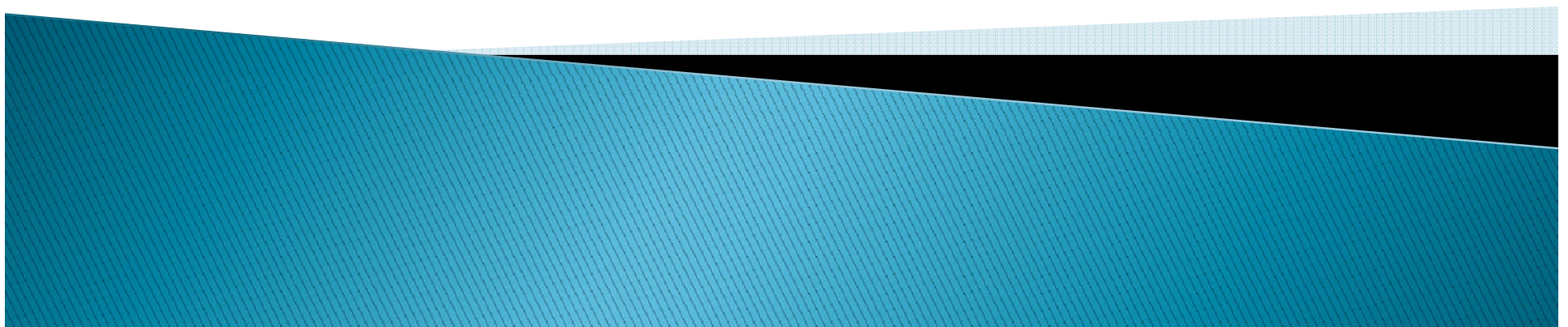


Buncombe County Energy Use and Emission Report, 2012



TERMS

Sustainability

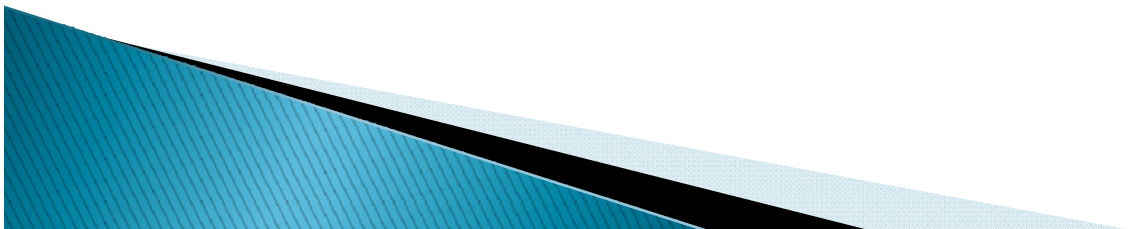
The Capacity or Ability to Endure

Carbon Footprint

An imaginary number that everyone chases.

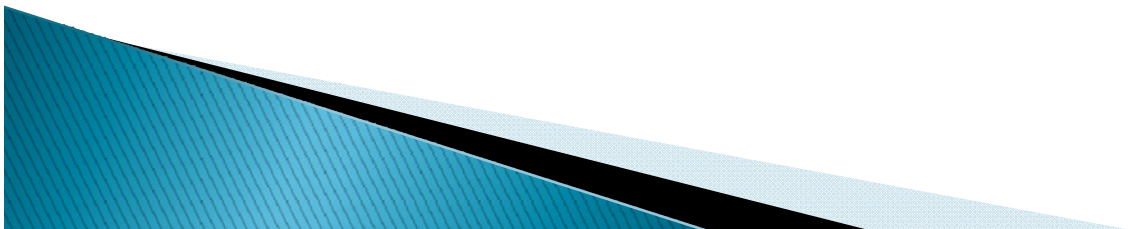
Emissions

What we leave behind.



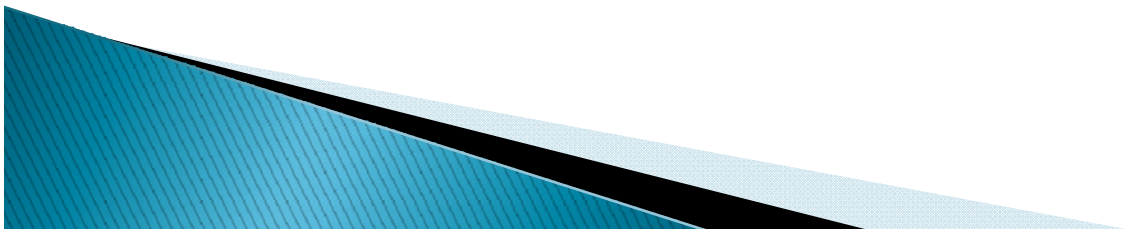
Major Energy Efficiency Upgrades Since 1997

- ▶ HVAC upgrades 709,955 Sq Ft.
 - ▶ Window Replacement 467,014 Sq Ft
 - ▶ Lighting System 929,476 Sq Ft
 - ▶ Roof Replacement 498,955 Sq Ft
-
- ▶ Total Sq Ft of County buildings 1.5 Million
 - ▶ 396,653 Sq Ft less than 15 years old



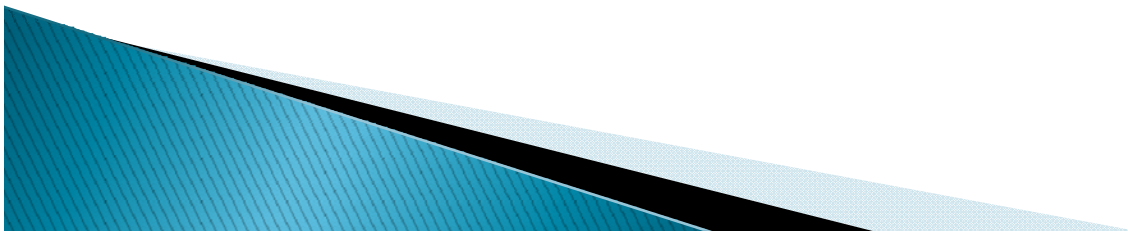
How Do We Compare Per Square?

- ▶ National/NC State Average
 - 90,500/135,000 BTU/sq ft
- ▶ Buncombe County Buildings
 - 64,848 BTU/sq ft
 - 29.5% below National Average
- ▶ Empire State Building
 - 88,000 BTU/ sq ft



Emissions Scope

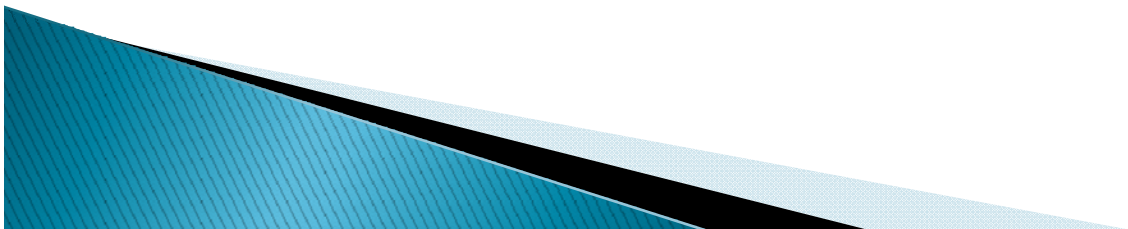
- ▶ Electrical Energy
- ▶ Heating Fuel
- ▶ Fleet Motor Fuel
- ▶ Water



Carbon Emissions For 2012

- ▶ Carbon emissions primarily result from
 - Buildings
 - Vehicle Fleet
 - Off Road Equipment

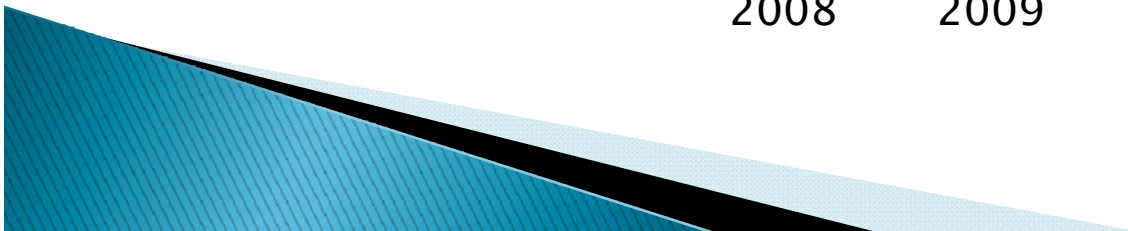
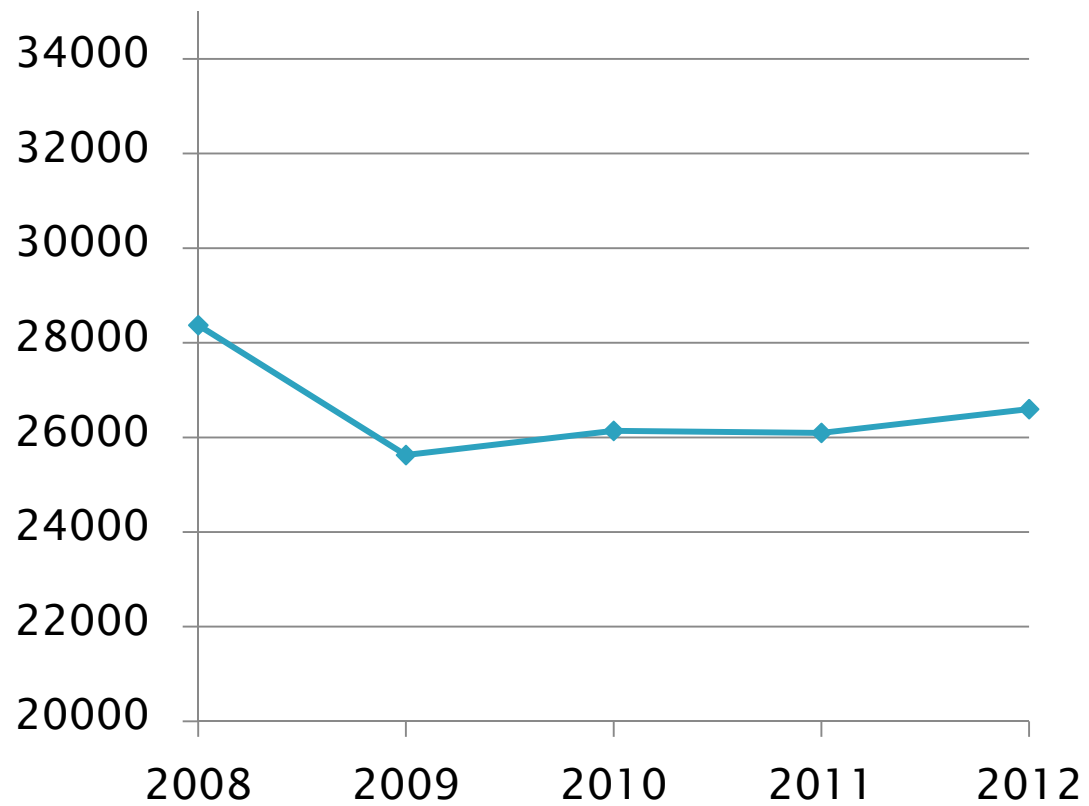
Buncombe County had a total of approximately 26,528 MT eCO₂ emissions in 2012.



Carbon Emission Trend

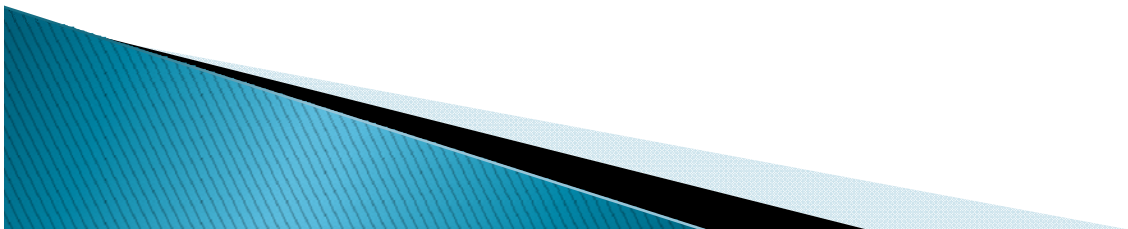
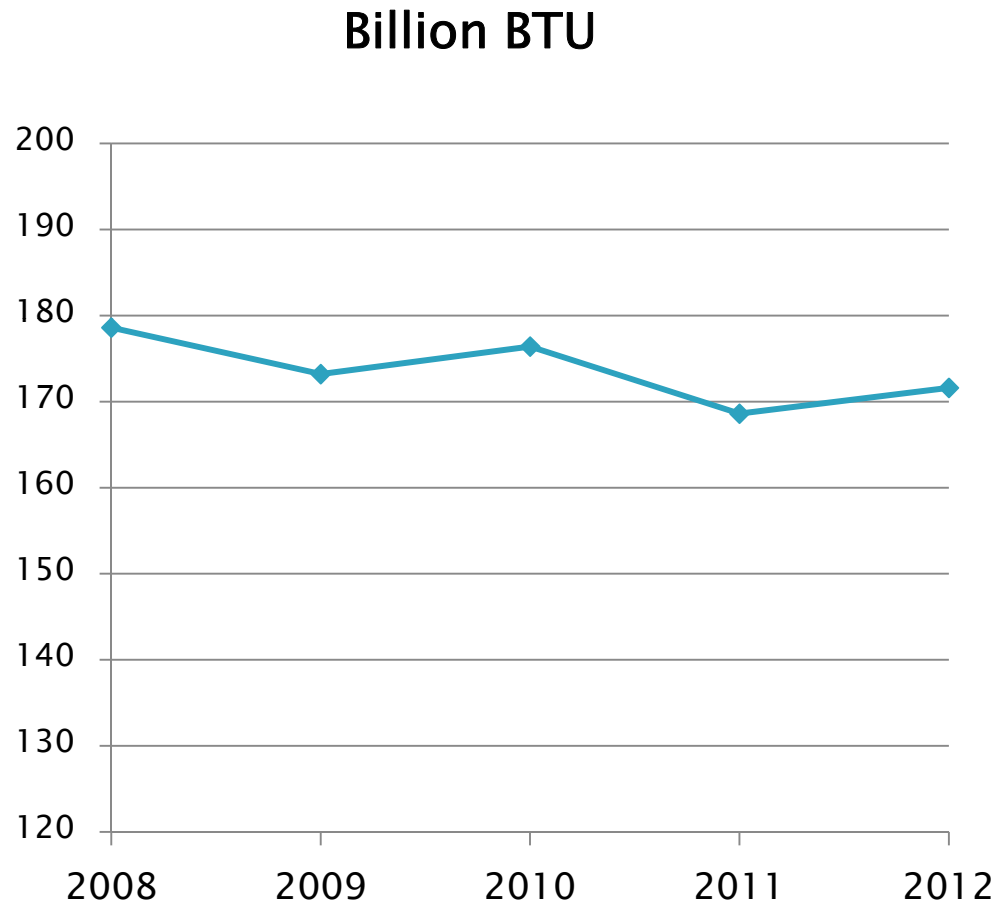
- ▶ 2008 - 28,372
- ▶ 2009 - 25,628
- ▶ 2010 - 26,139
- ▶ 2011 - 26,096
- ▶ 2012 - 26,528

MT eCO₂



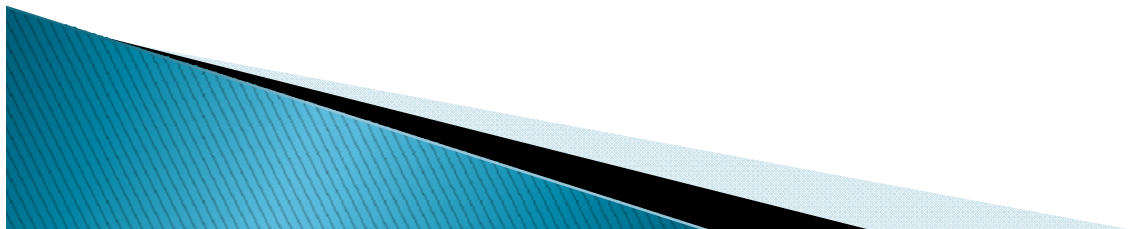
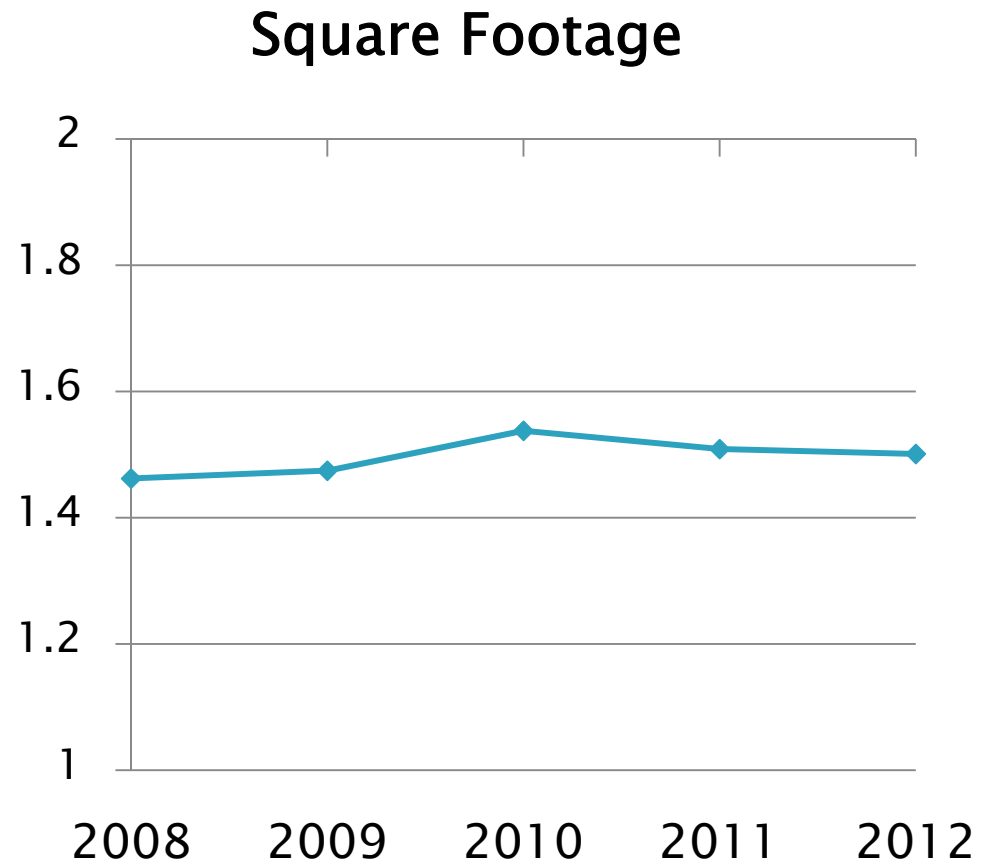
Total Energy Consumption

- ▶ 2008 – 178.6
- ▶ 2009 – 173.2
- ▶ 2010 – 176.4
- ▶ 2011 – 168.6
- ▶ 2012 – 171.6



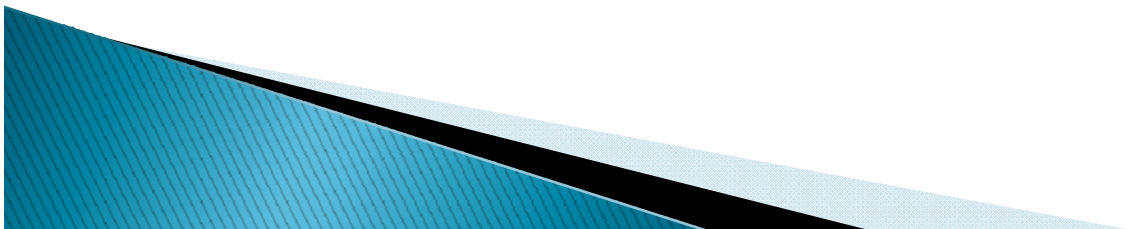
Energy Usage Factor

- ▶ Small reduction in square footage from 2011
 - 1,508,840 square feet at the end of 2011
 - 1,501,149 square feet at the end of 2012

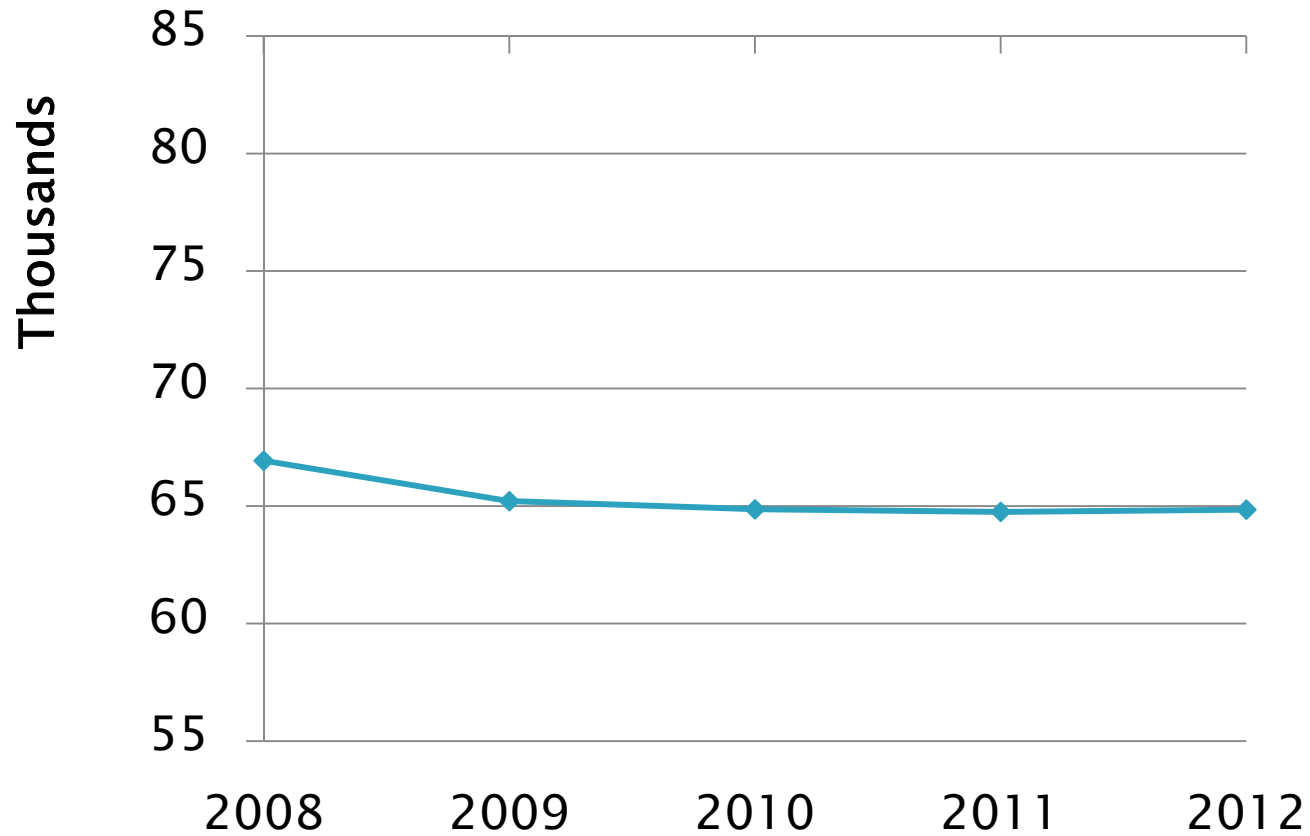


Buildings

- ▶ Over 1.5 Million Square Feet Currently Controlled by Buncombe County
- ▶ 98.1 Billion BTU of Energy Consumed in 2012
- ▶ Buildings are Responsible for 42% of the County's Carbon Footprint
 - 11,184 Metric Tons of eCO₂
 - 17.7Kg per sq ft. 23% below National average
- ▶ Total Energy Cost for 2012: \$1,478,963

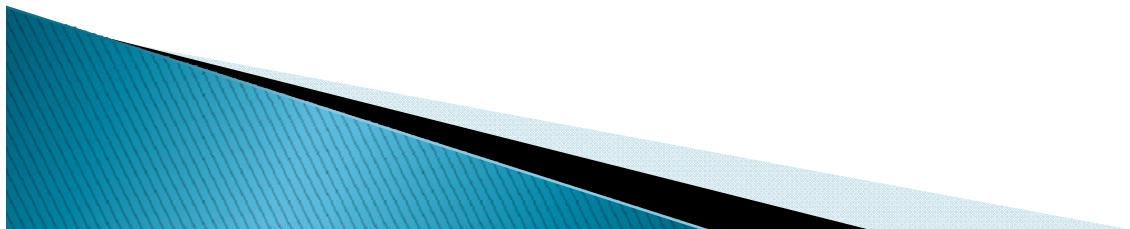
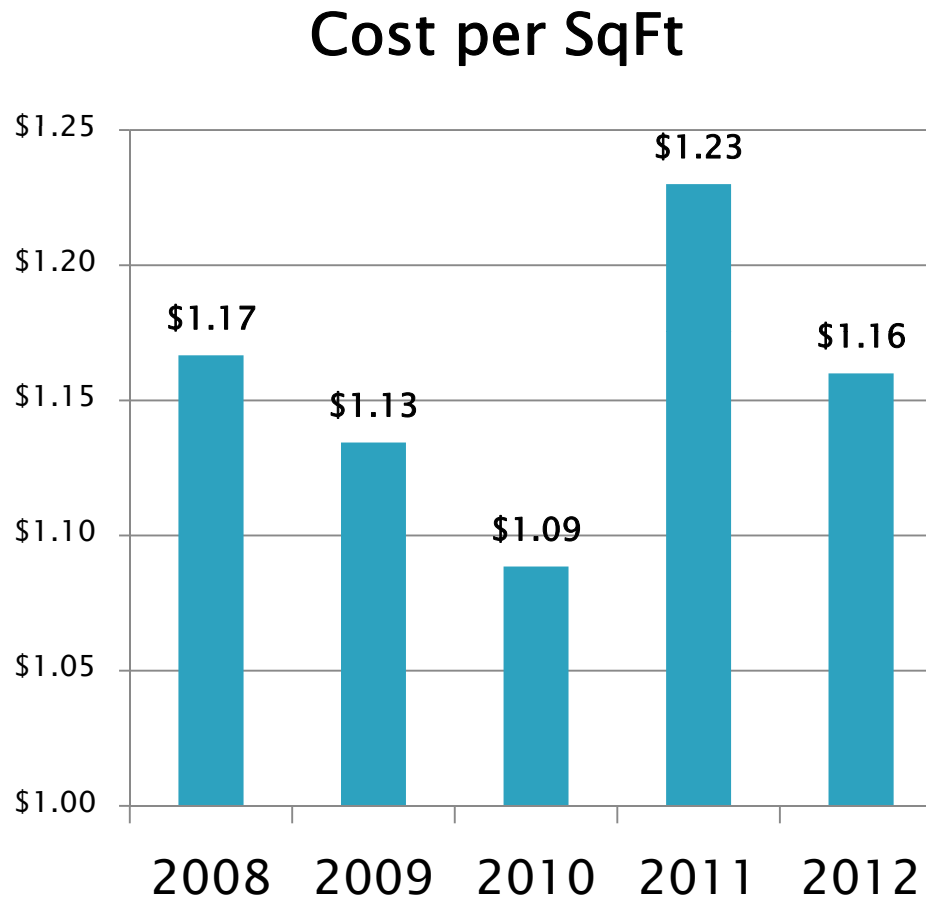


Energy Intensity Btu Per Sq Ft



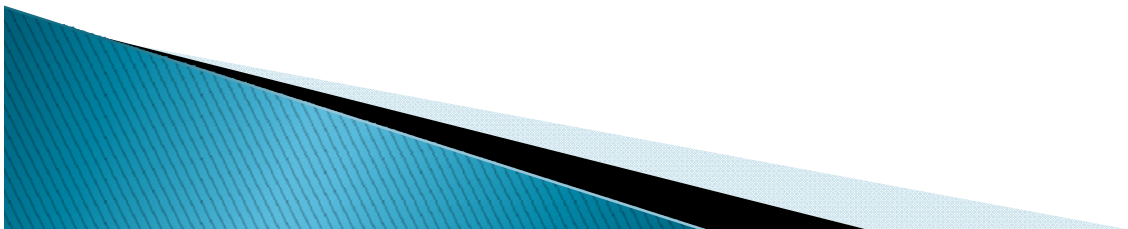
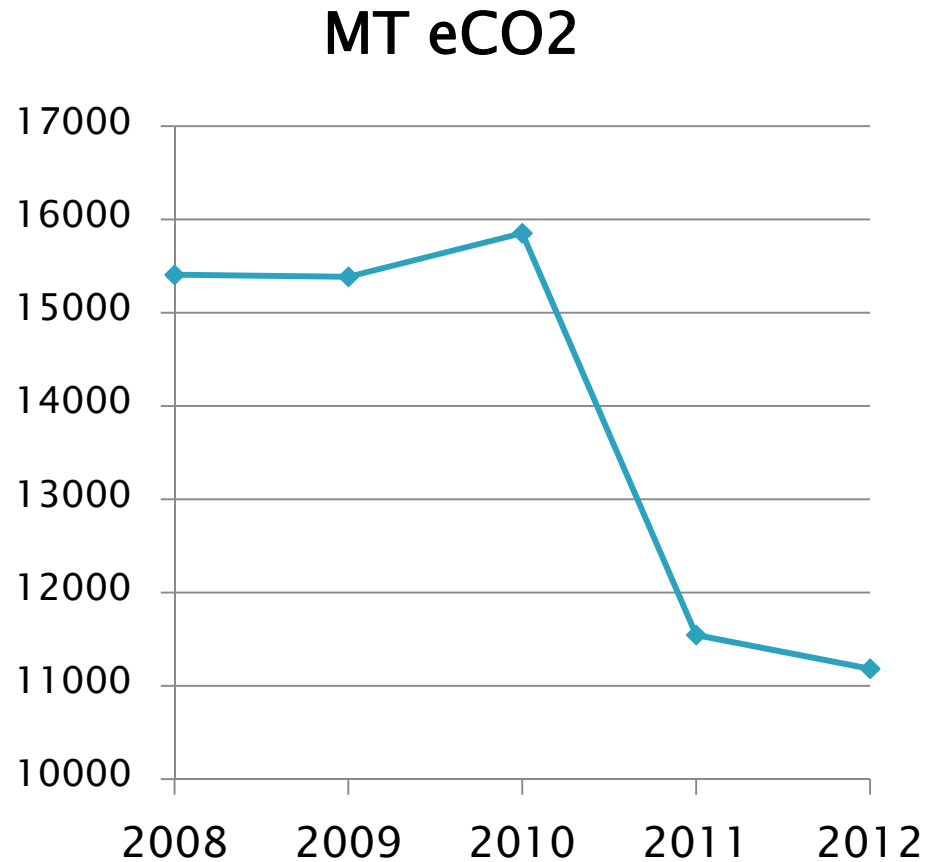
Energy Cost per Square Foot

- ▶ Current Building Inventory included 1,508,840 square feet
- ▶ Total energy cost for 2012: \$1,422,241 excluding seasonal meters*



Building Emissions

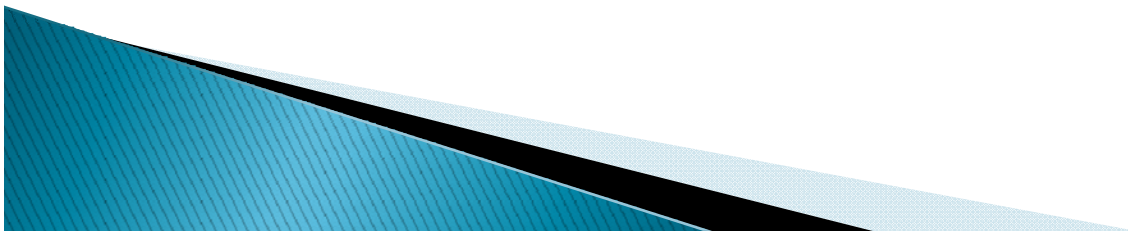
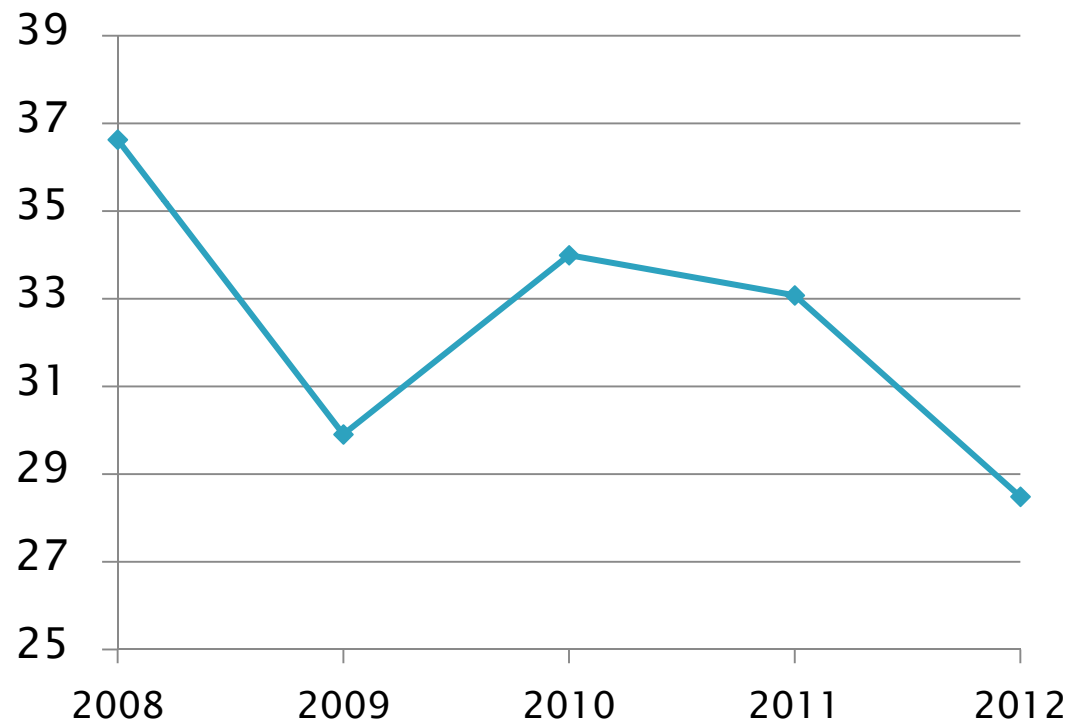
- ▶ 2008-15,406
- ▶ 2009-15,385
- ▶ 2010-15,853
- ▶ 2011-11,546
- ▶ 2012-11,184



Water Consumption

- ▶ 2008 - 36.6M
- ▶ 2009 - 29.9M
- ▶ 2010 - 33.9M
- ▶ 2011 - 33.0M
- ▶ 2012 - 28.4M

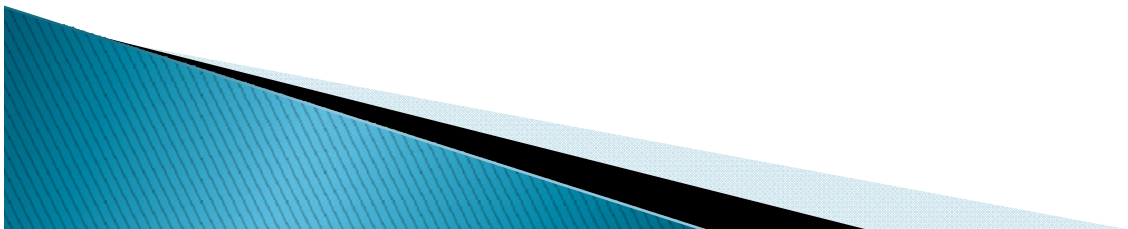
Gallons Consumed



Fleet Details for 2012

- ▶ Total Miles Traveled: 5,712,248
- ▶ Fuel Consumed: 479,486 Gallons*
- ▶ Total Fuel Cost: \$1,458,383*

*Includes all fuel types

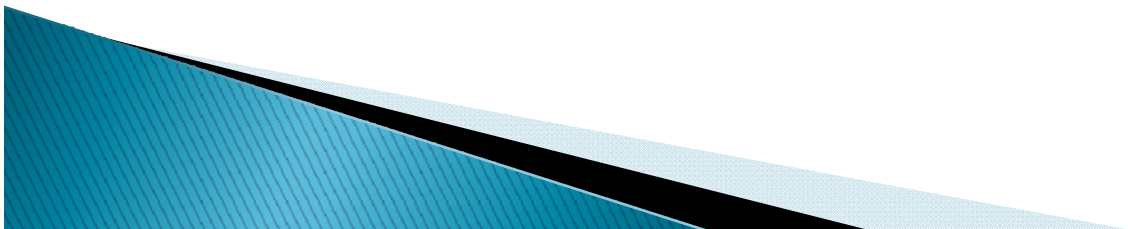


Mountain Mobility

2012 Totals

- ▶ Total Miles Traveled: 1,454,040
- ▶ Total Consumed: 167,525*
- ▶ Total Fuel Cost: \$391,459*

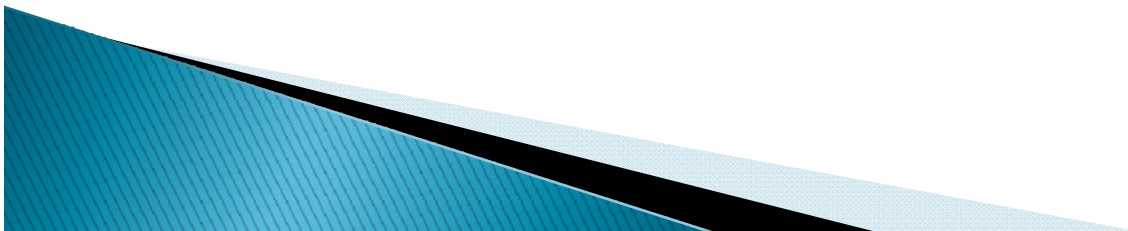
*Includes all fuel types



Vehicle Fleet

▶ Fleet Size

- 2008 - 415
- 2009 - 415
- 2010 - 428
- 2011 - 386
- 2012 - 397



Total Fleet Mileage

2008 - 6,862,013

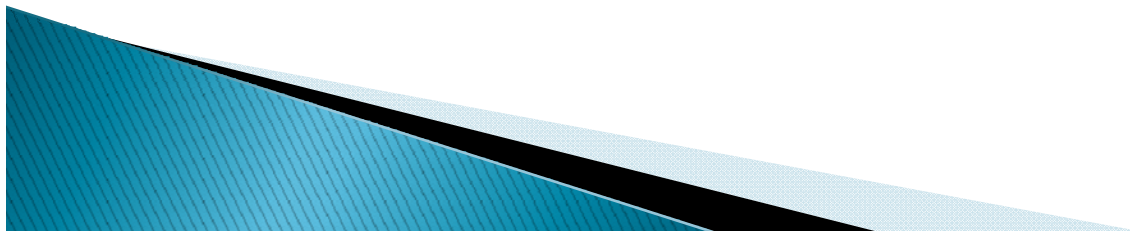
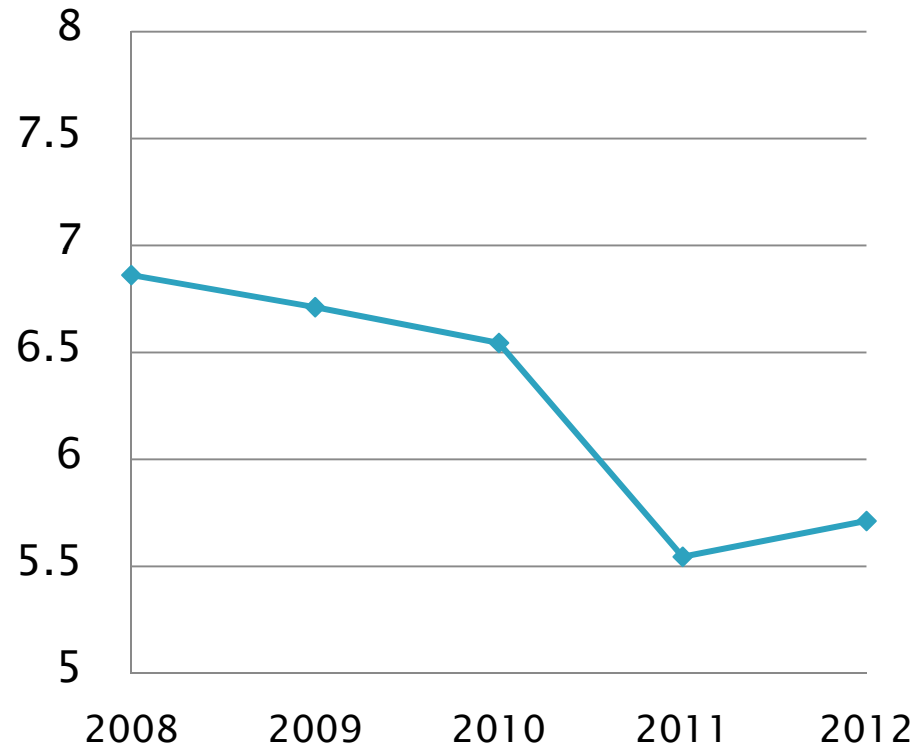
2009 - 6,711,816

2010 - 6,544,613

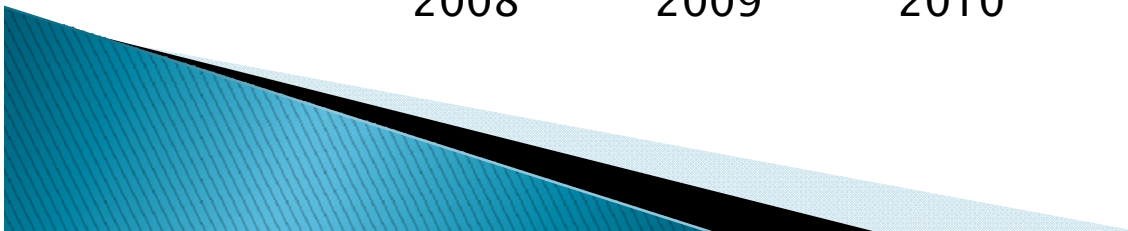
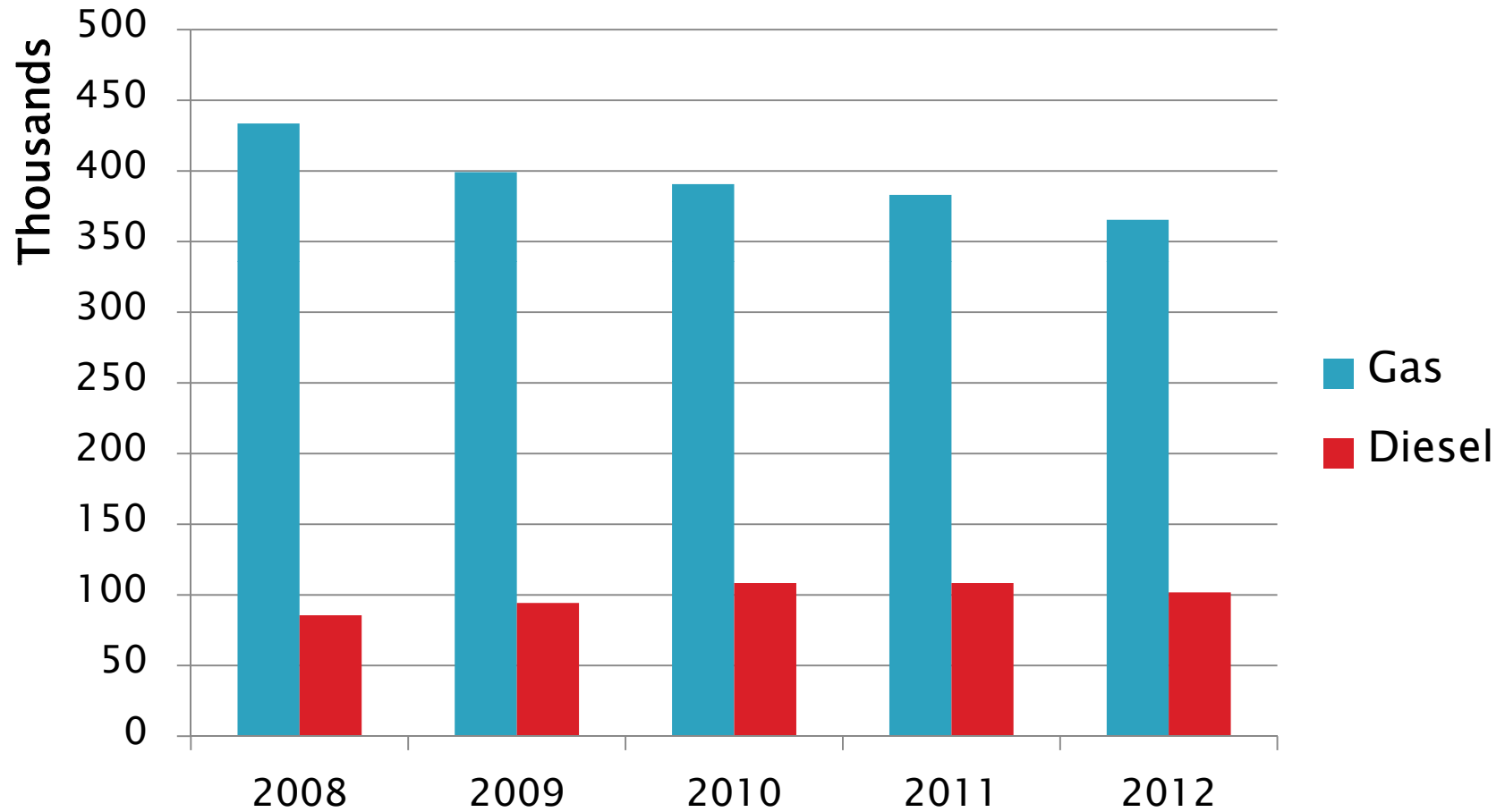
2011 - 5,544,824

2012 - 5,712,248

Miles Traveled



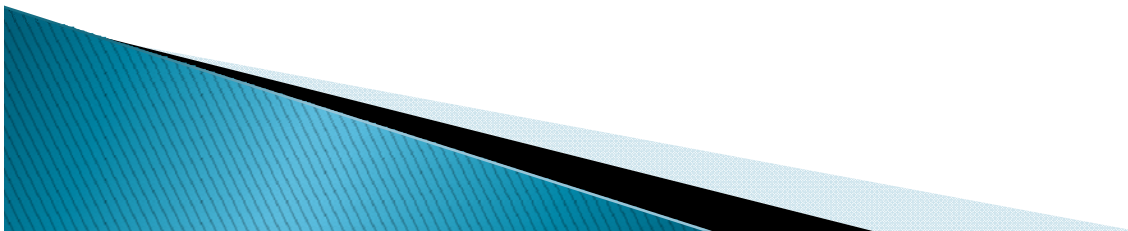
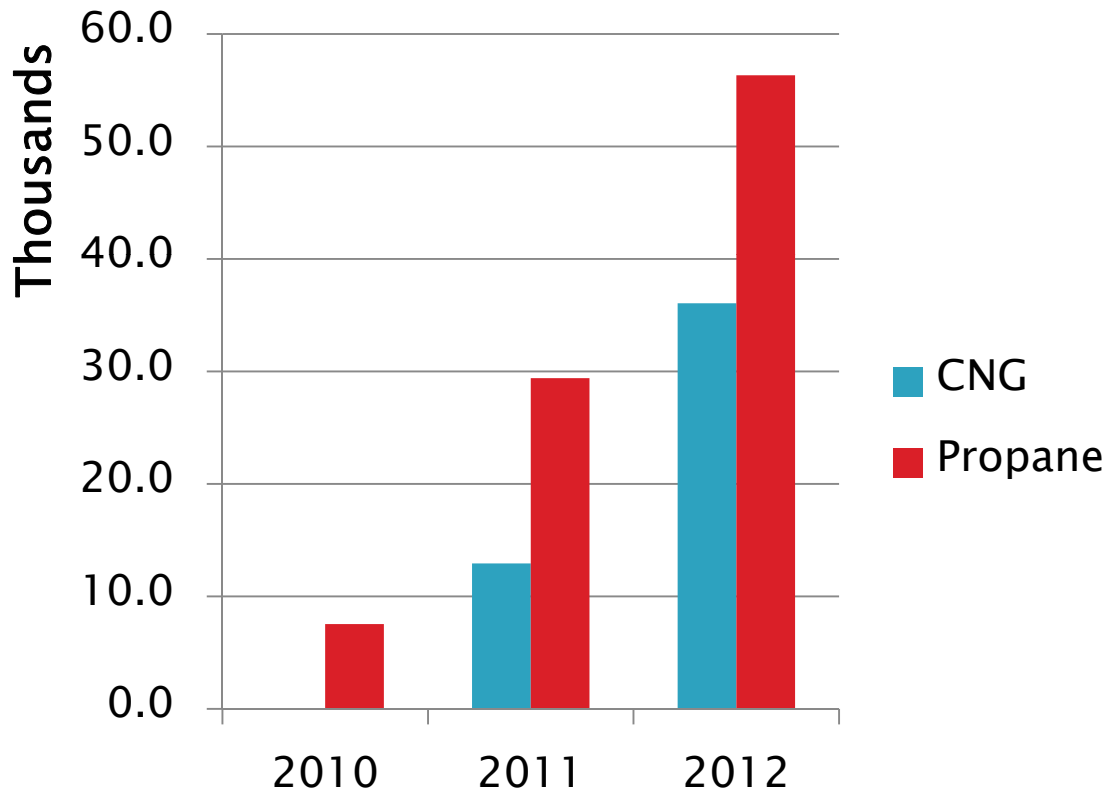
Fuel Usage History



Alternative Fuel Usage

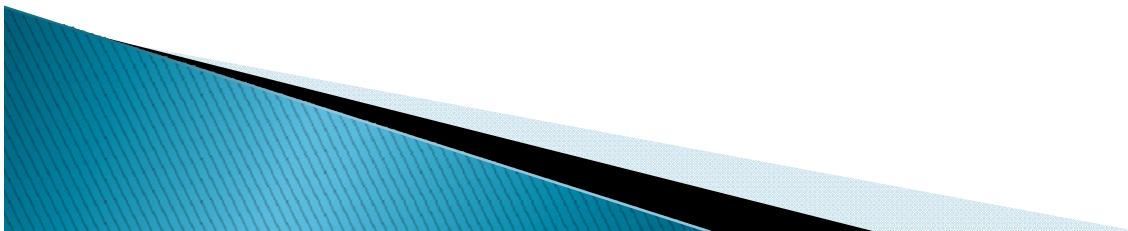
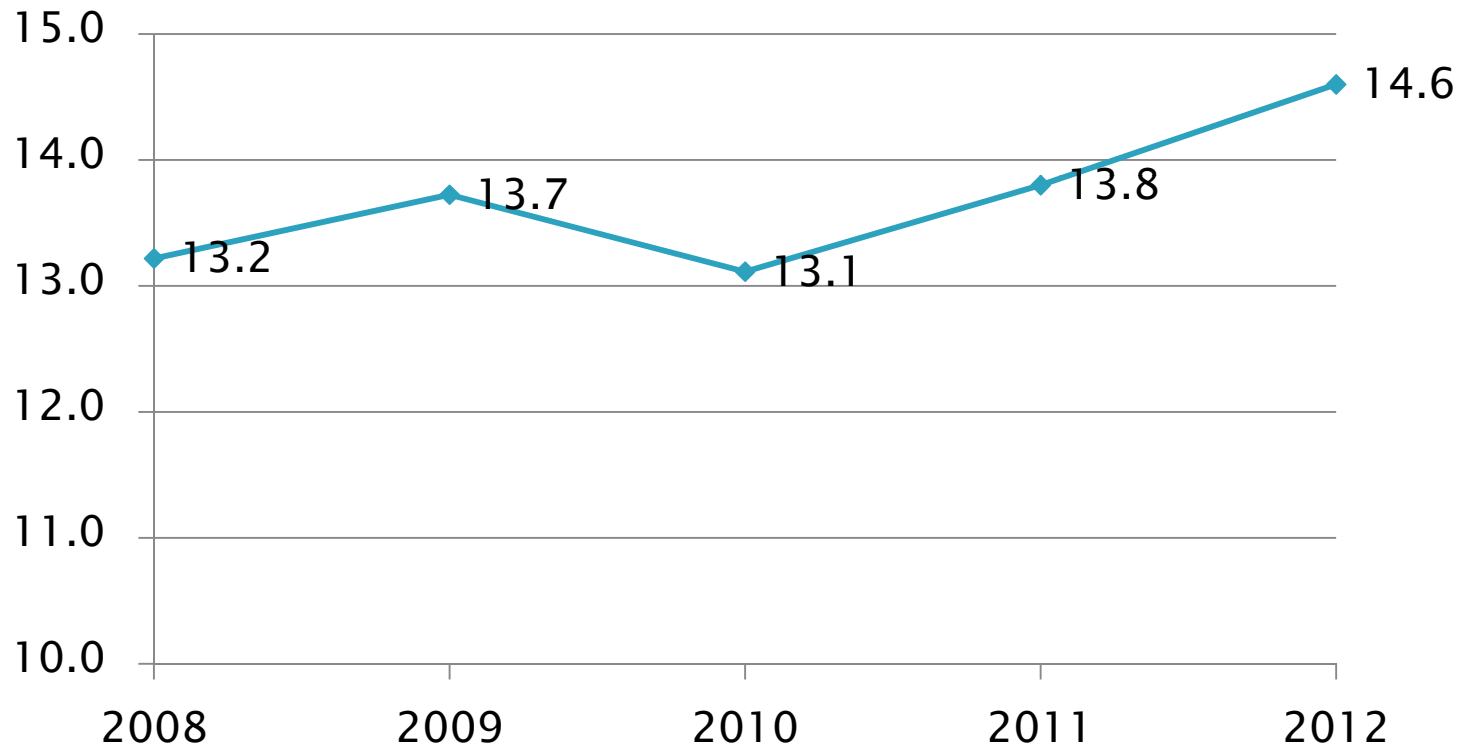
Alternative Fuel Vehicles include:

- Sheriff's patrol vehicles (propane conversions)
- Mountain Mobility vehicles (propane and CNG)



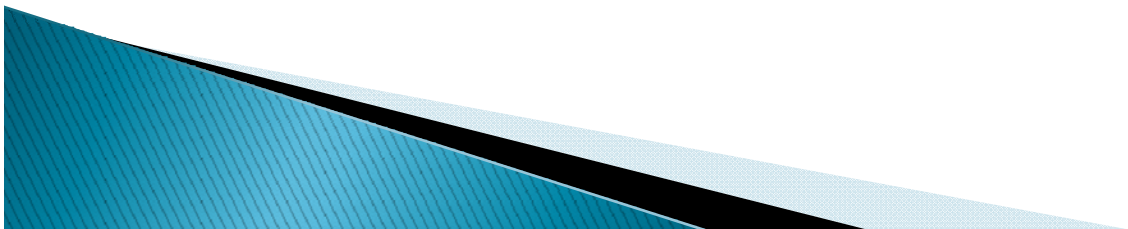
Fleet Fuel Mileage

Miles Per Gallon



Other Direct Emission

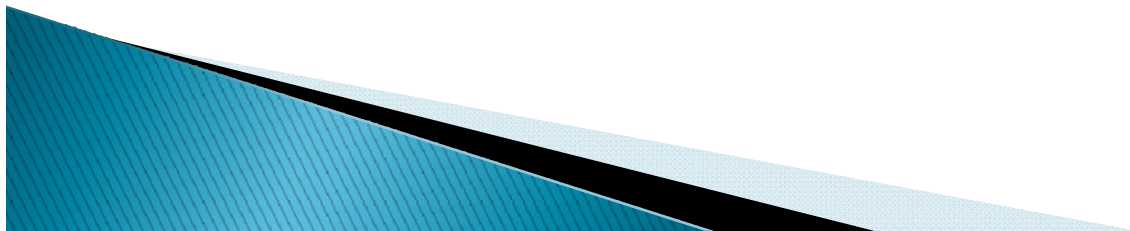
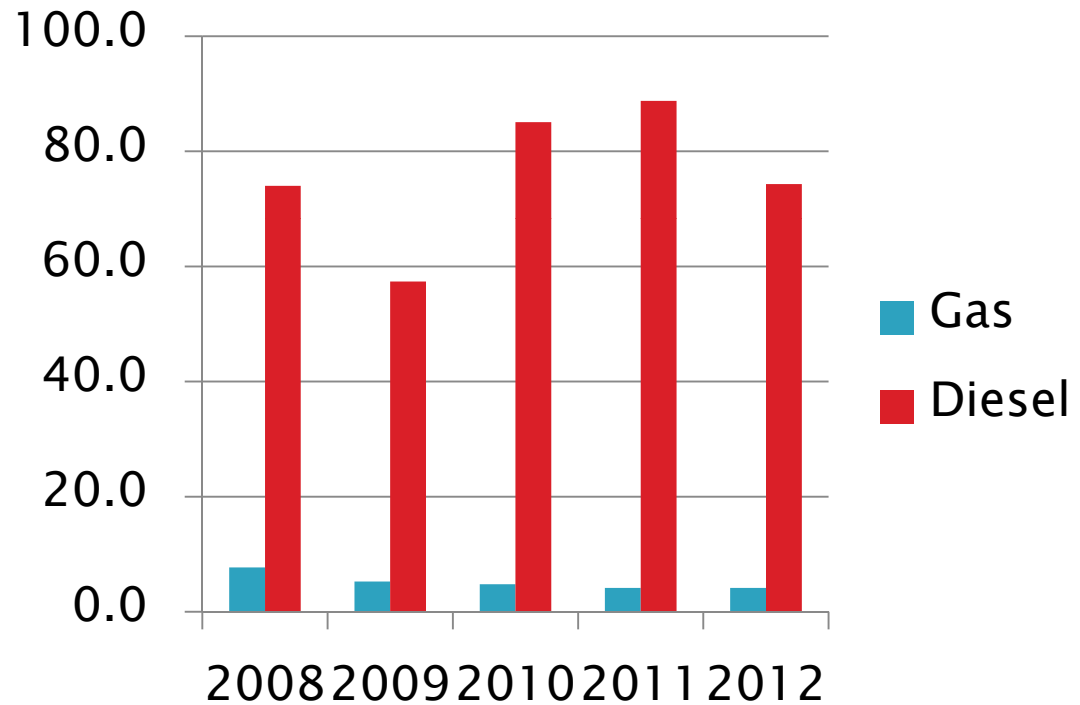
- ▶ Fuel for Off-Road Applications Contributed: 899 MT eCO₂
- ▶ This Category Includes: Landfill, Grounds Maintenance and Diesel Powered Generators
- ▶ 34 stationary Backup Generators



Off Road Fuel Use

Total Gallons

2008 - 109,361
2009 - 104,706
2009 - 89,849
2011 - 92,909
2012 - 78,456

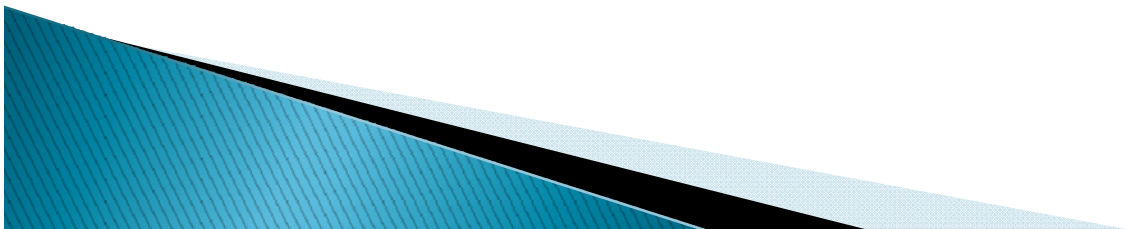


New Facilities

Existing Courthouse	220,000 sq ft
LSA Addition	30,000 sq ft
Courts Addition	127,130 sq ft
Total New Courts Complex	377,130 sq ft

Newly Renovated

40 Coxe Ave	74,000 sq ft
35 Woodfin	96,414 sq ft
Misc renovations	25,450 sq ft
Total	195,864 sq ft



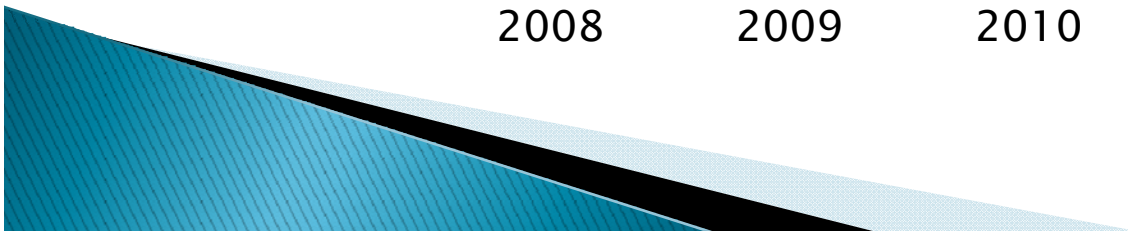
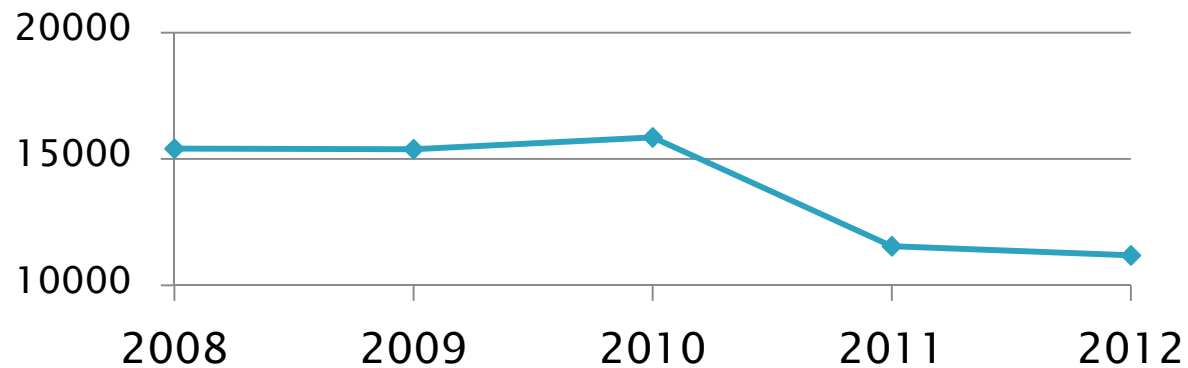
Funding Efficiency

Projects Past

- ▶ Capital Project Budgets
- ▶ General Services Department Budget
- ▶ Energy Savings Reinvestment Fund

Projects Ahead

MT eCO₂



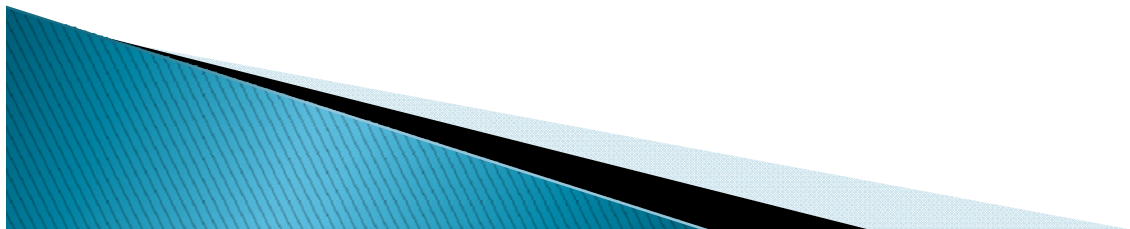
Employee Commute Survey

- ▶ Average Daily Commute 26.5
- ▶ Estimated Total Miles 8,351,700
- ▶ Total MT eCO₂ 4,814

Recycling

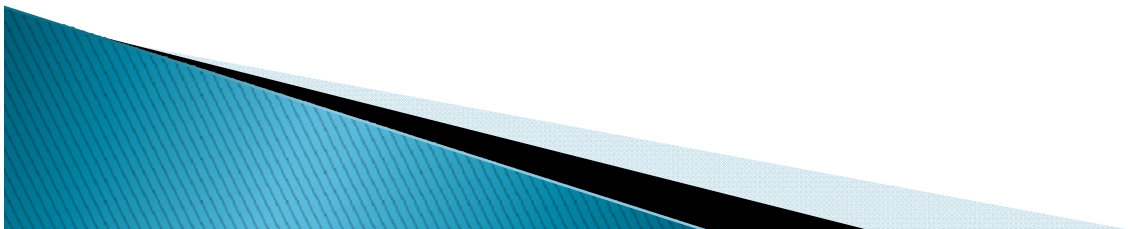
Steel 136MT

Recycling 1 MT of steel has a
777lb eCO₂ offset = -48MT eCO₂



Carbon Emissions For 2012

Buncombe County	26,528 MT eCO ₂
Employee Commute	4,800 MT eCO ₂
Recycled items	-48 MT eCO ₂
Total	31,280 MT eCO ₂



Virtual Servers?

GREEN CALCULATOR

Reduce Energy Cost & Environmental Impact with Virtualization



How many servers* do you plan to virtualize? 230 servers 

*Calculations are based on the power consumption of a standard 2 CPU server

	Physical	Virtualized	Savings
Energy Savings:			
Annual Server & Cooling Energy Usage (kWh)	1,737,765	217,221	1,520,544
Cost Reduction:			
Physical Hardware ¹	\$ 920,000.00	\$ 138,000.00	\$ 782,000.00
Annual Energy Cost ²	\$ 173,777.00	\$ 21,722.00	\$ 152,054.00
Environmental Impact:	Planting Trees	Cars off the highway ³	Annual CO2 Emission(lbs/kg) ⁴
These savings are equivalent to	3,609	204	2,407,021 lbs
			1,091,806 kg

¹ Assumes transition from 2CPU dual core to 2CPU quad core at \$4000 per server and \$6000 per server, respectively.

² Assumes \$0.10/kWh, and operating power of 375 Watts per Physical Server and 469 Watts per Virtualized Host Server. Cooling power multiple of 1.3x operating power.

³ Assumes 12,000 miles per year and 20 mpg.

⁴ Assumes 1.583 lbs CO2 emission per kWh.



For more information or to review the entire
Energy and Emissions Report

Please visit

buncombecounty.org/green

Presented by

Buncombe County General Services

828-250-4233

