



Flowing Straight Into the Future

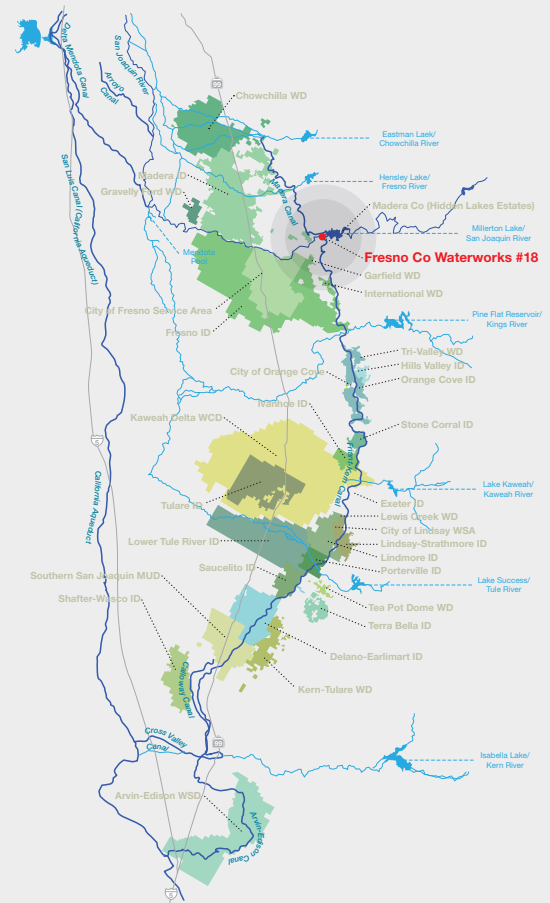
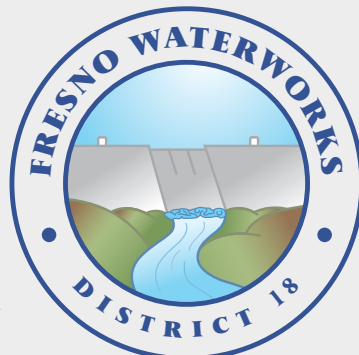
Summary

By providing a quick-start industrial IoT solution, Toshiba’s IoT Solution Pack helped this customer gain essential visibility into their operations, improve labor productivity, lower costs, improve accuracy and reporting and prepare for future expansion.

Background

Dedicated Water Service Since 1956

Located on the banks of the San Joaquin River in Central California, Fresno County Waterworks District 18 (FCWWD18) is a small water district, formed in 1956. Governed by the Fresno County Board of Supervisors, it serves a broad range of municipal, industrial and government customers: the U.S. Bureau of Reclamation; Millerton State Park; the California Department of Forestry Fire Station and, most notably, communities within the town of Friant.





To ensure its residential and business customers have access to a high-quality water supply for a good quality of life, General Manager Dan Pearce and Operations Manager Jack Wagner manage some 150 acre-feet of water a year (AFY) from various wells in the area and nearby Millerton Lake. This reservoir was created by the 319-foot-high Friant Dam, built between 1937 and 1942 by the U.S. Bureau of Reclamation.



Dan Pearce, General Manager



Jack Wagner, Operations Manager

Water is pumped from these original sources to both the Friant Surface Water Treatment Plant (c. 1982) and the Mira Bella Filtration Plant (c. 2016), where it is treated, filtered, then pumped into storage tanks. From there, gravity and booster pumps distribute water throughout the entire system.

A 26" pipe from the lake will service the Friant community and future expansion there, while Friant's Mira Bella community is currently serviced by three wells. A planned expansion of new homes in this area will require additional wells plus a new waste water treatment plant.

Stringent reporting requirements

Like most water treatment operations, FCWWD18 is required to provide regular accurate reports to federal and state government entities as well as residential, business agencies, and agriculture customer groups. In the case of FCWWD18, these reports include Daily and Monthly Water Usage, Nephelometric Turbidity Unit (NTU) levels and others.

Site survey reveals major opportunity

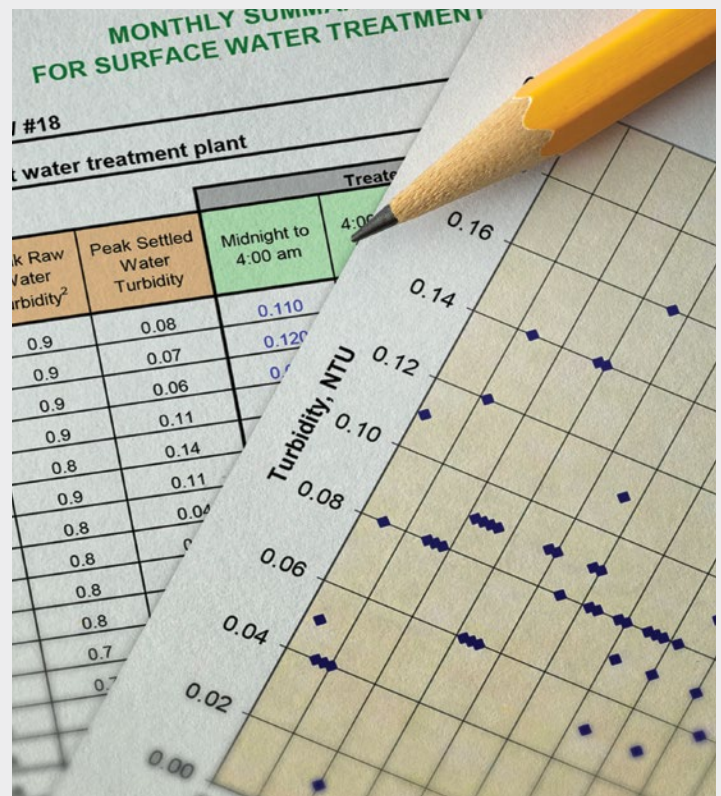
Faced with a sizeable amount of manual monitoring and reporting requirements, Dan, Jack and their staff had their hands full maintaining the system and answering to stakeholders. That burden would only increase with the expansion of the Friant and Mira Bella communities.

After a thorough site survey and assessing future needs, FCWWD18 and their global IT services provider NTT Ltd. realized that operations could be transformed through greater operational visibility and so called industrial IoT (Internet of Things) innovations.

Challenge

Small District, Big Responsibilities

To fulfill their mission of maintaining the safety and supply of water to their customers, FCWWD18 had to constantly monitor a wide range of key performance indicators (KPIs). These included flow, tank levels, turbidity and PSI, along with chemical treatment data such as chlorination and pH levels. To do this, staff were required to drive to remote locations to take readings.



Furthermore, with limited budget and manpower, the FCWWD18 operations and management team spent many hours each day and month manually entering operational data, producing reports and addressing operational alerts. The objectives were clear.

Fresno County Waterworks District 18 Objectives:

- 1 Reduce the manual labor involved in capturing data in order to focus efforts on other operational enhancements
- 2 Improve water management and reporting accuracy to their many stakeholders
- 3 Easily access and visualize operations using dashboards based on remotely-gathered real-time data
- 4 Automate completion of report templates required by government agencies

Major developments mean future demands

Naturally, with large residential expansions in the near future, the labor hours required to manage District 18’s water demands will only increase.

Approximately 3,000 additional residences are being planned in the Friant Ranch development, and the Mira Bella community is slated for two additional phases. To keep pace, FCWWD18 will need to expand the Friant Surface Water Treatment Plant and build a new sewage treatment plant, which will require chemical and water service.

To accommodate future expansions, FCWWD18 will need to scale up from managing 150 acre-feet of water per year (AFY) to 1,428 AFY—a 10X increase.

Facing two additional phases of the Mira Bella community, the district anticipates drilling new wells and adding a sewage treatment plant.

Given the combined Friant Ranch and Mira Bella expansions, Dan Pearce and his team anticipated they will need to scale up to manage a total expected water demand of 1,428 AFY—a whopping 10X increase.

An important step forward

Considering their current and future challenges, Dan and his team knew their existing operational methods—no matter how diligent—were simply inadequate and unsustainable. For this reason they consulted with their longtime engineering partner, A-C Technology Solutions, who was well acquainted with the benefits an IoT solution could provide the district.

“Fresno County Waterworks is far from unique in its huge responsibilities, while having to accomplish a lot with limited manpower,” says Larry Meyer, Engineering Manager for A-C

Technology Solutions. “We have seen the potential that remote monitoring and IoT apps have in transforming these operations through greater operational visibility.”

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—Larry Meyer, A-C Technology Solutions Engineering Manager

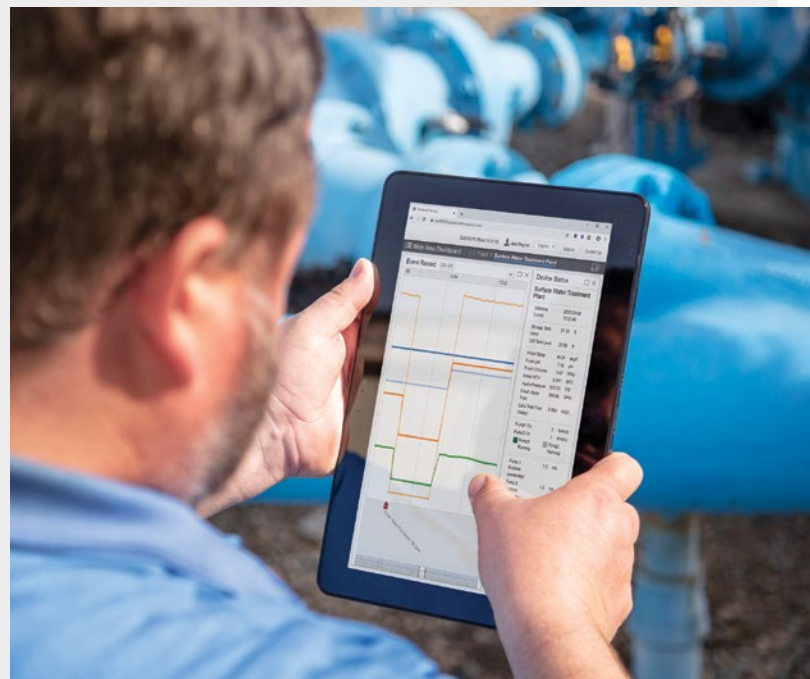
Working together, NTT Ltd. and A-C Technology Solutions selected a remote monitoring solution from Toshiba Digital Solutions Corporation, an experienced IoT solution provider.

Solution

Toshiba’s IoT Solution Pack

To help Fresno County Waterworks achieve their goals for greater operational visibility, improved labor efficiency, reduced costs and increased accuracy, engineering firm A-C Technology Solutions teamed up with NTT Ltd. and quickly recommended Toshiba’s IoT Solution Pack as a fast, cost-effective way to meet the challenge.

“We understand the immediate impact that remote monitoring would have on operations.” says NTT Ltd. Consulting Services Delivery Manager Ben Fay. “We have significant experience both delivering a strategic plan as well as integrating applications in the water treatment segment.”



Fast, trouble-free implementation

Accordingly, A-C Technology Solutions installed Toshiba's IoT Solution Pack (IOTSP) solution throughout FCWWD18's operational footprint quickly and easily. Using existing sensors or new sensors as required, the sensor data is fed into the Toshiba IOTSP application via a gateway deployed at the site.

Working together, the parties were able to complete the installation and begin collecting data in under a day with minimal downtime.

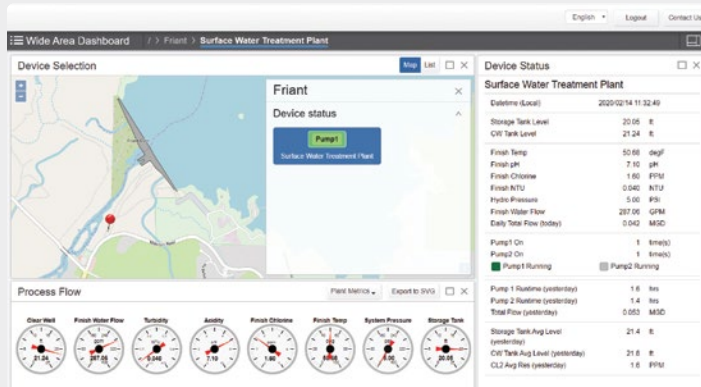


Figure 1. Site Overview – Main Dashboard

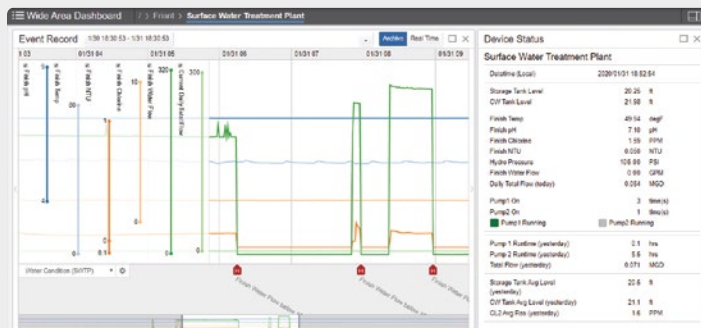


Figure 2. View detailed operations in real time or for archived data

Toshiba's IoT Solution Pack provided FCWWD18 with—

- The integration of multiple facilities with unique requirements into a **single operational view** (Figure 1)
- **Increased frequency and accuracy** of data points.
- **Remote access** that eliminates recurring site visits to manage operations
- **Email alerts** to key personnel
- Trending or logging using **easy-to-read graphs** automatically generated by remotely gathered near real-time data (Figure 2)

What's more, all data gathered throughout FCWWD18's operation can be downloaded for further analysis and data storage.

“In just a few days, Solution Pack was delivering results and giving us the visibility we've always needed.”

— Jack Wagner, FCWWD18 Operations Manager

“I think everyone on our team was amazed at how easy the implementation went,” says FCWWD18 Operations Manager Jack Wagner. “In just a few days, Solution Pack was delivering results and giving us the visibility we've always needed.”

Results

More Effective Today—for a Better Tomorrow

Toshiba's IoT Solution Pack solution has given Fresno County Waterworks District 18 the essential visibility they needed to improve their operation—and do more with less. Now they can:

- Monitor water volume processed and moved into tanks
- Monitor the plant hours during which pumps are operational
- Confirm general Friant water flow, storage tank levels and quality
- Check Mira Bella well production and fluid flow, plus storage tank levels and quality
- Reduce onsite visits to read meters
- Slash data entry time
- Produce more accurate, fully customized reports

All told, Toshiba's IoT Solution Pack has helped the district provide better water stewardship to the Friant-area citizens, businesses and agencies, as well as the government. It has also quickly and easily modernized older water treatment facilities that use legacy equipment.

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Less labor, more productivity

By providing a wealth of near real-time operational data at their fingertips, and customized reporting, Toshiba's IoT Solution Pack is also helping Dan, Jack and their staff save a significant amount of time on a daily and monthly basis.

Looking good—well into the future

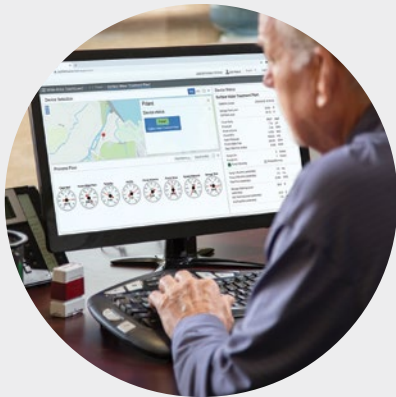
Just as important as the daily or even monthly time savings, Toshiba's IoT Solution Pack is laying the groundwork to help Fresno County Waterworks District 18 easily accommodate planned expansions in the Friant Ranch and Mira Bella communities.

“Toshiba's IoT Solution Pack is giving us so many capabilities we never had before. But it's also giving us the confidence of knowing we can provide excellent water stewardship for District 18 far into the future.”

— Dan Pearce, FCWWD18 General Manager

As new wells are dug and new treatment plants come online, Dan and his team can easily scale up to accommodate future needs.

As FCWWD18 General Manager Dan Pearce tells it, “Toshiba's IoT Solution Pack is giving us so many capabilities we never had before, and saving us so much time. But it's also giving us the confidence of knowing we can provide excellent water stewardship for District 18 far into the future.”



Toshiba Saves FCWWD18 Serious Time

Toshiba IoT Solution Pack has helped the district save 20 minutes/day in data entry and travel time plus an additional 18 hours/month on reporting.

TOSHIBA

For more information on Toshiba IoT Solution Pack

Visit <https://www.toshiba.com/tic/other-products/iot-solution-pack> | Write TIC-IoTsp@toshiba.com