



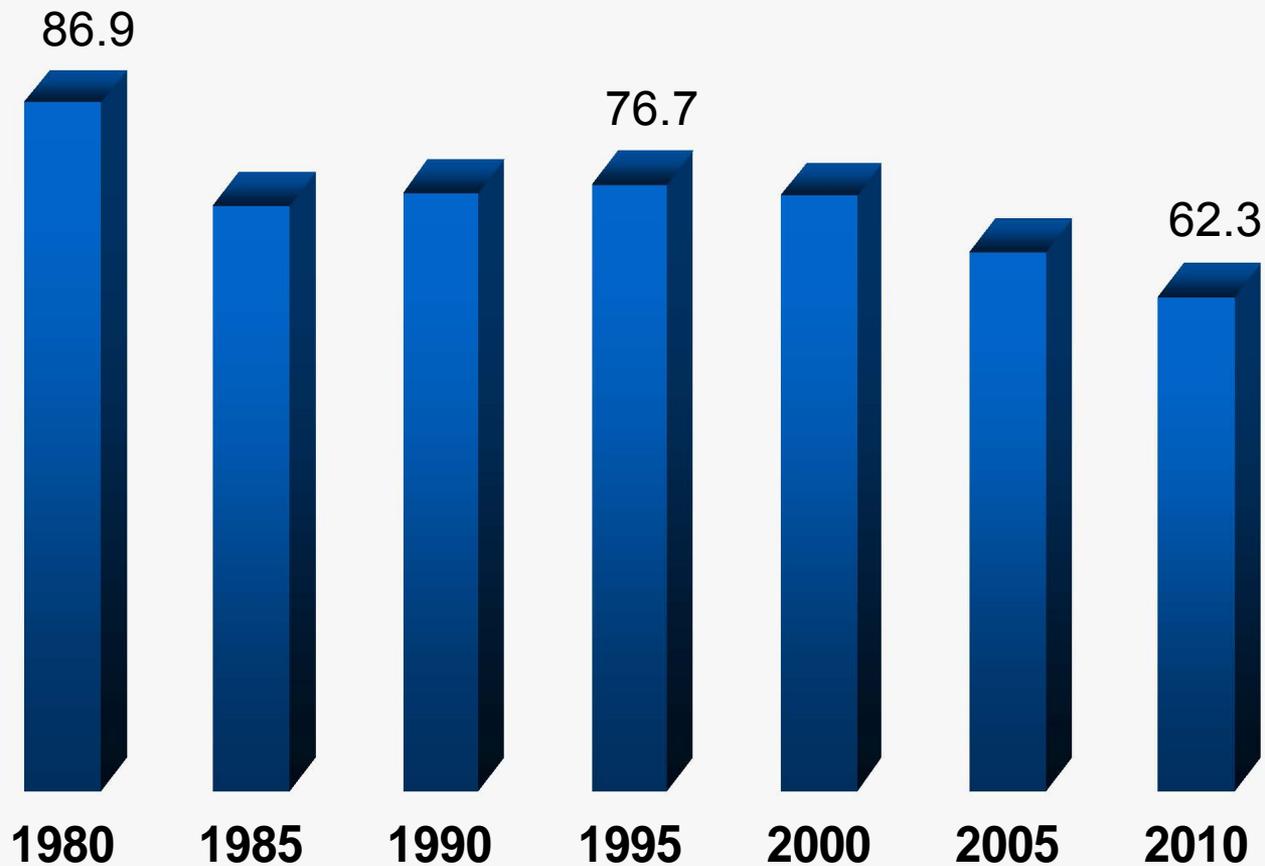
Piedmont
Natural Gas

Emerging & Foundational Issues in the Natural Gas Sector: Energy Efficiency & Conservation

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October 8, 2010*

Average SC Residential Natural Gas Consumption Per Customer

(Weather-Normalized Dekatherms Per Year)



Improved Home Design

Tight Ducts
can contribute to improved indoor air quality and comfort.

Energy-Efficient Windows
can improve the energy efficiency of your home by reducing heat loss in cooler climates and heat gain in warmer climates.

Improved Insulation
blankets the home in comfort and quiet.



Energy-Efficient Heating and A/C Equipment
can help reduce energy use and noise.

Reduced Air Infiltration
can affect drafts, dust, pests, and pollen in the home.

Federal Energy Efficiency Incentives

South Carolina Appliance Rebate Program

- ENERGY STAR labeled gas furnaces, water heaters, central air conditioning units and heat pumps were allocated 50% of the total rebate funding (\$1.95 million out of \$3.9 million); these funds were claimed by April 1, 2010, just one day after the rebate program launched
- Over 210 retail locations and 710 contractors issued rebates in all 46 counties

Federal Tax Credit

- Tax credit of 30% of cost up to \$1,500 for certain energy efficient appliances & equipment installed in existing principal residences
- Expires December 31, 2010

Piedmont's Energy Efficiency Programs

- Approved by the PSC on May 27, 2010 (Docket 2009-411-G)
- Annual expenditure of \$350,000 for 3 years on experimental programs:
 - Customer Education Program
 - Low-Income Energy Efficiency Program
 - Equipment Rebate Program

Piedmont: Customer Education Program

Bill Inserts & Newspaper Ads Starting in November 2010 Focusing on Key Energy Efficiency Messages

- High-efficiency equipment upgrades
- Federal Tax credits available
- Heating system yearly tune-up
- Upgrading your insulation
- Water heating energy tips
- General energy saving tips

School Conservation Education to begin Fall 2011

Piedmont: Residential Low-Income Program

Energy efficiency measures for low-income customers

- Sealing major air leaks in floors and ceilings
- Insulating attic, side walls and/or floors
- Sealing and insulating ducts
- Installing programmable/setback thermostats
- Evaluating, cleaning and tuning heating systems
- Installing general heat waste measures (furnace filters, water heater insulation wrap, piping insulation, water-saving devices, weather stripping).

Installed measures for each participant are based on needs guided by an in-home energy audit

Piedmont: Equipment Rebate Program

Eligible Equipment	Rebate	Equipment Efficiency Requirement	Eligible Customers
Storage Gas Water Heaters	\$50	EF=0.62 or higher	Residential
Tankless Gas Water Heater	\$250	EF=0.82 or higher	Residential Commercial
Forced Air Furnace	\$300	AFUE = 90% or higher	Residential

Over 160 qualified rebate applications, totaling over \$45,000 in rebate incentives, have been received by Piedmont in the four months since PSC approval of the program.

Appliance (Site) Energy Perspective

Natural Gas Furnace Systems

- Annual Fuel Utilization Efficiency (AFUE): measures the amount of fuel converted to space heat in proportion to the amount of fuel entering the furnace
- ENERGY STAR qualified natural gas furnace: AFUE \geq 90% (can get as high as 98%)
- “Standard” natural gas furnace: AFUE \geq 78%
- Older gas units in homes: AFUE ranges from 56% to 70%

Natural Gas Water Heaters

- Energy Factor (EF): ratio of useful energy output from the water heater to the total amount of energy delivered to the water heater
- “Standard” storage water heater: EF \geq 0.59
- ENERGY STAR storage water heater: EF \geq 0.62, EF \geq 0.67 (effective 9/1/10)
- ENERGY STAR tankless water heater: EF \geq 0.82 (can get as high as 0.98)
- ENERGY STAR condensing water heater: EF \geq 0.80

Full Fuel Cycle Energy Perspective

- Examination of energy use, efficiency and emissions from the point of extraction of the primary fuel (source) through the point of use (site)
- Provides an accurate and equitable method for measuring total energy efficiency and carbon footprint across consumer appliance and equipment choices

Energy consumed during extracting, processing and transporting primary fuels such as coal, oil or natural gas

+

Energy losses in the generation of electricity and the transmission & distribution of electricity to the end user

+

Energy consumed by the end-use application

Illustrative Full Fuel Cycle Exercise on Energy Efficiency

Residential Water Heater Equipment Choice	BTU of Natural Gas in the Ground	x	Natural Gas Extraction, Processing, Transportation & Distribution Efficiency	x	Electric Power Generation, Transmission & Distribution Efficiency	=	Source to Site Efficiency	x	Site Appliance Efficiency	=	FULL FUEL CYCLE EFFICIENCY
Storage Gas Water Heater	1	x	.91	x	n/a	=	.91	x	.59	=	.54
Tankless Gas Water Heater	1	x	.91	x	n/a	=	_____	x	.82	=	_____
Electric Storage Water Heater	1	x	.91	x	.45	=	_____	x	.88	=	_____

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Storage Gas Water Heater	1	x	.91	x	n/a	=	.91	x	.59	=	.54
Tankless Gas Water Heater	1	x	.91	x	n/a	=	.91	x	.82	=	.75
Electric Storage Water Heater	1	x	.91	x	.45	=	.41	x	.88	=	.36

Questions?