

Gulf Coast Roadmapping Workshop

CHP Market Status

April 26, 2005

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Energy and Environmental Analysis

703-373-6632



Energy and Environmental Analysis

- Professional services company focusing on energy markets and technologies
- Energy supply and demand modeling and forecasting
- Technology and market analysis
- Environmental policy analysis
- Distributed generation and CHP

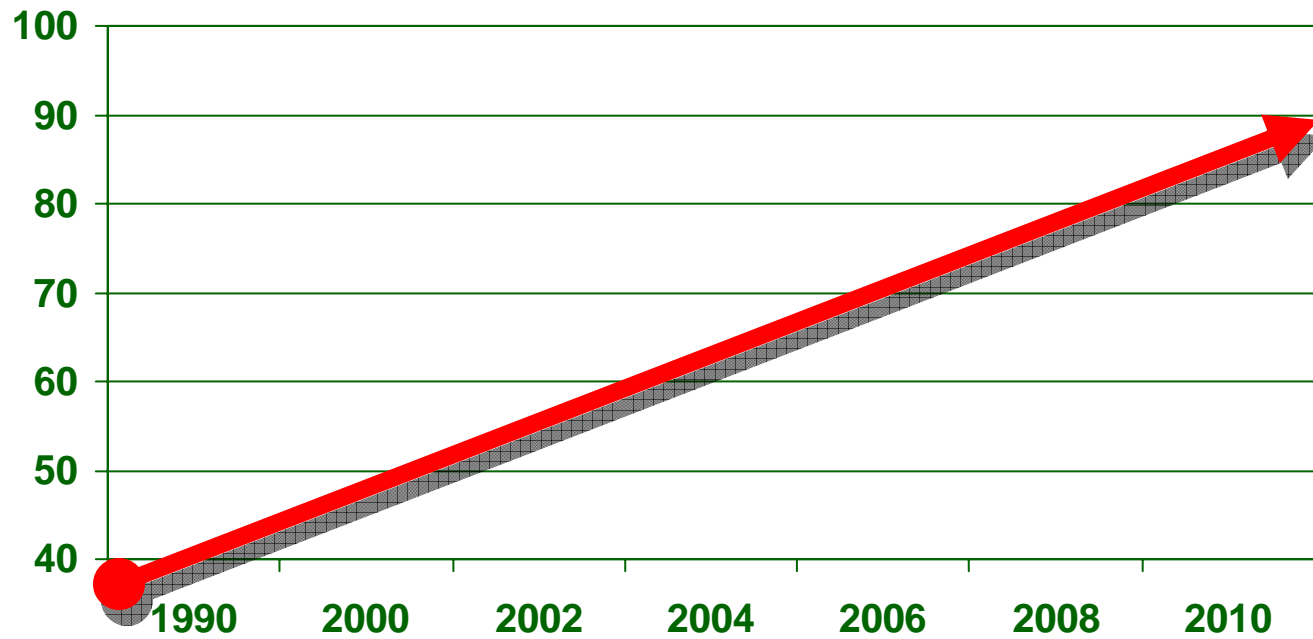


Agenda

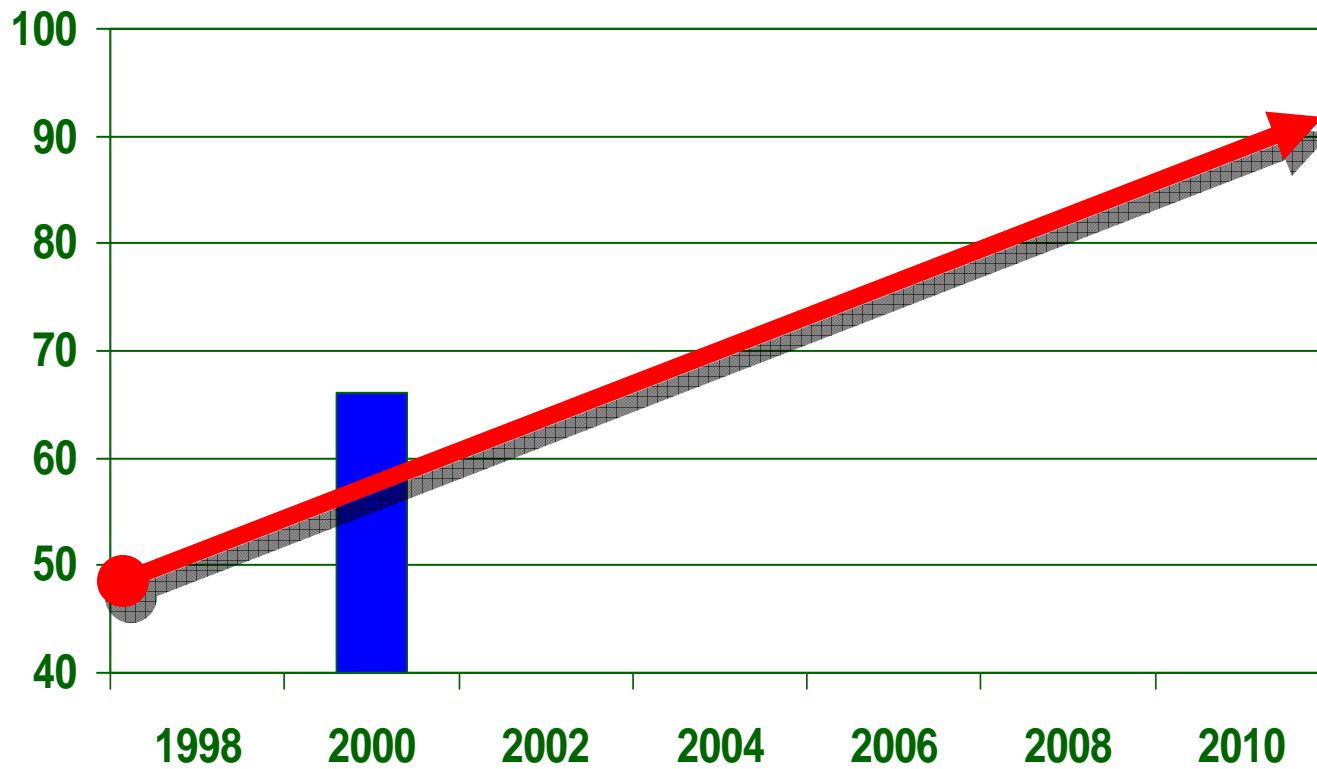
- Review Existing CHP
- Compare the three state region to the national picture
- First-cut look at the potential for additional CHP in the Region



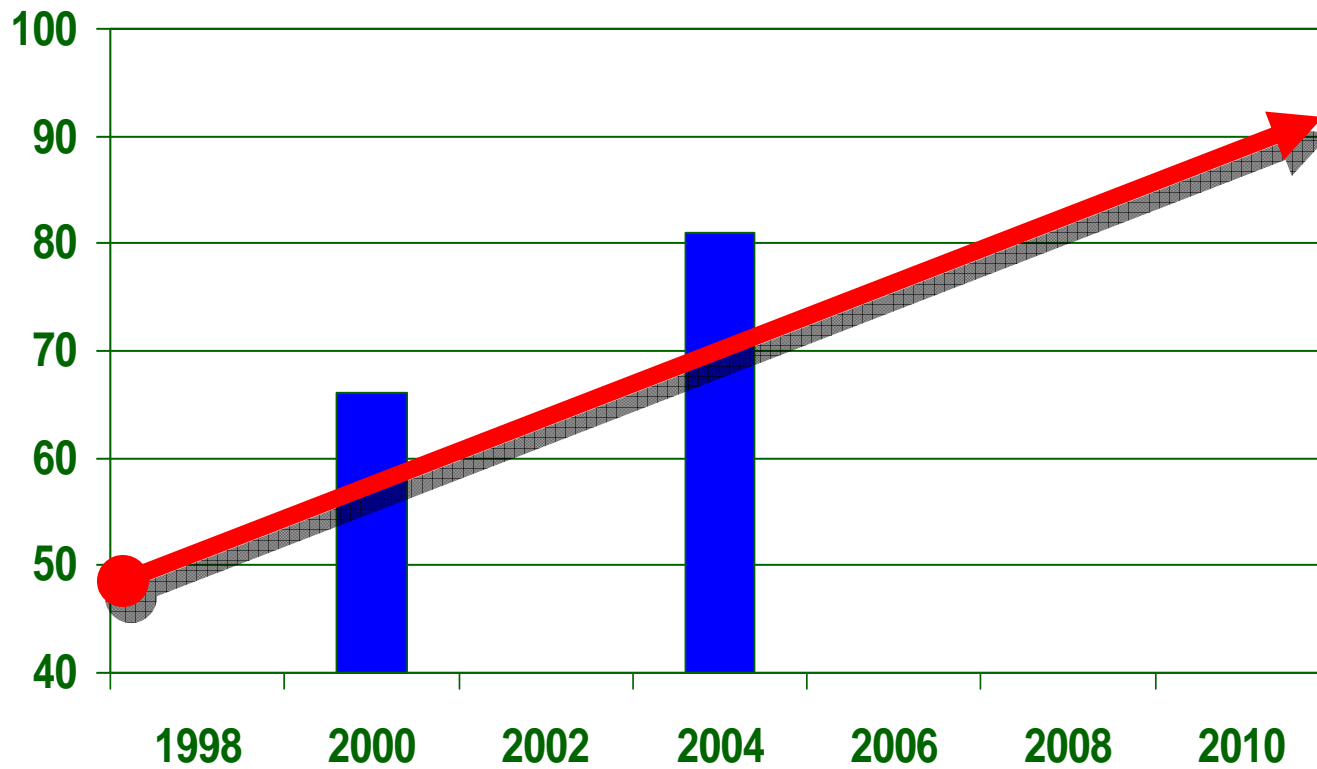
The National Goal – 92 GW by 2010



Progress – 66 GW in 2000...



Progress – 81 GW in 2004



Where Was Progress Made?

- Industrials: Chemicals, Refining, Paper, Food
- Commercial/Institutional: District Energy, Universities, Government, Hospitals
- States: Texas, Louisiana, California, Alabama, Michigan, Oregon, Northeast



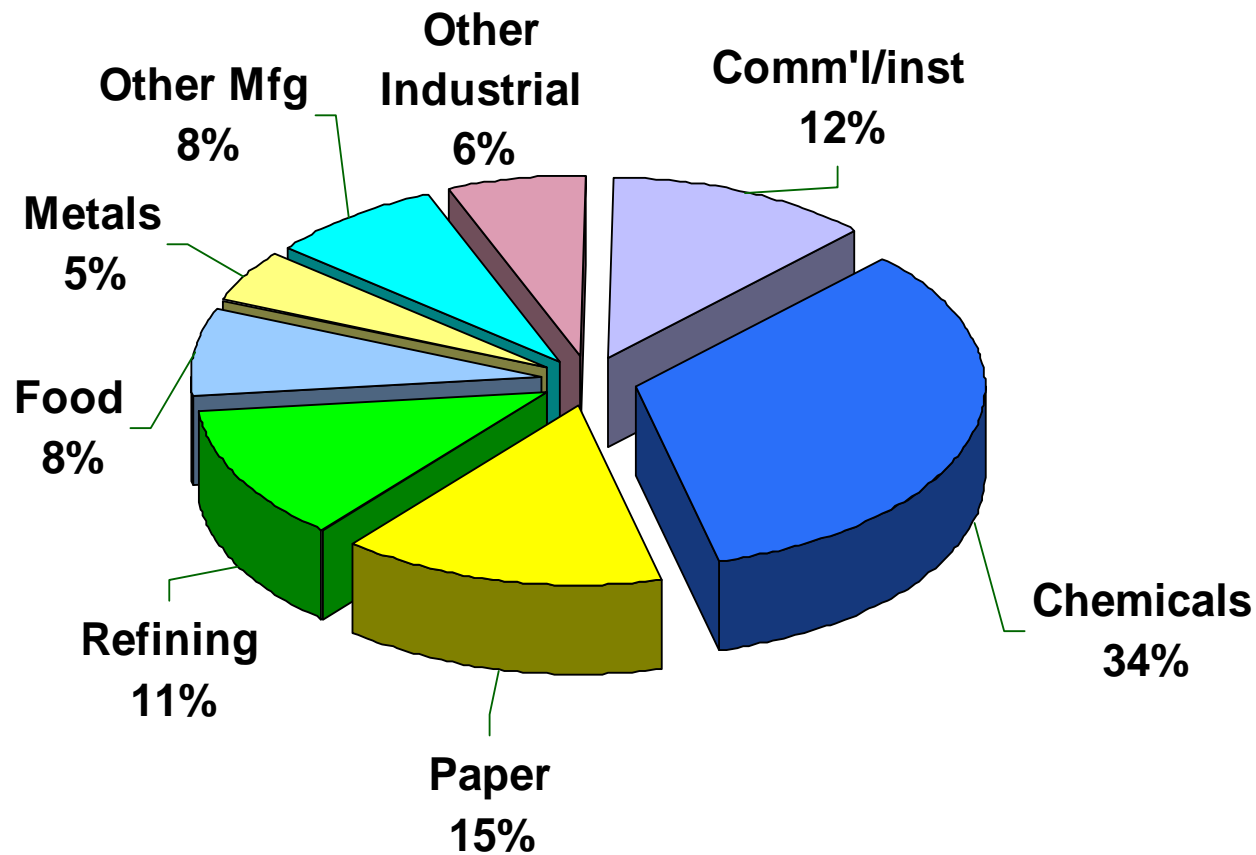
Installed CHP in 2003

- 80,905 MW at 2845 sites
- Average capacity is 29 MW
- Median capacity is 2.8 MW



Industrials Represent Close to 90% of Existing CHP

- *Existing CHP Capacity (2004): 80,905 MW*

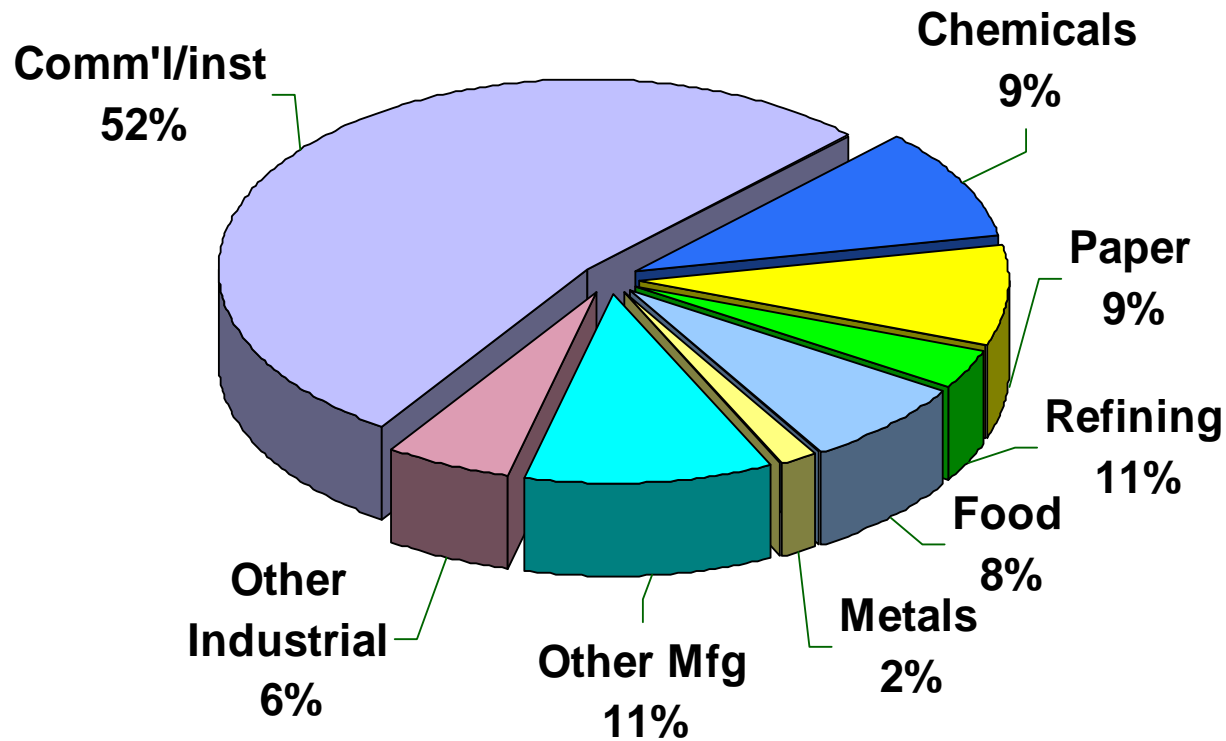


Source: EEA



But Over 50% of the Installations are Commercial/Institutional

- *Existing CHP Capacity (2004): 2,845 sites*

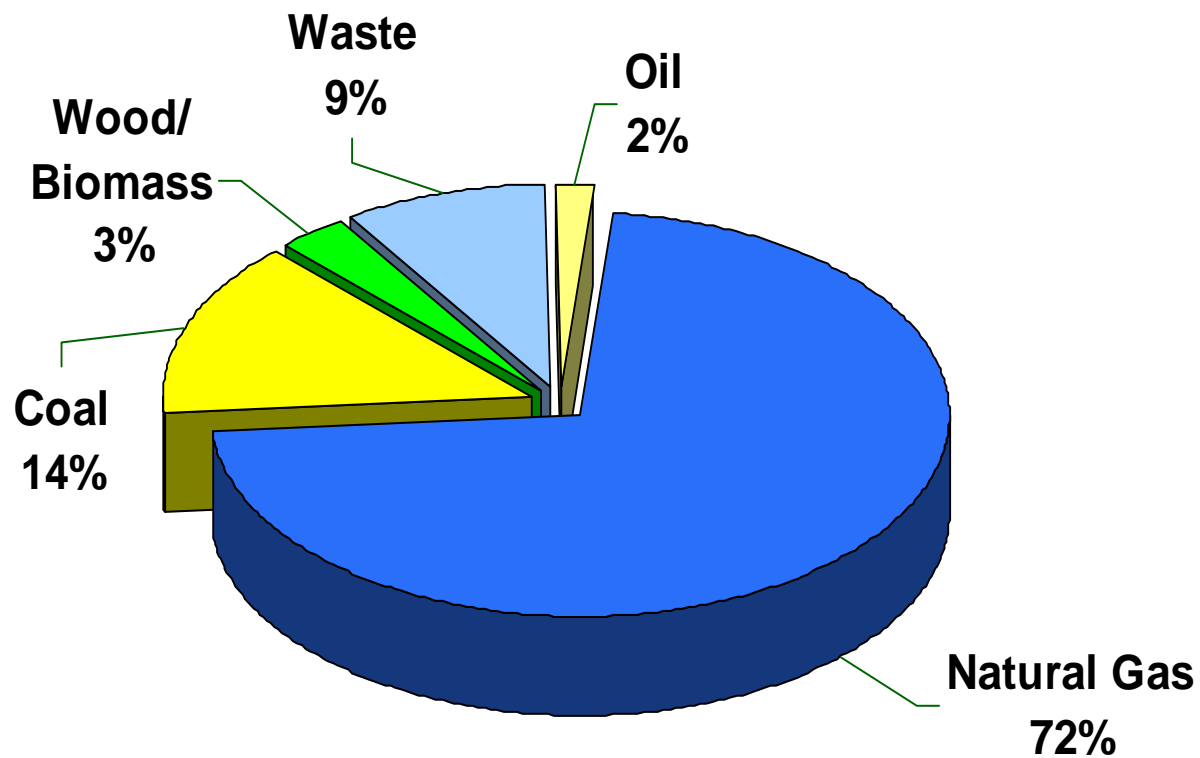


Source: EEA



Natural Gas Is the Preferred Fuel

- *Existing CHP Capacity (2004): 80,905 MW*

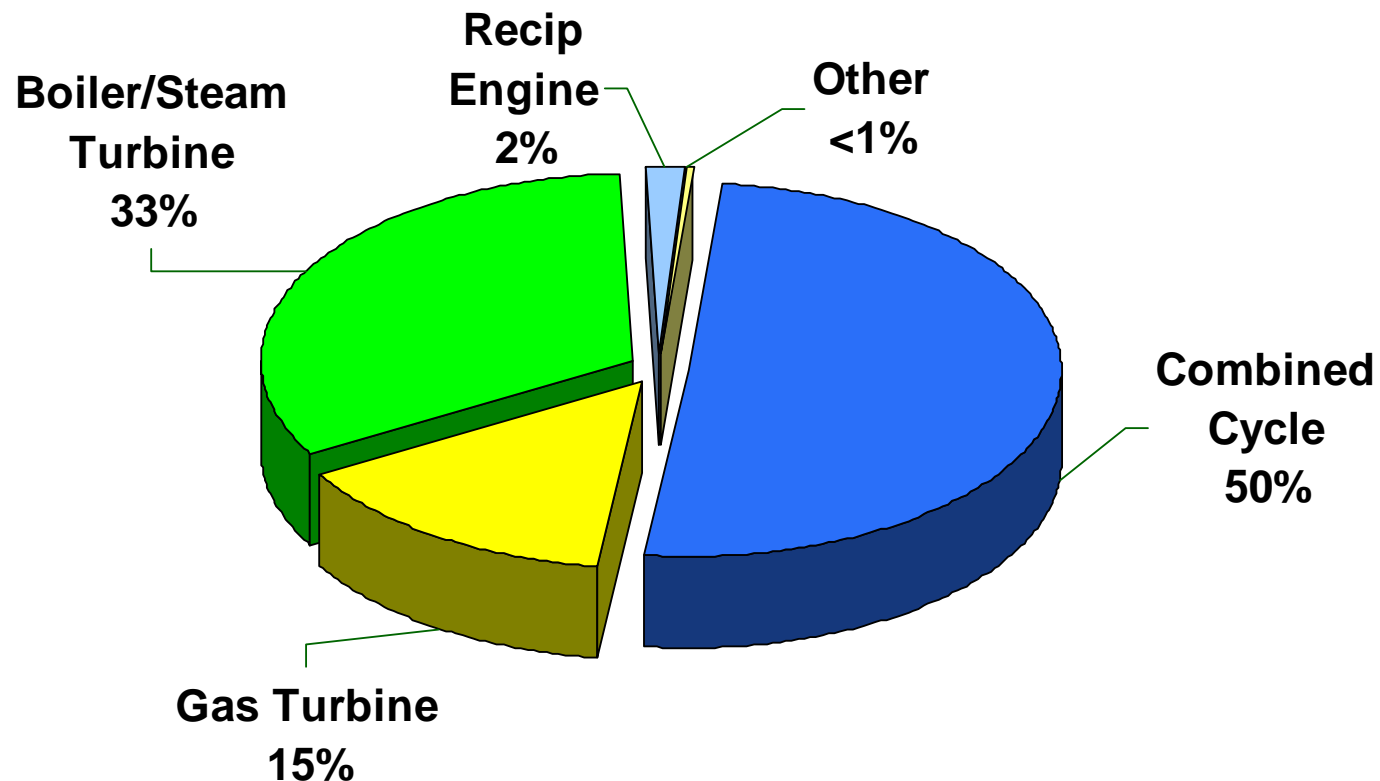


Source: EEA



Gas Turbines Represent Almost Two Thirds of the Capacity

- *Existing CHP Capacity (2004): 80,905 MW*

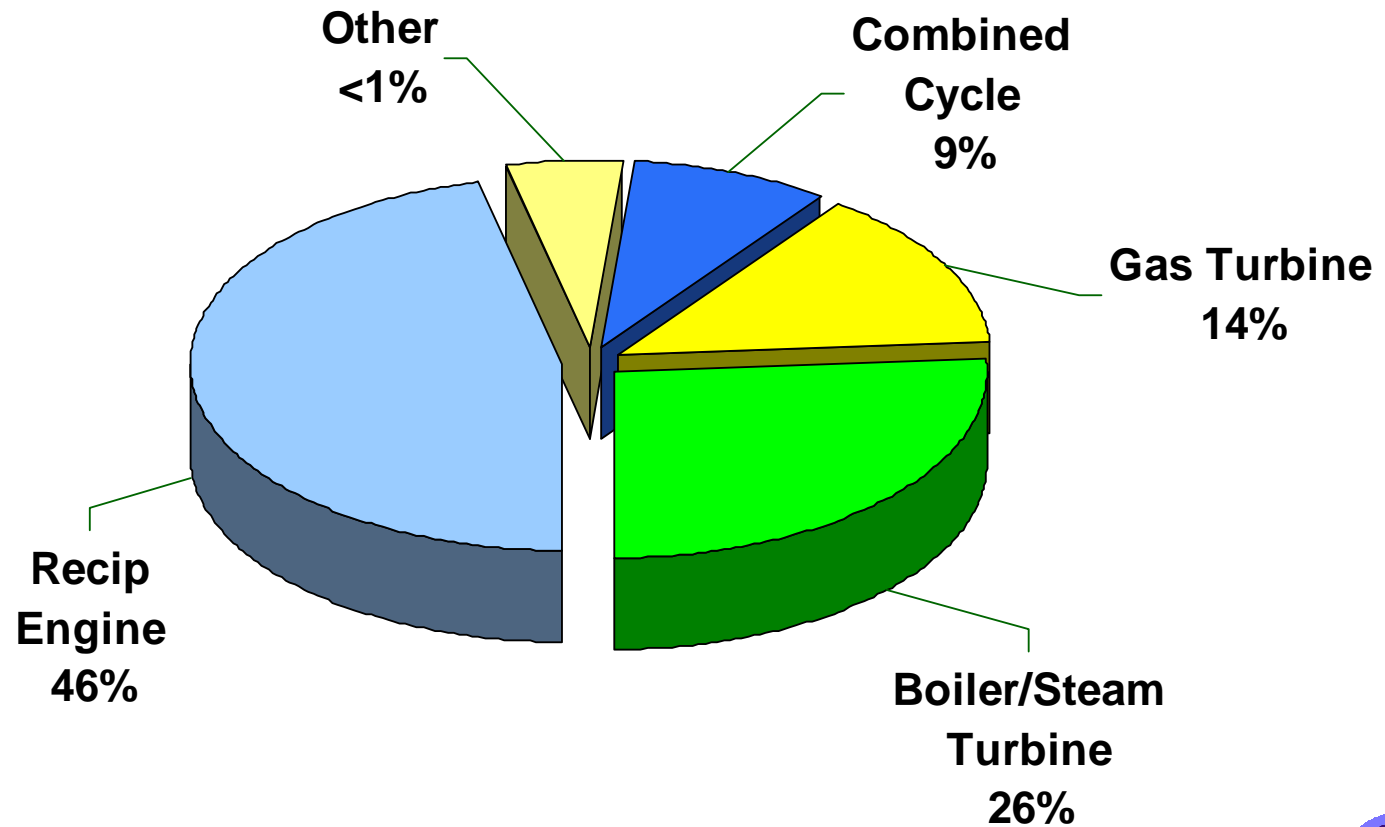


Source: EEA



Recip Engines Represent 46% of the Sites Nationwide

- *Existing CHP Capacity (2004): 80,905 MW*

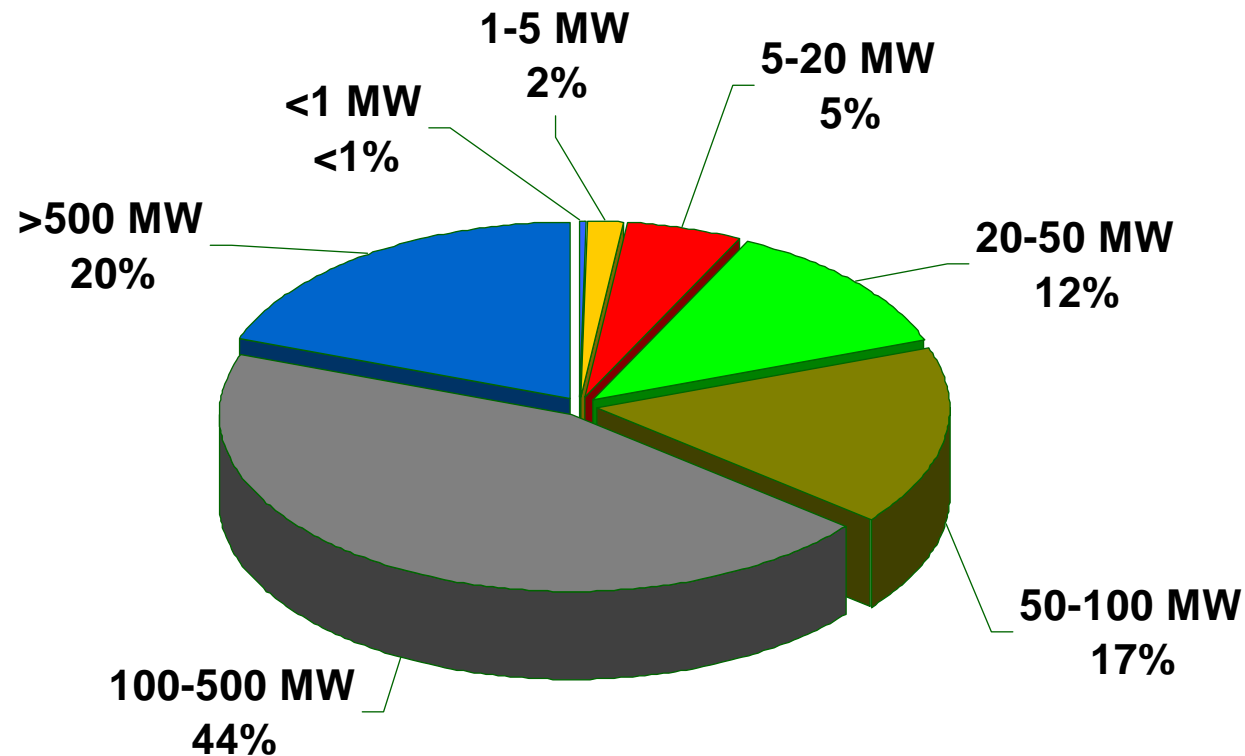


Source: EEA



Large Systems (>100 MW) Represent almost Two Thirds of the Nations CHP Capacity

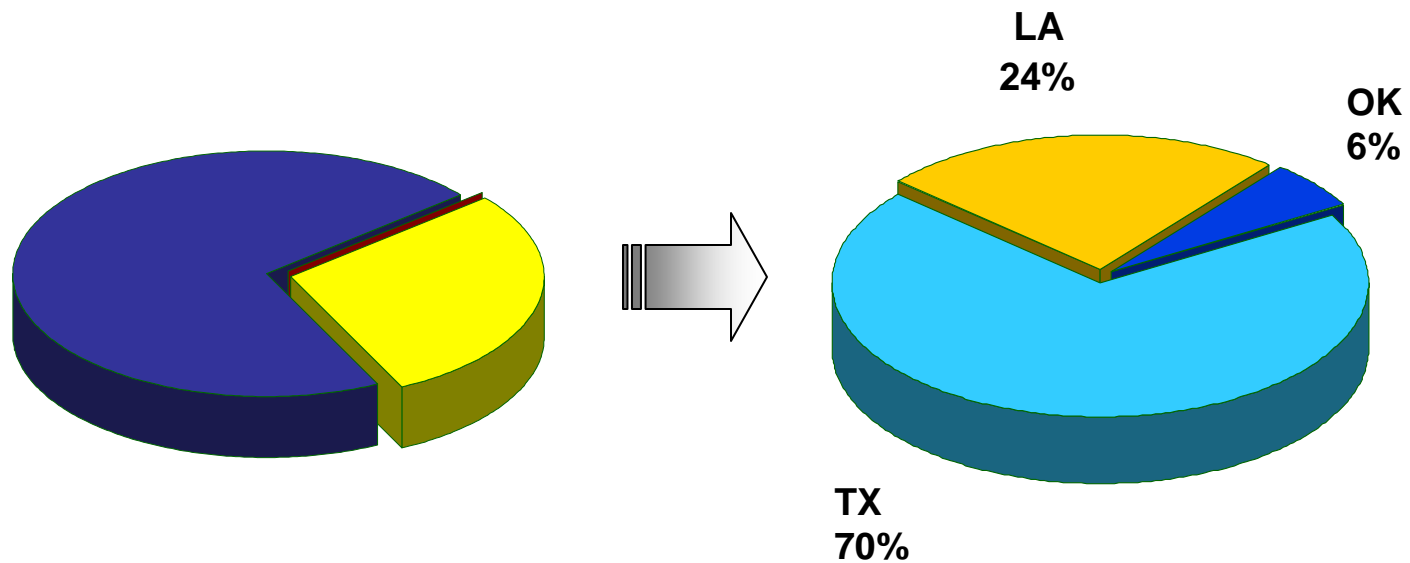
- *Existing CHP Capacity (2004): 80,905 MW*



Source: EEA



The Gulf Coast Region Represents 29% of Existing CHP Capacity



U.S. = 80,905 MW
2,845 sites

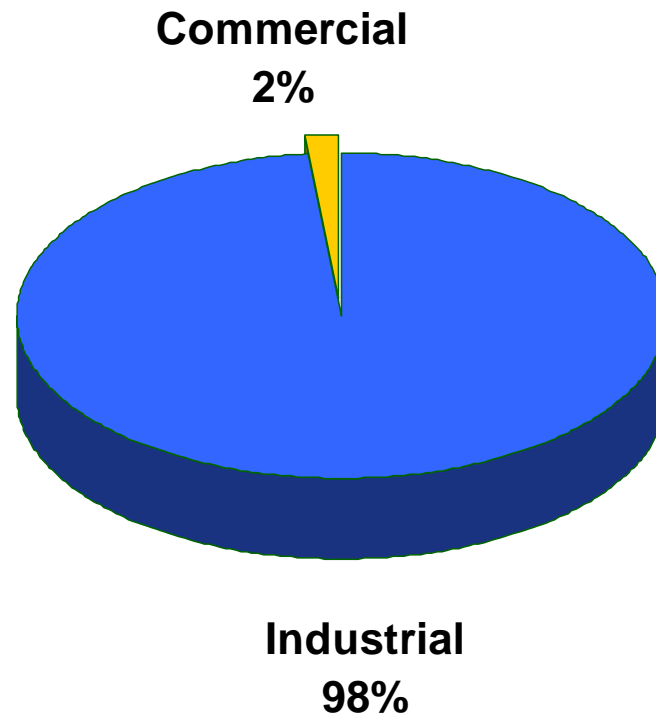
Gulf Coast = 23,365 MW
213 sites

Source: EEA



Industrials Represents 98% of Existing CHP in the Region

- *Existing CHP Capacity (2004): 23,365 MW*

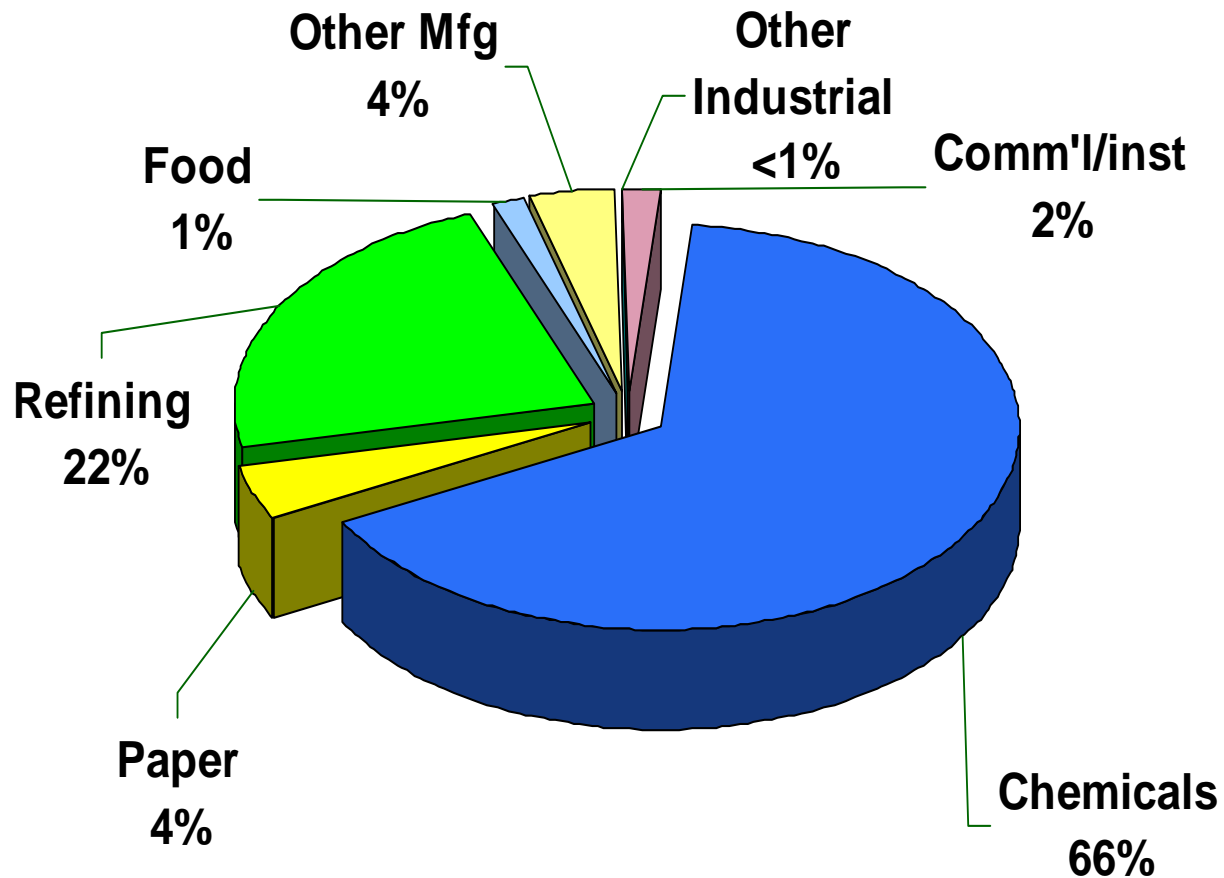


Source: EEA



Petrochemicals Represent 88% of Existing CHP in the Region

- *Existing CHP Capacity (2004): 23,365 MW*

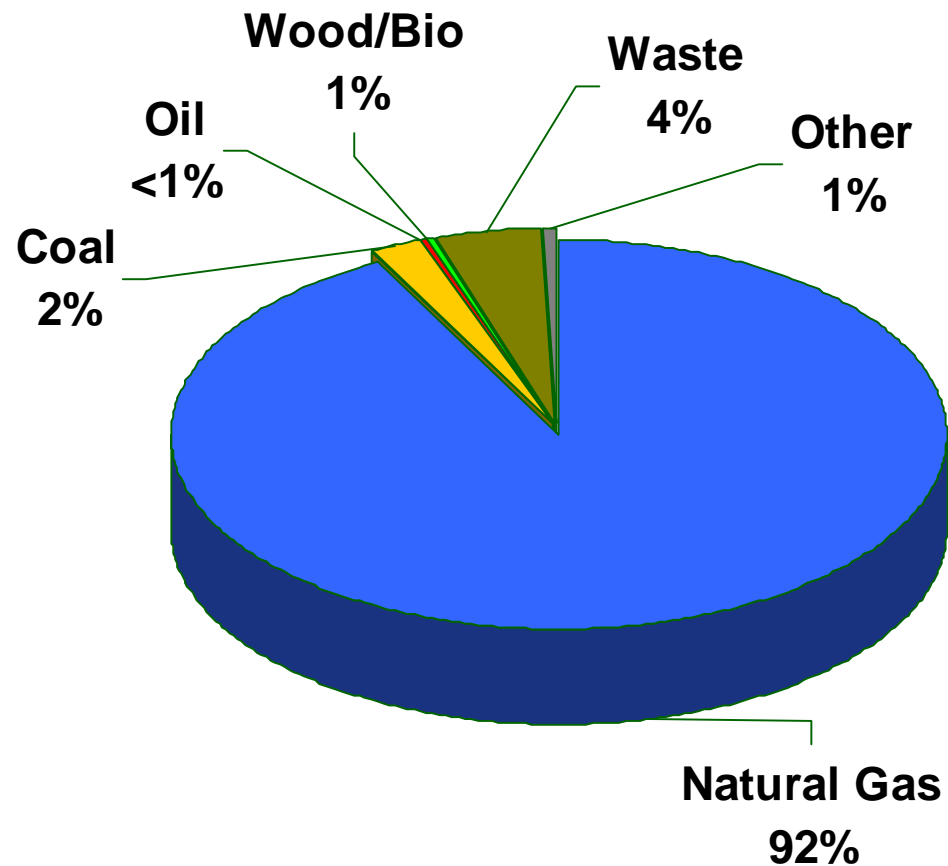


Source: EEA



The Region Depends on Natural Gas for Fueling CHP

- *Existing CHP Capacity (2004): 23,365 MW*

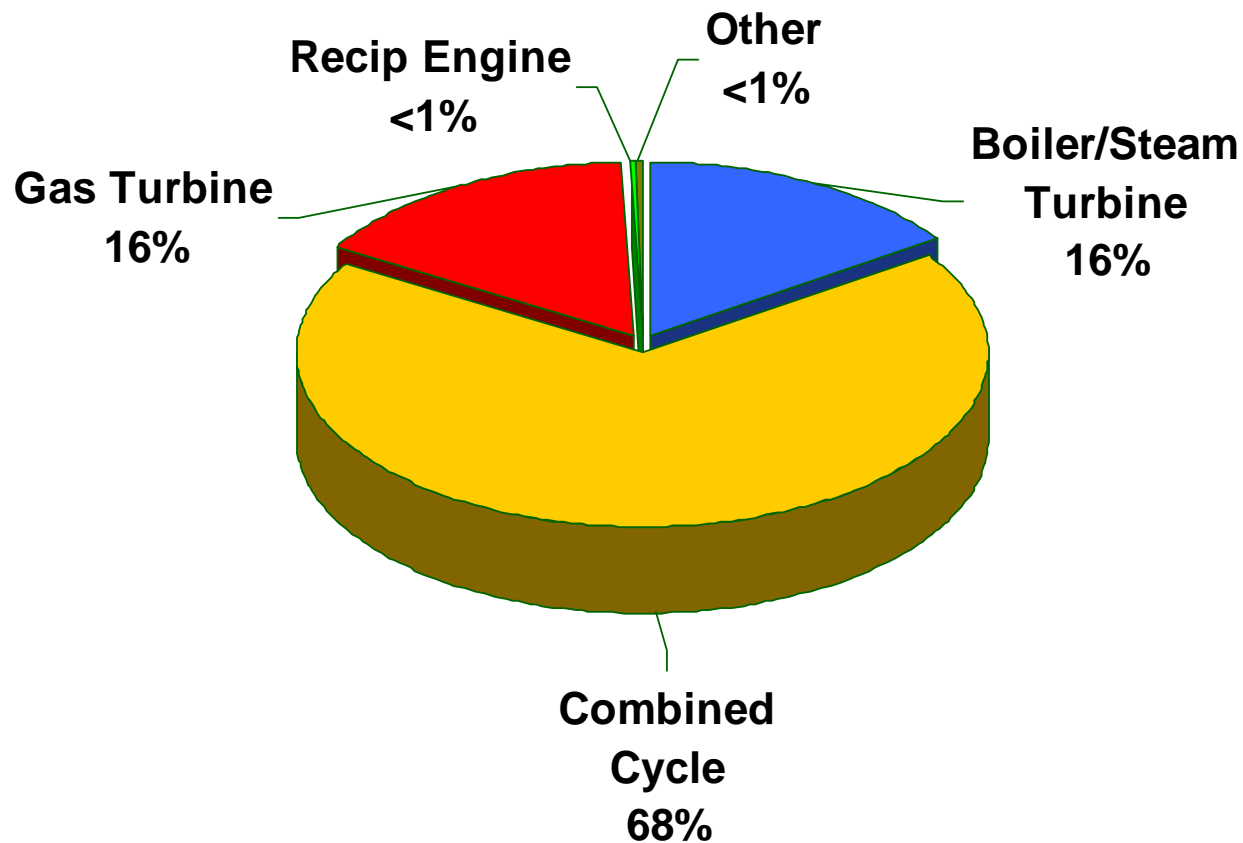


Source: EEA



Gas Turbine Technologies Represent 84% of CHP Capacity in the Region

- *Existing CHP Capacity (2004): 23,365 MW*

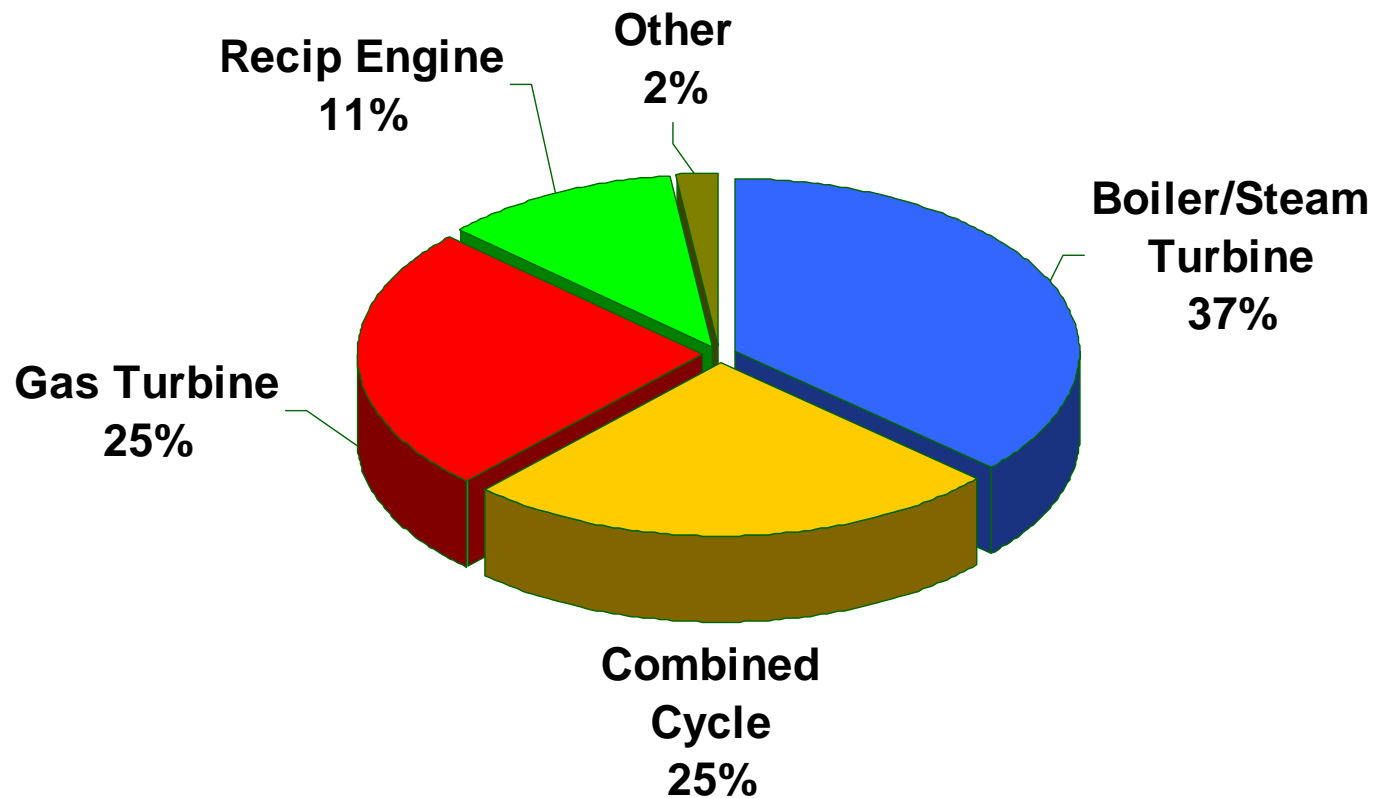


Source: EEA



However, the Region Uses a Diverse Set of Technologies

- *Existing CHP Facilities (2004): 213 sites*

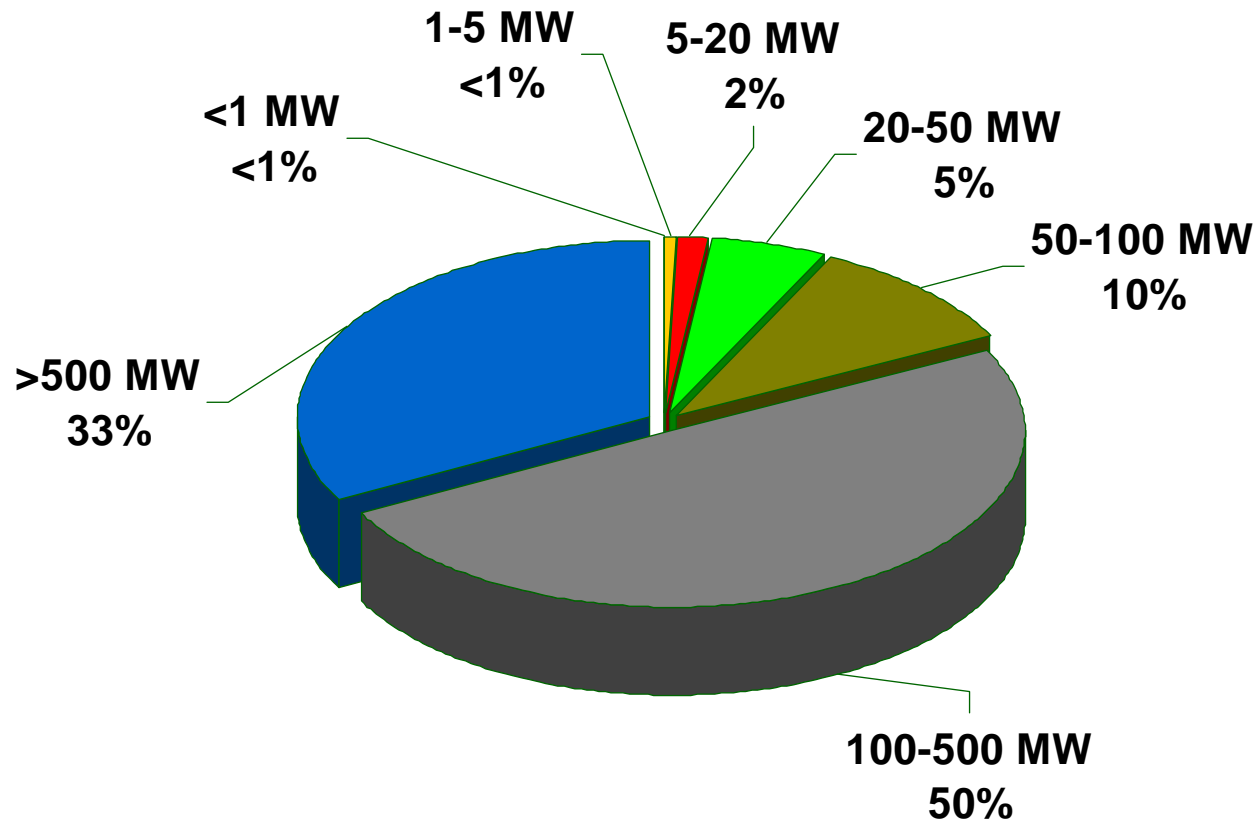


Source: EEA



Large Systems (>100 MW) Represent 83% of the Region's CHP Capacity

- *Existing CHP Capacity (2004): 23,365 MW*



Source: EEA



The CHP Profile in the Region is Unique

- The existing CHP systems are larger than the national average (110 MW vs 29 MW)
- CHP capacity is heavily concentrated in industrial applications
- Petrochemicals make up 88% of existing capacity
- The region is heavily dependent on natural gas as a fuel for CHP



A First-Cut Estimate of the Potential for Additional CHP in the Gulf Coast Region

- Technical potential only – no economic screening
- Existing commercial and industrial sites with thermal and electric loads conducive to CHP
- Within-the-fence systems – sized to meet thermal loads with no power exports
- Does not consider economic growth for target markets or potential for retrofit/upgrade of existing CHP

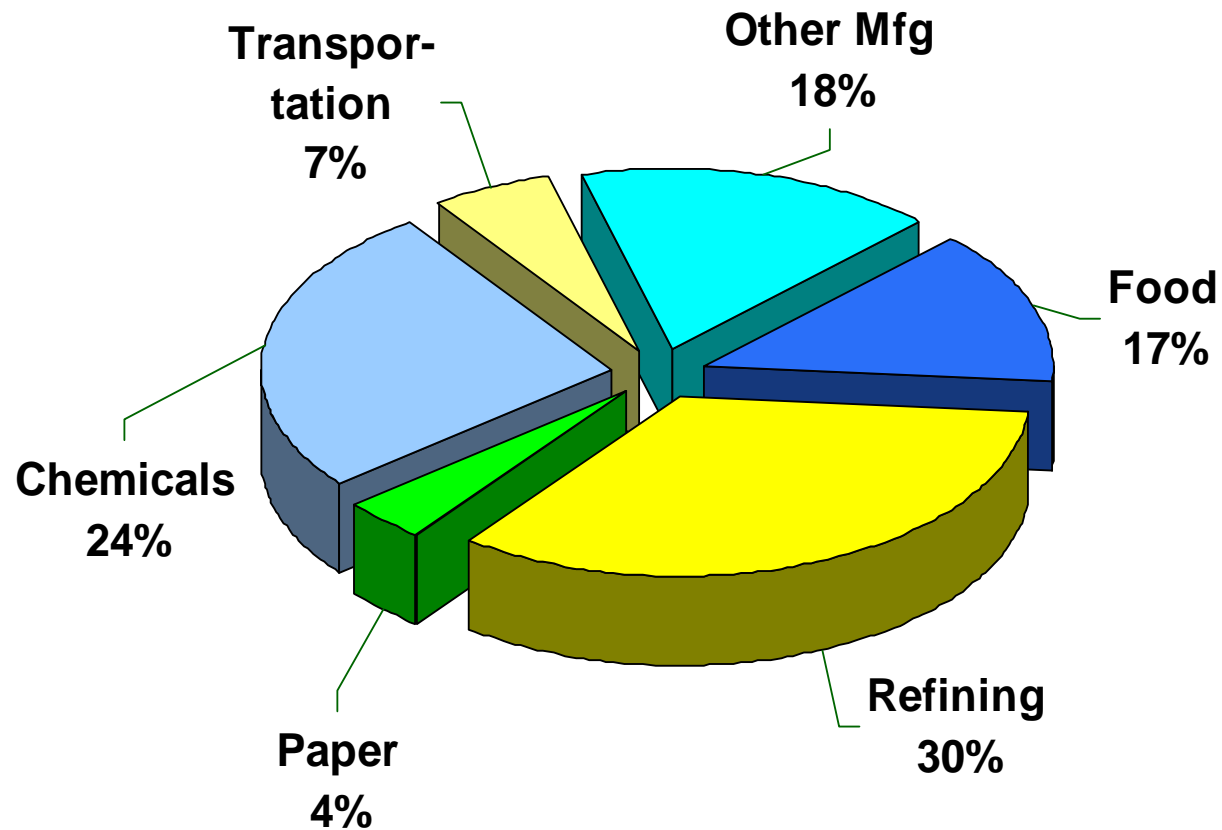


The Potential for Additional CHP in the Region (first cut estimate)

	Commercial (MW)	Industrial (MW)	Total (MW)
Louisiana	1,616	2,639	4,255
Oklahoma	886	1,021	1,907
Texas	6,229	7,411	13,640
	8,731	11,071	19,802



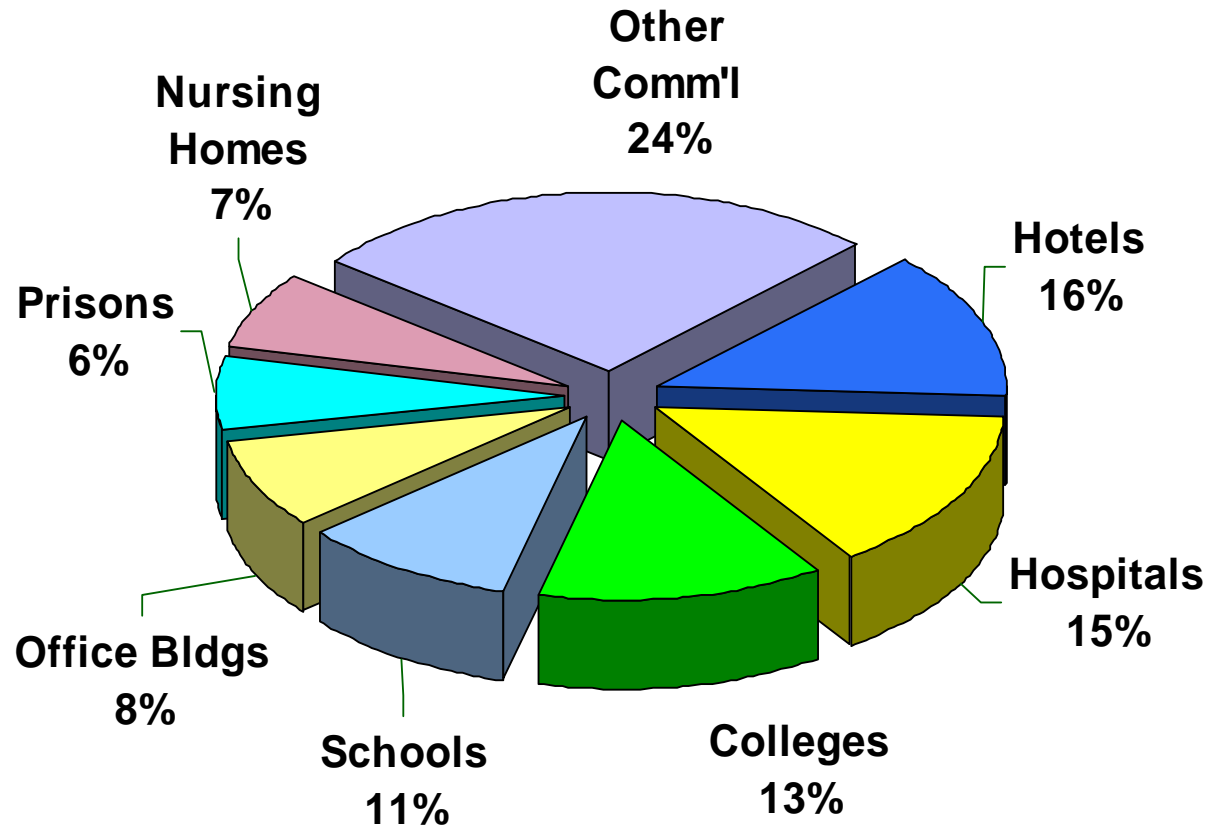
The Potential for CHP at Industrial Facilities is over 11,000 MW



Source: EEA



The Potential for CHP at Commercial and Institutional Facilities is almost 9,000 MW



Source: EEA



49% of the CHP Potential Is Below 5 MW in Size

	CHP Potential, MW			
	< 1MW	1-5 MW	5-20 MW	>20 MW
Commercial	3,738	2,619	1,831	544
Industrial	1,099	2,184	3,158	4,631
	4,837	4,803	4,989	5,175



Will This Potential Be Developed?

- The additional potential is much different than the existing capacity – smaller, with-in-the-fence, new applications
- Success depends on further technology development
- Success depends on how the industry responds to key issues
- Success depends on actions at the state and regional level



Questions?

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