

Water and Energy Conservation at MCF-Shakopee

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Company Background



MCF-Shakopee

(Minnesota Correctional Facility)

- 32-acre property
- 255,000 square feet combined facilities
- Average of 562 incarcerated persons (IP)
- Only state-run women's prison in MN
- Multi-use space

Incentive to Change

- Maintain security and safety of offenders and public
- Meet or exceed state sustainability goals
- Expand programming opportunities for offenders
- Improve efficiency of laundry systems
- Redirect cost of operations









Process Overview

24/7 365 Facility

Daily Operations:

- Food Services
- Educational and Employment Opportunities
- Physical and Mental Health Services
- Rehabilitation and Transition Programs

Key:

- | | |
|---|--|
|  Core Building |  Industry (MINNCOR) |
|  Residential Unit |  Heat Plant |
|  Segregated Housing Unit |  Greenhouse |



Showerheads

Current

Average Number of Persons	Minutes Per Shower	Flowrate (gpm)	Gallons Per Year
403	8	3.5	4,118,660
159	8	2.5	1,160,700

Recommendation

New Flowrate (gpm)	New Gallons Per Year	Gallons Saved Per Year
1.5	1,765,140	2,353,520
1.5	696,420	464,280

Annual Savings

- Water: 2.8 million gallons
- Cost: \$10,000



Special Considerations

- ADA-compliance
- Water Sense certification
- Vandal- and ligature-resistant fixtures

Laundry

Current

- IPs are responsible for washing their own clothing
- Regulated amount of state-issued clothing and personal property
- 74,000 loads/year
- 27.9 gal/cycle
- **Half full loads**
- **Misuse of detergent**
- 47 washers
- 49 dryers



Broker Laundry Room

Recommendations

Commingle Offender's Laundry

- Utilize state-issued mesh bag
- Label with offender ID # (OID)
- Employ IPs on each unit: 10+ jobs created
- Reduce number of loads per year by 50%

Ozone System

- Most effective with cold water
- Cut detergent use by 75%

Annual Savings

Washers

- 1,000,000 gallons of water
- 87,000 kWh
- 1,400lbs of detergent
- Double machine lifespan

Dryers

- 175,000 kWh
- Double machine lifespan



Lighting

Current Fluorescent

- Annual Energy Use: 1.5 million kWh
- Annual Cost: \$140,000

4' T12	10
4' T8	5,513
3' T8	334
2' U Shape	413
Miscellaneous Bulbs	397
TOTAL	6,667

LED Retrofit

Capital Investment

- Material Cost: \$60,000
- Rebate: \$31,000

Usage

- Annual Energy Reduction: 600,000 kWh
- Annual Cost Reduction: \$80,000

Savings

- Less Frequent Bulb Replacement



Recommendation	Annual reduction	Total cost	Annual savings	Payback period	Status
Install Low Flow Showerheads	3,000,000 gal of water 21,000 therms	\$2,300	\$17,000	1.5 months	Implementing
Commingle IP Laundry	1,030,000 gal water 263,000 kWh 1,500 lbs. detergent 1,600 lbs. scrap metal	\$19,500	\$48,000	6 months	Recommended
Install Ozone Laundry System	2,100 lbs. detergent	TBD	\$21,000	TBD	Tentatively Recommended
Replace Fluorescent Bulbs with LEDs	600,000 kWh	\$38,000	\$80,000	6 months	Recommended
Replace Dishwasher	19,000 gal of water 124,000 kWh	\$31,000	\$10,500	3 years	Recommended
Turn off IP Coffee Machines when Not In Use	60,000 kWh	None	\$6,550	Immediate	Recommended
Replace Gaskets on Coolers and Freezers	1,500 kWh	\$340	\$150	2 years	Implemented

Personal Benefits

- Researched evidence to support sustainability solutions
- Developed acuity around building relationships with stake-holders
- Calculated and communicated impacts of proposed changes
- Trained in self-defense skills!

