CHP as an EE Resource

A Review of State Programs

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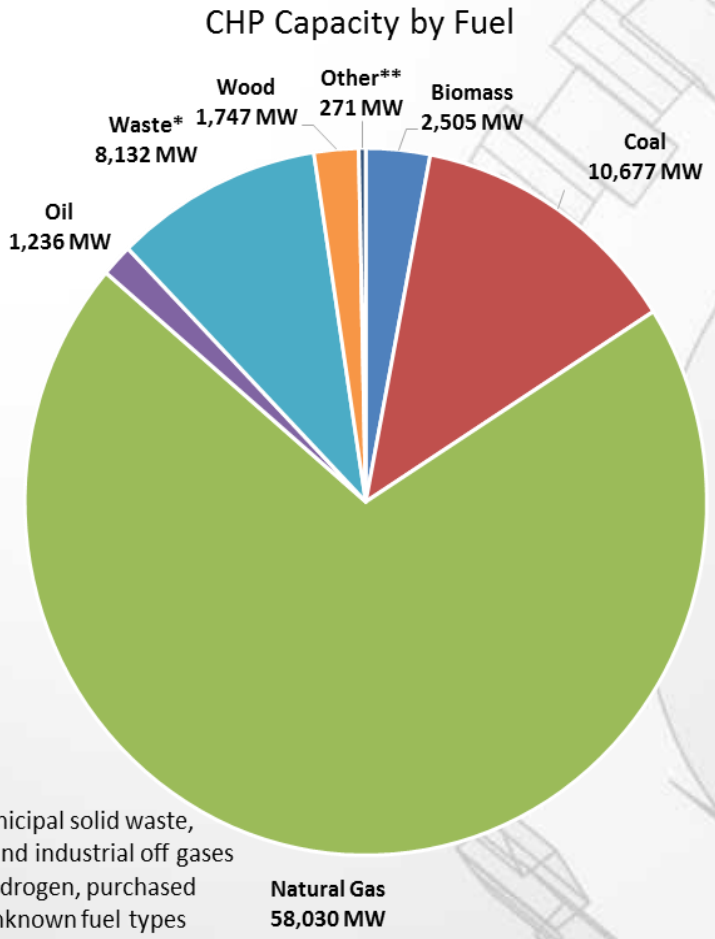
Takeaway and Topics

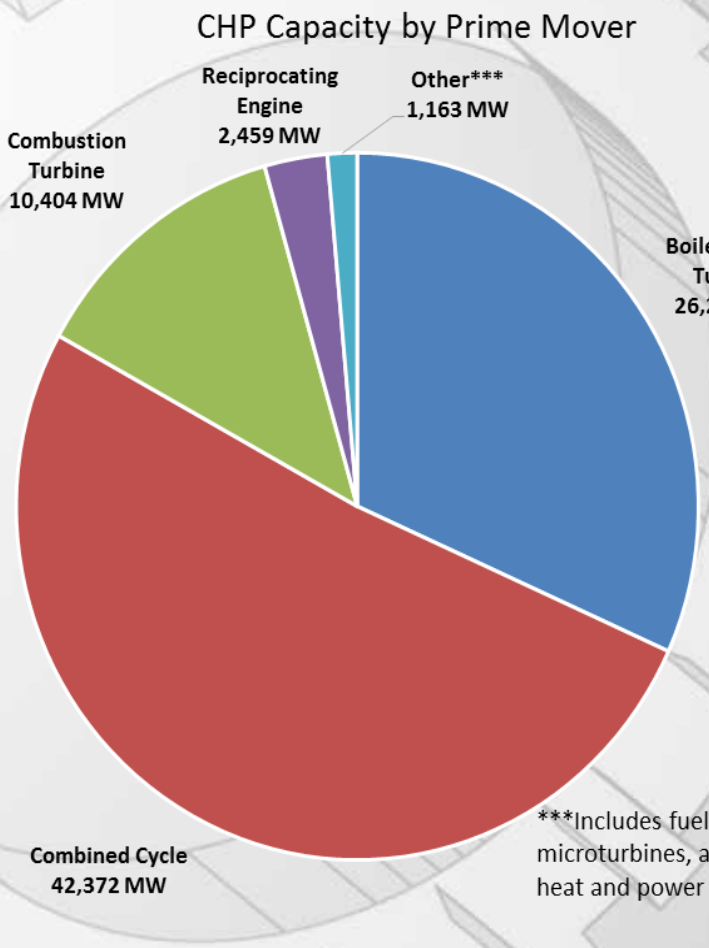
- Combined Heat and Power (CHP)
  - An energy efficient technology
  - Opportunities and barriers
  - Its role as a utility resource and offering
- CHP utility programs - current landscape
  - Policy drivers
  - Utility programs
  - Standard program characteristics
  - Outcome
- Resources

Commercial CHP installation

Latest Estimate of CHP Capacity: 82.6 GW



*Includes municipal solid waste, black liquor, and industrial off gases
**Includes hydrogen, purchased steam, and unknown fuel types



***Includes fuel cells, microturbines, and waste heat and power technologies

Source: DOE CHP Installation Database (U.S. installations as of December 31, 2016)

CHP
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CHP's Multi-Dimensional Value Proposition

Opportunities

1. Versatile Technology
2. Wide Application
3. Energy savings translates to $$$$ savings
4. Energy savings translates to reduced emissions
5. With islanding capabilities, provides grid resiliency
6. Can support multiple utility functions

Barriers

1. Project Economics
2. Typically ancillary business operations
3. Regulatory requirements vary by application
4. Regulations vary by state
5. Some regulations recognize system benefits
6. For utilities CHP presents an opportunity and a threat.

Current Utility and State CHP Programs

- 4 utilities that offer CHP electric and gas programs (3 in California, 1 in Pennsylvania
- 4 utilities that offer CHP gas programs
- 14 utilities that offer CHP electric programs
- 13 state policies for utilities on CHP to
  - Increase energy efficiency in the state (Electric Utility Marketing Managers of Texas)
  - Enhance energy efficiency, reduce emissions, reduce overall system peak demand, reduce existing/new demands to electric power grid, provide reliability/resiliency solutions (NJ EDA)
  - Meet growing electricity demands and provide clean, affordable, reliable energy (MD PSC)

State Policy Design and CHP Utility Programs

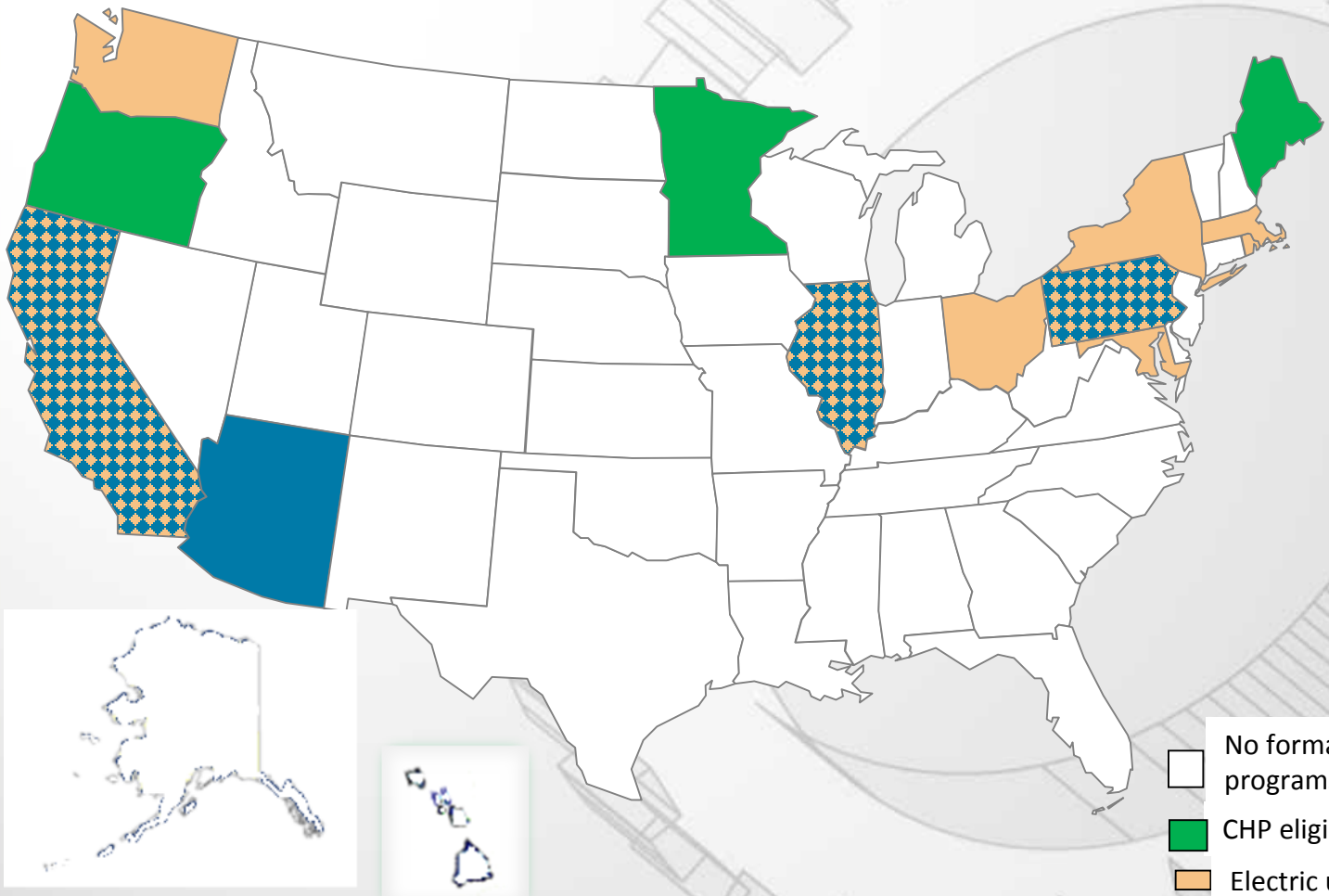
- EERS is potentially a bigger driver for CHP than RPS. RPS' typically only allow RE-fueled CHP as eligible and majority of CHP is natural-gas fueled.
- APS has been a big driver in MA, but has had less impact in PA, where CHP is a lower-tier resource.
- ConEdison's BQDM program allows the utility to invest ratepayer dollars in EE/RE/DR to avoid investment in a substation.
- California's utilities run CHP programs that are part of a state-wide program to reach CHP capacity targets and GHG reduction targets. Impacts are measures in terms of capacity installed and GHG reduced.

Utility CHP Program Characteristics

- All programs are funded in one way or another by ratepayers.

- Within a state, large variability
  - In program design, incentives, EMV and evaluation
  - In type of utility – whether gas or electric
  - In utility structure – whether deregulated, vertically integrated or muni
  - Within the same type of utilities in a state - two electric utilities offerings in a state are not necessarily the same
  - In type of CHP units covered - gas-fired utilities, WHP, renewably-fueled CHP
  - Across type of program – whether standard program offers, or types of standby charges

CHP and Incentive Programs in EE Portfolios



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Electric Utility CHP Programs in EE Portfolios

- CHP programs run by electric utilities exist in at least 9 states
  - CA, IL, MA, MD, NY, OH, WA, PA, RI
- Electric utilities with CHP programs appear to be motivated by compliance with a state policy.
  - Most utilities can count energy savings or MWh generation from CHP toward compliance with state portfolio standard of some kind (EERS, RES, APS, etc.)

Gas Utility CHP Programs

- CHP programs run by gas utilities exist in 4 states (AZ, PA, CA, IL)
- Some programs help the gas utility comply with state efficiency target (AZ, IL)
- Other programs help the gas utility advance sales (AZ, PA, CA)
- Gas utilities may offer incentives for CHP as part of energy efficiency portfolio (like electric utilities).
- Gas utilities may provide direct financial assistance for CHP installations outside of efficiency programs in order to:
  - better serve customers (attract/retain)
  - system benefits and resiliency
  - reduce emissions
  - spur economic development, etc.

Challenges Faced In Developing CHP Programs

- Some instances, CHP is not recognized as an EE or DSM measure to be considered in a utility program
- CHP considered too complicated:
  - Programs listed but not fully developed.
- CHP is considered a competition to the utility's core issue.
- Developer is required to address utility issues per service area.

Effective CHP State and Utility Programs

- CHP is an EE resource with quantifiable savings
- CHP can play a role in a variety of utility programs (portfolio standards, DR, resiliency, ancillary services, microgrids)
- Ensure program goals and offerings are clearly defined.
  - Custom design or separate tier classification in portfolio standards
  - Define CHP characteristics to support the program
  - Use cost-effective tests to define CHP incentives
  - Incentives tied to performance (electrical and thermal) and efficiency
- Standby rates and demand charges commensurate with CHP's function in the utility program
- Provide transparency to programs such as interconnection, standby rates, utility DSM plan.

CHP and Utility Programs

State Policies

Utility Programs and Offerings

CHP Owner or Developer

Resources and Contact Information

National Resources

Federal:
CHP Partnership Portal
Guide to Action
SEE Action Guides
State and Regional: State PUC, DOE TAP,
NGO: ACEEE, DGA

Speaker Details

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