



First Level Site Screening

Midwest CHP Application Center (MAC)

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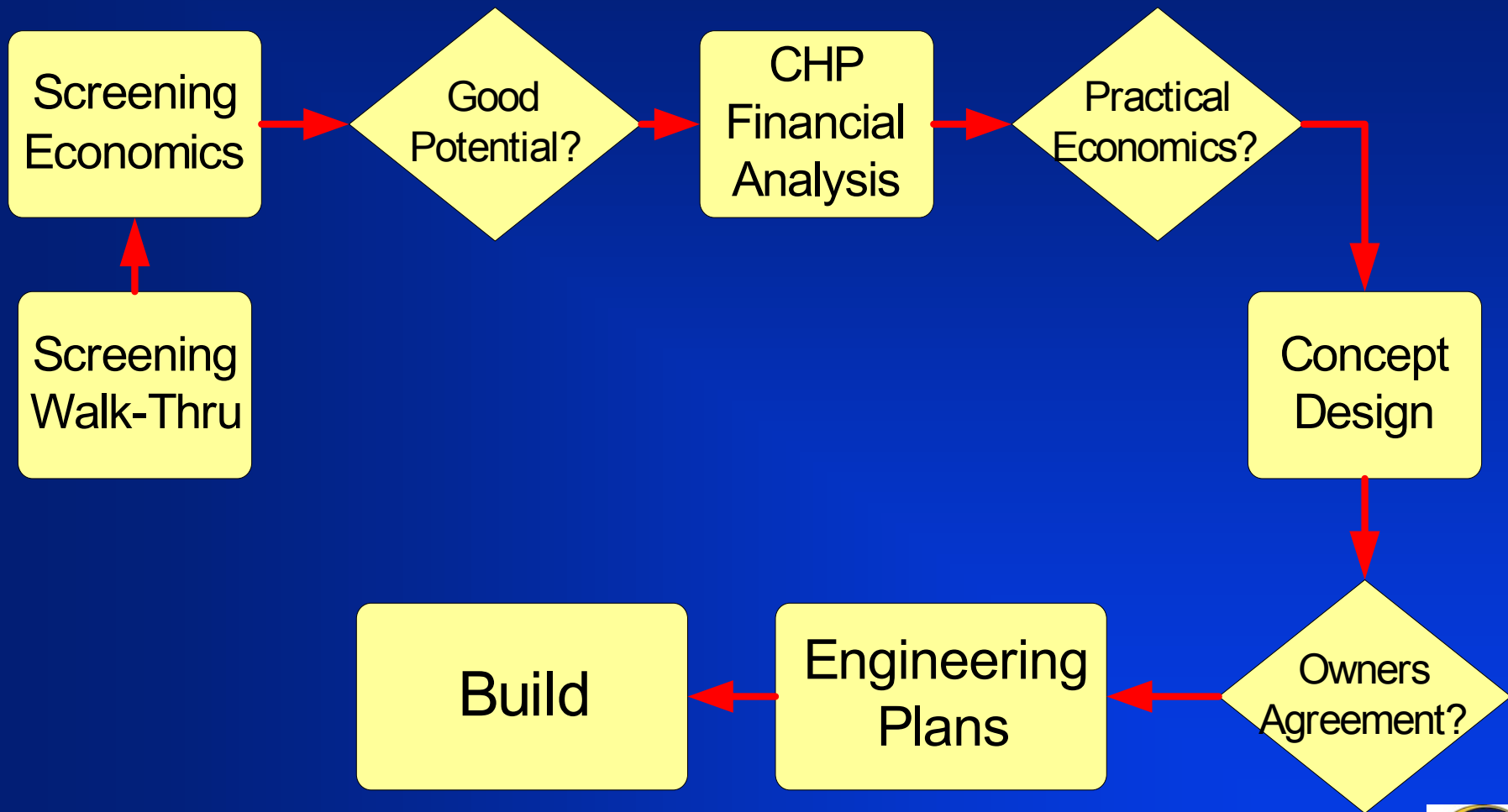


***University of Illinois at Chicago
Energy Resources Center***

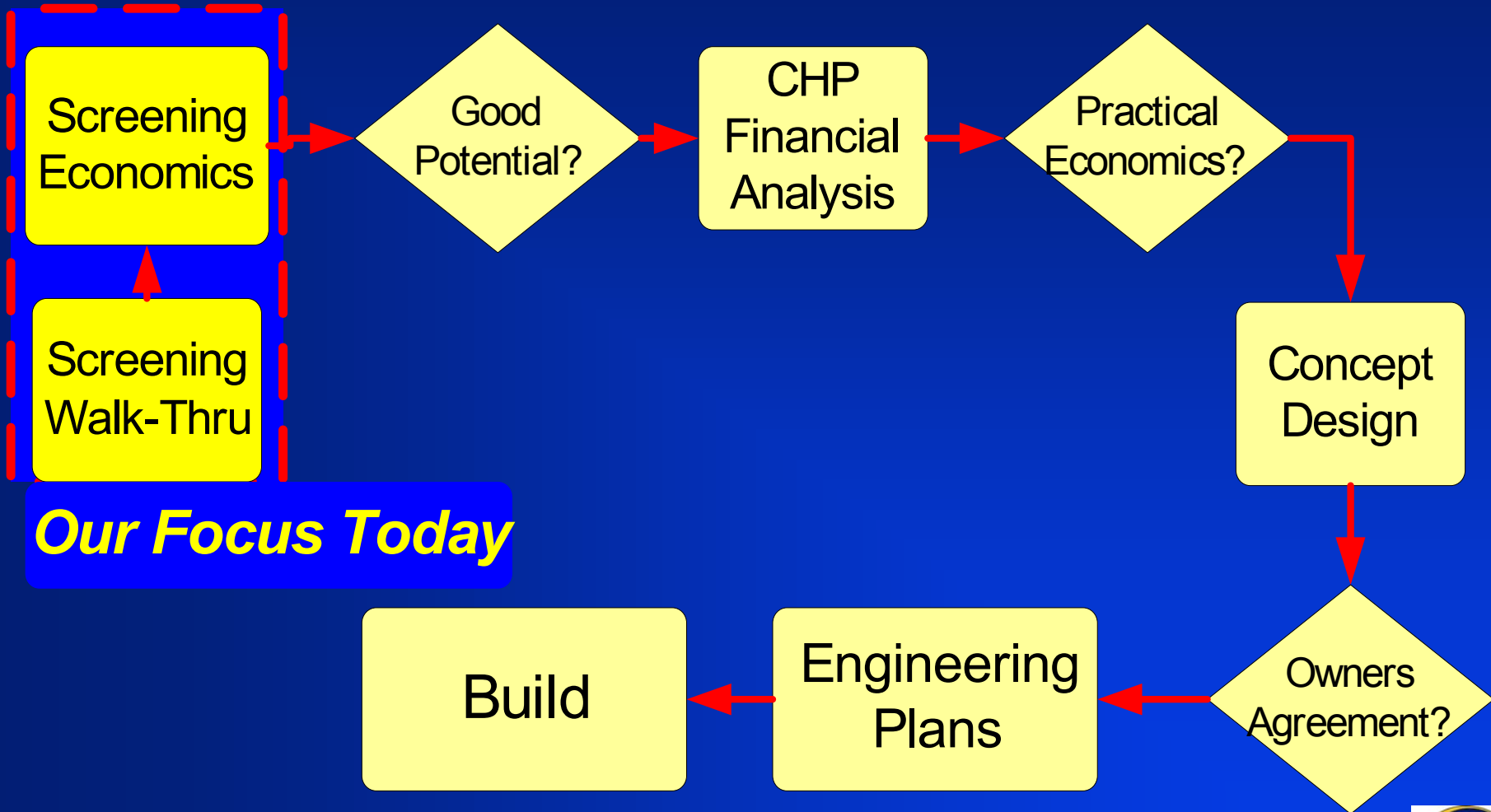
Overview

- CHP Systems are a Major Investment
- The Evaluation is Time Consuming
 - Done in Progressive Steps
 - To Avoid Excessive Outlays Before Some Verification of Potential

The Steps



Our Focus Today is the Starting Point



Initial Site Screening Walk-Thru

- Need a Low Cost Evaluation
- Need to Have Local Engineers Up to Speed on Quick Evaluation Procedure
- End-Product
 - Does the Site Warrant a Full Financial Analysis?
- Presenting an “*Initial Walk-Thru Question List*”

- Asking for the Utility Bills
 - Can Obtain Understanding of Facility Consumption
 - Indicator of What Facility is Paying
 - May Not Provide Full Details on the Rate Schedules

Initial Walk-Thru Question List
 Questions for the Facility Operator

Check-
Off Response

Obtain 12 Months of Electric Bills

- Do Bills Contain Monthly Demand Values?
- Do Bill Contain On-Peak and Off-Peak Consumption?
- Do Bill Contain Cost Totals?
- Name of Rate Schedule Used

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="text"/>	

Obtain 12 Months of Gas Bills

- Do Bill Contain Energy Usage?
- Do Bill Contain Cost Totals?
- Name of Rate Schedule Used

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="text"/>	

Obtain 12 Months of Fuel Oil Bills (If Used)

- Do Bill Contain Energy Usage?
- Do Bill Contain Cost Totals?

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

Type of Fuel Oil Used

<input type="checkbox"/>	No 2
<input type="checkbox"/>	No. 6

- Operating Hours are Essential in Projecting from Monthly Consumption to Hourly Consumption

Industrial Loads - Ask for Information on Operating Schedules

Number of Hours of Operation on Weekdays (Hrs./Day)

Number of Hours of Operation on Weekends (Hrs./Day)

Schedule of Major Process Heat Loads (Hrs./Day)

Does the Plant Have a Steam System? Operating Pressure? (psig)

Commercial Loads - Ask for Information on Operating Schedules

Hours Facility is Open for Business or Largely Occupied (Hrs./Day)

Type of Heating System? (Central Boiler/Rooftop Units?)

Type of Cooling System? (Central Chilled Water/Rooftop Units?)

- Electric Connection Issues Can Be a Major “Showstopper” in CHP Applications to Existing Facilities
- Special Needs Such as Electric Back-Up Capability and Improved Power Quality May Sell CHP Even when Economics Alone Won’t

Electric Connection Issues

Certain Issues with the Current Electric Power Service Can Impact CHP Economics. These Questions Investigate Power Service Issues

How Many Electric Services and Meters Serve Your Facility?

Do All of Your Meters Originate at the Same Utility Feeder?

Estimate the Distance Between the Multiple Meters in Your Facility

Has the Facility Experienced Problems with Power Quality Such as:

Low Voltage?

Poor Frequency Quality?

Does the Facility Have Any Significant Need for UPS Systems?

Has the Facility Had Frequent Power Outages?

Can a Value be Stated for the Cost of a Power Outage per Hour?

Does the Facility Have Back-Up Generation?

How Old are the Back-Up Generators

What is the Facilities Current Power Factor

(This Question Can Generally be Skipped for Commercial Buildings)

- The CHP System Must Have Some Way to Deliver Heating and Cooling to the Overall Building Load

Overall Location and Equipment Questions

Overall Location Questions: It is Important to Find a Location for the CHP System That Allows the System to be Affordably Connected to the Electric and Thermal Loads

If CHP is Installed - Where Can it Be Located?

How Close are the Existing Electric Feeders?

Does a Single Electric Distribution System Exist that Can be Used?
(Question Important for Multi-Building Campuses)

Does a Hot Water or Steam Piping System Exist that Could be Used?

How Close is the Existing Boiler Room? (Ft.)

What is the Approximate Efficiency of the Existing Boilers

What Sizes are the Existing Boilers?

No. 1	<input type="text"/>
No. 2	<input type="text"/>
No. 3	<input type="text"/>
No. 4	<input type="text"/>
No. 5	<input type="text"/>

- The CHP System Must Have Some Way to Deliver Heating and Cooling to the Overall Building Load

Is There a Significant Cooling Load?	<input type="text"/>
Can You Estimate the Maximum Cooling Load? (in Tons)	<input type="text"/>
Does the Facility Have a Chilled Water Distribution System?	<input type="text"/>
How Long is the Distance to the Existing Chiller Room (Ft.)	<input type="text"/>
How Old are the Existing Chillers	<input type="text"/>
What Type of Chillers are Currently Installed:	<i>Values Should Add to 100%</i>
Percent of Capacity in Electric Chillers	<input type="text"/> %
Percent of Capacity in Absorption Chillers	<input type="text"/> %
What Sizes are the Existing Chillers	No. 1 <input type="text"/>
Please Mark if Any of These Units are Absorbers	No. 2 <input type="text"/>
	No. 3 <input type="text"/>
	No. 4 <input type="text"/>
	No. 5 <input type="text"/>
	<input type="text"/>
Are There Concerns about Noise at the Selected System Location?	<input type="text"/>
Are There Concerns about Vibration at the Selected System Location?	<input type="text"/>



- **Some Miscellaneous Issues are Important**

- Obtaining Better Gas Rates for CHP Owners that Purchase More Gas than Before
- Cost of CHP System Stand-By Service by the Electric Utility
- Obtaining Rebates from State, Federal, or Utility Programs
- Some Info Used for Tax Implications for a For-Profit Owner
- Interest in Leasing or Third Party Ownership

Other Questions

Questions to Consider that Facility Operators May Be Able to Help With

Would the Facility be Able to Obtain Gas at a Lower Rate if the Gas Consumption of the Facility Were Larger	<input type="text"/>
What are the Electric Utility Stand-By Charges in This Area (\$/kW/Mo)	<input type="text"/>
Is the Facility Eligible for any State/Federal/Utility Rebate Programs?	<input type="text"/>
Is the Facility Owned by a For-Profit Company?	<input type="checkbox"/>
If Yes, What is Their Marginal Corporate Tax Rate?	<input type="text"/>
Would the Facility be Interested in Leasing a CHP Plant?	<input type="text"/>
Would the Facility be Interested in Having a Third Party Own the CHP Plant and Sell Them Power/Heating/Cooling?	<input type="text"/>



Summary

- Quick Run-Down List to Identify Some Important Questions
- The Answers to All Questions are Not Expected
- Will Aid in Both the Walk-Thru Economics and Also the Financial Analysis

References

- Places to Obtain Utility Rate Details
 - XCEL Energy:
 - <http://www.xcelenergy.com/EnergyPrices/RatesTariffsMN.asp>