



an SAIC company

Gulf Coast CHP

Doing the Deal – Waste Heat to Power

September 25, 2007

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

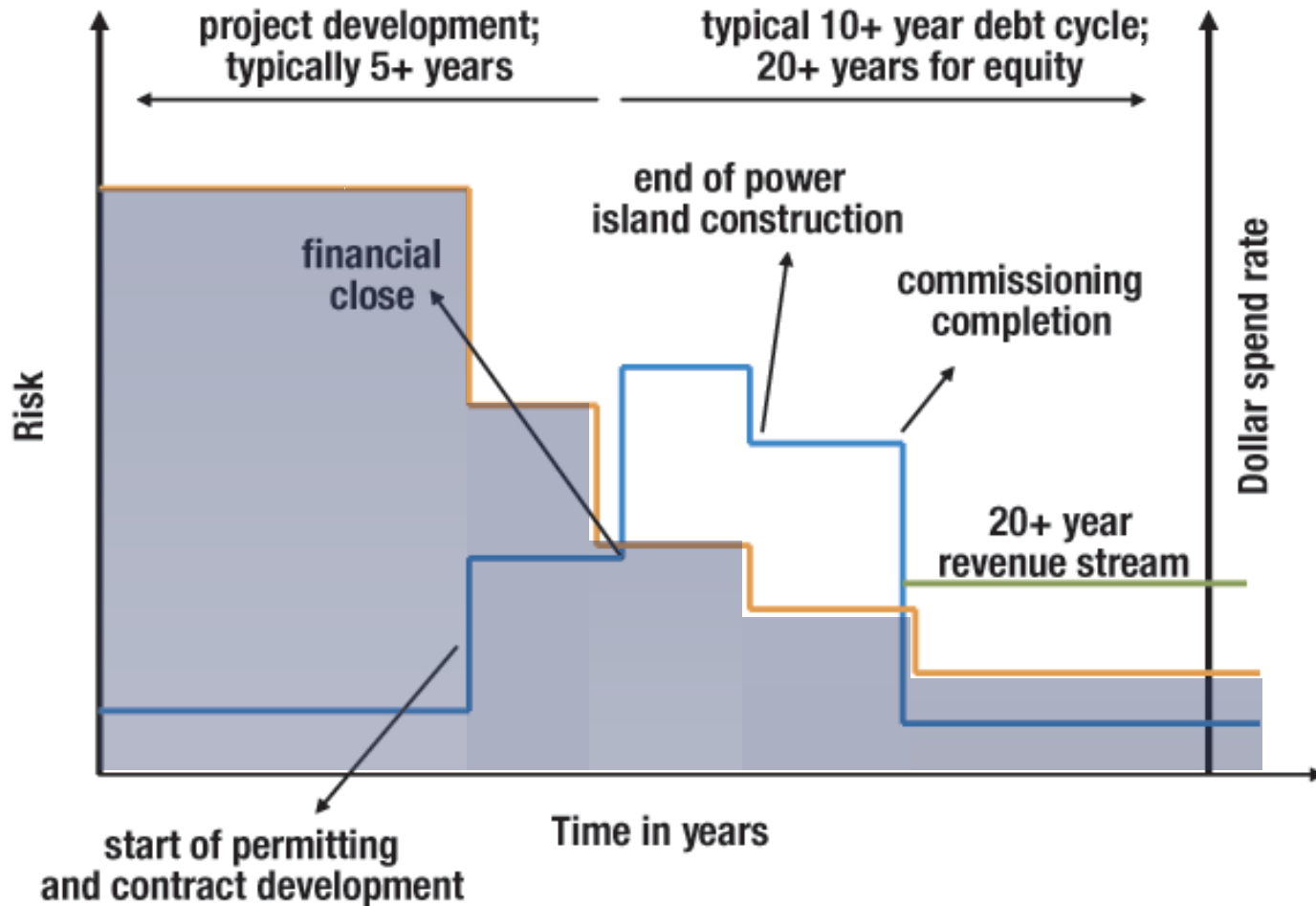
Do it yourself!

- 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



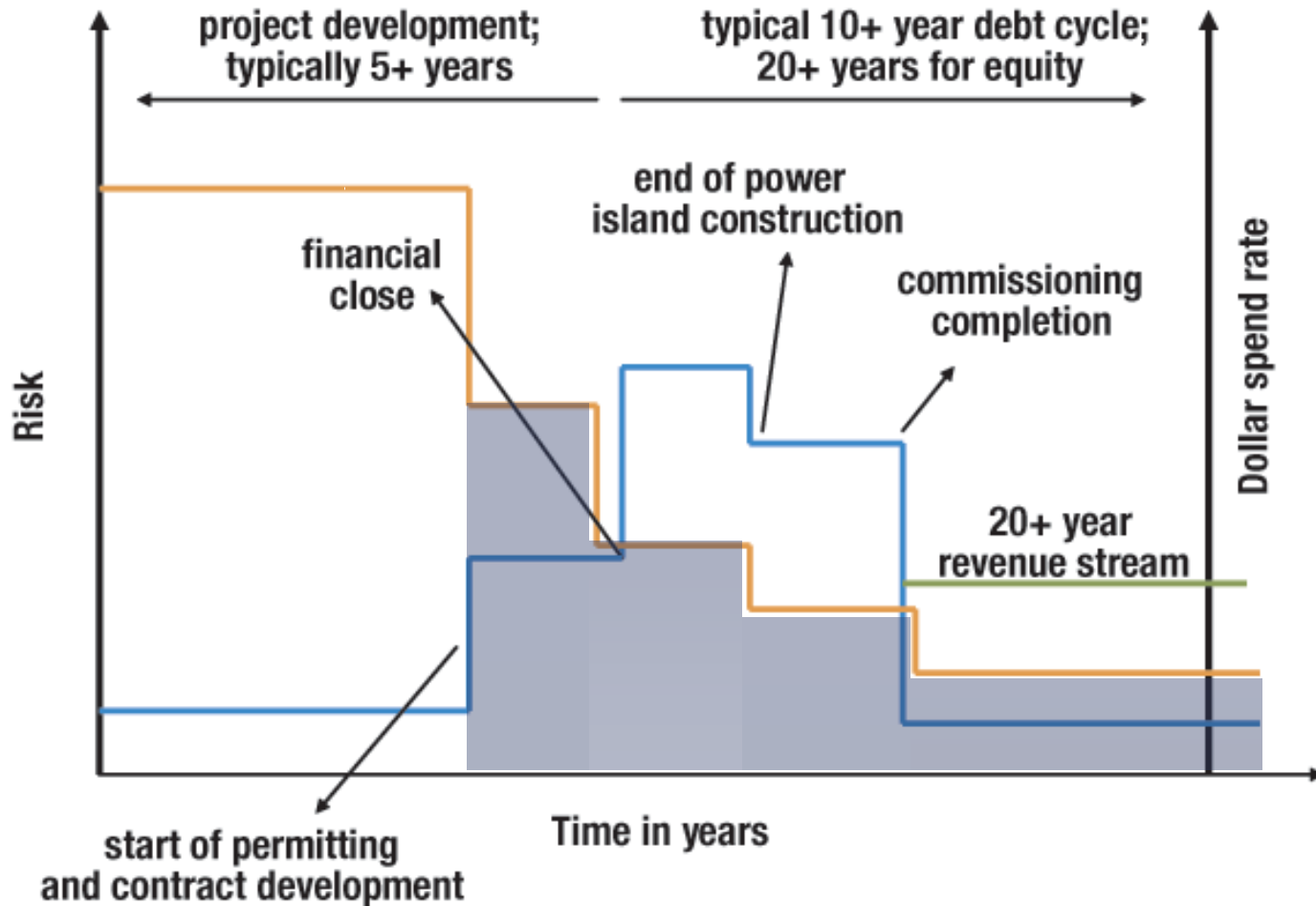
Design-Build Approach

- 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



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

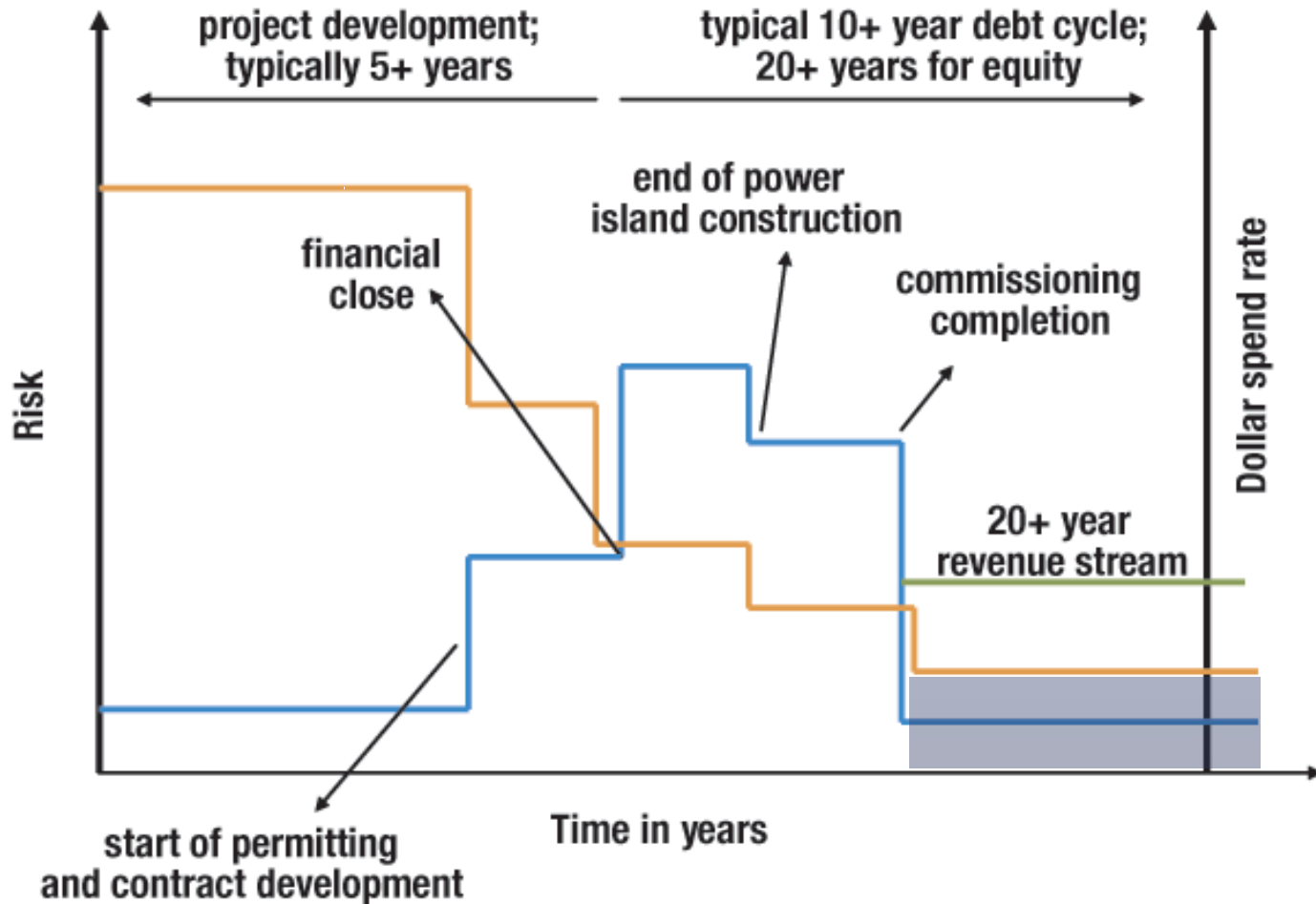
- Advantages

- 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!



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