

CHP for Buildings Midwest Regional Application Center

Site Report, Case Study, and Fact Sheet
(Protocol)



MIDWEST
CHP
APPLICATION
CENTER

December 5, 2001

How to Use This Protocol

There are 3 Sections to this protocol, the Site Report, the Case Study, and a Fact Sheet.

The first Section, the Site Report, represents the type of information that should be collected and documented in order to create as complete as possible characterization of the installation. Information should be collected and follow the protocol included herein as much as reasonably achievable from records and interviews that can be reasonably obtained. The intent is not necessarily to obtain all of the information, but to obtain enough information to be able to perform both an energy and a financial analysis between the BCHP system and the original and/or more conventional system. The document included herein provides the recommended content of information and desired outline format.

The second Section, the Case Study, should represent the most significant information ascertained from the Site Report. It is a document that will be used to showcase the facility and as such it should be a high level document that provides concise and pertinent information, widely utilizing visual information; such as, tables, graphs and photographs to succinctly convey information. The document included herein represents an example and provides some guidance on the information and desired layout. This document should be no more than 4 pages long, and should be printed in a double sided layout suitable for wide spread dissemination.

The final Section, the Fact Sheet, represents highlights of the installation. It should contain key technical and financial information concluded from the site report, primarily graphical information. It should be no more than 2 pages, and should be printed in a double sided layout suitable for wide spread dissemination.

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SECTION A SITE REPORT



Preparing Institution's Name
Preparing Institution's Address

Phone: XXX.XXX.XXXX
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www.CHPCenterXX.org

Name of Facility

Midwest Regional Application Center
CHP for Buildings

Case Study MAC # ***YEAR-###***

Month Year

Table of Contents

[Provide Table of Contents for Site Report]

1. Site Description

[Provide general information about site.]

1.1. General

Provide a general description about the site and how it came being. Include any information available relating to the reasons for installing a BCHP system. Include the building type.

1.2. Site Location

Provide a general description of the location of the site and any special site characteristics.

1.3. Site Characteristics

Include the number of buildings and how much square footage is covered by BCHP system. Include general occupancy/operating schedule and how the BCHP system is operated to meet that schedule. If there is a difference between what is serviced by the BHP system verse conventional equipment describe those differences. Other items that should be included if they add relevance are: the building age, general construction, and any special usages or considerations that would impact the BCHP system.

2. Market Segment Evaluation

[Discuss the potential market for BCHP in the particular sector for this building use. Include market penetration and an overview of other installations if information is available. Discuss any regional benefits or concerns. This section should be similar in each report (boilerplate) for each building sector type. For example, for all schools it should read the same with adjustments made for regional specific considerations.]

3. Technical Description

3.1. Overview of BCHP to Baseline/Original Installation

[Provide a brief discussion of the comparison of the BCHP system to the Baseline and/or original system. Include a table if it would enhance the discussion. Include operating philosophy (peak shaving, back-up power, match thermal loads or electrical loads, and/or to meet reliability and/or power quality issues. Provide a simple one line drawing showing the BCHP system. Label components and provide input and output parameters where they provide relevant information, such as: heat or temperature outputs for generation equipment, type and pressure of fuel supplies, rating of equipment, and how many of each piece of equipment there is.]

3.2. BCHP System Design

[If there are more than one component for each type of equipment (generation or thermal recovery) provide a separate description of each of the components.]

3.2.1. Electrical Parameters

3.2.1.1. Overview

[Discuss the buildings electrical energy requirements describing the amount of electricity that will be provided by the electric generation equipment verses that provided from the grid, whether the generation capacity will be supplied to the grid and when, if there are special metering requirements, and if there is any special requirements, such as high reliability or the need for back-up power. Explain what happens with excesses or shortages of electricity.]

3.2.1.2. Electrical Generation Prime Mover

[Provide the manufacture and the type of power supply equipment such as a microturbine, gas turbine, diesel engine, or fuel cell and.]

3.2.1.2.1. Generator (Type/Size)

[Provide the electrical ratings for the generator.]

3.2.1.2.2. Fuel Type

3.2.1.2.3. Waste Heat Profile

[Provide a description of the amount and quality of the waste heat. If available provide a chart or table indicating the manufactures exhaust parameters.]

3.2.1.3. Backup/Standby Power

[If back-up power is needed, describe the back-up power source (grid, diesel engine, batteries, etc.) ratings (kilowatts, KVA, amps etc.) and the manufacturer or supplier].

3.2.1.4. Grid Supply

[This section should include information such as the size of the service drop (KVA), the type of metering, applicable rate types, and if the service is three-phase. Describe any net metering if installed.]

3.2.1.5. Interconnection Requirements

[Discuss interconnection equipment required and why it is installed.]

3.2.2. Fuel Supply Description

[Provide a general overview of the fuel used by the facility including that used for generation and/or supplemental heating/cooling.]

3.2.3. Thermal Recovery Systems

3.2.3.1. Steam

[Describe the steam system(s) in place if waste heat is recovered to make process steam.]

3.2.3.2. Hot Water

[Describe the hot water system(s) in place if waste heat is recovered for building hot water heating or other uses such as laundry, pool heating, or some other heating process.]

3.2.3.3. Compression Chiller (Type/Size/Manufacturer)

[Describe the chiller system(s) in place if waste heat is recovered to drive a compression chiller.]

3.2.3.4. Absorption Cooling (Type/Size/Manufacturer)

[Describe the absorption cooling system(s) in place if waste heat is recovered for use in an absorption chiller.]

3.2.3.5. Desiccant (Type/Size/Manufacturer)

[Describe the desiccant (or enthalpy recovery) system(s) in place if waste heat is recovered to dry (or preheat) a desiccant wheel (or enthalpy wheel).]

3.2.4. Non-Recovery Thermal Systems

[Provide a description of any supplemental or redundant thermal systems to the BCHP systems described above, if applicable.]

3.3. Original/Baseline System Configuration

[If there was a previously installed heating and cooling system this section should discuss the previously installed system and a new conventional type system that would be normally installed in this building application in this area. If this building is new construction, this section should describe a conventional type system that would be normally installed in this building application in this area. Provide a simple one line drawing showing the BCHP system. Label components and provide input and output parameters where they provide relevant information, such as: heat or temperature outputs for generation equipment, type and pressure of fuel supplies, rating of equipment, and how many of each piece of equipment there is.]

3.3.1. Energy Supply Parameters

3.3.1.1. Electrical Supply Description

[This section should include information such as the size of the service drop (KVA), the type of metering, applicable rate types, and if the service is three-phase.]

3.3.1.2. Fuel Supply Description

[This section should include information such as the type of fuel used, the pressure of the fuel, and the rating on the supply.]

3.3.2. Thermal Systems

3.3.2.1. Heating

[If there are special thermal heating loads in the building beyond general area heating, such as a pool or laundry, include a separate description of each.]

3.3.2.1.1. System Description

3.3.2.1.1.1. System Type

3.3.2.1.1.2. Energy Source (Fuel Type/Electric/Other)

3.3.2.2. Cooling

[If there are special thermal cooling loads in the building beyond general area cooling, such as ice rink or computer equipment, include a separate description of each.]

3.3.2.2.1. System Description

3.3.2.2.1.1. System Type

3.3.2.2.1.2. Energy Source (Fuel Type/Electric/Other)

4. Energy Analysis (Baseline verses B CHP)

[For all analysis, if the B CHP system was a complete replacement of a previous installation 2 baseline cases should be developed, one for the previous installation and the second for a conventional replacement of the previous system. In this situation, there would be three cases depicted for each section; one for the original system, one for a conventional replacement, and one for a the B CHP installation. In cases where only components of a previous system are replaced or B CHP equipment added, only 1 baseline case, showing the previous installation, need be made.]

4.1. Electrical Parameters

[The information in this section provides for the results of a comparison of the electrical requirements focusing on the reduction from the offsite electrical grid. This section should provide written, tabular and graphical representations of the various parameters in the subsections depicting the reduction effected by the B CHP generation and thermal recovery equipment verses the baseline case(s) with no power generation. It is important in this section not only to show how the generation reduces the demand on the offsite power source, but also how the thermal recovery system(s) also reduce the demand on the grid. If there are any electric grid or supply problems, they should be described in this section.] [At minimum monthly information should be included. Suggested tables and figures include:]

• **Table 4.1-1 Electrical Parameters**

Description	Units	Baseline	B CHP
Electric Load	kw		
Electric Peak	kw		
Annual Electrical Consumption	kw-hr		

• **Figure 4.1–1 Peak Load Day – Summer (or Winter)**

[Insert graphical profile of typical peak load for facility.]

• **Figure 4.1–2 Average Summer Day Load Profile**

[Insert graphical profile of typical average summer day load for facility.]

• **Figure 4.1–3 Average Winter Day Load Profile**

[Insert graphical profile of typical average winter day load for facility.]

4.2. Thermal Requirements

[The information in this section provides for the results of a comparison of the thermal requirements focusing on the utilization of waste heat. This section should provide written, tabular and graphical representation of the various parameters in the subsections depicting the thermal energy produced by the B CHP generation equipment and the use of the waste heat by the thermal recovery equipment verses the baseline case(s) with no power generation. This section should reiterate how the thermal recovery equipment reduces the demand from the offsite grid.]

4.2.1. Thermal Loads

[Suggested tables and figures include:]

• **Table 4.2-1 Thermal Parameters**

Description	Units	Baseline	BCHP
Thermal Capacity	BTU		
Heating	BTU		
Cooling			
Sensible	BTU		
Latent*	BTU		
Annual Thermal Use	BTU		

** [Latent heat should be consider and discussed for all applications, but must be discussed when Indoor Air Quality (IAQ) is important (such as in schools, ice rinks, hospitals, or in high humidity areas) or when a desiccant system is being used.]*

• **Table 4.2-2 Annual Thermal Energy Provided** (YEAR) **[MMBTU]**
(BCHP and Baseline Case)

	Recovered	Supplemental	Delivered
Jan			
Feb			
Mar			
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			
TOTAL			

4.3. Fuel Usage

[The information in this section provides for the results of a comparison of the fuel requirements acknowledging the increased use due to the inclusion of power generation. Discussion should include the availability of various fuels to the site and the reasons for the fuel type(s) chosen. This section will provide written, tabular and graphical representation of the various parameters in the subsections depicting the fuel consumed by the BCHP generation equipment and if any, in the thermal recovery equipment verses the baseline case(s) with no power generation. This section should address any problems associated with the use of this fuel, such as safety, regulatory, or availability issues.] [At a minimum annual fuel consumption should be addressed.]

• **Table 4.3-1 Fuel Usage Parameters**

Description	Units	Baseline	BCHP
(Fuel Type 1)			
Average Daily Fuel Consumption			
Winter			
Summer			
Peak Daily Fuel Consumption			
Annual Fuel Consumption			
Annual Fuel Consumption	BTU		
(Fuel Type 2)			
Average Daily Fuel Consumption			
Winter			
Summer			
Peak Daily Fuel Consumption			
Annual Fuel Consumption			
Annual Fuel Consumption	BTU		
(Fuel Type 3)			
Average Daily Fuel Consumption			
Winter			
Summer			
Peak Daily Fuel Consumption			
Annual Fuel Consumption			
Annual Fuel Consumption	BTU		
TOTAL Annual Fuel Consumption	BTU		

5. Financial Analysis (Baseline verses BCHP)

[For all analysis, if the BCHP system was a complete replacement of a previous installation 2 baseline cases should be developed, one for the previous installation and the second for a conventional replacement of the previous system. In this situation, there would be three cases depicted for each section; one for the original system, one for a conventional replacement, and one for a the BCHP installation. In cases where only components of a previous system are replaced or BCHP equipment added, only 1 baseline case, showing the previous installation, need be made.]

5.1. Assumptions

*[List any assumptions, such as inflation rates, interest rates, tax rates, or escalation factors. Assume a service life of **TBD** years.]*

5.2. Project Cost (Estimated/Actual)

[The information in this section may be better summarized and enhanced in tabular and/or graphic format to more concisely convey the information.]

5.2.1. Equipment

[The information in this section provides for the results of a comparison of the costs associated with the equipment of the BHP system versus a conventional system. It should also include a comparison between the actual cost for the equipment for the BHP system and the estimated cost. This section should describe the costs associated with purchase of the actual physical equipment. It should include any instrumentation, protective equipment (interconnect relaying), and controls for the system as well as shipping and delivery charges.] [At a minimum the cost for the entire project should be included.]

• **Table 5.2-1 Equipment Costs**

Equipment	Equipment Cost		Instrumentation/Controls		Shipping & Delivery		TOTAL	
	Estimated	Actual	Estimated	Actual	Estimated	Actual	Estimated	Actual
Power Generation Equipment	\$0	\$0	\$0	\$0	\$0		\$0	\$0
Cooling Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Desiccant	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Heating Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
System Instrumentation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
System Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL COSTS - Estimated	\$0		\$0		\$0		\$0	
TOTAL COSTS - Actual		\$0		\$0		\$0		\$0

5.2.2. Engineering/Installation

[The information in this section provides for the results of a comparison of the costs associated with the engineering and installation of the BHP system versus a conventional system. It should also include a comparison between the actual engineering/installation cost for the equipment for the BHP system and the estimated cost. This section should describe the costs associated with engineering, design and installation of the BHP system. It should include any special testing requirements.]

• **Table 5.2-2 Engineering and Installation Costs**

	BHP System		Conventional
	Actual	Estimated	Estimated
Design			
Drawing			
Labor			
Site Preparation/Modification			
TOTAL COST	\$0	\$0	\$0

5.2.3. One-Time Fees

[The information in this section provides for the results of a comparison of the one-time fees associated with installation of the BCHP system verses a conventional system. It should also include a comparison between the actual one-time fees for the installation of the BCHP system and the estimated fees. This section should describe the costs associated with interconnect, exit, permitting and sitting fees.]

• **Table 5.2-3 One Time Fees**

	BCHP System		Conventional
	Actual	Estimated	Estimated
Sitting Fees			
Construction Permit			
Exit Fee			
Interconnection Fee			
TOTAL COST	\$0	\$0	\$0

5.3. Annual Costs (Estimated/Actual)

[The information in this section may be better summarized and enhanced in tabular and/or graphic format to more concisely convey the information.]

5.3.1. Maintenance Costs

[The information in this section provides for the results of a comparison of the maintenance costs associated with installation of the BCHP system verses the baseline system(s). It should also include a comparison between the estimated maintenance costs for the BCHP system and the actual maintenance costs. This section should describe the actual and anticipated maintenance costs associated with each of the systems over the service life when annualized. If a maintenance contract is in force, describe the financial requirements and terms of the contract.]

• **Table 5.3-1 Maintenance Costs**

	BCHP System		Conventional
	Actual	Estimated	Estimated
Service Contract			
Routine Maintenance			
Monthly			
Quarterly			
Yearly			
Special Maintenance (yearly average cost)			
Overhaul			
Replacements			
TOTAL COST	\$0	\$0	\$0

5.3.2. Operating Costs

5.3.2.1. Electrical Costs

[The information in this section provides for the results of a comparison of the annual electrical costs associated with installation of the BCHP system versus the baseline system(s). It should also include a comparison between the estimated electrical costs assumed for the BCHP system and the actual electrical costs. This section should describe the actual and anticipated electrical costs and savings depicted on a monthly basis for the first year, then summarized by year for subsequent years.]

5.3.2.2. Fuel Costs

[The information in this section provides for the results of a comparison of the annual fuel costs associated with installation of the BCHP system versus the baseline system(s). It should also include a comparison between the estimated fuel costs associated with the BCHP system and the actual cost. This section should describe the actual and anticipated fuel costs and savings depicted on a monthly basis for the first year, then summarized by year for subsequent years.]

5.3.2.3. Operator Costs

[The information in this section provides for the results of a comparison of the annual electrical operations personnel costs associated with installation of the BCHP system versus the baseline system(s). It should also include a comparison between the actual operator costs for the BCHP system and the estimated cost. This section should describe the actual and anticipated operator costs and savings depicted on a monthly basis for the first year, then summarized by year for subsequent years.]

• **Table 5.3-2 Operating Costs**

	BCHP System		Conventional
	Actual	Estimated	Estimated
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
TOTAL			

5.3.3. Total Costs

[The information in this section should summarize the results of a comparison of all costs associated with installation of the BCHP system versus the baseline system(s). It should also include a comparison between the actual total costs for the BCHP system and the estimated cost. This section should describe the actual and anticipated costs and savings depicted on a monthly basis for the first year, then summarized by year for subsequent years.]

• **Table 5.3-3 Total Annual Costs**

	BCHP Plant	Baseline
INCOME		
<i>[Identify any Income from sales of power or heat to others.]</i>		
GENERAL EXPENSES		
Salaries		
ELECTRICAL EXPENSES		
Wages		
Fuel Oil		
Gas		
Utility Electricity		
Water/Sewer		
Maintenance		
HEATING & COOLING EXPENSES		
Wages		
Fuel Oil		
Gas		
Water/Sewer		
Maintenance		
TOTAL		

6. Financial Considerations

[If the system has been operating for several years, it would be more informative to discuss the actual performance than to perform the analysis and calculations described below.]

6.1. Net Present Value Analysis

*[This section provides the results of a net present value associated with installation of the BCHP system versus the baseline system(s). It should also include a comparison between the actual net present value for the BCHP system and the estimated net present value. The net present value shall be evaluated for the **TBD** Service life of the system.]*

6.2. Payback Period

[This section provides the payback periods associated with installation of the B CHP system verses the baseline system(s). It should also include a comparison between the actual payback period for the B CHP system and the estimated payback period.]

6.3. Internal Rate of Return

[This section provides the internal rate of return associated with installation of the B CHP system verses the baseline system(s). It should also include a comparison between the actual internal rate of return for the B CHP system and the estimated internal rate of return.]

7. Operability Analysis (Baseline verses B CHP)

[This section provides the overall performance parameters associated with installation of the B CHP system verses the baseline system(s). It should also include a comparison between the actual performance parameters for the B CHP system and the estimated performance parameters. This section should include the differences including the effects from the generation source.]

7.1. Efficiency

7.2. Reliability

7.3. % Downtime

8. Installation Analysis (Baseline verses B CHP)

8.1. Location Requirements for Installation

[This section provides the comparison of the area and sitting requirements associated with installation of the B CHP system verses the baseline system(s).]

8.2. Time to Install (Estimated/Actual)

[This section provides the comparison of the time required to install the B CHP system verses the baseline system(s). It should also include a comparison between the actual time to install the B CHP system and the estimated time. It should address each time period separately in order to provide insight as to where delays are encountered and where enhancements might be made. If there is significant delays (>TBD%) describe any known reasons for delay.]

- 8.2.1. Design Started
- 8.2.2. Equipment Ordered
- 8.2.3. Installation Started
- 8.2.4. Installation Completed

9. Environmental Considerations

[Discuss any environmental controls or restrictions that exist on the BCHP system. This section provides the comparison of the effluents released from the BCHP system versus the baseline system(s). It should also include a comparison between the actual effluents from the BCHP system and the estimated effluents. This section should also describe the differences in effluents displaced by the reduction in electricity due to the thermally activated technologies (absorption chiller and desiccants).]

- 9.1. NO_x
- 9.2. SO₂
- 9.3. CO₂
- 9.4. VO_x
- 9.5. Mercury

10. Barriers/Incentives/Lessons Learned

[This section should provide descriptions of the various barriers, incentives, and lessons learned as indicated by the various parties involved in the installation and operation of the BCHP system. This information can be obtained from interviews conducted and ascertained from comments and information obtained during data gathering.]

- 10.1. Regulatory
- 10.2. Technical
- 10.3. Financial
- 10.4. Business Practices

SECTION B CASE STUDY



[Name of Facility]
Building Cooling, Heating, and Power Plant

Site Description

[Provide an overview summarizing the facility and any other relevant information that would portray the characteristics of the site and the application of the BCHP facility to that site. Such as:

- Building use market sector
- Square feet or number of buildings served
- Cit, part of State if not well know city, and State
- Any special considerations or applications regarding the site.]



Figure 4: Provide a photo of the plant or a photo portraying a characteristic piece of equipment at the facility.

Cooling, Heating, and Power for Buildings (BCHP)
Configuration

[Provide a bulleted list describing the number and types of each piece of equipment that comprises the BCHP system. Such as:

- ◆ The number and type of primary generation equipment including power rating and fuel type,
- ◆ The number and type of heat recovery and/or thermally activated equipment including manufacturer and size or equipment rating,
- ◆ The number and type of any supplemental conventional heating and or cooling equipment.]

Financial Statistics

[Provide a summary of the cost of the BCHP installation and the financial performance information. Include:]

Total Cost: \$ _____
Original Goal: Payback in ___ years
Actual Performance: Payback in ___ years
Operating Savings: Approximately \$ ___/yr
Internal Rate of Return: ___%

Energy/Financial Analysis Overview

[Provide a summary of the results of the Energy and Financial Analysis from the Case Study. List and identify key assumptions that answer such questions as:

Assumptions:

- ◆ *What is the normal operating schedule of the plant?*
- ◆ *How much of the electric consumption/ demand is met by the generation system?*
- ◆ *What happens with excess or shortages of electricity?*
- ◆ *How much of the thermal load is met by the system?*
- ◆ *If the system does not meet building thermal loads, how are shortages made up?*
- ◆ *Are there any special operating conditions or times when components of the BCHP system were not available?*
- ◆ *What are the differences between the BCHP plant and the Baseline plant?]*



Figure 1: *[Provide a picture portraying a characteristic piece of equipment at the facility.]*

Example

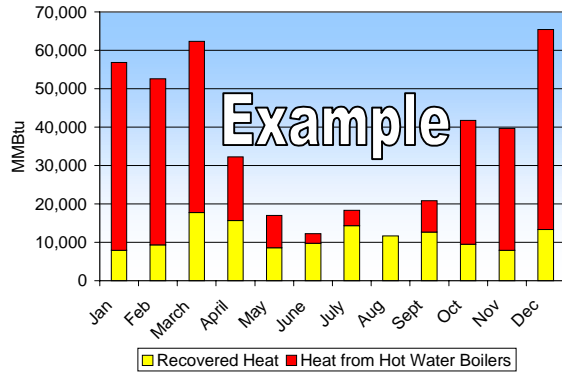


Figure 2: Annual Thermal Energy Provided (Example)

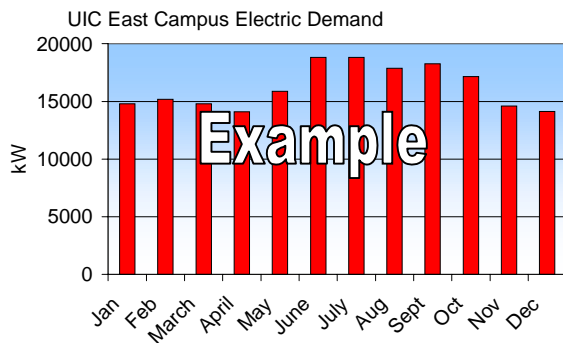


Figure 3: Peak Electric Demand Profile (Example)

	BCHP Plant	Baseline Plant
Natural Gas	1,178,356 MMBTU	538,645 MMBTU
#2 Fuel Oil	169,517 gallons	0

Table 1: Annual Total Fuel Usage (Example)

	Generated On-Site	Sold Back to the Utility	Purchased from the Utility	Total Delivered to Campus
Jan	4,303		3,408	7,711
Feb	4,442		2,412	6,854
March	3,991		3,871	7,862
April	6,050		1,191	7,241
May	2,337			9,463
June	7,626			5,578
July	10,512		2,301	12,813
Aug	10,043	-1,924		8,119
Sept	9,917	-2,935		6,982
Oct	8,214	-454		7,760
Nov	8,432	-1,335		7,097
Dec	7,428	-359		7,069
Total	83,295	-9,055	20,309	94,549

Table 2: Annual Electric Generation and Use in MWhr (Example)

	BCHP Plant	Baseline
INCOME		
Sold electricity	\$ 135,858	N/A
St Ignatius School	\$ 70,827	N/A
GENERAL EXPENSES		
Salaries	\$ 204,619	\$ 204,619
ELECTRICAL EXPENSES		
Electricity Wages	\$ 481,000	N/A
Electricity Fuel Oil	\$ 77,777	N/A
Electricity Gas	\$ 3,048	N/A
ComEd Electricity	\$ 6,710,445	6,710,545
Electricity Water/Sewer (a)	\$ 57,723	N/A
Maintenance	\$ 120,000	N/A
HEATING & COOLING EXPENSES		
Heating & Cooling Wages	\$ 886,600	\$ 886,600
Heating & Cooling Fuel Oil	\$ -	\$ -
Heating & Cooling Gas	\$ 1,674,764	\$ 2,462,380
Heating & Cooling Water/Sewer (b)	\$ 52,437	\$ 52,437
Maintenance	\$ 58,200	\$ 58,200
TOTAL	\$ 8,443,263	\$ 10,374,782

Table 3: Economic Comparison Details Between Baseline and BCHP Plant (Example)

Results

[Provide information that summarizes the results that can be ascertained from the case study.]

Additional Considerations

[Provide any other information such as overall source energy reductions, or reductions in effluents.]

Provide information from the Barriers, Incentives, or Lessons Learned section of the case study that would be of interest.]

For further information contact:



Address:

[Address of CHP Application Center responsible for Fact Sheet]

Phone: (XXX) XXX-XXXX

Fax: (XXX) XXX-XXXX

www.CHPCenterXX.org

SECTION C FACT SHEET



FACT SHEET

[Site Name]

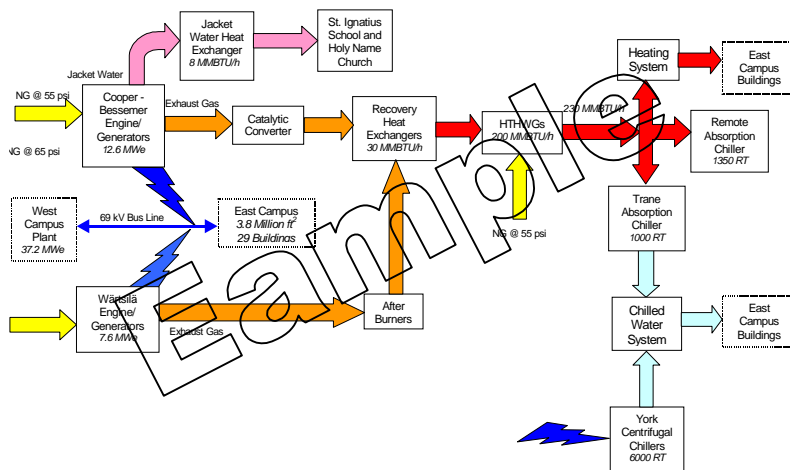
Building Cooling, Heating, and Power Plant

Site Description

[Provide a brief description of the site including, the name of the site, the market sector that it is in, the electrical generation capacity, the amount of heat recovered, the number of square feet or buildings serviced, and any other highlights particular to the site.]

Cooling, Heating, and Power for Buildings (BCHP) Configuration

BCHP System



BCHP System (YEAR)	
Total Cost:	\$XXM
Original Goal:	Payback in XX years
Actual Performance:	Payback in XX years
Operating Savings:	Approximately \$XM/yr
Internal Rate of Return:	XX%

Energy/Financial Statistics

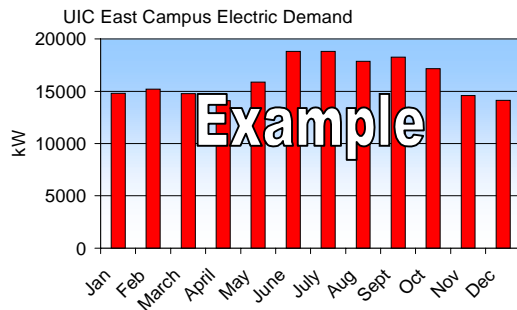


Figure 1: Monthly Electric Demand

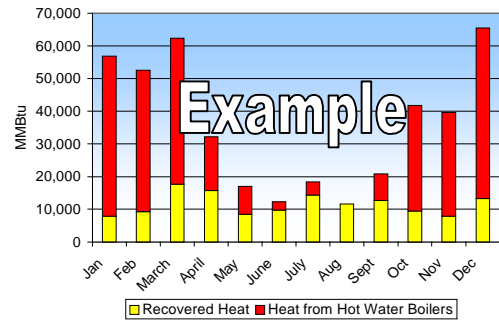


Figure 2: Annual Energy

	BCHP Plant	Baseline
INCOME		
Sold electricity	\$ 135,858	NA
St Ignatius School	\$ 70,827	NA
GENERAL EXPENSES		
Salaries	\$ 204,619	\$ 204,619
ELECTRICAL EXPENSES		
Electricity Wages	\$ 481,400	NA
Electricity Fuel Oil	\$ 7,477	NA
Electricity Gas	\$ 1,115	NA
ConnEd Electricity	\$ 6,710,545	NA
Electricity Water/Sewer (a)	\$ 57,723	NA
Maintenance	\$ 120,000	NA
HEATING & COOLING EXPENSES		
Heating & Cooling Wages	\$ 886,600	\$ 886,600
Heating & Cooling Fuel Oil	\$ -	\$ -
Heating & Cooling Gas	\$ 1,674,764	\$ 2,462,380
Heating & Cooling Water/Sewer (b)	\$ 52,437	\$ 52,437
Maintenance	\$ 58,200	\$ 58,200
TOTAL	\$ 8,443,263	\$ 10,374,782

Financial Comparison Baseline and BCHP Plant

Additional Considerations

[Provide a description of other elements of the BCHP installation that might be of interest. Include such things as source energy and emissions reductions, special funding or financing considerations, and issues with fuel or electricity costs.]

For further information contact:



Address:

[Address of CHP Application Center responsible for Fact Sheet]

Phone: (XXX) XXX-XXXX

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