CALIFORNIA ENERGY COMMISSION

California Energy Commission

Clean Transportation Program

FINAL PROJECT REPORT

Good Samaritan Hospital Workplace & Public Access Electric Vehicle Infrastructure

Prepared for: California Energy Commission

Prepared by: Good Samaritan Hospital

Gavin Newsom, Governor

July 2019 | CEC-600-2019-032

California Energy Commission

Veronia Aguas
Diane Smith
Kathleen Hatfield
Primary Author(s)

Good Samaritan Hospital
1225 Wilshire Blvd
Los Angeles, CA 90017
(213) 977-2121
www.goodsam.org

Agreement Number: ARV-13-050

Eric VanWinkle
Commission Agreement Manager

Elizabeth John
Office Manager
ADVANCED VEHICLE TECHNOLOGY OFFICE

Kevin Barker
Deputy Director
FUELS AND TRANSPORTATION

Drew Bohan
Executive Director

ACKNOWLEDGEMENTS

The Good Samaritan Hospital recognizes the California Energy Commission for its support of this project and the departments and organization listed below:

Good Samaritan Hospital: Executive Administration, Engineering, Finance, and Fund Development Departments

Sustainable Solutions Partners, Inc.

Los Angeles Department of Water and Power

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. 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 provide funding opportunities for Electric Vehicle Charging Infrastructure. In response to PON-13-606, the recipient submitted an application which was proposed for funding in the CEC's notice of proposed awards April 4, 2014 and the agreement was executed as ARV-13-050 on October 16, 2014.

ABSTRACT

The purpose of this final report is to document the process, approach, extent of success, and impact associated with the installation of electric vehicle charging infrastructure at four locations on a 6-acre campus of Good Samaritan Hospital. This project was made possible through the California Energy Commission grant ARV-13-050. This report also provides the data collected over six months and the emissions reductions realized.

The results from the project show that the installation of electric vehicle charging at the parking facilities was critical for public charging for visitors, residents living near downtown Los Angeles, and also workplace charging for employees and physicians.

Keywords: California Energy Commission, Good Samaritan Hospital, electric vehicle charging infrastructure, public charging, workplace charging.

Please use the following citation for this report:

Aguas, Veronica, Hatfield, Kathleen, Smith, Diane. Good Samaritan Hospital. Sustainable Solutions Partners. 2019. *Good Samaritan Hospital Workplace & Public Access Electric Vehicle Infrastructure*. California Energy Commission. Publication Number: CEC-600-2019-032

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Page

EXECUTIVE SUMMARY

This final report prepared for the CEC meets the reporting requirement of Agreement ARV-13-050 with the Good Samaritan Hospital in partnership with Sustainable Solutions Partners. This project installed and operated 24 chargers in four parking areas within two campus parking structures that are publicly accessible to electric vehicle drivers and community members in downtown Los Angeles, Good Samaritan Hospital employees, physicians and visitors. Overall, positive air quality impact is realized from the use of the charging infrastructure, and nearby community members are paying the daily parking fees.

Completion of this building and the services provided here projects a significant increase in the number of daily visitors to the campus, and Good Samaritan Hospital anticipates the need for additional electric vehicle supply equipment in the near future.

CHAPTER 1:
Project Introduction

Background

The Good Samaritan Hospital as shown in Figure 1, is located within the downtown area of Los Angeles. Good Samaritan Hospital is a local and regional destination of specialty healthcare in Southern California, and is located in one of the smoggiest regions of the United States. As a major employer, Good Samaritan Hospital participates in the South Coast Air Quality Management District (SCAQMD) regional air quality management plan by maintaining an Employee Commute Reduction Program.

The President and CEO of the hospital identified the need and opportunity to provide electric vehicle charging infrastructure because publicly accessible electric vehicle supply equipment (EVSE) was lacking in the downtown area. Physicians and staff were noticeably leading the charge in driving plug-in electric vehicles to the hospital but the infrastructure to support them was insufficient.

Figure 1: Good Samaritan Hospital

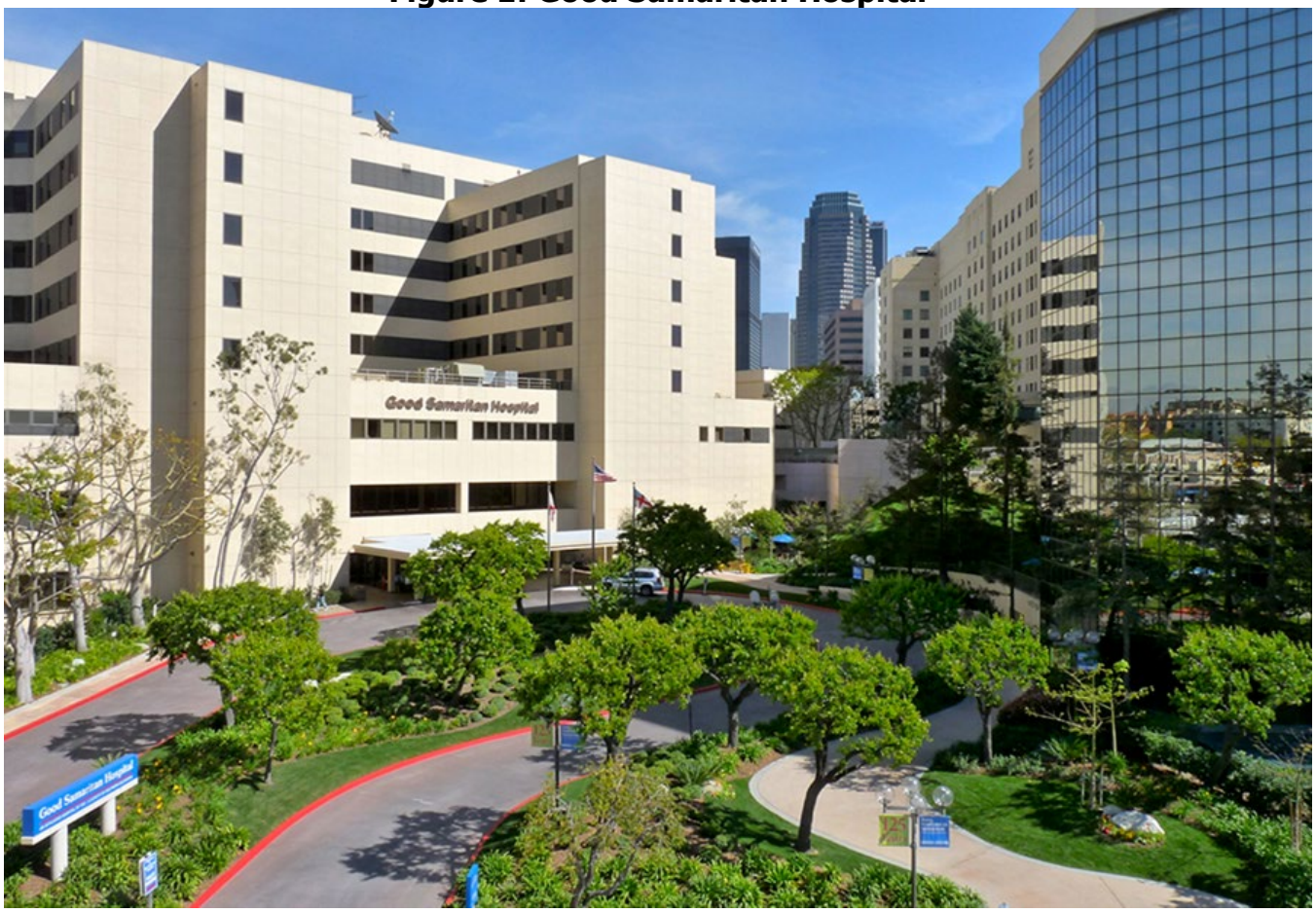


Photo Credit: Good Samaritan Hospital

Good Samaritan Hospital also planned for the future and completed the new medical pavilion (shown in Figure 2) in 2017. Construction of the medical pavilion ran concurrently with the

EVSE project. The medical pavilion is a 7-story ancillary building housing outpatient surgical suites, physician offices, a new state-of-the-art Linear Accelerator for the treatment of radiation oncology and other services. Completion of this building and the services provided here expected a significant increase in the number of daily visitors to the campus. Looking ahead, Good Samaritan Hospital anticipates the need for additional EVSE in the near future.

Figure 2: Good Samaritan Medical Pavilion

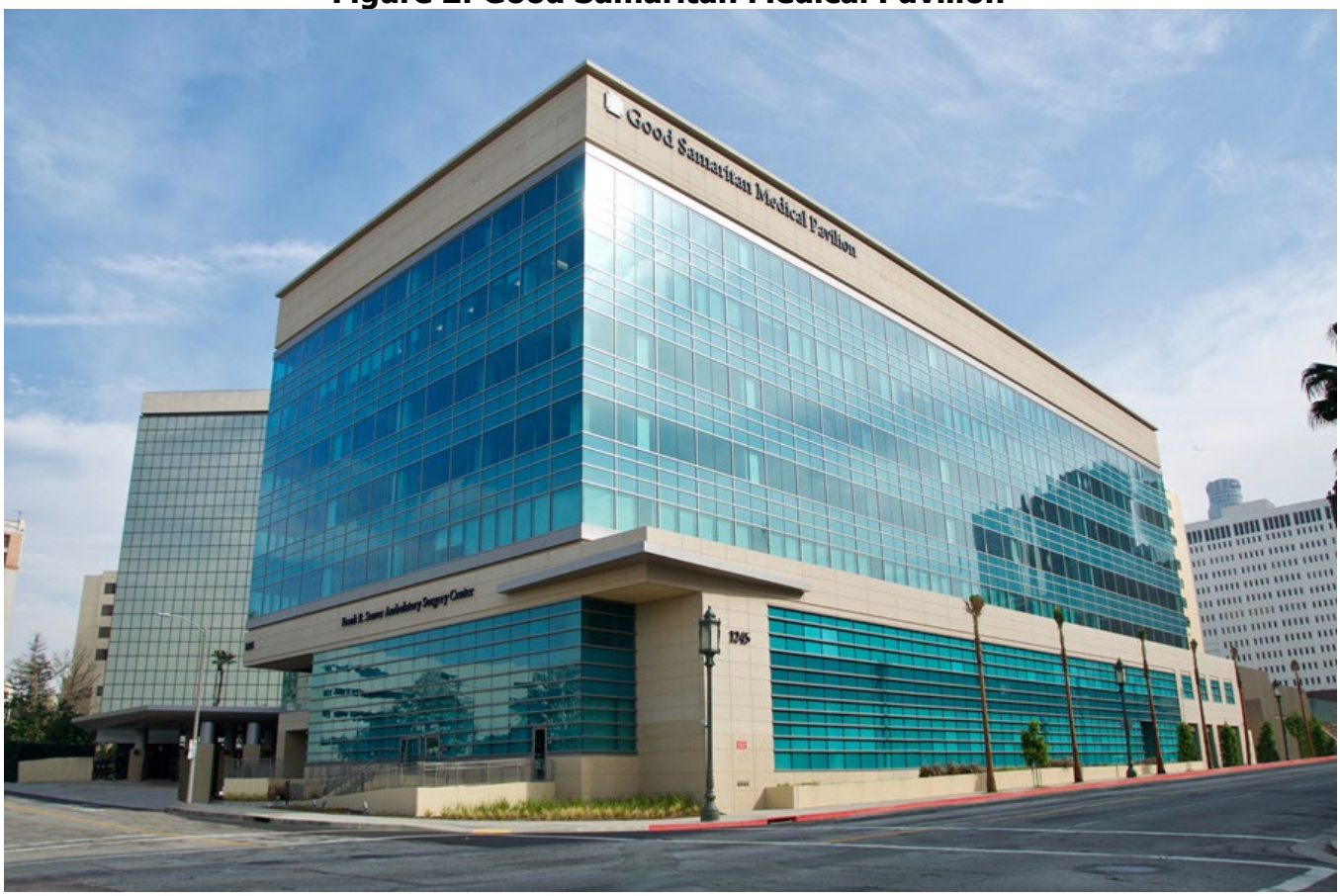


Photo Credit: Good Samaritan Hospital

Project Description

The Good Samaritan Hospital was the applicant and Sustainable Solutions Partners was the lead in developing a site plan for each parking structure, obtaining permits from the City of Los Angeles, performing installation, and overseeing inspections performed by the City. Moreover, the project was supported by the City of Los Angeles, Sustainable Solutions Partners Electric, and Athena Parking. Sustainable Solutions Partners was also instrumental in procuring the materials and scheduling the project accordingly.

The cost for construction and installation of the 24 charging stations was $138,660. Of this amount, the partners and supporters, which includes the SCAQMD, and Los Angeles Department of Water and Power (LADWP), provided a total of $41,549 in a combination of cash and in-kind services to offset the costs of construction, installation, and setup. The California Energy Commission grant of $97,111 covered the balance of the cost. Good Samaritan Hospital also received additional funds from the LADWP Electric Vehicle Charger Rebate Program, "Charge Up L.A.!"

CHAPTER 2: Installation and Development

The design, testing and configuration of the system was carried out in Metro Los Angeles. System installation required concrete scanning for core drilling to verify the equipment location and floor penetrations before installation of electrical conduit, a new 112.5kVA transformer, and all of the EVSE chargers could be installed. In all, 24 new wall-mounted EVSE chargers were installed on four different floors within two multi-level parking structures on either side of the hospital's campus as described in Table 1. All installation activities were completed by April 2015.

Table 1: Installed Chargers

Location	Floor Level	Level 2 Charger	Quantity
Lucas Garage	Basement visitors section	32A Clipper Creek	3
Lucas Garage	3rd level employees section	16A Clipper Creek	3
Shatto Garage	1st floor physicians section	32A Clipper Creek	3
Shatto Garage	3rd floor visitors section	16A Clipper Creek	6
Shatto Garage	3rd floor employee section	16A Clipper Creek	9

Source: Good Samaritan Hospital

On April 9, 2015, Good Samaritan Hospital unveiled the 24 new charging stations and provided an informational flyer (Appendix A) to participants.

Final Inspection at Charging Sites

The final inspection and testing was carried out by LADWP as well as the City of Los Angeles, who issued the permits for installation of the chargers. The City of Los Angeles Department of Building and Safety signed off on the construction at the sites, and the City of Los Angeles provided the final signoff of the project.

Level 2 Charging Station – Shatto Garage

Figures 3 and 4 show the actual deployment of two Clipper Creek Level 2 charging stations at 1317 Shatto Street.

Figure 3: Charging Station at Shatto Garage 3rd Floor Visitors Section

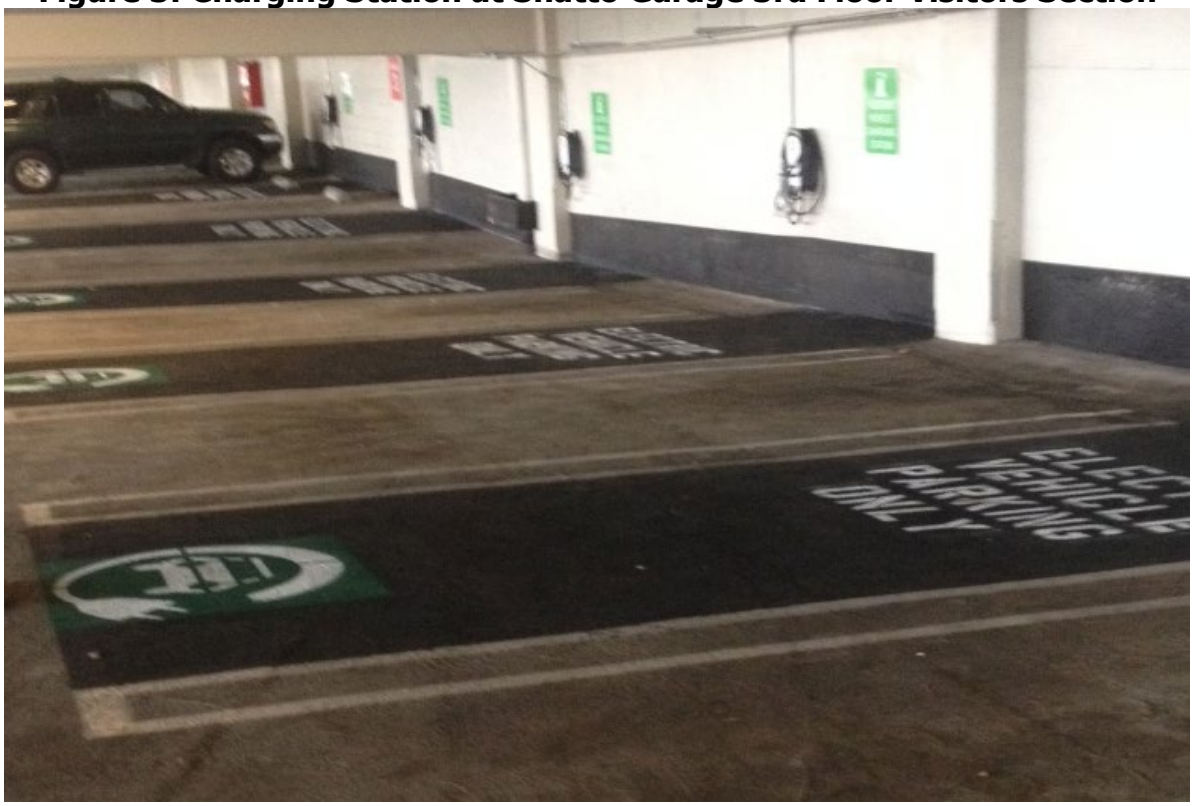


Photo Credit: Good Samaritan Hospital

Figure 4: Charging Station at Shatto Garage 3rd floor Employee Section

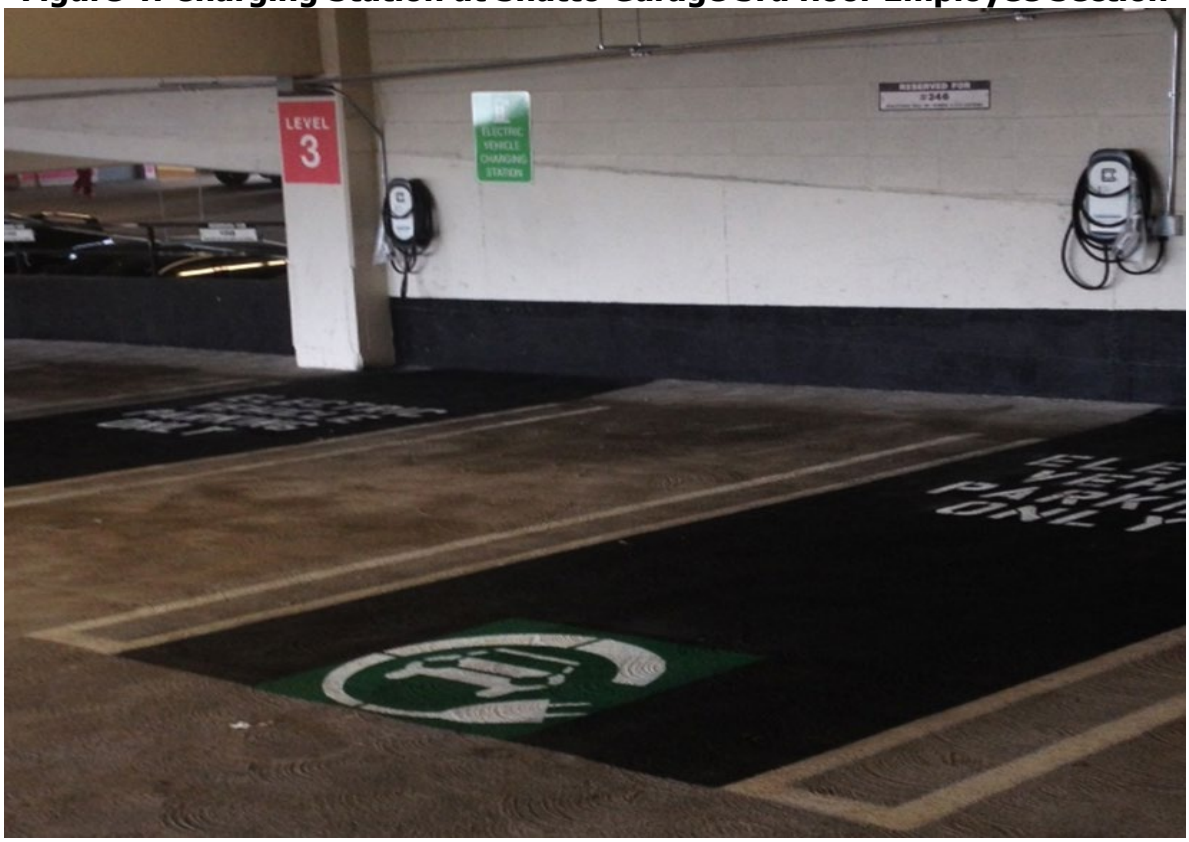


Photo Credit: Good Samaritan Hospital

Level 2 Charging Station – Lucas Garage

Figures 5 and 6 show the actual deployment of two Clipper Creek Level 2 charging stations at Lucas Garage located on 636 South Lucas Avenue.

Figure 5: Charging Station at Lucas Garage

Photo Credit: Good Samaritan Hospital

Figure 6: Charging Station at Lucas Garage

Photo Credit: Good Samaritan Hospital

Level 2 Charging by Employees and Physicians

In May 2015, employees, physicians, and the public began to use the charging stations. Figures 7 and 8 show employee and physician using the Clipper Creek Level 2 chargers.

Figure 7: Employee Charging a Ford Focus EV

Photo Credit: Good Samaritan Hospital

Figure 8: Physician Charging a Tesla EV

Photo Credit: Good Samaritan Hospital

LAWDP Sustainability Award

As a result of LAWDP's marketing endeavors to recognize sustainability within the City of Los Angeles, the LADWP recognized Good Samaritan Hospital with a First Place "Top Sustainability Award for the Electrification of Transportation" at their inaugural Sustainability Awards event in April 2016 as shown in Figure 9.

Figure 9: LAWDP Sustainability Award

Photo Credit: Good Samaritan Hospital

CHAPTER 3: Usage and Data Collection

Data collection started in May 2015 at all stations. The electrical usage for all EVSE was collected and recorded for six months.

The chargers will serve about 1,300 employees, over 400 physicians, and visitors on the hospital campus. Good Samaritan Hospital averages 15,275 daily parking permits for visitors to three different buildings on the campus each month.

Table 2 summarizes the data collected from May 2015 to October 2015 from this project.

Table 2: Electrical Usage in Kilowatt Hours (kWh)

Month	Lucas Structure	Usage over previous month	Shatto Structure	Usage over previous month
May 2015	374	------	1,708	------
June 2015	631	+257	3,951	+2,243
July 2015	1,026	+395	7,109	+3,158
August 2015	1,302	+276	10,000	+2,891
September 2015	1,529	+227	11,841	+1,841
October 2015	1,897	+368	13,042	+1,201
Subtotal	6,759		47,651	

Source: Good Samaritan Hospital

Good Samaritan Hospital applied SCAQMD's Rule 2202 Electric Vehicle Charging Stations Projects Quantification Protocol (Adopted May 1, 2015) and the Emission Factor Methodology for 2016 to calculate emissions reductions based on the aforementioned data in Performance Zone 1 for reactive organic gases, oxides of nitrogen, and carbon monoxide emissions. These pollutants are linked to either the combustion process of the engine or to the evaporation of the motor fuel from the storage and delivery system[1]. Table 3 provides a summary of emissions reduction resulting from the installation of the charging stations.

Table 3: Emissions Reductions

Emission Type	Quantity (Ibs/yr)
ROG	17.22
NOx	17.34
CO	188.7

Source: Good Samaritan Hospital

[1] South Coast Air Quality Management District Rule 2202 – On-Road Motor Vehicle Mitigation Options, Emission Factor Methodology. December 3, 2014.

CHAPTER 4: Conclusions

This project is a huge success not only for the Good Samaritan Hospital community but also for the commuters to downtown Los Angeles, City of Los Angeles, Good Samaritan Hospital employees, and prominent physicians. The project team thanks the Energy Commission, SCAQMD, LAWDP and other federal funding sources.

As indicated in Chapter 3 of this report, the use of the chargers increased during the data collection period through October 2015. In Good Samaritan Hospital's 2015 Transportation Report (composed from a survey that is 100 percent voluntary), employees identified 11 electric vehicles as their primary means of transportation. In the 2016 report however, the number increased to 31.

Good Samaritan Hospital is currently working with Sustainable Solution partners to make a private investment of additional EVSE in a restricted parking lot for physicians only. This project will install up to 12 new chargers designated only for physicians. Good Samaritan Hospital hopes this dedicated equipment will continue to promote electric vehicle adoption.

GLOSSARY

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

LOS ANGELES DEPARTMENT OF WATER AND POWER (LADWP) — An electric municipal utility serving the greater Los Angeles, California, region.

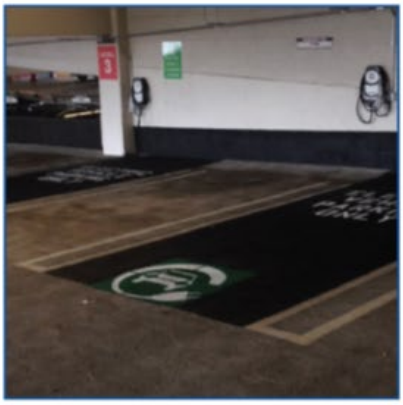
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) — The air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino counties. This area of 10,740 square miles is home to over 17 million people—about half the population of the whole state of California. It is the second most populated urban area in the United States and one of the smoggiest. Its mission is to clean the air and protect the health of all residents in the South Coast Air District through practical and innovative strategies.

APPENDIX A:
INFORMATIONAL FLYER

Good Samaritan Hospital
A Tradition of Caring

24 New Electric Vehicle Charging Stations

Shatto Garage 1st floor, physician section



Shatto Garage 3rd floor, employee section

Lucas Garage

On April 9th, Good Samaritan Hospital will be unveiling a total of 24 new electric vehicle charging stations, which are available to everyone working at or visiting the hospital.

Locations of the charging stations are as follows:

Shatto Garage on 1317 Shatto Street

- 3 charging stations in the physician section on the 1st floor
- 6 charging stations in the visitor section on the 3rd floor
- 9 charging stations in the employee section on the 3rd floor

Lucas Garage on 636 S. Lucas Avenue

- 3 charging stations in the visitor section on the basement level
- 3 charging stations in the employee section on the 3rd level

In partnership with the California Energy Commission, Good Samaritan Hospital aims to provide alternative fueling options as part of our initiative to become progressive in electric charging infrastructure installation and accessibility.

It is Good Samaritan Hospital's goal to increase the method of transportation options for our patients, visitors and employees. At the same time, Good Samaritan Hospital is proud to be on the forefront of providing new and innovative ways to protect the health and quality of life of our patients, community and environment.