Water Conservation and Environmental Best Practices of Health Care Facilities

JOHN WILGIS, M.B.A., RRT

FLORIDA HOSPITAL ASSOCIATION

2015 Water Conservation Expo – Feb. 20, 2015

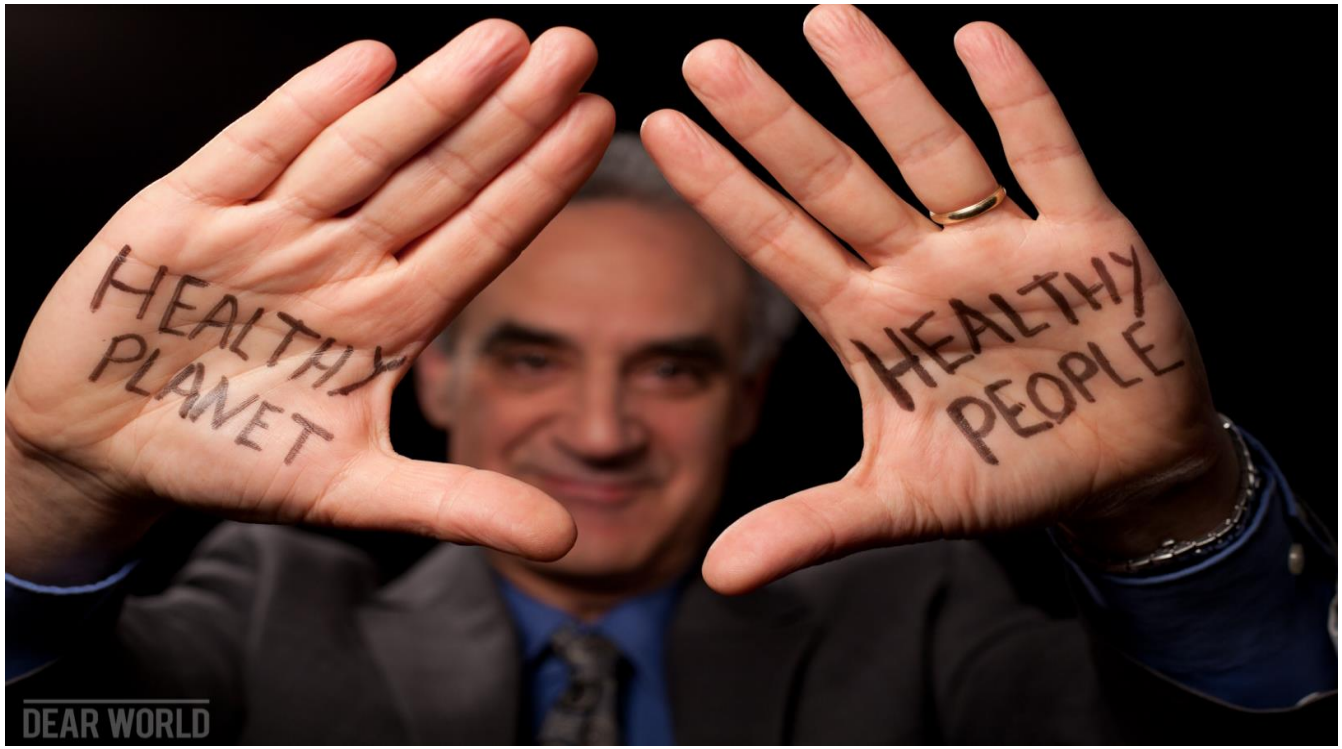
Objectives

- Understand why sustainability is important to health care.
- Understand what the Florida Healthier Hospitals Initiative (FHHI) is as a resource to hospitals.
- Discuss the corporate culture of sustainability and how water conservation is a part of that continuum.

Objectives

- Discuss the typical processes hospitals use to determine their current water use and methods to reduce their footprint and water use.
- Provide business case examples examples of best practice water conservation efforts hospitals and health systems are utilizing across Florida.

Florida Healthier Hospitals Initiative: Building a Healthier Future



Sustainability: More than a Blue Bin by the Copier

Logout Contact Messages My Account Search

Healthier Hospitals INITIATIVE

About HHI | HHI Challenges | Get Involved | Get Inspired | Media Center | Tools

HHI CHALLENGES

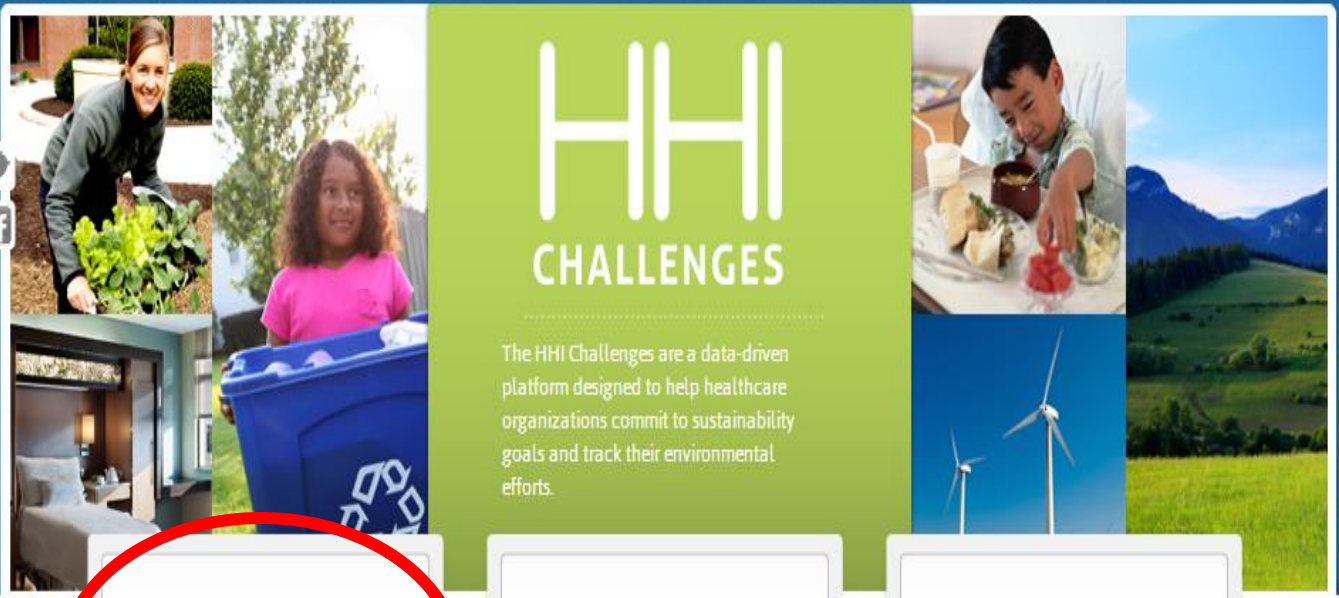
The HHI Challenges are a data-driven platform designed to help healthcare organizations commit to sustainability goals and track their environmental efforts.

+ Engaged Leadership
+ Healthier Food
+ Leaner Energy
+ Less Waste
+ Safer Chemicals
+ Smarter Purchasing

Logout Contact Messages My Account Search

Healthier Hospitals INITIATIVE

About HHI | HHI Challenges | Get Involved | Get Inspired | Media Center | Tools



HHI CHALLENGES

The HHI Challenges are a data-driven platform designed to help healthcare organizations commit to sustainability goals and track their environmental efforts.

+ Engaged Leadership

+ Healthier Food

+ Leaner Energy

+ Less Waste

+ Safer Chemicals

+ Smarter Purchasing

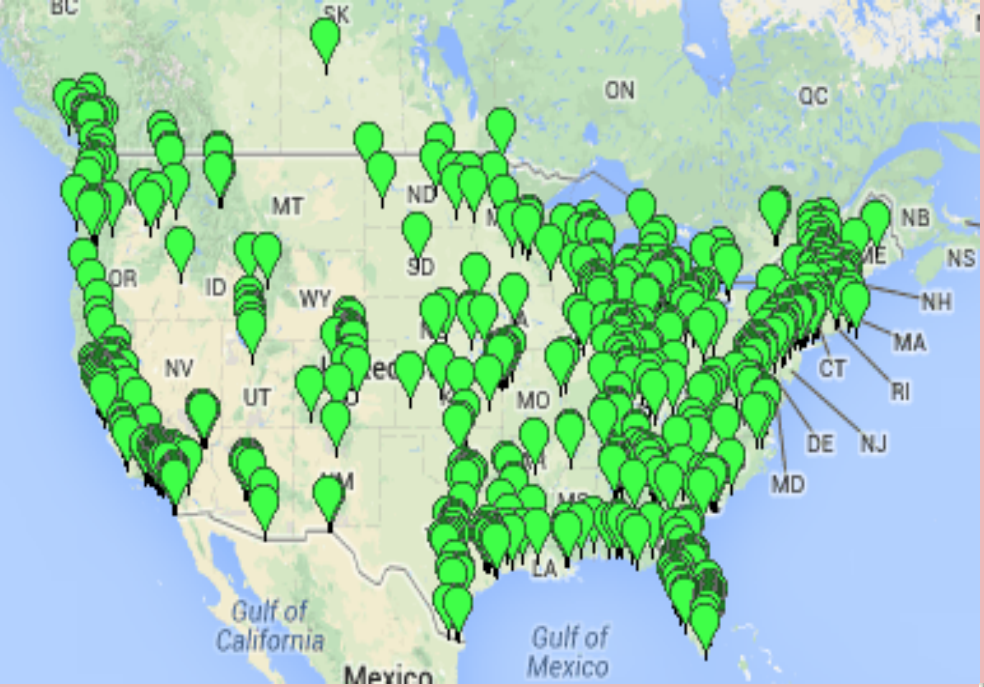
What about H_2O?

Engaged Leadership and Water Conservation

- Strategic priority
  - Plan, program and culture
- Operational focus
  - Assessment, goals and implementation
- Systematic communication
  - Measurement and reporting
- Stakeholder engagement
  - Support, education, best practice

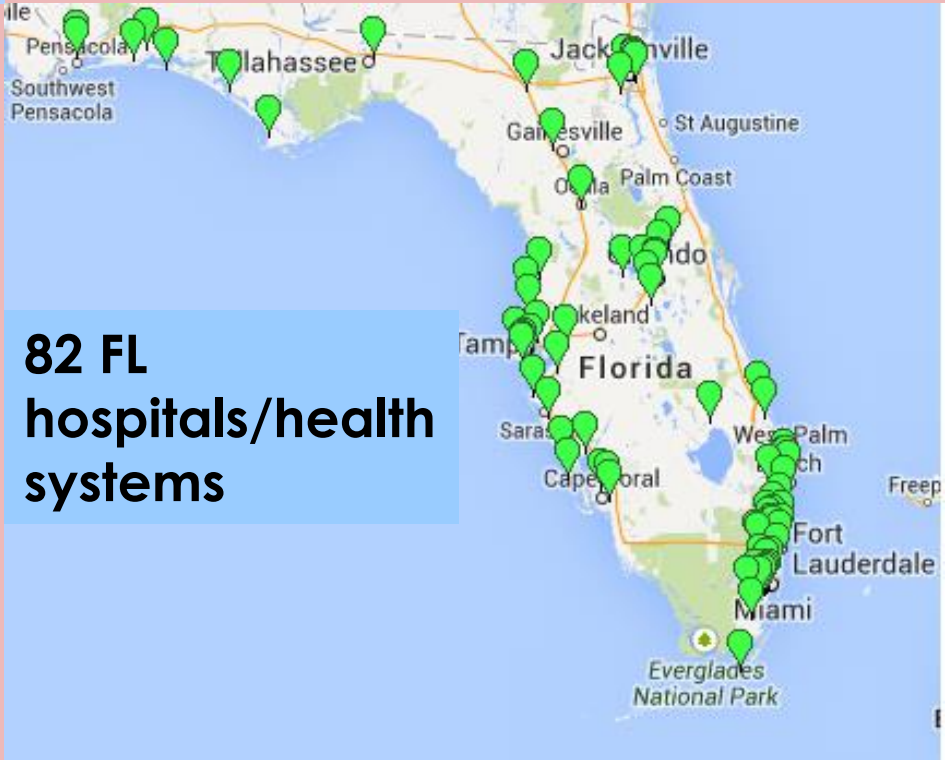
www.healthierhospitals.org

★ Includes former Vanguard facilities



Over 1,200 enrolled hospitals in HHI nationally

- **Ascension Health**
- **Baptist Health South**
- **Bon Secours**
- **Broward Health**
- **Cleveland Clinic Florida**
- **HCA, Inc.**
- **Lee Memorial Health System**
- **Orlando Health**
- **Tenet**
- **40 Community, Critical Access and Children's Hospitals**



82 FL hospitals/health systems

FHHI Resources

- How-To Guides
- Webinars & Sharing Calls
- Mentor Program
- Discussion Forums
- Case Studies
- Spark Newsletter
- Communications Toolkit

Practice Greenhealth

- Over 1200 health care, business, and other strategic members
- Dedicated facility engagement manager for setting goals, problem-solving and technical expertise
- Member-only resources and discounts
- Greenhealth Academy
- Environmental Excellence Awards

FLORIDA HOSPITAL ASSOCIATION
Mission to Care. Vision to Lead.

Water Conservation and Health Care

How Much Water in Health Care?

- An acute care hospital uses an average of **550 gallons** of water per bed staffed bed/day.
- **3.1 million gallons** of water per operating room per year.
- **62 gallons** per square foot per year.
  - Best Performers used **10 gallons** per square foot per year!
- Average Total Cost per 1,000 gallons - **$5.59/gallon.**
- Average Total Cost per 1,000 gallons with sewer - **$8.23/gallon.**

2013 Practice Greenhealth Sustainability Benchmark Report

Benchmarks

Entity	Gal / Sq. Ft. / Yr
Practice Greenhealth	62
IFMA / ASHE Benchmark Report 2.0	70
US Energy Information Administration - CBECS	67.7

Water Reduction & Cost Savings

Normalizing Factor	Gallons of Water	Annual Savings (Water & Sewage)
Per OR Procedure	20,600	$3.70
Per OR Room	15.4 M per year	$2,280
Per Staffed Bed	898,790 per year	$141

Implementing Change

- Assess current water use with a tool like EPA Energy Star or Watermark.
- Calculate costs associated with water, (water use and sewer fees) which vary by region.
- Make the case for water conservation.

Implementing Change

- Set goals and integrate into Environment of Care or Green Team committee.
- Develop a water conservation strategy.
- Implement, track and report.
- **Culture of continuous improvement**.

Water Conservation Methods

- Water audit
- Benchmark comparison
- Leak analysis
- Retrofit and replacement of older equipment and facility systems

Water Conservation Methods

- Native landscaping
- Irrigation controls
- Environmental and food service improvements
- Collaboration with water treatment advisor and utility providers

Success Stories

Save Over 12 M Gallons with One Decision

- Upgrade sterile processing equipment
  - Utility savings of > $172 K annually over older, original existing equipment.
  - Decrease use of 12,195,867 gal / year.
- Success factors:
  - Equipment efficiency
  - Reduced turnaround time for instrumentation back to OR
  - No loss of quality

STANFORD HOSPITAL & CLINICS

FHA Florida Hospital Association

Mission to Care. Vision to Lead.

Ascension Health Systems

- 5.9 million gallon reduction 2012 to 2013.
- Low flow toilets.
- Irrigation system maintenance.
- Outsourced Laundry.
- Volume reduction AND increased costs $166,000 to $212,500 even with a 2,000,000 gallon reduction.

ST. VINCENT'S HEALTHCARE
ABOVE. BEYOND. BECAUSE.

Current Best Practice

- Upgrade Faucet Valve Cartridge to Ceramic Stem
- Approximate Cost: $20
  - Same cost as traditional rubber washer cartridge
- Approximate Water/Sewer Savings: ~ 400 gal / year / leaky fixture
- Approximate Return on Investment: 5.75 years

Current Best Practice

Pint Urinals

- Cost: $500-1,500
- Water/Sewer Savings: ~ 20,000 gal / year
- Return on Investment: 3.4 years

Current Best Practice

Waterless Urinals

- Cost: $250 - $500
  - Cartridge cost: ~$25 (~ 7,000 uses)
- Water/Sewer Savings: ~ 40,000 gal / year / urinal
- Return on Investment: < 2 years

Current Best Practice

Dual-Flush Toilets

- Replace with 1.1 / 1.6 dual flush or 1.28 single flush
- Approximate Cost: $600
- Water/Sewer Savings: ~ 2.5 M gal / year
- Return on Investment: ~ 6.78 years

Current Best Practice

High Efficiency Shower Heads

- Replaced 2.5 gpm with 1.5 gpm shower heads
- Cost: $78
- Water/Sewer Savings: ~ 1.0 M gal / year
- Return on Investment: ~ 2 years

Current Best Practice

Kitchen Dishwashers

- Approximate Cost: $120,000
- Water/Sewer Savings: ~ 657,000 gal / year
- Return on Investment:18.26 years

Current Best Practice

Single Pass Refrigeration Equipment

- Replace
- Approximate Cost: $3,700
- Approximate Water/Sewer Savings: ~ 328,000 gal / year / item of equipment
- Approximate Return on Investment: 1.1 years

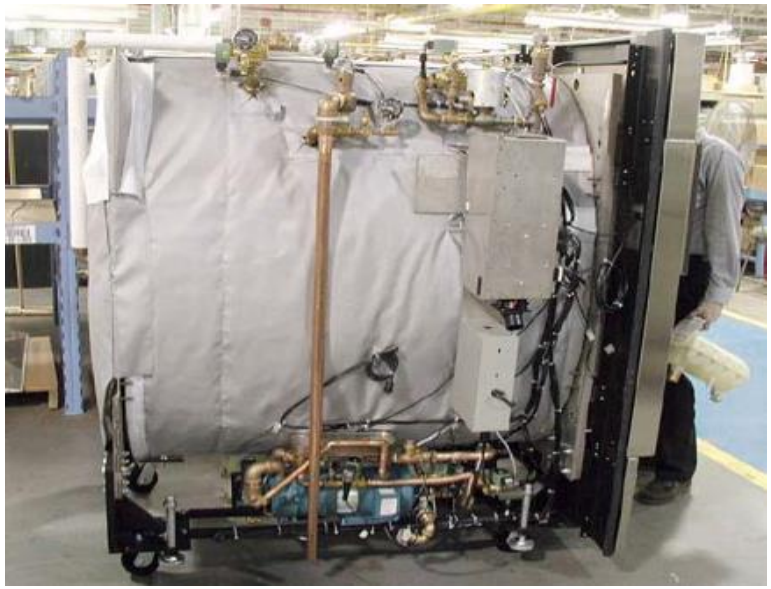
Current Best Practice

Retrofit Vacuum Sterilizers (10+ year old equipment)

- Electric vacuum pump modification
- Approximate Cost: $30,000
- Water/Sewer Savings: ~ 1.5 – 1.6 M gal / year
- Return on Investment: 1.9 years

Current Best Practice

Retrofit Vacuum Sterilizers



- Shut off condensate cooling line flow
- Cost: $0
- Water/Sewer Savings: ~ 3.8 M gal / year
- Return on Investment: immediate

Current Best Practice

Low Flow Medical Vacuum Pumps

- Approximate Cost: $40,000
- Approximate Water/Sewer Savings: ~ 1,051,000 gallons
- Approximate Return on Investment: 3.80 years

Current Best Practice

Air Cooled Reciprocating Medical Air Compressors

- Approximate Cost: $40,000
- Approximate Water/Sewer Savings: ~ 788,400 gal / year
- Approximate Return on Investment: 4.97 years

Current Best Practice

Hot Water Circulation Temperature Monitoring

- Approximate Cost: $19,500
- Approximate Water/Sewer Savings: ~ 526,000 gal / year
- Return on Investment: 4.61 years

Current Best Practice

Limited landscaping / Florida-friendly plants and trees

Current Best Practice

Limited landscaping / Florida-friendly plants and trees

Current Best Practice

Irrigation Options

- Installed temporary decomposable irrigation lines to establish plantings.
- Reduced irrigation run time settings by 75%.
- Approximate water / sewer savings: ~ 1,547,000 gal / year

Challenges

Challenge Area - Laundry

- Water and wastewater costs represent more than 50% of the total operating costs.
- There are limits to the reduction of water quantity and the ability to clean fabric.
- Greatest water conservation opportunities often exist in the various methods of reusing or recycling water from the machines.
- The extent of a laundry's ability to recycle water usually lies in the facility's ability to filter, clarify and sanitize the effluent water from the washing machines.

Washer-Extractors

- Efficiency measured in gallons per pound of fabric.
- Average 3 - 4 gal/ lbs. of fabric cleaned.
- Efficient machines have built-in water recycling capabilities; using less than 2.5 gal/ lbs.

Tunnel Washers

- Water consumption rates ~ 2.0 gal/ibs. - about 2/3 that of the typical washer extractors.
- $$$$$; most often used n industrial laundries with very high production rates.
- Inherently water-efficient; automated to maximize the throughput of the laundry.

In-house vs. Outsource

- In general, 2 gal/lbs. of clothes is considered a "good" water efficiency standard for commercial laundries
  - Not always achievable for heavily soiled fabrics (Hospitals).
- Water recycling requires special equipment to filter, sanitize, treat, and store the water; **$$$$$** to install and maintain.

In-house vs. Outsource

- NEW: Ozonation and membrane technologies offer exciting opportunities to advance clothes washing efficiencies (< 1.5 gal/lbs.)
- **The decision to outsource linen services must consider and actively involve a corporate partner whose strategic priorities and culture align with the organization's.**

Summary

- The concept of sustainability and water conservation is an important element of organizational operations in hospitals and health systems across Florida.
- FHHI takes a collaborative approach with hospitals to enhance their stewardship of natural resources as a business within their community.
- Water conservation is fast becoming a significant part of the corporate culture of sustainability.

Summary

- Hospitals use standard processes to determine water use that underscores areas for improvement leading to reductions in water use.
- There are many ways hospitals can implement water- and cost-savings and these methods are an integral part of a culture of sustainability.

Thank you!

JOHN WILGIS

JOHN@FHA.ORG

407-841-6230