



# CHP Funding Options

## 10/30/2014

Money...Money...Money...Money...

**In a survey, 90% of respondent's identified "money" as the obstacle to implementation of CHP projects.**

*Source: [www.districtenergy.org](http://www.districtenergy.org)*

**The number one reason energy management projects are not implemented is that there is not enough cash or the energy manager cannot get budget approval for the limited cash available.**

*Source: Association of Energy Engineers*

# Agenda

- Economics of CHP
- Client Owned
  - Purchasing
  - Loans
  - Leases
  - Performance Contracting
- Investment by others
  - Rental
  - PPA

# Sample Economics

	"Grid"	Load	CHP
 \$0.07 / kWh	\$896,000	1.6 MW @ 8000 Hours 12,800 MWh	\$314,000 E + \$150,000 O&M \$464,000 Total
 \$5.00 / MCF	78% Eff. \$273,000	42,700 MBH	\$307,000
Combined Utility Costs	\$1,169,000	 \$ 398,000 / Yr Savings	\$771,000

# Financial Overview

## Investment(s)

CHP Investment \$1.8 M

Annual O&M \$150 k

## Return(s)

Annual Net Save \$398 k

Annual Reliability \$X M

Fed Tax Credit \$180 k

Annual CO<sub>2</sub> ↓ 2200 T



## Sample CHP Solution

Pro Forma  
Cash Purchase

9-May-13

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Totals
Electrical Savings		896,000	958,720	1,025,830	1,097,639	1,174,473	1,256,686	1,344,654	7,754,003
Gas Savings		273,000	281,190	289,626	298,314	307,264	316,482	325,976	2,091,852
Federal Tax Credit		180,000							180,000
									0
<b>Total Annual Savings</b>		<b>1,349,000</b>	<b>1,239,910</b>	<b>1,315,456</b>	<b>1,395,953</b>	<b>1,481,737</b>	<b>1,573,168</b>	<b>1,670,631</b>	<b>10,025,855</b>
CHP System	1,800,000								1,800,000
Gas Usage		621,000	639,630	658,819	678,583	698,941	719,909	741,506	4,758,389
Maintenance		150,000	154,500	159,135	163,909	168,826	173,891	179,108	1,149,369
<b>Total Annual Costs</b>	<b>1,800,000</b>	<b>771,000</b>	<b>794,130</b>	<b>817,954</b>	<b>842,493</b>	<b>867,767</b>	<b>893,800</b>	<b>920,614</b>	<b>7,707,758</b>
<b>Annual Net Cash Flow</b>	<b>(1,800,000)</b>	<b>578,000</b>	<b>445,780</b>	<b>497,502</b>	<b>553,460</b>	<b>613,970</b>	<b>679,368</b>	<b>750,016</b>	<b>2,318,097</b>
<b>Cumulative Cash Flow</b>	<b>(1,800,000)</b>	<b>(1,222,000)</b>	<b>(776,220)</b>	<b>(278,718)</b>	<b>274,743</b>	<b>888,713</b>	<b>1,568,080</b>	<b>2,318,097</b>	

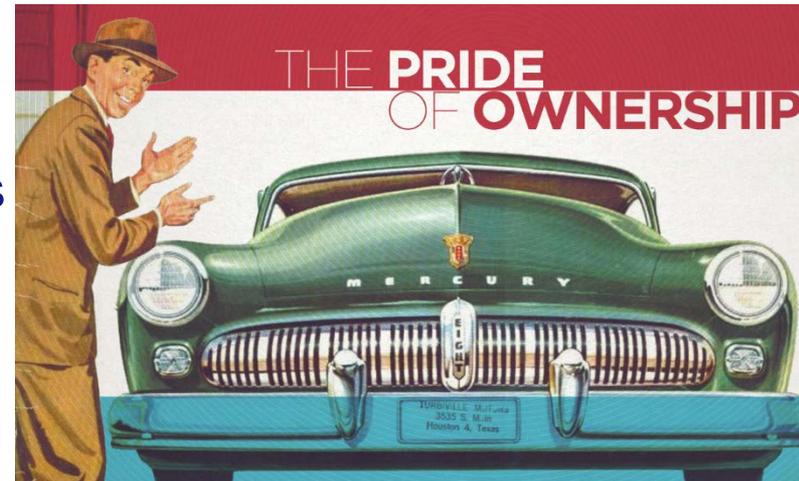
<i>Assumptions</i>	
Net Cash Flow	2,318,097
Internal Rate of Return	24.3%
Payback Period	3.5 Years
Project Cost	1,800,000
Project Duration	7 Years
Electrical Savings	7.0%
Gas Savings	3.0%
Federal Tax Credit	0.0%
Production Savings	0.0%
Gas Usage	3.0%
Maintenance	3.0%

Pro forma is for discussion purposes only. It is not an offer of credit.

# To own or not to own?

## *Ownership*

- Available grants and incentives
- Savings
- Risk of uptime
- Accelerated tax depreciation



## *Purchased utility or capacity*

- Additional redundancy
- Savings
- Reduced risk and concerns

# Internally Funded Projects

## Cash

### *Advantages*

- Speed
- Lower project risk
- Best life cycle cost

### *Disadvantages*

- Uses capital
- Lower secondary/resell value
- IBR may exceed market



# Debt instruments (Loans)

## Traditional loan

### *Advantages*

- Preserve capital
- Market interest rates

### *Disadvantages*

- Risk of ongoing financial commitments
- Interest expenses
- May require additional asset commitment
- Balance sheet treatment



# Debt instruments (Loans)

## Manufacture financing

### *Advantages*

- Preserve capital
- Can be favorable interest rates
- Can be easier transaction

### *Disadvantages*

- Risk of ongoing financial commitments
- Interest expenses
- May require additional asset commitment
- Usually narrow focus

# Leases

- Operating or Capital

## *Advantages*

- Preserves capital
- Evergreen asset
- Terms flexibility
- Tax deduction

## *Disadvantages*

- You don't own it
- Higher cost over life of system
- Continue cost payment
- IAS changes

# Performance Contracting

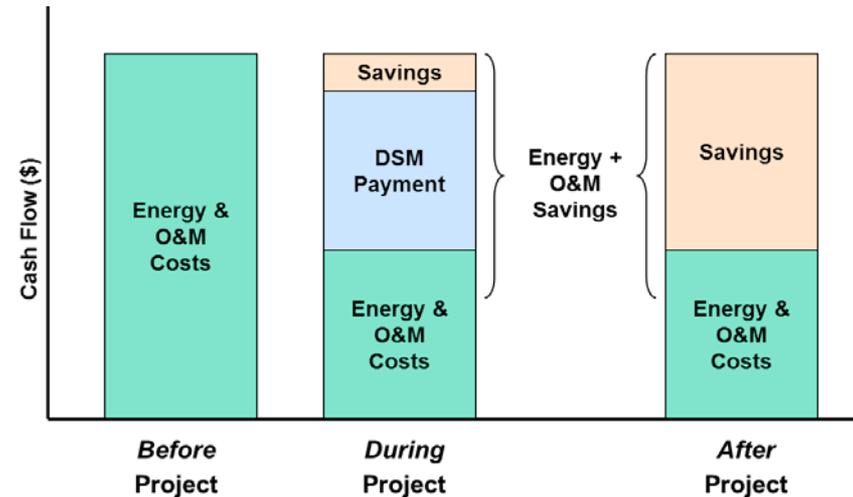
## Guaranteed Savings Projects

### *Advantages*

- No capital required
- Energy efficiency
- Terms flexibility

### *Disadvantages*

- Must be well planned
- Must find the right long-term team
- Savings verification



# Investor Owned

## Rental solutions

### *Advantages*

- No capital required
- Cash flow positive
- Terms flexibility
- Quick

### *Disadvantages*

- Short-term solution
- Can become expensive over time
- Aesthetics and noise

# Investor Owned

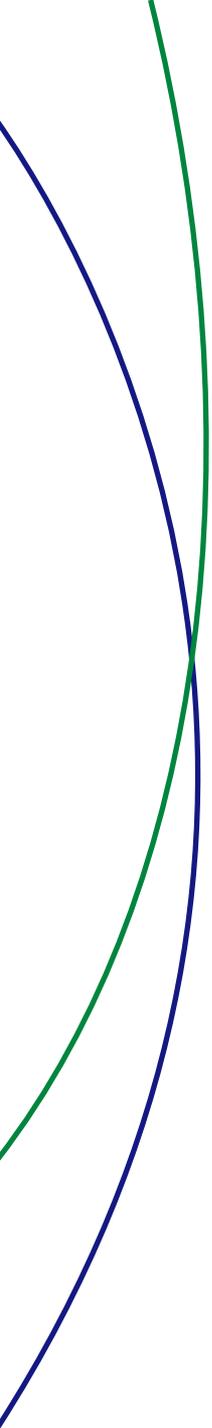
## Capacity Purchase (PPA)

### *Advantages*

- No capital required
- Credit treatment and flexibility
- System and load “Pooling”
- Terms flexibility
- Modernization

### *Disadvantages*

- Legal structure
- Lack of flexibility after contract



# Questions



## Kentucky CHP Program Workshop –November, 2014

