

Comments on the “Increase Combined Heat and Power Use” Strategy to the Senate Bill 184 Advisory Committee

*Submitted by
Gulf Coast Clean Energy Application Center
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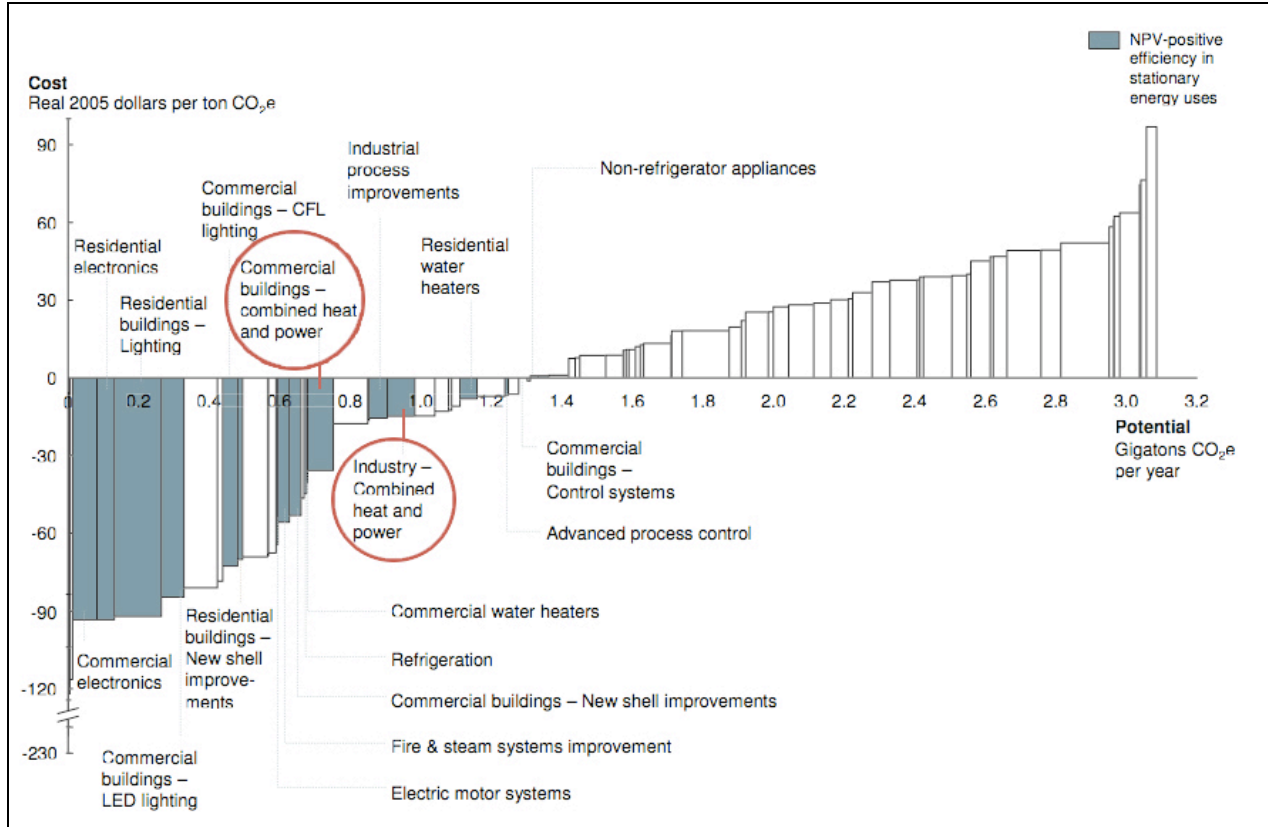
The Gulf Coast Clean Energy Application Center ("GC RAC") respectfully offers these comments in response to Senate Bill 184 Advisory Committee's request for comments. The GC RAC supports efforts like those proposed under the bill's "No Regrets" strategies to reduce greenhouse gas ("GHG") emissions in the state of Texas with net-zero long-term costs.

The GC RAC facilitates greater deployment of clean energy technologies including combined heat and power ("CHP"), district energy, and waste heat recovery in Texas, Louisiana, and Oklahoma. The GC RAC, which is hosted by the Houston Advance Research Center, a non-profit scientific organization, provides education and outreach programs, project-specific support services, and policy development initiatives supportive of clean energy.

The GC RAC supports the overall strategy considered among SB 184's "No Regrets" proposals to increase the adoption rate of CHP in the state of Texas. CHP delivers both the economic and environmental benefits that SB 184 aims to achieve.

The U.S. Department of Energy and the U.S. Environmental Protection Agency estimate that the use of small and medium sized natural gas-fueled CHP emits significantly lower GHG emissions than conventional power generation, reducing NOx emissions by 93%, CO2 emissions by 47%, and SOx emissions by 99%, compared to the average power plant emissions in Texas. In addition, CHP represents a positive net present value (NPV) over the life of the average project, with payback periods generally averaging 4-8 years over an average performance life of 30 years. Commercial and industrial applications of CHP (circled in red) are included among those GHG-reducing projects with positive NPVs in the chart shown in Figure 1.

FIGURE 1: U.S. mid-range GHG abatement curve – 2030



Source: McKinsey & Company

With nearly 17,000 MW of installed CHP, Texas is the national leader in CHP adoption. The state’s large base of industrials, especially those in the petroleum refining and chemical industries, has been a fervent adopter of CHP since the 1980s. Even so, vast potential in the industrial sector remains, and the fast-growing commercial/institutional sector is largely untapped. Details of current and potential statewide potential are presented in Table 1. In response to H.B. 3693, passed during the 80th Texas Legislature in 2007, a report commissioned by the Public Utility Commission of Texas concluded that the potential statewide CHP capacity amounts to an additional 13,400 MW, also shown in Table 1. According to the Texas CHP Initiative, this additional capacity would reduce carbon dioxide emissions by an estimated 25 million metric tons per year.

TABLE 1: Base Case Technical and Economic Potential in 2023

		Technical	Economic	% Economic
Commercial/Institutional	<1 MW	1,172	110	9
	1-10 MW	752	240	32
	>10 MW	0	0	N/A
Total Commercial/Institutional		<i>1,924</i>	<i>350</i>	<i>18</i>
Industrial	<1 MW	1,959	668	34
	1-10 MW	6,102	5,630	92
	>10 MW	6,874	6,759	98
Total Industrial		<i>14,935</i>	<i>13,057</i>	<i>87</i>
Commercial/Institutional and Industrial	<1 MW	3,131	778	25
	1-10 MW	6,855	5,870	86
	>10 MW	6,874	6,759	98
Total Industrial and Commercial/Institutional		<i>16,859</i>	<i>13,407</i>	<i>80</i>

Source: Summit Blue Consulting

CHP’s proven technology can be sized accordingly for applications ranging from below 1 MW to over 100 MW in the industrial, commercial, and institutional sectors. The key requirement is that a heat load be located near the site of the generating equipment. Many industrial, commercial, and institutional operations have sufficient electrical and thermal loads to support CHP systems. Table 2 includes a list of suitable adopter types by market sector.

TABLE 2: CHP adopter types by market sector

Market sector	Sites
Industrial	Chemical manufacturing Ethanol Food processing Petrochemicals Pharmaceuticals Pulp and paper Rubber and plastics

Commercial	Data centers Hotels and casinos Multi-family housing Multi-family housing – apartments Laundries Office buildings Refrigerated warehouses Restaurants Supermarkets and grocery stores
Institutional	Hospitals Universities and colleges Wastewater treatment

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