

The Clean Power Plan and Beyond: Impacts on the Energy Bills of Pennsylvania's Industries

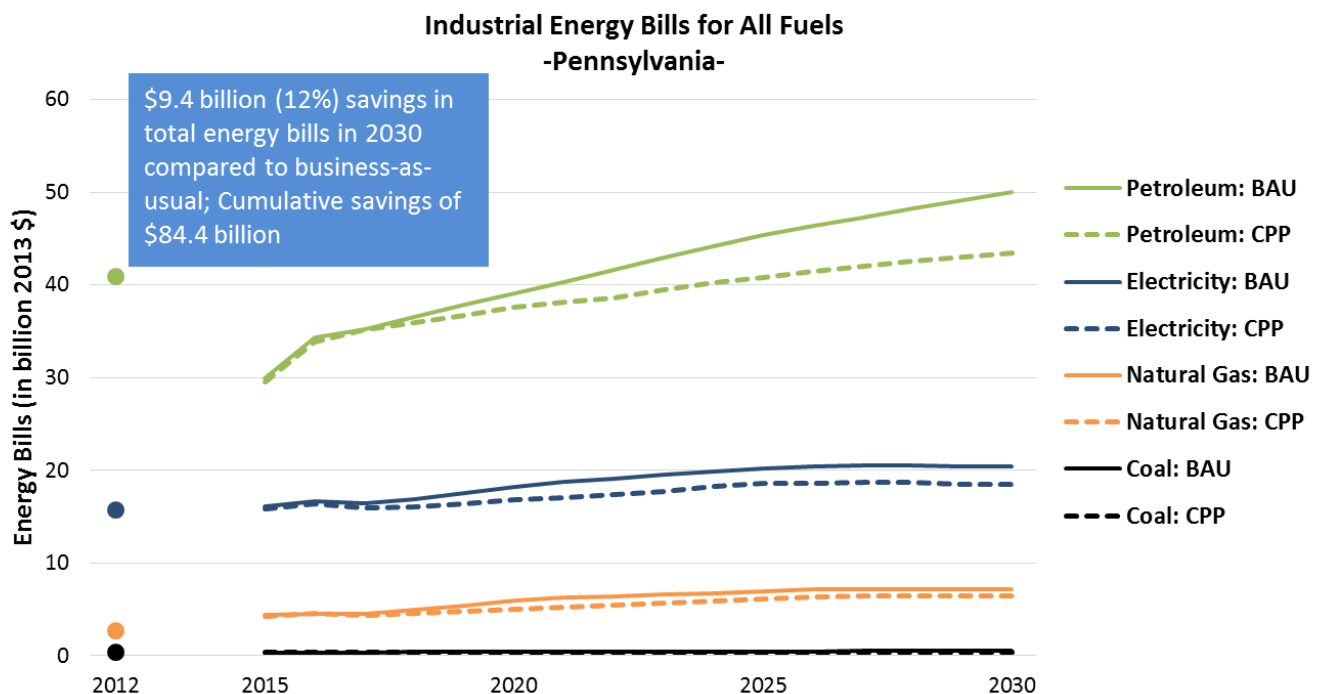
The ability of U.S. firms to manufacture goods and sell them to world markets has propelled the nation into its current position as a world superpower. Despite this historic strength, global competition for export markets, foreign investments and raw materials is intensifying, and U.S. manufacturing is struggling to remain competitive. Firms can become more competitive by improving the energy efficiency of their operations in order to cut their energy bills. An added benefit is that their carbon pollution would be cut simultaneously.

Transitioning to a low-carbon economy will also create opportunities for business growth. Many business owners and industry leaders are motivated not just by the 'push' of environmental regulation, but also by the 'pull' of potential cost savings, new customers, higher staff retention, and good publicity.

In August 2015, President Obama and the U.S. Environmental Protection Agency released the final Clean Power Plan, setting the nation's first-ever limits on carbon pollution from power plants. The Clean Power Plan addresses the largest source of the pollution driving climate change. It is the centerpiece of President Obama's climate action plan, as well as the linchpin of the U.S. commitment to the Paris Climate Agreement.

[Georgia Tech](#) has modeled low-cost pathways for compliance with the Clean Power Plan that emphasize energy efficiency and renewable policies, thereby tempering the nation's reliance on fossil fuels. Impacts on different industrial sectors – their energy bills, carbon emissions, and jobs – are summarized here.

If Pennsylvania's leaders were to adopt this low-cost Clean Power Pathway, Pennsylvania's industries could realize an estimated annual energy savings of **\$9.4 billion** (12.0%) in 2030 (see figure below). Over 15 years, cumulative savings of **\$84.4 billion** could be used for plant modernization, product improvements, or many other possibilities with favorable impacts on local jobs.

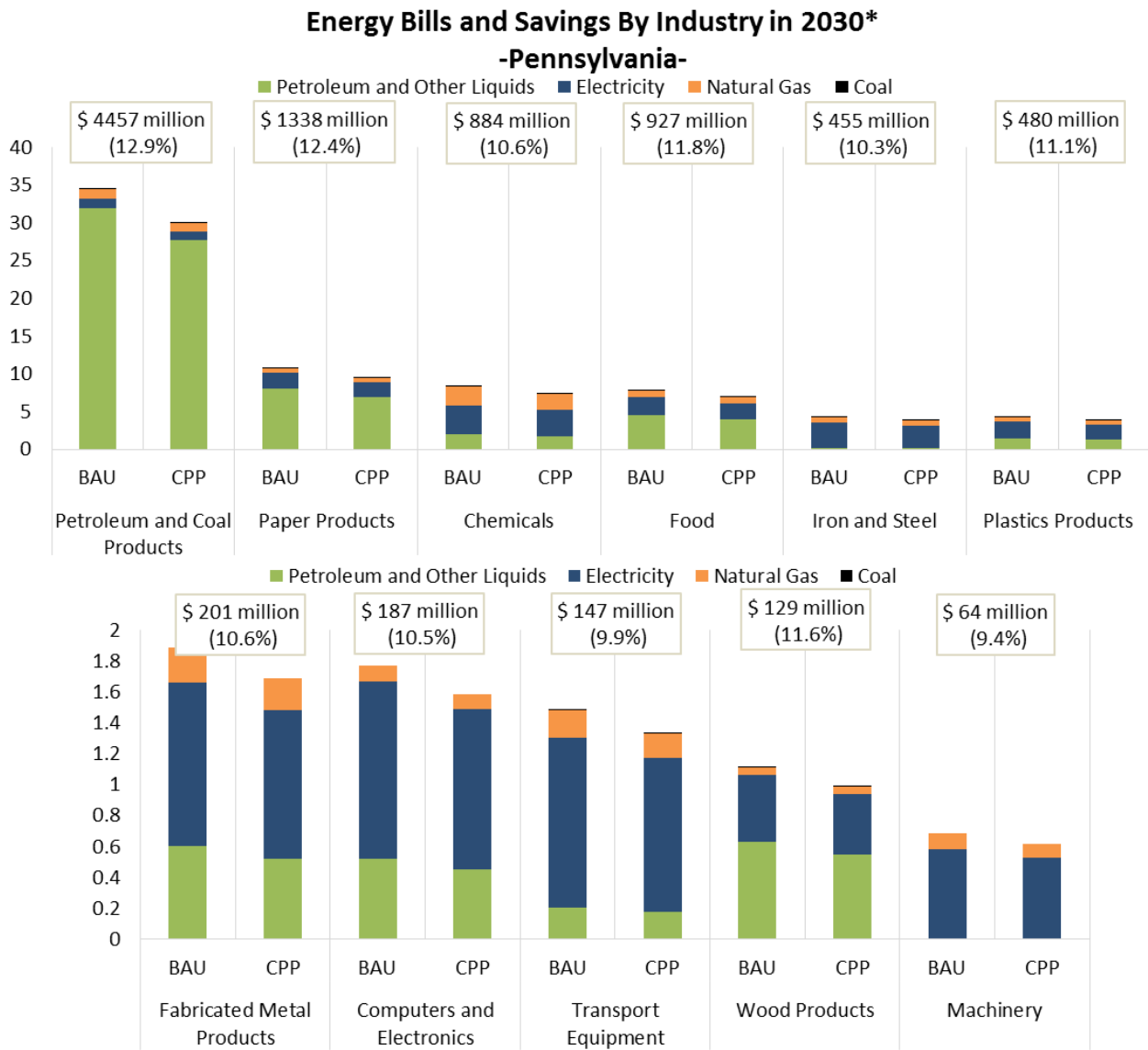


Note: BAU = Business-as-Usual; CPP = Clean Power Pathway. Between 2012 and 2015, petroleum prices decreased 32%, while natural gas prices increased 18%. BAU assumptions include modest increases through 2030.

The options for improving industrial energy efficiency are diverse and vast, and new opportunities are emerging all the time. The most impactful are process improvements such as optimizing thermodynamic processes, using advanced micro-sensors and controls, the use of light-weight ceramics and high-temperature materials, and shifting to “additive manufacturing” for fabricating complex products. In addition, air and steam leakages can be eliminated, loads on boilers and compressors can be reduced, motor and drive systems can be optimized, pipes and facilities can be insulated, and recycling can be increased, along with the cogeneration of electricity and heat.

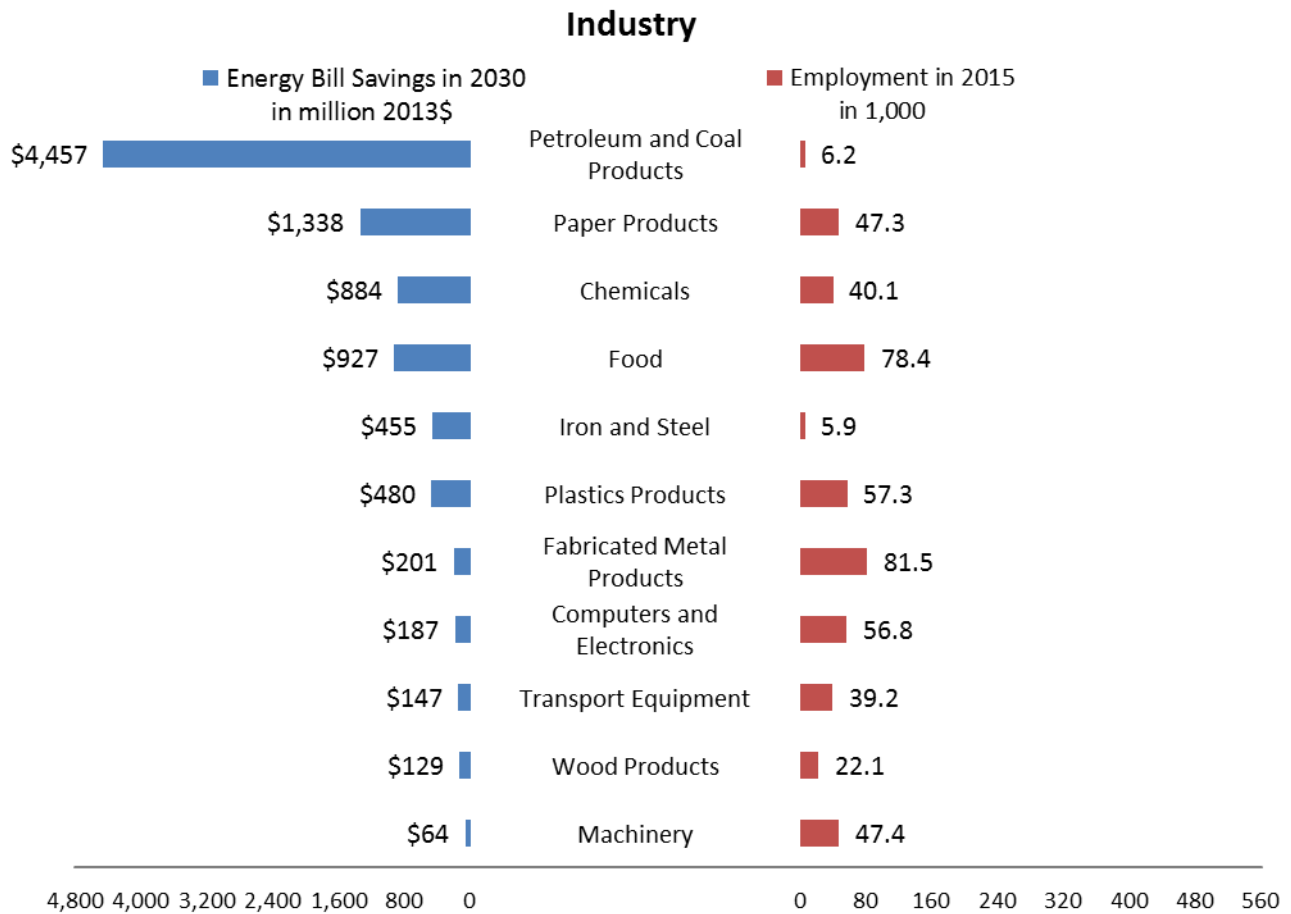
The Georgia Tech analysis found that:

- Under business-as-usual (without new regulations), the energy bills of Pennsylvania industries would rise by **53.5%** over the next 15 years, but under a Clean Power Pathway, this increase would be cut significantly, along with the state’s CO₂ emissions.
- Significant savings in both petroleum and electricity would result from stimulating greater industrial energy efficiency (See figure below).



*Numbers above the bars represent the potential savings in 2030 in \$2013 dollars, calculated as the difference between projected business-as-usual (BAU) bills and Clean Power Pathway (CPP) bills.

- Energy bill savings are expected to be greatest for the production of **petroleum and coal products** and **paper products** as well as the **chemicals** and **food** industries.
- In 2015, these industries employed about **480,000 workers** in Pennsylvania (See figure below.)



Strong financing, technical assistance, and regulatory policies are needed to encourage manufacturers to invest in energy-saving devices and practices to delivery these sizeable energy bill savings. The CPP scenario assumes that investment tax credits for cogeneration systems are extended through 2040 and raised to 30%, which in turn reduces cogeneration system costs through economies of scale and technology learning. In addition, we assume an expansion of state incentives for industrial efficiency and more stringent federal standards for industrial motors and drives.

Industrial enterprises will also be able to tap into markets for emission rate credits and carbon allowances, authorized by the Clean Power Plan and generated from cost-effective industrial electricity efficiency improvements.

Note: Analysis based on Marilyn Brown, Alexander Smith, and Gyungwon Kim, 2016. [The Clean Power Plan and Beyond](#), Georgia Institute of Technology, School of Public Policy Working Paper #89 (June).