CASE STUDY
Preliminary Financial Feasibility Analysis:
Pool Pump Variable Frequency Drive (VFD) Upgrades

City of San Fernando

December 2012

Project Summary

An energy savings opportunity was identified by analyzing the City of San Fernando's utility bills and evaluating energy efficiency and demand response potential in upgrading the pool recirculation pump systems at the City's Aquatic Center. The swimming pool currently operates with a constant speed circulation system that is sized to achieve health department mandated flow rates. However, pumping at maximum speed, especially when the pool is closed, leads to wasted energy and shorter useful life on the equipment due to overstressed conditions.

Upgrading San Fernando's Aquatic Center recirculation pump system with energy efficient technologies, such as a Variable Frequency Drive (VFD), presents a compelling opportunity to reduce energy bills, maintenance costs, and greenhouse gas emissions while enhancing the overall performance and efficiency of the pool's pumping equipment. The VFD can be utilized to adjust the speed of the pool pump motor and use only the required power to meet the pool's flow rate requirements.

The chart below provides a top-level preliminary financial feasibility analysis for the Aquatic Center project.

Preliminary Financial Feasibility Analysis

Project Summary (estimated):	Competitive Pool (50 HP)	Recreational Pool (25 HP)	Total
Project cost	$10,827	$12,869	$23,697
Utility rebate[1]	$5,414	$6,435	$11,848
Project cost after rebate	**$5,414**	**$6,435**	**$11,848**
On-peak demand incentive[1]	$2,108	$1,674	$3,783
kWh savings/yr.[2]	184,700	146,667	331,367
Energy cost savings/yr.[2]	$24,011	$19,067	$43,078
Simple payback period	3 months	4 months	

1) Because the City is not in a SCE Energy Leadership Partnership, the incentive cap for the 2010-2012 SCE customized solution program is only 50% of total project cost, or $0.09 per kWh savings/yr., whichever is less. On-peak demand reduction is $100/kW.
2) Savings calculations assume motors are 85% efficient, pool operates year-round (8,760 hrs./yr) and pump speed during non-operating hours is reduced to 60% with the VFD. Calculations provided are estimates only and actual energy and cost savings may differ from those presented in this report.

The project cost is based on supplying and installing the Pentair Acu Drive XS™ Variable Frequency Drive. The product is listed as an approved equipment by LA County and is utility approved through the customized solution, PM-21834, Non-residential pool pump VSD. Other similar products are available to the City.

This project is too small to merit financing options; therefore, it is recommended that the upgrades be funded with the use of internal funds. The Energy Network Energy Project Lease Financing is not a viable option since the project total does not meet the minimum lease requirement of $250,000.