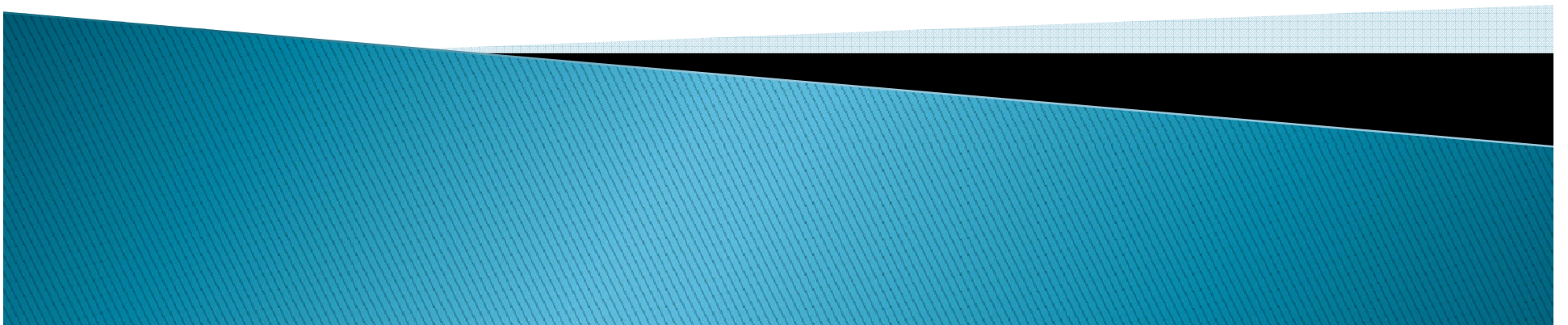


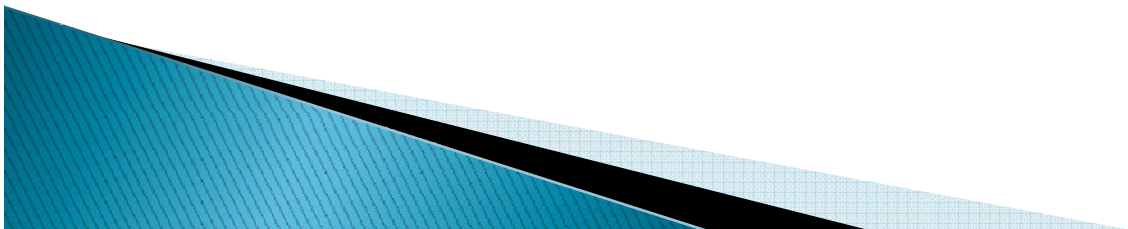
# Carbon Footprint and Energy Use

2010



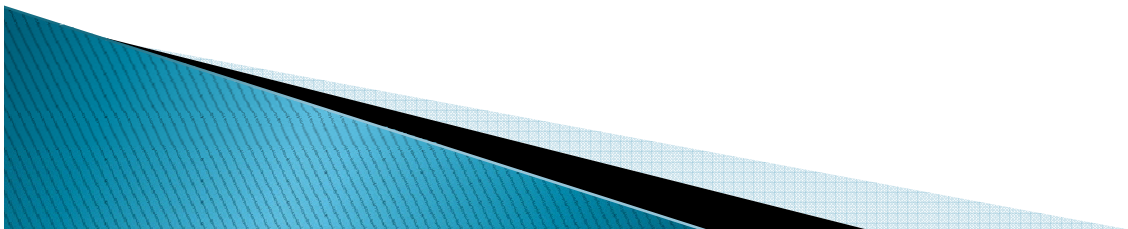
# Emissions Scope

- ▶ Electrical Energy Consumption
- ▶ Heating Fuel Consumption
- ▶ Motor Fuel Consumption
- ▶ Employee Commute
- ▶ Water Consumption



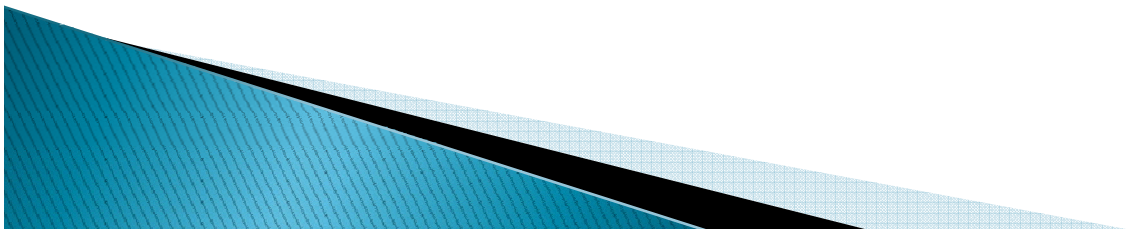
# How Do We Compare Per Square

- ▶ National Average
  - 90,500 BTU/sq ft
  - University of Wisconsin 50lbs eCO<sub>2</sub> per square foot
- ▶ Buncombe County Buildings
  - 64,862 BTU/sq ft
  - 38 lbs eCO<sub>2</sub> per square foot
  - Reduction of 20.6% from 2005 baseline



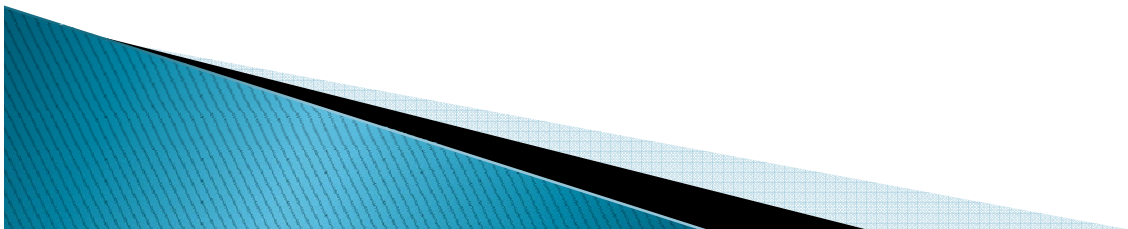
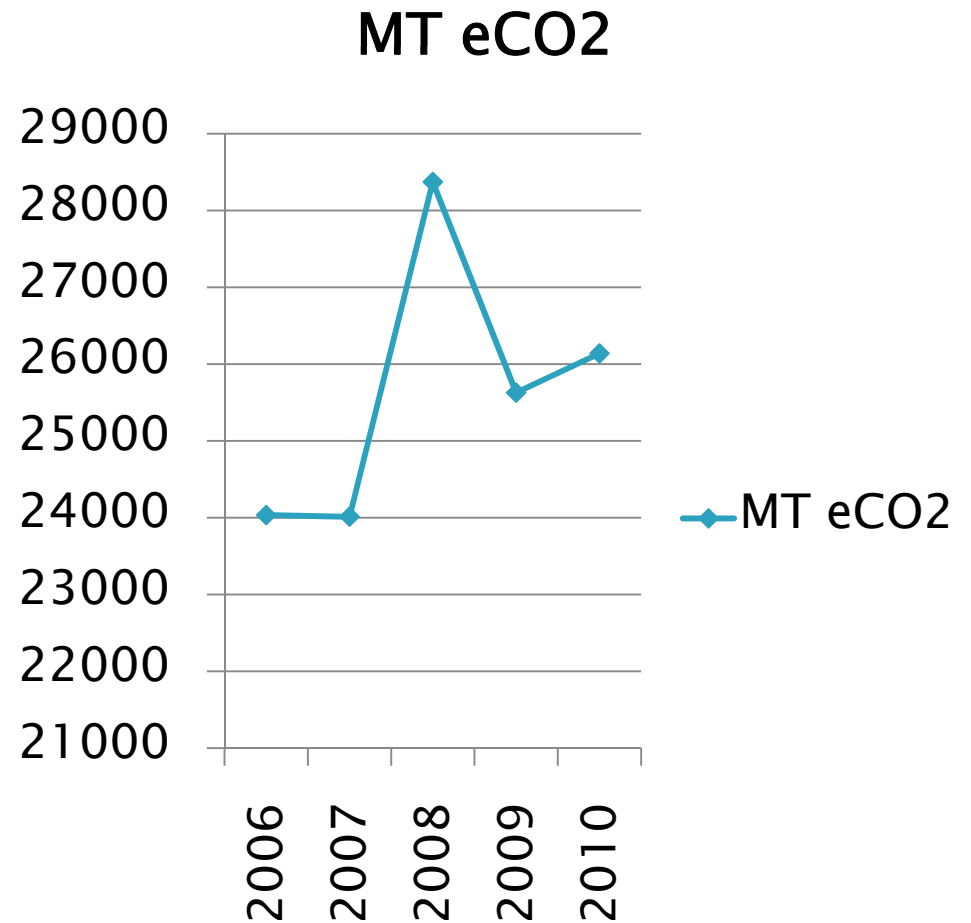
# Carbon Emissions For 2010

- ▶ Total of 26,096 MT eCO<sub>2</sub>
  - Buildings 60.7%
  - Employee Commute 18.5%
  - Vehicle Fleet 17.4%
  - Off Road Equipment Emissions 3.4%



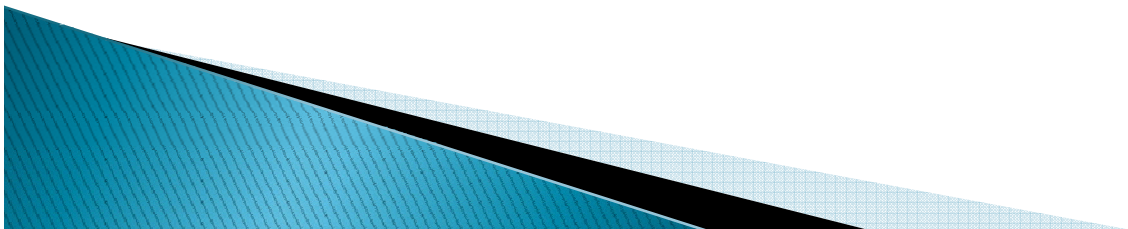
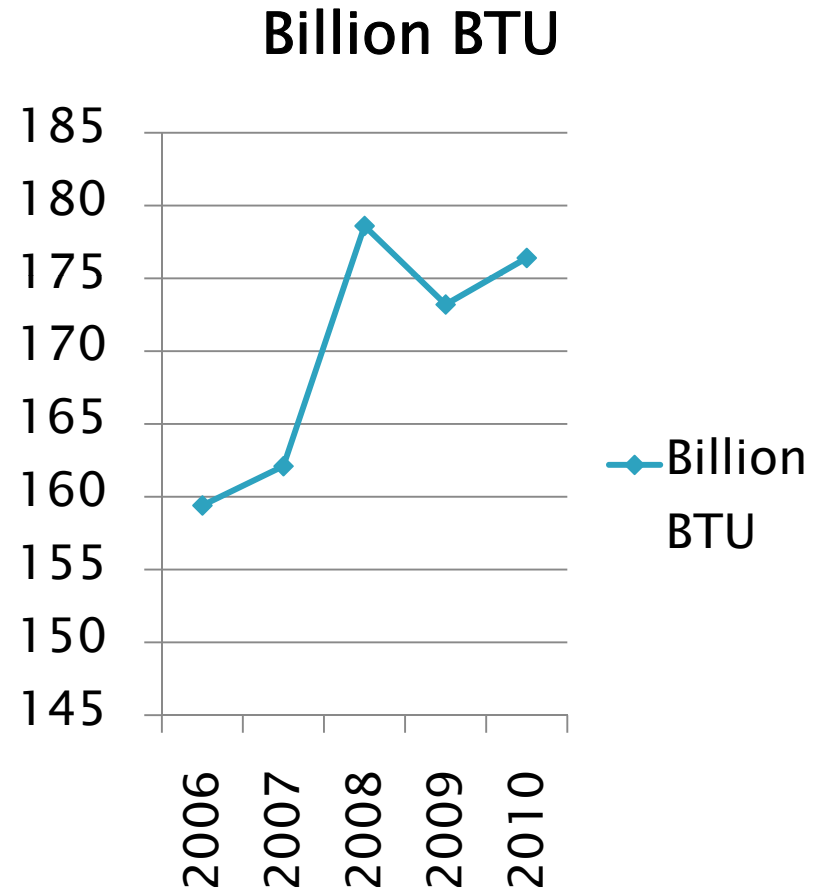
# Carbon Emission Trend

- ▶ 2006 - 24,034MT eCO<sub>2</sub>
- ▶ 2007 - 24,013MT eCO<sub>2</sub>
- ▶ 2008 - 28,372MT eCO<sub>2</sub>
- ▶ 2009 - 25,628MT eCO<sub>2</sub>
- ▶ 2010 - 26,139MT eCO<sub>2</sub>



# Total Energy Consumption

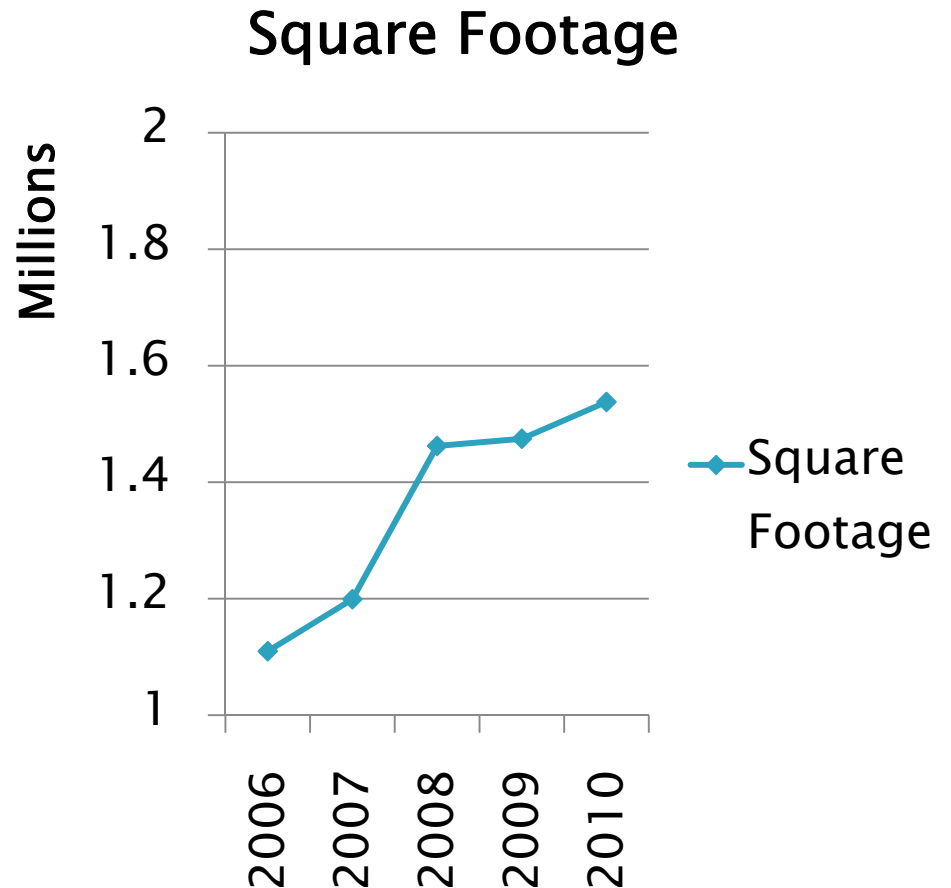
- ▶ 2006 - 159.4 Billion BTU
- ▶ 2007 - 162.1 Billion BTU
- ▶ 2008 - 178.6 Billion BTU
- ▶ 2009 - 173.2 Billion BTU
- ▶ 2010 - 176.4 Billion BTU



# Energy Usage Factor

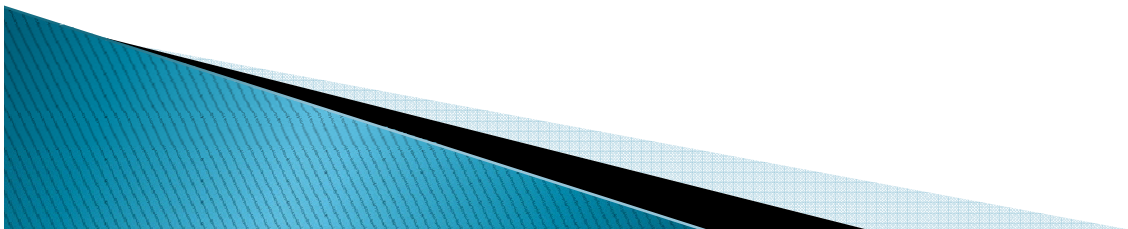
## ▶ Increased Square Footage

- 1,109,861 square feet at the end of 2006
- 1,537,808 square feet at the end of 2010
  - 200 College Street  
54,545 sqft
  - Detention Center  
Addition 92,453 sqft
  - College Street Parking  
Deck 261,400 sqft



# Employee Commute

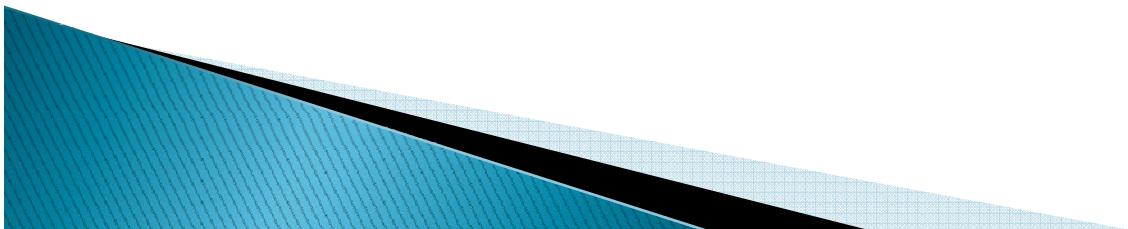
- ▶ 92.6% of County Employees Drive to Work
- ▶ Average Commuter Round Trip: 27.62 miles
- ▶ In 2010 10,938,088 Commuter Miles Driven
- ▶ Equates to 18.5% of our Annual Carbon Footprint, or 4,815MT eCO<sub>2</sub>



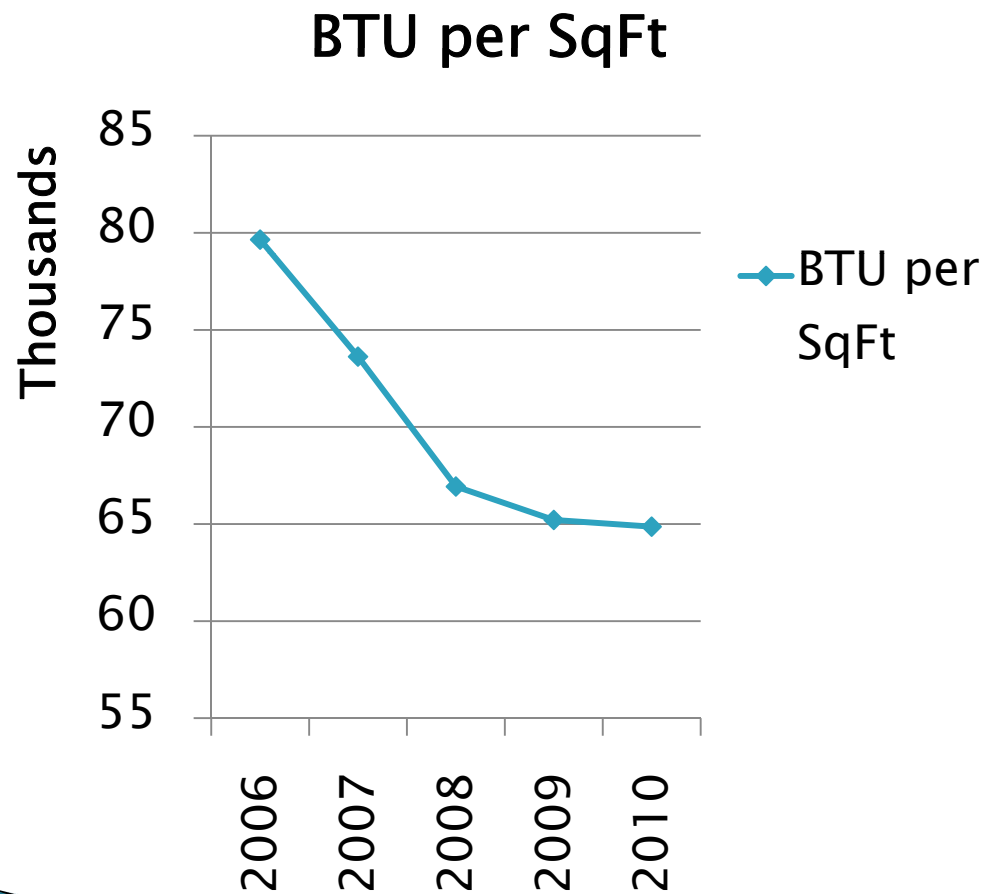


# Buildings

- ▶ Over 1.5 Million Square Feet Currently Controlled by Buncombe County
- ▶ 99.7 Billion BTU of Energy Consumed in 2010
- ▶ Buildings are Responsible for 60.7% of Our Carbon Footprint
  - 15,853MT eCO<sub>2</sub>
- ▶ Total Energy Cost for 2010: \$1,673,963.72

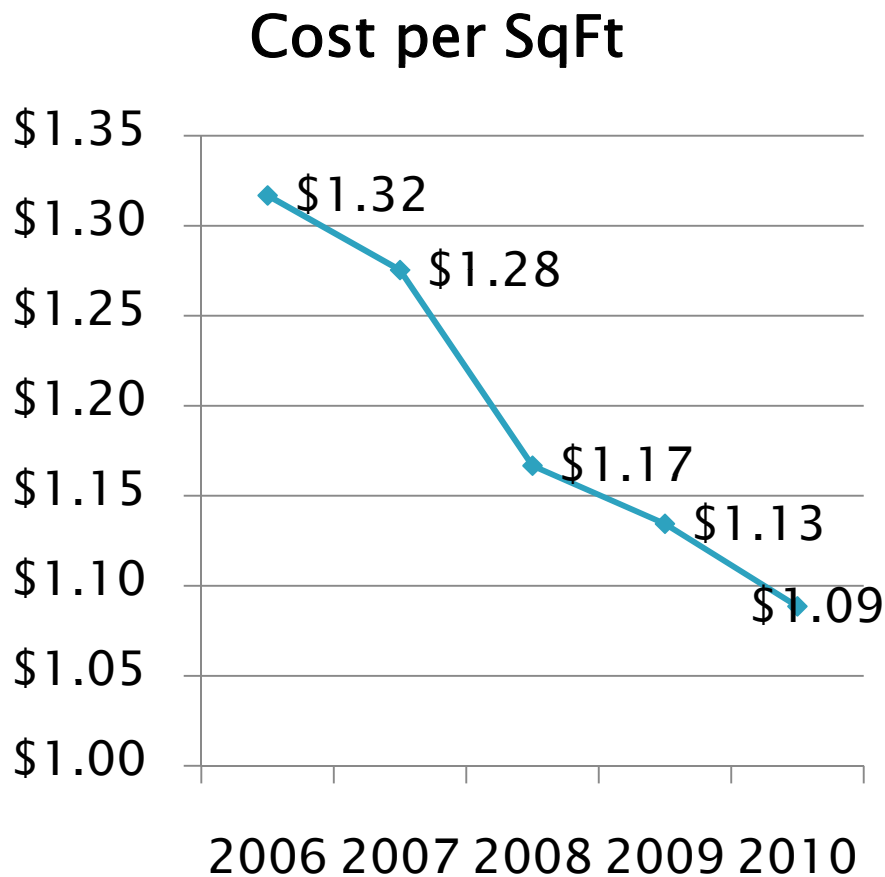


# Energy Intensity



- ▶ Energy Intensity – BTUs consumed per building square foot
- ▶ Steady Decrease in Energy Intensity since 2006

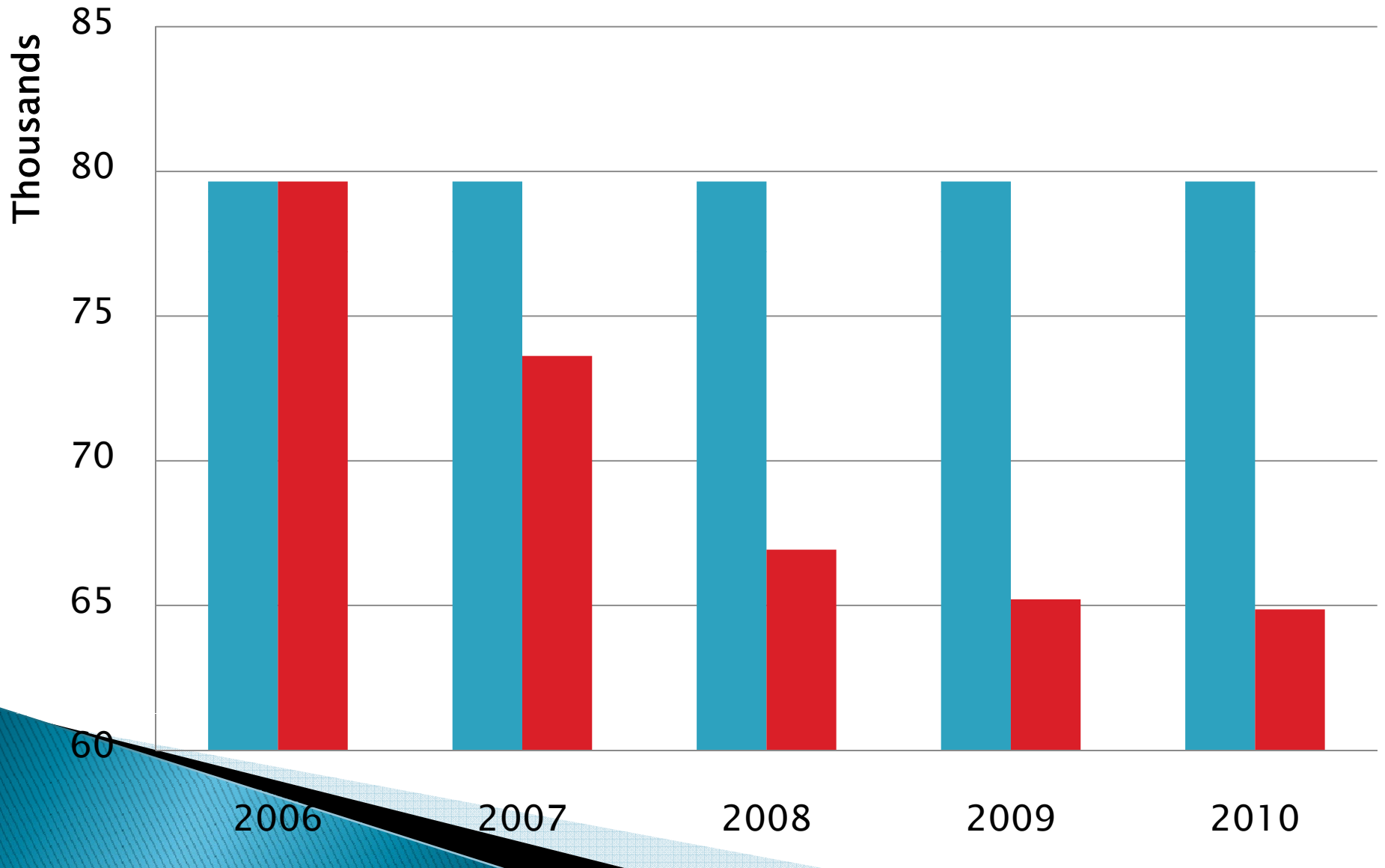
# Energy Cost per Square Foot



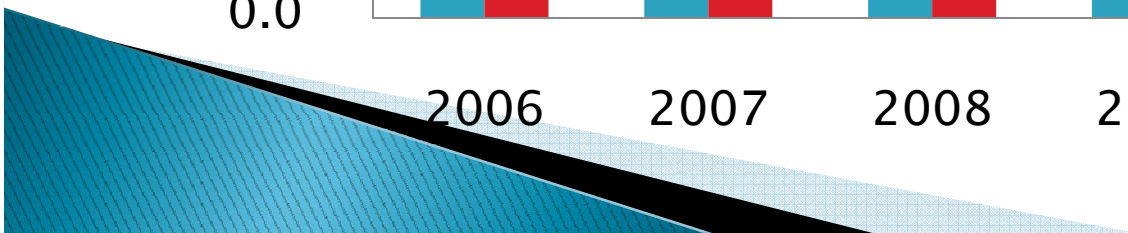
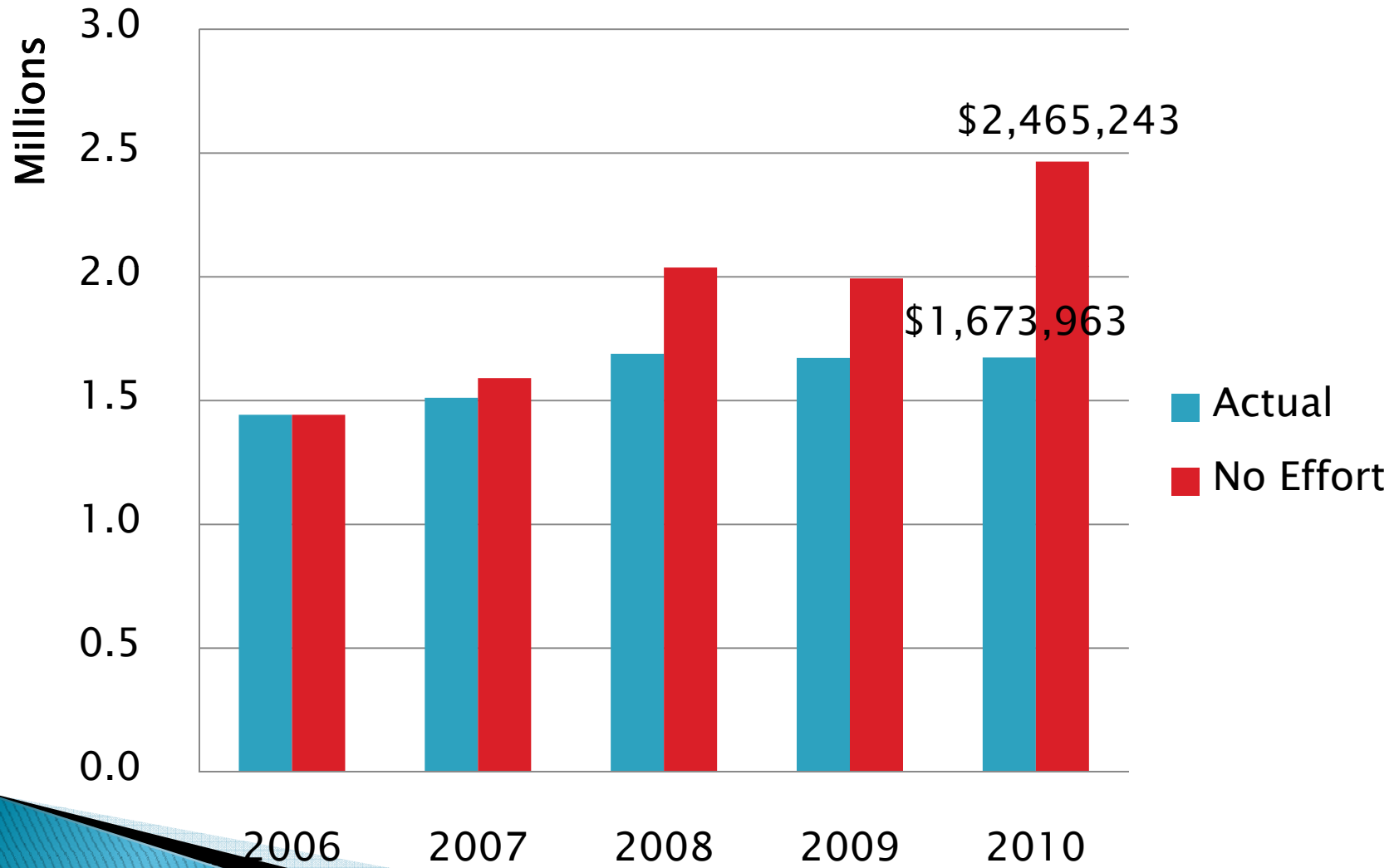
- ▶ Current Building Inventory included 1,537,808 square feet
- ▶ Total utility cost for 2010: \$1,673,963.72
- ▶ Steady Decrease in Cost per Square Foot since 2006

# Energy per Square Foot (BTU)

■ Baseline ■ Actual Cost

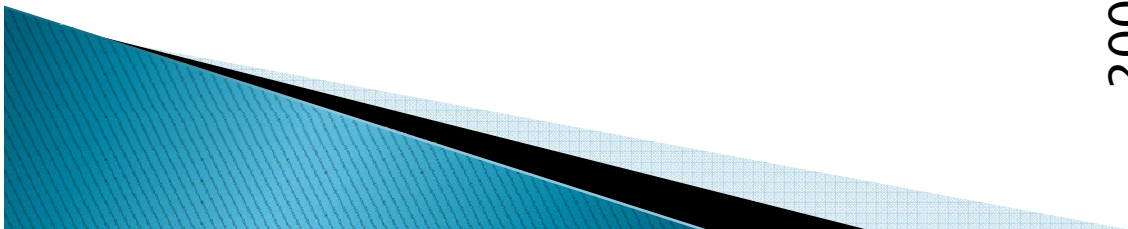
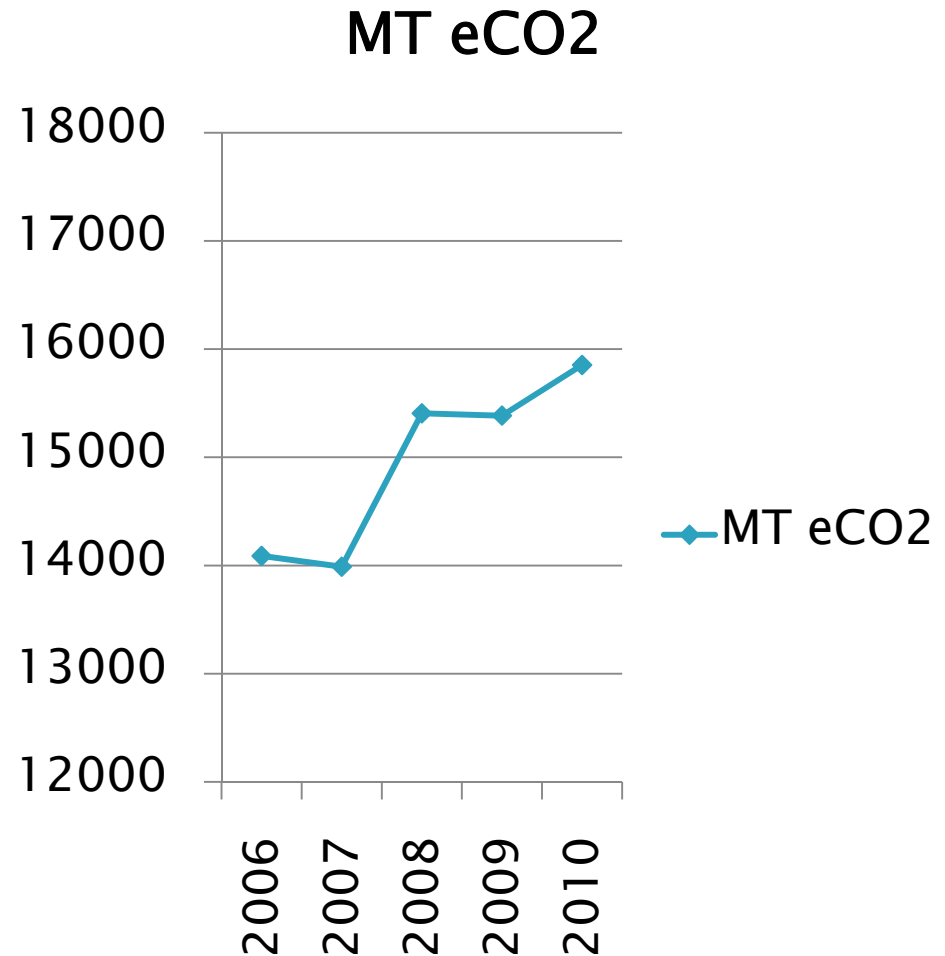


# Results of Efficiency Efforts



# Building Emissions

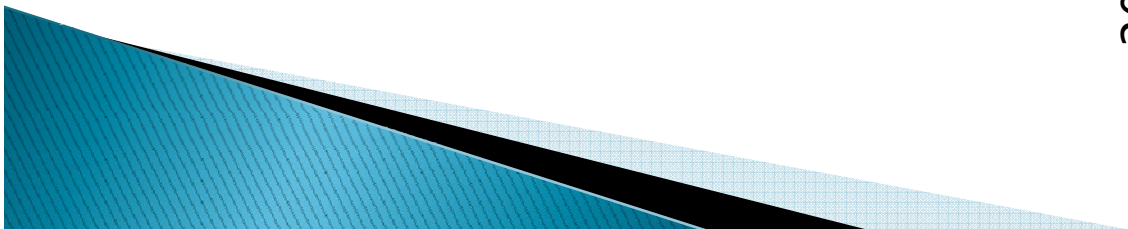
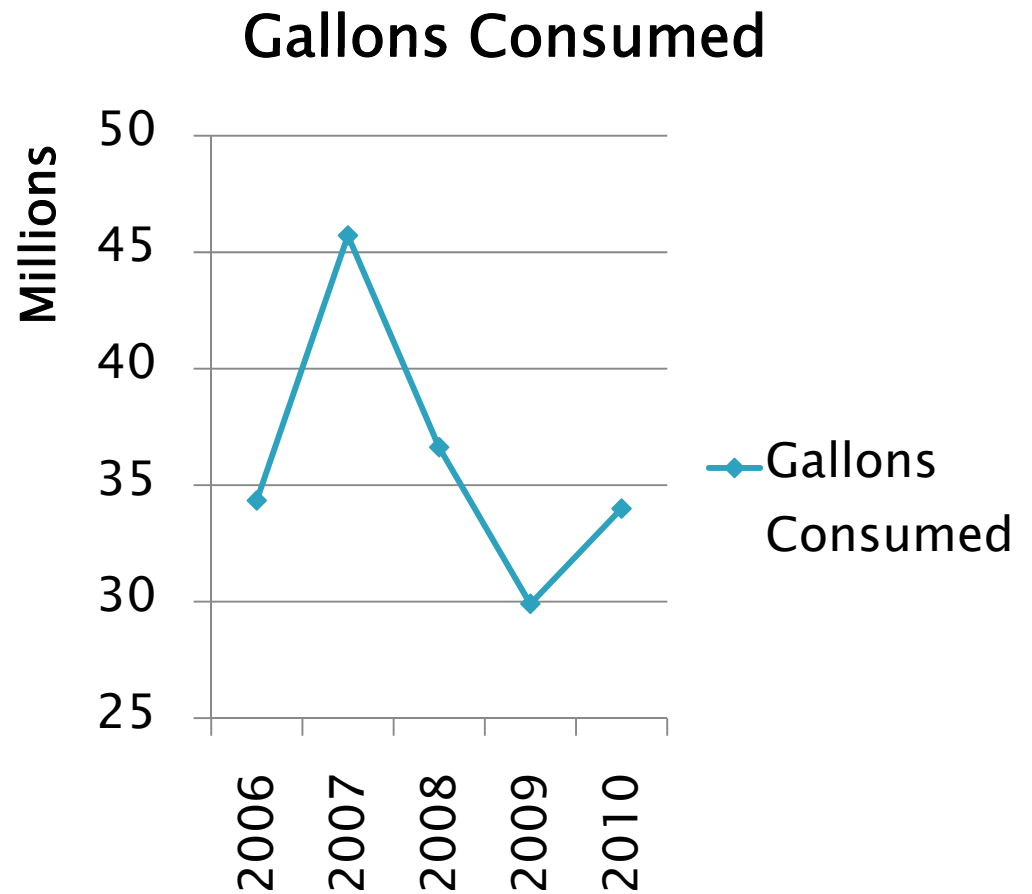
- ▶ 2006–14,088 MT eCO<sub>2</sub>
- ▶ 2007–13,988 MT eCO<sub>2</sub>
- ▶ 2008–15,406 MT eCO<sub>2</sub>
- ▶ 2009–15,385 MT eCO<sub>2</sub>
- ▶ 2010–15,853 MT eCO<sub>2</sub>



# Water Consumption

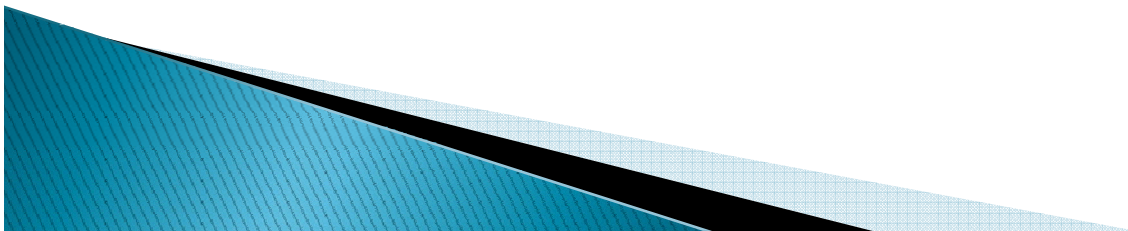
## Gallons Consumed

- ▶ 2006 - 34,342,668
- ▶ 2007 - 45,720,992
- ▶ 2008 - 36,629,452
- ▶ 2009 - 29,906,148
- ▶ 2010 - 33,993,644



# Fleet Details for 2010

- ▶ Total Miles Traveled: 6,544,613
- ▶ Fuel Consumed: 499,087.8 Gallons
- ▶ Total Fuel Cost: \$1,128,934.30
- ▶ Fleet Contributed 4,529 MT eCO<sub>2</sub> 17.4% of Our Total Annual Carbon Footprint

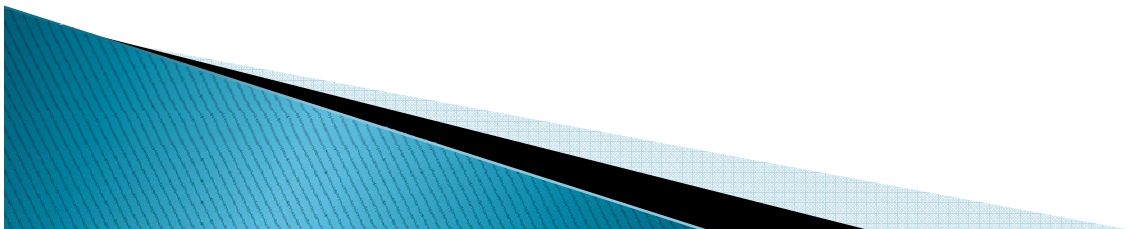




# Vehicle Fleet

## ▶ Fleet Size

- 2006 - 413
- 2007 - 414
- 2008 - 415
- 2009 - 415
- 2010 - 419



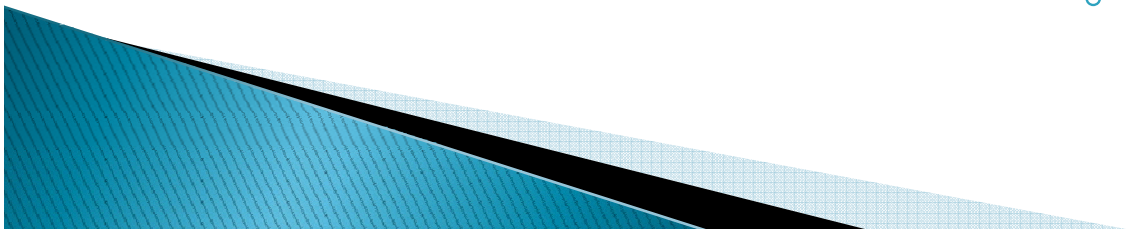
# Number of Vehicles by Department

## ▶ Public Safety

- Sheriff's Department 222
- Emergency Management 30

## ▶ Operations

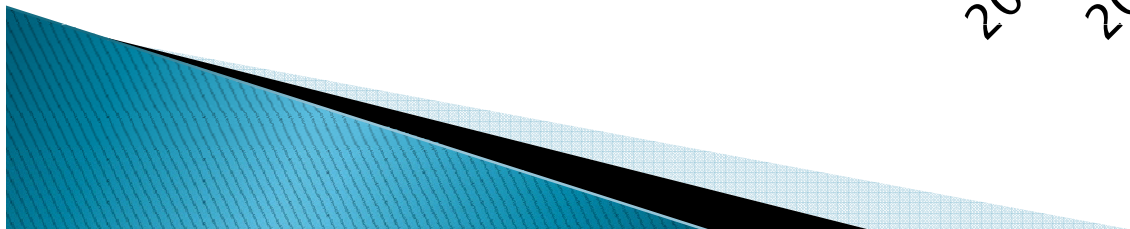
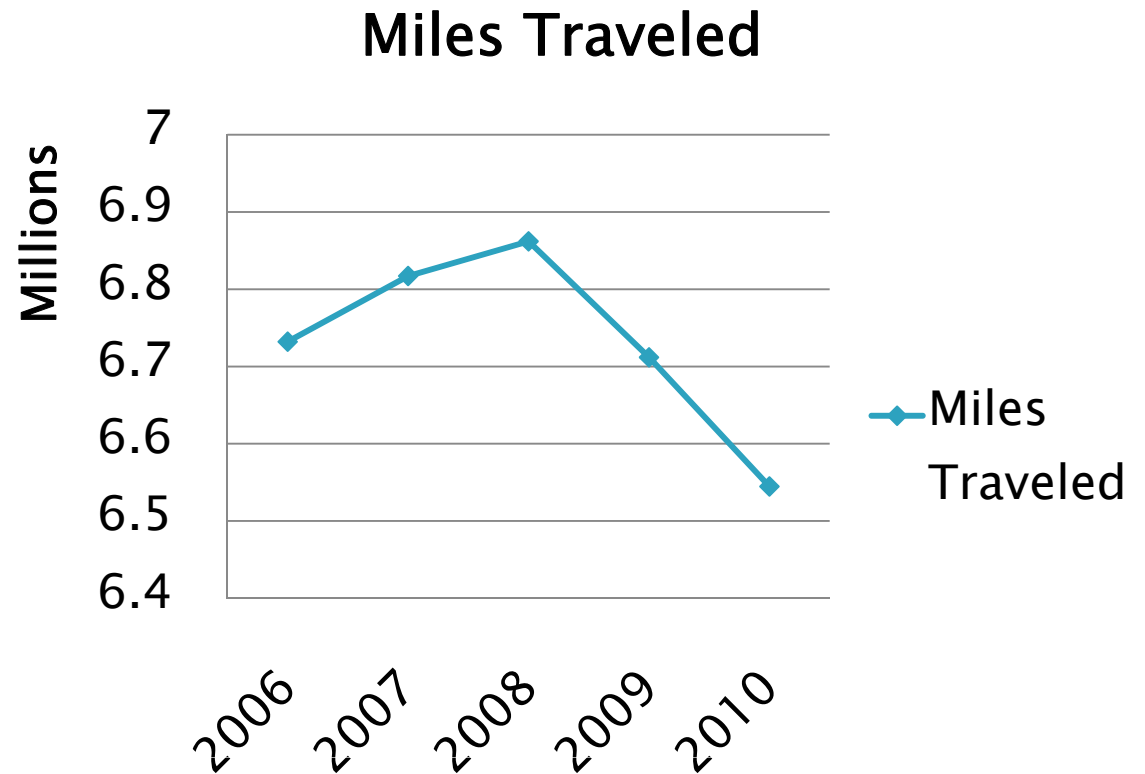
- Mountain Mobility 44
- Solid Waste 27
- Maintenance 21
- Inspections 16
- Tax 15
- Environmental Health 10
- DSS 10
- Planning 6
- Other 18



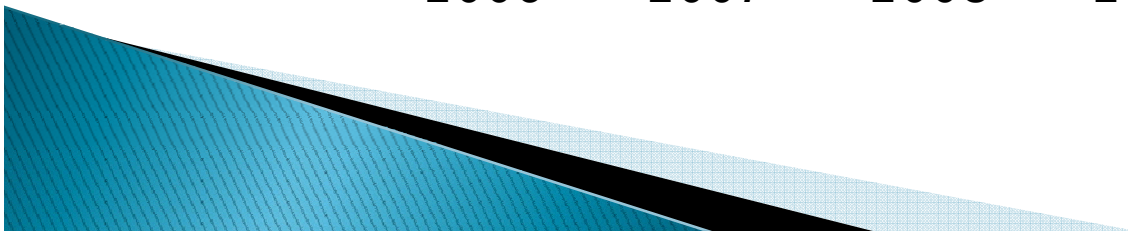
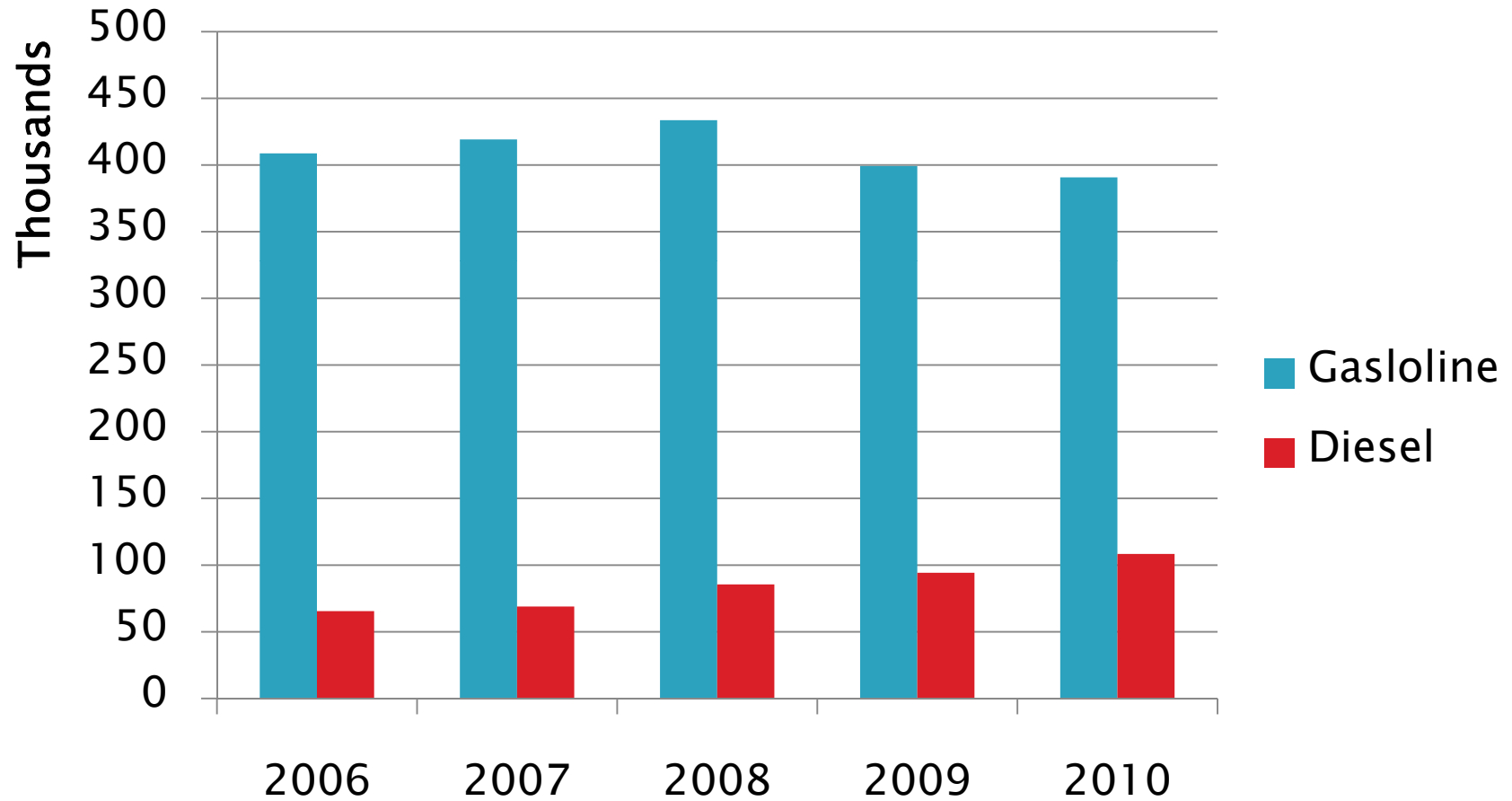
# Total Fleet Mileage

## ► Miles Traveled

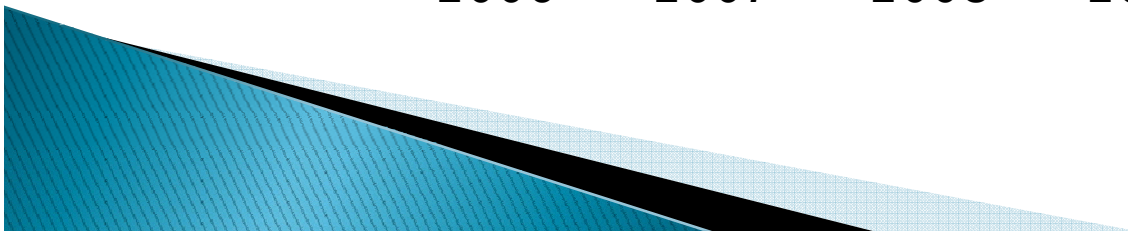
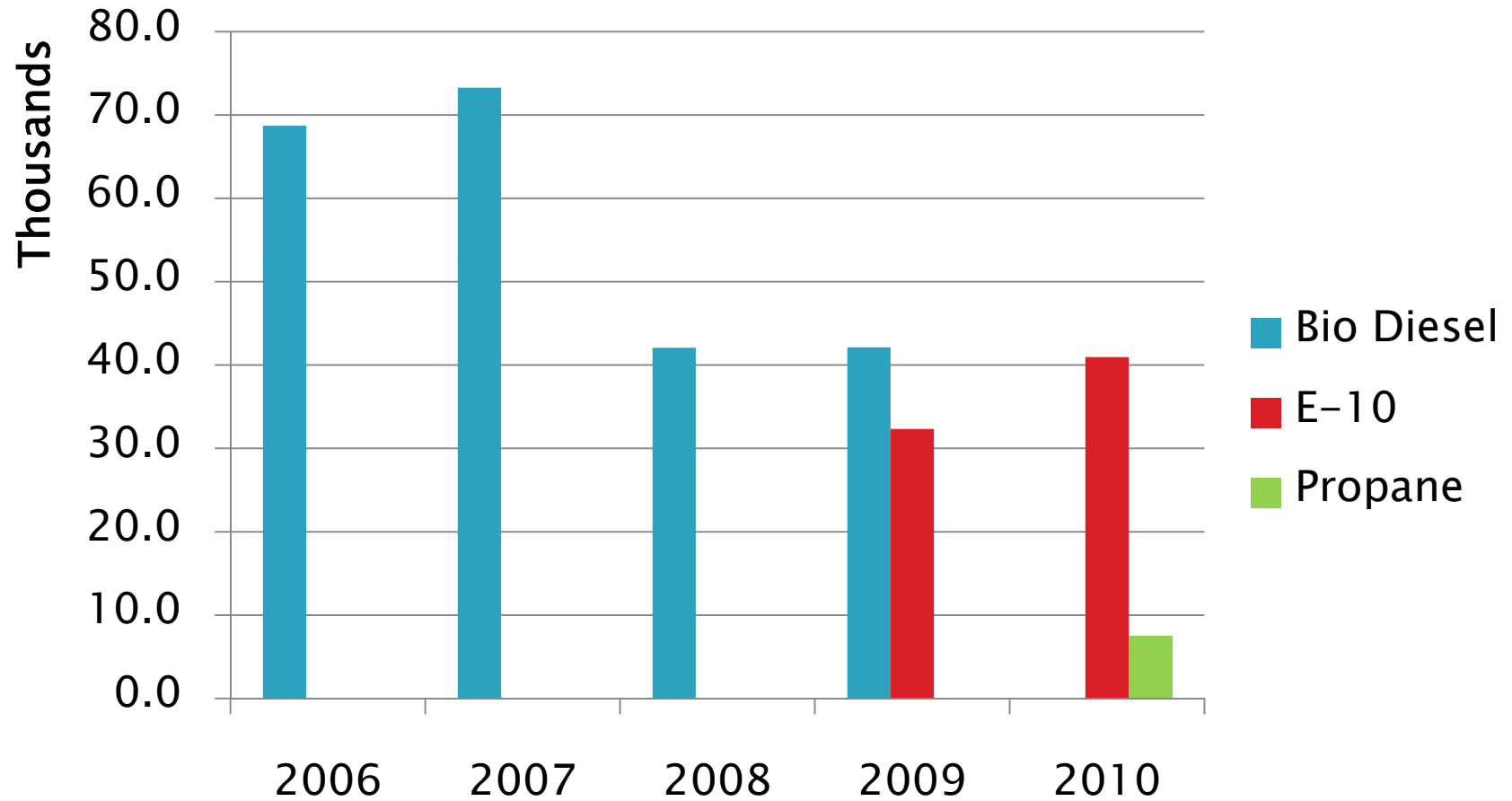
- 2006 - 6,732,051
- 2007 - 6,817,124
- 2008 - 6,862,013
- 2009 - 6,711,816
- 2010 - 6,544,613



# Fuel Usage History

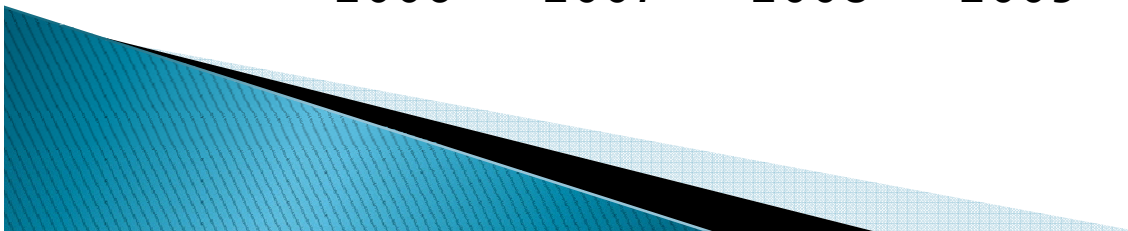
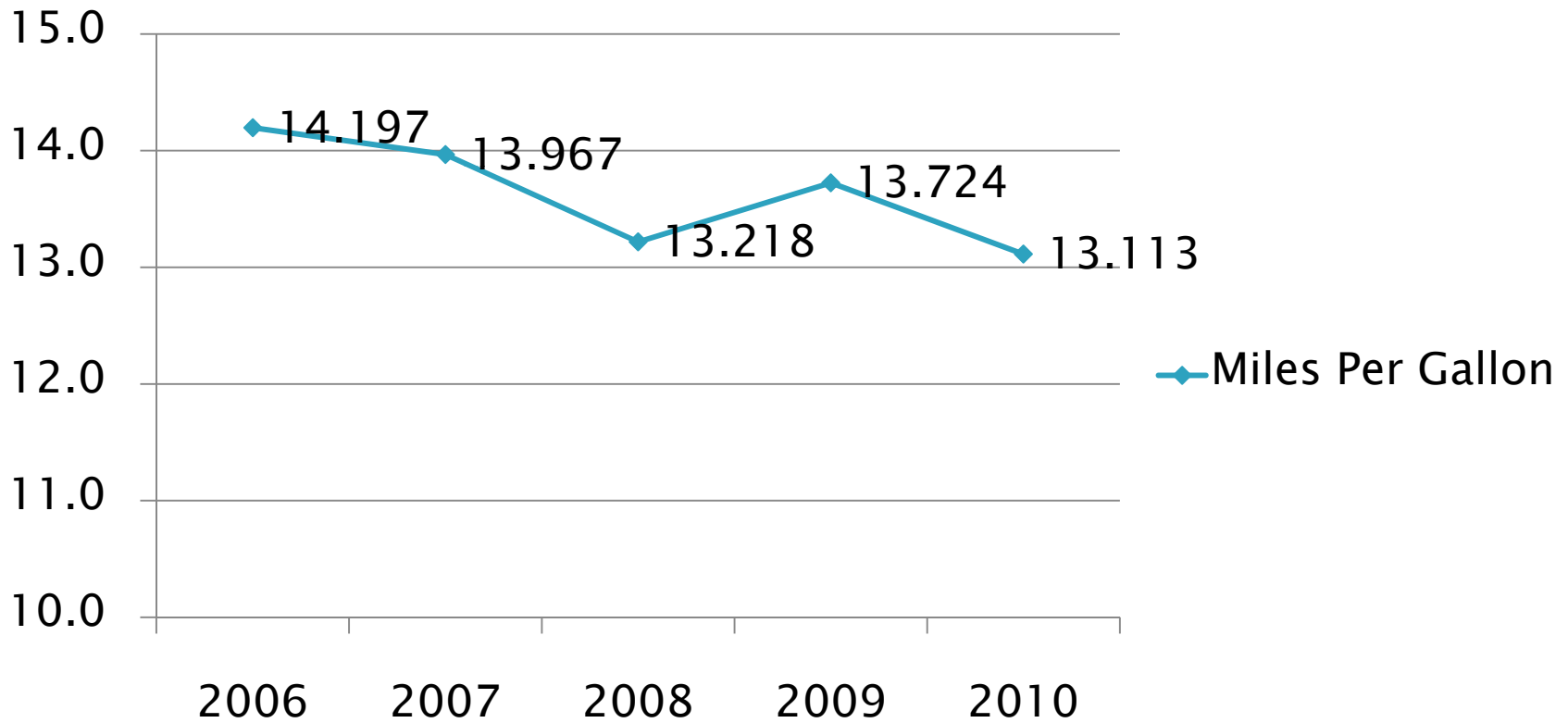


# Alternative Fuel Usage



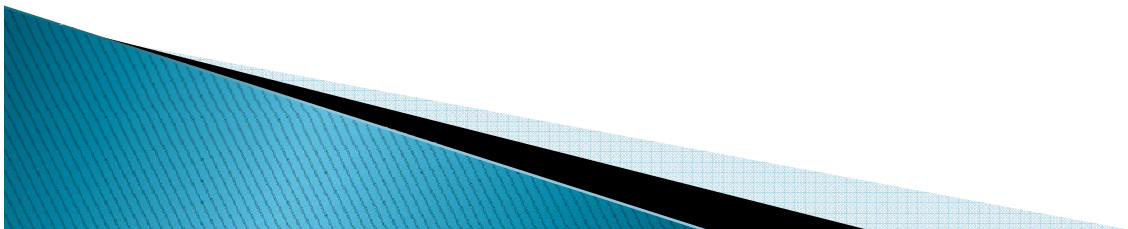
# Fleet Fuel Mileage

## Miles Per Gallon



# Other Direct Emission

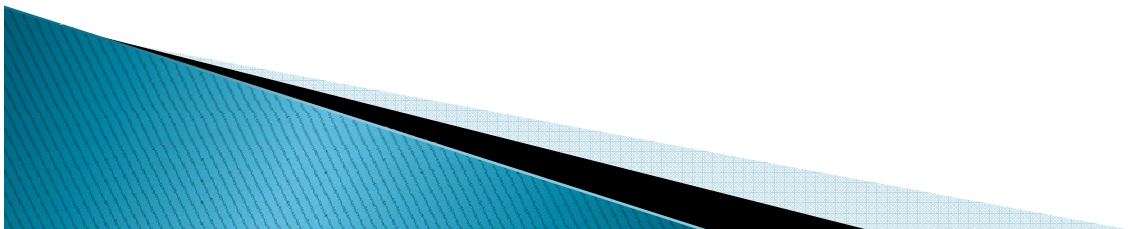
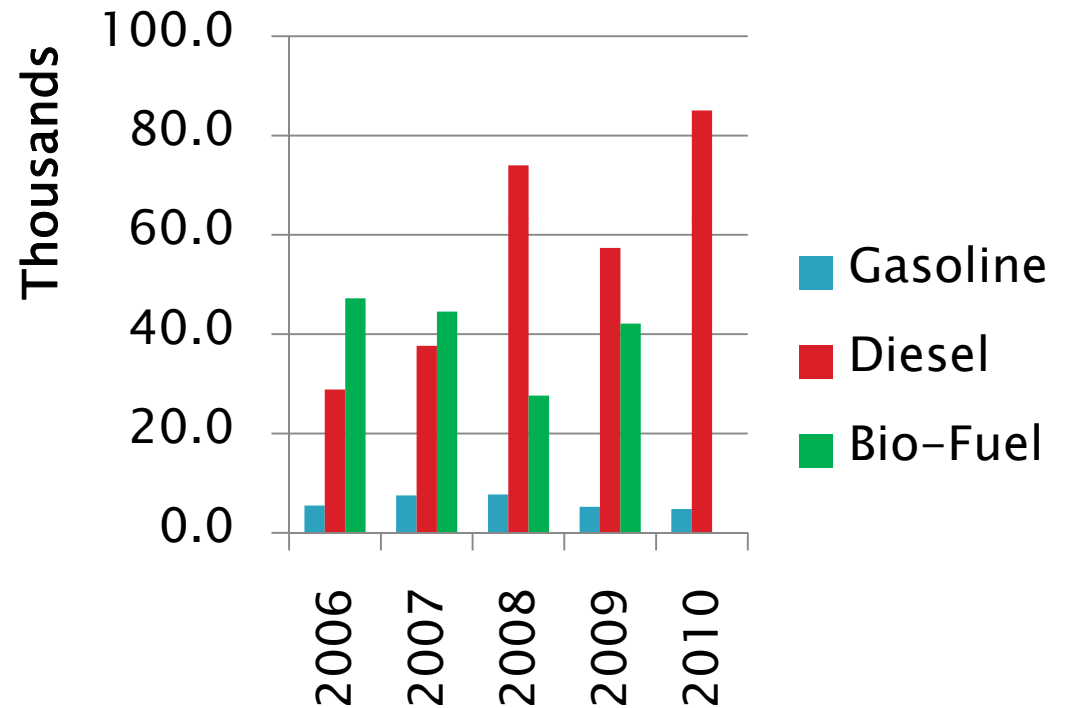
- ▶ Fuel for Off-Road Applications Contributed: 899 MT eCO<sub>2</sub> or 3.4%
- ▶ This Category Includes: Landfill, Grounds Maintenance and Diesel Powered Generators



# Off Road Fuel Use

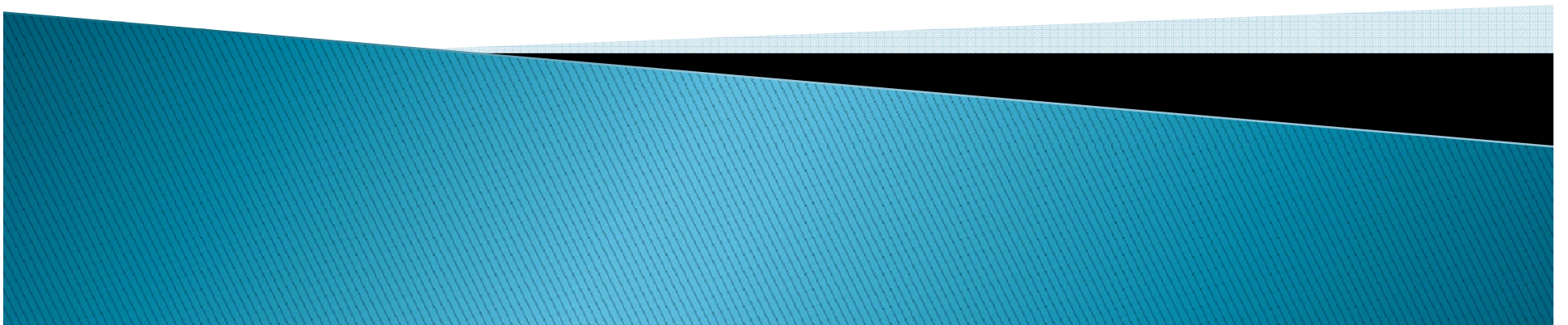
## ▶ Total Gallons

- 2006 - 81,619
- 2007 - 89,710
- 2008 - 109,361
- 2009 - 104,706
- 2010 - 89,849



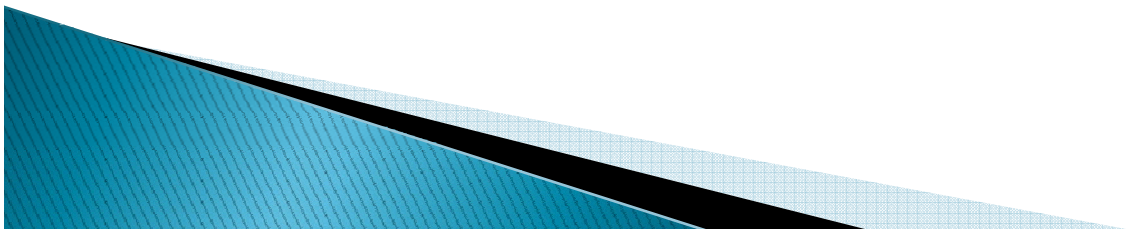


# Emission Reduction Projects



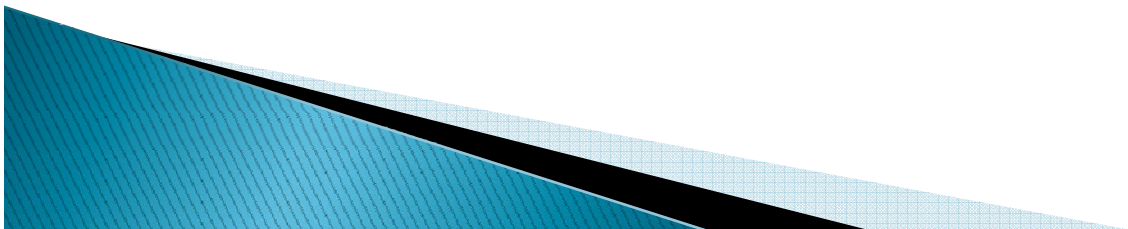
# Past Projects

- ▶ Courthouse Windows
  - 16.55% reduction of energy consumption
  - \$32,537 annual cost avoidance
- ▶ 35 Woodfin Renovation
  - 12.28% reduction of energy consumption
  - \$42,297.15 annual cost avoidance
- ▶ HVAC renovation Allport Building
  - 18.39% reduction of energy consumption
  - \$8966.17 annual cost avoidance



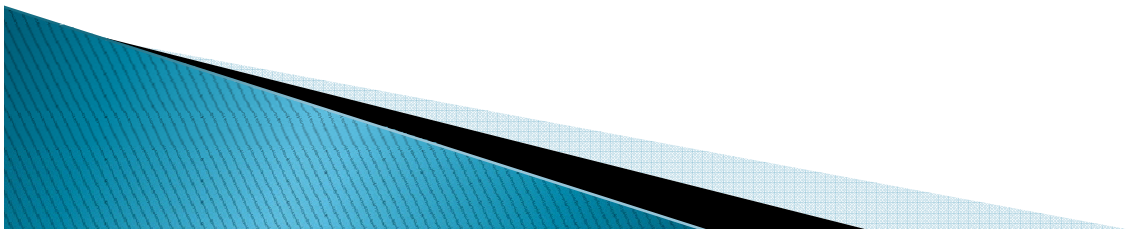
# Future Projects

- ▶ 40 Coxe Avenue renovation
  - Total building Renovation
  - Solar Thermal Installation
  - Electric Vehicle Charging Stations
- ▶ Alternative Fuel Vehicles
  - Currently looking to convert 15 vehicles to use Propane Fuel
  - Projected Annual cost savings \$25,000–\$35,000
- ▶ New Courts Building
  - LEED Certified



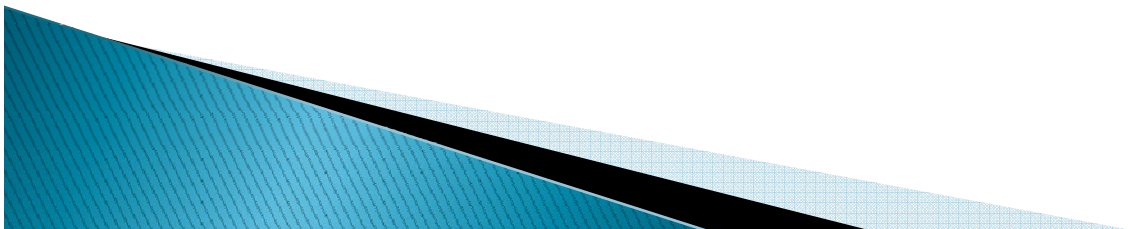
# How Do We Compare

- ▶ National Average
  - 90,500 BTU/sqft
- ▶ Buncombe County Buildings
  - 64,862 BTU/sqft
  - 77,050 BTU/sqft without parking deck
  - Reduction of 20.6% from 2005 baseline



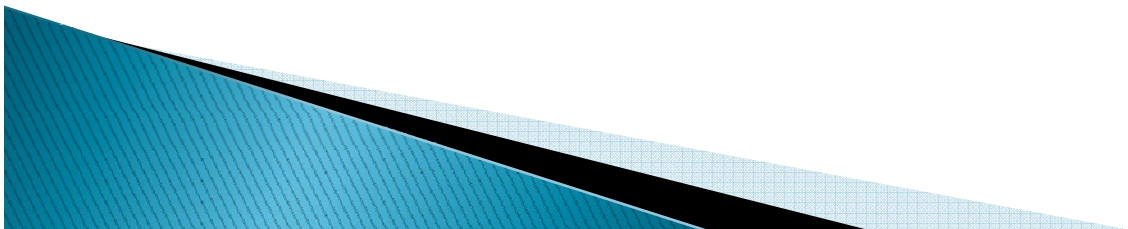
# Funding Efficiency

- ▶ Capital Project Budgets
- ▶ General Services Department Budget
- ▶ Energy Savings Reinvestment Fund
  - Consists of Utility Rebate Money
  - Demand Response Money
  - 75% of all utility costs avoided



# The Way Forward

- ▶ Continue on the proven course of improving efficiency through routine maintenance
- ▶ Analyze purchases based on total life cycle cost and not only upfront purchase price
- ▶ Design future buildings as efficiently as possible
  - Courts Building LEED certified
- ▶ Leverage all grants and efficiency programs as thoroughly as possible.



For More Information or to review the entire  
Energy and Emissions Report

Please visit

[www.buncombecounty.org/green](http://www.buncombecounty.org/green)

Presented by

Buncombe County General Services

828-250-4233

