

Industrial Energy Efficiency and CHP as Compliance Strategies under the CPP

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The Final CPP Provides Opportunities for CHP and Efficiency

- Although EPA removed the energy efficiency building block from setting state targets in the final rule, it did so in order to strengthen its goal-setting framework against legal challenges.
- **This change does not affect states' ability to utilize energy efficiency and CHP as robust compliance options.**
- EPA has made it clear that energy efficiency is likely to serve as an integral component of, or complimentary policy to, many state compliance plans
- EPA identified a variety of energy efficiency measures, programs, and policies that can count toward compliance. These include **utility and nonutility energy efficiency programs**, building energy codes, **combined heat and power**, energy savings performance contracting, state appliance and equipment standards, behavioral and **industrial programs**, and energy efficiency in water and wastewater facilities....

Industrial EE and CHP are Win-Win-Win Options

- Savings associated with IEE/CHP can significantly reduce emissions
 - Industrial EE/CHP can be cornerstones of an effective carbon mitigation strategy and are consistent with the requirements of the CPP
- Implementing EE/CHP supports the broader goal of increasing industrial competitiveness, productivity, and innovation.
 - More efficient processes and equipment will help companies maintain competitiveness when energy supply and prices are volatile.
 - EE reduces costs and increases manufacturers' operational efficiency and productivity.



Good for the State, Good for the Manufacturer, Good for the CPP

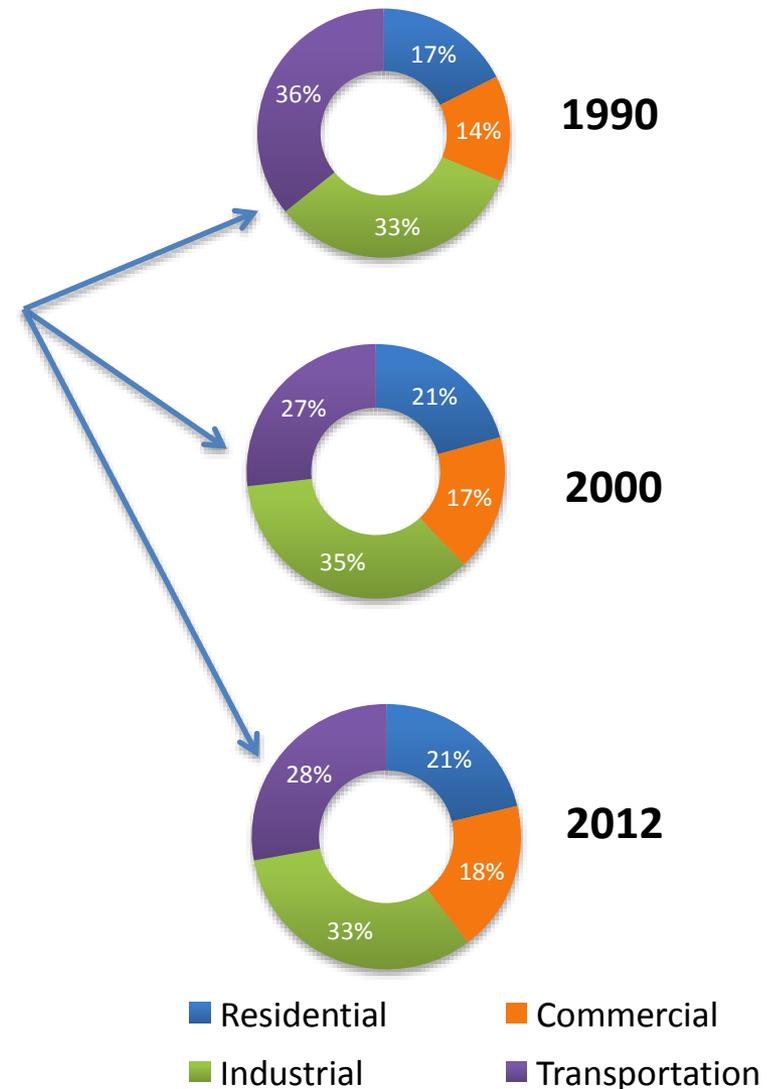
Industry Remains the Largest Energy User in the U.S.

The industrial sector:

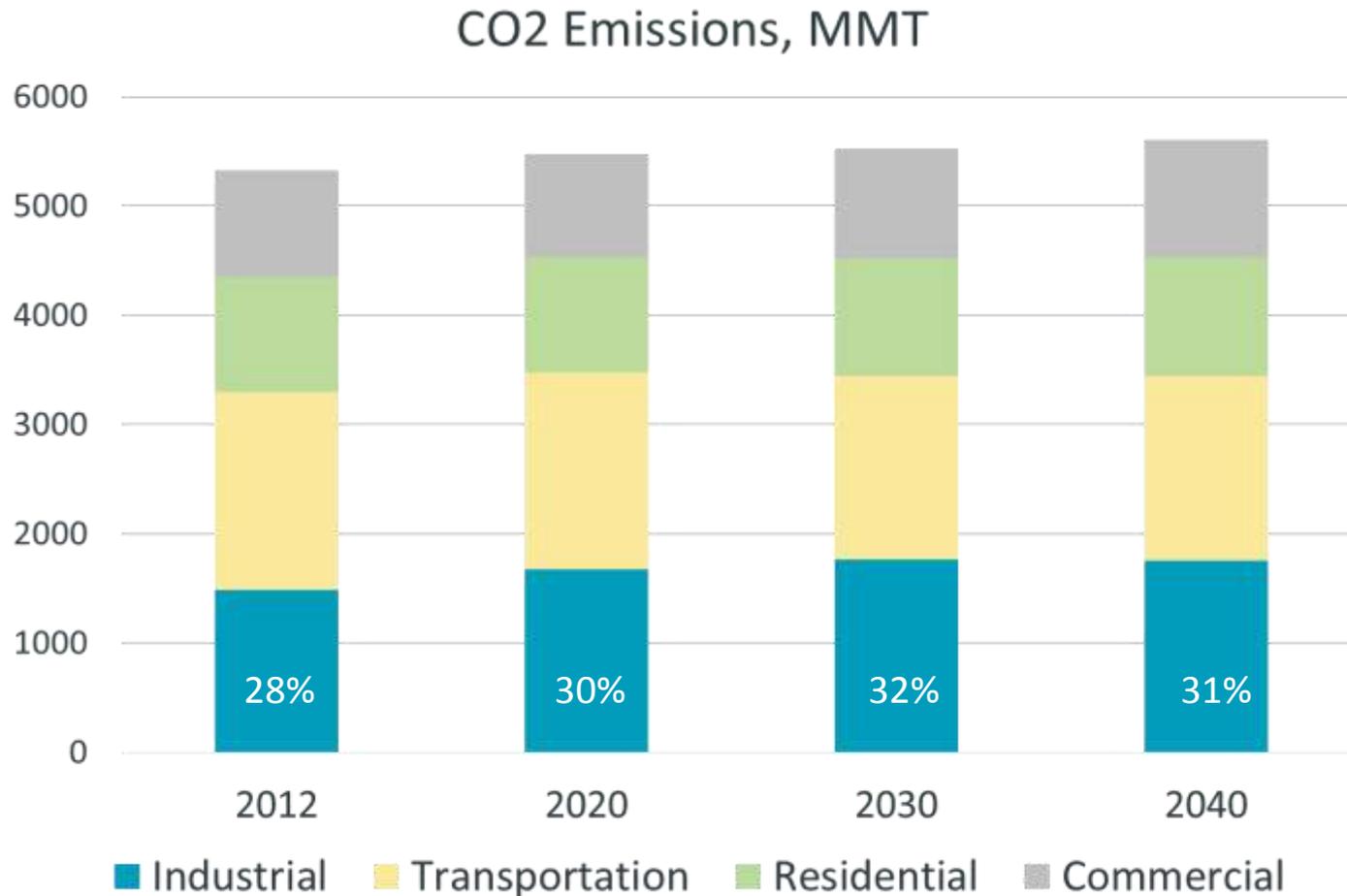
- Consumes more energy than any other sector and accounts for **~1/3 of all end-use energy**
- Remains the largest energy user even though industrial efficiency continues to improve
- Will consume 34.8 quads of primary energy in 2020 (**36% of all end-use**)*
- Has the **potential to reduce energy consumption by ~20% by 2020****

* Energy Information Administration (2013). Annual Energy Outlook

**The McKinsey non-transportation industrial estimates were used to calculate the potential for the full industrial sector.



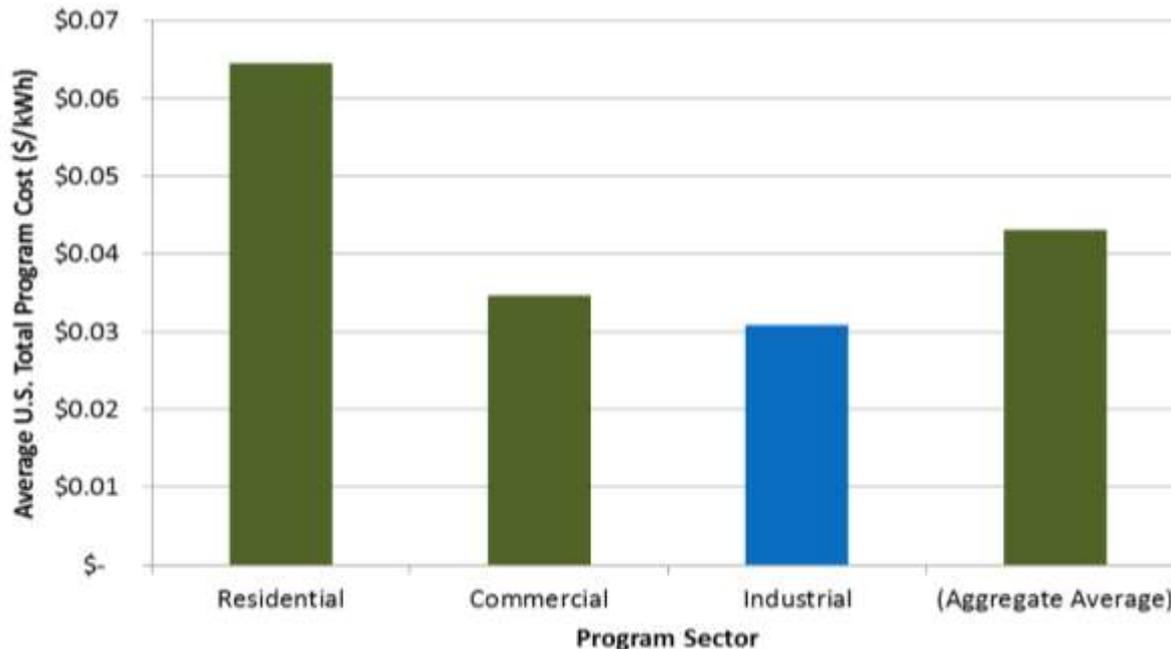
....and will be the Largest Source of CO₂ Emissions in 2040



Source: Energy Information Administration Annual Energy Outlook 2014

Industrial Efficiency is a Cost-effective Resource

Cost of industrial EE resources vs. other customer classes

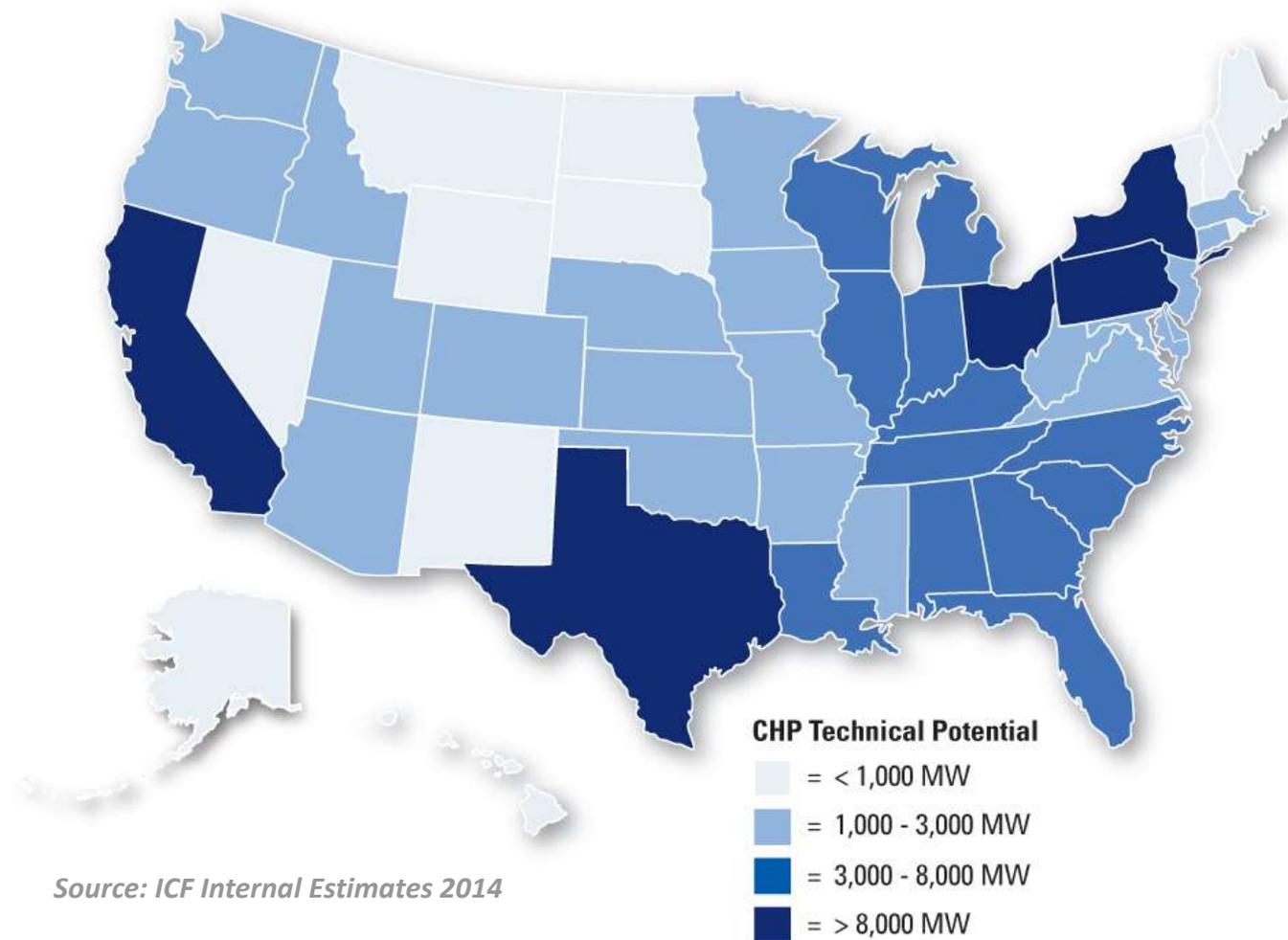


Source: Aden (2013) based on EIA 2012 DSM, energy efficiency and load management programs data for more than 1,000 utilities
www.eia.gov/electricity/data/eia861

- Industry has the lowest cost of saved energy on a national level – (note that cost structures vary by program and sector at the state level)
- Factors that may influence program costs:
 - program administrator experience
 - Scale of program,
 - Labor costs
 - State policy environment
 - Retail rates

(LBNL/Billingsley et al. 2014)

There Is Potential for Additional CHP in every State

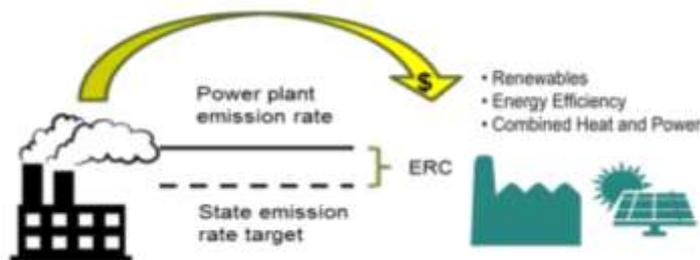


Source: ICF Internal Estimates 2014

How Do IEE and CHP Help Compliance?

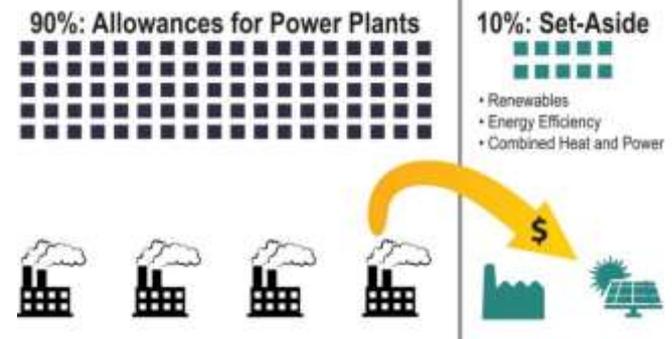
Rate-Based Approach

- Sets emissions-rate targets (e.g., lbs / MWh)
- EE reduces demand from affected units, thereby reducing emissions
- CHP systems generate electricity at a lower effective emissions rate
- Receive emission reduction credits (ERCs) to reduce an affected unit's emissions rate



Mass-Based Approach

- Sets emissions targets (e.g., tons of CO₂)
- When properly accounted for, EE and CHP systems should yield fewer total emissions
- Potential for allowance set asides to promote EE and CHP



CHP and Industrial Efficiency as CPP Compliance Options

- Both offer air quality, economic and reliability benefits
- Both are cost-effective compliance resources available in all states, resulting in cost-effective CO₂ reductions
- Both meet EPA's requirements for an approvable compliance option
- There is an opportunity to monetize emissions reductions from EE and CHP through ratepayer programs or through direct sales of ERCs or allowance set asides
- ***States will need guidance and stakeholder participation to develop effective pathways for CHP and industrial efficiency***

Outstanding Issues

- Measurement of prorated MWh credits for CHP systems
- Approvable, and reasonable, EM&V requirements
- Approaches to encourage both rate-payer and privately delivered IEE/CHP
- Open issues in FIP and model rules
- States engagement
 - Assess the opportunity for CHP and IEE
 - Identify best practices in EM&V, program design, etc.
 - Rationalize policies and regulatory requirements to support increased investment in IEE and CHP
 - Design effective set asides and ERC markets