

TROUGH TECHNOLOGY ROADMAPPING

Financial Due Diligence for Solar-Powered IPP

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PRESENTATION OUTLINE

- ❖ Standard due diligence
- ❖ Typical reports
- ❖ Risk and mitigation (lender interaction)
 - ❖ SEGS lessons learned
- ❖ Trough concerns
- ❖ Attractive features of solar power
- ❖ Phases of due diligence scope

FRAMEWORK FOR PROJECT REVIEW

- ❖ Resource
- ❖ Technology
- ❖ Environmental
- ❖ Cost and schedule
- ❖ Participants
- ❖ Performance
- ❖ Contracts
- ❖ EPC Plan
- ❖ O&M Plan

PROJECT SUCCESS FACTORS

	POSITIVE	NEGATIVE
PROJECT PARTICIPANTS	<ul style="list-style-type: none"> ◆ Experienced 	<ul style="list-style-type: none"> ◆ Inexperienced (or missing altogether)
TECHNOLOGY STATUS	<ul style="list-style-type: none"> ◆ Conventional ◆ Commercial ◆ Proven 	<ul style="list-style-type: none"> ◆ Experimental ◆ Developmental ◆ Scaled-up
PERFORMANCE PROJECTIONS	<ul style="list-style-type: none"> ◆ Realistic ◆ Has design objective ◆ 50th percentile 	<ul style="list-style-type: none"> ◆ Unrealistic ◆ No design objective ◆ 10th percentile
COMMERCIAL TERMS	<ul style="list-style-type: none"> ◆ Balanced returns ◆ Shared risk ◆ Wn/Wn 	<ul style="list-style-type: none"> ◆ One-sided returns ◆ Unilateral risk ◆ Wn/Lose
DESIGN & CONSTRUCTION PLAN	<ul style="list-style-type: none"> ◆ Comprehensive definition of performance, scope, cost and schedule 	<ul style="list-style-type: none"> ◆ Performance specifications
OPERATIONS & MAINTENANCE PLAN	<ul style="list-style-type: none"> ◆ Comprehensive definition of staff, programs and budgets 	<ul style="list-style-type: none"> ◆ No definition of program ◆ Thin and inexperienced staff ◆ Contract maintenance ◆ No parts and tools

DEVELOPMENT PERIOD RISKS

RISKS	MITIGATING STRATEGIES
Development Financing Agreements	<ul style="list-style-type: none">◆ Credible participants◆ Negotiators who understand financing requirements
Permits	<ul style="list-style-type: none">◆ Completed conceptual design
Construction Financing	<ul style="list-style-type: none">◆ Skillful development◆ Commercial technology

CONSTRUCTION PERIOD RISKS

TURNKEY FACILITIES

MITIGATING STRATEGIES

Cost

- ◆ Fixed price guarantee

Project Delay

- ◆ Guaranteed with LDs and buydown

Performance

- ◆ Capacity

- ◆ Guaranteed with LDs and buydown

- ◆ Efficiency

- ◆ Guaranteed with LDs and buydown

- ◆ Availability

- ◆ Guaranteed pass/fail

- ◆ Emissions

- ◆ Guaranteed pass/fail

OPERATING PERIOD RISKS

REVENUE SHORTFALL RISKS

Power Sales Unit Price

Steam Sales

Annual Power Sales

MITIGATING STRATEGIES

- ◆ Energy component to fuel
 - ◆ Capacity component to fixed costs
 - ◆ Adequate debt coverage ratio under all contractual steam supply cases
 - ◆ Obtain capacity guarantee and verification by EPC contractor and equipment suppliers
 - ◆ Proper O&M to minimize performance degradation and maximize availability
 - ◆ Commercially proven technology
 - ◆ Experienced equipment suppliers
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OPERATING PERIOD RISKS

NON-FUEL O&M RISKS

Routine O&M

Scheduled Maintenance

Unanticipated O&M

MITIGATING STRATEGIES

◆ Commercially proven technology

◆ Commercially proven technology

◆ O&M reserve accounts and contingency funds

SEGS LESSONS LEARNED

- ❖ Technology works
- ❖ Economics are a matter of timing
- ❖ Availability of proprietary solar field parts is crucial
- ❖ Continued O&M results in improved performance



NEED FOR PERFORMANCE WARRANTY

- ❖ SEGS model has both a parts and a performance warranty
- ❖ SEGS model corrects for third-party variables and owner deficiency
- ❖ Power is a regulated commodity, therefore it results in minimal reward
- ❖ "GREEN" power has additional value
- ❖ Technology that is not demonstrated presents a huge risk



TROUGH CONCERNS

- ❖ Status of technology (SEGS versus combined-cycle)
- ❖ Stand-alone versus hybrid operation
- ❖ Participants and financing
- ❖ Power contract versus merchant plant
- ❖ Cost and schedule
- ❖ Operator

ATTRACTIVE FEATURES OF SOLAR POWER

- ❖ Renewable energy is popular
- ❖ Solar power is good use of desert
- ❖ Solar power is part of portfolio standard
- ❖ Value of "GREEN" energy is unknown
- ❖ High-tech trough versus low-tech photovoltaic
- ❖ Avoidance of global warming

TECHNICAL/FINANCIAL DUE DILIGENCE PHASES

- ❖ PHASE 0 - Fatal flaw
- ❖ PHASE 1 - Detailed analysis
- ❖ PHASE 2 - Construction monitoring
- ❖ PHASE 3 - Performance testing
- ❖ PHASE 4 - Ongoing O&M review

FINANCIAL DUE DILIGENCE FOR SOLAR-POWERED IPP



Questions and Answers