



An Overview of Energy Efficiency

Energy efficiency means reducing the amount of energy that you need to perform a particular task. When you practice energy efficiency, you increase or maintain your level of service, but you decrease the energy used to provide that service through efficient technologies. Examples include ENERGY STAR appliances, compact fluorescent and LED light bulbs, better insulation for buildings, more efficient windows, high efficiency air conditioning equipment, and vehicles with higher miles per gallon (mpg). Another distinct strategy is energy conservation, which means that you change your behavior or lifestyle to reduce energy use. Examples include carpooling, using mass transit, turning thermostats down in the winter and up in summer, and other behavioral changes.

Improving energy efficiency is a “win-win” strategy — it saves money for consumers and businesses, reduces the need for costly and controversial new power plants, increases the reliability of energy supply, cuts pollution and greenhouse gas emissions, and lowers energy imports. There is vast potential for improving the energy efficiency of homes, appliances, businesses, and vehicles throughout Utah.

Quick Facts:

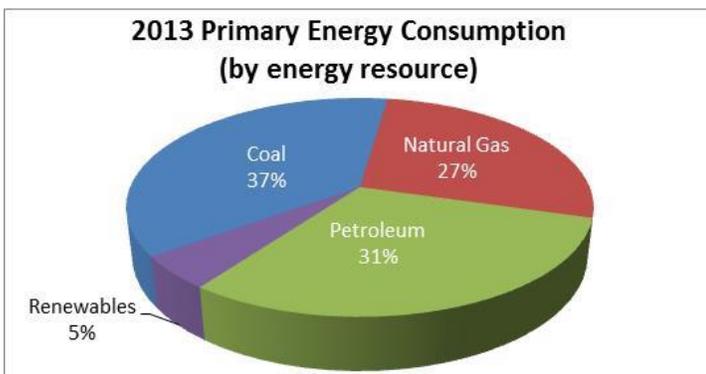
- ◆ Population, 2014: 2,942,902
 - ◆ Population growth rate, 2006-2014: 1.63% per year
 - ◆ Number of households, 2014: 896,194
- Source: United States Census Bureau.*

Primary Energy Consumption (2013)

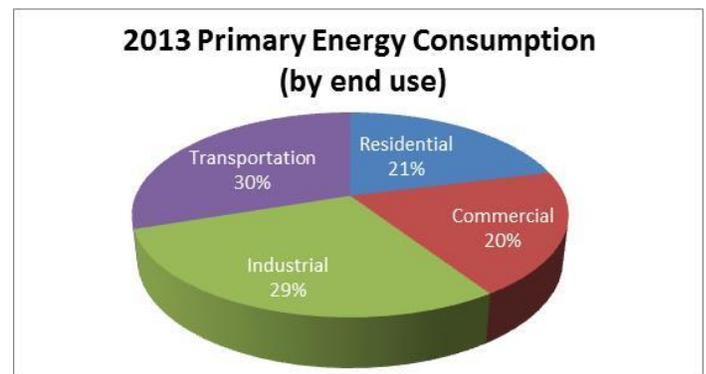
- ◆ Primary energy consumption: 832.1 trillion Btu
- ◆ Growth rate, 2006-2013: 0.95% per year
- ◆ Primary energy consumption per capita: 287 million Btu
- ◆ Ranking, energy consumption per capita: 32
- ◆ Ranking, total energy consumption: 34
- ◆ Ratio of consumption to production: 0.74

Energy Expenditures (2013)

- ◆ Total energy expenditures: \$11.0 billion
 - ◆ Ranking, energy expenditures: 34
 - ◆ Energy expenditures per capita: \$3,791
 - ◆ Ranking, energy expenditures per capita: 39
- Source: U.S. Energy Information Administration, State Energy Data System, March 2016.*



Renewables include hydropower, wood, solar, geothermal and waste materials.



Primary energy use includes the losses in electricity generation and distribution. Rankings are position among US states plus DC (1 is highest, 51 is lowest).

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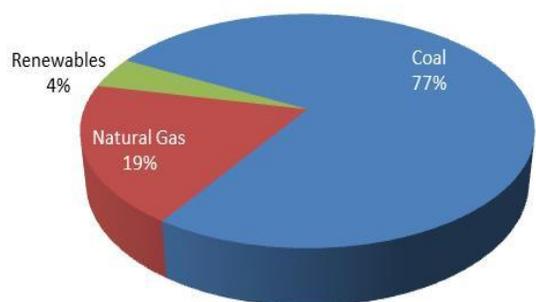
Electricity Use (2014)

- ◆ Total retail sales: 30.0 billion kWh
- ◆ Ranking, total retail sales: 36
- ◆ Consumption growth rate, 2008-2014: 1.07% per year
- ◆ Electricity use per capita: 10,209 kWh
- ◆ Residential electricity use per household: 10,602 kWh
- ◆ Average retail price, all sectors: 8.35 cents/kWh
- ◆ Ranking, average electricity price: 42

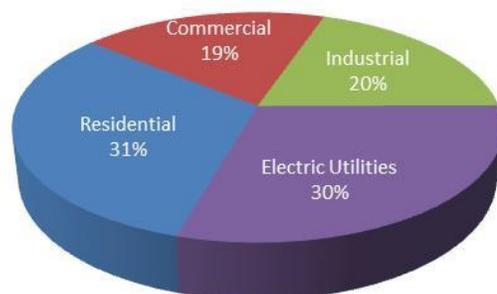
Natural Gas Use (2014)

- ◆ Natural gas consumption by ultimate customers: 198.3 Bcf
- ◆ Ranking: 35
- ◆ Consumption growth rate, 2008-2014: 0.51% per year
- ◆ Natural gas use per capita: 67,375 cf
- ◆ Residential natural gas use (per residential consumer): 71,869 cf

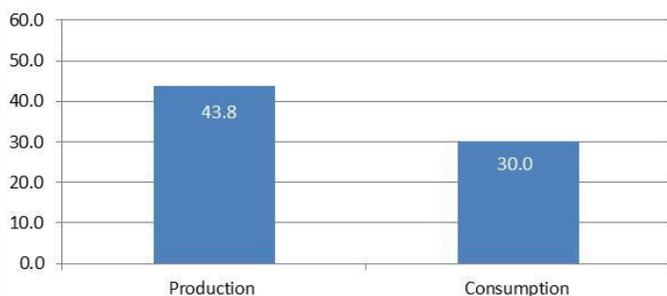
2014 Electricity Generation Breakdown



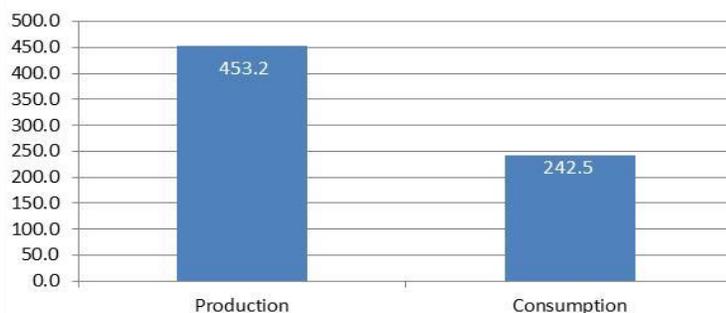
2014 Natural Gas Use by Sector



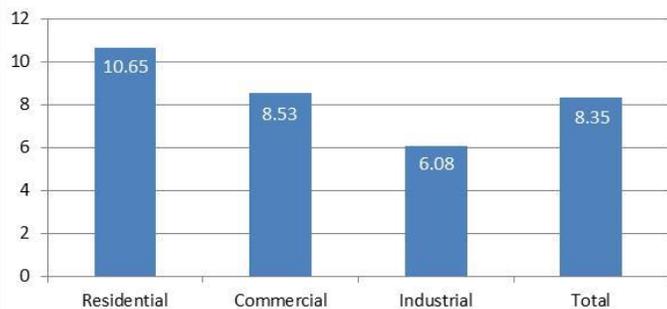
2014 Electricity Production and Consumption (Billion kWh)



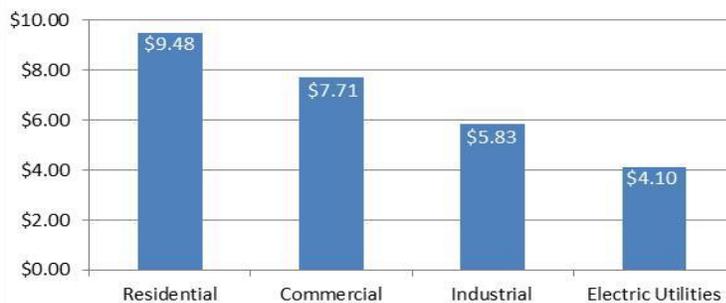
2014 Natural Gas Production and Consumption (Billion Cubic Feet)



2014 Electricity Average Retail Prices (cents/kWh)



2014 Natural Gas Average Retail Prices (Dollars per Thousand Cubic Feet)



Sources: U. S. Energy Information Administration (www.eia.doe.gov) and U. S. Census Bureau (www.census.gov)

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Status of Energy Efficiency in Utah

State Energy Efficiency Goals

Energy efficiency is a high priority resource for Utah. Former Governor Jon Huntsman issued Executive Order 2006-004, which established a goal of increasing energy efficiency in the state of Utah by 20% by year 2015. The goal applies to all forms of energy use in the state, including electricity, natural gas, gasoline, and other petroleum products. In 2007, SWEEP and Utah Clean Energy (UCE) developed options and an overall strategy for meeting this goal. In 2014, Governor Herbert issued the Utah Energy Efficiency and Conservation Plan which includes 26 recommendations for increasing energy efficiency in the state.

- ◆ Read SWEEP's and UCE's report at:

<http://www.swenergy.org/Data/Sites/1/media/documents/news/news/file/UT%20Energy%20Efficiency%20and%20Conservation%20Plan%20June%202014.pdf>

- ◆ Read the Utah Energy Efficiency and Conservation Plan: <http://energy.utah.gov/utah-energy-efficiency-conservation-plan/>

Electricity Demand-Side Management

Rocky Mountain Power (RMP), the main electric utility in Utah, offers a wide range of demand-side management programs to its customers. These programs include financial incentives and technical assistance. Total spending on electric utility energy efficiency and load management programs in 2015 was about \$63 million, or 3.1% of utility revenues.

- ◆ Info about RMP's residential programs: <http://www.rockymountainpower.net/res/sem.html>.
- ◆ Info about RMP's business programs: <http://www.rockymountainpower.net/bus/se.html>.

Natural Gas Demand-Side Management

The gas utility in Utah, Questar Gas Company, began implementing efficiency programs in 2007, offering a wide variety of programs to residential and commercial customers. As of 2015, Questar spent about \$24 million on these programs.

- ◆ Info about Questar's DSM programs: <http://www.thermwise.com>.

Status of Building Energy Codes

Utah has adopted the 2015 International Energy Conservation Code (IECC) for all new commercial buildings statewide and a modified version of the 2015 IECC (with weakening amendments) for all new residential buildings. The U.S. Department of Energy estimates that by adopting the 2015 IECC rather than the 2009 version will save \$228 per year on energy costs.

- ◆ For more information, visit <http://www.energycodes.gov/adoption/states>.

Commercial PACE

In 2013, the Utah legislature approved Commercial Property Assessed Clean Energy (PACE) legislation. This new law allows cities and counties to provide a long-term, property tax-based method of financing energy efficiency and renewable energy upgrades to commercial buildings. The law allows interested cities and counties to sell bonds to raise capital for loans that would be offered to property owners. The loan is repaid through a property tax assessment for up to 20 years.

- ◆ Utah Commercial C-PACE program: <http://energy.utah.gov/utah-c-pace/>

State Energy Efficiency Scorecard

The American Council for an Energy-Efficient Economy (ACEEE) has ranked states based upon scores in six categories including: 1) utility and public benefits of energy efficiency programs; 2) combined heat and power (CHP); 3) building energy codes; 4) transportation policies; 5) appliance and equipment efficiency standards; and 6) state government initiatives. In the 2015 state scorecard, Utah ranked 23rd among all states with a score of 17 out of a possible 50 points.

Electricity Conservation Potential and Impacts in Utah*

Savings potential in 2020:	20% Avoided
new power capacity:	1,444 MW Net
dollar savings (2010-2030):	\$1.7 billion Net
increases in jobs by 2020:	3,100
Water savings by 2020:	3.2 B gal/year

*Based on the High Efficiency Scenario in SWEEP's study, *The \$20 Billion Bonanza: Best Practice Utility Energy Efficiency Programs and Their Benefits for the Southwest*. This study, completed in 2011, presents the energy savings potential and impacts from a strong commitment to utility energy efficiency programs over a 10-year period.

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Residential Energy Consumption Survey (2009)

Housing Characteristics:

The Energy Information Administration (EIA) has published housing characteristics data from the 2009 Residential Energy Consumption Survey. The EIA presents only aggregated data for Idaho, Montana, Utah and Wyoming; therefore these numbers represent the average for those four states.

The table below indicates the fraction of households that report having, using or practicing the following equipment and/or behaviors in their homes:

Poor insulation:	15%
Home is too drafty during the winter some or most of the time:	40%
Single pane glass in windows:	15%
Energy-efficient light bulbs:	60%
Two or more refrigerators:	35%
ENERGY STAR refrigerator:	35%
ENERGY STAR dishwasher:	25%
ENERGY STAR clothes washer:	40%
Keep some or all portable tools and appliances chargers always plugged in:	30%
Three or more televisions:	45%
Turn off computers when not in use:	45%
Keep some or all cell phone and other electronic device chargers always plugged in:	50%
Electric resistance heating as a main heating source:	20%
Have and use a programmable thermostat:	35%
Central air conditioning:	55%
Evaporative cooling:	15%
Use ceiling fans quite a bit or all summer:	40%
Electric resistance water heating:	30%
Insulation blanket on main water heater:	10%

Source: U. S. Energy Information Administration, 2009 Residential Energy Consumption Survey: Housing Characteristics Tables.

More Information on Energy Efficiency

- ◆ American Council for an Energy-Efficient Economy (ACEEE) www.aceee.org
- ◆ Alliance to Save Energy www.ase.org
- ◆ Consortium for Energy Efficiency www.cee.org
- ◆ ENERGY STAR® Products www.energystar.gov
- ◆ Southwest Energy Efficiency Project www.swenergy.org
- ◆ U.S. DOE's Energy Efficiency & Renewable Energy Programs www.eere.energy.gov