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Is It Time to Cash in Your CHPs? Increasing Energy Reliability and Savings for Healthcare Providers

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Agenda

- Buchanan Energy Team Introduction
- What is a Combined Heat and Power (CHP pronounced “CHIP”) Facility?
- Why are CHP Facilities Important for Healthcare Providers?
- So You’ve Decided to Develop a CHP Project – Now What?

Buchanan Energy Team

- **John F. Povilaitis** – What is a CHP and Why are CHPs Important for Healthcare Providers?
- **Alan M. Seltzer** – So You've Decided to Develop a CHP Plant – Now What?

We are energy and utility lawyers from Buchanan's Harrisburg office, specializing in public utility and energy law, both regulatory and transactional. We represent power plant owners, operators and developers, including hospitals and others developing or considering the development of CHP facilities.



What is a CHP?

Chips



“CHiPs”



CHP

- “CHP” stands for “Combined Heat and Power”
- Also known as “cogeneration”
 - The concurrent production of electricity or mechanical power and useful thermal energy (for heating and/or cooling) from a single source of energy.
 - A suite of technologies that can use a variety of fuels to generate electricity or power at the point of use, allowing the heat that would normally be lost in the power generation process to be recovered to provide needed heating and/or cooling.¹

¹ Department of Energy Office of Energy Efficiency & Renewable Energy, “Combined Heat and Power Basics,” available at <https://www.energy.gov/eere/amo/combined-heat-and-power-basics>

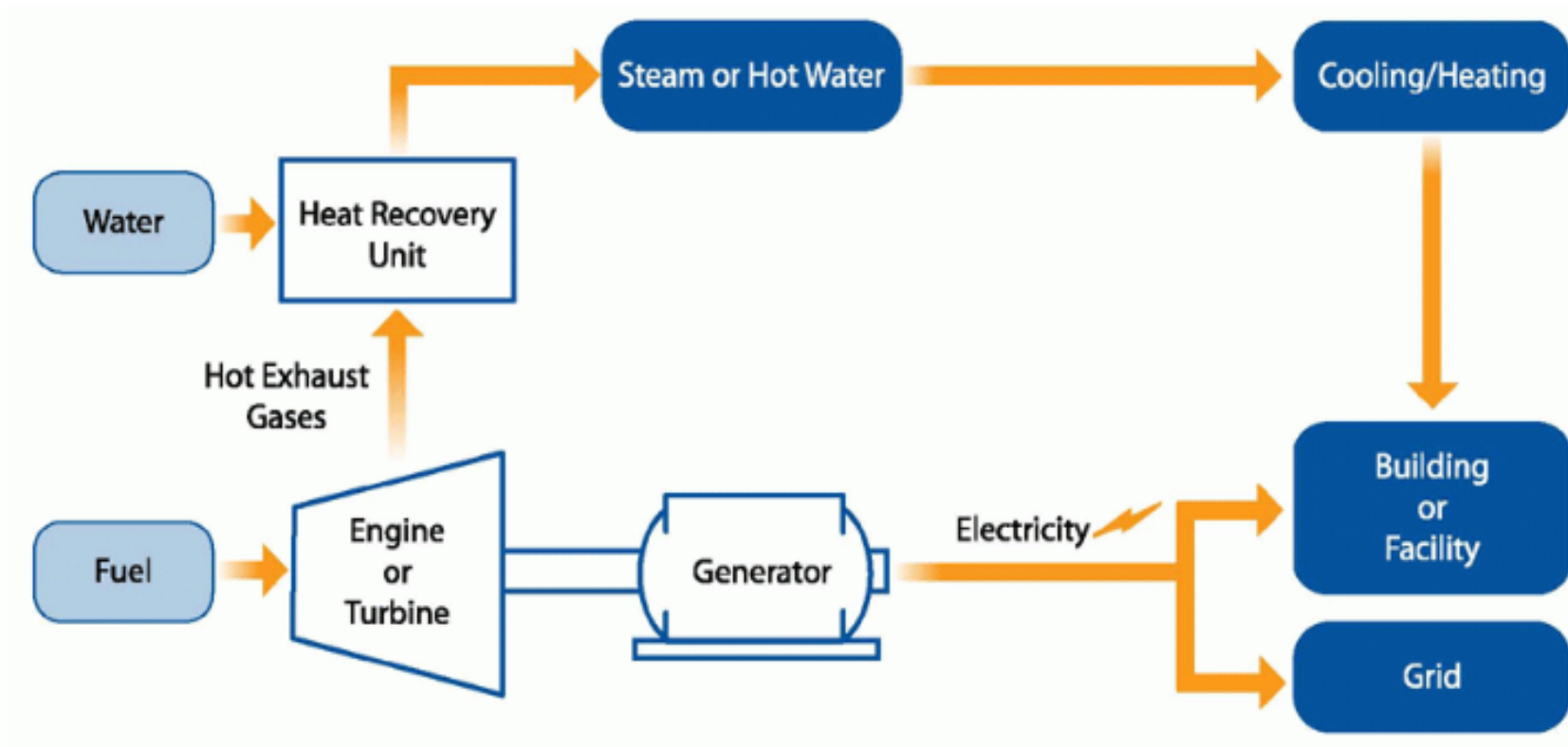
CHP

- Combustion turbine or reciprocating engine CHP systems burn fuel (e.g., natural gas, oil, or biogas) to turn generators to produce electricity and use heat recovery devices to capture the heat from the turbine or engine.
- This heat is converted into useful thermal energy, usually in the form of steam or hot water.

Source: United States Environmental Protection Agency, Combined Heat and Power (CHP) Partnership, "Common CHP Configurations", available at <https://www.epa.gov/chp/what-chp>

CHP

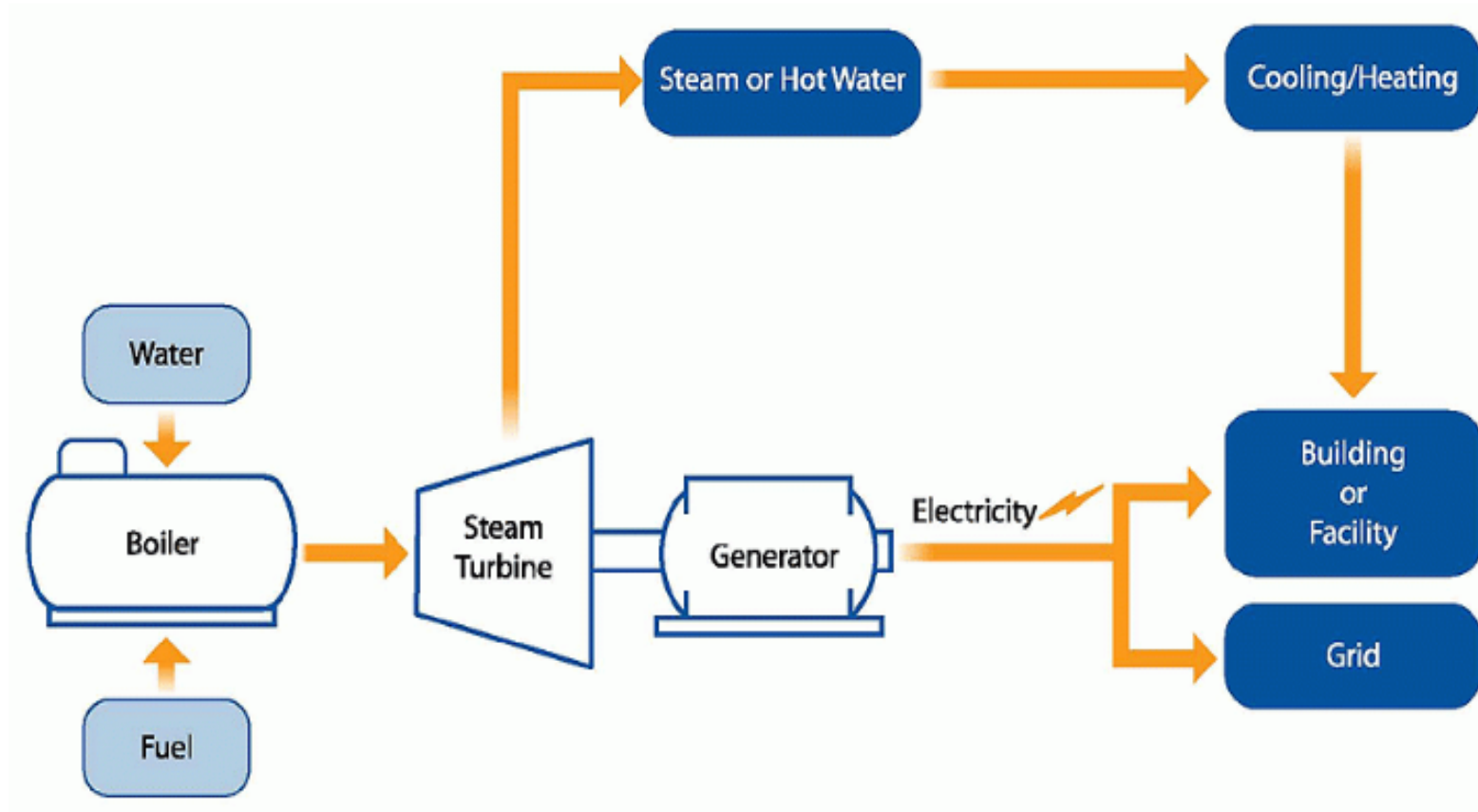
Combustion Turbine, or Reciprocating Engine, with Heat Recovery Unit



Source: United States Environmental Protection Agency, Combined Heat and Power (CHP) Partnership, "Common CHP Configurations", available at <https://www.epa.gov/chp/what-chp>

CHP

Steam Boiler with Steam Turbine



Source: United States Environmental Protection Agency, Combined Heat and Power (CHP) Partnership, "Common CHP Configurations", available at <https://www.epa.gov/chp/what-chp>

CHP

- The steam or hot gases leaving the turbine can be used to produce useful thermal energy for building heat and cooling.
- Both the steam turbines fed by boilers and the turbines fueled by natural gas turn generators that produce electricity for use in the facility and excess that is for sale to the electricity grid.

Source: United States Environmental Protection Agency, Combined Heat and Power (CHP) Partnership, "Common CHP Configurations", available at <https://www.epa.gov/chp/what-chp>

CHP

- CHP technology can be deployed quickly and cost-effectively compared to larger scale electric generators.
- CHPs can use a variety of fuels.
- CHPs have been employed for many years, mostly in industrial, large commercial, and institutional applications.
- CHPs may not be widely recognized outside industrial, commercial, institutional and utility circles, but have been quietly been providing highly efficient electricity and process heat/cooling to some of the most vital industries (including healthcare facilities), large employers and college campuses in the United States.²

² Department of Energy Office of Energy Efficiency & Renewable Energy, "Combined Heat and Power Basics," available at <https://www.energy.gov/eere/amo/combined-heat-and-power-basic>



Why are CHPs Important for Healthcare Providers?

CHPs – The Value Proposition

CHPs have been around since 1980, but are now spiking in popularity.

Why?

- Long used by Independent Power Producers (IPPs) and large industries, but now a feasible customer option for smaller facilities.
- Long-term availability of reasonably priced fuel, e.g., natural gas.
- Multiple approaches available to evaluate, design and build a CHP facility on customer premises.

CHPs – The Value Proposition

Who are considering CHPs?

- Hospitals, acute care facilities
- Medical parks/complexes
- Senior living facilities
- Education facilities

CHPs – The Value Proposition

What does a CHP do for me?

- Increased reliability of electricity supply
- Energy savings

CHPs – The Value Proposition

You may be a good candidate for a CHP facility if...

1. You are concerned about electric reliability and resiliency because...
 - CHPs are protection from short-term grid outages, lengthy grid outages, voltage fluctuations and frequency fluctuations.
 - Be the first micro-grid on your block!

CHPs – The Value Proposition

2. You are concerned about the cost of electricity you consume, because...

- CHPs provide a predictable long-term energy cost with protection from market price fluctuations compared to purchases from your local utility or the competitive market.

CHPs – The Value Proposition

3. You have consistent, year-round electricity and heating/cooling needs, because...

- Steady, level usage of electricity increases the efficiency of CHPs and “waste” heat is put to use.

CHPs – The Value Proposition

4. You anticipate upgrading, expanding or replacing your boiler, generator or heating/cooling facilities in the next 3-5 years, because...
 - You have an opportunity to reduce your long-term energy costs.

CHPs – The Value Proposition

5. You've implemented energy efficiency measures, e.g., new lighting and smart controls, but still have large energy costs, because...
 - You can reduce and stabilize your cost per kwh of electricity with a CHP facility.

CHPs – The Value Proposition

6. You are interested in reducing your facilities' impact on the environment, because...

- You may be able to switch from “slice of the system” electricity (which includes coal generation) to a fuel with a smaller carbon footprint such as natural gas or biogas.

CHPs – The Value Proposition

Customers now have more options to obtain a CHP facility.

- Planned, designed and built by the customer.
- Contract with a third party developer.
- Contract with a utility, e.g., a gas company.
- Combine with other customers to create a micro-grid.

CHPs – The Value Proposition

Is it risky to generate my own electricity?

There are risks, but your energy team can work with you to make them acceptable.

- Allocation of business risk with the developer.
- Proper economic/business analysis.
- Provision for change in law or regulations.
- Monitor the level of governmental support.



So You've Decided to Develop a
CHP Plant – Now What?

So You've Decided to Explore a CHP Plant – Now What?

Assemble the Right Team

- In-house legal and facilities managers
- Finance
- Outside legal
- Economic consultants

So You've Decided to Explore a CHP Plant – Now What?

Negotiate and Execute the Key Transaction Documents

- Energy Services Agreement (ESA) – kwh price protection.
- Fuel Supply Agreement (typically gas) – fuel security.

So You've Decided to Explore a CHP Plant – Now What?

Negotiate and Execute the Key Transaction Documents

- CHP Facility Operations and Maintenance (O&M) Agreement – performance guarantees.
- Engineering Procurement and Construction (EPC) Agreement (for the CHP Facility) – delivered ready for commercial operation.
- Utility Agreements – back up delivery service and alternative supply.

So You've Decided to Explore a CHP Plant – Now What?

Negotiate and Execute the Key Transaction Documents

- Prepare engineering drawings, schematics, circuit diagrams, etc. for the CHP Facility – what will we get for our money?
- Model forecasts of fuel costs, electricity costs, electric demand and load, change of law or regulations impacting costs and pricing, etc. – will the facility achieve my financial/environmental/reliability/resiliency goals?

So You've Decided to Explore a CHP Plant – Now What?

CHP Transaction Risks

- A CHP Facility transaction can provide many benefits, but the key is to manage through analysis and negotiation the risks inherent in any long-term (usually 20 years) power arrangement.
- The greatest risk to any long-term power supply and construction arrangement is that the anticipated benefits do not materialize due to unanticipated/unaccounted for changes in cost and other factors that are outside of the analyzed scenarios and sensitivities.
- Long-term power plant construction and power sales arrangements have a number of variables/risks that can be studied and evaluated, but not completely controlled.

So You've Decided to Explore a CHP Plant – Now What?


CHP Transaction Variables

- Future price and availability of the fuel supply (e.g., natural gas) for the CHP Facility.
- Changes in utility charges for back up service.
- Changes in law (including environmental laws and regulations) that impact the economics and anticipated transaction benefits for either party.
- Changes in technology that make the CHP facility prematurely obsolete from either an operational or cost perspective.
- CHP Facility operates with different efficiency and cost (including the costs of the O&M provider) than the base case.

So You've Decided to Explore a CHP Plant – Now What?

Mitigation of CHP Transaction Variables

- Most transaction risks can be mitigated to a certain degree by developing contract terms that allocate the cost responsibility to the parties in certain ways and/or amounts based on the item involved.
- Good contracting protocol is to allocate the greatest amount of risk on any item on the party that can most cost effectively and efficiently manage that risk.
- The negotiations will involve identifying the key risks and determining the appropriate party and mechanism to handle such risk.
- Risks that cannot be addressed via contract are typically mitigated by obtaining professional evaluations and opinions from experts.



Is It Time to Cash in Your CHPs – Increasing Energy Reliability and Savings for Healthcare Providers

The Buchanan Team



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John focuses his practice on administrative law matters with special emphasis on energy, communications, water/wastewater and transportation public utility law and related transactions. His practice ranges from proactive counseling to litigation before administrative agencies, and appellate matters before state and federal courts. He is a former Chief Counsel of the Pennsylvania Public Utility Commission, and has significant regulatory experience in electricity, natural gas, water, transportation and communications law.



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Alan focuses his practice on electric and gas matters. He has actively represented public utilities and other stakeholders before the Pennsylvania Public Utility Commission, particularly in the areas of electricity, gas, water and transportation. His current emphasis is on energy related transactions, obtaining the state regulatory approvals for the merger or acquisition of gas and electric utilities, and addressing the real estate, regulatory and financing phases of renewable energy project development.



Questions?