

# Innovative Pool Pump Technology Delivers Radical Efficiency Gains

<b>1. Projected Program Budget</b>	<b>\$</b>	<b>500,000</b>
<b>2. Projected Program Impacts</b>		
MWh		1,209
MW (Summer Peak)		1.00
<b>3. Program Cost Effectiveness</b>		
TRC		2.03
PAC		3.86

## 4. Program Descriptors

Market Sector:	Residential
Program Classification:	local
Program Status:	INDEE

## 2. Program Statement

The improved technology allows for more precise control of the motor and pump system, as it involves monitoring the pool system for optimization. Rather than running constantly or at pre-set and possibly unnecessary intervals, the new technology monitors the pool conditions and adjusts the pumping system automatically. By incorporating variable speed drive, the pumping system can be run at lower levels much of the time, reducing both consumption and demand levels. The new system, called Intelliflo, also significantly outperforms the pool pump systems already receiving rebates through SCE.

## 3. Program Rationale

Pool pump systems are a serious and growing consumer of energy in the Southern California Edison (SCE) service territory. Some studies estimate that pool pumps are the third largest user of residential electricity. With as many as 500,000 residential pools in the service territory, we estimate that pool pumps are responsible for 1.3 billion kWh per year and a potential demand of as much as 750 MW. And the demand and consumption appears to be growing, as tens of thousands of new pools are built each year. While it is very difficult to break out the number of new pools and replacement pump systems by utility service territory, we estimate that as many as 50,000 new and replacement systems are installed each year in your territory. This provides an incredible opportunity to have a significant effect on lowering utility demand and customer costs at the same time.

## 7. Program Outcomes

To speed the market penetration of the Intelliflo variable speed drive pool pump system by offering training to pool sales companies, pool installers, service companies and pool owners so that they understand the energy benefits and savings potential available with the new system. To improve the impeller design and controller panel and reduce the cost of the Intelliflo variable speed drive pool pump system by \$300 per unit within two years.

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To independently test and verify energy and demand savings through the use of the Intelliflo pool pump system compared to standard systems and compared to existing systems receiving energy efficiency rebates.

## **8. Program Strategy**

This project is best understood if taken in two phases. The first and primary phase is the introduction of Intelliflo into the SCE market area. Because this system is more complex it requires a more intense training and verification system which is included in this proposal to ensure the highest quality results and customer satisfaction. Also, because this is a new technology, we are proposing a customer rebate program to help get the system marketed and installed. Because the variable speed drive system is not currently addressed in SCE's current rebate program, this model does not currently receive any subsidy for installation, despite the significant demand and energy savings. The marketing, training, verification and rebate program will help speed this new technology to market and provide significant benefits to this SCE program. The second phase of the program involves working toward improving the Intelliflo design and reducing the production cost. We believe that, given the support of SCE under this solicitation, the project team will be able to reduce the cost of the system so that it is within the range of current efficient systems.

## **9. Program Objectives**

Essentially, the goal is to reduce cost enough to achieve the price point of two speed pumping systems while delivering even greater efficiency. Additionally, because of the controller technology, it may be possible for SCE and other utilities to communicate with the pool pump systems and reduce demand during peak days, offering SCE yet another option for limiting demand on a broad scale.

## **10. Program Implementation**

### *Task 1 Implementation Timeline, Marketing Plan, Staffing Rates and Unit Pricing*

These items will be reviewed and considered during contract negotiations.

Marketing materials for SCE approval

Training schedule

Training materials

List of qualified installers

Accounting of systems installed

Reports of quality control

Reports of customer service

Impeller design evaluation

Controller pod design and fabrication

Energy savings reports

Other reports as needed

Staffing

For pricing of the Intelliflo pool pump system, we estimate that after vendor markup and installation, the cost to the customer will be approximately \$1,700.

### *Task 2 SCE Approved Purchase Order Kit*

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1. Program Procedures
  - a. Process Flow Diagram -
  - b. Process Flow Narrative
2. Scope of Work Document (Described in proposal)
  - a. Program Overview
  - b. Tasks
3. Program Budget (Attached to proposal)

### *Task 3*

#### *Build Tracking System*

This will include the Summary Report which describes the installed projects and their savings data. The tracking system will also include the Flat File.

### *Task 4*

#### *Develop Marketing Materials and Obtain SCE Approval*

For the most part, Pentair Water Pool and Spa already has much of the marketing materials already created for this particular technology. These created materials will be submitted to SCE for approval and can be modified to reflect the support of SCE, CPUC and the INDEE program.

### *Task 5 Implement Marketing Campaign*

Because of the nature of this product and sales mechanism, the marketing component is primarily directed to the vendors and installers. Fortunately, Pentair Water Pool and Spa is currently the largest provider of pool pump systems in California and has positive relationships with the majority of swimming pool installers and service companies. When implementing the marketing program, the fastest way to get the product to market is to work within existing relationships and service agreements with vendors and installers, moving through the established supply chain. Top vendors have already expressed interest in Intelliflo, and several custom installations have already been completed in California. With the support of SCE and the rebate process, the interested vendors will have the financial incentive to include the systems in their sales process.

### *Task 6 Enroll Customers*

As stated in Task 5, the project team has a long standing relationship with vendors, sellers and installers across the country and in the SCE territory. We intend to use these relationships with vendors, sellers and installers to roll out the new pool pump system. Some of this roll out is happening, but in order to achieve significant market penetration we will need to conduct training programs in many areas of the SCE territory.

### *Task 7 Install Energy Efficient Hardware, Issue Customer Rebates, and/or Perform Program Services*

This first part of this task is rather self explanatory and will be carried out by the qualified vendors and installers only after they have attended the required training programs. As modeled after the Energy Star Homes program, the project team will inspect each installer's first two installations of the pool pump system. If the systems are installed and working properly, then we will reduce the inspection protocol to every one

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in seven installations on a random basis. If the systems are not functioning properly, we will work with the vendor to fix any problems and follow up with inspections at the next two installations.

#### *Task 8*

##### *Inspect Installed Jobs*

The quality control objective for this project consists of several steps. In the first step, installers will not be certified to install the system until they have attended a training session on the operational characteristics of this new technology. Only upon completion will installers be eligible to participate in rebate programs provided under this solicitation. In the second step, the proposal team will send technical field representatives to inspect the first two installations of each vendor/installer. The inspection will include both the inspection of the system itself as well as a confirmation that the pool owner/operator understands how to use the system.

#### *Task 9 Remedy Installation Issues*

Pentair's warranty procedure which will be used to ensure customer satisfaction and satisfactory remedy of any installation problems.

#### *Task 10 Perform Customer Satisfaction Surveys*

In order to manage customer satisfaction, the proposal team will implement a survey process after approval from SCE. The first phase of the survey will be internet based, where we ask the customers who have had new pools installed or gotten replacement pool pumps for their opinions on performance and quality and if they have noticed any changes in energy consumption. A second survey will be administered to vendors/installers of the systems to determine the most appropriate ways to move this technology further into the market.

#### *Task 11 Address Customer Satisfaction Issues*

We are confident that all of our customers will be extremely pleased with the service they receive from the proposal team. And all pool owner/operators will be completely satisfied with the installation and training and performance they get from their systems. In the unlikely event that a customer is not pleased we will make all efforts to determine the nature of the problem and work to a resolution of the issue. Representing the lion's share of pool pump systems installed today, it is critical that we maintain a satisfied customer base. We can assure SCE that protecting our reputation and customer satisfaction is as important to us as it is to SCE.

#### *Task 12 Invoice SCE for Completed Jobs*

As in standard business practice, the proposal team will work closely with SCE to create a useful and functional invoice system. We recognize the need to be transparent when using public benefit funds in this way. Project partners have more than 25 years of experience working directly with electric utilities such as Duke Energy, Progress Energy, Dominion, PG&E and SCE. The proposal team already has in place strong cost allocation and budgeting abilities borne through work with utilities and government agencies. These

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can easily be translated to match with the requirements of the SCE systems, as well as accommodating the CPUC reporting requirements.

#### *Task 13 Perform Program Reporting*

To match with standard billing processes, the proposal team suggests a monthly invoice and reporting process. The monthly report will include all the necessary information as described in Appendix D to the RFP. Additionally, once contracted, the proposal team will make available the reports, calculator, expenditures workbook, and flat files electronically via a password protected web link so that SCE staff has ready access to the project list for completed and committed projects, as well as the log of trainings and contacts.

#### *Task 14 Program Ramp Down*

In order to ramp down the project and complete all contractual activities by the end of December, the proposal team intends to halt training of new installers of the Intelliflo system by October. Those who had already been through the training process will still be supported through the rest of the year and beyond, via Pentair Water Pool and Spa distribution system.

#### *Task 15 Shut Down the Program*

Final reports and invoices will be submitted to SCE in December. In the project closeout plan, we will be ending installer training in October and, in order to be eligible for rebates, installations must be complete and verified by November. This allows time for surveying customers to determine satisfaction and make any modifications and inspections of equipment before the contract expires.

#### *Task 16*

##### *Respond to Miscellaneous Utility/CPUC Data Requests*

The proposal team has included capacity to respond to reasonable requests for information from SCE and CPUC. Most data collection will be available upon demand via a password protected web page that should provide answers to most questions. More detailed questions and responses may require more time considerations. Based on previous work with utilities and utility commissions, we believe we can respond in an appropriate and timely manner to questions and data requests.

#### *Task 17 Follow Up with Remaining and New Customer Issues*

Clearly, the purpose of this proposal is to establish a long term and successful introduction of a revolutionary efficient pool pump system in the SCE service territory. Because it is new and more complex technology, it currently carries a higher front end cost for both purchase and installation. However, with the support of this project, and with time for improvement, a key goal is to reduce the up-front cost of the technology through improved impeller design and controller module. We believe that, within a few years, we can produce a product that matches the performance of the Intelliflo (90% reduction from standard pool pump systems) without a significant incremental cost.

#### *Task 18 Submit Final Program Report*

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As described in the RFP and in the above task discussions, the proposal team will provide SCE with a final program report that covers a variety of topics and program areas. At a minimum, the final report will include:

- a - Program Achievements
- b Program Challenges
- c Goal Attainment
- d Lessons Learned
- e Program Improvement Recommendation
- f Program Next Steps Proposed
- i. Mainstream
- ii. Continue Development
- iii. End Program Concept

Clearly, this report is an important component in making decisions about whether to continue or end certain projects and evaluate performance. We will work closely with SCE to ensure that all questions and topics are covered adequately and provide the level of detail needed for SCE and CPUC coordination and reporting.

**11. Customer Description**

New pool construction and pump replacement

**12. Customer Interface**

Pool vendors and service providers

**13. Energy Measures and Program Activities**

**13.1. Measures Information**

Intelliflo variable speed pump

**13.2 Energy Savings and Demand Reduction Level Data**

See E3 Calculator

**13.3. Non-energy Activities (Audits, Trainings, etc.)**

Not Applicable

**13.4. Subcontractor Activities**

**13.5. Quality Assurance and Evaluation Activities**

Inspections of first 2 installations As necessary

Inspections of random samples One of seven installations

**13.6. Marketing Activities**

See Program Implementation for marketing

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