



The United States Iron and Steel Industry – Energy Perspective

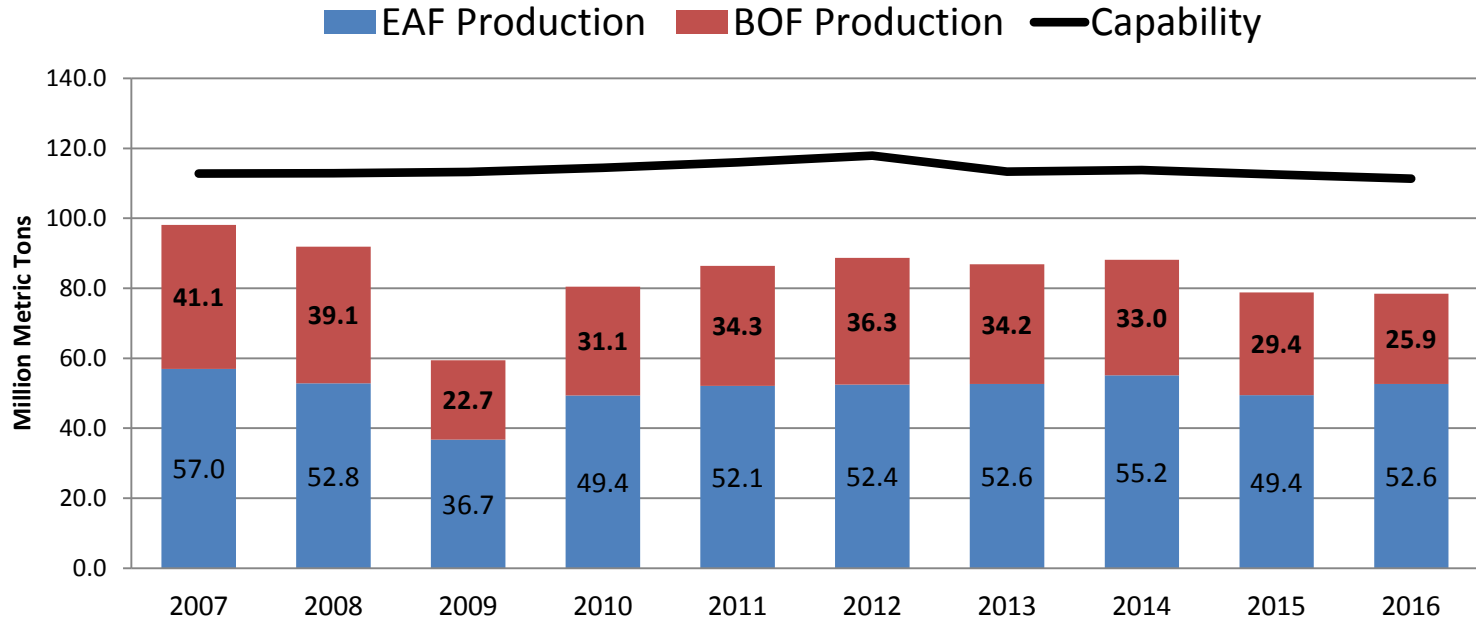
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American Iron and Steel Institute

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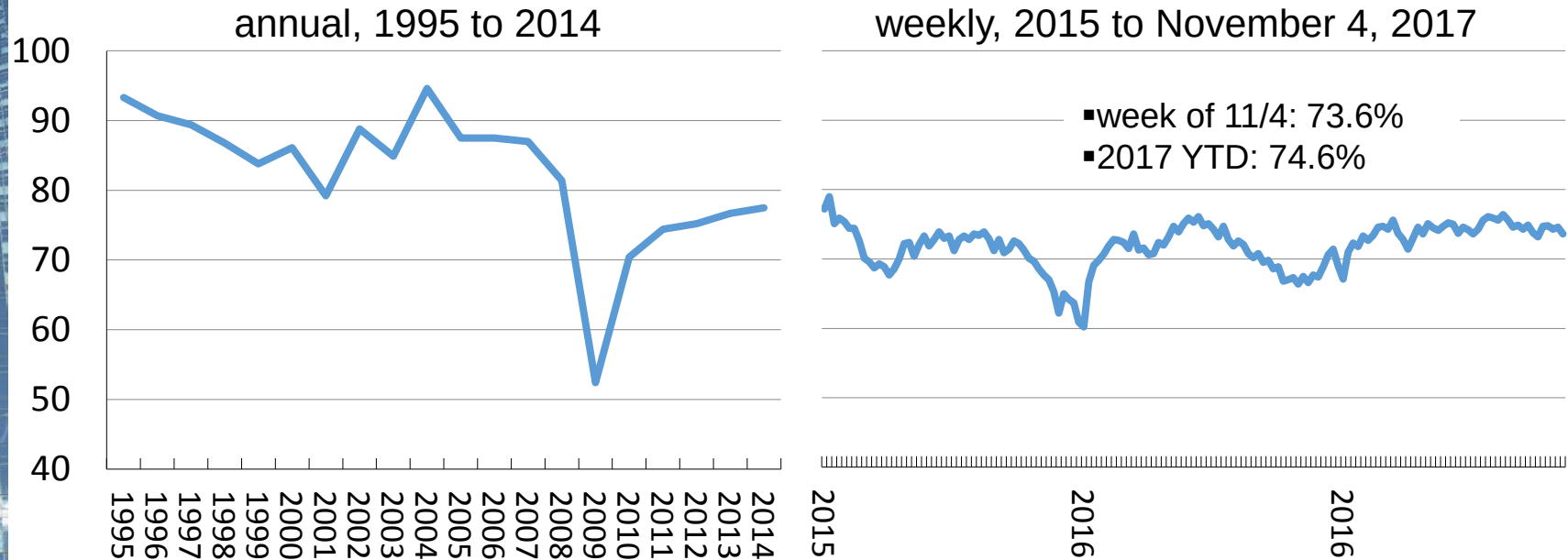
U.S. Raw Steel Production and Capacity Utilization

Production by Furnace Type
(net tons)

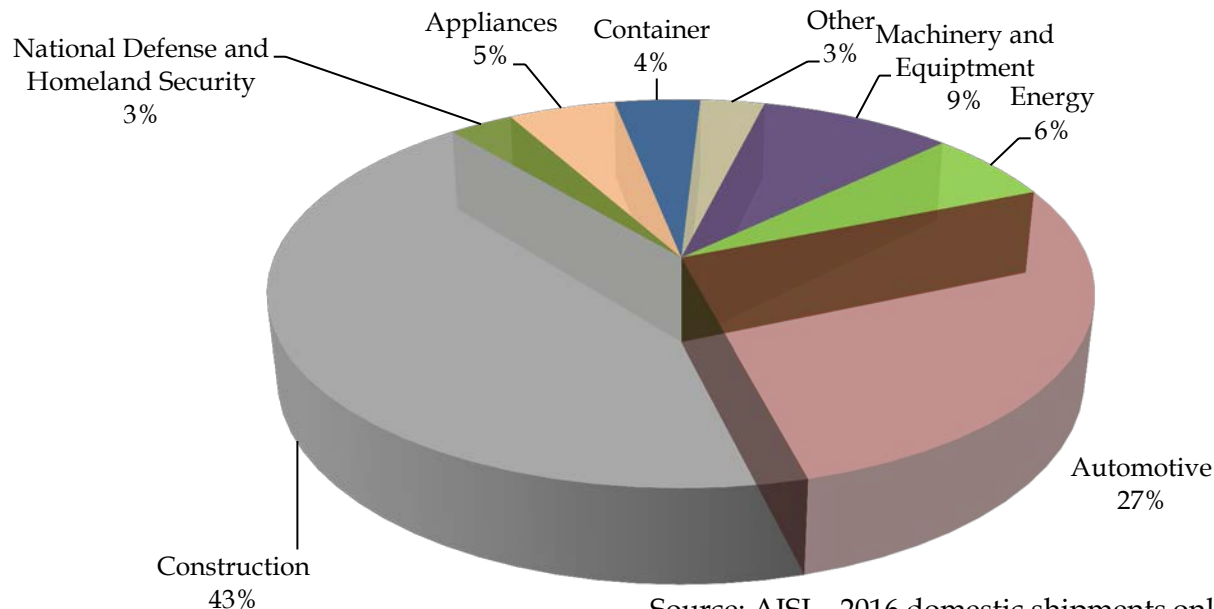


U.S. Steelmaking Capacity Utilization

Raw steelmaking capacity utilization (percent) has trended higher recently but remains historically low.



U.S. Net Shipments by Market Classification



Source: AISI - 2016 domestic shipments only (excludes exports)
*includes estimated allocation of Service Center shipments,

Steel Recycling

- In 2015, over 54 million metric tons of steel scrap was recycled into new steel products
 - The overall recycling rate was 76%
- 2015 recycling rates for individual steel product categories include:

– Automobiles	87%
– Appliances	88%
– Containers/Packaging	71%
– Construction/Structural	98%
– Construction/Rebar	71%

Steel Recycling

- Steel recycling is inherent to the steelmaking process, offsetting demand for energy and natural resources and creating demand for end of life steel products
- Nearly all co-products from the steelmaking process in North America are recycled or reused



Collaborative Research Program

- Committee on Manufacturing Technology (COMT)
 - AISI Producer and Associate Members
 - Gives direction on R&D projects
- AISI acts on behalf of Industry Participants
 - Solicit research proposals
 - Facilitate analysis of proposals
 - Provide project management

Collaborative Research Vision

- Healthy range of projects
 - Implementation
 - Immediate 1-2 years
 - Long Range 10-15 years
 - Direction
 - Industry, Academia, Customer

Priority Research Topics

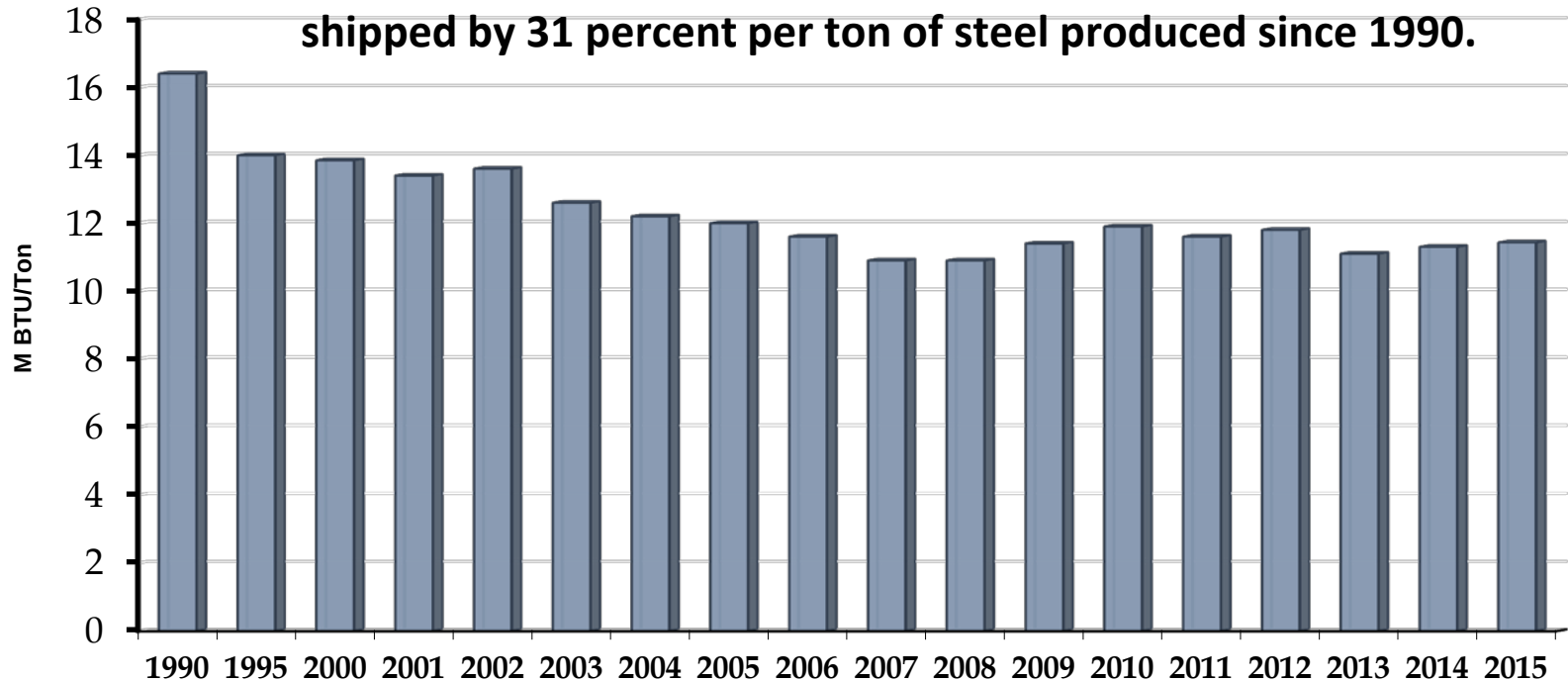
- Advanced measurement technology
- 3D printing/ additive manufacturing and steel
 - Technical barriers
 - Impact on competing materials
- Recycling of steel plant co-products
- CO₂ reduction

Research Proposal Solicitation

- Topics
 - Data Analysis/optimization
 - Slag depth/composition
 - High temperature measurement
- 1.5 – 4 years
- \$150,000 - \$2,000,000+

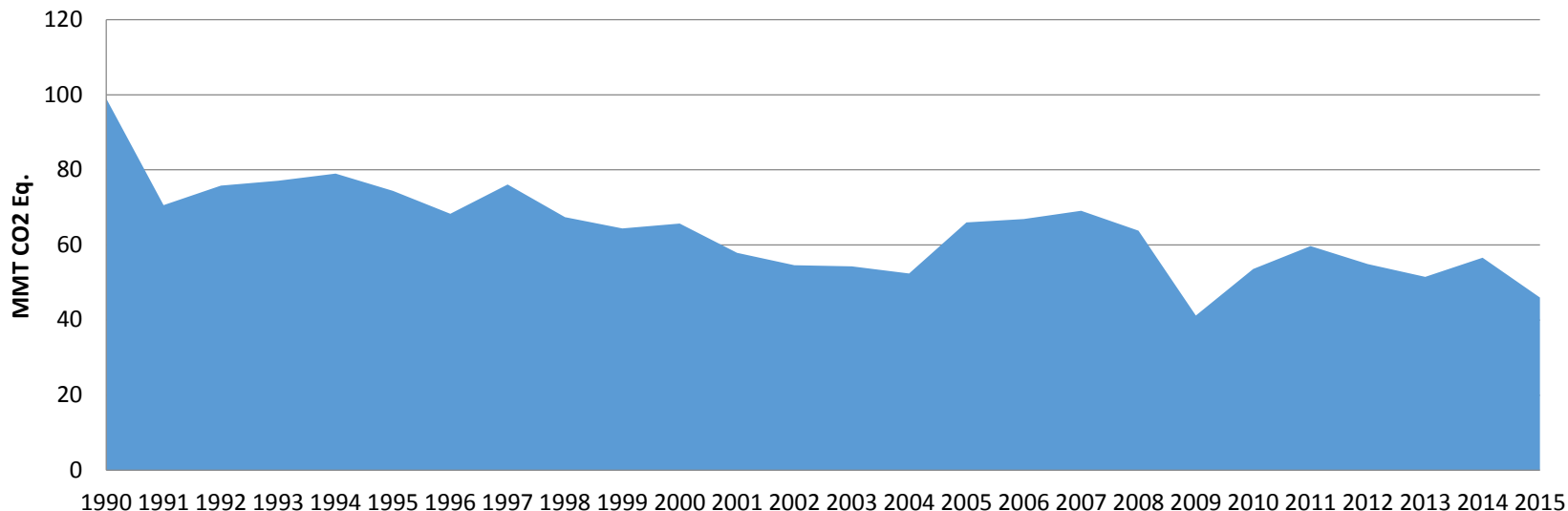
U.S. Steel Industry Energy Intensity

The industry has reduced energy intensity per ton of steel shipped by 31 percent per ton of steel produced since 1990.



Steel Sector GHG Emissions

U.S. GHG Emissions from iron and steel production have decreased by 51 percent since 1990.

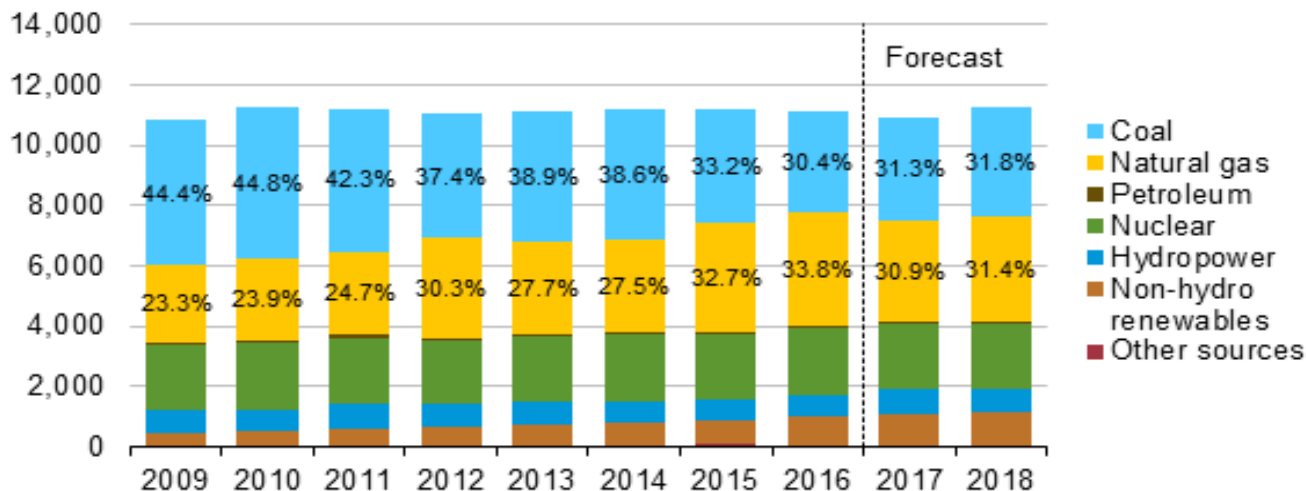


Source: *U.S. EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2015*

U.S. Electricity Generation by Fuel

Slight increase in share of coal-fired electricity, yet substantial decrease over past decade

U.S. electricity generation by fuel, all sectors
thousand megawatthours per day



Note: Labels show percentage share of total generation provided by coal and natural gas.

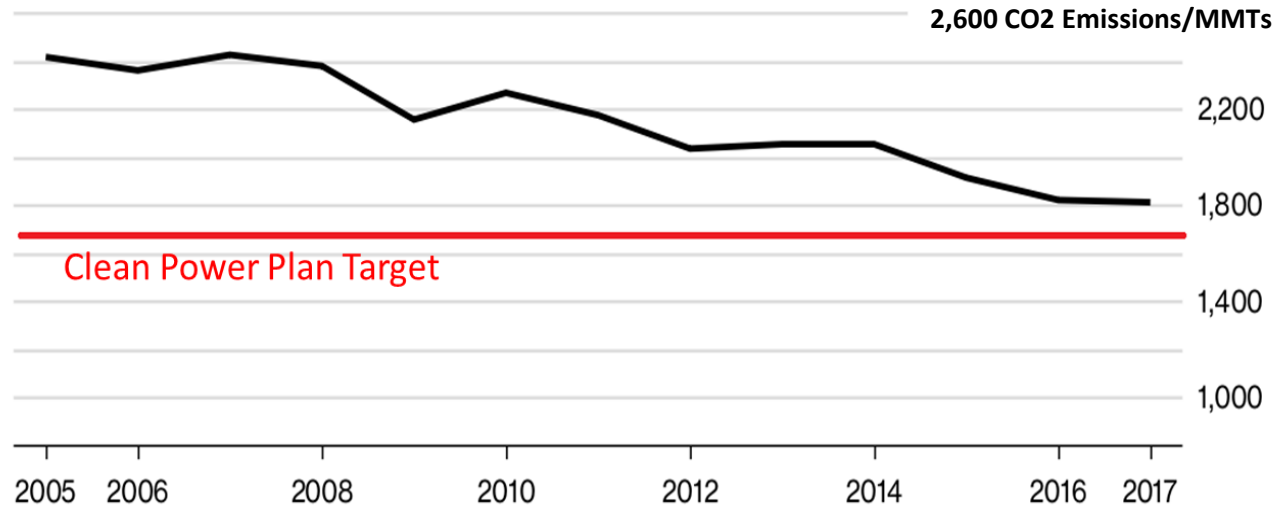
Source: Short-Term Energy Outlook, September 2017.



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U.S. Electricity Sector CO₂ Emissions

U.S. electric utility CO₂ emissions decrease toward Clean Power Plan (CPP) goal



2017 value is the rolling 12-month total through June.

EIA data



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