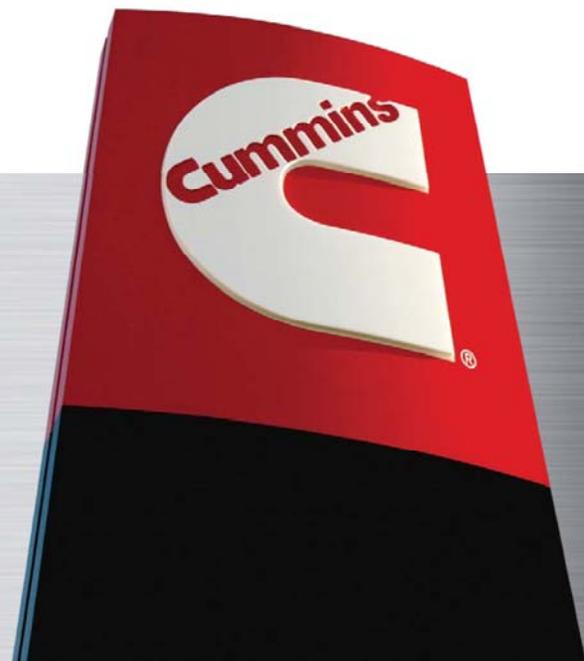


# Cummins Water Program

**Mark Dhennin**

Better Buildings Summit

May 2016



# Cummins, Inc.

2015 Revenue: \$19.1 billion

55,000 employees, 190+ countries & territories



Engines



Power  
Generation



Components



Distribution

2015 water consumption: 953 MG global; 494 MG U.S.



## Envolve Cummins Priorities

### FOCUS

### ACTION AREAS

Reducing our carbon footprint.



New product fuel efficiency • facility GHG reduction • renewable energy • products-in-use fuel efficiency • logistics • remanufacturing

Using fewer natural resources.



Water reduction and neutrality • increased recycling • zero disposal • materials efficiency • packaging • advanced manufacturing

Partnering to solve complex problems.



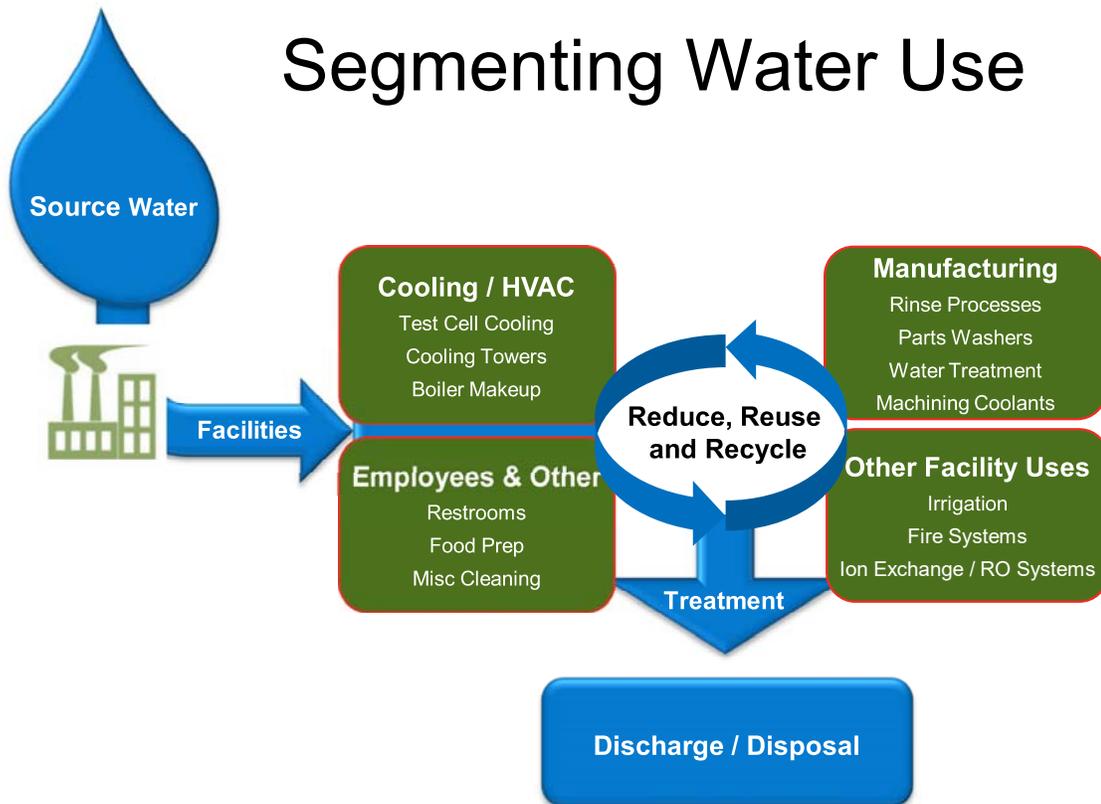
Supplier and community collaboration • new technologies • metals and water availability • NGOs • governments

# Water Stewardship at Cummins

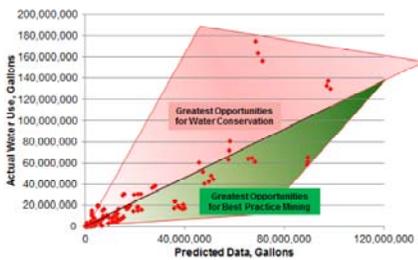




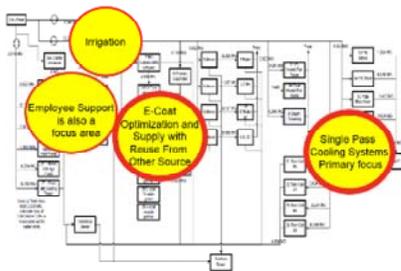
# Segmenting Water Use



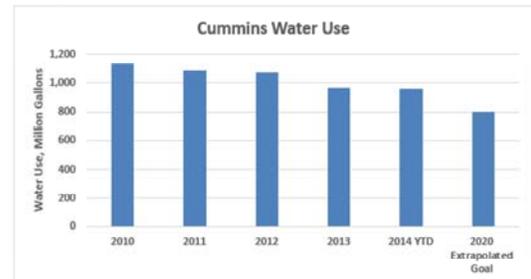
# Make the Complex Simple



## Prioritize



## Consult



## Achieve



## Expanding the Champion scope



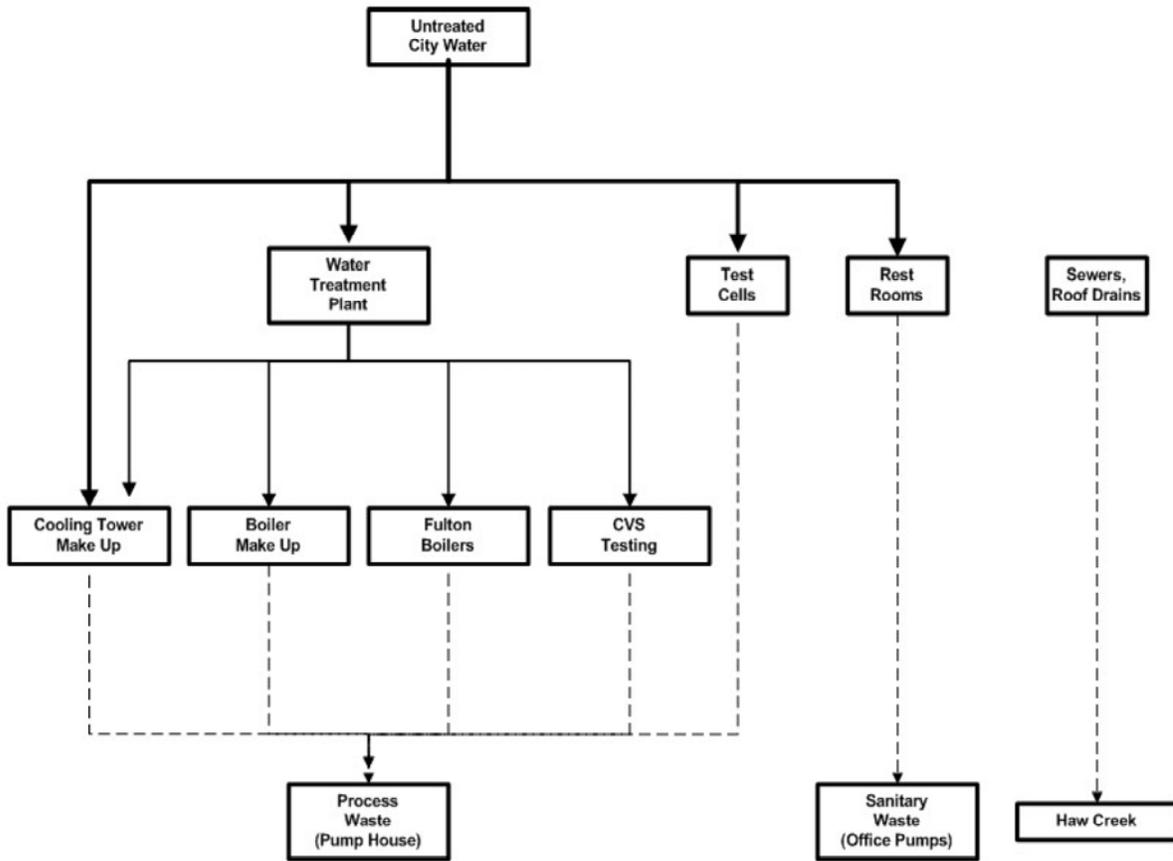
- Holistic approach to environmental sustainability
- Utilize common, proven approaches and tools

# Focus: Cummins Technical Center



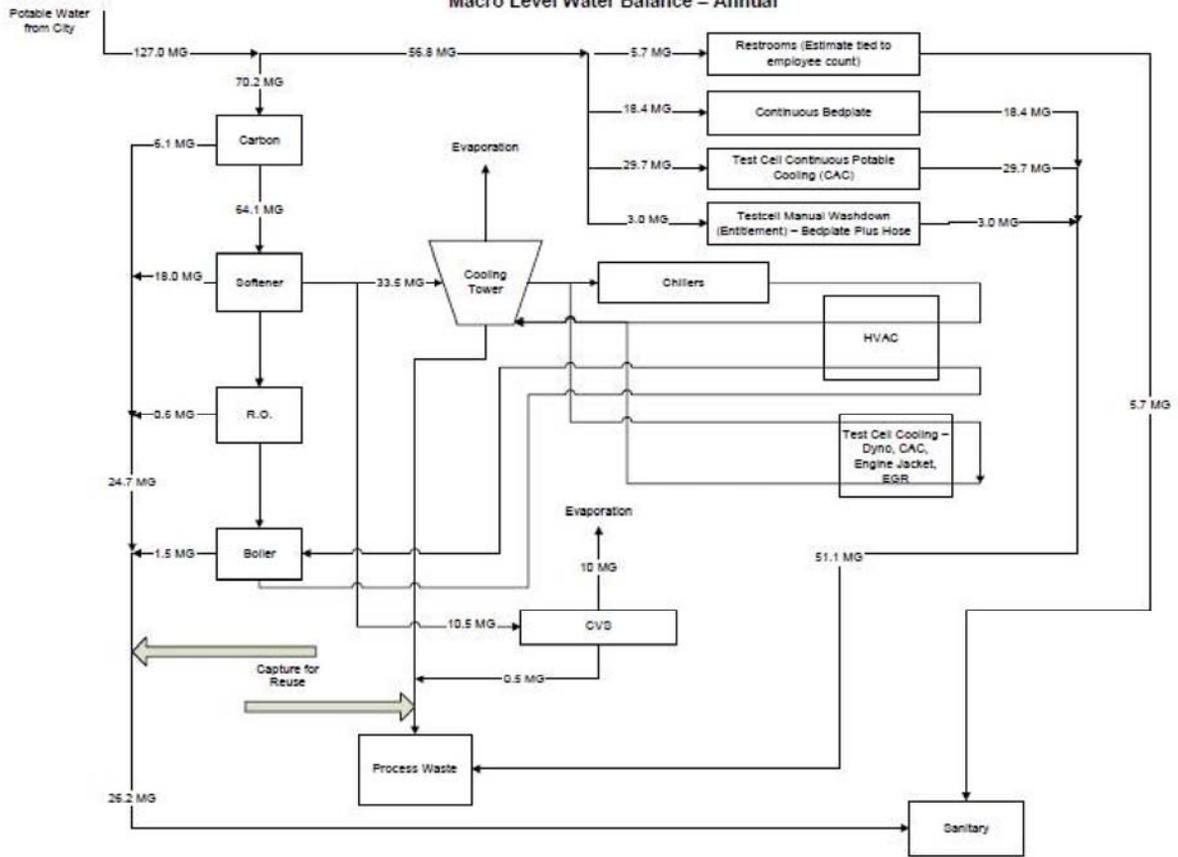
- Opened in 1967
- 88 test cells and labs
  - 500 – 3,000 HP
- 1,100 employees
- 500,000 sq. ft.
- ISO 14001, ISO 50001, Superior Energy Performance – Platinum
- 68.8 million gallons of water consumed, 2015
- 722,000 MMBtu energy consumption, 2015
  - 42% Electricity, 37% Diesel, 20% Natural Gas, 1% Other





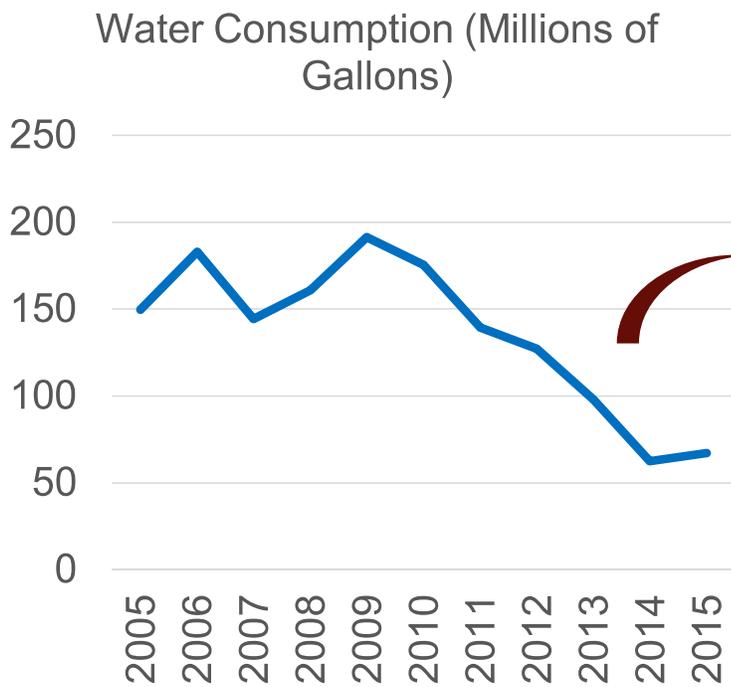
# Cummins Technical Center: Water Tree

**Cummins Technical Center  
Macro Level Water Balance – Annual**





# Cummins Technical Center: Water Profile



## Largest Water Uses:

- Boilers – 38%
- Sanitary & Laboratories – 28%
- General process water cooling – 23%
- Bedplate washdown / test cell cleaning – 5%
- Chilled water system – 4%
- Other – 2%

## Significant Efforts in Water Conservation:

- Test cell bedplate washdown
- Cooling tower water cycle improvements
  - From 2 cycles to 7
- Chemical management of process water
- Auditing and awareness

# Water Management in a Research Environment



## Leak Repairs and Auditing

- Maintenance team critical in fixing leaks
- Site communication on water conservation efforts led to a significant increase in employees reporting leaks
- One-pass cooling identified and addressed
- Test cell audits led to improved water valve placement, usage and control



## CTC Energy/Water Deputies

- Operational team focusing on ground-level improvements
- Comprised of test cell operation experts, facilities engineering, operational and environmental management
- Harness team's technical expertise to implement improvement projects
- Critical in bedplate washdown project and others
- Just-Do-It attitude



## Regenerative Dynamometers

- Do not require the use of process water to cool the dyno
- Much less water required in test cells
- Increases engine testing technical capabilities

# Observations

