The Unconventional Energy Revolution: Estimated Energy Savings for Public School Districts and State and Local Governments

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Key Findings

Savings by public elementary and secondary school districts

Public elementary and secondary school districts in the United States spent $7,260 million for electricity and $1,720 million for natural gas in fiscal year 2012/13; IHS projects that they would have spent $8,001 million and $2,187 million, respectively, under the Without Unconventional Energy Case. School districts received the following savings in 2012/13 from the unconventional energy revolution:

- Spending was lowered $740.9 million for electricity and $466.9 million for natural gas.
- The percent savings were 9.3% for electricity and 21.3% for natural gas.
- The combined energy savings for both electricity and natural gas were $1,207.8 million.
- The estimated energy savings is equivalent to the cost of 8,796 full-time equivalent (FTE) teachers, due to electricity savings, and 5,450 from natural gas savings, for a total of 14,246 teachers.

Savings by state and local governments

State and local governments, excluding public elementary and secondary school districts, spent $4,442 million for electricity and $916 million for natural gas in fiscal year 2012/13; they would have spent $4,909 million and $1,169 million, respectively, under the Without Unconventional Energy Case. State and local governments realized the following savings in energy expenditures during the reference year:

- Lower outlays of $467.2 million for electricity and $252.9 million for natural gas.
- The percent savings were 9.5% for electricity and 21.6% for natural gas.
- Combined energy savings for both fuel types were $720.1 million.
- The estimated energy savings is equal to the cost of 7,006 additional FTE government workers, such as police and firefighters, from the electricity savings, and 3,989 workers due to natural gas savings, for a total of 10,995 workers.

Total US Energy Expenditure Savings - 2012/13 Fiscal Year

	Public Elementary & Secondary Schools		State & Local Governments		Total	
Energy Type	Energy Savings	# of Positions Cost Equivalent	Energy Savings	# of Positions Cost Equivalent	Energy Savings	# of Positions Cost Equivalent
Electricity	$740.9	8,796	$467.2	7,006	$1,208.1	15,802
Natural Gas	$466.9	5,450	$252.9	3,989	$719.8	9,439
Total	$1,207.8	14,246	$720.1	10,995	$1,927.9	25,241

Note: energy savings are in millions of $

Introduction

Purpose

In the recently completed study—America's New Energy Future (ANEF) – Volume 3: A Manufacturing Renaissance—IHS estimated the effect of the unconventional energy revolution on the US economy. This revolution has increased domestic oil and natural gas production, lowered prices for oil and natural gas, and increased energy investment. These direct industry effects, in turn, have affected the national economy, including GDP, foreign trade, industrial production, and household disposable income. The ANEF study determined lower prices for oil and natural gas, the accompanying declines in electricity prices, and other economic effects, increased US households' annual disposable income by $1,200 in 2012.

API retained IHS to extend its ANEF results to estimate similar energy savings due to the unconventional energy revolution received by state and local governments & public elementary and secondary school districts across the US. These institutions paid lower rates for much of their energy use as a direct result of the unconventional energy revolution. The savings are the differences between actual spending for energy by state and local governments & school districts, and estimates of what they would have paid under a scenario with higher oil and natural gas prices which would have occurred without US unconventional oil and natural gas development.

State and local governments considered

This study estimates the energy savings received by: 1) state and local governments, excluding public elementary and secondary school districts, and 2) public elementary and secondary school districts. The local, non-education, government sector is large and varied, as it includes county, city, and municipal governments, authorities (e.g., water and sewer systems, solid waste management authorities, and local public utilities) and special-use districts, such as those for libraries, irrigation, etc. The term "state and local governments," as it is used in this report, does not include public elementary and secondary schools districts.

According the Census Bureau, in 2012, there were 14,178 public school districts in the United States. Private K-to-12 schools are not considered in the analysis of public elementary and secondary schools, due to the difficulty in obtaining energy spending data. Charter schools that are public schools are included in the study. The inability to consider private schools does not significantly affect the results, because, according to the United States Department of Education, in 2009, about 90% of all students in grades K to 12 attended public schools, so those schools account for the vast majority of energy spending by all K-to-12 schools.

Reference year

The reference year of analysis for this study is fiscal year (FY) 2012/13, which was from 1 July 2012 to 30 June 2013. It was selected because: 1) virtually all state governments, many local governments, and most public elementary and secondary districts use a 1 July to 30 June fiscal year; and 2) it was the most recent fiscal year for which detailed energy spending figures were consistently available. If information could not be obtained for the reference year, but had been published for prior fiscal years, price indices were used to convert figures to FY 2012/13 dollars. Quarterly values for price indices were used to convert calendar-year data to a fiscal-year basis.

Scenarios evaluated

This study estimated energy spending savings by state and local governments, and by public elementary and secondary school districts, during the reference year for two scenarios:

- The Base Case uses energy cost estimates for 2012 and 2013 from the IHS ANEF study, which includes unconventional oil and natural gas production. This report uses the term "Base Case" to refer to this scenario.
- The Without Unconventional Energy Case is the energy cost environment that would have existed without unconventional oil and natural gas.

In order to calculate benefits from the unconventional energy revolution, IHS's energy group provided estimates of electricity and natural gas prices under both scenarios in FY 2012/13. Because this study estimates actual energy spending by both types of governments, the appropriate metric is the retail or delivered price of electricity and natural gas. Finally, we use commercial prices for electricity and natural gas, as both types of governments are usually classified as commercial customers by electric and natural gas utilities.

IHS studies of the unconventional energy sector

Our ANEF study estimated that the economic benefit from the unconventional energy revolution was an increase of $1,200 in annual real disposable income per US household in 2012. These economic benefits are the cumulative result of higher spending and investment in the unconventional energy value chain, in addition to lower fuel and feedstock prices paid by the US manufacturing sector, especially by energy-intensive sub-sectors such as chemicals, oil refining, food, and metals. The $1,200 figure is the total value of economic benefits across the US economy that households received, including:

- Lower consumption costs from reduced prices for natural gas used for heating and water heating.
- Reduced prices for electricity due to lower costs for natural gas used as a fuel in electricity generating plants.
- Lower prices for consumer goods and services, especially for energy-intensive products, due to lower input costs.
- Higher wage income as the manufacturing renaissance increases industrial activity, leading to rising employment and wage levels in manufacturing, and in the downstream sectors that use its goods as inputs.

IHS forecasts in the ANEF study that the increase in real disposable income per US household provided by unconventional oil and natural gas revolution will grow over time, from just over $2,000 in 2015, to more than $3,500 by 2025.[1]

[1] IHS, America's New Energy Future: The Unconventional Oil and Gas Revolution and the US Economy, Volume 3: A Manufacturing Renaissance, September 2013.

Energy use and spending

This study includes the following types of energy consumed in buildings used by both types of governments.

- Electricity
- Natural gas
- Fuel oil
- Propane
- Other (e.g., steam, geothermal, compressed natural gas, etc.)

This study does not include fuel used in vehicles.

IHS conducted a literature review to describe energy use patterns in state and local governments, and in elementary and secondary school buildings. Understanding energy use patterns by fuel type and end use category was necessary to evaluate how the differences in retail energy prices between the two scenarios had affected energy spending by the two types of governments. For example, lower prices for natural gas have caused both types of governments in the New England and Mid-Atlantic Census divisions to substitute it for fuel oil in systems used to provide space and water heating. At the same time, in order to take maximum advantage of lower natural gas wholesale prices, both types of governments are also are entering into longer-term contracts. While it is outside the scope of this study, both types of governments are also increasingly considering using natural gas-fueled vehicles in order to lower their transportation costs. While the retail price of commercial electricity has fallen due to lower natural gas wholesale prices, it is still high enough to provide both types of governments with an incentive to reduce their electricity consumption.

Data on energy spending, consumption patterns by fuel type, and end use in government buildings is from the United States Department of Energy's (USDOE) Building Energy Data Book. The information contained in this source is for calendar year 2003, so it should be used knowing that energy use patterns have likely changed since then, especially following the unconventional energy revolution's start in the late 2000s. After talking with energy experts from both USDOE and IHS, we feel the energy consumption patterns by end use, and to a lesser extent by fuel type, are still generally applicable. It is certain the energy share used for computers has increased since 2003, as both types of governments have invested more in information technology (IT). For example, many school districts have increased the number of computers and other devices in their buildings.

IHS analyzed energy use information in the nine census divisions for elementary and secondary buildings, and for state and local government buildings, which are defined below in the methodology section.

Energy consumption by fuel type

Energy consumption on a British thermal unit (Btu) basis by fuel type varied significantly in 2003 between elementary and secondary buildings, and state and local government buildings. Fuel use in school buildings was almost evenly split between electricity (46.9%) and natural gas (41%) with the remaining fuel types making up just over 12% of consumption. By comparison, fuel use in state and local government buildings

was much more heavily concentrated in electricity—55%, and was evenly distributed between natural gas and other fuels at approximately 21% each.

Energy Consumption by Fuel Type in the US - 2003		
End Use	Elementary & Secondary Buildings	State and Local Government Buildings
Electricity	46.9%	55.0%
Natural Gas	41.0%	21.1%
Fuel Oil	8.0%	2.1%
Other	4.2%	21.8%
Total	100.0%	100.0%

Source: US Department of Energy, 2005. Buildings Energy Data Book
http://buildingsdatabook.eren.doe.gov/CBECS.aspx

Consumption by fuel type varied considerably across the nine census divisions, with fuel oil in the New England and Mid-Atlantic divisions accounting for 65.8% and 25.3%, respectively, of total consumption in elementary and secondary buildings in 2003; these two shares have almost certainly declined significantly since then. In general, electricity's share of total energy consumption was highest, for both building types, in the southern and western census divisions, especially in the South Atlantic, West South Central, East South Central, and Pacific.

Natural gas's share of total energy consumption in elementary and secondary school buildings was highest in the East North Central, Pacific, Middle Atlantic, and Mountain Census divisions, all with shares above 40%. For state and local government buildings, natural gas shares were highest in Mountain, Middle Atlantic, East South Central, and East North Central, all with shares above 25%. It is worth noting the West North Central, West South Central, and Middle Atlantic divisions are major centers of unconventional energy production.

Energy Consumption by Fuel Type by Census Division - 2003								
	Electricity		Natural Gas		Fuel Oil		Other	
Census Division	Elemen. & Secondary Schools	State & Local Gov.	Elemen. & Secondary Schools	State & Local Gov.	Elemen. & Secondary Schools	State & Local Gov.	Elemen. & Secondary Schools	State & Local Gov.
New England	22.8%	31.6%	11.4%	1.2%	65.8%	15.8%	0.0%	51.3%
Middle Atlantic	27.5%	56.2%	44.0%	31.4%	25.3%	4.3%	3.3%	8.0%
South Atlantic	79.6%	72.7%	14.2%	4.9%	2.6%	0.2%	3.6%	22.2%
East North Central	30.2%	40.8%	64.5%	26.7%	0.3%	0.1%	4.9%	32.3%
East South Central	60.5%	71.2%	39.5%	28.8%	0.0%	0.0%	0.0%	0.0%
West North Central	46.8%	64.0%	40.6%	24.6%	5.9%	1.0%	6.7%	10.4%
West South Central	78.8%	92.8%	21.2%	6.6%	0.0%	0.1%	0.0%	0.5%
Mountain	35.9%	50.9%	43.0%	42.1%	4.9%	0.0%	16.2%	6.9%
Pacific	53.6%	76.6%	45.4%	23.4%	0.1%	0.0%	0.9%	0.0%
US	46.9%	55.0%	41.0%	21.1%	8.0%	2.1%	4.2%	21.8%

Source: US Department of Energy, 2005. Buildings Energy Data Book
http://buildingsdatabook.eren.doe.gov/CBECS.aspx

According to US DOE's Buildings Energy Data book, in 2003, electricity and natural gas accounted for 87.9% of total energy consumption and 92.9% of total energy expenditures at public elementary and secondary education buildings. Similarly, the two fuels accounted for 76.1% of total energy consumption and 81.6% of total energy expenditures at state and local government, non-education buildings. As a result, the focus of this study is on expenditure savings produced by declines in retail, commercial prices of electricity and natural gas.

Energy intensity

Total energy use intensity, measured as 1,000s of Btus consumed per square foot of floor area per year, in state and local government buildings was 109.5 Btus per square foot, about 51.5% higher than in elementary and secondary buildings. The difference was due principally to intensive use of electricity in state and local government buildings, which was 77.9% higher than in elementary and secondary school buildings, and state and local governments' greater reliance on other fuels.

Energy Use Intensity by Fuel & Building Type in the US - 2003		
End Use	Elementary & Secondary Buildings	State and Local Government Buildings
Electricity	33.9	60.3
Natural Gas	29.6	23.1
Fuel Oil	5.8	2.3
Other	3.0	23.9
Total	72.3	109.5

Note: intensity is thousands of Btus of energy use per square foot per year.
Source: US Department of Energy, 2005. Buildings Energy Data Book
http://buildingsdatabook.eren.doe.gov/CBECS.aspx

Energy consumption by end use

Across the US, shares of energy consumed for space heating were similar, at 45.2% in elementary and secondary buildings, and 44.4% in state and local government buildings. Elementary and secondary schools had substantially higher shares for cooling, ventilation, and water heating than did state and local government buildings. By contrast, end-use shares for lighting, office equipment, and computers were noticeably higher in state and local government buildings than in school buildings. Variations in energy end-use shares between the two types of buildings are due to differences in the activities performed in each of them; providing education services has a different pattern of energy use than providing state and local government services.

Energy Consumption by End Use in the US - 2003

End Use	Elementary & Secondary Buildings	State and Local Government Buildings
Heating	45.2%	44.4%
Cooling	11.2%	7.1%
Ventilation	10.1%	5.2%
Water Heating	7.5%	1.4%
Lighting	14.3%	21.4%
Cooking	1.3%	0.3%
Refrigeration	2.1%	4.0%
Office Equipment	0.5%	2.3%
Computer Use	3.2%	5.2%
Miscellaneous	4.6%	8.8%
Total	100.0%	100.0%

Source: US Department of Energy, 2005. Buildings Energy Data Book
http://buildingsdatabook.eren.doe.gov/CBECS.aspx

Regional variations in energy use

Our analysis of the USDOE's data showed that energy consumption patterns for both intensity (i.e., Btus of use per square feet of building area per year) and for shares by end-use category vary widely across the census divisions, due principally to differences in climate and seasonal weather patterns. Energy intensity in elementary and secondary school buildings in 2003 was highest in the New England, Middle Atlantic, and East North Central divisions, at over 80,000 Btus per square foot per year, and just under this level in the Mountain Division. By contrast, the lowest energy intensity levels in elementary and secondary school buildings were in the West South Central and East South Central divisions. The US average for energy intensity in elementary and secondary school buildings in 2003 was approximately 72,300 Btus per square foot per year.

The energy intensity level for state and local government buildings was near or more than 100,000 Btus per square foot per year in five census divisions: East North Central, New England, Mountain, Middle Atlantic, and East South Central. The lowest intensity levels were in the West South Central, West North Central, and Pacific divisions, at or less than 70,000 Btus per square foot per year. The average energy intensity for state and local government buildings in the United States in 2003 was 109,500 Btus per square foot per year.

Energy intensity levels in state and local government buildings varied more across the nine census divisions than did intensity levels for elementary and secondary buildings. The percent difference across the nine census divisions between lowest and highest energy intensity levels in elementary and secondary buildings was 76.3%, compared to 145.8% for state and local government buildings. The lower variation for education is likely because elementary and secondary school districts perform similar types of activities across the US, while state and local governments activities vary widely based on the level of service provided, and on the number and sizes of governmental units that deliver them.

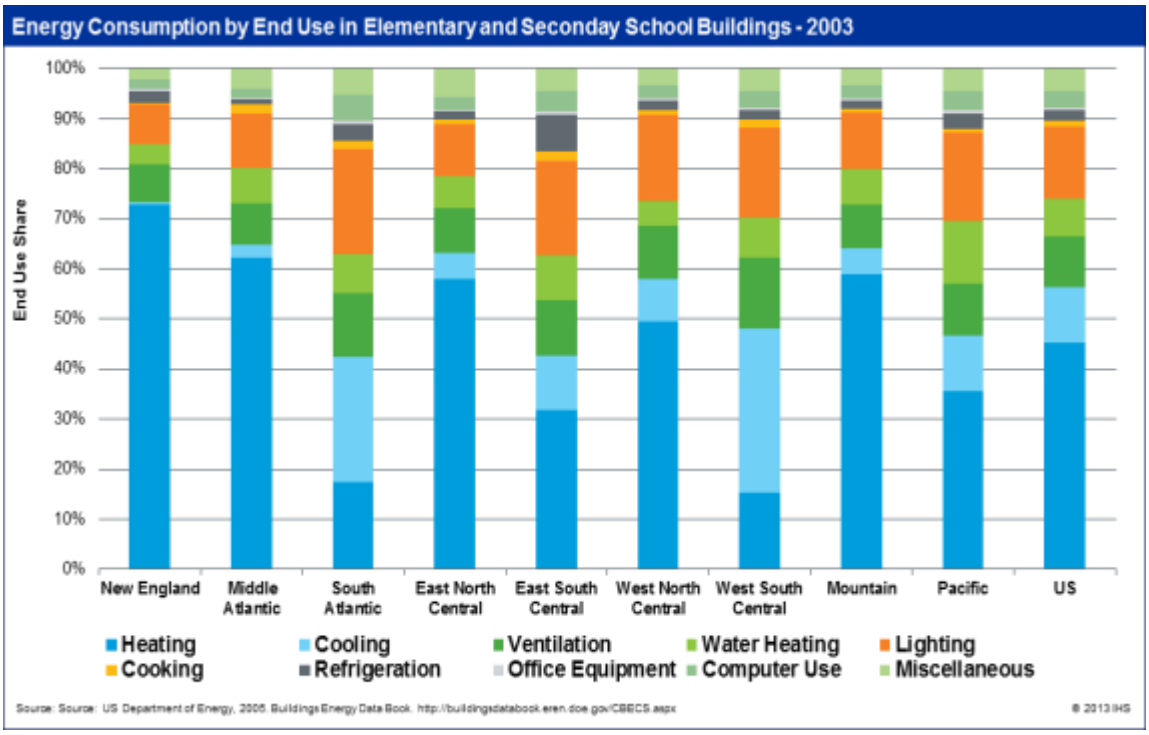
Energy Intensity by Census Division - 2003

Census Division	Elementary & Secondary Buildings	State and Local Government Buildings
New England	83.7	154.4
Middle Atlantic	85.6	99.8
South Atlantic	63.6	85.8
East North Central	83.5	165.0
East South Central	53.9	99.3
West North Central	66.6	74.0
West South Central	48.5	67.1
Mountain	79.0	101.8
Pacific	70.0	70.2
US	72.3	109.5

Note: energy intensity is thousands of Btus of energy use per square foot per year.
Source: US Department of Energy, 2005. Buildings Energy Data Book
http://buildingsdatabook.eren.doe.gov/CBECS.aspx

Energy consumption by end-use category also varied across the nine census divisions for both building types. Because of differences in climate, energy end-use shares for cooling and heating varied widely across the country. Census divisions in colder climates—New England, Middle Atlantic, Mountain, East North Central, and West North Central—had the highest shares for heating and cooling for both building types. The lowest shares for heating and cooling were in the East South Central, South Atlantic, and Pacific divisions. Heating and cooling end-use shares in the United States in 2003 were 56.5% for elementary and secondary buildings, and 51.5% for state and local government buildings.

Energy consumption shares for other major end uses, such as lighting, ventilation, office equipment, and computers were relatively similar across the nine divisions for both building types.


Energy Consumption by End Use in Elementary and Seconday School Buildings - 2003
End Use Share
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
New England
Middle Atlantic
South Atlantic
East North Central
East South Central
West North Central
West South Central
Mountain
Pacific
US
Heating
Cooling
Ventilation
Water Heating
Lighting
Cooking
Refrigeration
Office Equipment
Computer Use
Miscellaneous
Source: Source: US Department of Energy, 2006. Buildings Energy Data Book. http://buildingsdatabook.eren.doe.gov/CBECS.aspx
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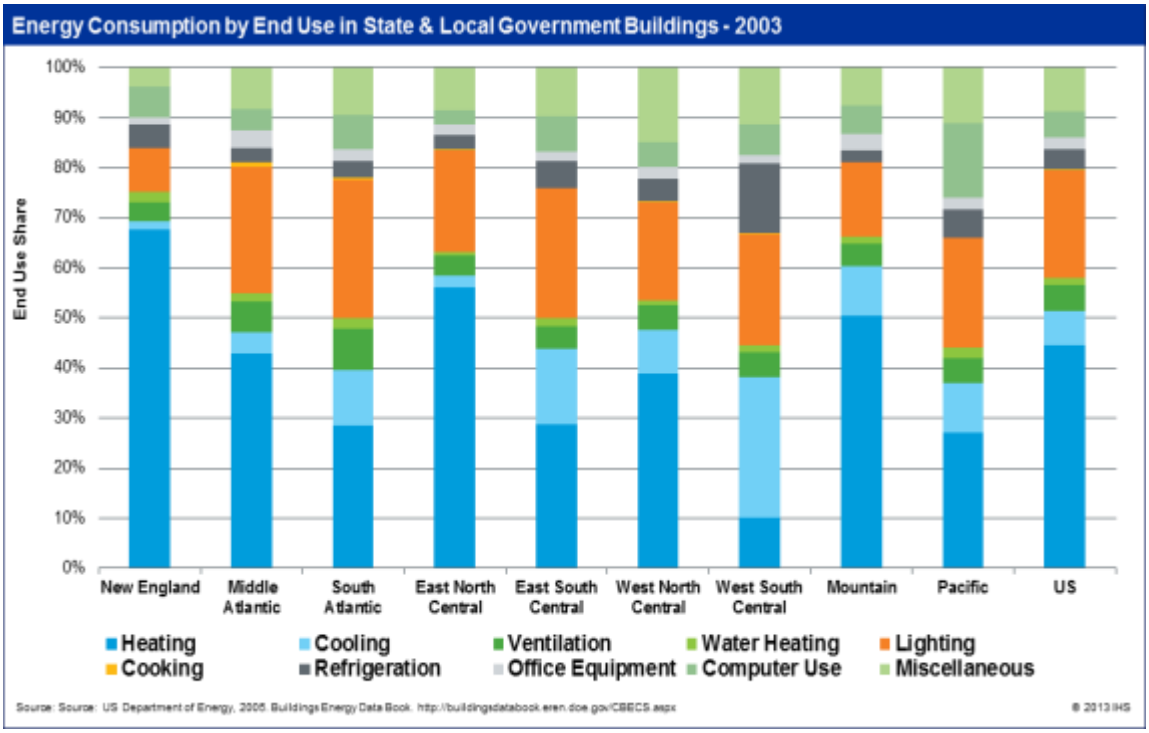
Energy Consumption by End Use in State & Local Government Buildings - 2003
End Use Share
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
New England
Middle Atlantic
South Atlantic
East North Central
East South Central
West North Central
West South Central
Mountain
Pacific
US
Heating
Cooling
Ventilation
Water Heating
Lighting
Cooking
Refrigeration
Office Equipment
Computer Use
Miscellaneous
Source: Source: US Department of Energy, 2006. Buildings Energy Data Book. http://buildingsdatabook.eren.doe.gov/CBECS.aspx
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Annual spending

Considered together, the two types of governments are large annual users and purchasers of energy, primarily due to their large size. The FY 2010-11 total expenditures by state and local governments (excluding transfers) was approximately $3.1 trillion, with $1.5 trillion spent by state governments. Total spending by local governments was $1.6 trillion, which included $558 billion for public elementary and secondary education. Excluding public elementary and secondary education, local governments spent approximately $1.1 trillion in FY 2010/11. Therefore, the combined spending by state and local governments, excluding education, was approximately 4.7 times greater than spending by public elementary and secondary school districts.

The two types of governments considered in this study in general are not energy-intensive activities, as their direct spending on energy comprises only small shares of their annual budgets. However, some local government activities can be energy intensive, such as the operation of mass transit systems and electric and natural gas utilities.

An order-of-magnitude estimate of spending for electricity and natural gas as percent shares of total annual spending by both types of governments was derived from the 2007 benchmark input/output (I/O) tables for the United States. We estimate combined purchases of electric and natural gas services accounted for about 0.6% of total 2007 spending by both types of governments. Since retail electricity and natural gas prices have declined since 2007, it is likely energy spending shares in FY 2012/13 are even lower. However, even if energy spending is a small fraction of overall government budgets, lower electric and natural gas prices from the unconventional energy revolution can still produce significant energy spending savings in absolute terms, since government expenditures are in excess of $3.1 trillion.

Methodology

This section summarizes the methodology used by IHS to estimate savings in energy expenditures by both units of government resulting from the unconventional energy revolution during FY 2012/13.

Geography

Because of observed differences in regional energy use patterns, IHS decided to estimate energy savings by census division. Since there are a large number of state and local governments and public school districts within a census division, our approach was to estimate energy savings for at least one benchmark state in each Division, then extrapolate the results to other states in it if their climates indicated similar energy use patterns. Benchmark states are shown below in bold; in some divisions, such as the South Atlantic and Mountain, we used more than one benchmark state because of their large size and climate diversity (e.g., in the Mountain Census Division, energy consumption patterns are different in Montana than in Arizona).

- New England: Connecticut, Maine, **Massachusetts,** New Hampshire, Rhode Island, Vermont
- Middle Atlantic: **New Jersey**, New York, **Pennsylvania**
- South Atlantic: Delaware, District of Columbia**, Florida**, Georgia, **Maryland,** North Carolina, South Carolina, **Virginia**, West Virginia
- East North Central: **Illinois,** Indiana, Michigan, Ohio, Wisconsin
- East South Central: Alabama, Kentucky, **Mississippi**, Tennessee
- West North Central: Iowa, Kansas, **Minnesota,** Missouri, Nebraska, North Dakota, South Dakota
- West South Central: Arkansas, Louisiana, Oklahoma**, Texas**
- Mountain: Arizona, **Colorado,** Idaho, Montana, Nevada, **New Mexico**, Utah, Wyoming
- Pacific: Alaska, **California**. Hawaii, Oregon, Washington

The benchmark states were used for the elementary and secondary schools analysis; there were some differences for the state and local government analysis because of information availability. Within each census division, we selected the benchmark state that was centrally located and representative of weather conditions across the entire division. We used California as the benchmark state in the Pacific Division because it has a very high share of its government spending.

Estimate energy spending shares in benchmark states

IHS obtained actual data on energy spending by fuel type for both types of governments in each benchmark state for FY 2012/13. From this data, we derived key variables needed to derive energy spending benefits:

- Energy spending shares, defined as outlays for electricity and natural gas as percent shares of total annual spending for both types of governments.
- For the public school districts, the energy spending shares were calculated as a percent of the general fund; for state and local governments excluding public education, they were a percent of total direct spending across all fund types.

We faced two challenges in deriving energy spending shares. First, we were required to find financial reports, budget documents, etc. with line-item details on annual expenditures by individual fuel type, especially for electricity and natural gas. Second, we needed data for individual governmental entities, such as local governments and school districts, so we could construct energy spending shares using a representative sample in each benchmark state.

IHS first estimated the two energy spending shares for selected public school districts in each benchmark state. Since most states did not have the required level of expenditure detail publicly available, we identified the five largest public school districts according to enrollment in each benchmark state, and estimated energy spending shares from their budgets. We obtained, when easily available, data for multiple years to determine trends in energy spending shares over time. Public elementary and secondary school districts' combined energy spending share for electricity and natural gas, excluding gasoline and diesel fuel used for vehicles, usually ranged between 1.5% and 2.0% of the general fund.

We did not estimate spending shares for fuel oil, propane, and other fuel types because of a lack of data. This omission is not significant, because in 2003, according to USDOE data presented above, electricity and natural gas together accounted for 87.9% of energy use in elementary and secondary buildings, and 76.1% in state and local government buildings. Our literature review confirmed these shares are higher now.

IHS then collected data on energy spending by fuel type to derive state government energy spending shares in the benchmark states. To obtain the required level of spending detail, we examined a range of state-level sources, including annual budgets, transparency websites with detailed spending figures, energy plans, and reports by general service agencies that manage state office buildings. State government energy spending shares were derived by dividing the actual level of state energy spending by the National Association of State Budget Officials (NASBO) estimates of total state spending across all fund types for FY 2012/13. Our research indicated state government energy spending shares for electricity and natural gas together across all fund types was under 0.5%. This share is less than the range of 1.5% to 2% for elementary and secondary education, because the denominator—total direct spending—is much larger, as it includes disbursements from all fund types.

According to the Census Bureau's 2012 Census of Governments, there were 90,056 local government entities in the United States, only 14,178 of which were school districts. Because of the large number and different types of local non-education governmental entities, it was not possible to collect detailed energy spending data from a representative sample without a level of effort beyond the scope of this study. As a result, IHS made a key assumption that energy spending shares by fuel type for state governments also applied to local, non-education units of government. IHS concluded that this assumption was defensible for the following reasons:

- States and local, non-education units of governments deliver similar types of services, so they also require a similar mix of inputs such as labor, energy, office and information technology equipment, supplies, etc.

- Both levels of government require the same types of buildings to deliver their services, so their energy use characteristics are comparable. Most studies that estimate energy consumption by end use combine state government and local, non-education government into a single sector; this is done in both USDOE's Buildings Energy database and in the 2007 benchmark input/output use table.

Energy spending under the Base Case

The next step in our analysis was to estimate electricity and natural gas spending by both types of governments during FY 2012/13 under the Base Case. This was accomplished by multiplying energy spending shares for electricity and natural gas, as calculated for the benchmark states, by figures of total annual spending for both types of government in each state. To ensure consistency we used the following sources of spending by state:

- State governments: National Association of State Budget Officials (NASBO) estimates of total state spending across all fund types for FY 2012/13.
- Local, non-education governments: total local government expenditures from the Census Bureau's State and Local Government Finance report projected to FY 2012/13.
- Public elementary and secondary school districts: The US Department of Education's National Center for Education Statistics Common Core of Data estimates of total current expenditures which IHS projected to FY 2012/13.

As noted above, we assumed a benchmark state's energy spending shares applied to all other states in its census division. IHS estimates state and local governments, excluding elementary and secondary education, spent $5.36 billion for electricity and natural gas during the reference year, while elementary and secondary school districts spent $8.98 billion.

Calculate differences in energy spending

The first step in estimating the differences in energy spending between the two scenarios was to determine the following four energy price levels for the reference year of the study:

- **Retail electric prices for commercial customers by state under the Base Case:** This information is used in our state forecast models; the history comes from the USDOE's Energy Information Agency (EIA).
- **Retail electric prices for commercial customers by state under the Without Unconventional Energy Case:** IHS's energy group provided an estimate of the percent difference in the US retail electricity price for commercial customers between the two scenarios. It was used, along with current prices, to derive the percentage increase in electricity prices in each state that would have occurred under the Without Unconventional Energy Case.
- **Retail natural gas prices for commercial customers by state under the Base Case:** These prices are also contained in our state forecast models, and historic values come from the USDOE.
- **Retail natural gas prices for commercial customers by state under the Without Unconventional Energy Case:** IHS's energy group provided absolute differences in wholesale natural gas prices for

each state under the two scenarios; they were added to the existing retail prices to estimate retail prices that would have occurred under the Without Unconventional Energy Case. This is a conservative approach, as it assumes differences in the retail natural gas price between the two scenarios are due entirely to changes in wholesale prices (i.e., no other markup for transmission or distribution charges were included).

Some school districts and governments contacted while gathering data for this study said the retail energy prices they pay have declined in recent years for reasons in addition to the drop in wholesale prices that has occurred under the unconventional energy revolution. They acknowledged that while both types of governments have benefitted from the decline in wholesale prices in recent years, they have continued to take other steps, which they have been doing for many years, to obtain lower retail energy rates. Some of these actions include: forming consortia to buy energy in bulk to obtain lower rates and entering into long-term, fixed-price contracts to reduce the risk of short-term price spikes. Some governments are teaming with other commercial and industrial users with different load profiles to negotiate with utilities to obtain better rates. The aggregate load of both the governmental entities and private-sector commercial and industrial customers can often be served more efficiently by utilities, enabling them to offer lower retail rates. While it is difficult to determine the share of the drop in retail energy prices in recent years due to the drop in wholesale prices for oil and natural gas, versus the share due to other actions, the size of the absolute decline in wholesale energy prices strongly suggests reductions in energy spending by both types of governments in recent years is primarily due to the benefits of the unconventional energy revolution.

Energy spending shares used in this study were derived from reported data, so they reflect actual market energy prices. Retail prices include the effects of steps taken by both types of governments to negotiate lower energy rates. We assumed that 100% of the increase in wholesale natural gas prices under the Without Unconventional Energy Case would have been passed through to consumers, thus raising retail prices by the same absolute amount. As a result, energy savings are the same regardless of retail prices under the Base Case.

The percent increases in commercial natural gas retail prices under the Without Unconventional Energy Case are substantially smaller than the corresponding percent increases in the wholesale natural gas price under this scenario. This difference occurred because the absolute increase in the wholesale natural gas price under the Without Unconventional Energy Case, which averaged about $2.23/million Btus (mmBtus) across the states, was added to the existing retail commercial natural gas price which was, on average, about five times greater. For example, IHS determined the wholesale natural gas price in Pennsylvania under the Without Unconventional Energy Case would have been $2.79/mmBtus higher than under the Base Case, a difference of 80%.

The four energy price levels described above were expressed at a quarterly frequency on a calendar-year basis; we converted them to a FY basis so they aligned with budget data.

Results

Public elementary and secondary school districts

IHS estimates public elementary and secondary school districts spent $7,260 million for electricity and $1,720 million for natural gas during FY 2012/13, making up 1.2% and 0.3%, respectively, of total current expenditures. Under the Without Unconventional Energy Case, school districts would have spent $8,001 million for electricity and $2,187 million for natural gas. Therefore, we estimate public elementary and secondary school districts in the United States saved $740.9 million in electricity spending and $466.9 million in natural gas spending during FY 2012/13.

Energy Expenditure Savings by Public Elementary & Secondary Schools - 2012/13 Fiscal Year									
	Energy Savings			% Savings			# of Teachers - Cost Equivalent		
Census Division	Electricity	Natural Gas	Total	Electricity	Natural Gas	Total	Electricity	Natural Gas	Total
New England	$47.7	$31.8	$79.5	12.0%	9.3%	10.8%	482	320	802
Middle Atlantic	$138.0	$107.1	$245.1	11.5%	21.7%	14.5%	1,306	1,029	2,335
South Atlantic	$134.8	$53.1	$187.9	8.4%	22.6%	10.2%	1,815	687	2,502
East North Central	$83.8	$139.5	$223.4	8.5%	26.1%	14.6%	980	1,635	2,615
East South Central	$42.2	$18.3	$60.5	8.8%	23.7%	10.8%	600	261	861
West North Central	$26.3	$41.1	$67.4	7.9%	23.8%	13.3%	353	552	905
West South Central	$104.3	$30.3	$134.6	7.3%	25.4%	8.7%	1,470	426	1,896
Mountain	$37.6	$25.1	$62.8	8.2%	20.4%	10.8%	502	333	835
Pacific	$126.1	$20.6	$146.7	11.6%	22.5%	12.4%	1,288	207	1,495
Total	$740.9	$466.9	$1,207.8	9.3%	21.3%	11.9%	8,796	5,450	14,246

Note: all dollar figures are in millions of dollars

The savings, expressed as a percent reduction from what they would have spent under the Without Unconventional Energy Case, were 9.3% for electricity and 21.3% for natural gas. The combined energy savings for both electricity and natural gas was $1,207.8 million, or 0.1% of total current expenditures, during FY 2012/13.

Four census divisions—Middle Atlantic, South Atlantic, West South Central, and Pacific—accounted for 67.9% of electricity spending savings because their large sizes and reliance on electricity, especially in the South Atlantic and West South Central divisions. By contrast, 63.7% of natural gas savings were received by public school districts in the Middle Atlantic, East North Central, West South Central, and Pacific divisions because of their dependence on this fuel. The percent reductions in electricity spending varied between 7.3% in the West South Central Division and 12% in the New England Division. The percent savings for natural gas expenditures were similar across eight of the nine divisions, ranging between 20% and 26%; the exception was the New England Division, where the percent reduction in natural gas spending was only 9.3%. Fuel oil has a substantially higher share of the home heating market in New England than in other parts of the country. The relatively narrow percent differences in energy spending savings across the nine divisions, especially for natural gas, is because the absolute changes in wholesale energy prices were also similar across divisions.

To put the energy savings in perspective, IHS calculated the cost equivalent of the number of public school teachers that was equal to the estimated annual energy savings. For the United States as a whole, the

annual savings from electricity is equal to the cost of 8,796 full-time equivalent (FTE) teachers. Natural gas savings equals an estimated 5,450 FTE teachers, for a total equivalent of 14,246 teachers. The cost equivalent number of teaching jobs in each state was determined by two factors: 1) the value of energy spending savings and the split between electricity and natural gas, and 2) the average annual compensation per FTE teacher for that state. As result, those census divisions and states with the largest energy spending savings for elementary and secondary school districts had the largest number of calculated cost equivalent teaching positions. The four census divisions with the largest combined energy spending savings—Middle Atlantic, South Atlantic, West South Central, and Pacific—accounted for 58% of the cost equivalent teaching FTEs.

Appendix A presents the energy savings in both absolute and percent terms by census division and state, along with estimates of the number of cost equivalent teaching jobs.

State and local governments

State and local governments, excluding public elementary and secondary school districts, spent $4,441.6 million for electricity and $916.1 million for natural gas during FY 2012/13, making up 0.2% and 0.03%, respectively, of their total spending. The combined total of $5,357.7 million was approximately 0.2% of total direct spending by state and local governments. Because of the difficulty of estimating current energy spending shares for state and local governments, along with our assumption that they are same for both, IHS concludes the energy spending estimates under the Base Case are conservative, with actual energy spending levels likely to be higher.

Under the Without Unconventional Energy Case, energy expenditures are estimated to have been $4,908.8 million for electricity and $1,169 million for natural gas in FY 2012/13. As a result, IHS estimates state and local governments saved $467.2 million in electricity outlays and $252.9 million in natural gas spending during the reference year. The savings, expressed as percent reductions from what they would have spent under the Without Unconventional Energy Case, were 9.5% for electricity and 21.6% for natural gas, similar to those noted above for public elementary and secondary school districts. The combined energy savings for both electricity and natural gas was $720.1 million, or 0.2% of total current expenditures, during the reference year. Four census divisions—New England, Middle Atlantic, South Atlantic, and Pacific—accounted for 73.7% of the electricity savings and 62.4% of the natural gas savings. The percent reductions in electricity and natural gas spending for state and local governments were the same as those for the public elementary and secondary school districts, because both groups paid the same retail prices for electricity and natural gas.

Energy Expenditure Savings by State and Local Governments - 2012/13 Fiscal Year									
	Energy Savings			% Savings			# of Positions - Cost Equivalent		
Census Division	Electricity	Natural Gas	Total	Electricity	Natural Gas	Total	Electricity	Natural Gas	Total
New England	$58.0	$11.4	$69.4	12.0%	9.3%	11.4%	782	150	932
Middle Atlantic	$48.6	$44.3	$92.9	11.5%	21.7%	14.8%	652	599	1,251
South Atlantic	$119.0	$82.5	$201.6	8.2%	22.9%	11.1%	1,935	1,356	3,291
East North Central	$20.3	$21.5	$41.8	8.5%	26.1%	13.0%	319	338	657
East South Central	$28.3	$15.7	$44.0	8.8%	23.9%	11.3%	526	294	820
West North Central	$28.4	$27.1	$55.5	7.9%	24.1%	11.7%	509	484	993
West South Central	$28.8	$21.1	$49.9	7.3%	25.1%	10.4%	493	360	853
Mountain	$16.9	$9.8	$26.6	8.2%	19.4%	10.4%	274	163	437
Pacific	$118.9	$19.4	$138.3	11.6%	22.6%	12.5%	1,516	245	1,761
Total	$467.2	$252.9	$720.1	9.5%	21.6%	11.8%	7,006	3,989	10,995

Note: all dollar figures are in millions of dollars

To put the energy savings in perspective, IHS also calculated the cost equivalent of the number of state and local government employees equal to the annual energy savings. For the US as a whole, the annual electricity savings is equal to an estimated 7,006 average full-time equivalent (FTE) government workers. Natural gas savings is equal to 3,989 average FTE government workers, for a total of 14,246 workers. The calculated number of state and local government job equivalents in a census division or state was determined by two factors: 1) the value of energy spending savings and the percent split between electricity and natural gas and 2) the average annual compensation for a FTE worker in state and local government. The census divisions and states with largest energy spending savings for state and local government entities also had the largest number of cost equivalent jobs. The four census divisions with the largest combined energy spending savings—South Atlantic, Pacific, Middle Atlantic, and New England—accounted for 67% of cost equivalent state and local government jobs.

Appendix B presents the energy savings for state and local governments, in both absolute and percent terms, by census division and state, along with estimates of cost equivalent jobs.

Conclusion

Under the Base Case, IHS estimates state and local governments, and public elementary and secondary school districts, saved a combined total of $1,927.9 million in energy spending during FY 2012/13 due to unconventional oil and natural gas development. The estimated energy savings is equal to the labor compensation cost of 25,241 full-time equivalent (FTE) employees for the two types of governments.

Appendix A: savings for public elementary and secondary schools

Energy Expenditure Savings by Public Elementary & Secondary Schools - 2012/13 Fiscal Year										
Census Division	States (benchmarks in bold)	Energy Savings (millions of $)			% Savings			# of Teachers - Cost Equivalent		
		Electricity	Natural Gas	Total	Electricity	Natural Gas	Total	Electricity	Natural Gas	Total
New England	Connecticut	$14.0	$11.0	$24.9	12.5%	11.3%	12.0%	135	106	241
	Maine	$3.0	$1.9	$4.9	10.2%	7.4%	8.9%	42	26	68
	Massachusetts	**$21.7**	**$13.4**	**$35.1**	**12.1%**	**8.8%**	**10.6%**	**200**	**124**	**324**
	New Hampshire	$3.8	$2.3	$6.1	11.6%	8.5%	10.2%	45	28	73
	Rhode Island	$3.0	$1.9	$4.9	10.8%	8.0%	9.5%	31	20	51
	Vermont	$2.3	$1.3	$3.6	12.3%	8.3%	10.5%	29	16	45
	Subtotals	$47.7	$31.8	$79.5	12.0%	9.3%	10.8%	482	320	802
Middle Atlantic	**New Jersey**	**$38.1**	**$27.7**	**$65.8**	**11.0%**	**22.4%**	**14.0%**	**375**	**272**	**647**
	New York	$80.5	$53.4	$133.9	12.9%	21.3%	15.3%	724	480	1,204
	Pennsylvania	**$19.4**	**$26.0**	**$45.5**	**8.3%**	**22.1%**	**12.9%**	**207**	**277**	**484**
	Subtotals	$138.0	$107.1	$245.1	11.5%	21.7%	14.5%	1,306	1,029	2,335
South Atlantic	Delaware	$2.0	$1.8	$3.8	9.1%	17.8%	11.8%	23	20	43
	Florida	**$45.5**	**$1.7**	**$47.2**	**8.6%**	**18.7%**	**8.8%**	**656**	**24**	**680**
	Georgia	$31.2	$1.4	$32.6	8.6%	21.7%	8.8%	399	18	417
	Maryland	**$15.1**	**$16.5**	**$31.6**	**9.2%**	**21.3%**	**13.1%**	**156**	**171**	**327**
	North Carolina	$14.0	$12.9	$27.0	7.8%	24.3%	11.5%	207	190	397
	South Carolina	$8.6	$6.9	$15.5	8.7%	24.1%	12.2%	121	98	219
	Virginia	**$15.0**	**$5.4**	**$20.3**	**7.2%**	**23.7%**	**8.8%**	**203**	**72**	**275**
	West Virginia	$3.5	$6.5	$9.9	7.6%	24.1%	13.7%	50	94	144
	Subtotals	$134.8	$53.1	$187.9	8.4%	22.6%	10.2%	1,815	687	2,502
East North Central	Indiana	$10.0	$16.6	$26.6	8.2%	25.4%	14.2%	132	218	350
	Illinois	**$20.7**	**$38.3**	**$59.0**	**7.2%**	**24.8%**	**13.4%**	**237**	**438**	**675**
	Michigan	$21.1	$27.9	$49.0	9.7%	24.7%	14.9%	232	307	539
	Ohio	$20.7	$39.4	$60.0	8.4%	28.7%	15.7%	241	459	700
	Wisconsin	$11.3	$17.4	$28.7	9.4%	26.8%	15.5%	138	213	351
	Subtotals	$83.8	$139.5	$223.4	8.5%	26.1%	14.6%	980	1,635	2,615
East South Central	Alabama	$12.5	$3.5	$16.0	9.4%	17.9%	10.5%	176	50	226
	Kentucky	$8.9	$5.2	$14.1	7.8%	26.6%	10.5%	120	69	189
	Mississippi	**$6.8**	**$3.4**	**$10.2**	**8.5%**	**26.0%**	**11.0%**	**108**	**55**	**163**
	Tennessee	$14.0	$6.2	$20.2	9.1%	24.8%	11.3%	196	87	283
	Subtotals	$42.2	$18.3	$60.5	8.8%	23.7%	10.8%	600	261	861
West North Central	Iowa	$3.5	$6.0	$9.6	7.4%	24.4%	13.3%	46	79	125
	Nebraska	$2.5	$4.6	$7.1	7.7%	26.6%	14.3%	34	64	98
	Kansas	$4.2	$5.1	$9.2	8.4%	20.7%	12.4%	59	72	131
	North Dakota	$0.7	$1.4	$2.1	7.4%	26.9%	14.2%	10	20	30
	South Dakota	$0.8	$1.5	$2.4	7.4%	25.7%	13.8%	14	26	40
	Minnesota	**$7.6**	**$12.4**	**$20.0**	**8.3%**	**25.5%**	**14.2%**	**91**	**149**	**240**
	Missouri	$7.0	$10.0	$17.0	7.6%	21.6%	12.3%	99	142	241
	Subtotals	$26.3	$41.1	$67.4	7.9%	23.8%	13.3%	353	552	905
West South Central	Arkansas	$7.9	$2.1	$9.9	7.1%	23.2%	8.3%	114	30	144
	Louisiana	$13.1	$3.3	$16.4	7.5%	23.5%	8.7%	172	43	215
	Oklahoma	$8.3	$2.0	$10.4	6.7%	20.8%	7.8%	127	31	158
	Texas	**$75.0**	**$22.9**	**$97.9**	**7.3%**	**26.4%**	**8.8%**	**1,057**	**322**	**1,379**
	Subtotals	$104.3	$30.3	$134.6	7.3%	25.4%	8.7%	1,470	426	1,896
Mountain	Arizona	$12.5	$8.4	$20.9	8.7%	20.4%	11.3%	169	114	283
	Colorado	**$8.4**	**$3.0**	**$11.4**	**8.6%**	**13.3%**	**9.5%**	**114**	**40**	**154**
	Idaho	$1.6	$1.4	$3.0	6.4%	21.5%	9.5%	21	18	39
	New Mexico	**$4.4**	**$3.8**	**$8.2**	**8.5%**	**24.5%**	**12.2%**	**63**	**55**	**118**
	Montana	$1.5	$1.0	$2.5	8.4%	21.0%	10.9%	20	12	32
	Utah	$3.3	$2.5	$5.8	7.4%	22.1%	10.4%	45	34	79
	Nevada	$4.7	$4.1	$8.8	7.9%	23.0%	11.4%	56	49	105
	Wyoming	$1.2	$1.0	$2.2	7.6%	23.2%	10.8%	14	11	25
	Subtotals	$37.6	$25.1	$62.8	8.2%	20.4%	10.8%	502	333	835
Pacific	Alaska	$3.3	$0.5	$3.7	12.7%	21.8%	13.4%	33	4	37
	California	**$100.5**	**$17.0**	**$117.5**	**11.9%**	**23.8%**	**12.9%**	**982**	**165**	**1,147**
	Hawaii	$8.7	$0.1	$8.7	25.1%	4.8%	24.0%	107	1	108
	Oregon	$5.1	$1.2	$6.4	7.5%	20.8%	8.6%	59	14	73
	Washington	$8.5	$1.9	$10.3	7.0%	18.5%	7.9%	107	23	130
	Subtotals	$126.1	$20.6	$146.7	11.6%	22.5%	12.4%	1,288	207	1,495
	US	$740.9	$466.9	$1,207.9	9.3%	21.3%	11.9%	8,796	5,450	14,246

Note: all dollar figures are in millions of dollars

Appendix B: savings for state and local governments

Energy Expenditure Savings by State and Local Governments - 2012/13 Fiscal Year										
Census Division	States (benchmarks in bold)	Energy Savings (millions of $)			% Savings			# of Positions - Cost Equivalent		
		Electricity	Natural Gas	Total	Electricity	Natural Gas	Total	Electricity	Natural Gas	Total
New England	**Connecticut**	**$15.0**	**$3.5**	**$18.5**	**12.5%**	**11.3%**	**12.3%**	**186**	**43**	**229**
	Maine	$3.2	$0.6	$3.8	10.2%	7.4%	9.6%	59	11	70
	Massachusetts	$31.2	$5.8	$37.0	12.1%	8.8%	11.5%	409	75	484
	New Hampshire	$2.7	$0.5	$3.2	11.6%	8.5%	11.0%	46	8	54
	Rhode Island	$3.5	$0.7	$4.2	10.8%	8.0%	10.3%	41	7	48
	Vermont	$2.4	$0.4	$2.8	12.3%	8.3%	11.5%	41	6	47
	Subtotals	$58.0	$11.4	$69.4	12.0%	9.3%	11.4%	782	150	932
Middle Atlantic	New Jersey	$8.4	$8.3	$16.7	11.0%	22.4%	14.8%	102	102	204
	New York	$32.1	$25.1	$57.2	12.9%	21.3%	15.6%	430	337	767
	Pennsylvania	**$8.1**	**$10.9**	**$19.0**	**8.3%**	**22.1%**	**12.9%**	**120**	**160**	**280**
	Subtotals	$48.6	$44.3	$92.9	11.5%	21.7%	14.8%	652	599	1,251
South Atlantic	Delaware	$4.2	$2.1	$6.3	9.1%	17.8%	10.9%	59	30	89
	Florida	**$18.1**	**$4.8**	**$22.9**	**8.6%**	**18.7%**	**9.7%**	**280**	**74**	**354**
	Georgia	$8.4	$2.7	$11.0	8.6%	21.7%	10.1%	151	48	199
	Maryland	**$21.5**	**$13.4**	**$34.9**	**9.2%**	**21.3%**	**11.8%**	**301**	**188**	**489**
	North Carolina	$26.1	$23.3	$49.5	7.8%	24.3%	11.4%	438	391	829
	South Carolina	$12.5	$9.8	$22.3	8.7%	24.1%	12.1%	214	168	382
	Virginia	$20.0	$18.8	$38.7	7.2%	23.7%	10.8%	325	305	630
	West Virginia	$8.3	$7.6	$15.9	7.6%	24.1%	11.2%	167	152	319
	Subtotals	$119.0	$82.5	$201.6	8.2%	22.9%	11.1%	1,935	1,356	3,291
East North Central	Indiana	$2.3	$2.4	$4.7	8.2%	25.4%	12.6%	42	45	87
	Illinois	**$5.3**	**$6.2**	**$11.5**	**7.2%**	**24.8%**	**11.7%**	**74**	**87**	**161**
	Michigan	$4.7	$3.9	$8.6	9.7%	24.7%	13.5%	73	61	134
	Ohio	$4.6	$5.6	$10.2	8.4%	28.7%	13.7%	71	87	158
	Wisconsin	$3.5	$3.4	$6.8	9.4%	26.8%	13.9%	59	58	117
	Subtotals	$20.3	$21.5	$41.8	8.5%	26.1%	13.0%	319	338	657
East South Central	Alabama	$7.3	$2.6	$10.0	9.4%	17.9%	10.7%	132	47	179
	Kentucky	$5.5	$4.0	$9.5	7.8%	26.6%	11.1%	108	79	187
	Mississippi	**$5.0**	**$3.2**	**$8.1**	**8.5%**	**26.0%**	**11.6%**	**96**	**61**	**157**
	Tennessee	$10.5	$5.9	$16.3	9.1%	24.8%	11.8%	190	107	297
	Subtotals	$28.3	$15.7	$44.0	8.8%	23.9%	11.3%	526	294	820
West North Central	Iowa	$4.4	$4.6	$9.0	7.4%	24.4%	11.5%	77	79	156
	Nebraska	$2.9	$3.3	$6.2	7.7%	26.6%	12.3%	52	58	110
	Kansas	$3.8	$2.8	$6.7	8.4%	20.7%	11.2%	75	55	130
	North Dakota	$1.2	$1.4	$2.5	7.4%	26.9%	12.1%	24	28	52
	South Dakota	$0.9	$1.0	$1.9	7.4%	25.7%	11.8%	20	22	42
	Minnesota	$9.3	$9.1	$18.4	8.3%	25.5%	12.4%	154	150	304
	Missouri	**$5.8**	**$5.0**	**$10.8**	**7.6%**	**21.6%**	**10.9%**	**107**	**92**	**199**
	Subtotals	$28.4	$27.1	$55.5	7.9%	24.1%	11.7%	509	484	993
West South Central	Arkansas	$2.7	$1.8	$4.6	7.1%	23.2%	9.9%	50	34	84
	Louisiana	$4.7	$3.0	$7.7	7.5%	23.5%	10.2%	80	51	131
	Oklahoma	$2.8	$1.7	$4.5	6.7%	20.8%	9.1%	54	34	88
	Texas	**$18.6**	**$14.5**	**$33.2**	**7.3%**	**26.4%**	**10.7%**	**309**	**241**	**550**
	Subtotals	$28.8	$21.1	$49.9	7.3%	25.1%	10.4%	493	360	853
Mountain	Arizona	$4.6	$2.0	$6.6	8.7%	20.4%	10.5%	74	31	105
	Colorado	**$4.6**	**$2.0**	**$6.6**	**8.6%**	**13.3%**	**9.6%**	**69**	**30**	**99**
	Idaho	$0.8	$0.8	$1.6	6.4%	21.5%	10.0%	15	16	31
	New Mexico	**$1.8**	**$1.0**	**$2.8**	**8.5%**	**24.5%**	**11.0%**	**31**	**17**	**48**
	Montana	$0.7	$0.6	$1.3	8.4%	21.0%	11.3%	14	11	25
	Utah	$1.6	$1.5	$3.1	7.4%	22.1%	10.9%	30	28	58
	Nevada	$1.7	$0.9	$2.6	7.9%	23.0%	10.3%	23	12	35
	Wyoming	$1.1	$1.0	$2.1	7.6%	23.2%	11.3%	18	18	36
	Subtotals	$16.9	$9.8	$26.6	8.2%	19.4%	10.4%	274	163	437
Pacific	Alaska	$3.5	$0.5	$4.0	12.7%	21.8%	13.4%	46	6	52
	California	**$95.7**	**$16.1**	**$111.8**	**11.9%**	**23.8%**	**12.9%**	**1,167**	**197**	**1,364**
	Hawaii	$8.0	$0.1	$8.0	25.1%	4.8%	24.0%	123	1	124
	Oregon	$4.6	$1.1	$5.7	7.5%	20.8%	8.6%	76	18	94
	Washington	$7.2	$1.6	$8.8	7.0%	18.5%	7.9%	104	23	127
	Subtotals	$118.9	$19.4	$138.3	11.6%	22.6%	12.5%	1,516	245	1,761
	US	$467.2	$252.9	$720.0	9.5%	21.6%	11.8%	7,006	3,989	10,995

Note: all dollar figures are in millions of dollars