Metropolitan Domestic Water Improvement District
Board of Directors Meeting

July 8, 2013

Consideration and Direction regarding Additional Facilities to the Electric Service Agreement with Tucson Electric Power for Interruptible Service

Synopsis

The Board of Directors is requested to consider adding additional interruptible facilities to the Electric Service Agreement with Tucson Electric Power for additional cost savings.

Background

In May 2001, Metro Water District entered into an Electrical Service Agreement with Tucson Electric Power to put 5 of its sites on interruptible service. In November of 2003 the District added 8 more sites to the agreement. Later in 2004 the District added an additional 2 sites bringing the total number of sites on interruptible to 15. Three of the original facilities no longer have pumping equipment and are inactive or abandoned: Bell Well, Chapala, and the Matter Well reducing the active number to 12.

In September 2011, the District added the North East Booster Station to the interruptible service. Tucson Electric Power pursued and received approval from the Arizona Corporation Commission a rate increase that means a 15% increase for the District. The District thought it could keep its power costs down by adding additional sites to interruptible power. The Fiscal Year 2013-14 budget included a $74,000 increase to purchased power for a total of $1,100,000 for that line item, which is less than what the 15% TEP increase would require.

Issues

Benefits

Staff worked with TEP to have an additional 10 sites added under Amendment #4 to the Electric Service Agreement. This would bring the total number of District facilities on Interruptible Service will be 23 active facilities if Amendment #4 is approved as it is presented. The interruptible service provides a lower power rate than traditional firm service. The advantage of the interruptible service is the lower electrical cost for the District and provides Tucson Electric Power with the ability to stabilize the power grid during one of their emergencies. Using the average of the annual power consumption over the last 12 years at each facility and taking the difference between the firm service rate and the interruptible rate; the calculated cost savings for

the District in power costs by adding the 10 additional facilities is approximately $95,000 per year.

Concerns

As Amendment #4 to the Electric Service Agreement was being prepared, staff began to recognize that adding 10 more sites to interruptible service created certain disadvantages for the District. The concern is if TEP is having difficulties meeting the demand of supplying power they can ask us to shed load or stop using power. The agreement allows for the District to be interrupted for up to 6 hours out of a 24 hour period. During the previous 12 years the District has only been interrupted a few times. The few interruptions were likely based on the small load the District had to interrupt. The smaller the load the lesser effect it has on a TEP's emergency. Now with 23 sites and the District's KW running in the 1.5 to 1.8 mega watt range; it is more likely that TEP would interrupt our service. The District should anticipate the increased frequency of interrupts.

When TEP requests an interrupt, the District has 10 minutes to remove the load at these sites from TEP's power grid. This is accomplished through the District's telemetry system. TEP sends a signal directly to our telemetry with little or typically no warning or notice to the District. The whole process from interrupt to shut down at the sites is a couple of minutes. All the sites being interrupted are either connected to one of the large gravity reservoirs directly, through pressure reducing valves, or have auxiliary pumping capabilities. The only exception to that is the Lattamore facility. Lattamore north feeds the Pima County irrigation systems, which would not have water during an interruption. All other customers of the District will remain in water. Some may notice a lower pressure than normal.

Short duration outages should not create any difficulties in service that staff cannot work with. The large reservoirs will drop in level and production can be made up during the evening hours. However, staff is concerned that longer interruptions that last 3 to 6 hours will have a much greater impact. Long back to back interruptions in consecutive days back periods will have a greater impact and could be catastrophic if combined with a Peak hour events. It is just unknown if these interruptions would occur and how often.

Attached is a spread sheet identifying the wells in the Metro Main service area and their associated GPM. The total production capacity of the current wells is 10,537 GPM. This assumes all are running. Of the 13 sites presently on interruptible the available GPM drops to 8,753 GPM. If the District adds the additional 10 sites identified in Amendment #4 the total available GPM in an interrupt drops to 3,383.

The majority of the District is either fed directly by or backed up by the District's A-Zone system. It is the A-Zone system that allows the District to consider interruptible power rate. Of the total Metro Main production, 8,013 GPM supplies water to A-Zone. During the existing 13 site interrupt, the available production would drop to 7,222 for A-Zone; less than a 1,000 GPM impact. During the 23 site interrupt the available GPM to A-Zone drops to 2,492. The remaining GPM is due to either sites that have auxiliary power or are on the firm service rate.
There are a number of factors that go into determining the District's system demand. Based on

the factors provided by CDM in their 1994 report and the average day production the District's Maximum Day demand is approximately 10,000 GPM with a Peak Hour demand of 20,000 GPM. Note from the spreadsheet that the District is right at the Maximum Day with its available pumping capacity without an interrupt. During an interrupt that would coincide with the Maximum day utilizing the Peak Hour demands; the District's A-Zone reservoir could significantly drop by as much as half. Consecutive day interrupts would not allow the reservoirs to recover leading to potential outages.

Reducing or Removing the Risks

While the savings from interruptible service would be beneficial, the risks of lengthy and/or consecutive interruptions raise a significant concern for staff. For the District to be able to take full advantage of the interruptible service rate or be prepared for an extended multiday power outage, the District should consider additional backup supplies in the form of wheeling agreements from Tucson Water and additional storage facilities, auxiliary power, generation and wells.

Regarding these solutions, auxiliary power has been installed at some of the key sites currently under interruptible power. The District could add additional natural gas powered pumps on generators at additional sites and thus provide a back up if electrical power is discontinued. The cost for adding auxiliary power is ranges from $50,000 to $200,000 based on the facility size.

The need for auxiliary power could be reduced by having a wheeling agreement with Tucson Water. More importantly, a wheeling agreement with Tucson Water would remove the concerns about being able to recover from an extended interruption to electrical services and would allow the District to have all of the sites on interruptible service. The District worked with Tucson Water and Oro Valley to complete a study in July 2011 that identified the costs involved for Tucson Water to wheel to the District and Oro Valley a portion of their respective CAP allocations. This study reached an agreement for costs. Based on that study, the Town of Oro Valley has entered into a wheeling agreement with Tucson Water in which Oro Valley is receiving a portion of its CAP water and has significantly reduced its groundwater pumping, along with its reclaimed system.

If the District was able to receive from 800 to 1,400 acre feet a year of its CAP allocation through Tucson Water's system, this could provide approximately 1,500 gallons per minute during an interruptible event, which would allow more sites on interruptible power. This would provide the savings due to TEP's interruptible power rate but also additional power costs would be saved because 800 to 1,400 acre feet of water would not need to pumped. The savings from reduced power purchase would not equal the cost for the wheeling of CAP water through Tucson Water; however, the District would gain additional benefits. It would provide a transition as the District pursues its CAP Utilization Program. The District would gain experience of learning how a small amount of recovered CAP water adapts to our infrastructure. It would mean less groundwater would be pumped and thus reduce the overall groundwater decline. The wheeled water could be financed through the Water Resources Utilization Fee, which could be raised to cover the cost and also be used to pay a future debt service for the CAP Utilization Program. It should be emphasized that the wheeling agreement would be viewed as a transition until the

District's CAP Utilization Program is completed, at which time, it would provide all the same benefits including being able to have sites on interruptible power.

TEP Amendment No. 4

The 10 sites being considered to be added to interruptible are primary production facilities. Adding all ten at this time is not recommended due to the risks described in this report. Phasing these facilities in as additional sources of water supply or power are brought online would reduce the risk.

Therefore, the TEP Amendment No 4 could stand but by reducing the sites listed from ten to three. This would provide still $30,000 in power savings this fiscal year. In the meantime, the District ought to pursue developing a wheeling agreement with Tucson Water, which would allow for additional sites to then be included on the interruptible power rate.

Recommendation

It is recommended that the Board of Directors discuss the benefits and risks of adding additional sites to the interruptible service.

Staff recommends that the Amendment No.4 of the Electric Service Agreement with Tucson Electric Power Company to only include the following sites: Alcott, Horizon Hills and Thornydale. This would provide a savings of approximately $30,000.

It is further recommended that Board should direct staff to work to include more sites under this Agreement. One way to accomplish this is by developing a wheeling agreement with Tucson Water. A complete discussion of the benefits and implications of such an agreement would be brought before the Board before the Board has to consider approving the agreement. If such an agreement is being pursued and after the high demand summer season, it would be recommended to amend again the Electric Service Agreement by adding a few more sites to interruptible rates.

Suggested Motion

I move to Approve Amendment No. 4 of the Electric Service Agreement with Tucson Electric Power with the following modifications: only Alcott, Horizon Hills, and Lattamore to be added to the interruptible service and authorize the Chair of the Board to sign the amendment following the modification.

Respectfully submitted,

Christopher W. Hill
Deputy Manager

I concur with the above recommendation.

Respectfully submitted,

Mark R. Stratton, P.E.
General Manager