

# Grundfos - Indianapolis



# Agenda

- Grundfos Sustainability
- Waste Disposal Improvements
- Water Usage Improvements
- Utility Efficiency Improvements
- Future Projects

# Grundfos Sustainability Commitments

- Grundfos White Paper issued in 2008
  - We will reduce our carbon footprint
  - We will investigate and reduce carbon emissions over the entire lifecycle of our products and services
  - We will investigate and reduce our water consumption throughout our value chain
  - We will grow the demand for energy-efficient pumps, systems and solutions
  - We will help the world adapt to climate change, water scarcity and a low carbon economy
  - We will do our part to raise global awareness of the link between water, energy and climate change

# Grundfos' Commitments

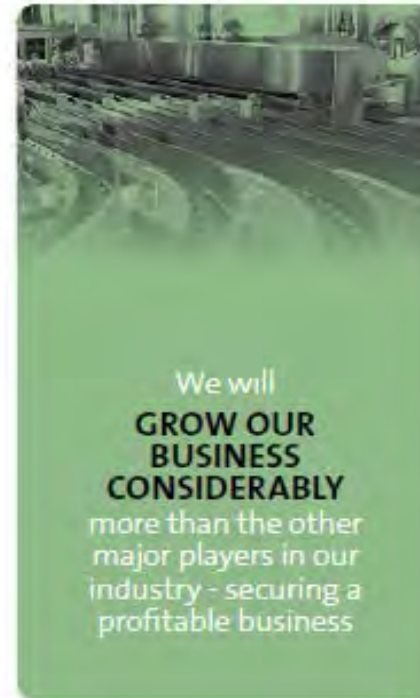
Grundfos has a history of acting as a sustainable company and we will continue to build on this in the future. But to fulfill our ambition of being a trustworthy sustainable partner for our customers, we need to step up our efforts in this direction. Therefore we have identified four commitments that will anchor our climate efforts:

- Take our own medicine
- Innovate new sustainable products and solutions
- Encourage a green mindset
- Influence the global agenda

# Grundfos Sustainability Vision

## “Triple Bottom Line”

### SUSTAINABILITY VISIONS



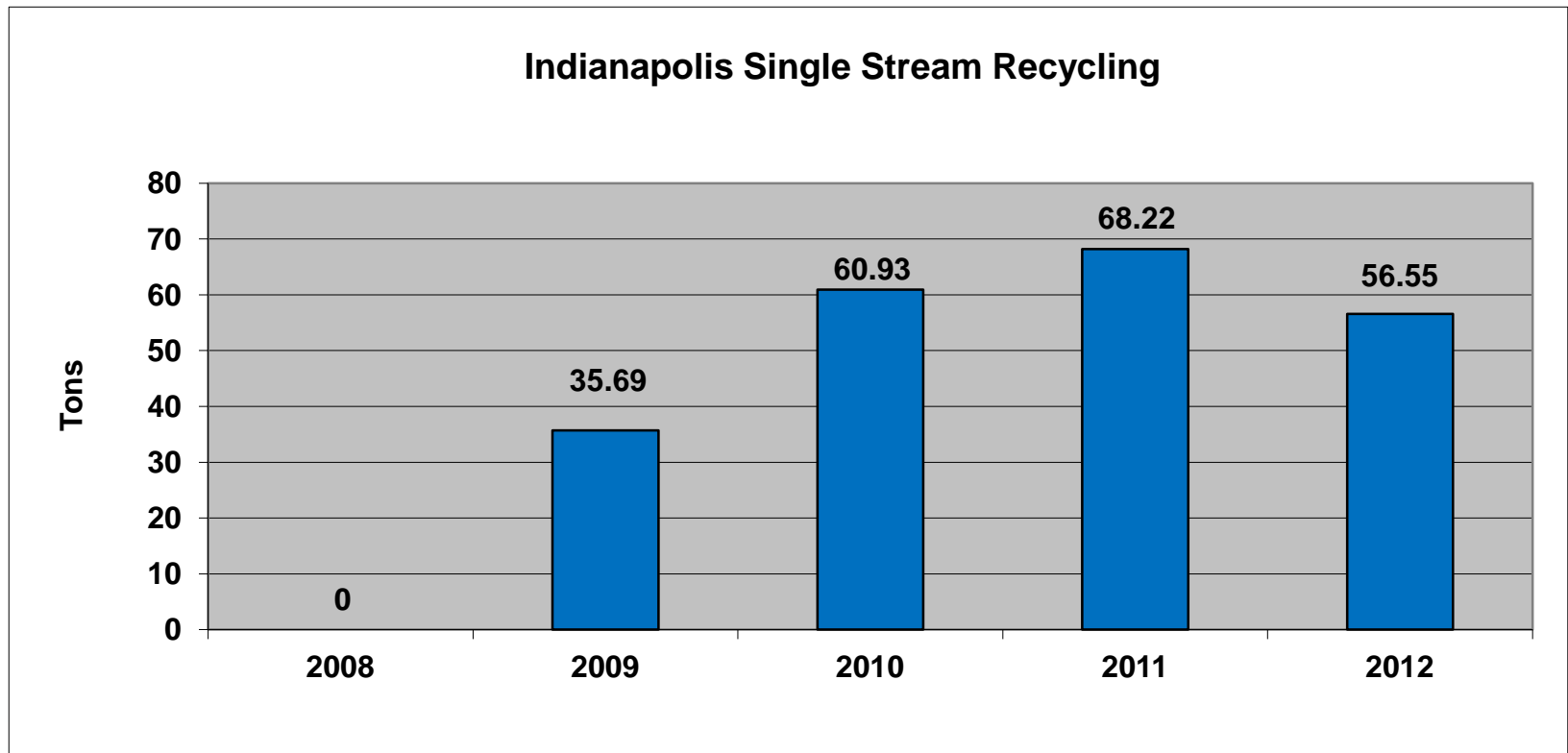
# Waste Disposal Improvements





# Single Stream Recycling

- Implemented Single Stream Recycling in 2008
  - Stopped landfilling waste and work to recycle
  - Incinerated general refuse



# Single Stream Recycling



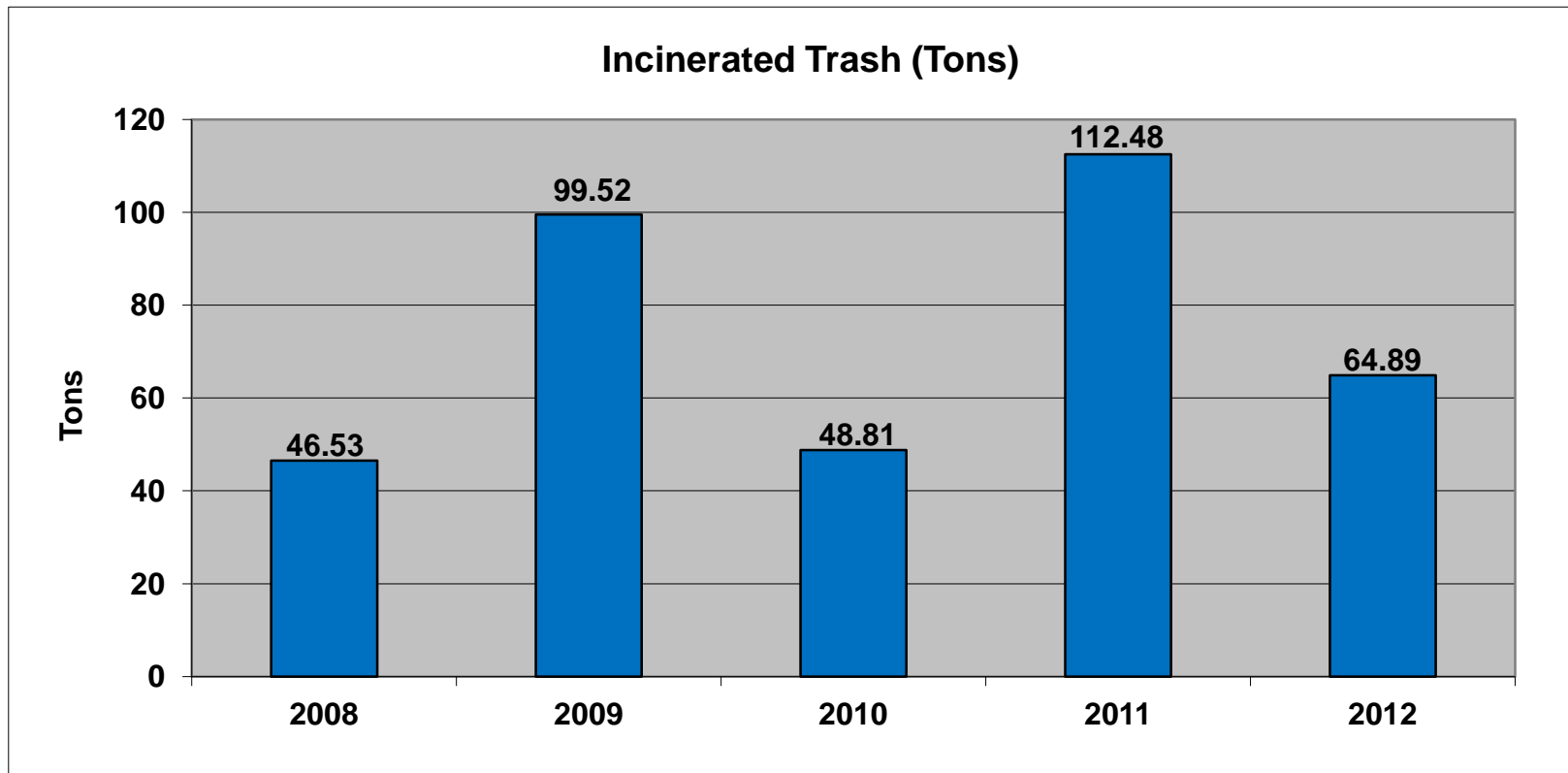


# Single Stream Recycling



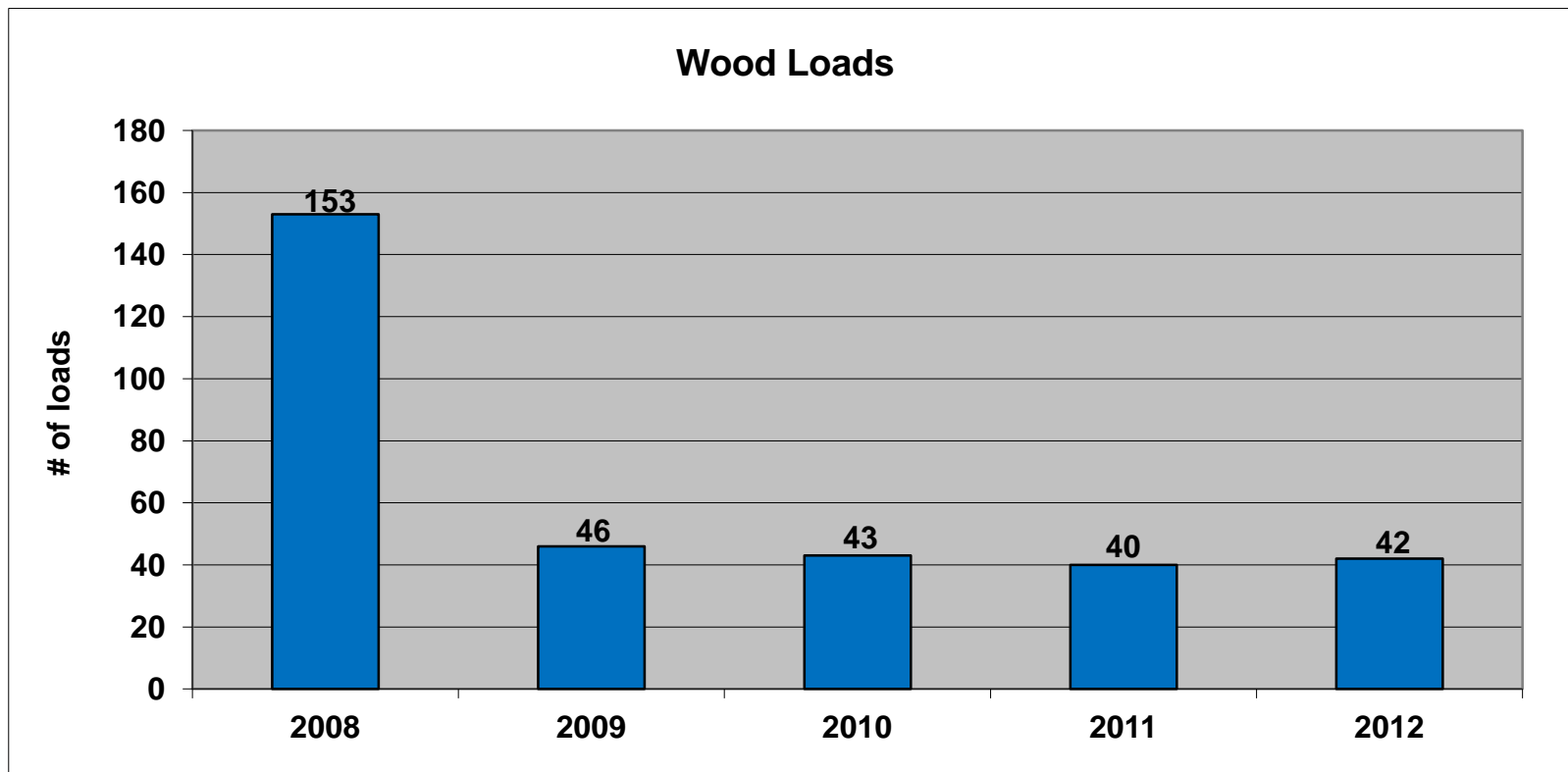
# General Refuse Waste to Energy

- Utilized Covanta since June of 2008 to incinerate our general refuse for energy production



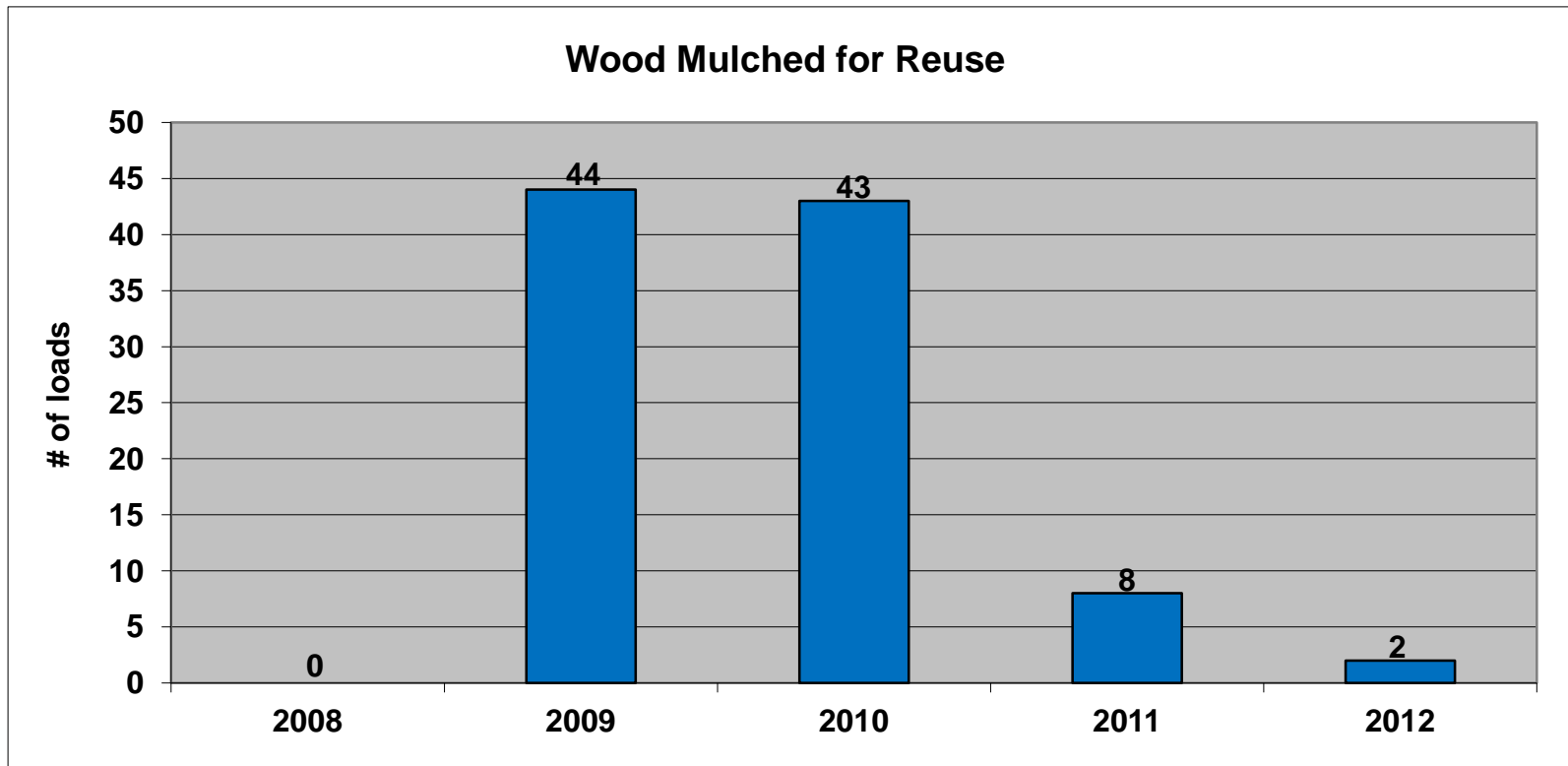
# Wood Waste Shipment Reductions

- Utilized a wood pre-crusher to replace the open top roll-off dumpster to reduce the number of wood waste shipments from our facility.



# Wood Reuse

- Mulched wood for commercial and residential reuse
- Lost vendor in 2011 and need to work to remove painted material from crusher
- Once painted wood is separated, we will be sent for mulch



# Wood Reuse





# Wood Reuse





# Painted Wood





# Drum Color Coded System

- Purchased color coated drums for single stream recycling, general refuse and metals
  - Decreased the amount of general refuse containers and placed containers together
- Metal color coated drums will increase profitability for recycled metals by reducing cross contamination of materials.



# Water Usage & Disposal Improvements



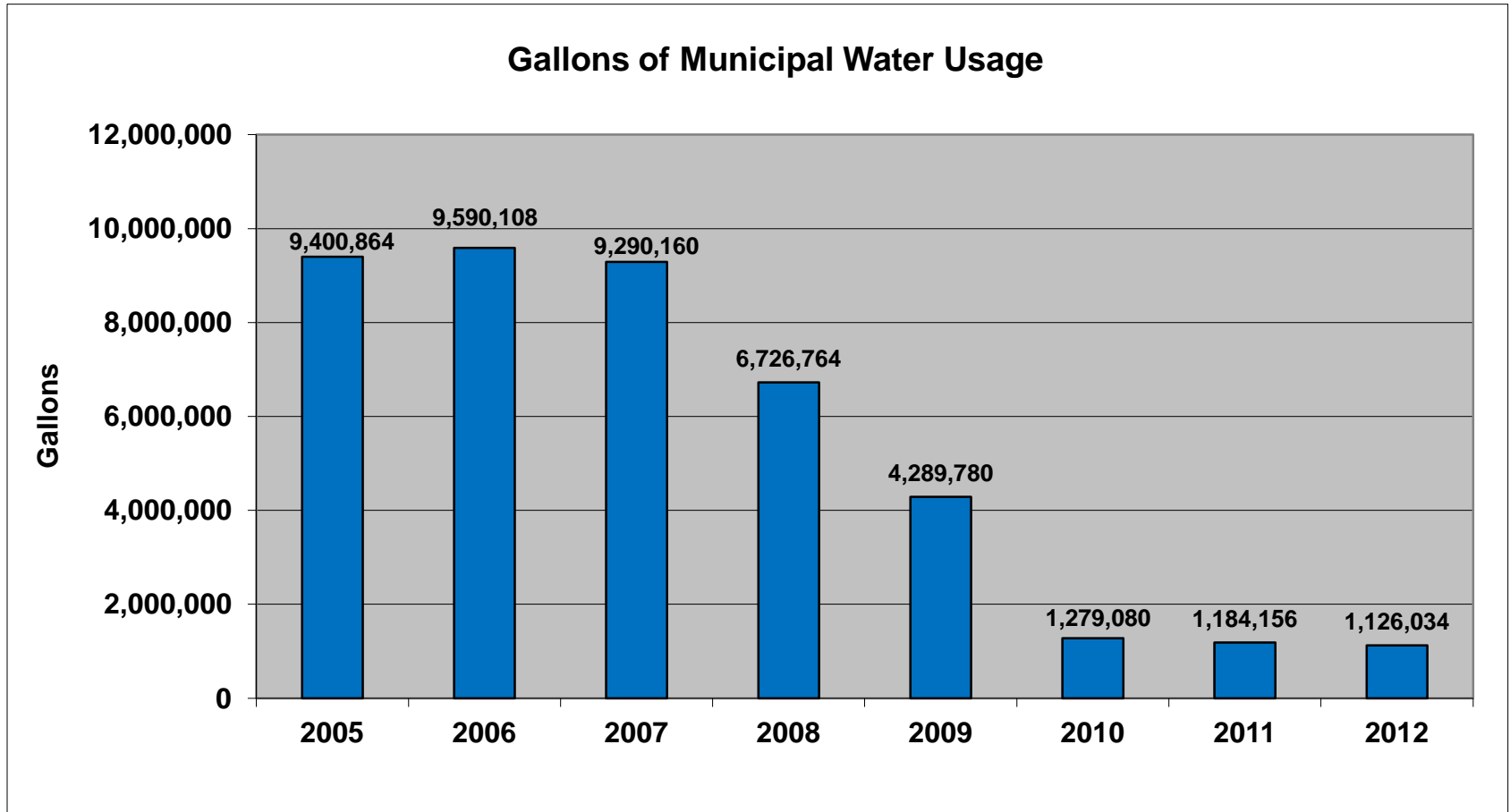
**SUSTAINABLE**

# Water Usage & Wastewater

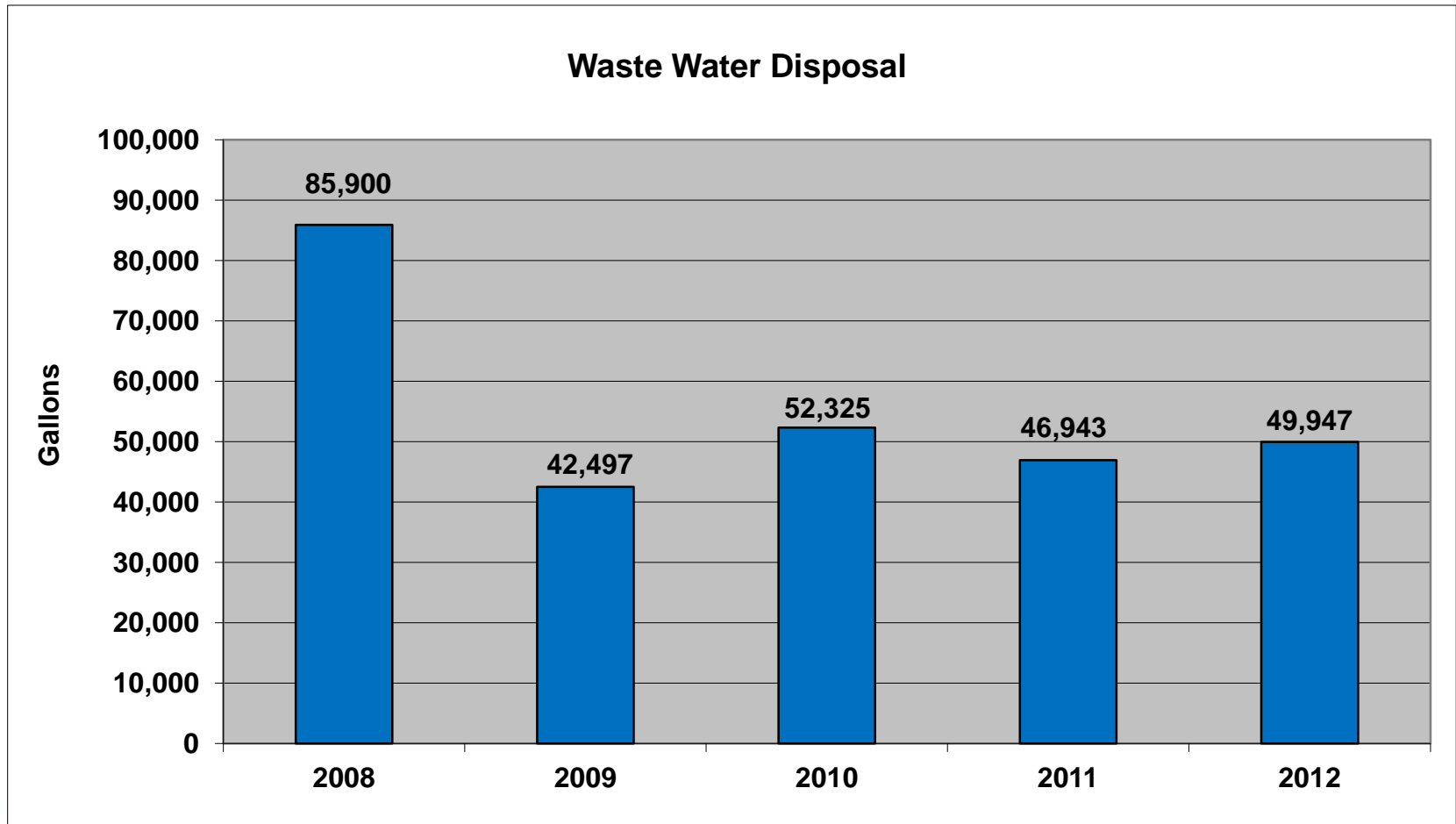
- Potable Water
  - Increased potable water usage efficiency through fixing water leaks and replacing some bathroom fixtures with low flow technology.
  - Increased the efficiency of our Reverse Osmosis (RO) water system
- Industrial Waste Water
  - Improved our AST system for Industrial Wastewater. Installed 2 new tanks and a roof over our containments to reduce the rainwater disposal
  - Increased our machine coolant recycling
  - Installed roofs on our Diesel Fuel ASTs to prevent rainwater disposal
- Groundwater Usage
  - Reduced the flow of our fire suppression water pit
  - Cleaned outside pit and installed aerators to decrease algae blooms
  - Controlled the amount of usage through monitoring needs of test pits



# Potable Water Usage



# Industrial Wastewater Disposal



# Industrial Wastewater ASTs

- Reduced the number of ASTs
- Installed a roof over the ASTs to prevent rainwater from entering tanks



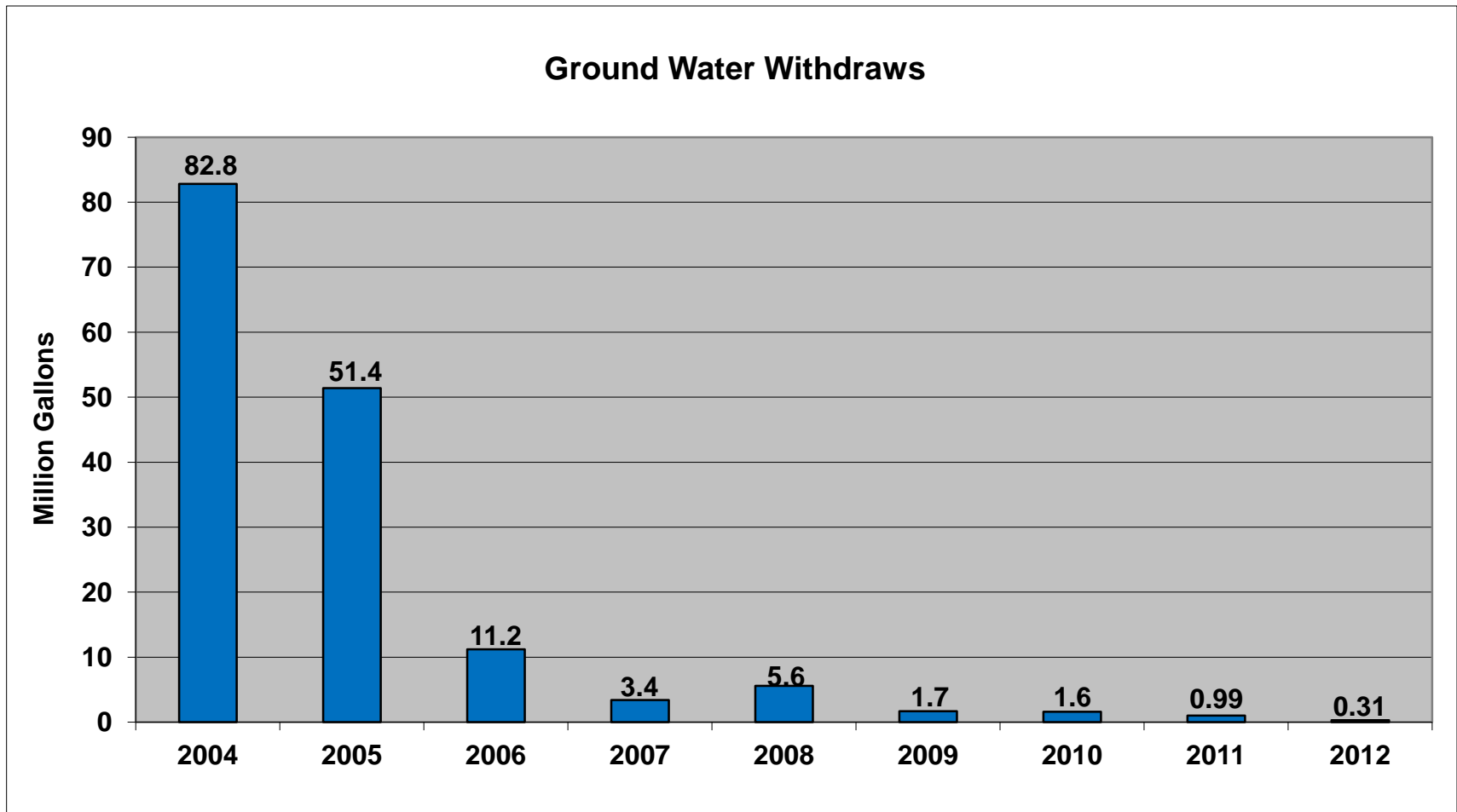


# Diesel AST Rainwater Prevention

- Added roof system to Diesel ASTs



# Groundwater Usage Reductions





# Utility Efficiency Improvements



# Radiant Tube Heat & Air Compressor Heat Recovery

**Radiant Tube Heat:** Replace the current ceiling mounted unit heaters with radiant tube heat. The current unit heaters are estimated to be running at 60% efficient. The radiant tube heat will be 90%+ efficient. Below is a summary of the estimated cost and CO<sub>2</sub> savings.

- 50,000 Therms reduced (250 tons of CO<sub>2</sub> savings)
- 90,000 KWh reduced (60 tons of CO<sub>2</sub> savings)
- Annual estimated utility savings: \$50,000

**Air Compressor Heat Recovery:** The heat created from the facility compressed air system will be directed into the manufacturing plant. Below is a summary of the estimated cost and CO<sub>2</sub> savings.

- 1375 Therms reduced (8,100 kg of CO<sub>2</sub> savings)
- Estimated Annual Electricity Savings: \$1,170

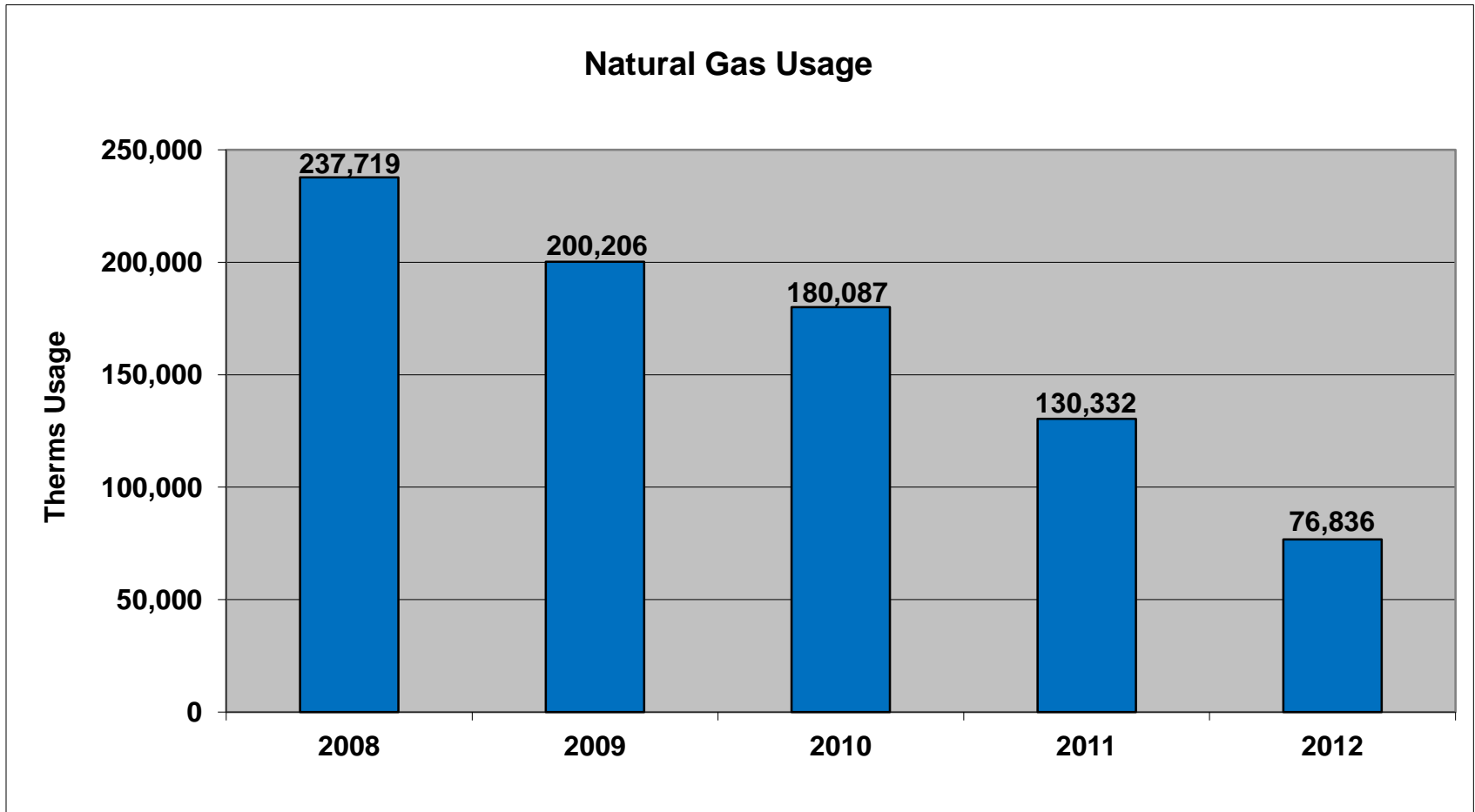
# Radiant Heaters



# Air Compressor Heat Recovery



# Natural Gas Usage





# Manufacturing Area Lighting

- Previous T8 Lighting
  - 8 tubes at 32 watts per tube
  - Consumes over 300 watts of energy per fixture with ballast
- LED Lighting
  - 8 tubes at 20 watts per tube
  - Consumes under 160 watts of energy per fixture without ballast
- Benefits
  - Decrease energy and CO<sub>2</sub> (356,000 KWh and 320 tons of CO<sub>2</sub>)
  - Increase light output
  - Decrease maintenance hours to replace lamps and ballasts
  - Decrease universal waste management and disposal

# Manufacturing Area Lighting



# Office LED Lighting

- Removed 95 T8 Lighting Fixtures
  - 3 tubes at 32 watts per tube
  - Consumes over 100 watts of energy per fixture with ballast
- Installed 107 LED Lighting Fixtures
  - 3 tubes at 20 watts per tube
  - Consumes under 60 watts of energy per fixture without ballast
- Benefits
  - Decrease energy and CO<sub>2</sub> (16,500 KWh and 14 tons of CO<sub>2</sub>)
  - Increase light output
  - Decrease maintenance hours to replace lamps and ballasts
  - Decrease universal waste management and disposal



# Office LED Lighting



# Manufacturing Area Task Lighting

- Most of our task lighting is T12 two lamp fixtures
- 40 watt T12 lamps with ballast
- Change to 20 watt LED lamps
- Savings of over 50% per changed fixture
- Working to implement across the entire manufacturing area
- Provides more task light for our machine operators



# Task Lighting



# Machine Lighting

- Replaced lighting inside machines with LED light
  - 90W halogen machine lights replaced with 17W LED



# Exterior LED Security Lights

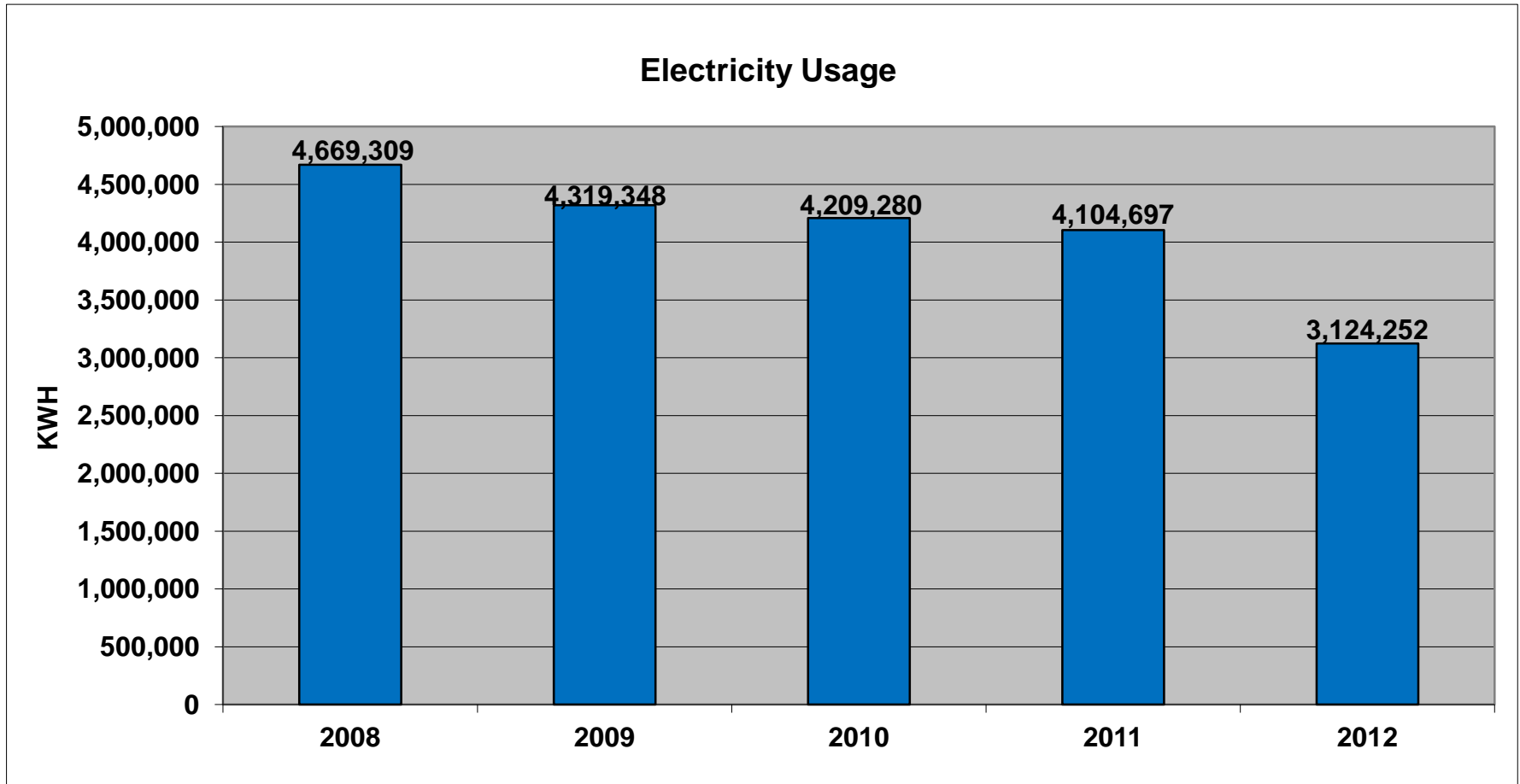
- Previous Security Lighting on Building
  - 21 fixtures 400 watts per fixture
  - Consumes over 400 watts of energy per fixture with ballast
  - Consumes 36,000 KWH/yr
- LED Lighting
  - 25 fixtures 150 watts per fixture
  - Consumes 14,000 KWH/yr
- Benefits
  - Decrease energy and CO2 (22,000 KWh and 19 tons of CO2 reduced)
  - Increase light output
  - Decrease maintenance hours to replace lamps and ballasts
  - Decrease universal waste disposal cost

# Exterior LED Security Light

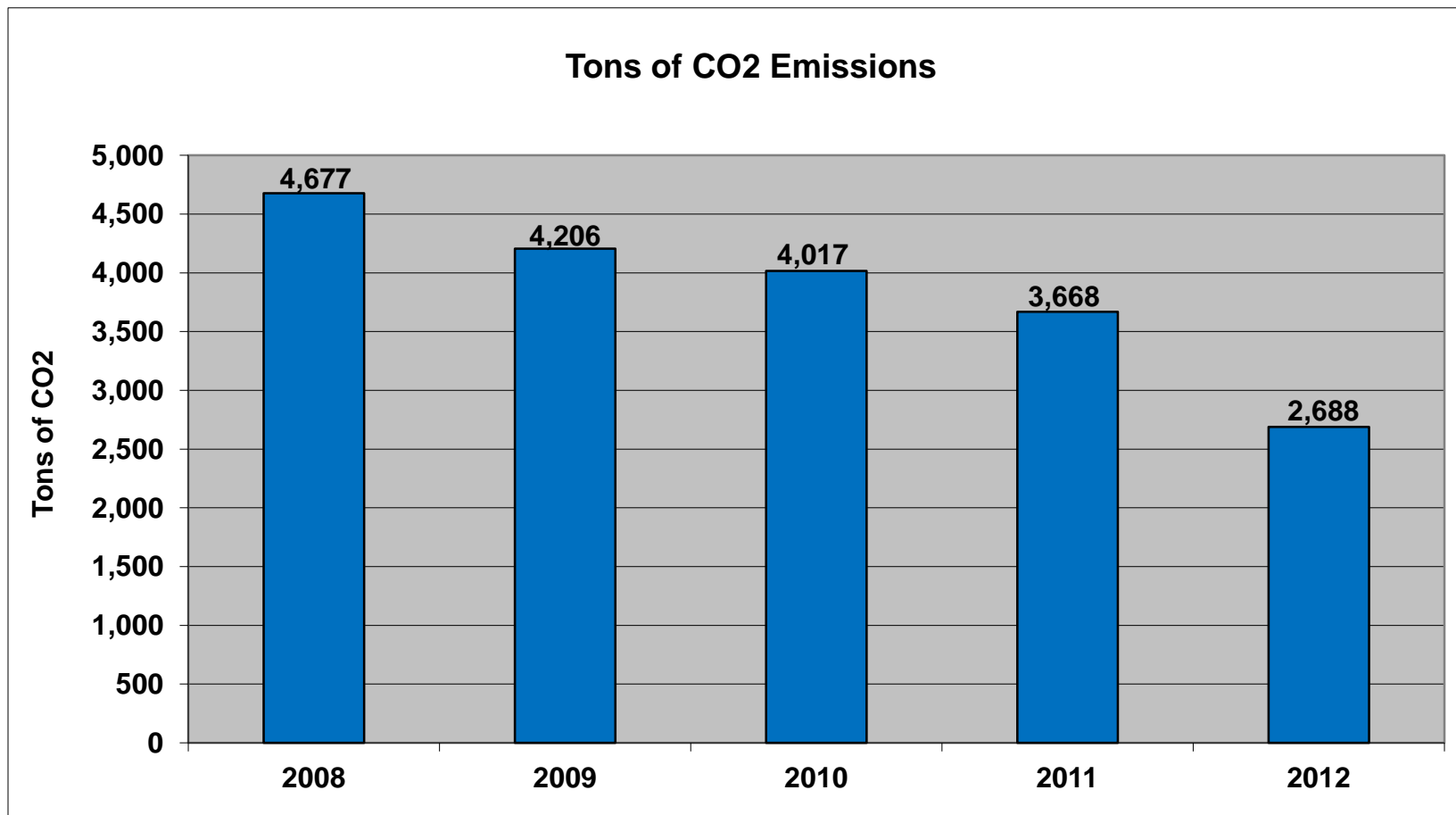




# Electric Usage



# CO<sub>2</sub> Emissions



# Oil / Water Separator

- Utilize the current tank system as holding tanks
- Use chemical separation to separate the oils from the wastewater
- Pump through a two bag filter system
- Discharge to the POTW
- Eliminate wastewater transportation
- Increase used oil recycling



# Compressed Air Compressor & Delivery Network

- Replace the current air compressor with a new variable speed drive compressor
- Replace the entire compressed air delivery system (60+ year old cast iron system)
- Estimated savings of over 30% of current operating costs of compressed air system



# 2013 Office Addition LEED GOLD STATUS



# 2013 Office Addition Cont.





# 2013 Front Entrance Improvement



**Thank You**

**Any Question?**