

January 25, 2008

Ad-Hoc Work Group on Cogeneration

Initial Report to
Governor's Task Force
on Global Warming

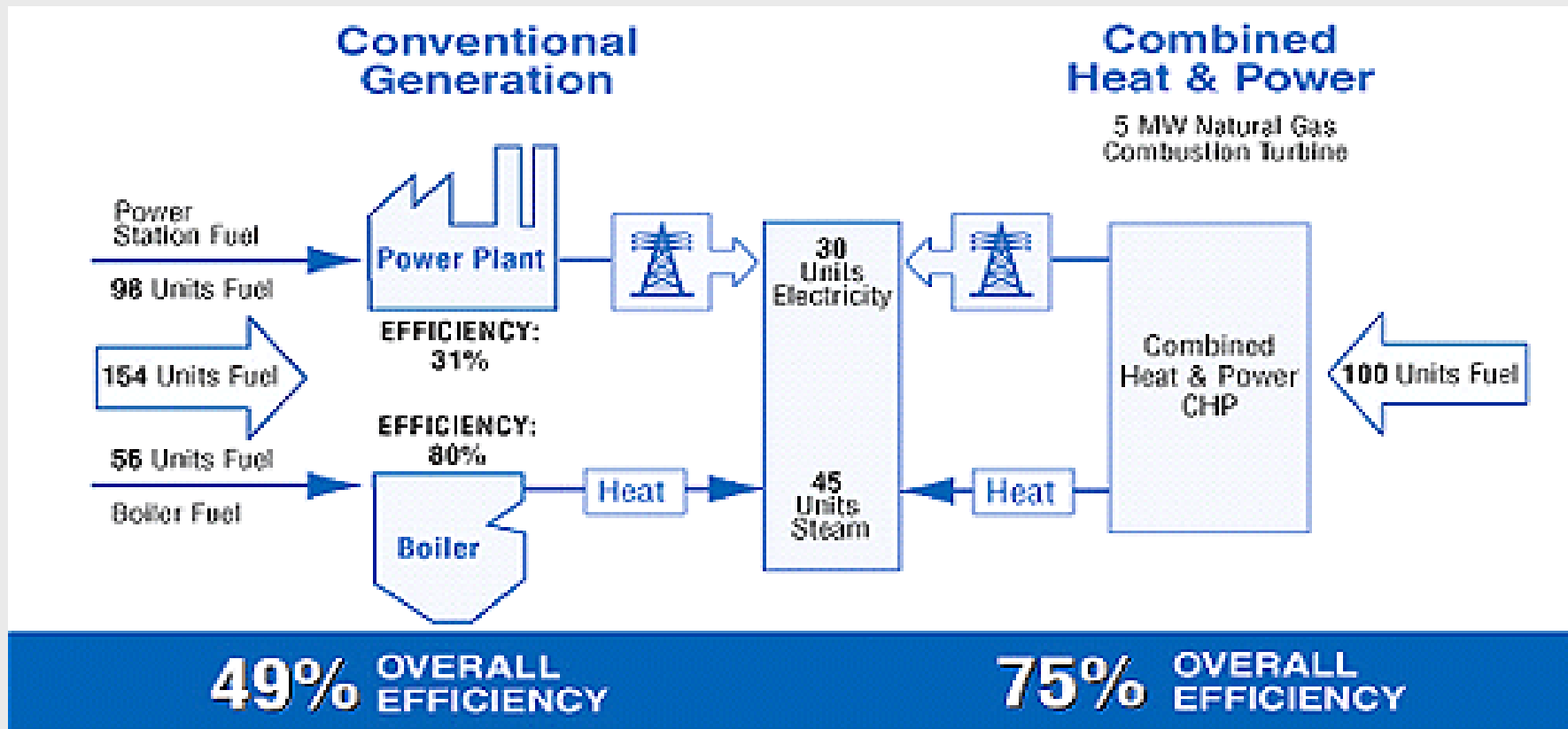
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Introduction

- Cogeneration = Combined Heat and Power (CHP) = The simultaneous production of electricity and useful thermal energy from a common fuel source



Nature of Cogeneration Facilities

- Fuel - Natural gas, coal, biomass
- Technology - Boiler, combustion turbine, reciprocating engine
- Thermal Energy User(s) - Single or multiple thermal energy users, district heating system
- Ownership - Thermal energy user, utility, independent power producer (IPP)
- Size of Facility - Small commercial facility matched to thermal requirements up to utility-scale power plant
- Use of Electricity - Offset thermal energy user's retail power purchases, sold to utility, used by utility to supply power requirements







Work Group Approach

- Identify impediments to cogeneration project development
- Identify opportunities for cogeneration project development
- Determine policies to overcome obstacles and take advantage of opportunities
- Explore promising approaches even if not strictly cogeneration-related

Impediments to Cogeneration Development

- Capital Cost
 - Generally higher than a new electric-only plant:
 - Additional cost of cogeneration facilities
 - Plant sized to match thermal load likely smaller and more costly than optimized electric-only facility
 - Need to locate near thermal energy user limits siting options
- Operating Cost
 - Despite higher efficiency, a cogeneration plant may produce electricity and/or thermal energy at a higher cost than separate facilities if using a higher-cost fuel (e.g. natural gas)
- Thermal Host Risk
 - Economics of cogeneration facility depend on continued viability of thermal energy user

Relationship Between Impeding Factors

	Capital Cost	Operating Cost	Thermal Host Risk
Smaller Facility			
Natural Gas Fuel			
Multiple Thermal Hosts			

Higher Efficiency vs. Lower GHG Emissions

- Cogeneration is a means - not an end
- Higher efficiency of cogeneration facility may not result in lower greenhouse gas emissions
- Example: Coal-fired cogeneration plant versus separate gas-fired boiler
 - Cogeneration will have higher efficiency

However ...

 - Separate generation may have lower total GHG emissions

Opportunities for Cogeneration Development

- New industrial facilities
 - Locate near existing cogeneration plant or power plant that can be converted to cogeneration
 - Avoided capital cost of not installing boilers helps offset capital cost of new cogeneration facility
- Aging industrial boilers requiring replacement
 - Avoided capital cost of replacing boilers
- Industrial boilers requiring environmental upgrades
 - Avoided capital cost of installing upgrades
- Unused industrial cogeneration facilities
 - Encourage siting of industrial facilities that can utilize steam and allow reuse of unused cogeneration facilities

Potential Policies - 1

- Impediment -
 - Utilities and cogeneration developers lack information on potential thermal hosts
 - Industries seeking to locate in state lack information on cogeneration plants or electric generating plants that could be converted to cogeneration
- Policy Approach - Establish voluntary registry to match cogeneration facilities with thermal hosts

Potential Policies - 2

- Impediment - Industrial facilities may avoid upgrades with GHG reduction benefits (cogeneration, efficiency improvements, increased use of biomass) due to potential for triggering air permit requirements (NSR, MACTs, etc.)
- Policy Approach -
 - To the extent that limitation is dictated by federal statutory provisions, opportunity may be limited to advocacy in favor of changes
 - To the extent that limitation is based on uncertainty or misunderstanding of requirements, improved communication of regulatory requirements may alleviate concerns

Potential Policies - 3

- Opportunity - Cogeneration facilities that are not currently operating due to loss of thermal energy user (e.g. utility plant at a closed paper mill)
- Policy Approach - Provide tax incentives (TIF, industrial revenue bonds, etc.) to encourage thermal energy users to locate in vicinity of unused cogeneration facilities

Potential Policies - 4

- Impediment - Various types of projects with GHG reduction benefits may not be given proper incentives by current renewable portfolio standard
- Policy Approach - Make appropriate changes or clarifications to RPS requirements:
 - Renewable credit for incremental renewable generation at an industrial facility
 - Renewable credit for biogas supplied to a pipeline
 - Renewable credit for thermal energy produced by a biomass-fired cogeneration facility

Additional Areas for Investigation

- Potential expansion of Focus on Energy incentive programs to cover certain cogeneration installations
- School district tax levy limits that may preclude or discourage installation of cogeneration facilities
- Utility equity return incentives for cogeneration facilities