Repurposing a Corporate Energy Management System for Water Efficiency

Alan Resnik
Director, Facilities & Operations Environmental Management

August 23, 2018
Five operating segments

Cummins has a nearly 100-year-long track record of delivering leading power solutions. As we look ahead, we know our industries and markets will continue to change, and we are committed to bringing our customers the right technology at the right time.
J. Irwin Miller: A visionary

- Laid foundation for future global growth
- Embraced the stakeholder model
- Integrated values into the fabric of our business
HSE Policy Commitments

Cummins’ leadership will facilitate this mission by providing the necessary resources and information to meet aggressive improvement targets in the areas of:

- illness and injury prevention;
- health and wellbeing promotion;
- pollution prevention; and
- natural resources conservation.
Enterprise Growth by Entity and Savings

- 372 Certified Sites
- More than $7.2 million avoided audit costs since 2004
HSEEnMS: Initiative Into Standard Practice

- Risk Assessment
- Compliance Obligations
- Strategy
- Objectives & Targets

- Corrective Actions
- Continuous Improvement (e.g. Global Action Plan, Hopper, Best Practices)
- New Goals

- Talent Management
- Training & Consultancy
- Internal & External Communication

- Goal Achievement
- HSE Metrics
- Incident Reporting
- Internal & External audits
- Management Review

- Implementation of Controls
- Management of Change
- Procurement
- Emergency Response

Cummins Leadership and Employee Engagement
Why Water, Why Cummins?

- **North America**
  - # of Sites: 41
  - Cummins Population: 15,888 / 32.9%
  - % of Total Water: 48.85%

- **Mexico & Central America**
  - # of Sites: 5
  - Cummins Population: 4,711 / 9.8%
  - % of Total Water: 4.21%

- **South America**
  - # of Sites: 4
  - Cummins Population: 2,832 / 5.9%
  - % of Total Water: 2.06%

- **Africa**
  - # of Sites: 2
  - Cummins Population: 221 / 0.5%
  - % of Total Water: 0.19%

- **Europe & Middle East**
  - # of Sites: 21
  - Cummins Population: 6,784 / 14%
  - % of Total Water: 4.12%

- **Asia Pacific**
  - # of Sites: 4
  - Cummins Population: 298 / 0.6%
  - % of Total Water: 0.49%

- **Russia**
  - # of Sites: 1
  - Cummins Population: 266 / 0.6%
  - % of Total Water: 0.02%

- **China**
  - # of Sites: 16
  - Cummins Population: 9,309 / 19.3%
  - % of Total Water: 23.85%

- **India**
  - # of Sites: 14
  - Cummins Population: 8,006 / 16.6%
  - % of Total Water: 16.21%

**Notes:**
1) Population includes employees plus contract workers;
2) Includes all Enablon reported sites in Q3 '12;
3) Includes only Non-DBU facilities (Manufacturing, Office, Warehouse);
4) Map Source: IWMI.CGIAR.ORG
Water Stewardship at Cummins

**Water Conservation**

*Aspiration* – We will continually reduce the amount of water we use in our operations and improve the quality of the wastewater we discharge.

*2020 Goal:* Reduce the water use intensity (normalized to labor hours worked) in our facilities by 50% as compared to a 2010 baseline.

**Community Water Engagement**

*Aspiration* – We will work together with our communities to ensure that everyone has adequate, safe, and sustainable water supplies.

*2020 Goal:* Achieve water neutrality (off-set the water we use) for 15 facilities in India, China, Brazil, South Africa, and Mexico by doing water projects (water quality, conservation, sustainable supplies) with our communities.
Water Performance Roadmap

- Integrate water requirements into EEnMS (ISO 14001/50001)
  - PDCA approach
  - Energy Champion Environmental Champion Program
  - Similar tools/toolkits: Metering, Energy Review/Water Balance
  - Sustainable and auditable controls
  - Media efficiency roadmaps via annual Objectives and Targets
  - Water/Energy nexus: Holistic approach
  - SEP statistical analysis for Energy and Water normalization factors

- Capital management process
  - All Media project hopper
  - Campaigns (metering, leaks, etc.)
  - Water capital projects look at risk/stewardship/goals beyond ROI

- Leadership Scorecards
Conservation: Make the Complex Simple

Prioritize  
Consult  
Achieve
Embedding Water Risk in Business Processes

Business Planning
- Site Selection
- Visibility of Requirements in High Water Risk Areas

Gate Review
- Material Selection Preferences
- Supplier Requirements
- Pursue Waterless Manufacturing

Product Design / Production Planning
- Non-Evaporative Cooling
- Pursue Waterless Machining
- Dry Filter Paint Curtains
- Production Critical Storage
- Contingency Plans

Gate Review
- VP Supply Chain or Chief Manu. Officer

Manufacturing Design
- Core Water Efficiency Measures
- Non-Evaporative Cooling
- Eliminate Potable Water Irrigation
- Water Storage Requirements

Gate Review
- VP Supply Chain or Chief Manu. Officer

Facilities Design
- Reuse Hierarchy
- Contingency Plans
- Neutrality Pursuit
Assessing Supplier Water Risk

264 Critical suppliers evaluated using Maplecroft tool to determine water stress risk

- 17 at extreme or very high risk
  - Driving risk mitigation plans
  - Next steps; sharing CMI water tools and training
Water Neutrality

Ecosystem Recovery
Shanghai Houtan Park (2017)
Total benefit is 60 MG/yr.

Manjarumbha, India Village Water Management Project (2012)
Tankers Not Needed First Time in 40 Years.
10,000,000 L Storage Added

China Recon – Zhuji Middle School (2013)
Water purification systems to supply water to a middle school serving 2,982 students, an estimated 7.8 million liters.

Car & General
/Cummins/Lions Club Water Pan Project (2012)
Kenya – East Africa
5,000,000 L Reservoir
Moving Forward

- **Priority Opportunities**
  - Single-pass operations
  - Irrigation (India)
  - Process optimization
  - Capture of clean water streams
  - Leak detection and mitigation
  - Wastewater treatment for reuse
  - Management of change

- **Sustainability 3.0**
  - No potable water for manufacturing
  - Water neutrality: all mfg. sites in stressed areas
  - Wastewater treatment for reuse
  - True cost of water and factor in risk