



Federal and State Policy Impacts on CHP and Waste Heat Recovery

Paul Cicio
Industrial Energy Consumers of America
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Who is IECA?

- The Industrial Energy Consumers of America is an association of leading non-partisan manufacturing companies with \$800 billion in annual sales and with more than 850,000 employees nationwide.
- It is an organization created to promote the interests of manufacturing companies for which the availability, use and cost of energy, power or feedstock play a significant role in their ability to compete in domestic and world markets.
- IECA membership represents a diverse set of industries including: plastics, paper, food processing, commodity and specialty chemicals, fertilizer, insulation, steel, glass, industrial gases, pharmaceutical, aluminum and brewing.



IECA Member Companies

- Abbott Labs
- Ag Processing Inc
- Air Liquide America L.P.
- Air Products and Chemicals, Inc.
- BASF Corporation
- Celanese Corporation
- CF Industries
- Charlotte Pipe & Foundry Company
- Cliffs Natural Resources Inc.
- Dow Corning Corporation
- Eastman Chemical Company
- Eastman Kodak Company
- Evonik Degussa Corporation
- Fairmount Minerals
- FMC Corporation
- Gerdau Ameristeel Corporation
- The Goodyear Tire & Rubber Company
- Guardian Industries Corporation
- Huntsman Corporation
- International Paper Company
- Kimberly-Clark Corporation
- Koch Industries Inc.
- Lehigh Hanson Inc.
- LyondellBasell Industries
- Miller/Coors
- MWV
- NewPage Corporation
- Nucor Corporation



Why CHP and Waste Heat Energy?

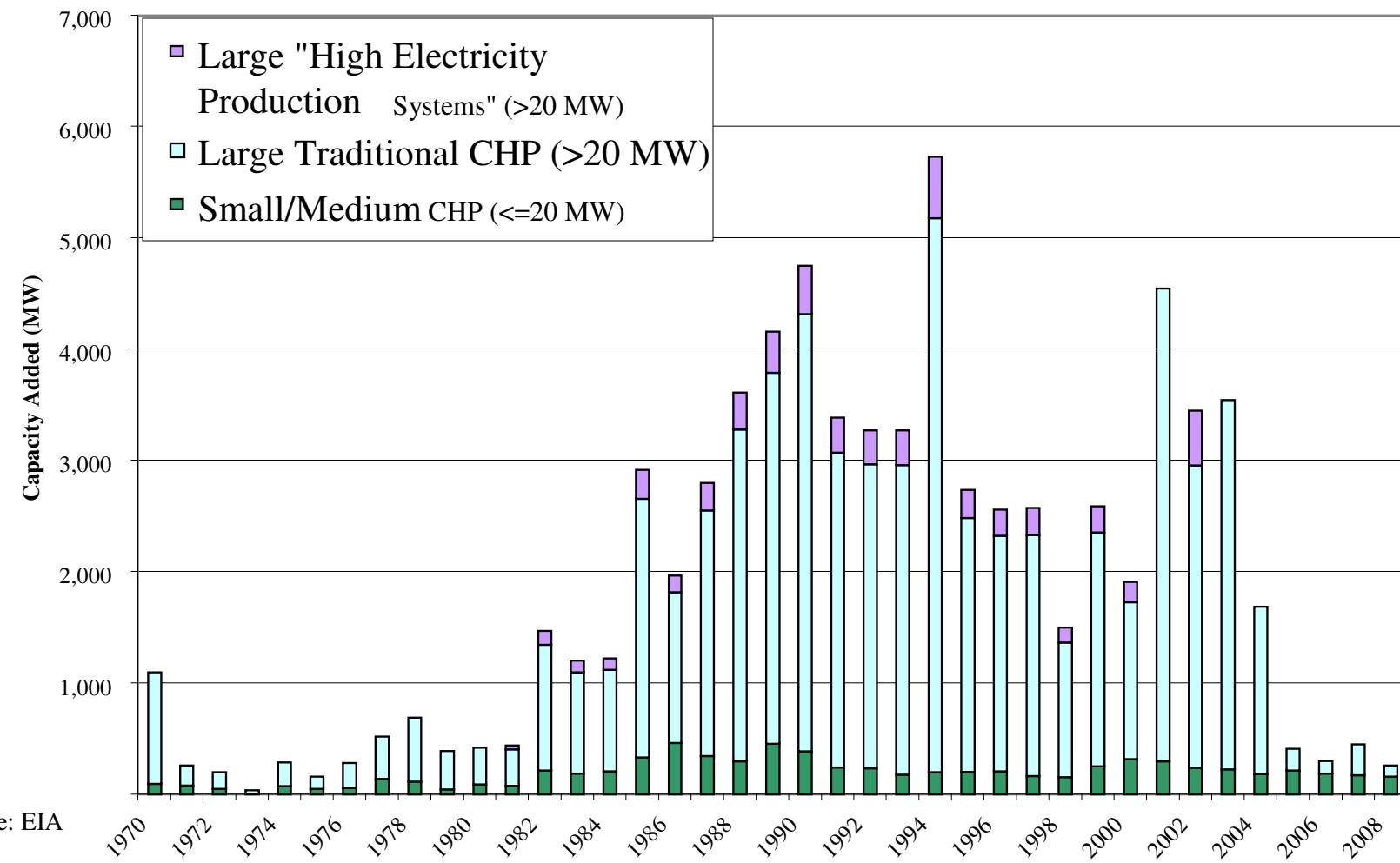
- For manufacturing:
 - Lowers the cost of energy – improves competitiveness, the potential for new jobs and exports
- For the Country:
 - Lowers energy consumption
 - Improves reliability of grid
 - Reduces emissions



Environmental Benefits of Existing CHP Units

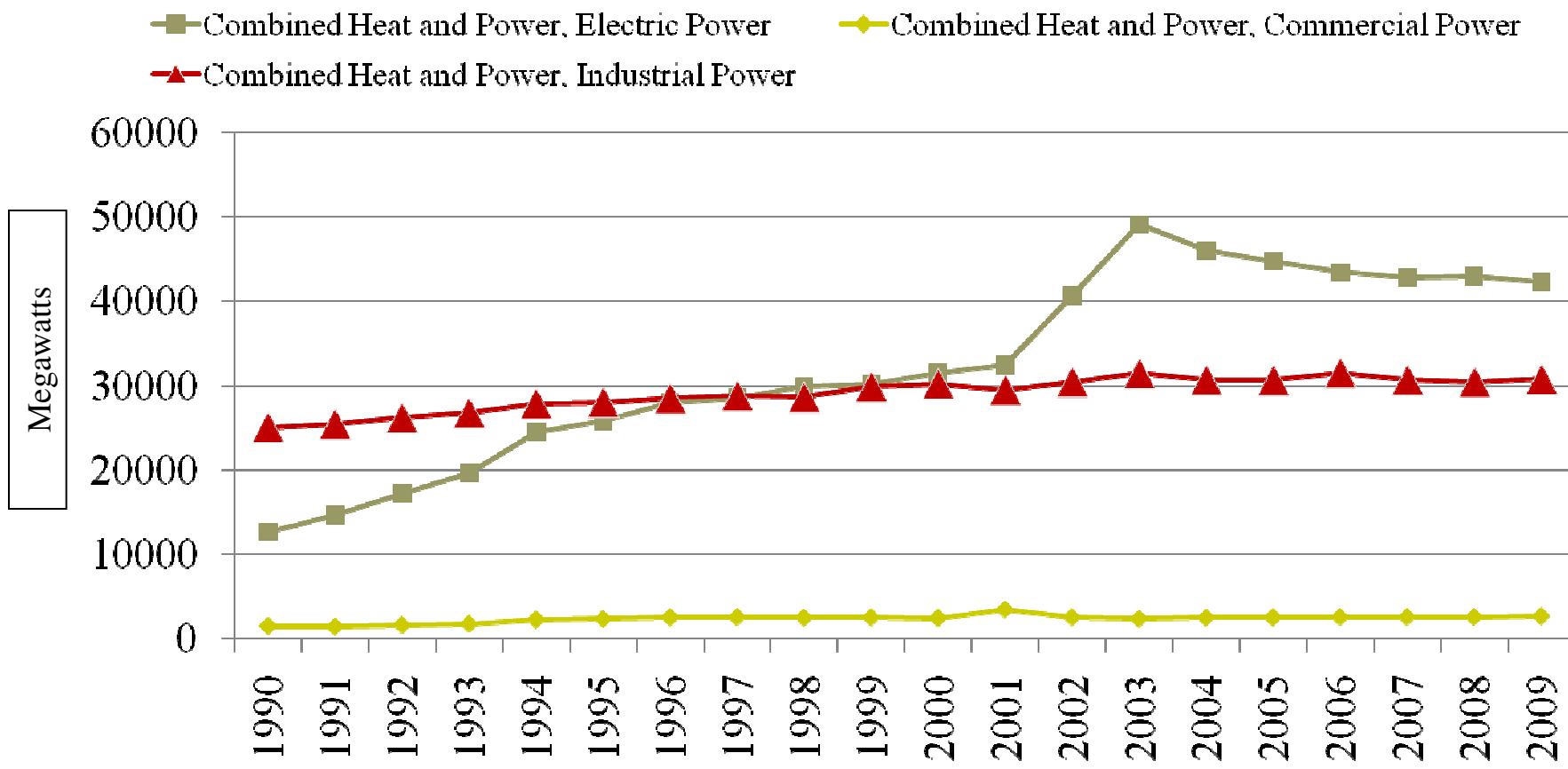
- Avoids more than 1.9 quadrillion Btus of fuel consumption
- Avoids 248 million metric tons of CO2 as compared to traditional separate production
- CO2 reduction equivalent of removing 45 million cars from the road

Almost No New Industrial CHP Since 2005



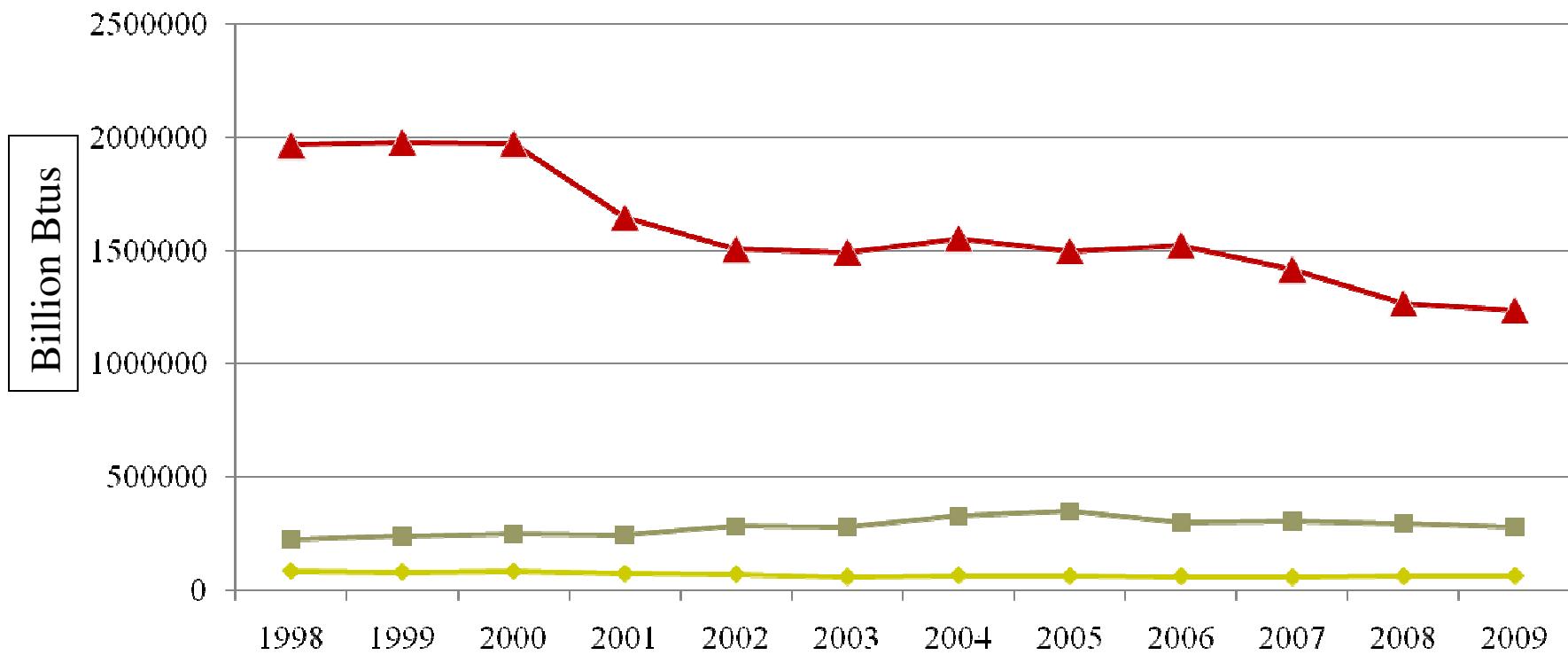


Since 2000, Industrial CHP Nameplate Capacity Increased Slightly by 1.8%



Since 2000, Industrial CHP Thermal Output Fell by 37%

—▲— Combined Heat and Power, Industrial Power —◆— Combined Heat and Power, Commercial Power
—■— Combined Heat and Power, Electric Power





We Have Failed to Sell the Benefits

- Failed to receive recognition of their benefits to the electricity system, to the environment or to industrial competitiveness
- Failed to convince policy makers of the barriers to entry (or) we have not offered adequate policy solution

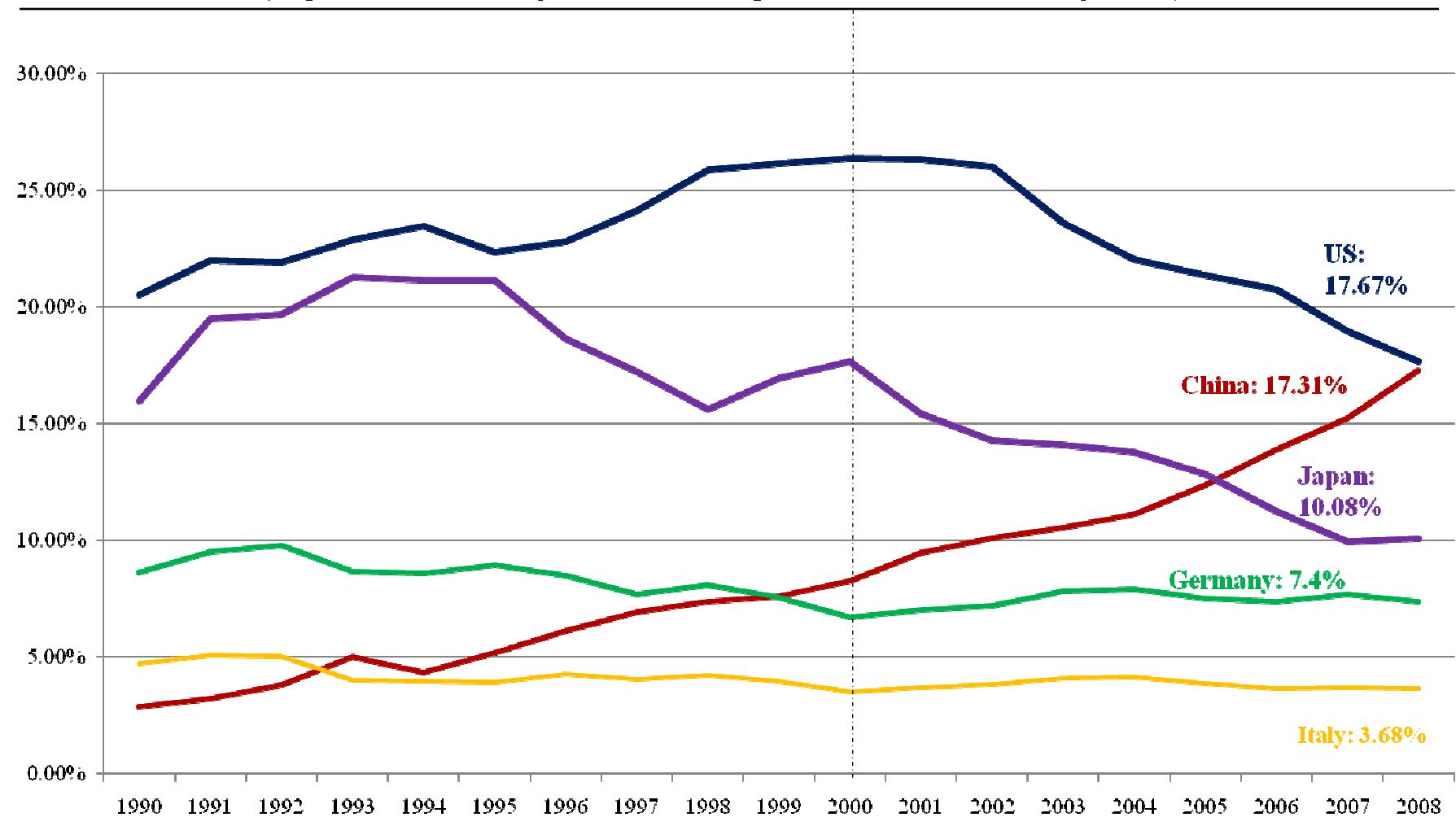


What is at Stake?

- Competitiveness
- Jobs
- Economic growth
- Environmental Sustainability

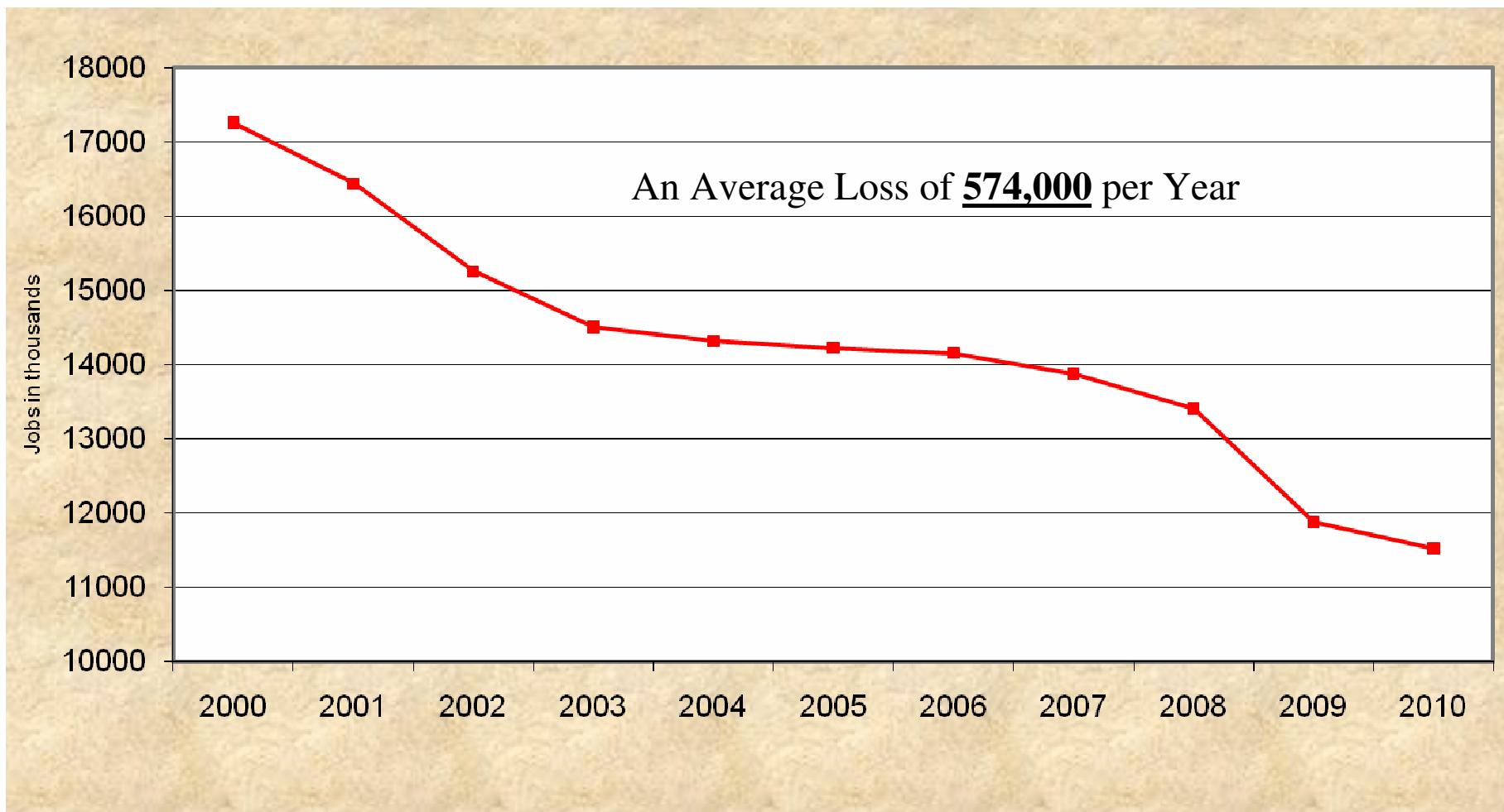
The United States ~~is~~ was the World's Largest Manufacturer

(Top 5 Manufacturing nations made up 55 % of Manufacturing Value)



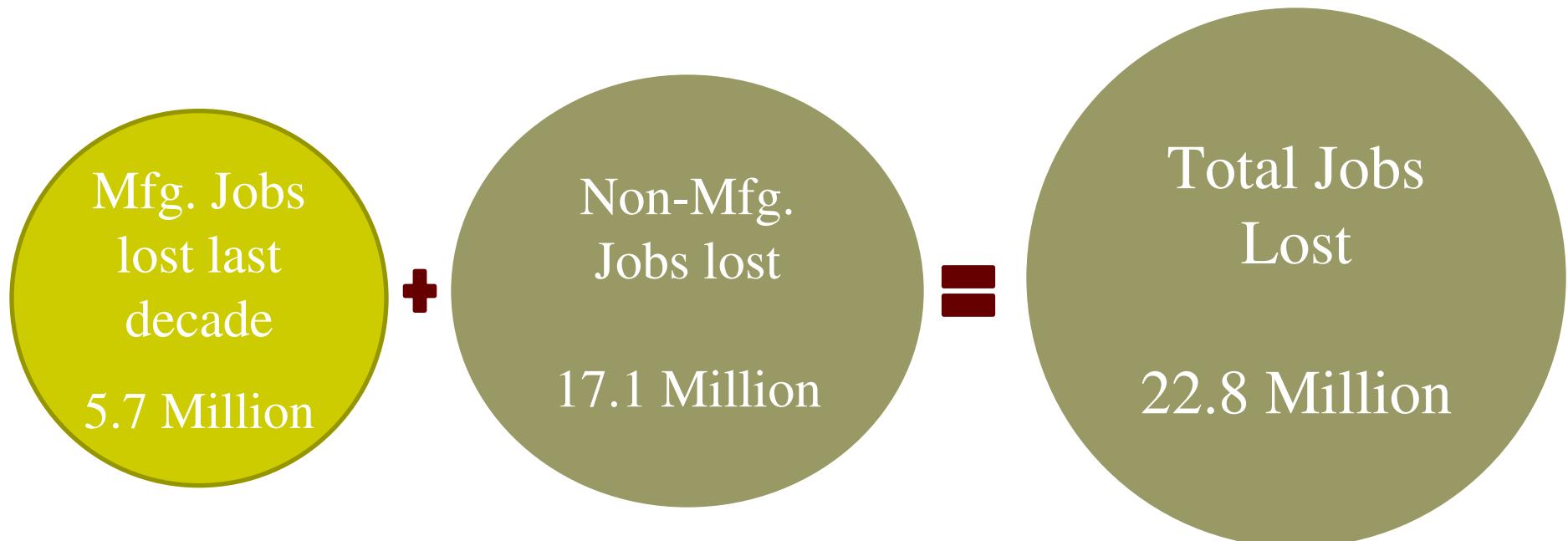
Source: United Nations, IECA Calculations

U.S. Total: 5.7 Million Manufacturing Jobs (33%) Lost





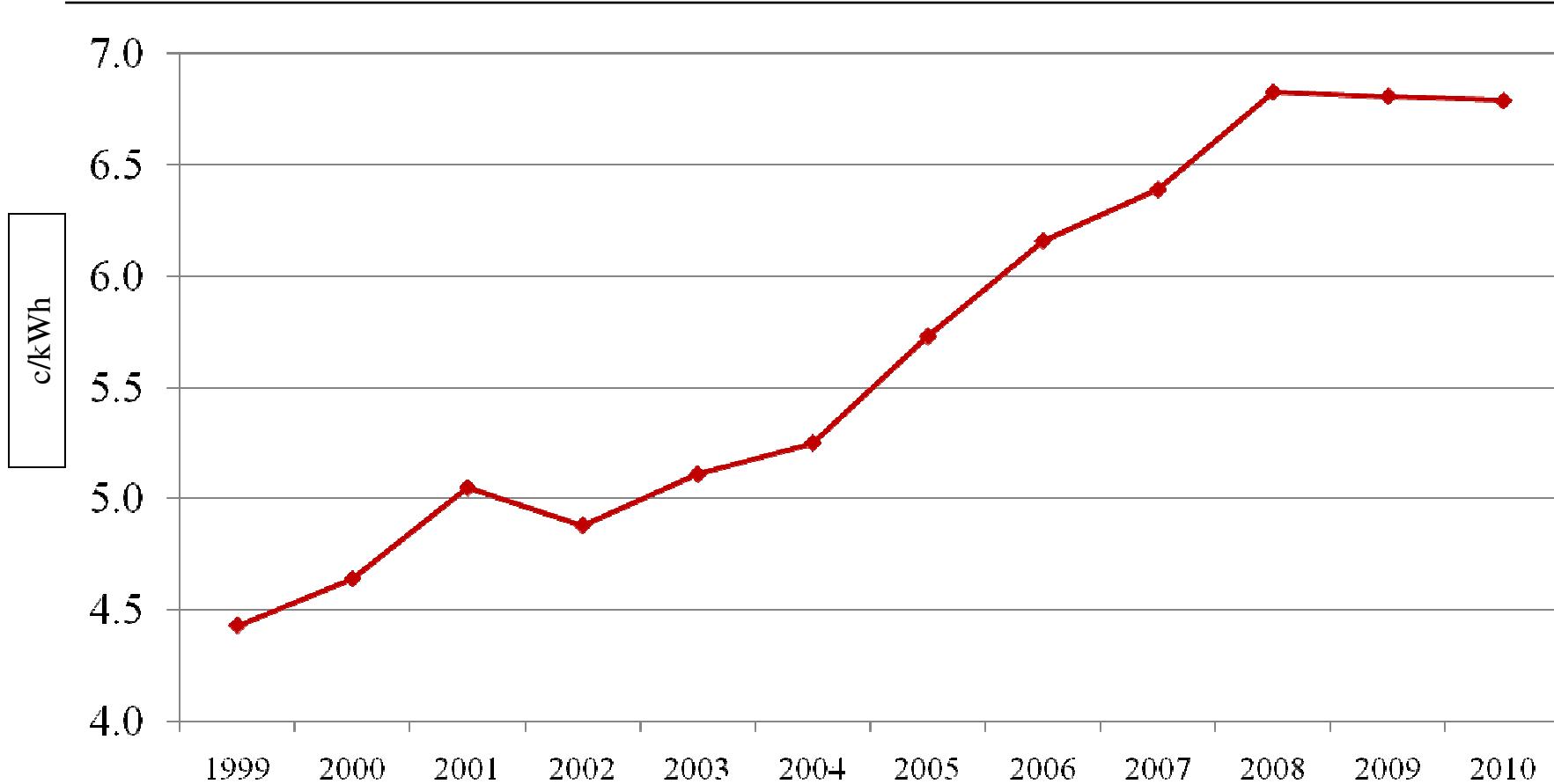
Each Manufacturing Job Creates Three Non-manufacturing Jobs



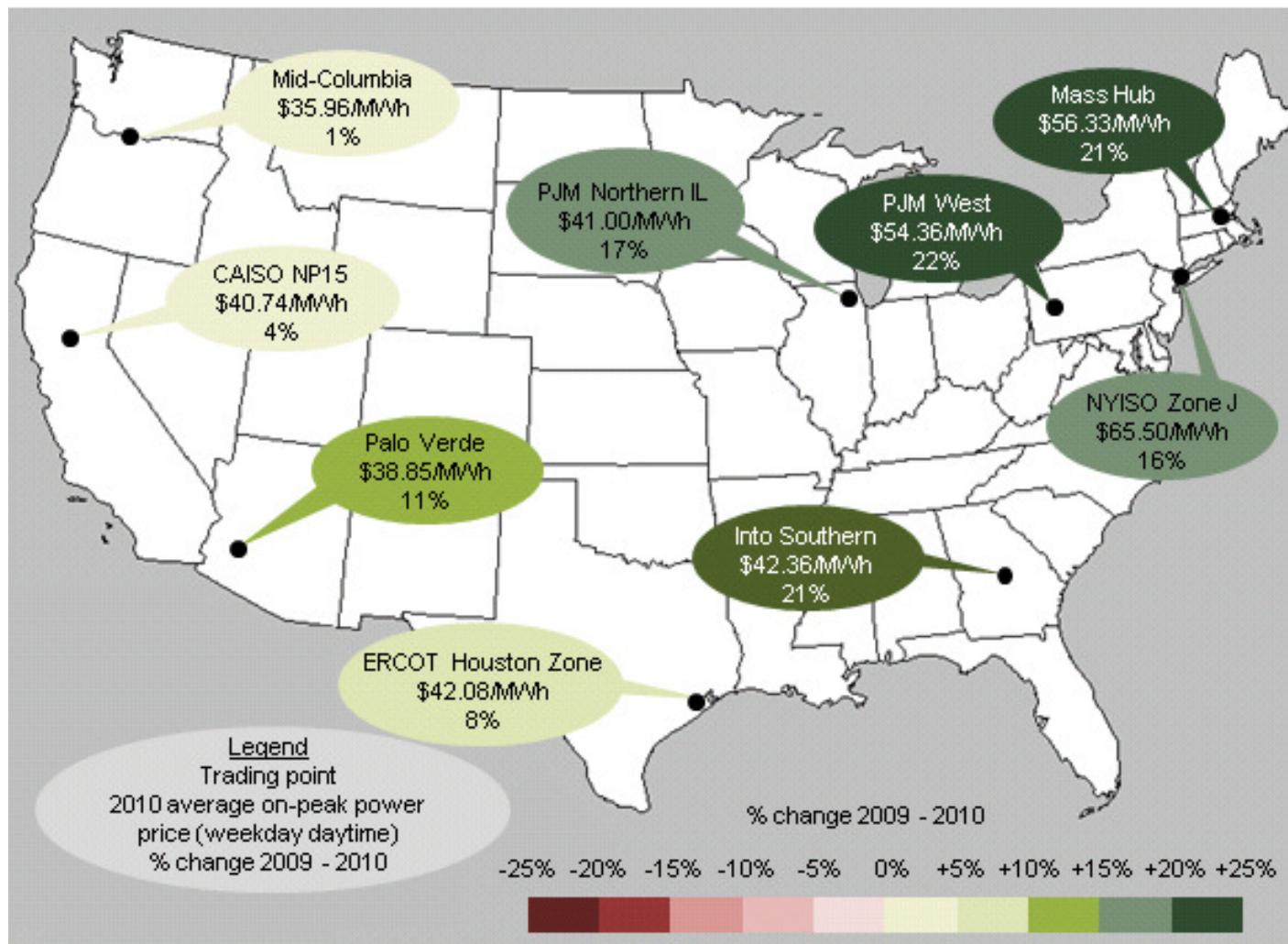


Industrial Electricity Prices

53.3% Jump from 1999 to 2010



Average Wholesale Electric Power Prices Rose in 2010





History of the Public Utilities Regulatory Policy Act of 1978 (PURPA)



PURPA

- To encourage cogeneration and small power production/renewable energy
- Guaranteed CHP facilities would not be discriminated against when connecting to electricity grid
- Ensured supply of supplemental, back-up and maintenance power at just and reasonable rates



PURPA

- Required that utilities purchase electricity from facilities that met PURPA qualifications at the cost the utilities avoided by not having to build additional power plants or purchase power from wholesale markets
- As a result of PURPA, cogeneration production increased to 9% of US generation



PURPA – Energy Policy Act 2005

- FERC interpretation dramatically impacts PURPA
- Utilities not required to demonstrate that their markets were functionally competitive to be relieved of PURPA mandatory purchase obligation
- If utility becomes member of RTO/ISO – is automatically exempt



PURPA – EPAct 2005

- FERC creates Open Access Transmission Tariff (OATT), a tariff designed to provide non-discrimination open access to transmission grid
- FERC placed burden on CHP generators to prove discrimination in the implementation of an (OATT)
- In practice – not working because of the utilities' right to preserve transmission capacity for future native load...and other reasons



PURPA – EPAct 2005

- Mid 2008, the DC Circuit Court affirmed FERC's decision
 - Effectively ended the PURPA purchase obligation for utilities in a large part of the nation
 - Existing contracts were not impacted
 - Result: CHP has no leverage in negotiations with utilities



FERC - Interconnection Rule

- Finalized new generation interconnection rules for both small facilities (<20MW) and for larger generators (>20MW) capacity
- FERC standards are the default if the RTO/ISO has not set its own unique standard



**PURPA Conclusion: Since 2005
almost no new industrial CHP or
WHR projects have been built!**

Energy Independence and Security Act of 2007

- Title IV, Section D, provision designed to improve energy efficiency by promoting CHP/WHR
- EPA to establish a WHR registry to identify the quantity and quality of recovery potential (not released by EPA)
- Created Waste Energy Recovery Incentive Program (not authorized). Incentive of \$10/MWh during first three years of operation

Energy Improvement and Extension Act of 2008

- Provided a 10% investment tax credit for first 15 MW of CHP property
 - Systems <50 MW
 - Produce at least 20% useful thermal and 20% electricity
 - Must be 60% efficient
 - Placed in service before January 1, 2017
 - CHP qualifies for 5 year depreciation under Modified Cost Recovery System (MACRS)



American Recovery & Reinvestment Act of 2009

- \$156 million for cost-share grants – CHP & WHR
- Allows CHP tax credits to be financed with local development bonds
- Allows bonus depreciation for CHP – 50% in first year – remainder over four years



Conclusion:
Recent legislation has had little
impact on driving industrial
CHP/WHR



FEDERAL LEGISLATION

2010



H.R. 4144 Introduced by Rep. Inslee

H.R. 4751 Introduced by Rep. Tonko

- The bills include policies that incorporate changes to the tax treatment of CHP systems and adds waste heat to energy (WHE) technology.
- The bills include five key changes to Federal tax rules under the Business Energy Investment Tax Credit (ITC) (26 USC § 48):



H.R. 4144 Introduced by Rep. Inslee

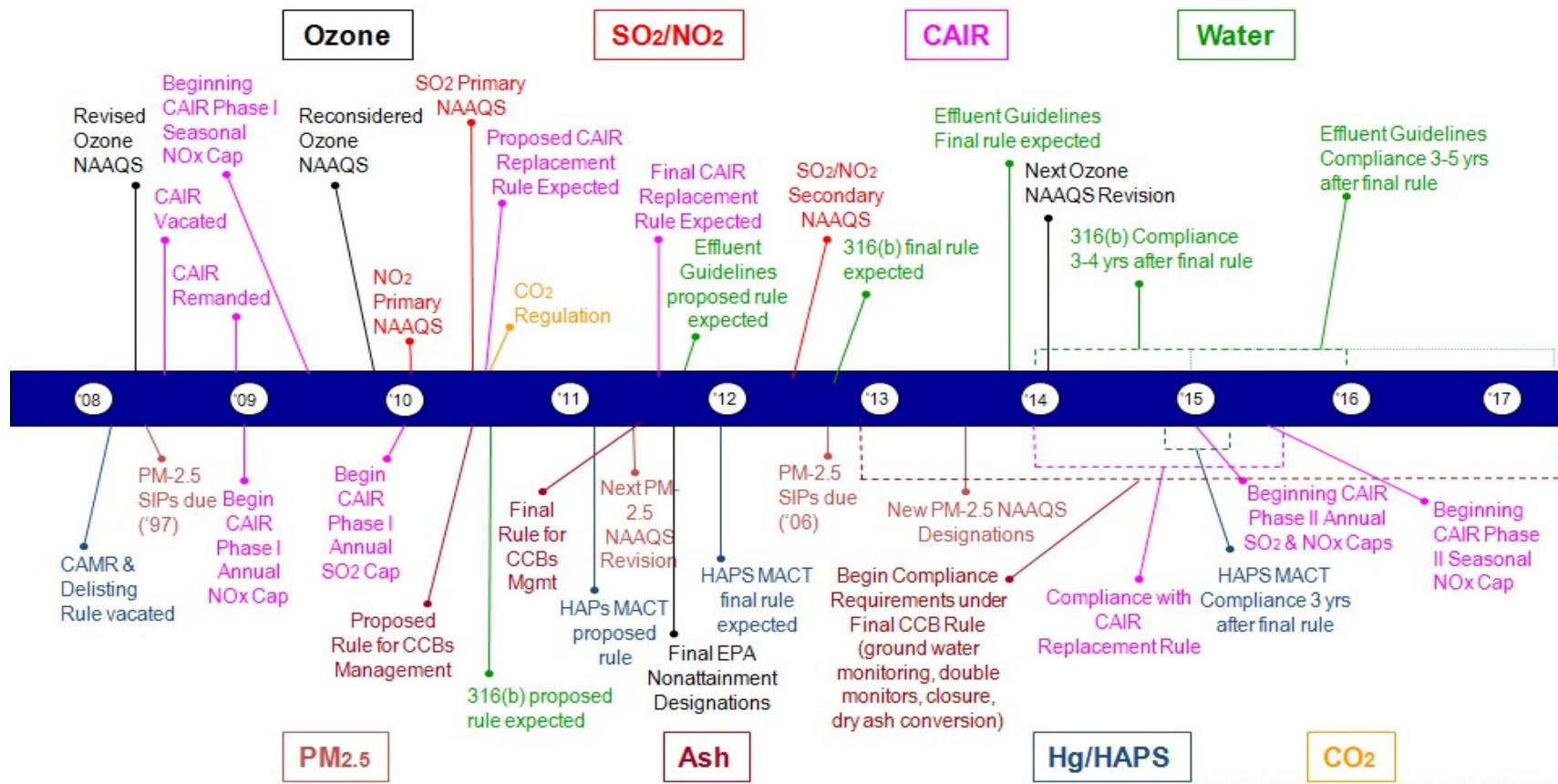
H.R. 4751 Introduced by Rep. Tonko

- Divide the definition of “Combined Heat and Power System Property” into a “Combined Heat and Power System Property” and a “Waste Heat to Electricity System Property”
- Removes the upper limit on the size of applicable systems (currently limited to 50 MW)
- For CHP systems with an efficiency >60% but less than 70%, provide a 10% ITC to be applied to the first 25 MW of capacity (instead of 15 MW)
- For CHP systems with an efficiency >70%, provide a 30% ITC to be applied to the first 25 MW of capacity
- For all “Waste Heat to Electricity System Properties” provide a 30% ITC

S.3935 Advanced Energy Tax Incentives Act Introduced by Sen. Bingaman/Snowe

- Section 114: Combined Heat and Power Credit (Code Section 48) would:
 - Expand the current 10% investment tax credit's applicability, from the first 15 megawatts to the first 25 megawatts of system capacity
 - Remove the existing overall system size cap of 50 megawatts

EPA CAA Rules – A Electric Utility Industry in Transition



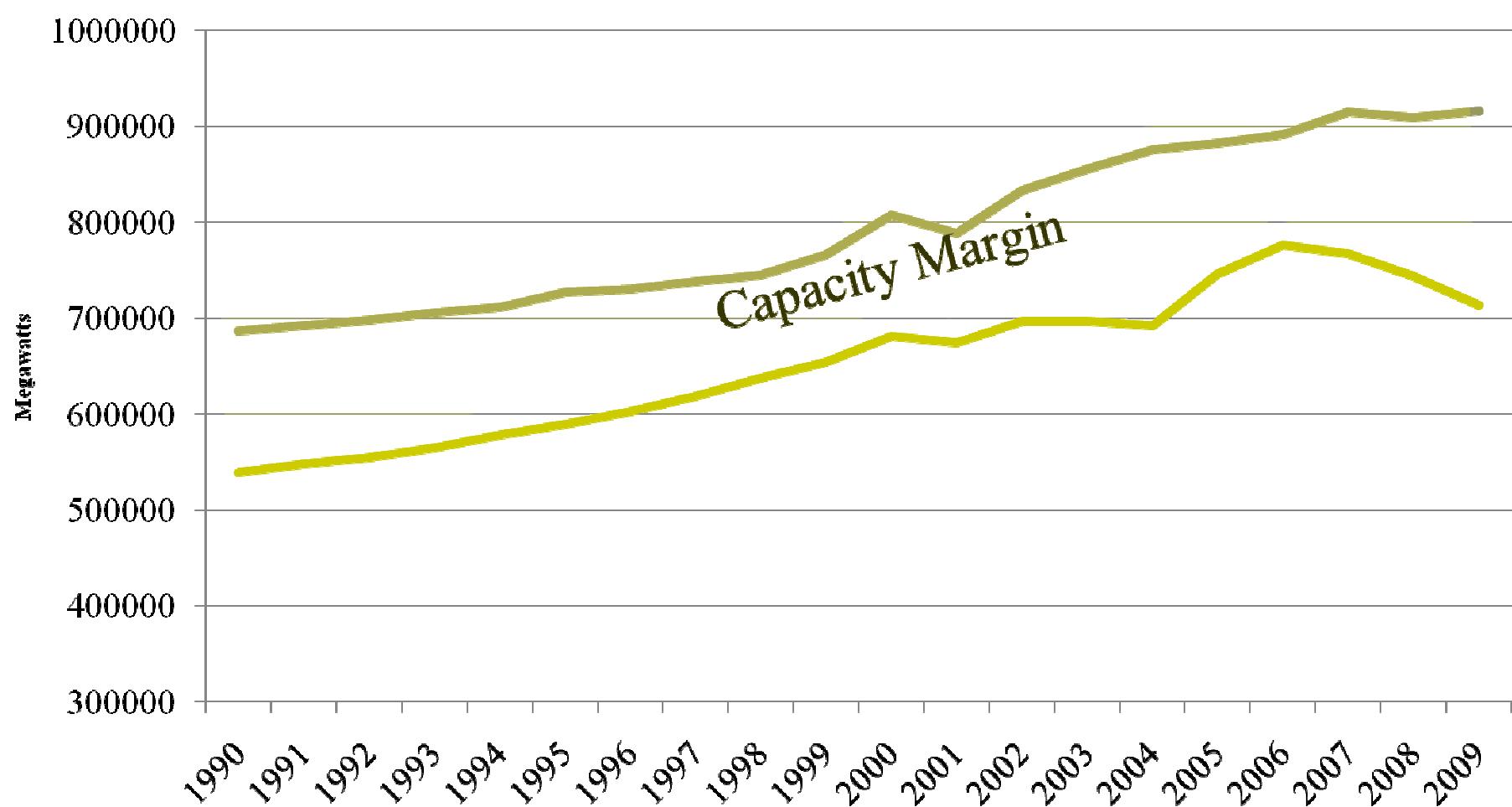
EPA Clean Air Act Rules – Impact on Electric Utility Sector?

- Implications
 - Early retirement of existing older coal fired power plants
 - New coal fired power plants too expensive as a supply option
 - Drive greater power generation to natural gas
 - Impact on electric reliability
 - Opportunity for CHP/WHR?



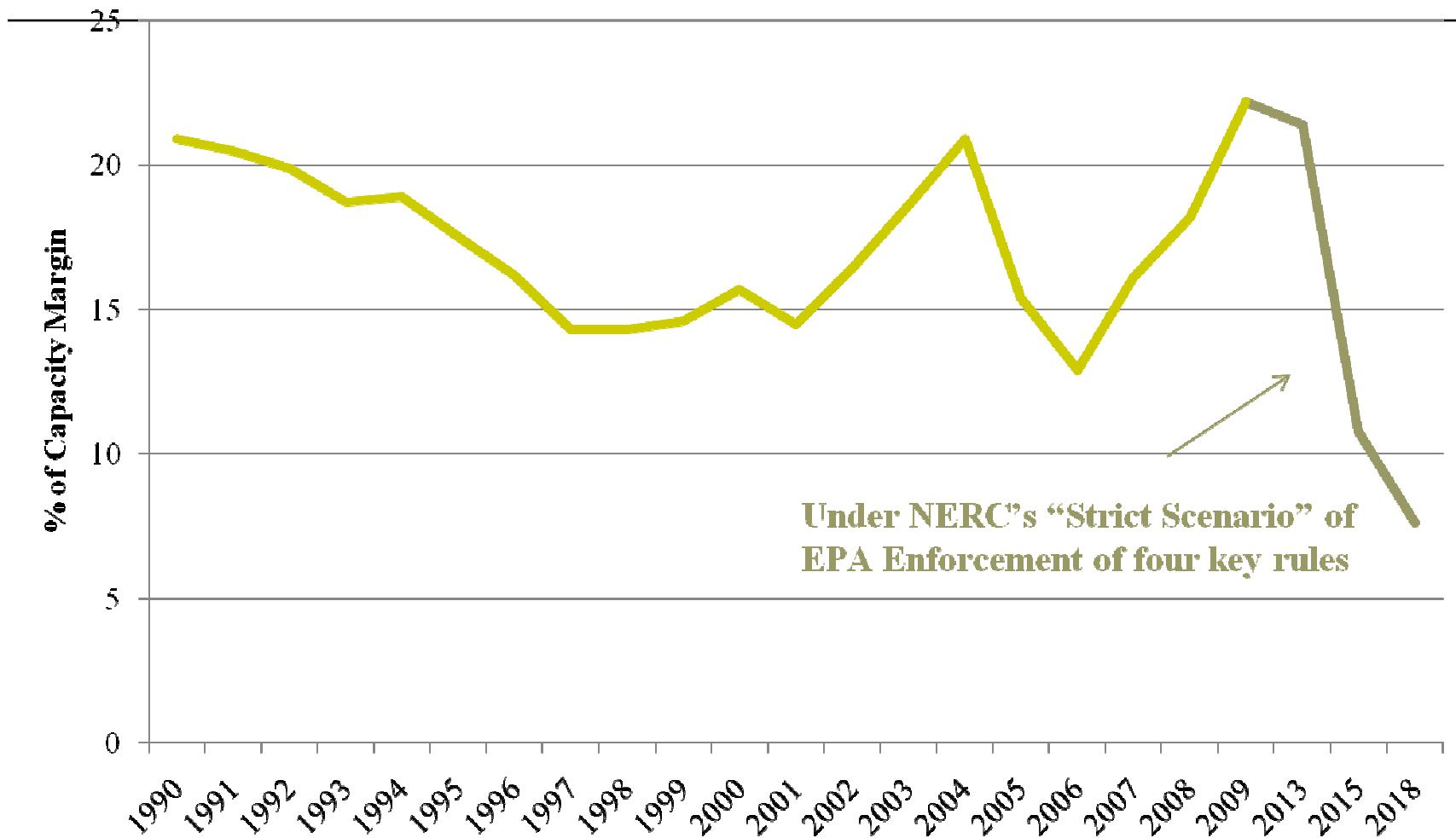
NERC Net Internal Demand, Capacity Resources Summer, 1990 through 2009

— Net Internal Demand — Capacity Resources





NERC Study on EPA Regulations - Summer Capacity Margins 1990 through 2018





EXAMPLES OF STATE CHP/WHR PROGRAMS

State Renewable Portfolio Standards (Some include EE / CHP / WHR)

- Arizona, CHP
- California, CHP
- Colorado
- Connecticut, CHP
- Delaware
- Illinois, WHR
- Iowa
- Kansas
- Louisiana, WHR
- Maine
- Maryland
- Massachusetts, CHP
- Michigan, CHP
- Minnesota
- Missouri
- Montana
- Nevada, WHR,
- New Jersey, CHP
- North Carolina
- North Dakota, WHR,
- New York, CHP
- New Mexico
- New Hampshire
- Ohio, CHP
- Oregon, WHR,
- Pennsylvania
- South Dakota, WHR,
- Texas, CHP
- Utah
- Virginia
- Vermont
- Washington
- Wisconsin



New Jersey (past program)

- “Pay for Performance Program”
- Must prove a 15% energy efficiency improvement
- Offers \$450/kw. Rigorous up front facility audit/modeling at costs of \$50,000 to \$100,000
- Result – no one has put a project thru the program



New Jersey

- “Retail Margin Fund”
- Offers \$450/kW
- 28 applications filed
- Funded by collecting fee from large users of electricity - \$90 million with \$60 million earmarked for CHP
- Governor is using the funds for state operations



New Jersey

- Board of Utilities to develop new plan
- Move away from grants to a “market system” approach



North Carolina

- 2010: 35% investment tax credit up to \$2.5 million



Arizona

- The Arizona Corporation Commission has approved a Gas Utility Energy Efficiency Rule and Standard (Gas EERS) that requires Arizona gas utilities to ramp up gas savings to 6% by 2020. CHP is included as an eligible energy-saving measure.
- Electric EERS - increased incentives for CHP capital costs from the main gas utility Southwest Gas. (These incentives are among the highest in the country.)



New York

- For existing facilities and proven technology: will pay \$750/kw to perform at peak hours
- Limited to three years
- New RFP Solicitation: due Jan 2011; pays up to 40% of installed capital costs up to \$2M



Louisiana

- Adopted waste heat recovery as a “renewable resource” applicable to the RPS
- Pilot: 350MW requirement for utilities to meet
- 5 Grants: Funding from Stimulus Package - completed



Connecticut (2006 to 2009)

- Incentive of \$450/kw, capital cost grants
- Minimum of 50% energy efficiency
- Low cost interest loans
- Utility incentive of \$200/kw and reduced over time to \$75/kw
- State to avoid federally mandated congestion charges



Massachusetts

- Alternative Portfolio Standard (just starting)
- Requires CHP to be 4% of utility sales by 2018
- Default payment by utility of \$20/MWh
- Up to \$750/kw to buy down cost of capital (must pass cost benefit test)
- Paid for by System Benefit Charge



California

- Self-Generation Incentive Program –Capital cost subsidy to promote high efficiency
- Sept 30, 2010 - SB 412 re-instates fossil fuel-based CHP systems
- Reinstates some combustion based systems but not all
 - Three key “guiding principles”: Cost- effectiveness;
 - GHG reductions;
 - Financial need (<15% IRR)
- Payment as “hybrid PBI”: 25% at commissioning and 15% per year for 5 years after that



California

- Climate and Feed-In-Tariffs (FIT)
- 4 GWs for CHP
- California enacted a CHP FIT for systems less than 20 MW and with excess power (AB 1613) Must be sized to thermal load and > 62% efficiency
- Price tied to natural gas and time of day and season (Market Price Referent (MPR))



California

- Rate cannot exceed the utility avoided cost
- Approved multi-tiered rates (higher rates for higher efficiency)
- Approved adders for transmission constraints and environmental externalities



Thank you

Paul Cicio
Industrial Energy Consumers of America

202-223-1661

pcicio@ieca-us.org