2 EVCS from ChargePoint deployed at the Library and at City Hall, the City wanted to be sure that ChargePoint equipment would be used for the project because it would make maintaining the equipment more efficient. Staff went to Council to seek a finding that it would be in the public interest to use only ChargePoint equipment and authorize the City to purchase the equipment directly from the vendor and not have contactors secure the equipment. This was completed in April 2019 and the City received the EVCS equipment in May 2019.

The design plans were substantially completed at the end of May 2019, which allowed the City to release the public works bid package to contractors on June 3, 2019. The City received bids from eight contractors, and the construction and installation bids ranged anywhere from $286,832 to $623,705. The lowest responsible bidder, Doty Bros Construction, was selected and the City Council approved a contract with the vendor for $286,832, on July 16, 2019. A Notice to Proceed was issued and construction commenced on October 21, 2019. The delay between executing the contract and commencing work was due to the need to closely coordinate construction activities with SCE.

Each site required the placement and installation of a new transformer service from SCE. The City contractor was tasked with preparing the site and trenching for electrical conduit that would connect the new transformer to the new meter service. SCE construction forces were responsible for placing the new transformer, installing electrical line through the conduit from the new transformer to the new electric meter location and installing the new meter.

At City Hall, the existing transformer for the parcel, which serves the City Hall building, required replacement in order to accommodate the extra load and to change the existing transformer from a terminal transformer to one that is in a series and able to flow power to the new transformer, which would be placed several hundred feet away in the front parking lot of City Hall. In order to preserve the parking lot surface, staff elected to bore a tunnel under the parking lot to install the electrical conduit to connect the two transformers.

The trenching and civil improvements to the locations, including correcting the grading of the parking surfaces to comply with ADA requirements, were completed by mid-November. Once completed, then SCE construction crews installed the transformers, ran electrical lines in the conduit and completed all required work on the SCE side of the service. This required weekend work by SCE crews because power needed to be turned off at both facilities while connections were made to the transformers.

The City contractor then installed the main switchgear and EV charging station equipment over a one week period. There were no issues with the equipment or installation and City inspectors accepted the work the first week of December.

The stations went live on December 16, 2019.

Project Costs

City staff tracked project costs separately by location and funding source in order to assist grant sources with the review of expenses. Each grant would accept costs up to either a capped dollar amount or 75% of the project expenses, whichever was lower. Expenses that were common to each site were attributed to each funding source equally, up to 75%. Staff initially budgeted $788,520 for the entire project. The two grant funding sources would contribute up to $423,520, and the remainder would be paid for using AQMD Subvention Funds. The following table details the project expenses.

City of Murrieta 2019 EV Charging Station Project Budget & Actual Costs

Funding Sources

	Funding Amount	Max % of Project	EV Charging Heads
CalEVIP Grant	$ 280,000.00	75% Max	4
MSRC Grant	$ 143,520.00	75% Max	6
AQMD Subvention Funds	$ 365,000.00		
Total	**$ 788,520.00**		10

City Hall

Level III DC Fast Chargers	**Qty**	**Unit Cost**		**CalEVIP (2 Heads) x 75%**	**MSRC (1 Heads x 75%)**	**AQMD Remainder**	**Total**
CPE250 (62.5 kw DCFC)	3.00	$ 34,010.00		$ 51,015.00	$ 25,507.50	$ 25,507.50	$ 102,030.00
Upgrade from 50kW to 62.5kW	3.00	$ 4,750.00		$ 7,125.00	$ 3,562.50	$ 3,562.50	$ 14,250.00
5yrs DC Network/Cloud Services	3.00	$ 2,559.00		$ 3,838.50	$ 1,919.25	$ 1,919.25	$ 7,677.00
5yrs CPE250 Maintenance (per PM)	3.00	$ 15,500.00		$ 23,250.00	$ 11,625.00	$ 11,625.00	$ 46,500.00
Level II Chargers (Dual Head)	**Qty**	**Unit Cost**		**(0 Heads) x 75%**	**(2 Heads x 75%)**	**Remainder**	
CT4000 (dual L2 unit)	1.00	$ 5,863.00		$ -	$ 4,397.25	$ 1,465.75	$ 5,863.00
5yrs AC Network/Cloud Services	2.00	$ 1,105.00		$ -	$ 1,657.50	$ 552.50	$ 2,210.00
5yrs CT4000 Maintenance	1.00	$ 2,495.00		$ -	$ 1,871.25	$ 623.75	$ 2,495.00
Equipment Subtotal				**$ 85,228.50**	**$ 50,540.25**	**$ 45,256.25**	**$ 181,025.00**
Tax	8.75%			$ 4,463.81	$ 2,616.67	$ 2,360.16	$ 9,440.64
				(50% of cost) x 75%	**(50% of cost) x 75%**	**Remainder**	
Shipping & Handling (50% of Materials Order)	1.00	$ 860.00		$ 322.50	$ 322.50	$ 215.00	$ 860.00
Design Services (50% of Invoice)	1.00	$ 15,148.75		$ 5,680.78	$ 5,680.78	$ 3,787.19	$ 15,148.75
Construction & Installation	1.00	$ 158,236.32		$ 59,338.62	$ 59,338.62	$ 39,559.08	$ 158,236.32
Construction Contingency (15%)	1.00	$ -		$ -	$ -	$ -	$ -
SCE Design & Site Upgrade (Net Cost)	1	$ 2,418.30		$ 906.86	$ 906.86	$ 604.58	$ 2,418.30
City Hall Project Site Total				**$ 155,941.08**	**$ 119,405.68**	**$ 91,782.25**	**$ 367,129.01**

Senior Center										
					CalEVIP	MSRC	AQMD			
Level III DC Fast Chargers	**Qty**	**Unit Cost**			**(2 Heads) x 75%**	**(1 Heads x 75%)**	**Remainder**	**Total**		
CPE250 (62.5 kw DCFC)	3.00	$	34,010.00	$	51,015.00	$ 25,507.50	$ 25,507.50	$	102,030.00	
Upgrade from 50kW to 62.5kW	3.00	$	4,750.00	$	7,125.00	$ 3,562.50	$ 3,562.50	$	14,250.00	
5yrs DC Network/Cloud Services	3.00	$	2,559.00	$	3,838.50	$ 1,919.25	$ 1,919.25	$	7,677.00	
5yrs CPE250 Maintenance (per PM)	3.00	$	15,500.00	$	23,250.00	$ 11,625.00	$ 11,625.00	$	46,500.00	
Level II Chargers (Dual Head)	**Qty**	**Unit Cost**			**(0 Heads) x 75%**	**(2 Heads x 75%)**	**Remainder**			
CT4000 (dual L2 unit)	1.00	$	5,863.00	$	-	$ 4,397.25	$ 1,465.75	$	5,863.00	
5yrs AC Network/Cloud Services	2.00	$	1,105.00	$	-	$ 1,657.50	$ 552.50	$	2,210.00	
5yrs CT4000 Maintenance	1.00	$	2,495.00	$	-	$ 1,871.25	$ 623.75	$	2,495.00	
Equipment Subtotal				$	85,228.50	$ 50,540.25	$ 45,256.25	$	181,025.00	
Tax	8.75%			$	4,463.81	$ 2,616.67	$ 2,360.16	$	9,440.64	
					(50% of cost) x 75%	(50% of cost) x 75%	Remainder			
Shipping & Handling (50% of Materials Order)	1.00	$	860.00	$	322.50	$ 322.50	$ 215.00	$	860.00	
Design Services (50% of Invoice)	1.00	$	15,148.75	$	5,680.78	$ 5,680.78	$ 3,787.19	$	15,148.75	
Construction & Installation	1.00	$	121,605.89	$	45,602.21	$ 45,602.21	$ 30,401.47	$	121,605.89	
Construction Contingency (15%)	1.00	$	-	$	-	$ -	$ -	$	-	
SCE Design & Site Upgrade (Net Cost)	1	$	-	$	-	$ -	$ -	$	-	
Senior Center Project Site Total				$	141,297.80	$ 104,762.41	$ 82,020.07	$	328,080.28	
Total Project Expenses				$	297,238.88	$ 224,168.09	$ 173,802.32	$	695,209.29	
	Budget			$	280,000.00	$ 143,520.00	$ 365,000.00	$	788,520.00	
	Actual Costs by Funding Source			$	280,000.00	$ 143,520.00	$ 271,689.29	$	695,209.29	

Station Usage

The stations have been well received by the public and have gotten a lot of usage. Our City Hall is located near the intersections of two major highways, Interstates 15 and 215, so they have become popular with commuters. We also have several employees that have purchased new electric vehicles in the past 6 months because of the convenience of the new charging stations.

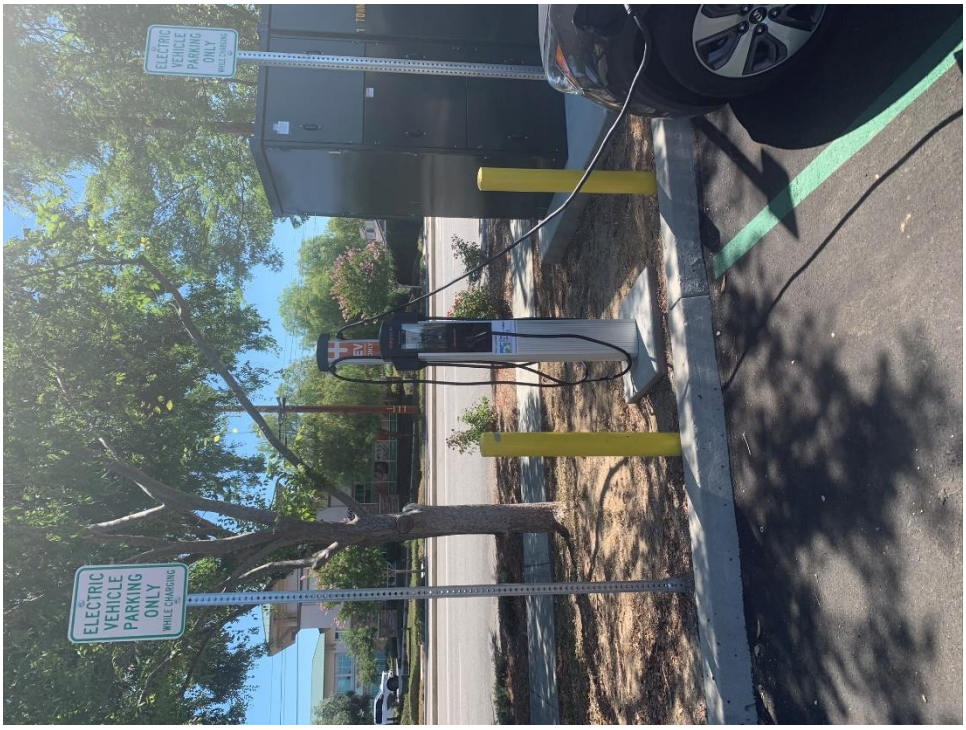
The City currently provides all users with free charging for the first 2 hours and then $3.00 for each hour thereafter. The City will be revising the pricing structure closer to the end of the year in an effort to recoup some of the energy costs.

Total Usage, 01/01/20 – 06/30/20

Stations (Heads)	Transaction Quantity	Total Charging Time (Hours)	Energy (kWh)	Gasoline Savings (Gal)
All (14)	3,679	3,510	52,361	6,571
Level 3 DC Fast (6)	2,129	1,388	42,608	5,347
Level 2 (8)	1,550	2,122	9,753	1,224
MSRC Sponsored (6)	1,675	1,657	19,083	2,395
Level 3 DC Fast (2)	740	459	13,219	1,659
Level 2 (4)	935	1,198	5,864	736

EV Charging Station Pictures

City Hall Station

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Senior Center Location


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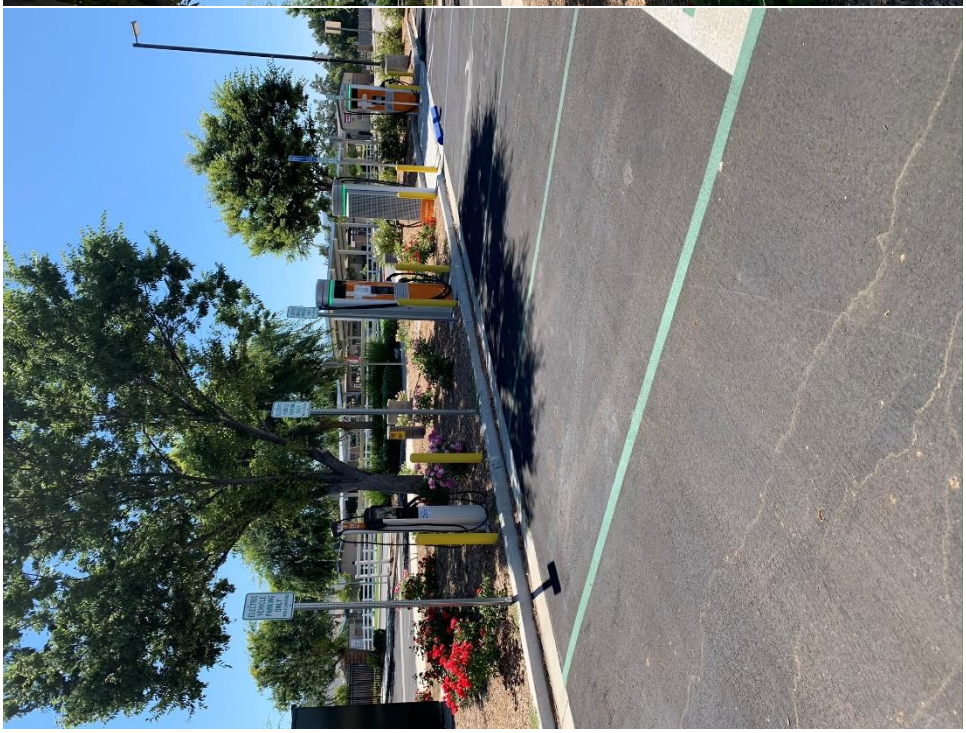
EV


VEHICLE
PARKING
ONLY
WHILE CHARGING



Public Outreach

The City has utilized press release, monthly newsletter, and social media posts to spread the word to our community that the City has constructed new charging stations.

Press Release:

ss Releases

Posted on: December 9, 2019

Murrieta Expands EV Charging Capacity

December 6, 2019

Contact: Robin Godfrey, Public Information Officer: 951-461-6007

FOR IMMEDIATE RELEASE

Murrieta Expands EV Charging Capacity at City Facilities

On Friday, December 6, 2019, the City of Murrieta unveiled six new ChargePoint electric vehicle charging stations at City Hall and the adjacent Senior Center. Each location received three single head, Level 3 fast chargers, which can provide 250 miles of range per hour; and a dual head Level 2 charger, which provides about 25 miles of range per hour.

When combined with the existing dual head Level 2 chargers at City Hall and the Library, there is now space for 14 cars to charge simultaneously at the City sites. All chargers are accessible to the public 24 hours a day.

Initial charging fees will remain free for the first two hours and $3 per hour after that. Over the next few months, the City will assess use and electrical cost and may make later adjustments, with the goal of running the stations at cost.

Murrieta Mayor Kelly Seyarto explains how expanding our EV charging capacity serves the community, the environment and City government.

"Sales of electric cars in California rose nearly 64% in the first half of this year. We're committed to providing residents with the technology they need to keep these cars on the road, to supporting reduced emissions, and to bringing the latest technology to City Hall."

The City's vehicle fleet includes four Chevy Volt plug-ins.

The installation of the EV chargers was funded in part by grants from the Mobile Source Air Pollution Reduction Review Committee's (MSRC) Clean Transportation Funding program as well as several grants and AB 2766 Motor Vehicle Subvention funds. No general funds were used.

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Social Media: