

IOWA HEALTH - DES MOINES



MATT LITWIN
CIVIL & ENVIRONMENTAL ENGINEERING, THE UNIVERSITY OF IOWA



COMPANY BACKGROUND

Iowa Health - Des Moines (IHDM) in Des Moines, Iowa, is the largest affiliate of the Iowa Health System. IHDM has a staff of nearly 7,000 employees, houses 779 beds, and is the parent of four hospitals: Iowa Methodist Medical Center (IMMC), Iowa Lutheran Hospital (ILH), Blank Children's Hospital and Methodist West Hospital (MWH). Some of the many services IHDM provides include cancer, cardiac, diabetes, maternity/OB, and rehabilitation. IHDM is committed to "improving the health of our communities through healing, caring and teaching."

PROJECT BACKGROUND

Water is one of the more expensive utilities for IHDM and future water prices will continue to rise. Water usage at IHDM nearly doubles during the summer months as large amounts of water are used for irrigation and cooling towers. IHDM seeks to use water more efficiently and improve its environmental footprint.

INCENTIVES TO CHANGE

IHDM is constantly searching for ways to create a more eco-friendly environment. The intern focused on water usage and finding opportunities to conserve water and reduce costs. By conducting an overall water balance and analyzing specific areas of use, the intern identified several opportunities to reduce water usage through new technologies, improved efficiencies and reuse.

RESULTS

Deduct Meter Installations (IMMC): More than half of the irrigation usage at IMMC incurs sewer charges. IMMC is paying three times as much as it should be for over half of its irrigation. By installing deduct meters around the campus to remove the sewer charges, IMMC can save \$12,717 annually, reducing irrigation costs by 55.6 percent.

Lake Water Use for Irrigation (MWH): A 9 acre lake, owned by IHDM, is adjacent to the MWH facility. Since the facility is in West Des Moines, water charges are more than twice as much as those in Des Moines. If a pumping station were installed in the lake, the water could be used for irrigation, reducing MWH's city water usage by 100 percent and saving \$6,450 a year.

Irrigation System Upgrade (IMMC): The irrigation system at IMMC may need replacement in the near future. New technologies in spray bodies and rotors offer greater efficiencies for water savings than systems used in the past. By centralizing the control system, making it weather smart,

and upgrading the spray bodies and rotors, a 30-percent reduction in water use would be possible, creating savings in labor as well.

RO Treatment of Boiler Feed Water: Although the boiler system at IMMC is very efficient, savings could still be realized. If the feed water for the boilers at IMMC were pretreated with a reverse osmosis (RO) system, boiler cycles could increase, saving natural gas and chemical costs and approximately \$11,010 annually. This would improve condensate corrosion control, lower external costs and reduce the amount of chemicals going down the drain.

On-going Showerhead Retrofit: IMMC is already making progress toward updating its restrooms with the most efficient products. The intern recommended installing more water efficient showerheads in patient rooms. This measure could save \$5,783 per year in water and heating costs and it would be an easy replacement.

Reuse of Cooling Tower Blow Down: The operation of IMMC's cooling towers doubles water usage at the facility during the summer, from large makeup water use. By treating the blow down from the cooling tower, an estimated 50 percent of the blow down could be reused as makeup. This would create an annual savings of \$8,966 and reduce makeup city water use by 10 percent.

CONVENTIONAL AIR POLLUTANTS AND GREENHOUSE GASES DIVERTED IN STANDARD TONS

Total for all sectors					
CO ₂	SO ₂	CH ₄	N ₂ O	CFC	PM-10
255.20	0.09	144.26	74.83	0.95	0.04



PROJECT	ANNUAL COST SAVINGS	ENVIRONMENTAL RESULTS	STATUS
DEDUCT METER INSTALLATIONS (IMMC)	\$12,717	-	IN PROGRESS
LAKE WATER USE FOR IRRIGATION (MWH)	\$6,450	1,500,000 GALLONS	RECOMMENDED
IRRIGATION SYSTEM UPGRADE (IMMC)	\$6,861	1,515,454 GALLONS	RECOMMENDED
RO TREATMENT OF BOILER FEED WATER	\$11,010	3532 THERMS 17.3 TONS OF CHEMICALS	RECOMMENDED
ON-GOING SHOWERHEAD RETROFIT	\$5,773	2,559 THERMS 638,750 GALLONS	RECOMMENDED
REUSE OF COOLING TOWER BLOW DOWN	\$8,966	1,387,864 GALLONS	MORE RESEARCH NEEDED

