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Integration of Public Electric Vehicle Charging Infrastructure into California Polytechnic State University Parking System

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Short Abstract Summary

This paper will outline the installation of 12 Level II electric vehicle stations and usage data over the first 12 month period of operation. Stations were installed at 2 separate locations to spread infrastructure across campus and allow both visitors and staff/students reliable access. A variety of data has been collected over the first 12 months of operation and progression of trends over this period will be presented. The data is analysed and as yearly totals and also broken down from into monthly, weekly, and daily trends. Usage data presented will include number of unique users, number of charges, charge duration, total energy per charge, total fee collected, number of charges per unique user, total energy consumed, station occupancy, and CO₂ displacement. The two sites are also compared to determine popularity of each location. It was found that for regular staff and student users one station was preferred while for visitors the alternate station was more popular. The stations have steadily increased occupancy over the first 6 months and have built to a more or less steady state for the remainder of the study period.

Authors

Dale S.L. Dolan (M'2001) is the Hood Assistant Professor of Electrical Engineering at California Polytechnic State University with experience in renewable energy projects, education, power electronics, and advanced motor drives. He received his BSc in Zoology in 1995 and BEd in 1997 from the University of Western Ontario. He received the BASc in Electrical Engineering in 2003, MASc. in Electrical Engineering in 2005 and PhD in Electrical Engineering in 2009 all from the University of Toronto. He is past chair on the board of directors of Windy Hills Caledon Renewable Energy, past chair of the OSEA (Ontario Sustainable Energy Association) Board and was an executive chair of the 7th World Wind Energy Conference 2008 (WVEC 2008). He is a past member of the management committee for the Ontario Green Energy Act campaign. His research interests involve sustainable/renewable energy generation, electric vehicles, energy storage, power systems, electromagnetics, and power electronics.