



## PowerSource Energy Services

*Presentation*

June 2009

## "The Power of the Future"



“Hybrid distributed generation, the small-scale production of electricity at or near customers' homes and businesses, combining renewable and conventional cogeneration can improve the reliability of power supply, reduce the cost of electricity, and lower emissions of air pollutants”

PowerSource applies distributed generation & co-generation to reduce a client's carbon footprint , its electrical load demand & hence its energy expenses.



- PowerSource ***finances, builds, owns and operates***(BOOT) ***combined heating, cooling and power systems*** (cogen/trigen) for hotels, malls, hospitals and industrial clients.
- The new system provides a ***guaranteed quality of service and minimum energy cost savings*** under an Energy Savings Performance Contract financed by PowerSource.
- PowerSource sells electricity, hot water and/or steam and/or chilled water to the customer at a discounted price under a ***10-15 year energy purchase agreement*** (PPA)
- The grid, back-up generators, individual boilers and chillers are replaced by a ***highly-efficient and reliable system*** using ***well-proven “cleaner” and “renewable” technologies***
- Being ***technology-neutral***, PowerSource designs plants according to customer's needs and market conditions using either:
  - diesel engines or gas turbines
  - hybrid solar PV and gas/diesel gensets
  - biomass boiler with steam turbine, biogasification, etc



## Issues faced by Industrial & Commercial facility owners/operators

- Volatile and rising public utility electricity costs
- Volatile and rising fuel costs for boilers & back-up gensets
- Fuel, lube, spare parts & maintenance obligations
- Declining reliability & quality of electricity from public utility
- Untapped process efficiencies capable of being “monetized”
- Clients have no desire to invest/operate energy systems & want to focus on core business
- Anti-cyclical market as facility owners/operators have stronger incentives to cut energy costs during recession

Solution = PowerSource cogen/trigen platform

# The PowerSource Solution



## A Simple Process

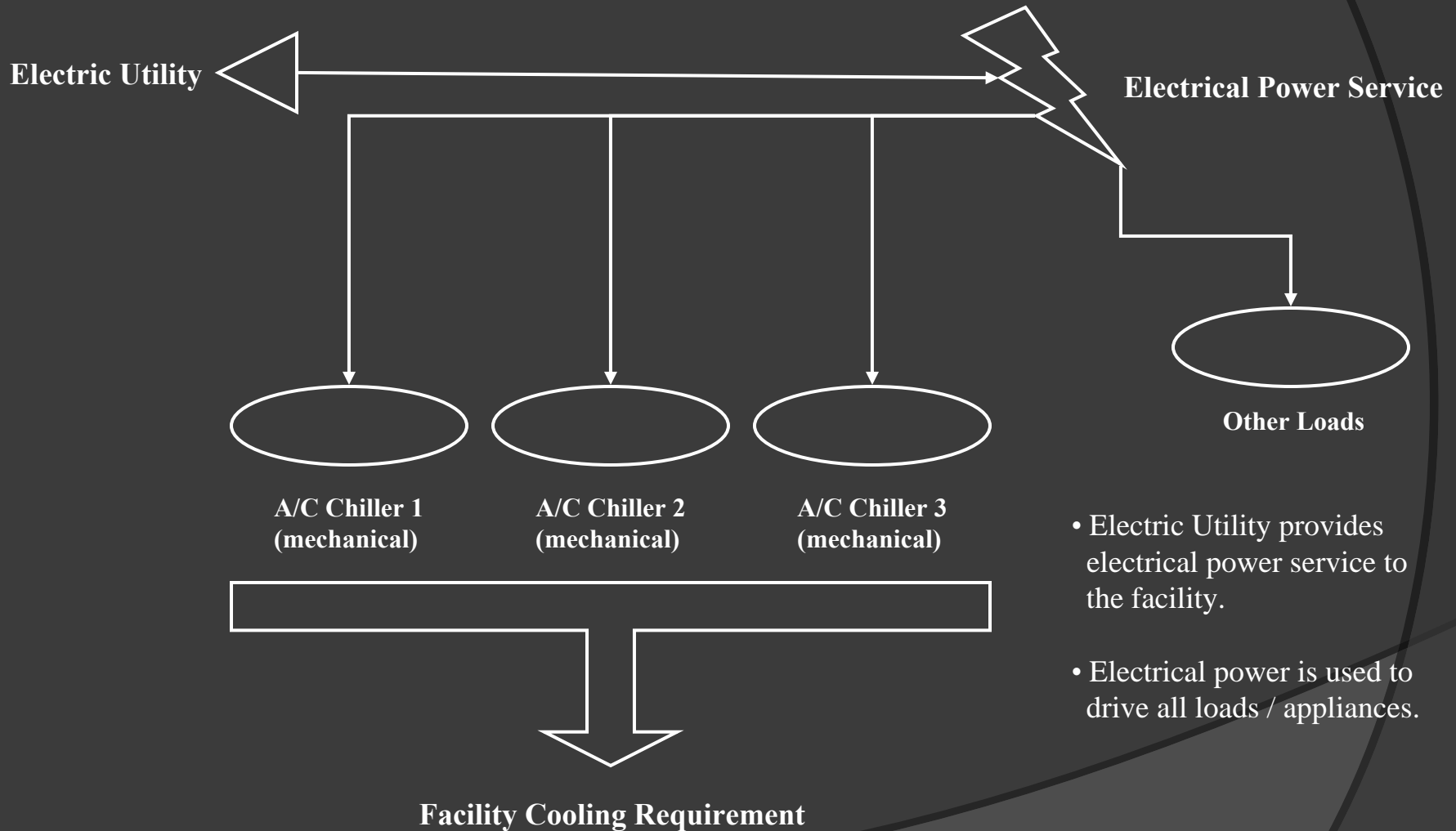
- Assess the client's historic public utility electricity and fuel expenditures (audit)
- Compare with cost of self-generated heating/cooling/power using our system
- Design a “captive” hybrid trigen power system as a primary source of power
- Finance 100% of the project costs
- In charge of System installation, Operation and Maintenance
- Generate savings from increased efficiencies
- Share savings with clients & recover investment from power sales over 10-15 yr
- Guarantee a minimum level of savings to client against current energy costs

# Value Proposition for Customers

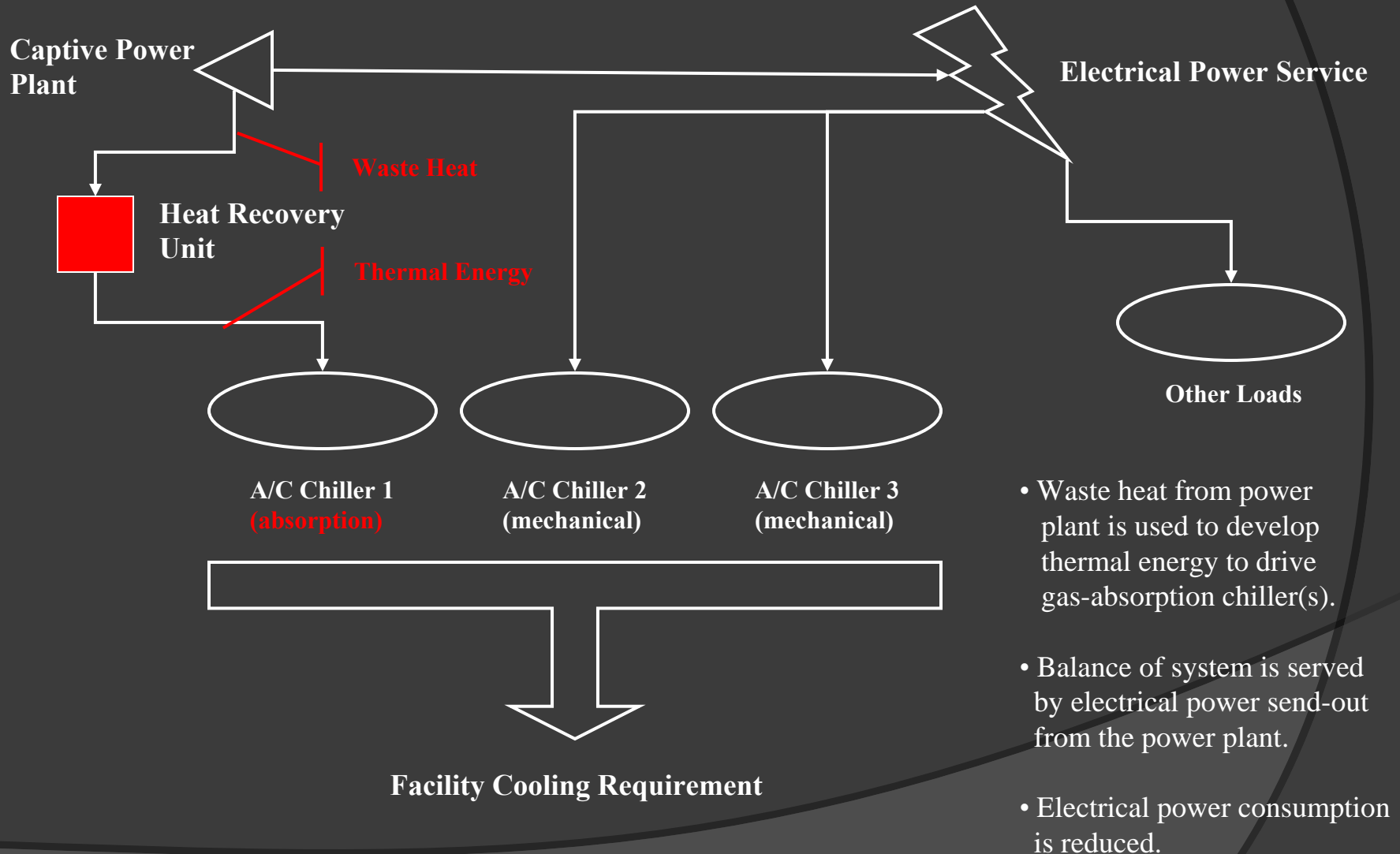


- Immediate reduction in energy costs => improvement of the bottom line
- Guaranteed lower costs => competitive advantage compared to industry peers
- No assets on balance sheet & no capital expenditure
- Client can focus resources on core business instead
- Increased efficiencies => reduction in GHG emissions + “Bragging rights”
- Increased reliability => no more equipment damage or service interruptions
- Public Utility Grid now becomes a back-up solution (safety net)
- Non-intrusive solution, no business interruption during construction
- Energy savings shared between client and PowerSource for 10-15 years
- After 10-15 years, client owns a sophisticated cogeneration plant
- After 10-15 years, client captures 100% of the savings

# Waste Heat Recovery Cogeneration: Standard Facility Energy Utilization Regime

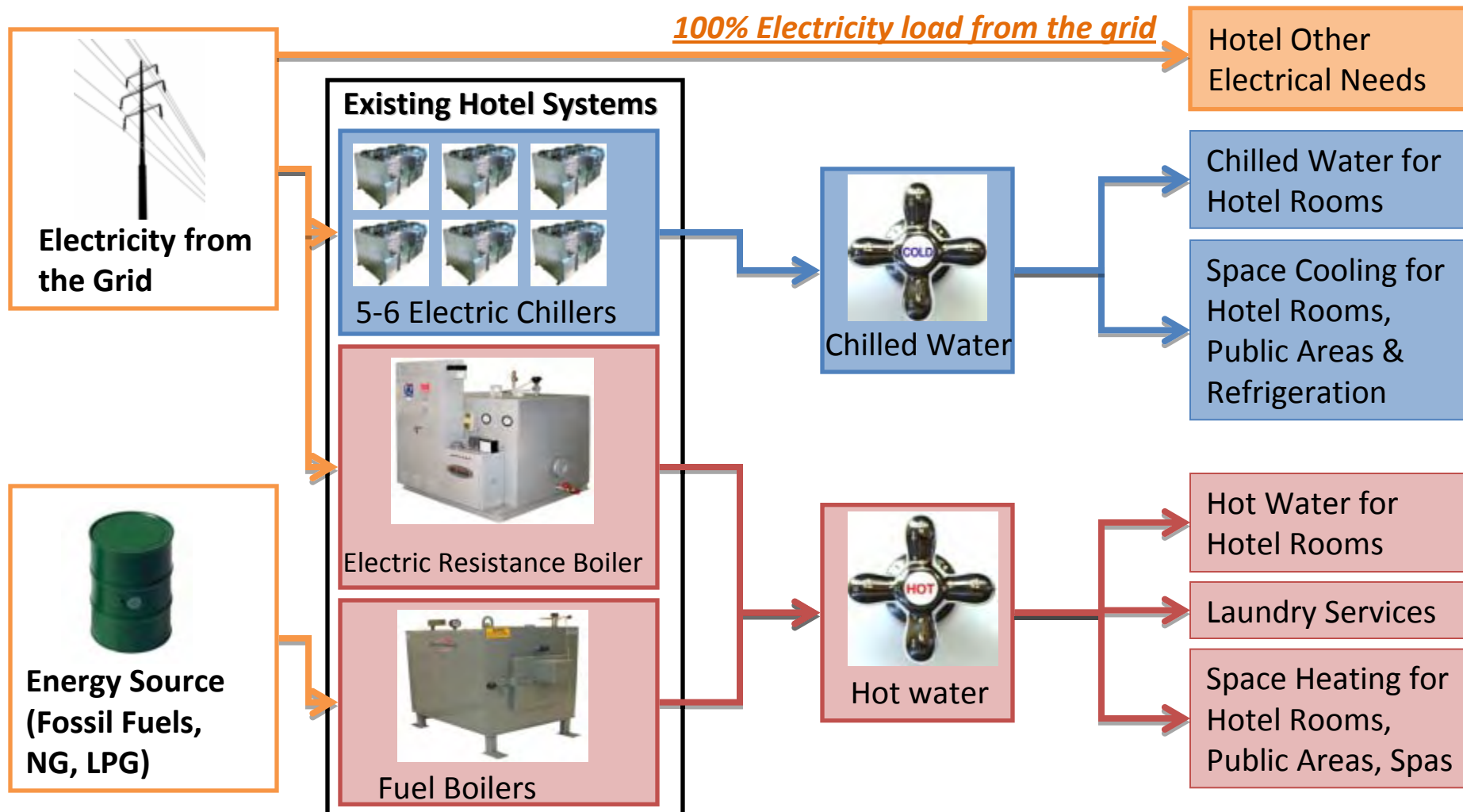


# Waste Heat Recovery Cogeneration: Cogeneration Plant Energy Utilization Regime

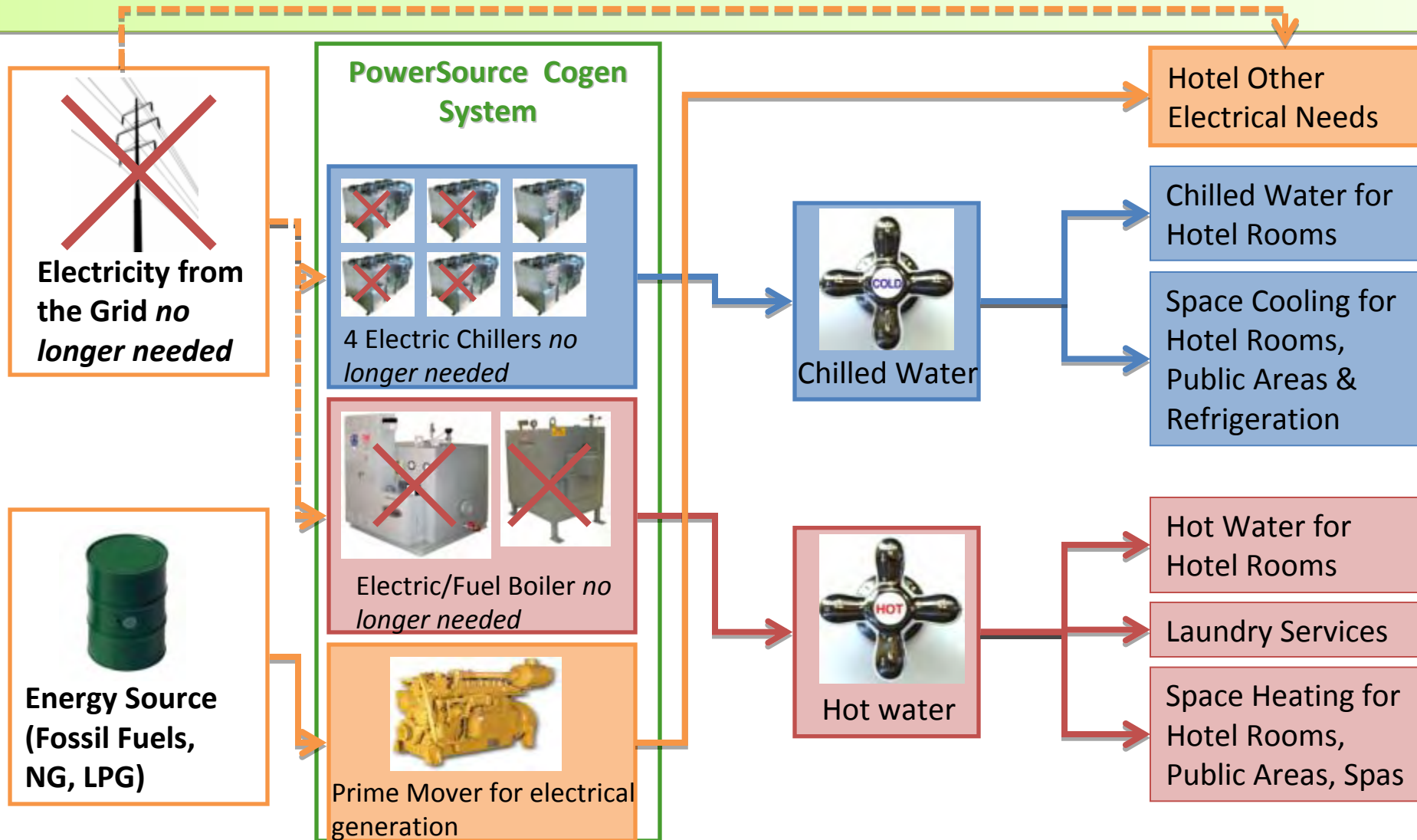




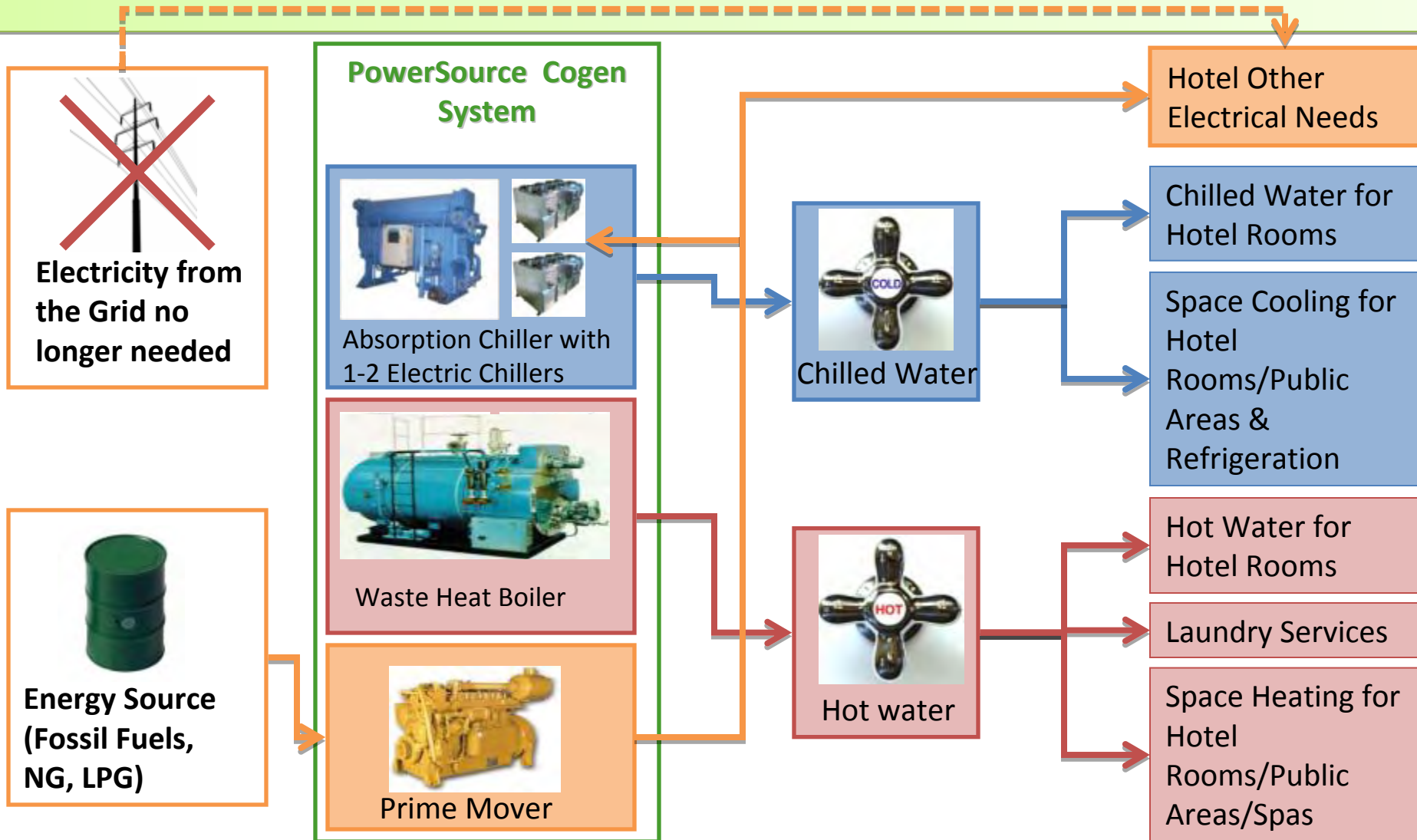
# Pre-Hotel Retrofit



# Redundant Equipment



# Post-Hotel Retrofit



# Agana Shopping Centre, Guam – Case Study



<b>Energy Supplier: (Build, Own &amp; Operate)</b>	<b>PowerSource Energy Services</b>
<b>Energy Offtaker: (Purchaser)</b>	Sy Family & SM Group's Agana Shopping Center, Guam
<b>Contractual Guarantee (Supplier):</b>	Minimum annual savings against comparable purchases of public grid- supplied electricity
<b>Contractual Guarantee (Offtaker):</b>	Purchase of all energy requirements from PowerSource & pass-through of all fuel price increases





MAR 5 2009



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CAUTION

P.P.E. TO BE WORN  
AT ALL TIMES

**DANGER**  
**AUTHORIZED  
PERSONNEL  
ONLY**  
HARD HAT & SAFETY SHOES  
REQUIRED

**DANGER**  
CONSTRUCTION AREA  
KEEP OUT

MAR 13 2009





MAR 28 2009



MAR 5 2009







MAR 28 2009





MAR 3 2009

# Project Implementation Phases



## Phase 1 - 90 Days

- Final Energy Audit
- Engineering Design
- Procurement & Logistics Planning
- Energy Services Agreement

## Phase 2 – 180 Days

- Permitting
- All Equipment Ordered:
- Gas Turbines or Medium-speed Diesel Gensets
- Photovoltaic Array
- Biomass/Biogasification System
- Co-generation equipment
- Fuel system & ancillary equipment
- Civil, mechanical & electrical
- Construction/Installation Completed
- Facility Commissioning

## Phase 3 – 15 Years

- Energy System Operations & Maintenance
- Operating Technicians
- Regular System Routine & Major Maintenance
- Fuel Supply Management

# Market Opportunity & Value Proposition



## Market Opportunity

- Volatile/rising electricity prices & fuel costs
- Declining grid quality/reliability
- Untapped efficiencies
- No desire to invest & operate energy systems



## PowerSource Solution

- Initial energy audits
- Guaranteed savings
- Design hybrid trigen system
- 100% financing
- Construction and O&M for 10-15 yrs



## Value Proposition

- Reduction in energy cost  
→ Increased Profitability & Competitiveness
- Increased reliability
- “Greener” building
- No capex outlay for client
- No operation, client focus on core business
- Certified for carbon credits

# Regional Biomass Resource Development



- ⦿ The CNMI has extensive agricultural expertise to develop multiple energy efficient strains of biomass feedstocks.
- ⦿ PowerSource is prepared to invest capital in the CNMI to develop a regional biomass feedstock supply capability.
- ⦿ PowerSource would provide investment capital; the CNMI would provide leased land for biomass plantation development & manage local farmers with guaranteed crop purchase contracts.
- ⦿ Local employment would be catalyzed, incomes improved & skills transferred.
- ⦿ Biomass feedstocks would be deployed in PowerSource cogeneration systems around the region.





## PowerSource Energy Services

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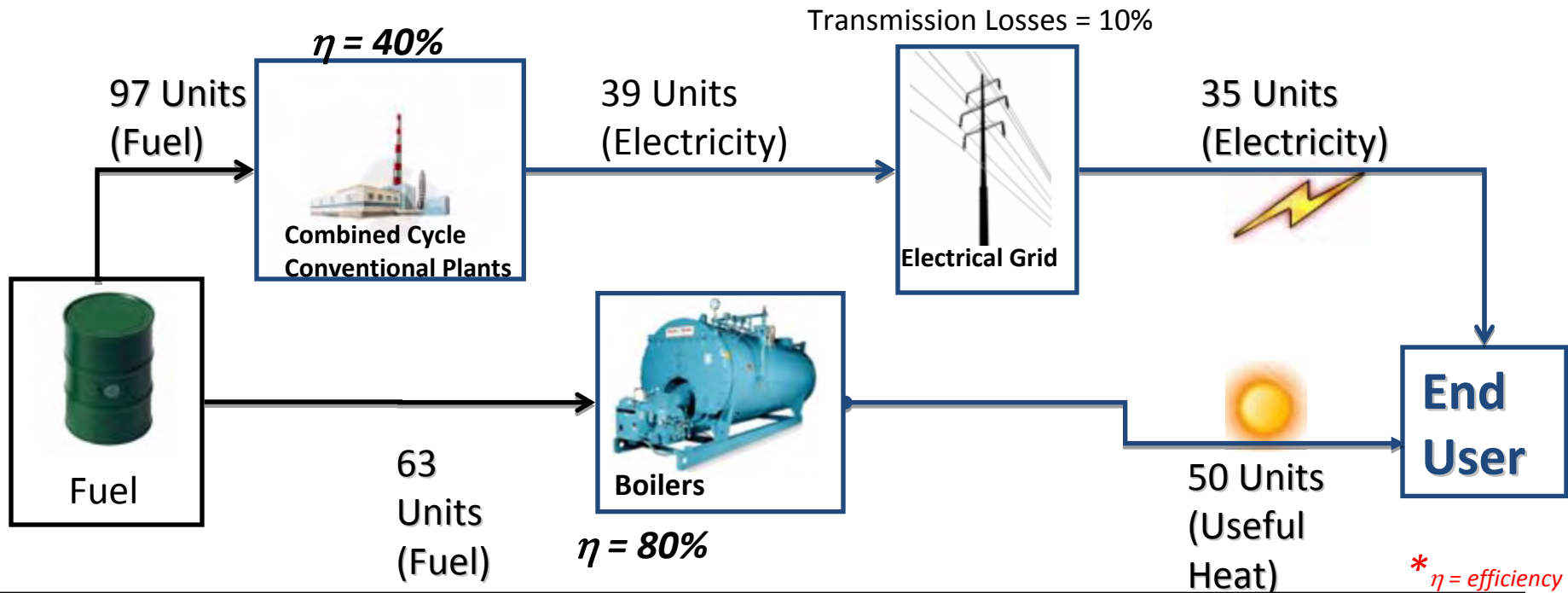
June 2009

## "The Power of the Future"



# APPENDIX 1: ECONOMICS

# Costs of Existing Systems



**Assuming that end-user requires 35 Units of Electricity and 50 Units of heat**

Total Units of Fuel Used =  $(97+63) = 160$  units

Energy Lost = 75 Units!

Overall System Efficiency =  $(85/160) = \mathbf{53\%}$ !

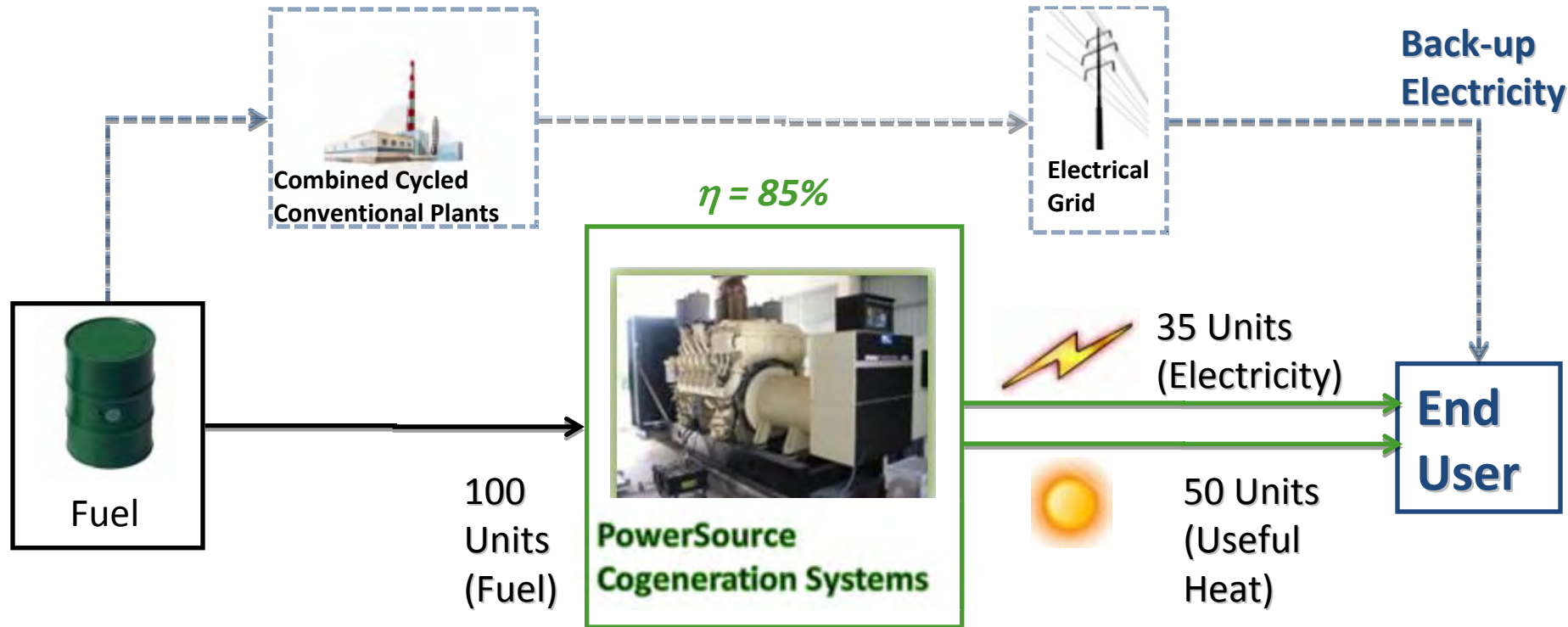
**Cost to End-user for 35 units of Electricity and 50 Units of heat (In Singapore)**

Fuel = 63 units of fuel \* SGD0.10/kWh (diesel) = S\$6.3  
*(assuming that diesel cost is S\$1.1 per liter, volume energy density is 10.9kWh/L)*

Electricity = 35 \* SGD0.23/kWh = S\$8.05

Total Cost =  $6.3+8.05 = \mathbf{S\$14.35}$

# Cost Savings from PowerSource Systems



## When using PowerSource's Systems to generate 35 Units of Electricity and 50 Units of heat

Total Units of Fuel Used = 100

Energy Lost = 15 Units!

Overall System Efficiency =  $(85/100) = 85\%$ !

## Cost to End-user for 35 units of Electricity and 50 Units of heat (In Singapore)

Fuel = 100 units of fuel \* SGD0.10/kWh (diesel) = S\$10

Amount Saved =  $14.35 - 10 = \text{\textcolor{red}{S\$4.35}}$

Cost Savings =  $4.35 / 14.35 = \text{\textcolor{red}{30\% of utility costs!}}$



# Why PowerSource



## 6. First Mover Advantage & High Barriers of Entry

- No other similar company in Asia Pacific

Services Offered	Energy Consultancy Companies	Utility-ESCO Companies	Equipment Manufacturer	PowerSource
Energy Audits	●	○	○	○
Customized Energy Management Solution	○	○	○	●
Sale of Electricity/Chilled Water/Steam	○	●	○	●
Equipment Procurement & Commissioning	○	○	●	●
Equipment O&M	○	○	●	●
"Guaranteed" Savings	○	○	○	●
Fuel Supply Agreements	○	●	○	●

● - Services being offered; ○ - Limited Service offered; ○ - Service not offered

- Barriers of entry:
  - Engineering design & know-how
  - Marketing acumen & diversified pipeline
  - Solid relationships with reliable suppliers
  - Operating experience
  - Knowledge of regulatory environment
  - Structuring ability & access to capital
  - Successful execution of CF-generation projects (see section 7.)

# Competitive Analysis – Matrix Table



Services Offered	Energy Consultancy Companies	Utility-ESCO Companies	Equipment Manufacturer	PowerSource
Energy Audits	●	○	○	○
Customized Energy Management Solution	○	○	○	●
Sale of Electricity/Chilled Water/Steam	○	●	○	●
Equipment Procurement & Commissioning	○	○	●	●
Equipment O&M	○	○	●	●
“Guaranteed” Savings	○	○	○	●
Fuel Supply Agreements	○	●	○	●

● - Services being offered; ○ - Limited Service offered; ○ - Service not offered