

# Regional CHP Market Drivers

• **Economics** – CHP project economics are a major driver of adoption. Energy consumers are very sophisticated in their understanding of the price and economic impacts of energy services – both electric and thermal. Capital costs and fuel costs dominate the calculations, and the focus of consumers is typically on short-term costs due to the way facility energy budgets are managed. In addition, facility managers do not always enjoy full discretion to make large scale capital investment decisions based on multi-year payoffs. Upshot: CHP advocates must make a strong case for the favorable economics associated with CHP systems, and must engage the customer at several key points in the organization.

• **Reliability** – Because energy consumers increasingly demand high reliability from their energy suppliers and systems, reliability can be a key selling point for CHP adoption. Because CHP technology is still “new” to many customers and because the systems are often perceived as more complex, concerns about the reliability of CHP systems are paramount to new adopters. Properly designed CHP systems offer a significant opportunity to facility managers to enhance energy services reliability. Upshot: CHP supporters must demonstrate the reliability improving opportunities of CHP, and translate those benefits into economic, operational, financial and risk terms. Due to large opportunity for thermal loads to be used in chilling plants, the reliability of absorption chillers and related thermally activated technologies needs to be demonstrated.

• **Emissions** – Regulatory issues relating to emissions from CHP systems are a major market driver and issue in the region. In many areas, regulators see the NOx emissions associated with gas-powered CHP systems as a problem for non-attainment regimes, especially since CHP systems tend to be distributed in nature. These regulatory schemes seldom credit CHP systems with the benefit of overall emissions efficiency or compare CHP to average “fleet emission” rates. Texas offers an excellent test case for both positive and negative regulatory implications. On the one hand, standard permits for distributed systems are in place in Texas, thereby facilitating development. At the same time, proposed changes in the permitted emissions levels will challenge smaller CHP systems. Upshot: The technical case for emissions benefits deriving from CHP system efficiencies needs more research and articulation. Improving emissions regulation relating to CHP is a key project for the CHP Initiative.

• **Business Continuity and Continuous Operation** – Roadmap participants identified “business continuity” as a growing driver favoring CHP adoption. Business continuity embodies the concept that a facility can continue operations under a wide range of external system conditions, including blackouts, natural and man-made disasters. CHP systems offer value for business continuity enhancements and can address risk of business interruptions faced by operators, facility managers, and insurers, for example. Upshot: Case studies and other system evaluations should translate business continuity benefits of CHP systems into solid economic and financial terms.

• **Peak Load Reduction** – Utilities and Retail Electric Providers (in Texas) continue to seek strategies to shift electricity costs, which are still heavily driven by peak consumption patterns, to consumers. Dispatchable power production from embedded CHP system operations will increasingly have significant economic benefit to customers for peak load reduction. With education and outreach, CHP should be increasingly valued by utilities and policy makers. To the extent that CHP displaces typically inefficient peaking generation in the electric systems, it may also offer important fuel savings and emissions reductions benefits. Upshot: CHP advocates need to clearly articulate the peak load reduction benefits of CHP systems to both customers and electric system operators and regulators, as well as to emissions regulators.

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- **CHP Gas Conservation Value** – CHP systems are inherently more efficient than operation of stand-alone electric and thermal energy generation systems. Rising and consistently high costs of natural gas should drive growth in CHP markets over the mid to long term, though Roadmap participants identified short term challenges due to a narrowed spark gap. Upshot: The challenge to CHP market expansion appears to be overcoming short term thinking about natural gas prices in order to recognize gas conservation value.
- **Thermal Load** – The consistent theme of the Roadmap Workshop participants was that for CHP systems, thermal load is the overriding and primary technology and market driver. Every successful case described had at its core a system designed to serve a well defined and understood thermal load. Upshot: Making the case for CHP starts with identifying thermal loads.
- **Boiler Replacements** – An excellent time to promote CHP to facility managers is when they are in the process of seeking capital budgets for boiler replacements. Facility managers need to understand better that implementing CHP (rather than simply replacing existing boilers) can add value to their operations without dramatically increasing capital needs. Third party ownership models, which could eliminate the client’s need to raise capital budgets altogether and the ability of developers to further simplify system design and engineering to reduce costs are strong potential drivers for the growth of CHP markets. Upshot: Facility owner/operators need to be provided with information regarding “packaged” CHP solutions and financing strategies at the time they are considering the replacement of existing thermal equipment.
- **CHP Value for Relieving Grid Congestion** – Workshop participants shared a common sense that CHP systems offer significant grid congestion relief benefits that should be highly valued by electric transmission and distribution grid operators, as well as their regulators. The partial market deregulation in competitive zones of Texas poses a unique challenge to CHP adoption due to the operational separation of transmission and distribution functions from retail marketing and generation. In traditionally regulated markets, utility companies often impose problematic requirements relating to interconnection and do not often compensate for congestion relief benefits. (In fact, standby charges are a major issue.) However, municipal utilities in Texas—especially Austin Energy and CPS Energy—have embraced the benefits of embedded CHP. Upshot: Education and outreach efforts that highlight the experiences of AE and CPS should be targeted to additional utilities in the region. A CHP Initiative may have a role to play regarding the utility participation in the competitive electricity market in Texas.
- **Homeland Security** – Closely related to the market driver of business continuity, the rising importance of homeland security favors CHP systems. As embedded distributed generation with ability to be islanded from the grid, CHP systems offer homeland security planners additional opportunity to meet critical load requirements under a broad range of contingencies. Upshot: CHP advocates need to better articulate the homeland security benefits obtained through implementation of efficient, robust CHP systems.
- **Owner/operator Risks** – many small industrial and institutional market participants do not see power and heat production as central to their business or as a core competency. If alternatives were available to allow adopters to benefit from CHP implementation without creating complex operational hurdles and risks, adoption rates among medium-sized industrials and institutional building owners would likely be enhanced. Upshot: Project developers need to provide potential clients with options for third-party owner operator project models.