

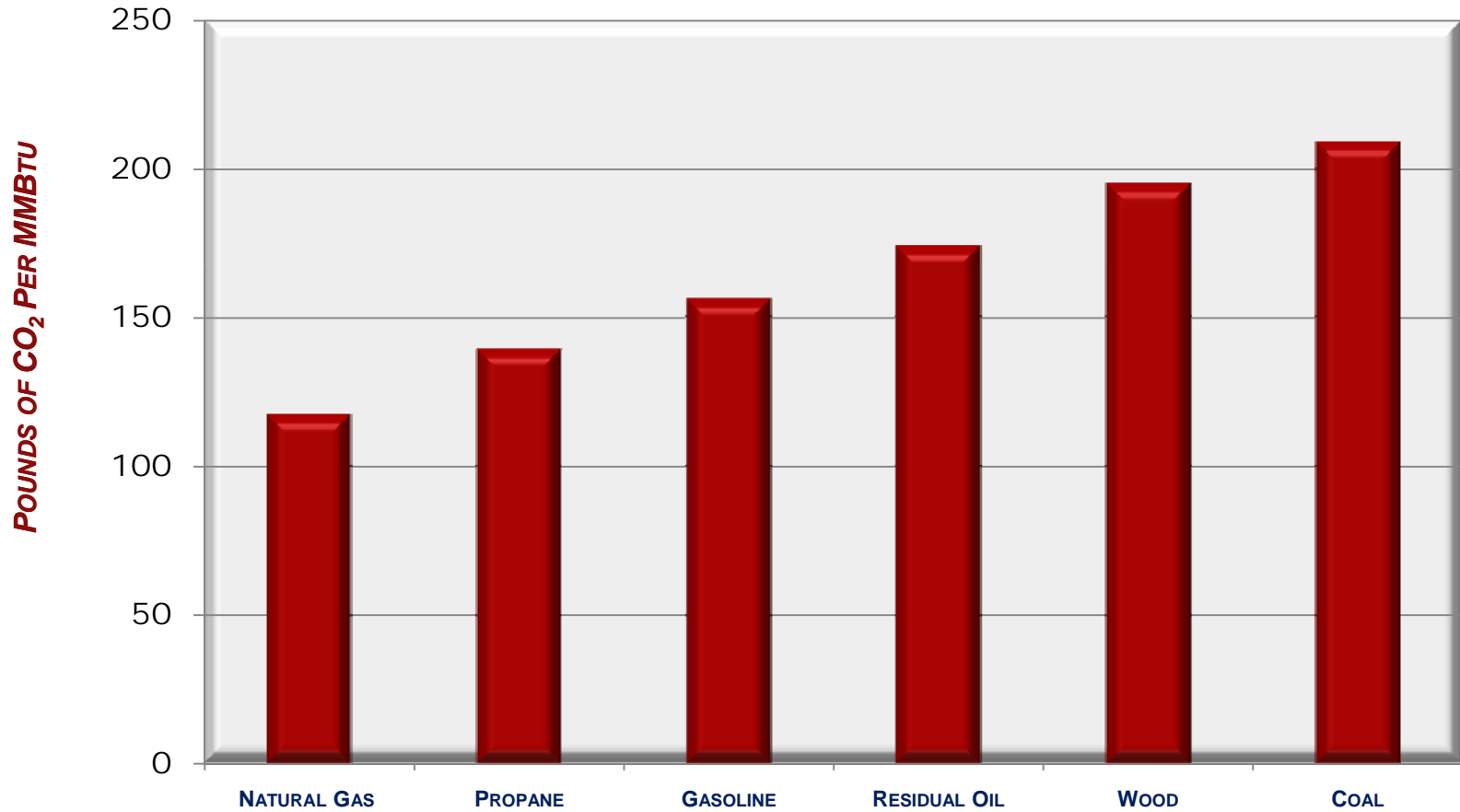
Low Carbon Energy Supply for North Carolina

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Low Carbon Energy Supply for North Carolina

- Natural gas meets essential human needs – over 60% of US homes use gas for heating, hot water and cooking.
- Natural gas is part of the solution – it offers immediate reduction of GHG emissions with existing technology.
- Abundant – estimates of US reserves have increased 50% in recent years because of efficient production technology, primarily in the shale plays.
- Lowest carbon footprint of all fossil fuels – 43% less CO₂ than coal, and 28% less than fuel oil, with negligible or no emissions of SO_x, NO_x and mercury.

Natural Gas Has the Lowest Greenhouse Gas Emissions of all Major Fossil Fuels

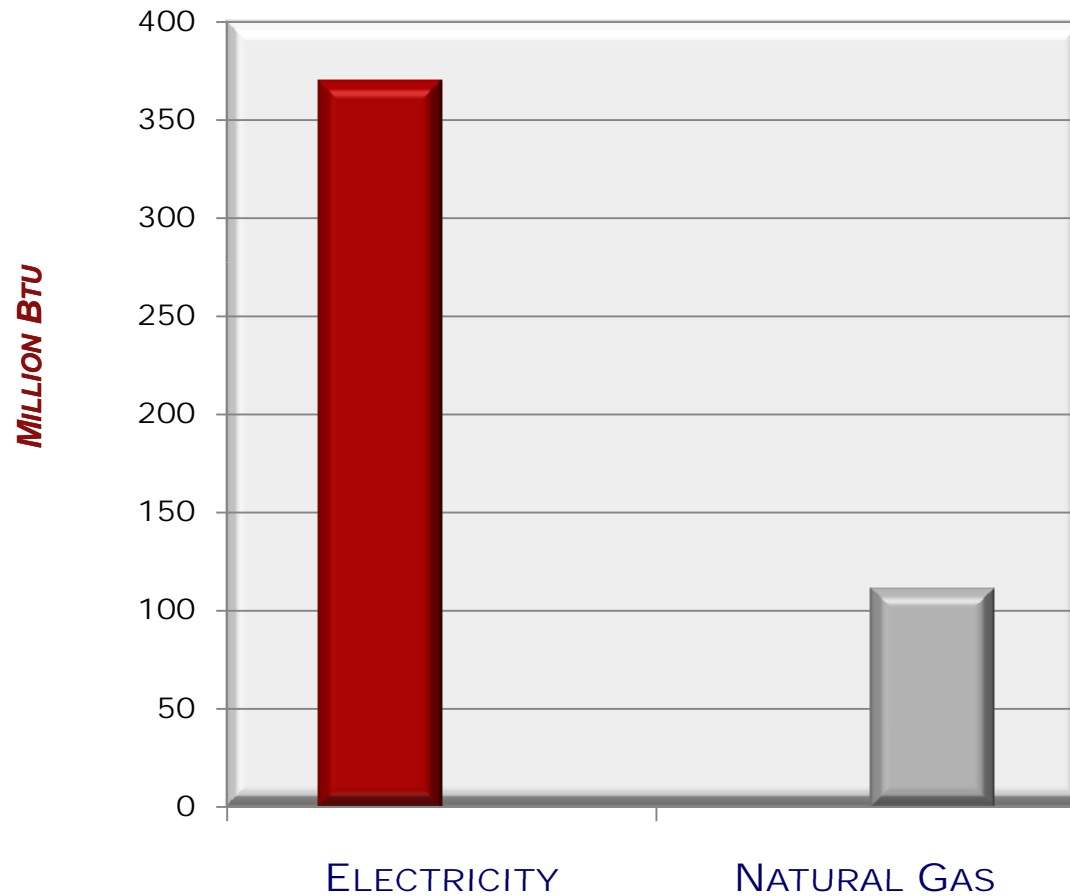


Source: U.S. Energy Information Administration.

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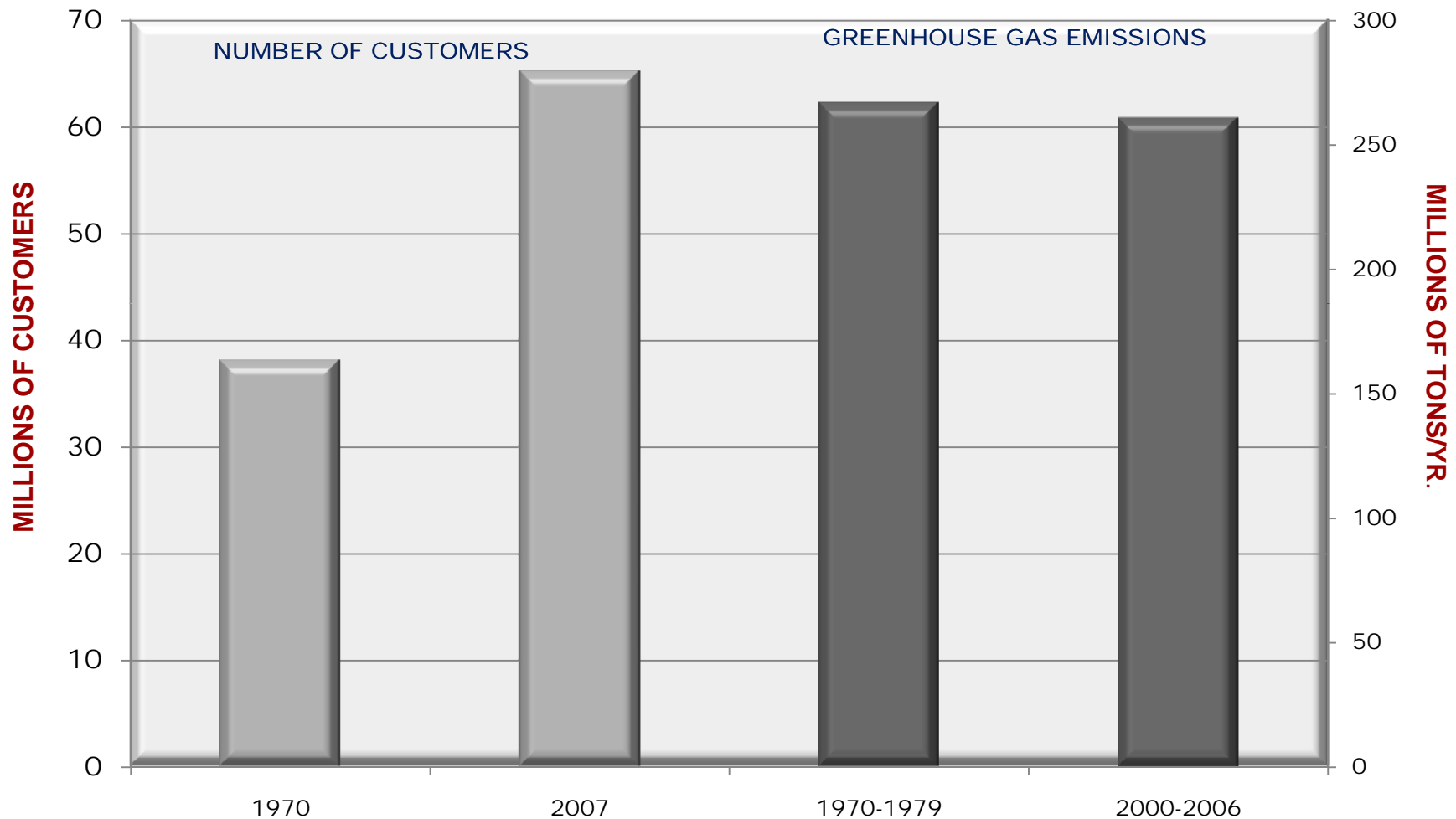
- Efficient – 90% of the energy produced from a well is delivered to the consumer, vs 30% of the energy used to produce electricity – full fuel-cycle measurement (National Academy of Science study)
- In fact, since 1970, residential natural gas users have increased by 70%, yet total emissions equal 1970 levels due to more efficient appliances and structures.

Energy Production Required to Deliver 100 MMBtu to the Customer



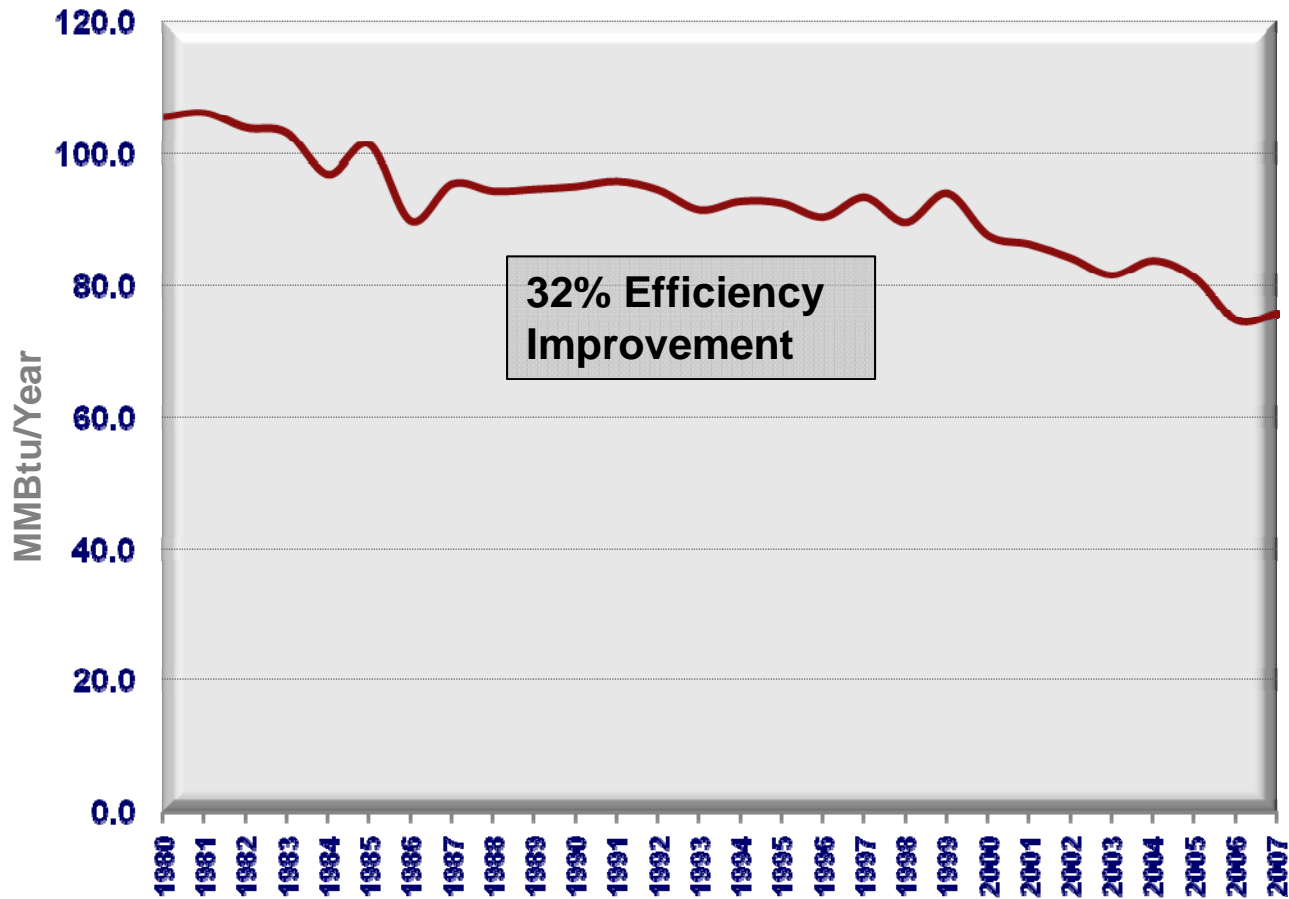
NOTE: Assumes Natural Average generating mix for electricity generation.

Residential Natural Gas Customers Are Growing, But Their Greenhouse Gas Emissions Have Declined



Source: U.S. Environmental Protection Agency, U.S. Energy Information Administration and American Gas Association.

Consumption Per Residential Natural Gas Customer



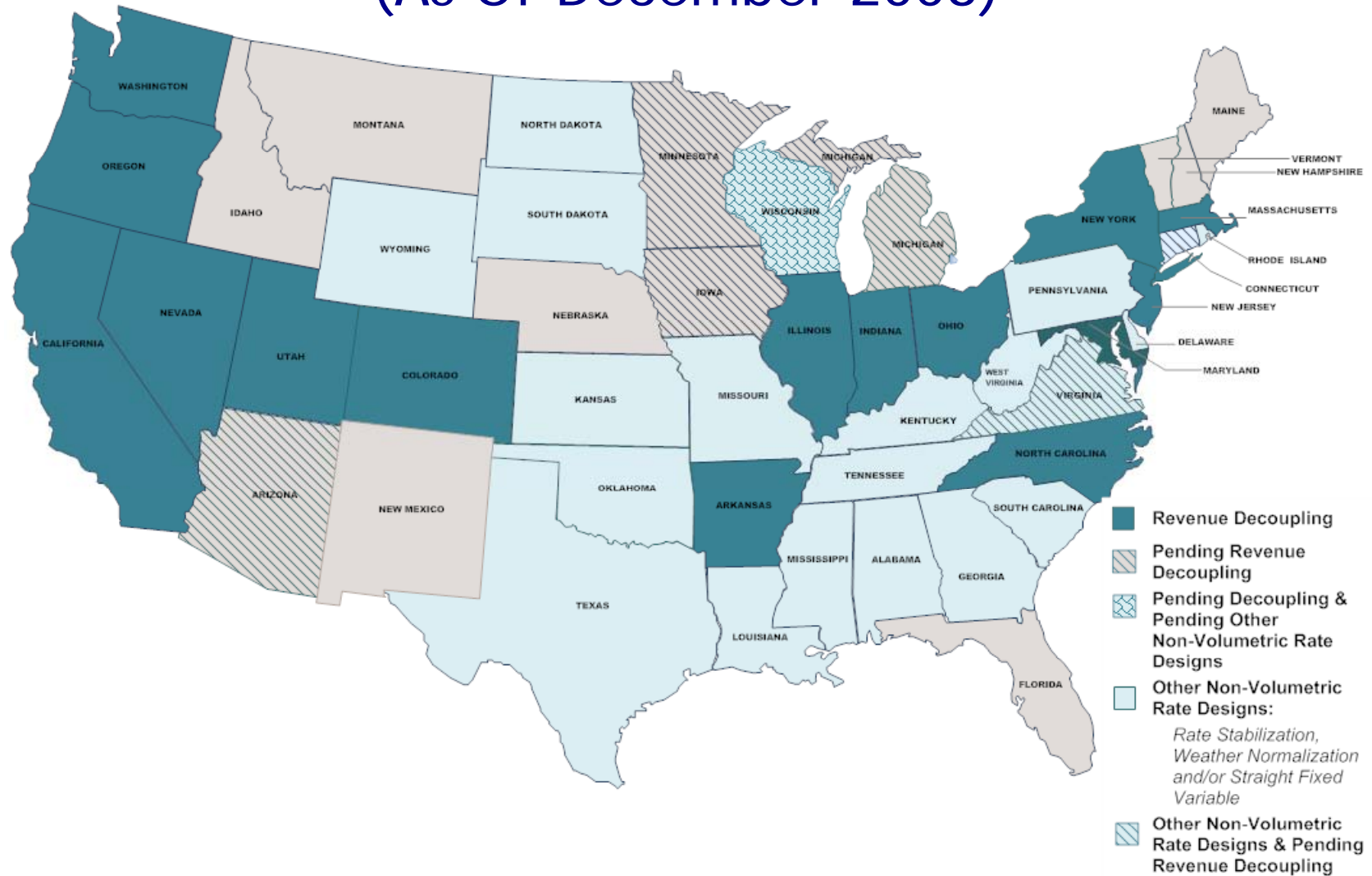
Source: U.S. Energy Information Administration and American Gas Association.

NOTE: Data is "weather normalized" or adjusted to reduce the impact of abnormally warm or cold weather.

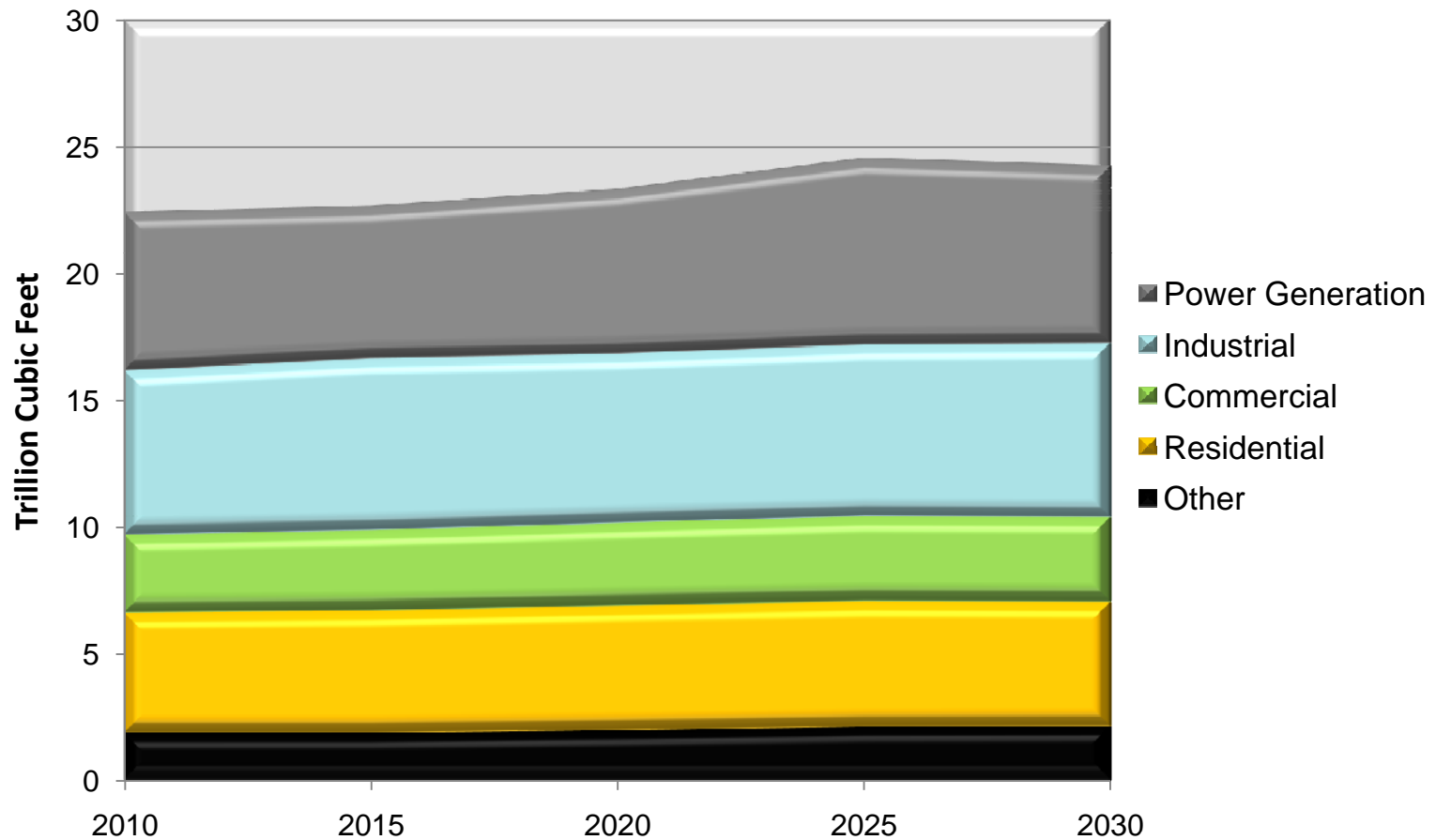
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- Already accomplished in North Carolina:
 - ✓ Decoupled rate design for LDCs – aligns the interest of consumer and utility on energy efficiency and conservation.
 - ✓ Utility-funded weatherization programs.
 - ✓ Endorsed Clean Smokestacks Bill compliance method (2009, S.B. 1004)
 - ✓ Legislative study panel and Governor's scientific panel created to evaluate offshore energy proposals.

States With Non-Volumetric Natural Gas Rate Designs (As Of December 2008)



Future Natural Gas Demand (2010-2030)



Source: *Energy Information Administration, Annual Energy Outlook 2009-2030.*

Low Carbon Energy Supply for North Carolina

- New Initiatives for efficient, clean energy:
 - ❖ Develop offshore energy production with environmental protections – means jobs, potential revenue sharing and energy security for NC.
 - ❖ Create incentives for:
 - Efficiency programs
 - Natural gas vehicles (NGVs)
 - Combined heat and power (CHP) and fuel cells
 - Landfill gas & biogas gas
 - Back-up for renewables
 - ❖ Institute fair codes & standards that measure efficiency and emissions on a full fuel-cycle basis.

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- By 2030, a 7% shift to direct use of gas would:
 - ❖ Reduce total energy consumption by 1.25% to 2.00% nationally
 - ❖ Avoid incremental generation capacity of 63 – 80 GW of power
 - ❖ Avoid incremental investment costs of \$49 billion to \$122 billion
 - ❖ Reduce total energy costs by \$18 billion to \$29 billion
 - ❖ Reduce CO₂ emissions by 60 to 200 million tons

(Source: American Gas Foundation study)

Direct Natural Gas Use Reduces Greenhouse Gas Emissions

