



# WATER LOSS / MAKE-UP MANAGEMENT

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**UTILITIES & ENERGY  
SERVICES**  
TEXAS A&M UNIVERSITY

# Background of Thermal Loop Make-up

The campus is experiencing an increase in the degradation of building system piping

Cultural acceptance of small leaks and lack of maintenance

Campus Thermal Water Study was commissioned to better understand the scope

# Recommendations from Campus Thermal Water Study

Eliminate existing system leaks and maintain losses within an acceptable range

Commitment from Facilities Services Team to install and maintain air-vents and strainers

Update design standards to require air venting in each building and define hydronic piping to be used

Transition to improved water treatment

UES takes the lead tracking, reporting, and correcting losses in distribution system

# Chemical Treatment Program

## **Improve Chemical Treatment:**

Shift from a phosphate base system to Molybdate system

Chemical treatment cost would increase by millions of dollars

Increased cost would be less than a million if make up rates are reduced

Establish a make up rate goal for each system

Develop a executable plan to meet the goals

# Plan to Reduce Make-up Rates

Establish a make-up rate goal for each system

Develop a executable plan to meet the goals

## Leak Notification Procedure

- Production Services Operators 24/7 monitoring and initiate communication via text, email, and phone
- Plumbing Distribution investigate leak on the distribution system
- Building Control Technician, Energy Stewards called to action to investigate leaks in buildings
- If leak not found within 4 hours, Facilities Services notified for detailed building search for leaks

# Thermal System Management

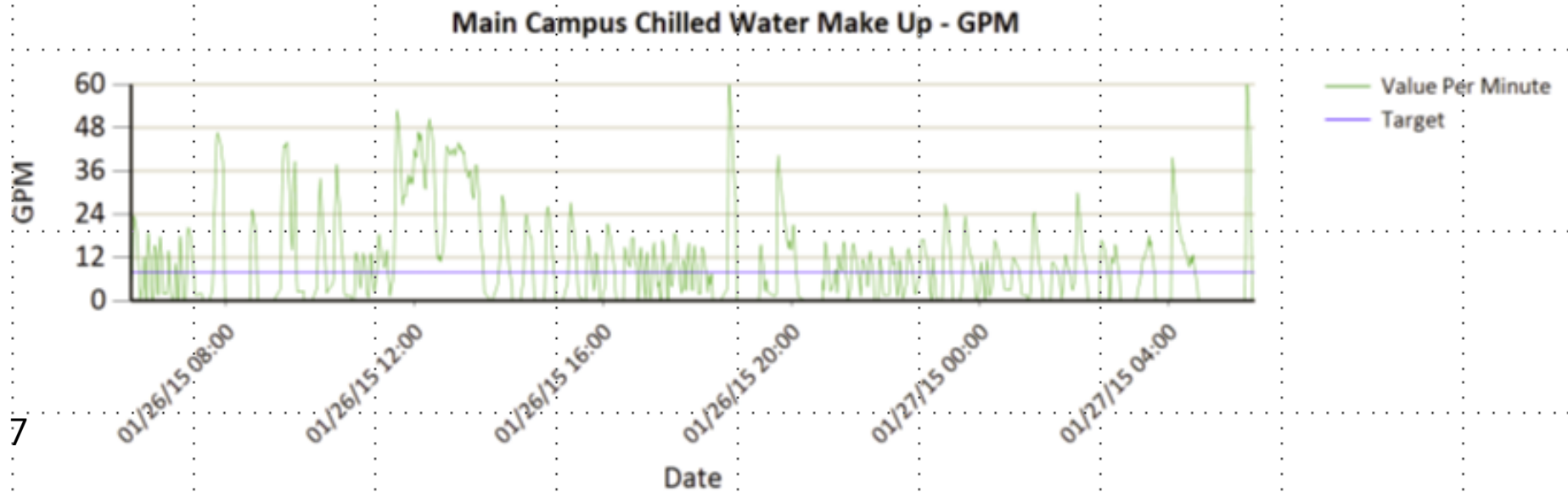
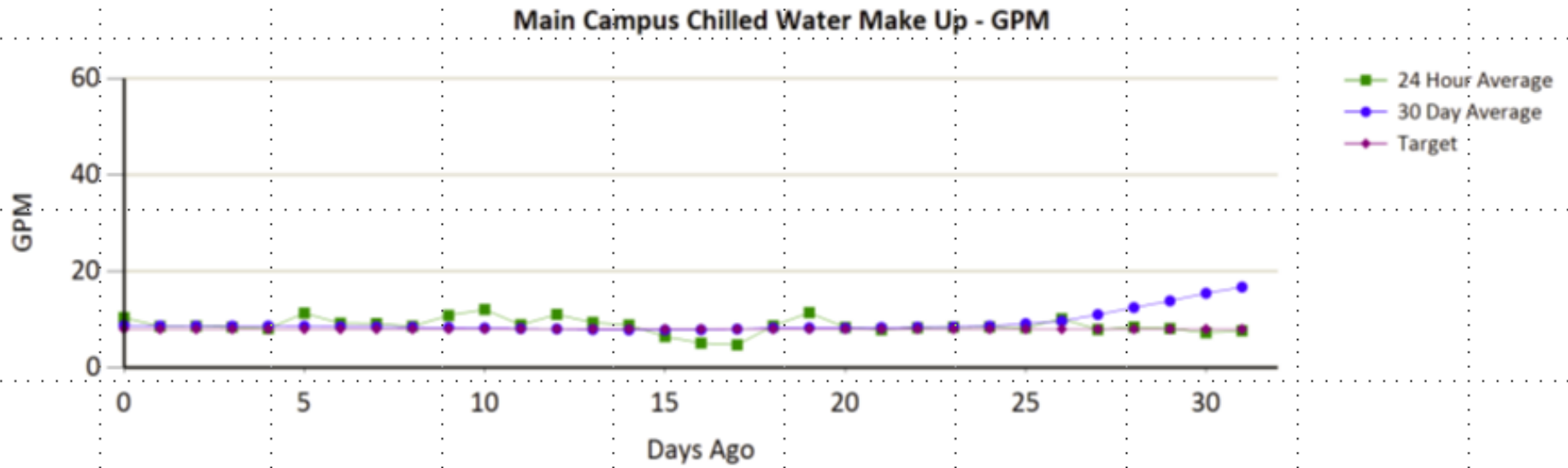


## Thermal Systems Makeup Water Performance

for: 1/27/2015 6:00:00 AM

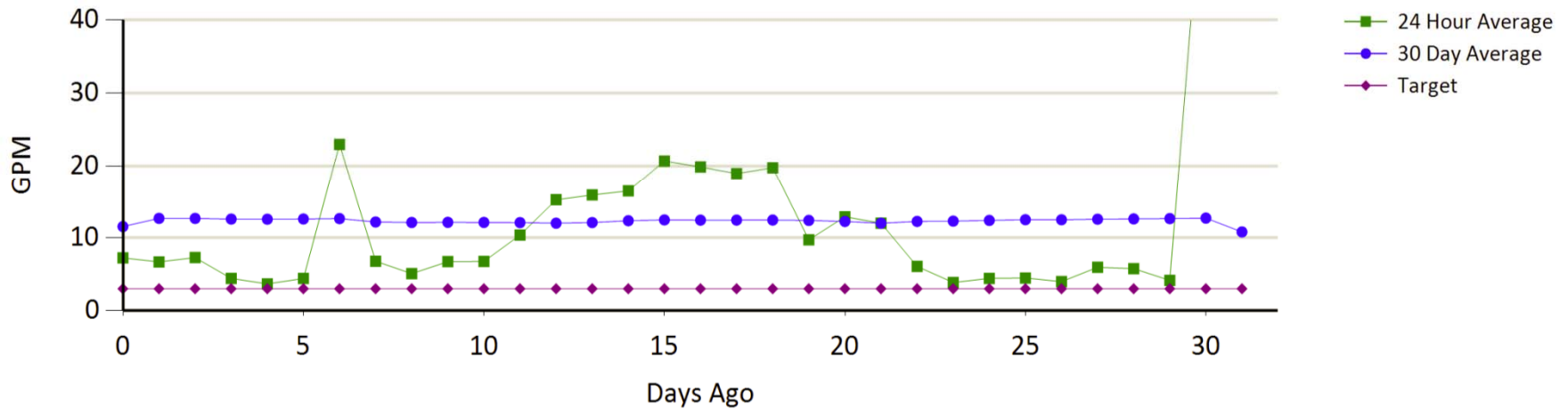
Thermal Loop	24 Hour Average	30 Day Average	Target (1%)	% Over / (Under) Target
Main Campus Chilled Water Make Up - GPM	10.37	8.74	8	9
Main Campus Heating Hot Water Make Up - GPM	14.98	13.62	3	354
West Campus Chilled Water Make Up - GPM	6.89	10.86	11	(1)
West Campus Heating Hot Water Make Up - GPM	7.24	11.55	3	285

# Thermal System Makeup Water Chilled Water

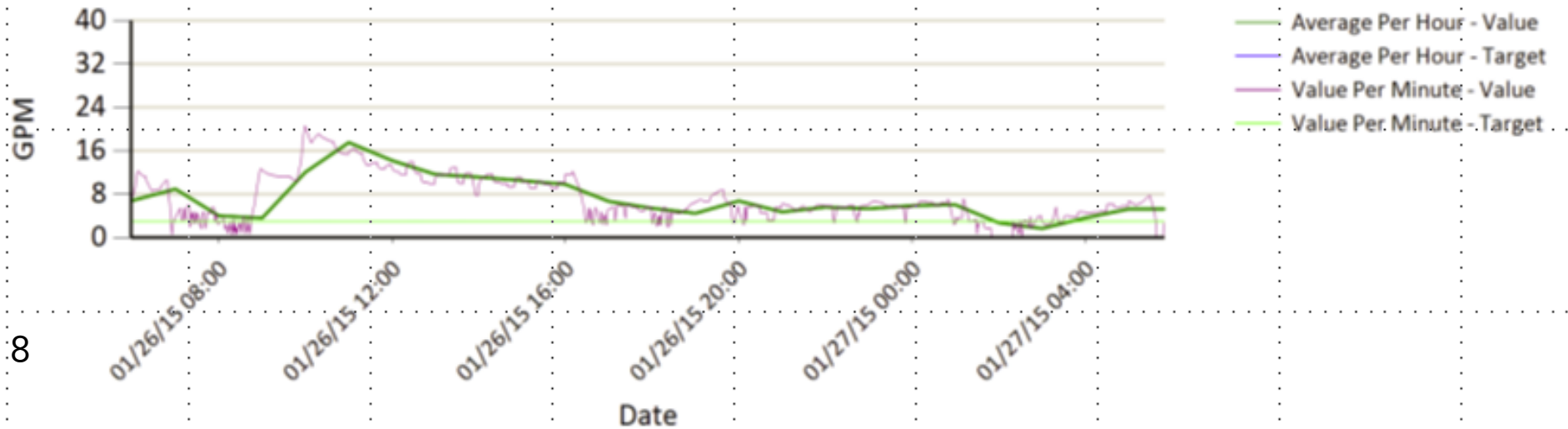


# Thermal System Makeup Water Heating Hot Water

West Campus Heating Hot Water Make Up - GPM



West Campus Heating Hot Water Make Up - GPM





# Keys to Success - Instrumentation

Ensure all flows for thermal make-Up and dumping are properly metered

HHW and CHW Expansion Tank systems must be properly tuned

Control System alarming

System alarms based on priority alarming

Tuned to avoid nuisance alarms due to normal system volume changes

# Keys to Success – IT

## Dedicated Utility IT Team

- Understands utility plant control systems and operations
- Extract and deliver data in a variety of formats
- Automation of daily reports