

COMBINED HEAT AND POWER

LESSONS LEARNED

For Energy 2002 Conference

Agenda

- Design Issues
 - Heat
 - Power loads
- Maintenance

OPENING JOKE

Combined heat and power or cogeneration is
always easy and is always the right answer

DESIGN ISSUES

- Where to use the power
- Where to use the heat.
- Predictable loads for duration of economic assumptions?
 - History may not predict future
 - Risks if wrong?
- Cost of Fuel
 - Spot versus Long Term Contract

DESIGN ISSUES

- Know thy heat loads
 - Process loads
 - Heating/Cooling loads
 - Quantity/when
 - Time of day
 - Time of year
 - Heat quality
 - Steam?
 - Hot Water?

DESIGN ISSUES

- Know thy electrical loads
 - Behind the meter
 - Export to the grid
 - Quantity/when
 - Base load/peak load
 - Stand by charges/exit fees
 - Interconnect agreement
 - Other power sources on same grid

PURPA

- PURPA is the Public Utility Regulatory Policies Act, regulated through 18CFR292.
- Some Utilities require that small generators be a PURPA qualified facility
- Know your PURPA efficiency and keep it above 42.5%
 - PURPA efficiency is defined as Output of electricity plus half of thermal output divided by input fuel.

Air Pollution Control District (APCD)

- Must clear APCD regulations
- Competent APCD consultant is critical
- Prime mover manufacturers are reluctant to give a tight pollution emission guarantee unless the sale is in jeopardy.

Maintenance Issues

- Equipment must be well maintained
- Boilers: water cleanliness and safeties
- Prime movers: competent maintenance staff
- Steam absorption chillers: qualified technicians

Summary

- Effective where heat and power loads are appropriate and predictable for economic assumption term
- Do your homework.