Bringing CHP to Market:

EPA CHP Partnership Support and Opportunities for Louisiana

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U.S. Environmental Protection Agency CHP Partnership

Alternative Energy: The Future of Louisiana's Energy Industry?

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What is Combined Heat and Power (CHP) ?

- Combined Heat and Power (CHP) is an efficient and reliable approach to generating electrical and thermal energy from one fuel source.
- By recovering the waste heat from electricity production or industrial processes and using it in a facility, fuel utilization efficiencies are greatly increased.
- CHP is not a specific technology but an application of technologies to meet an energy users needs.

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CHP Benefits

- Reduced operational and capital expenses
  - Lower energy costs
  - Offset equipment retrofit or replacement
- Reduced energy-related environmental pollution
  - Efficiency lowers greenhouse gas emissions
- Increased on-site power reliability
  - Reduce impact of grid power outages
- Efficient use of natural resources
  - CHP requires less fuel per output than separate heat & power.

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EPA Clean Energy Programs

- Green Power Partnership
  - www.epa.gov/greenpower
- Landfill Methane Outreach Program
  - www.epa.gov/lmop
- EPA-State Energy Efficiency & Renewable Energy Projects
  - www.epa.gov/cleanenergy
- Clean Energy-Environment State Partnership Program
  - www.epa.gov/cleanenergy

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EPA CHP Partnership

- Combined Heat & Power Partnership
  - www.epa.gov/chp
- Voluntary program that seeks to reduce the environmental impact of power generation by promoting the use of CHP.
- We are technology, fuel and vendor neutral.

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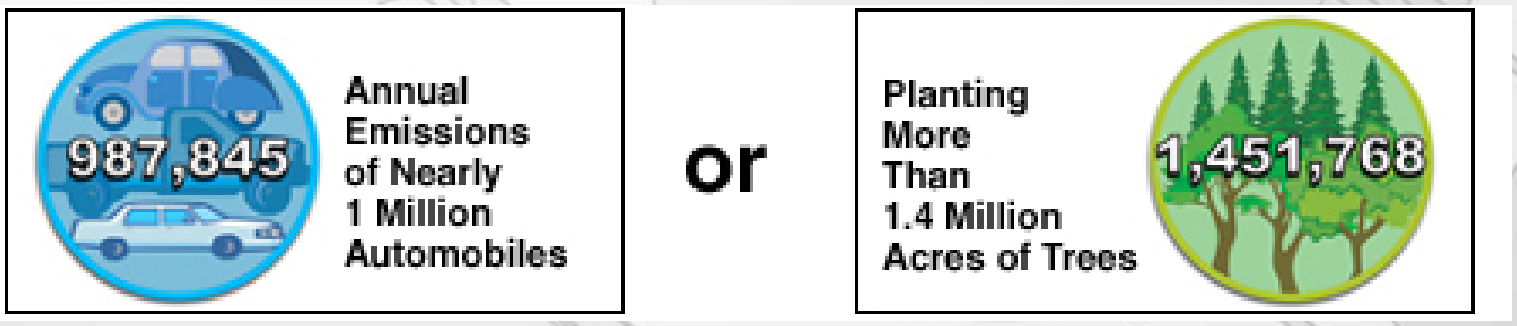
CHP Partnership Accomplishments

- **160 CHP Partners**
- 2001-2004: Assisted Partners with more than **110** CHP projects representing **2,273 MW** of operational capacity.
- In 2004, prevented the emissions of nearly **1.5 million metric tons of carbon dioxide equivalent**.



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Services/Tools of the CHP Partnership

- **Outreach and education to energy end-users, CHP industry, policy makers and regulators**
  - Strategic market development
  - Output-based emission regulation and training
  - Funding opportunities
  - Assistance to states on rate design, incentive program development, interconnection, sharing experiences of other states
  - Monthly Partner newsletter

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Services/Tools of the CHP Partnership (2)

- **Direct project assistance to energy end-users**
  - Targeted feasibility analyses
  - Barrier identification
  - Facilitating peer-to-peer marketing and networking

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Services/Tools of the CHP Partnership (3)

- **Public recognition**
  - ENERGY STAR CHP Award
  - EPA CHP Certificates of Recognition
  - Dedication ceremonies
  - CHP Partner Climate Reports

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States and CHP

- CHP can help states:
  - Reduce energy costs
  - Improve their business environment
  - Support energy infrastructure
  - Improve power reliability
  - Provide environmental and climate change benefits
- State policies can make or break CHP in many cases.
  - Interconnection
  - Standby rates / backup rates
  - Avoided cost
  - Environmental regulations

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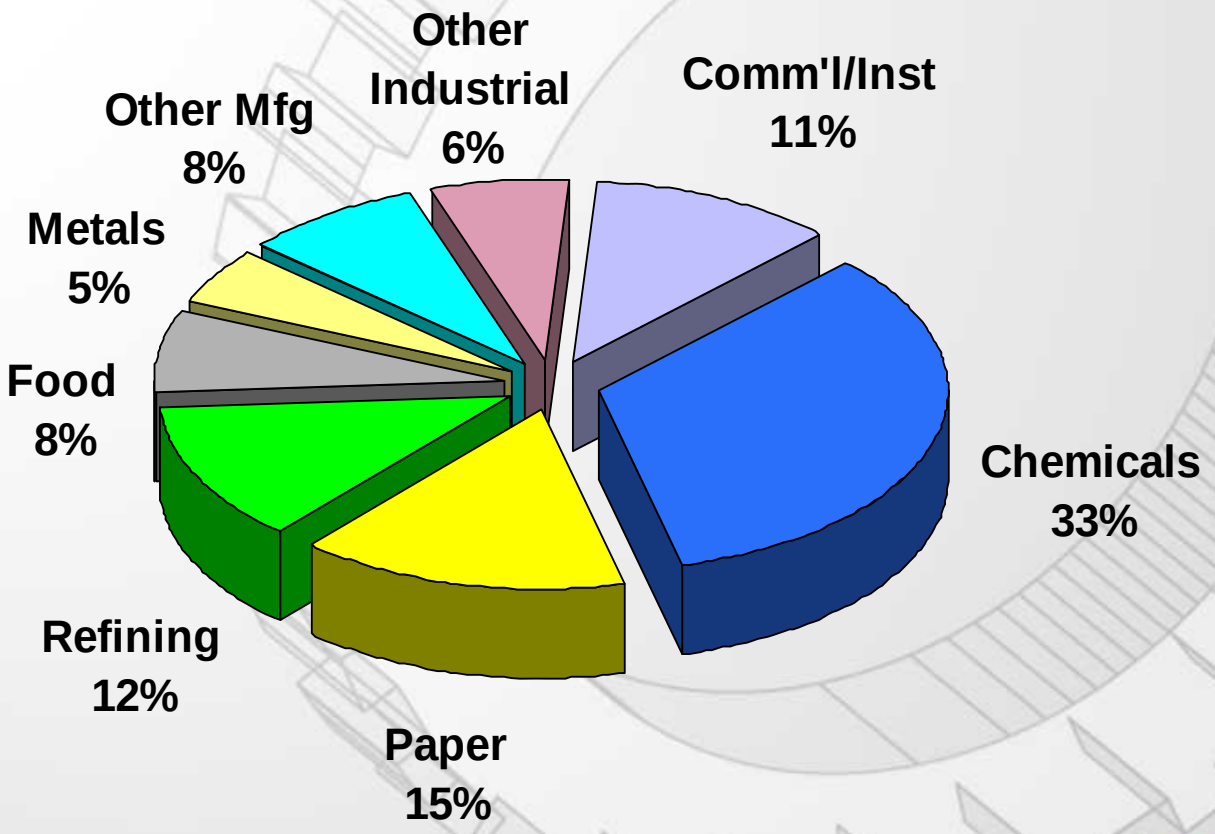
CHP Represents 8% of Total Generating Capacity in the United States

- *Existing 2004 CHP Capacity: 81,000 MW*



Source: EEA

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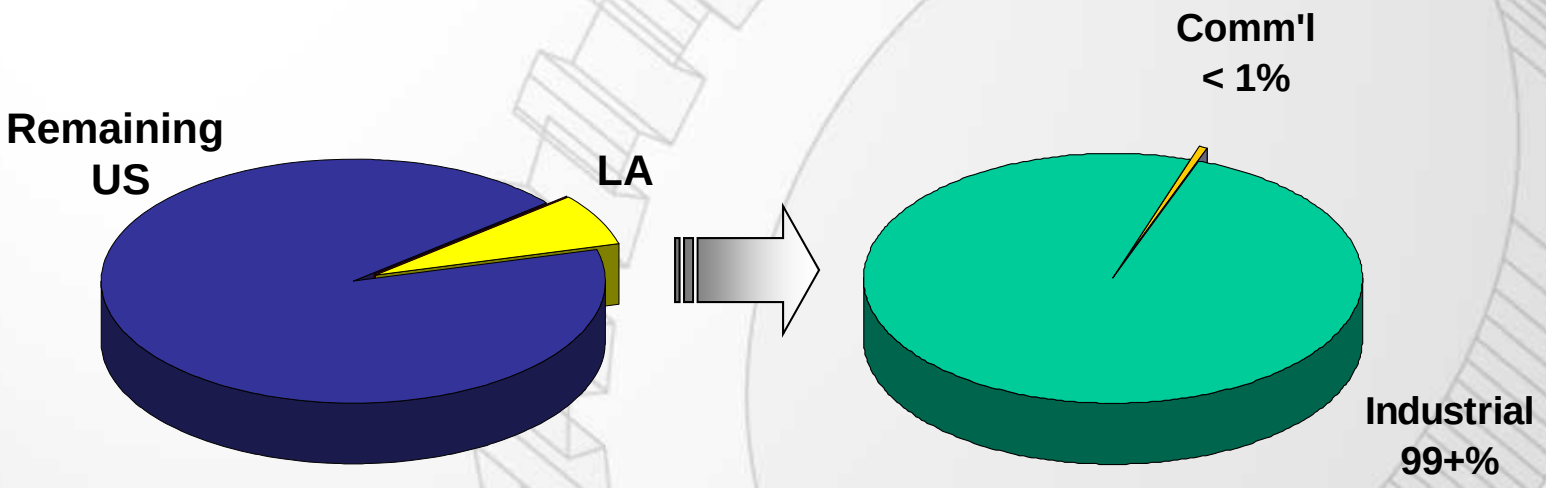
Louisiana Represents 7% of Total Existing CHP Capacity



U.S. = 81,000 MW
2866 sites

LA = 5,737 MW
59 sites

Source: EEA

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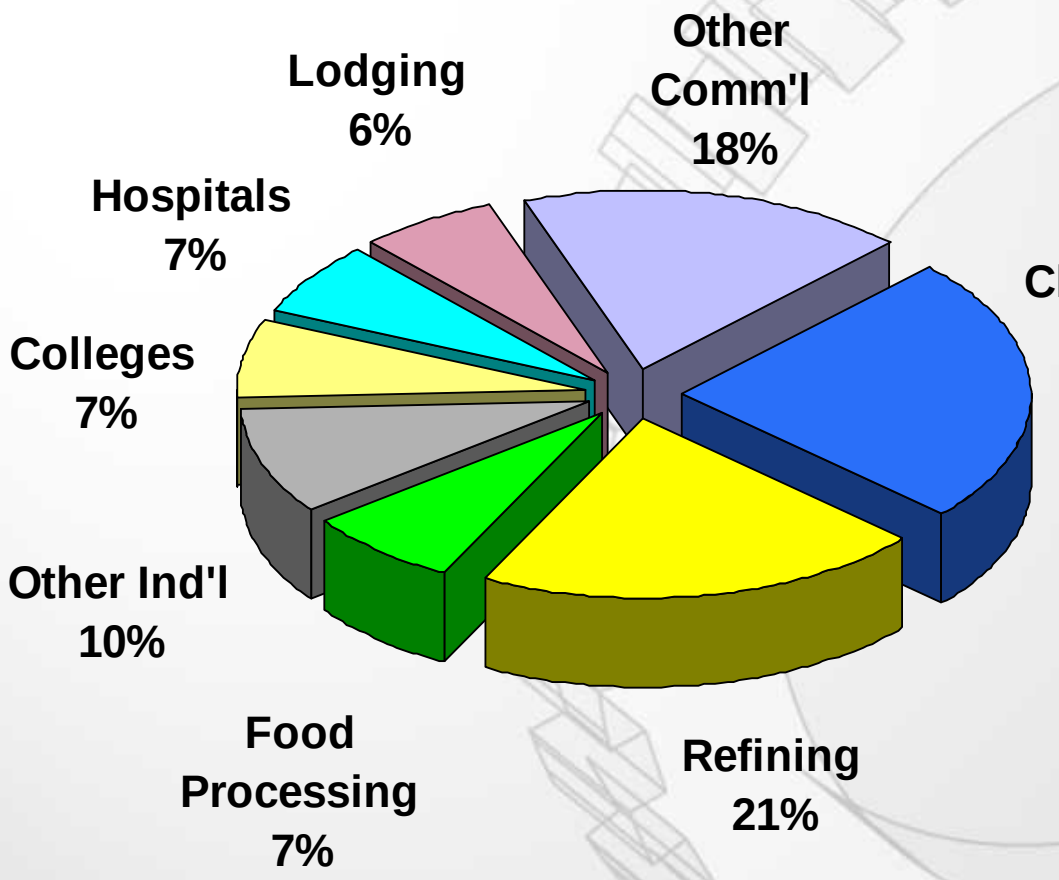
Additional CHP Technical Potential at Existing Facilities in Louisiana



Additional 4,200 MW of CHP Technical Potential at Existing Commercial and Industrial Facilities in Louisiana

Source: EEA

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Profile of Technical Potential CHP is Very Different from Existing CHP

- Based on efficient, within-the-fence, thermally base loaded systems
- 36% of potential capacity is below **5 MW** in size
- 20% is potential capacity is below **1 MW** in size
- 38% of potential capacity is in commercial and institutional applications

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Development of a Portion of CHP Potential would Provide Significant Environmental Benefits

- Development of 25% (1,000 MW) would result in[1]:
  - **27% less fuel use** than separate heat and power
  - A reduction in **CO2** emissions of **3.8 million tons/year**
  - A reduction in **NOx** emissions of **10,000 tons/year**
  - A reduction in **SO2** emissions of **16,500 tons/year**
- The CO2 emission reductions are equivalent to:
  - Annual emissions of **628,000** cars
  - Planting **942,000** acres of trees

1 Based on displacing the average fossil fueled central station generation emissions for Louisiana and on-site gas boilers

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CHP Opportunities in Louisiana

- Linking air quality benefits to CHP
  - Output-based emission regulations
    - www.epa.gov/chp/chp_support_tools.htm#regulations
  - State Implementation Plan (SIP) credit for CHP
    - www.epa.gov/ttn/oarpg/t1/memoranda/ereseerem_gd.pdf
- Significant technical potential for additional CHP projects in industrial and commercial facilities
- Large current CHP capacity installed under PURPA provide new CHP opportunities

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CHP Policy Barriers in Louisiana

- Existing state policies may prevent energy users in Louisiana from realizing CHP benefits.
  - Avoided cost
    - Rates being set years in advance does not address if the refused resource is actually available at any given time.
  - Standby rates/Backup rates
    - Some fees reasonable to maintain grid stability/safety, recoup investments
    - Excessive fees prevent good projects
  - Interconnection
    - Difficult to quantify cost of compliance during CHP project development process

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Policy Options for Louisiana

- **Avoided cost**
  - Consider establishing rate reasonableness tests
  - Consider avoided cost rates as the cost of the system generating resource that was displaced by the CHP project
- **Standby rates/backup rates**
  - Consider different rates for different customer classes/project sizes
  - Consider evaluating economics for reasonableness
- **Interconnect**
  - Consider a rule standardizing interconnect
    - Standardized costs for interconnect studies and equipment.

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Successful State Policies in Place

- New York
  - Interconnection: “Certified Equipment”. Current rule has 2 MW limit, new standard under development.
  - Standby rates (all utilities except Niagara Mohawk): Possible CHP exemption from standby service rates.
- California
  - Self-Generation Incentive Program: Receives $125 million annually for clean DG up to 5 MW.
  - Historical G-COG gas rate: CHP received $.18 reduction per therm.
  - New So Cal Gas GT-F gas rate for CHP (output-based).
- Texas
  - Output-based emission standard for NOx emissions. DG up to 10 MW. Provides full credit for heat recovery in CHP projects.
  - Interconnect specifies appropriate level of review and technical and equipment requirements for each DG project.
- Connecticut
  - Output-based emission standard for DG up to 15 MW.

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For More Information

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