

Combined Heat & Power (CHP) and Utility Engagement

PRESENTED TO

Minnesota Department of Commerce's
CHP Stakeholder Meeting

PRESENTED BY

Ahmad Faruqui, PhD.

September 24, 2014



THE **Brattle** GROUP

CHP is experiencing a re-emergence

Largest CHP Users

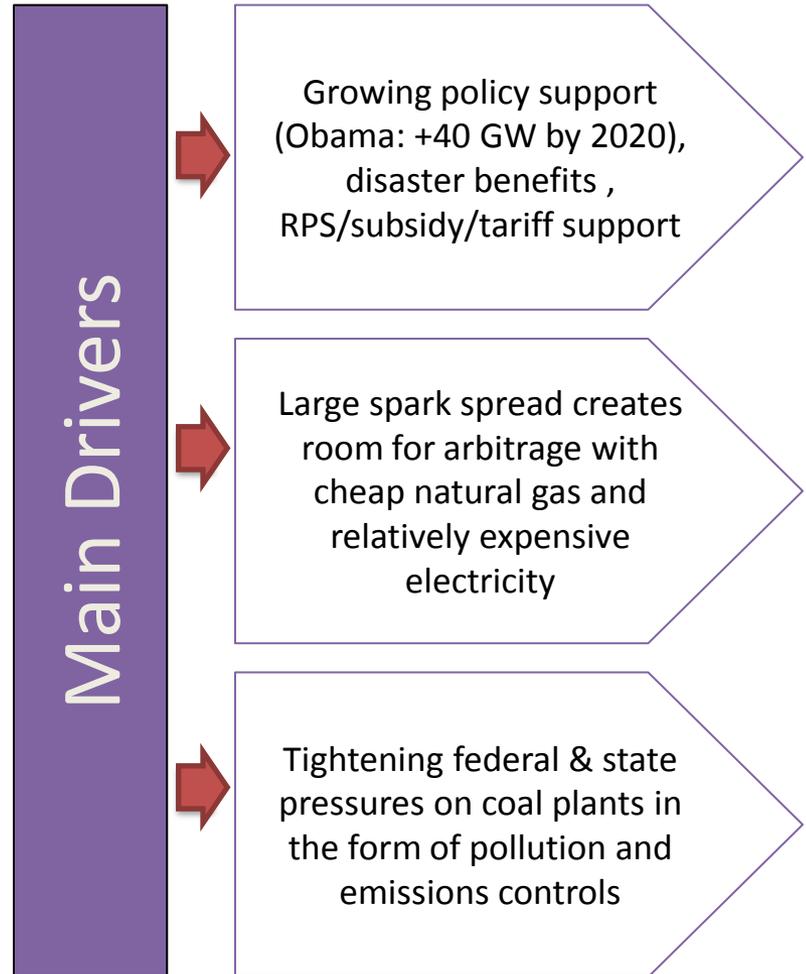
- Chemicals (24.3 GW, 275 sites)
- Petroleum Refining (15 GW, 108 sites)
- Pulp and Paper (11.3 GW, 232 sites)
- Food Processing (6.2 GW, 247 sites)
- Commercial/Institutional (10.7 GW)

Source: ICF International, 2013

Policy Status

Accelerated depreciation (5 years)
Interconnection standards for projects under 20 MW
10% federal tax credit for CHP < 50 MW
Various state tax credits, grants, loans, renewable requirements, efficiency standards

Source: Database of State Incentives for Renewables & Efficiency, 2014



Source: The International DHC/CHP Collaborative, 2008

Utilities are re-engaging with CHP in three different ways

Type I utilities

- These utilities are wary of CHP because it will erode their customer base and revenues

Type II utilities

- These utilities have found ways to accommodate CHP

Type III utilities

- These utilities are seeking ways to turn CHP into an opportunity

Type I utilities are trying to block CHP

- One utility has a special discounted tariff for high (> 90%) load factor customers to discourage them from going to CHP
- A second utility uses real time pricing to lower the cost of electricity and make CHP less attractive
- A third utility uses ratcheted demand charges and exit fees to discourage customers from installing CHP
- A fourth utility has imposed exit fees which discouraged petroleum refineries that had 'formally explored' leaving the grid from traveling down the CHP road
- A fifth utility sought to deter CHP through a standby tariff but the request was denied by the state commission

Type II utilities are seeking ways to accommodate CHP

- One utility has a >10 MW CHP customer who has enough self-generation capacity to exit the grid; the utility was able to keep the customer with a specially negotiated rate
- A second utility convinced a customer who was considering CHP that it could not just rely on CHP because of reliability issues and was able to keep the customer on the grid
- A third utility has an ice storage customer who has 1.3 MW of solar capacity but still relies on the utility for meeting its peak demand
- A fourth utility has a data center customer who substitutes grid power with 'backup generation' when prices are high, but stays grid connected for regular usage

Type III utilities are seeking to turn CHP into an opportunity

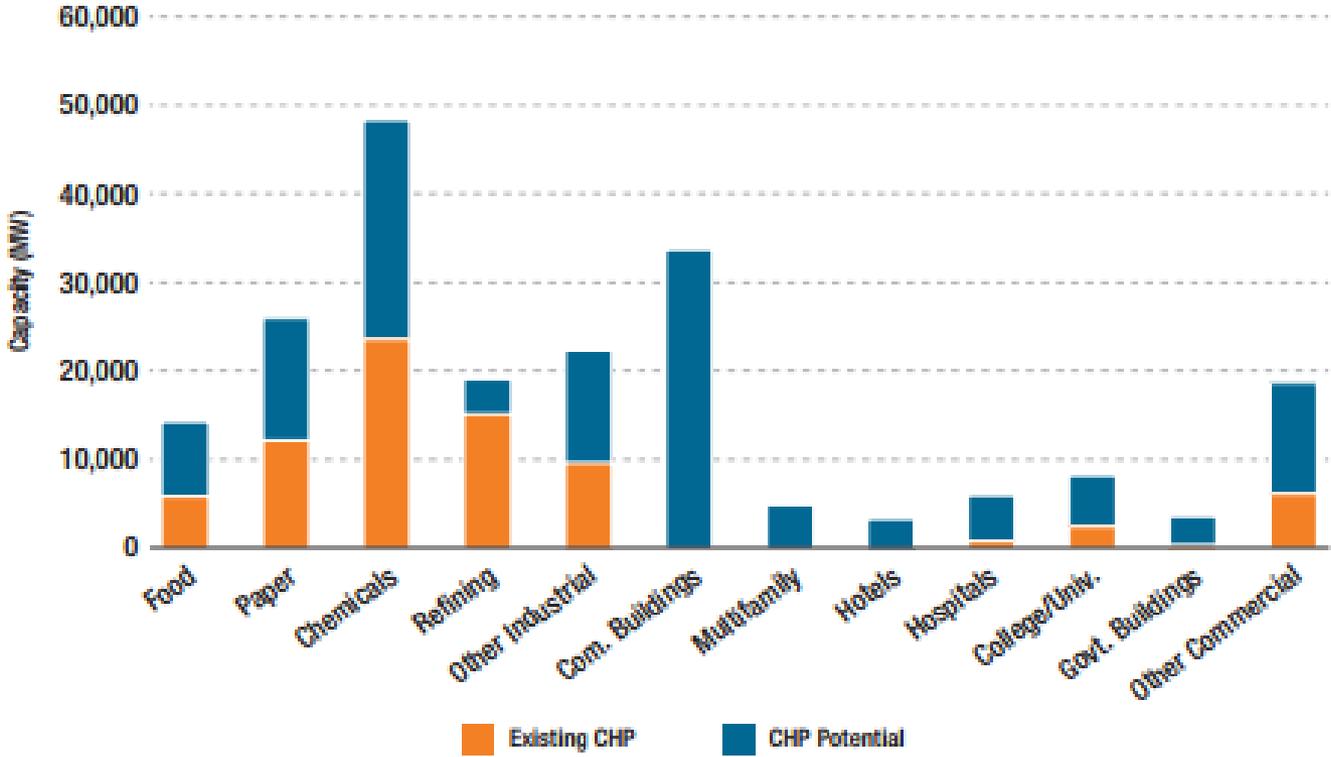
- One utility has standby rates for customers with CHP that still want to be on the grid
- A second utility dispatches CHP during peak times and provides electric service on interruptible rates
- A third utility buys solar energy from a third party that installed and manages solar panels on site for a customer and sells it back to the customer
- A fourth utility has a customer who installed a standby generator for backup service but the utility pays for fuel, runs and maintains generator
- A fifth utility co-owns a CHP plant on customer site; the utility sells energy to the customer and is able to dispatch the CHP plant into the grid
- A sixth utility uses CHP to meet its state-mandated energy efficiency goals

Solar PV has become part of the future of CHP

- Extensive incentives for solar PV, the decreasing cost of solar panels, green labeling, and (to come, new battery technologies) are increasing the uptake of solar PV
- One utility has a hospital customer with a roof designed for solar installation
 - Large retailer interest in power from third-party owned solar panels on roofs
- Another utility has a manufacturing customer who has installed 3MW of wind turbines to allow their products to be branded as 'green' to the ultimate end-users of their products

Much of the technical potential for CHP resides in commercial buildings

FIGURE 7 | Technical Potential for Additional CHP at Existing Industrial and Commercial Facilities²⁰



Source: US Department of Energy and US Environmental Protection Agency, *Combined Heat and Power: A Clean Energy Solution*, August 2012

The full potential of CHP won't be realized without utility engagement

Utilities have begun giving serious consideration to CHP and are asking some fundamental business questions

- What is the market potential of CHP in my service area?
- What are the barriers to its realization?
- Should I modify my tariffs to make CHP an attractive proposition for me and my customers?
- Should I consider investing in customer-located CHP facilities?
- Will the commission allow the investment to be rate based?

Commissions will have to make suitable modifications to the appropriate regulations for CHP to become a win-win opportunity for utilities, consumers and society as a whole

Presenter Information



AHMAD FARUQUI, Ph.D.

Principal | San Francisco

Ahmad.Faruqui@brattle.com

+1.925.408.0149

Dr. Ahmad Faruqui helps develop customer-focused competitive business and regulatory strategies for utilities. He has testified before a dozen regulatory commissions and legislative bodies and worked for several dozen utilities around the globe. He has also worked for the Alberta Utilities Commission, the California Energy Commission, the Edison Foundation, the Electric Power Research Institute, the Federal Energy Regulatory Commission, the Ontario Energy Board, the Ontario Power Authority and the World Bank. His work has been cited in *The Economist*, *The New York Times*, *Wall Street Journal*, *Washington Post* and *USA Today*. He has appeared on Fox Business News and National Public Radio. The author, co-author or editor of four books and more than 150 articles, he holds a Ph.D. in economics from The University of California at Davis and B.A. (Hons.) and M.A. degrees in economics from The University of Karachi, Pakistan.

The views expressed in this presentation are strictly those of the presenter and do not necessarily state or reflect the views of The Brattle Group, Inc.