

Gas Utility Perspective on DG/CHP

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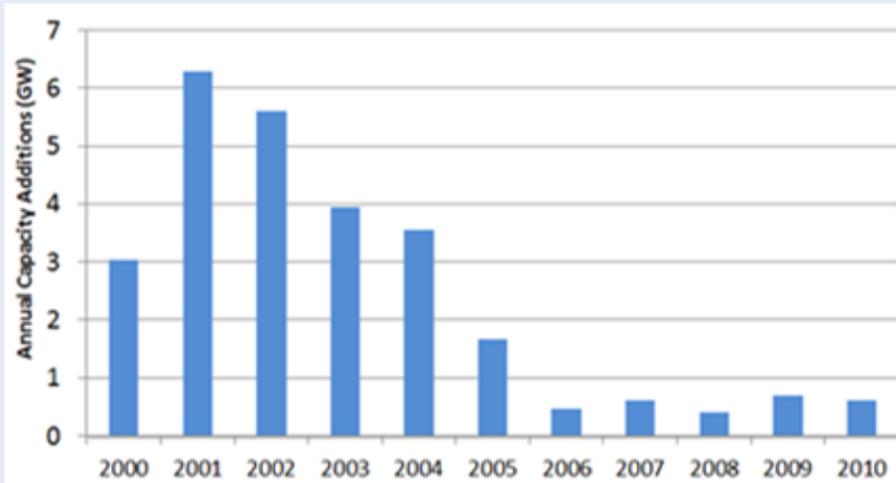
SoCalGas has a rich history supporting CHP

- » Technology Development
 - IC Engines
 - Microturbines
 - Fuel Cells
 - Stirling Engines
- » Technology Demonstration
 - Data Center
 - Food Processing
 - Nursery
 - Metal Heat Treating
 - Water Pumping
- » Customer feasibility studies
- » Continuing education, training, customer seminars



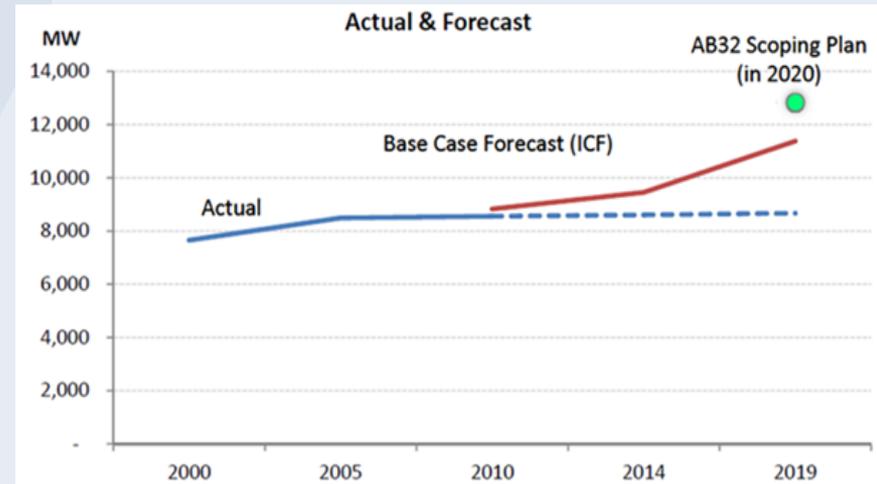
CHP Market Trends

U.S. CHP Capacity Additions



Source: ICF Consulting

CA CHP Installed Capacity



- » Relatively slow CHP capacity growth in the U.S./CA over the past several years, despite state goals for CHP
- » AB32 Scoping Plan 4,000 MW by 2020
- » Governor's Job Plan 6,500 MW by 2030
- » CA is falling behind State goals
- » Significant potential through 2030: 16 GW (ICF)

Value and/or benefits of CHP to customers, communities, grid operators and the state

- » Natural gas is a clean, reliable and affordable energy resource
- » New CHP technologies are emerging, which are able to meet CARB emission requirements: Tecogen, Continental Controls, etc,..
- » Micro-CHP has the potential to have similar impact as solar PV
- » Natural gas utilities are exploring various ways to accelerate adoption given a stable commodity price/supply forecast
- » Other countries have made progress with accelerated adoption of Micro-CHP: Germany, UK and Japan
- » CHP can help CA meet several key Energy policy goals:
 - Increasing the use of energy efficiency/demand response
 - GHG emissions and criteria pollutants reduction
 - Energy security
- » Add more generation capacity to offset the Loss of SONGS & OTC

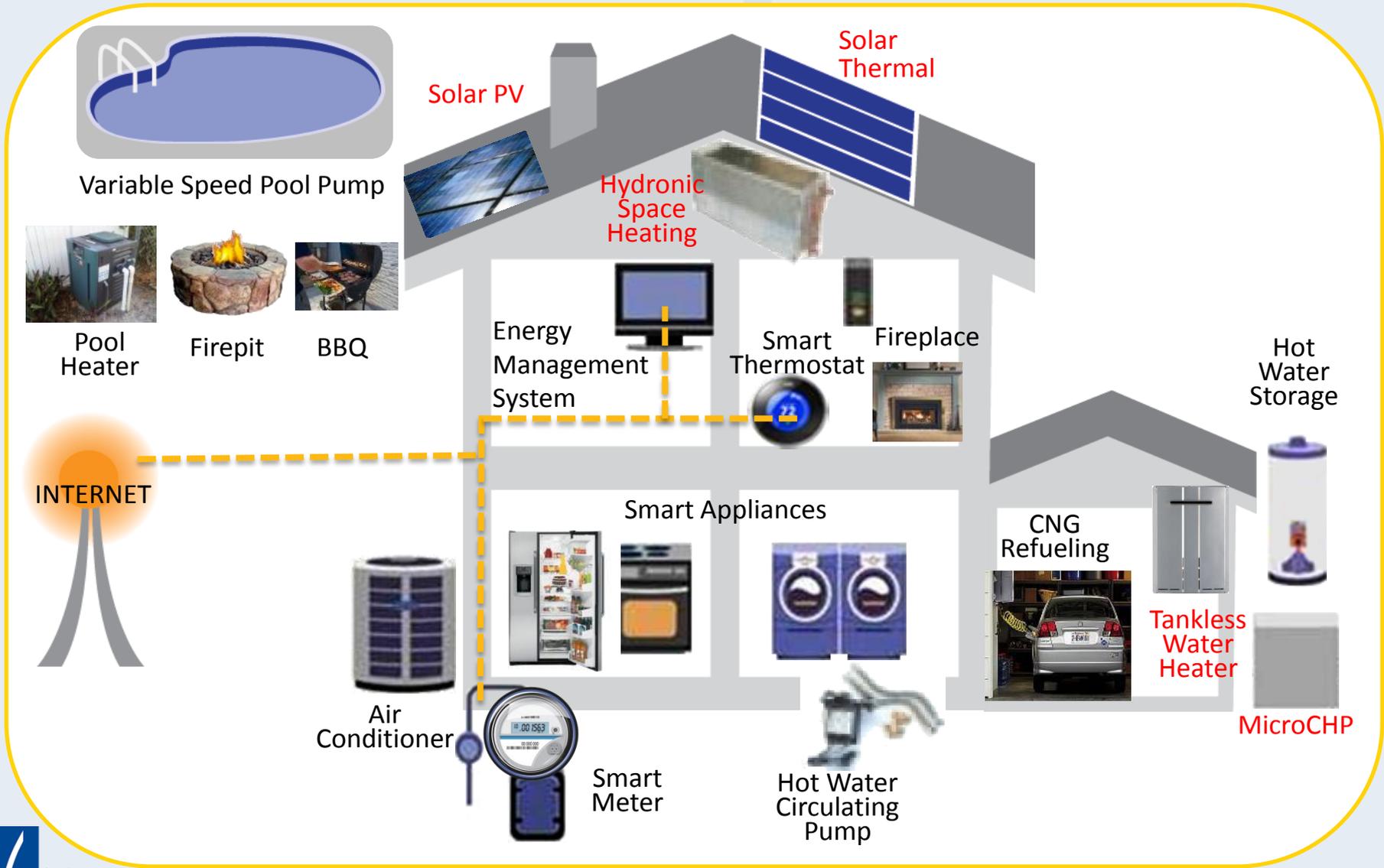
How to recognize these values & encourage development of new CHP projects in CA

- » Utility business/regulatory models will need to adapt/evolve to emerging technologies and policy trends
- » CA Executive Orders are not adequately supported by policy directives or regulations
 - Increase Incentives
 - Tax Credits and Accelerated Depreciation offered by the State
 - Reduce first costs for CHP by streamlining permitting process and reducing fees
- » More innovation are needed in order to move this technology platform forward
- » Increasing awareness to support key policy goals: EE/DR, RPS, Energy Storage, CHP
 - Make sure policies & regulations don't discourage CHP

What new CHP research will support the development of new CHP in CA

- » Products that can meet CARB & SCAQMD emissions requirements
- » Cost effective products (i.e., microturbine, MicroCHP and fuel cells)
- » Micro CHP systems that are:
 - highly efficient (>40% electric),
 - Runs independent of electricity demands,
 - Provide hot water and space heating as needed,
 - If possible, provide space cooling
- » Low-cost reliable absorption chillers, to broaden CHP applications potential into cooling markets
 - Combined Cooling Heating & Power (CCHP)
- » Cost effective waste heat recovery technologies
- » Hybrid & integrated with Renewable (Solar & Biofuels)
- » Ensure that CHP is included in the definition of ZNE

Smart ZNE Home



Conclusion

- » California needs robust implementation of CHP to realize energy and environmental policy objectives
- » Remove barriers that continue to slow market progress of CHP
 - Energy Rate
 - Technical complexity
 - Permitting Costs & Time
 - Customer preferences for renewable energy
 - Customer awareness
 - Interconnection
 - Lack of financing
 - Faster depreciation or tax incentives
- » Improve product performance and cost
- » Incentives are vital, particularly for robust market adoption of smaller systems (< 5 MW), where the greatest remaining CHP potential resides
- » Outlook for CHP is encouraging – but proactive CHP legislation and regulations that enables state energy policy is critical