

**Metropolitan Domestic Water Improvement District  
Board of Directors Meeting**

**October 12, 2011**

**Professional Services Agreement for Pump Efficiency Training**

**Synopsis**

The Board of Directors is requested to approve a professional services agreement with Tata and Howard for pump efficiency training

**Background**

The District has over 100 pumps providing water to customers. It is well known when pumps are running efficiently, power savings can be realized. The majority of pump systems in the District have never been tested from a performance and efficiency perspective. Additionally, motors coupled to the related pump systems could be candidates for upgrading.

**Issues**

Opportunities for saving power have been a driving force for the District since its inception. One of the more fortunate benefits is the availability of interruptible power from Tucson Electric Power (TEP).

While the District benefits from the interruptible rate, strong consideration to the risks must be given. TEP allows an interruptible rate with provisos: 1) the District must install remote shut-off to affected facilities, via electronic signal generated from TEP; and 2) interruptions can last for up to six hours daily, as identified in TEP's tariff. In response to proviso 1 - remote shut-off electronics have been installed as required and this capability exists for any facility connected via telemetry – of which all Metro-Main facilities have this capability. In response to proviso 2 – TEP has required the District to interrupt on surprisingly few occasions while duration of interruption has never been up to six hours; regardless, the District must plan for the most extreme conditions where interruption is possible.

A second area to look for cost saving opportunities exists in each pump and motor facility. Pumps wear out over time, whereby the working parts (impellers, etc.) become much less efficient compared to original design. When this occurs, it takes longer run times to produce the required amount of water to be pumped. This in turn equates to a higher cost per million gallons of water pumped; increasing electric costs. It is well known that newer motors are more efficient. Motors manufactured these days are much more efficient compared to those produced 15 and 20 years ago. It is common to purchase a new motor that is greater than 95% efficient compared to the standard 80-85% motors just 20 years prior.

Measuring real time efficiency of pumps is neither arduous nor complex; however, it requires adequate experience and training to measure and calculate the correct parameters regarding efficiency. It is this area where the District will benefit from pump efficiency training. Also challenging is the availability of competent trainers willing or able to provide a curriculum District staff could immediately benefit from. Recently, staff became aware of the firm of Tata and Howard's ability and willingness to provide such training to staff.

The proper training for pump efficiency is key to the District's endeavors to take power use analysis to the next level. There is little question regarding the opportunities to save power via more efficient pump use, operation and design.

Tata and Howard provided a Scope of Services late in the FY 2011-2012 budget process; therefore, the fee for this scope (\$7,050) was not included. After discussion with Mike Land, Chief Financial Officer, this work would be paid from the miscellaneous consulting services account, which would have funds available.

The District has previously purchased the efficiency equipment, so the remaining feature for a District pump efficiency program is the actual training. Staff to be trained will include key Utility and Engineering Division staff members with 4 hours of class-room training followed with 4 hours of field training.

Staff has struggled with time restrictions to embark on this endeavor but the time is right to proceed. By improving efficiencies for given pump and motor assemblies, the District benefits in two ways: 1) increased life span of equipment via appropriate sizing and application, and 2) reducing power costs. In order to accomplish this, a kick start to the program by way of training key staff is required. Pump efficiency experts are few; however, Tata and Howard approached the District with an offer to train staff to perform pump and motor efficiencies. Tata and Howard made a presentation to staff, which demonstrated their expertise. Once trained appropriately, District staff can begin an ongoing program to identify and correct inefficient pump systems and reap the benefits of power savings and increased life span of pumping systems. The District already owns the equipment to perform efficiencies but the consultant services are required to fine tune the complete understanding of efficiency measurements, and will require future approval from the Board.

### **Staff Recommendation**

It is recommended the Board of Directors approve a Professional Services Agreement with Tata and Howard to train key District personnel in pump efficiency in order to identify potential cost savings for District pumping facilities.

### **Suggested Motion**

I move to approve a Professional Services Agreement with the consulting firm of Tata and Howard to train key District personnel in pump efficiency for an amount not to exceed \$7,050.

Respectfully submitted,

Christopher W. Hill,  
Deputy Manager

I concur with the above-noted recommendation.  
Respectfully submitted,

Mark R. Stratton, P.E.  
General Manager