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Leveraging Industrial and Commercial applications for increasing renewable energy

The intermittent nature of renewable generation is the primary impediment to the carbon free future. While solar and wind electric generation is becoming increasingly competitive with traditional power sources, the unreliable supply inherent with renewable generation has compromised the resiliency of the electrical grid, sometimes causing complete loss of electrical supply.

Reliable electrical supply is further compromised by natural events exemplified by Hurricane Sandy, which cause the complete breakdown of New York's electrical grid. The huge financial impact caused by that disaster spurred public and private sectors' investment in redesigning the electrical supply to critical loads in the form of microgrids. A microgrid is a local network of electrical loads that is supplied by either the utility grid or supplied by power sources within the network, allowing the autonomous operation of electrical devices within the microgrid.

While policies encouraging renewable generation have made substantial inroads in the reduction of fossil fuel generation, the carbon free future is but a dream without addressing the substantial portion of carbon pollution resulting from process and comfort heating. For even if all electricity was generated carbon free it would only reduce greenhouse gases by a mere 30% largely due to the enormous contribution of carbon due to the heating needs of industrial and commercial facilities.

Combined heat and power can bridge the generation gap of intermittent renewable generation by leveraging the existing heating needs of industrial and commercial applications while providing power at a fraction of the cost and greenhouse gas emissions of peaking power plants. Unfortunately the CEC and CPUC bias against all things non-renewable has hampered renewable generation by de-incentivizing CHP from industrial commercial processes all but assuring the continued greenhouse gas production from these processes. Without incentives there is no economic reason to support the grid, setting up the scenario whereby facilities will opt for a one-way microgrid - a microgrid that can take power from the grid when cheap and go off grid when economically attractive. Natural gas CHP energy equivalent power is less than 3c/kw-hr. The CPUC and CEC myopic renewable approach against natural gas assures that companies wishing to reduce their energy cost will do so at the expense of California's grid resiliency.