



# Tennessee Water and Wastewater Energy Efficiency Partnership

**Bob Freeman & Brendan Held**

**EPA Region 4**

# Overview

- Introduction
- Background
  - Tennessee Water and Wastewater Energy Efficiency Partnership (TWWEEP)
  - TWWEEP structure – the team and its work process
  - Summary of total results to-date
- Individual examples
  - Fayetteville
  - Columbia
  - Franklin
- Lessons Learned
- Next Steps

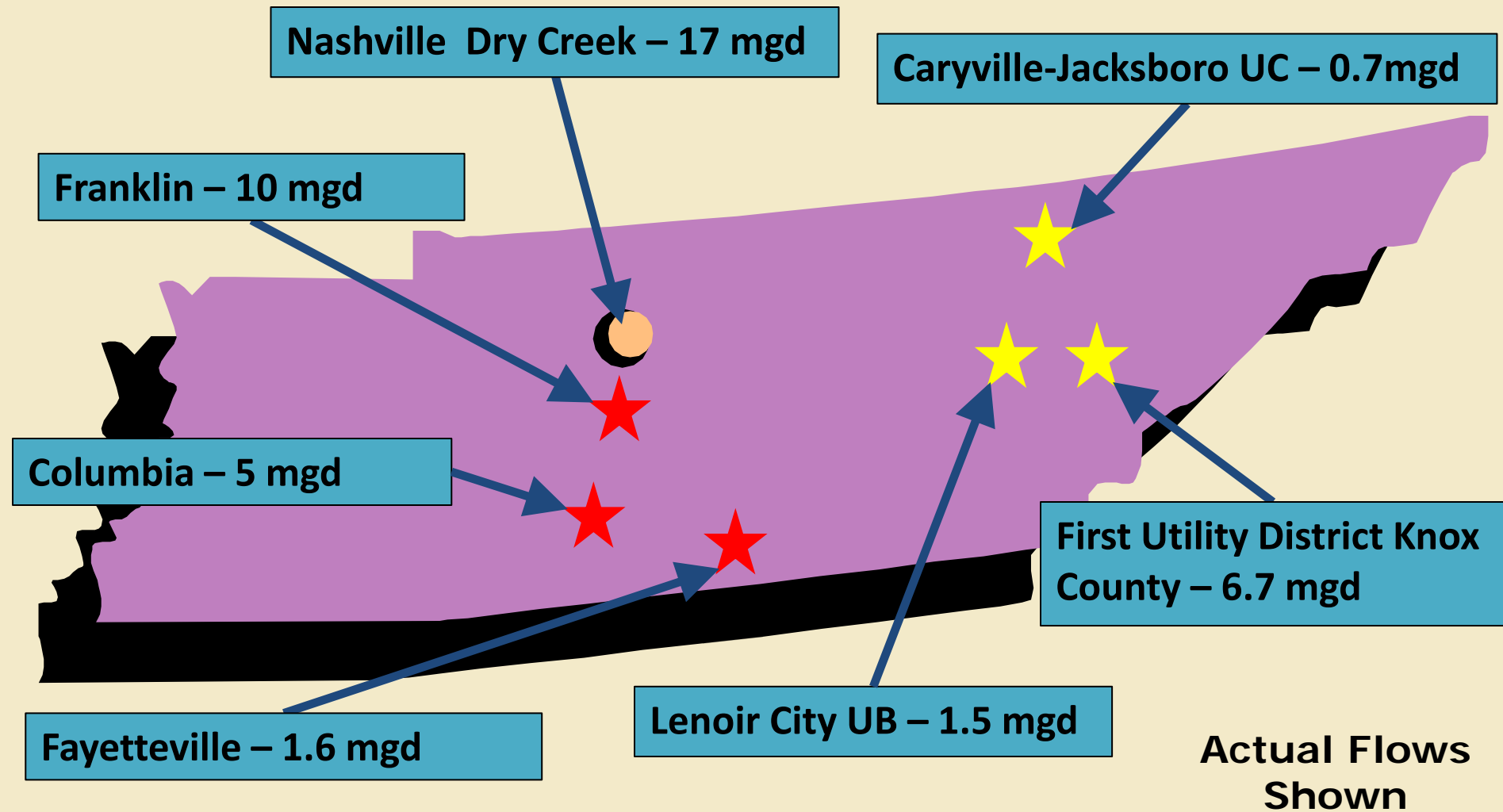


# The TWWEEP Program

# The Team: Tennessee Water & Wastewater Energy Efficiency Partnership



# TN Utility Partners







**Columbia WWTP**



**1st Utility Dist. Knox Co. - DW**



**Nashville Dry Creek WWTP**

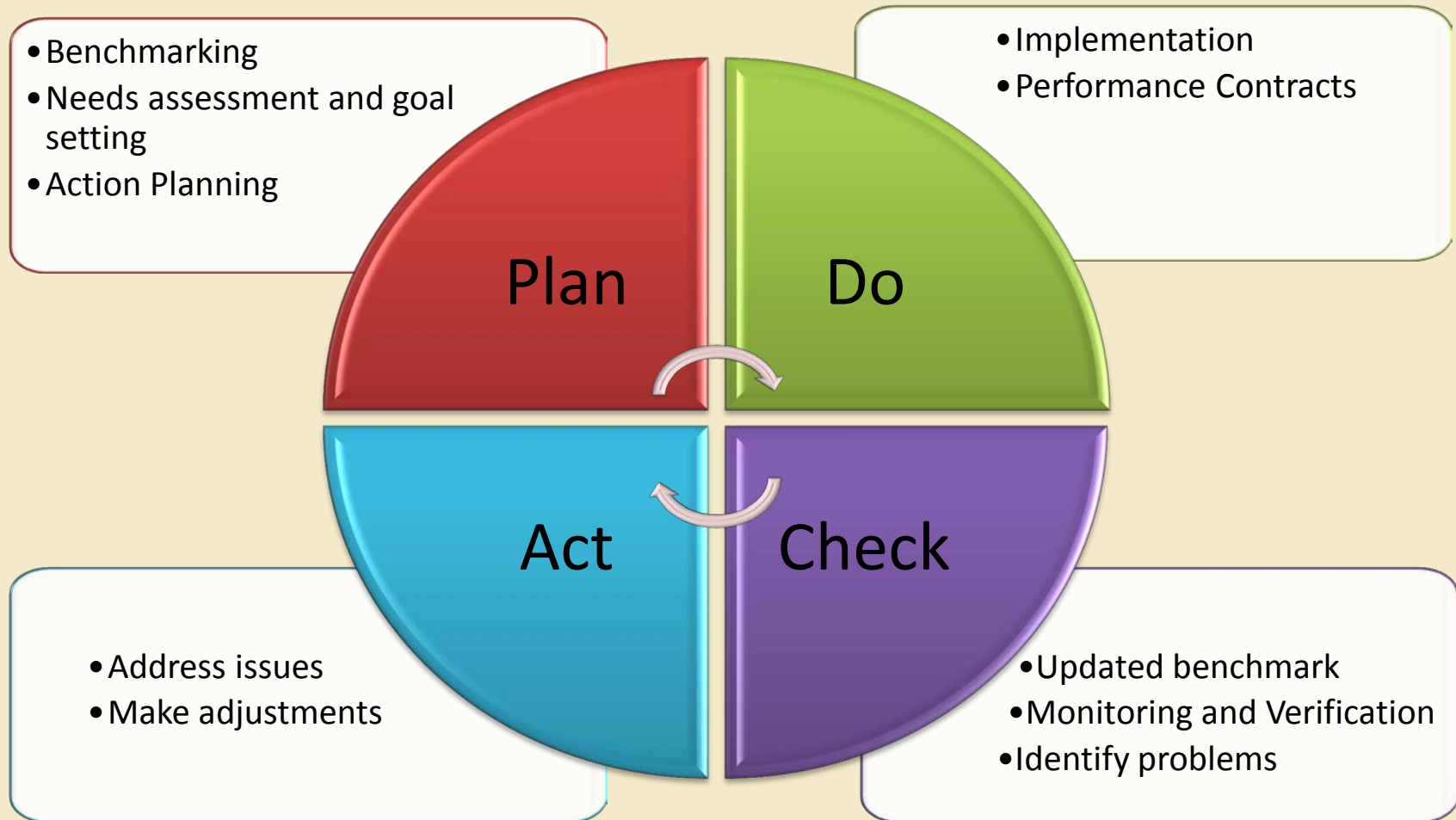


**Lenoir City UD WWTP**





# The Approach





# Results To-Date

- Average Energy Savings – over 18%
- **Measured** Annual Savings (September 2013)
  - Over 5,000,000 kWh
  - Over \$400,000/year savings
  - Over 4800 tons/year CO2 Reduction
- **Additional Savings** of 1.5-2.0 million kWh is projected

## Individual Examples



# Fayetteville - WWTP



# Fayetteville - Orbal Oxidation Ditch



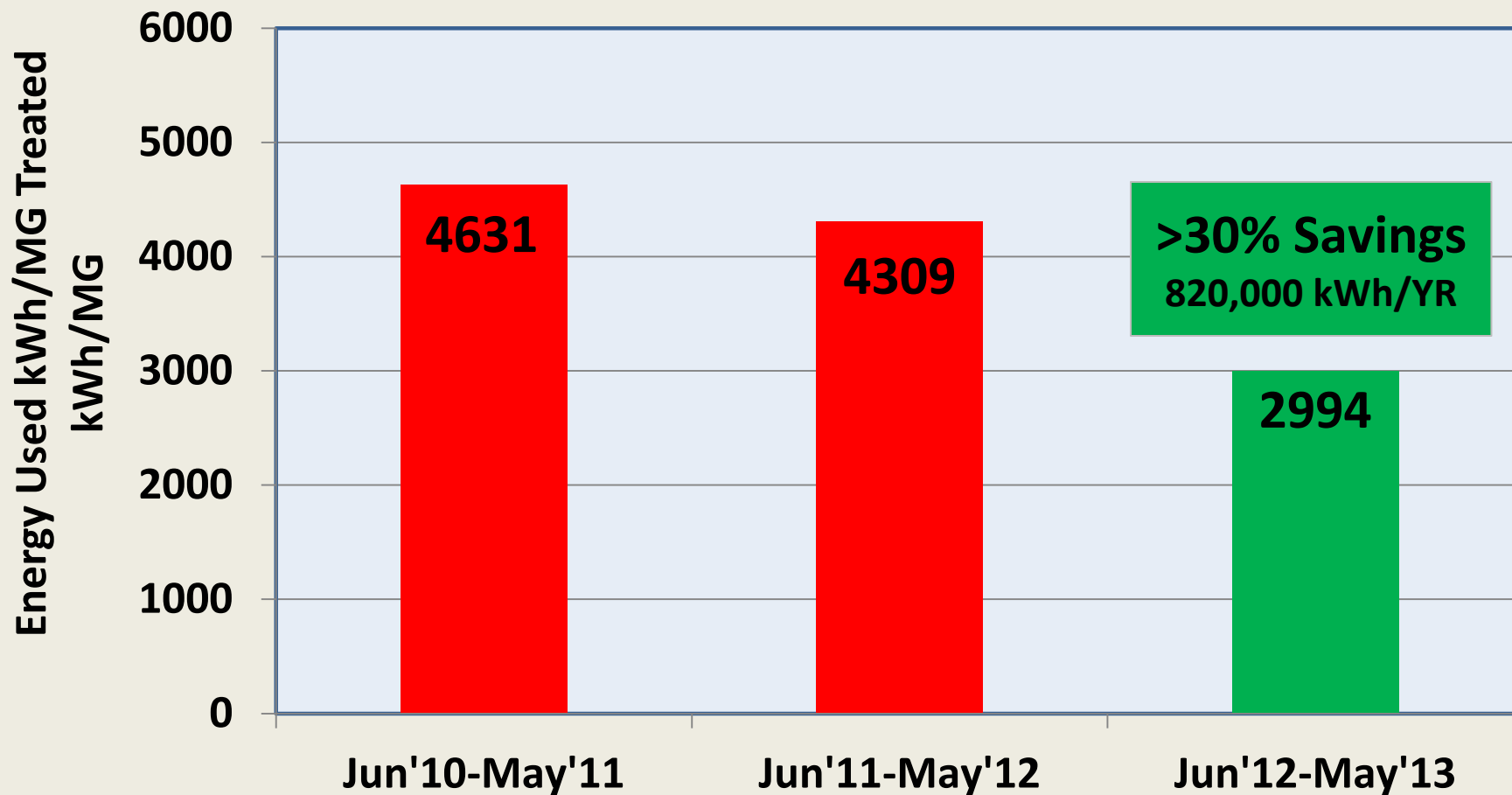


# Fayetteville – Aerobic Digesters



# Fayetteville – Measured Energy Savings

Fayetteville Yearly Energy Use/MG Treated





# Columbia - WWTP





# Columbia - WWTP



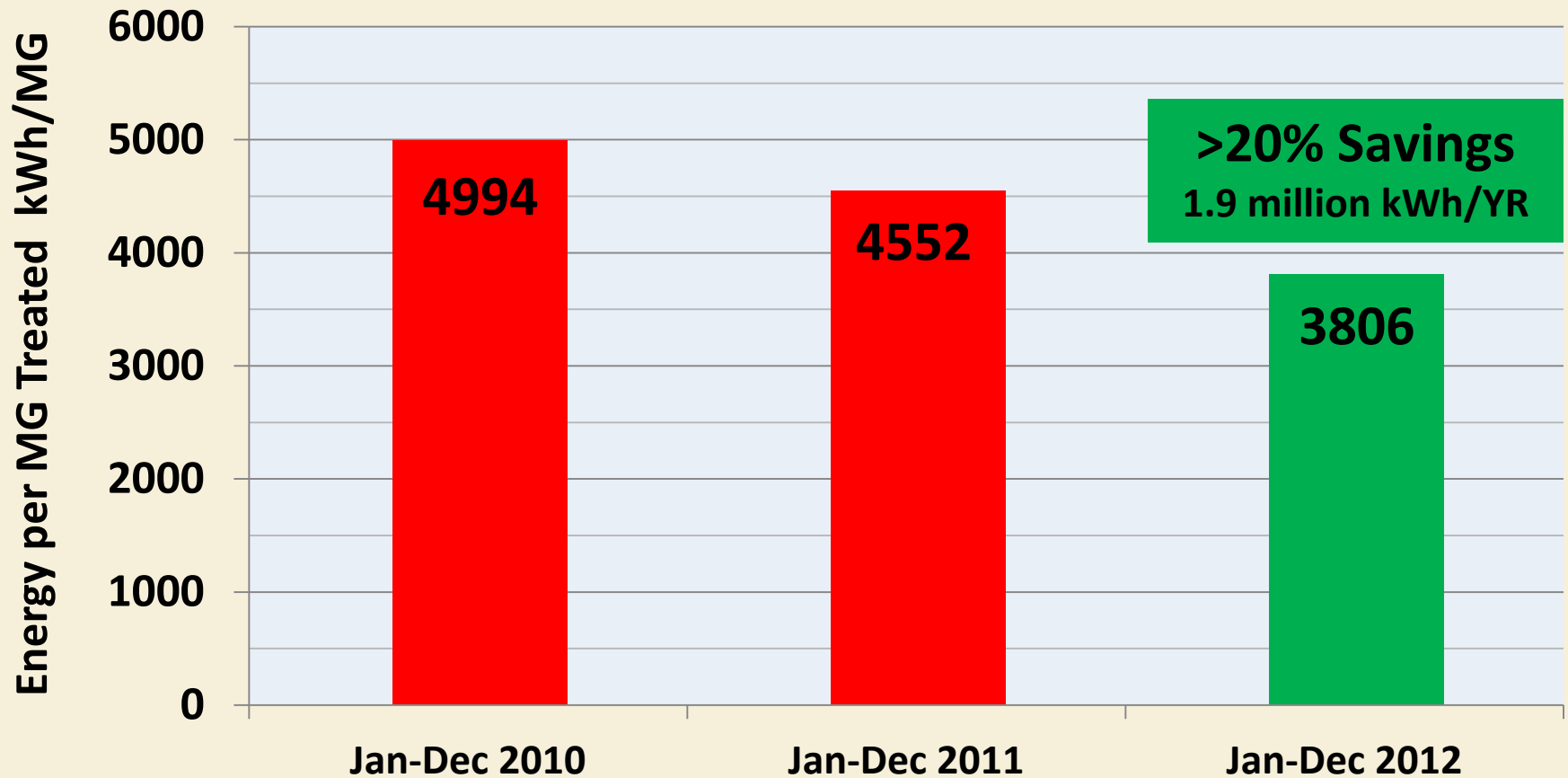
**Nitrification Tower**

**Aeration Tanks**



# Columbia - Measured Energy Savings

Columbia Yearly Energy Use / MG Treated





# Franklin - WWTP



# Franklin - WWTP

Anoxic Zone



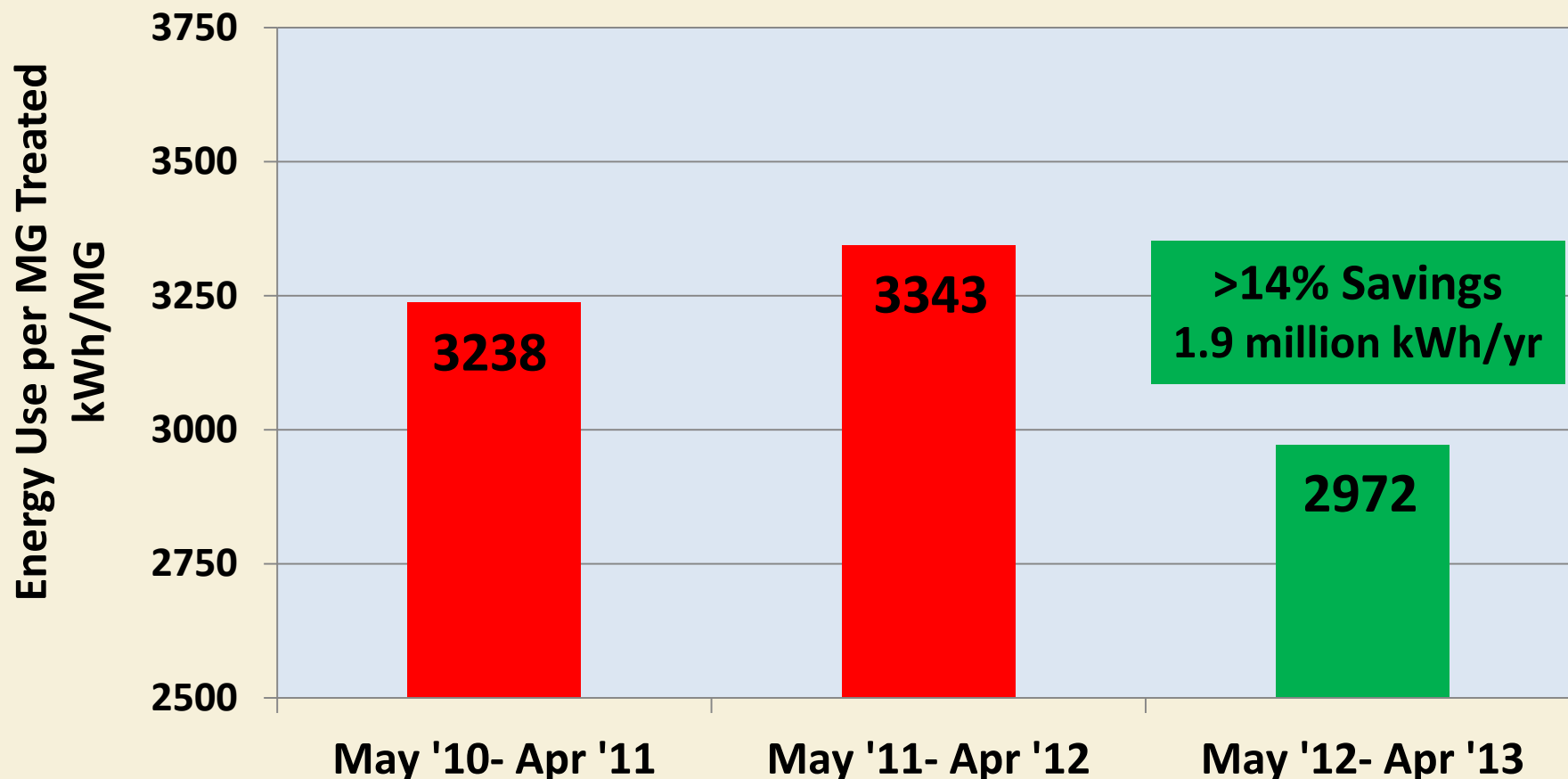
Solar  
Array



Denitrification Filter

# Franklin – Measured Energy Savings

## Franklin Yearly Energy Use/MG Treated





# Lessons Learned

- Any size plant can find savings
- Minimal investment can produce big results – does not necessarily require expensive upgrades
- Savings beget savings – using savings \$ for upgrades motivates staff to find more
- Team approach works best – operations and governance share responsibility for effective energy management

# Next Steps

- Region 4 continues to support activity in this area
  - TN is set to implement a second round with 8-10 utilities in 2014
  - AL is in the planning stages for a similar program
  - United South and Eastern Tribes are developing capacity to support their member utilities
  - GA Environmental Financing Authority is highly interested in funding energy-related construction through SRF

# Next Steps

- What if there is not a program in your area?
  - Start small
  - Energy Use Assessment Tool
  - Power company may be willing to support an assessment
  - SRF financing
  - Contact us



# Energy Management Training

- What? Free two-day energy management training course
  - ▶ Optimizing operations to save energy
  - ▶ Equipment upgrade/improvements
  - ▶ Techniques, Tools, Case Studies
- Where? EPA Office in Atlanta, and on the web
- When? January 7 & 8, 2014
- Who? Dr. Larry Moore, Univ. of Memphis

For information, contact Bob or Brendan

# Contact Information

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