



## **CHP – Power with a financial edge: How does this model work and does it pass the smell test? - by George Crawford**

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Recent hurricanes have put the spotlight on electrical power interruptions. Real life tragedy can come from these outages – some truly horrific. At the same time, there are other instances of outages that have less severe results, but can also be problematic. Every outage is unwelcome, hurricane related or not. Continuous power for hospitals and other critical care facilities is essential – not to mention emergency services, communications and health and safety support facilities. Once you move away from this critical core group, facilities with continuous power becomes hit or miss – but for those facilities in the “miss” category, this article may be a game changer in terms of introducing continuous power as a viable and economic alternative.

In instances where continuous power is an absolute requirement, the traditional solution – a back-up generator. While this solution works, it is not cost effective. In fact, generators can be a hugely expensive solution involving a mountain of added costs – starting with the installation, followed by ongoing maintenance costs. With no associated cost savings, the more you do to maintain a back-up generator, the more you add to the cost – which only works against the entire effort.

There is, however, an economic solution, which is the focus of this article. The “economic solution” is the result of newer technologies that make it possible to reconfigure your primary electric supply source. This solution – in effect flips your primary power source from back to front. With this model, your in-house CHP becomes the primary power source and your utility becomes back-up. In this configuration, your electric utility takes on the role of the back-up generator. While this configuration is not “conventional”, it is in fact being successfully used by hundreds of buildings, including many hospitals and other critical facilities. The CHP reliability factor has been well established as many hospitals and other critical facilities have been operating successfully in this mode for many years. The advantage here is the favorable economics. Facilities which operate with an in-house CHP as their primary power source, realize significant cost savings as compared to costs for power purchased from their local utility. Accumulated savings from this differential can generate sufficient funds to cover the financing costs of a CHP installation – usually in less than five years. With this model, literally any facility considering a back-up generator should investigate the more favorable economics of an in-house CHP.

How exactly does this CHP model work and do the economics really pass the smell test?

When electric utilities generate electricity, there are two factors at play. Because they are remote, they are unable to utilize the heat byproduct from the generating process, which represents a significant loss of potential value. They also lose a percentage of the power generated over the long distribution lines. With a CHP installation, not only is electric generated with no distribution loss, but more importantly the valuable heat byproduct from the CHP can be fully utilized – including hot water production as well as heating and cooling the host facility itself. It is the ability to utilize the heat byproduct that gives CHP installations the economic advantage over electric purchased from utilities.

As to the economic “smell test,” we asked Michael Weisberg, principal of M-Core Credit Corp., whose company specializes in energy savings related financing, to comment on his experience regarding the many CHP installations that M-Core has financed. These projects range from the low six figures for a 75kw CHP unit for a 75 unit residential facility up to the low seven figures for a custom 960 kw CHP for a 1,689 unit 4 tower complex. Michael advises that in every case, the CHP installations have been successful. Post installation follow ups have all demonstrated that the financed projects have met or exceeded their savings targets. And virtually all of these projects have met or are meeting their five year or less investment payback return goals as well.

From an operational perspective, Benjamin Locke an industry expert and co-CEO of Tecogen, advises that regardless of brand or model, the success of any CHP installation, including Harvard University’s CHP installation which has been running for 35 years, is dependent on quality, reliability and longevity. If the CHP equipment selected will be the primary power source, it must have a proven track record of meeting these performance standards – as well as ease of maintenance. In addition, the length of the combined warranty / maintenance contract is also an essential factor with regard to the financial underpinning of any CHP installation. With the first five years of savings from operations earmarked for project payback, a minimum of an additional five or even ten years is required for the investment return. Harvard’s 35 years of CHP operations sets the gold standard in this regard.

In terms of putting an actual face on one or two of the hundreds of successful CHP stories in the metro area, think of Interfaith Hospital operating for many years independent of the grid or the Brevoort Coop in Greenwich Village which successfully weathered Superstorm Sandy with their lights on. In subsequent CHP articles, we will focus on case studies such as these as well as more specifics of CHP installations and how they can work for your facility.

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