Gulf Coast CHP
Doing the Deal – Waste Heat to Power
Doing the Deal
You want to do WHAT??
Doing the Deal

- You want to do **WHAT??**
  - Bankers only lend on “the sure thing” – the project has to work, with a guaranteed cash flow over the term of the project
  - Waste heat-to-power rates only slightly above perpetual motion in the creditworthiness continuum
Doing the Deal

- Risk Assessment
  - Bankers assign risk based on a combination of certainties and uncertainties – the greater number of uncertainties, the higher the interest rate
  - Think of your project having a “credit score”
    - Good projects have high scores
    - Projects with uncertainty have a low score
    - Low scores = high rates

- Example - U.S. auto industry
  - Prior to 2004, cash was lent to projects at 8 percent
  - By late 2005, uncertainties pushed credit rates above 20 percent
Issues to Have “In Pocket” Answers For

- Utility interconnection standard terms and conditions
- Utility stand-by power tariffs
- Emissions reduction impact (TCEQ credit impact)
- Building permitting
- Public safety/local regulatory agency involvement
- Downtime
- Management/maintenance of specialized equipment

*Best bet: Create a checklist and tick off the issues as they are addressed*
The Key to a Good Project?

- Minimize potential of cost/schedule overrun
- Obtain firm quotes for:
  - Engineering
  - Equipment
  - Construction management
  - Commissioning (often overlooked)
- Or:
  - Subcontract these activities to either a design-build contractor or energy service provider
Project Structure

There are several ways to structure a deal:

- Do it yourself (plant executes)
- Design/build/transfer
- Design/build/own/operate (energy services provider)

Each has its own risks and rewards…
Internal Project Execution

**Do it yourself!**

- Common method of project execution
- Perceived lowest cost
- Internally funded
- **ALL** project risk borne by YOU
- Difficult to push large capital projects through the organization
- Can take a **LONG** time to complete
Internal Project Execution

- **Advantages**
  - You control the project – soup to nuts
  - Properly managed, costs are low

- **Disadvantages**
  - Scarce resource allocation (everyone has full-time jobs)
  - Dilution of resources can lead to project delays and overruns
  - Total project risk is borne by a single entity
The Risk Chart – Internal Project Execution

- **Project Development:** Typically 5+ years
- **Typical 10+ Year Debt Cycle:** 20+ years for equity

- **Start of Permitting and Contract Development**
- **Financial Close**
- **End of Power Island Construction**
- **Commissioning Completion**
- **20+ Year Revenue Stream**

- **Time in Years**
- **Dollar Spend Rate**
Design-Build Approach

- Integrates engineering, construction management, construction interest, and commissioning into a single product.
- Internally funded
- Project becomes “yours” at material completion/beneficial use
- Design risk and construction risk is “owned” by the design-build contractor
- Cost/schedule overruns become the design-build contractor’s responsibility (depending on contract structure)
Design-Build Approach

- **Advantages**
  - Single-source responsibility for project design/project execution
  - Resource allocation issues limited to project liaison
  - Project risk is shared between owner and design-build firm

- **Disadvantages**
  - Perceived first costs are higher (offset by value engineering)
  - Some project control is relinquished – you have to trust the contractor or build in risk/reward offsets
The Risk Chart – Design-Build Approach

- **Project Development**: Typically 5+ years
- **Typical 10+ Year Debt Cycle**: 20+ years for equity
- **Financial Close**
- **End of Power Island Construction**
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**Time in Years**

- **Start of Permitting and Contract Development**

**Dollar Spend Rate**

**Risk**

- **Benham an SAIC Company**
Energy Service Provider Approach

- Same delivery structure as design-build, but with:
  - Development and operation handled by energy service provider (ESP)
  - Permitting and financing handled by ESP
  - Majority share of project risk shifted to third party
  - System operated for duration of contract by ESP

- Think of the ESP as an independent power producer (IPP) located on or near your site

- You provide the IPP with an energy stream; they convert it to electricity and “sell” the power either to you or the grid
Energy Service Provider Approach

**Advantages**
- Self-contained project; you cut them an energy services agreement (ESA), and they either buy energy from you or sell power back (inside fence deal), depending on utility terms and conditions
- Minimal risk exposure
- No capital outlay

**Disadvantages**
- Long-term contract (typically 15+ years)
- Potential penalties for supply reductions and/or take or pay clauses
The Risk Chart – Energy Service Provider Approach
Conclusions

- There are multiple methods for waste heat-to-power project execution
- Preferred method for each firm is a function of appetite for risk and/or available project funding
- Each method has inherent advantages/disadvantages…but…

The greatest cost of any waste heat-to-power project is the opportunity cost of not executing a viable project in a timely fashion

*Don’t delay – Start today!*