Greetings, Zaida Darley!

Primary Investigator and Co-Investigator contacts and Organization information is visible only to administrators.

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	Objective: The objective of this project is to reduce green-gas emission of the USF Tampa campus by efficiently using t1Eneswablectenergy s erchgolng cief Threey s as goll reey cacied nut 1End nmplected si the electricity grid; and (iii) design and implement a real-time monitoring and control Energy Management System (EMS) to inventory energy consumption, renewable energy generation and to switch off loads for energy saving. Description: The PV charging was established in 1995 and represents the first 20kW solar charging station in the U.S.A. Currently the charging station is not connected to the grid. To maximally use the solar energy, it is necessary to connect the solar charging station to the grid. The integration can certainly lower the net energy consumption at the USF Tampa campus. Another advantage is the USF golf carts could be charged via charging station powered by PV panels. One of the major tasks of the project is to purchase and install inverters to convert the dc electricity from the charging station to ac electricity at 120 volts and 60 Hz. The existing inverters were purchased in 1990s. In the past twenty years, power electronic technology has made significant improvement in terms of rating and control capability. There are three reasons to replace the existing inverters: low efficiency, lack of reactive power control capability, and incompatibility of the current communication standards. Low efficiency and lack of reactive power control reduce the economic benefits of using solar energy. The incompatibility of communication makes real-time monitoring and control difficulty to realize. The second major task of the project is to design and implement a charging station for USF golf carts. Not only the power generated by PV panels could be injected into utility grid, but also it could be used to charge USF golf carts. Normally, a USF golf cart needs 7 kWh energy to be fully charged, and the power rating of current PV panels is 10 kW. However, a battery charger and proper controller need to be designed in order to meet the charging requirements of the batteries in golf carts. If 80% of the energy generated by the PV panels could be used to charge golf carts, which could

	support the usage of 18 golf carts everyday. The third major task of the project is to design and build an EMS to inventory energy production and consumption in the USF Tampa campus. Moreover, the EMS will have the capability to switch off loads for energy saving. Measurements from the PV charging station will be integrated into the EMS. With a PC, we can access the EMS and check if the PV charging station is at work. Such monitoring system reduces the maintenance cost. Moreover, the EMS could optimize the use of energy generated by the PV station. Not only to support golf cart charging, but it also could supply electricity to the auxiliary services of USF buildings. Electric vehicle is a critical energy source in future smart grid. The golf carts at USF are great asset from smart grid point of view.
