

Successful Lender Financing of Anaerobic Digestion Projects

Role of the Independent Engineer What Prospective Developers Should Know





Overview of Presentation

Types of Project Financing

Lender Concerns

Lender Risk Mitigation

Role of the Independent Engineer





Types of Project Financing

Off-Balance Sheet or Non-Recourse

- Lender Entitled to Repayment only from Project Assets upon Developer Default
- Project Assets include Revenue-Producing Project Agreements
- Lender Can Not Seize Additional Developer Assets for Loan Repayment
- Developer's Equity Contribution Potentially at Risk
- Project Economics Defined by Projected Cash Flows
- Requires Significant Technical, Financial and Legal Due Diligence
- Lenders Require an Independent Engineer's Due Diligence Review & Report





Types of Project Financing

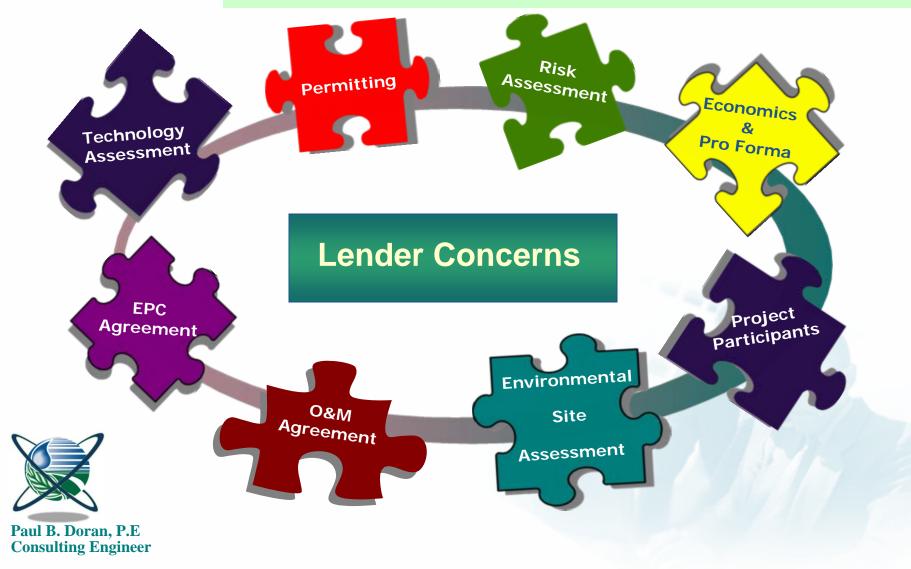
On-Balance Sheet

- Recourse to the Developer's other assets and revenue streams
- Strength of the sponsor's balance sheet
 - Level of existing debt and debt covenants
 - Impacts amount and terms of financing
- Potential Risk of losing business upon loan defaults
- Some Risk Mitigation may be required by Lenders





Lender Concerns





Lender Concerns cont

Project Participants Capabilities, Qualifications, Experience & Role

- Developer & Management Team
- Design Engineering Team
- **EPC** Contractor
- **Operations & Maintenance Team**
- Other Key Developer Participants

Technology

- Technical Development
- Proven and Reliable Performance
- Existing Operational Commercial Facilities
- No Emerging Technologies



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Morgan Stanley

citibank

BARCLAYS

J.P.Morgan

Bank of America 🧇 💥 UBS

CREDIT SUISSE

Deutsche Bank



Lender Concerns cont





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EPC Contractor

- Experience with Implementation of Similar Facilities
- Commercial Terms and Conditions
- Performance Guarantees

In-Hand Permits and Other Regulatory Compliance

In-Hand Long-Term Agreements

- Credit Worthy Off-Takers
- Power Purchase
- Feedstock Supply
- Transportation
- Operation & Maintenance
- Product Sale/Purchase
- Interconnection



Risk Identification and Allocation

Types of Project Risk Categories Developer Participants

- Financial Strength
- Commitment to Project
- Qualification of Team

Planning

- Project Feasibility
- Viable Technology
- Permitting Potential
- Suitable Project Site

Design/Construction

- Design/Construction Defects
- Additional Unanticipated Capital Costs
- Commercial Operation Date Extended
- Construction Not Completed

Operation

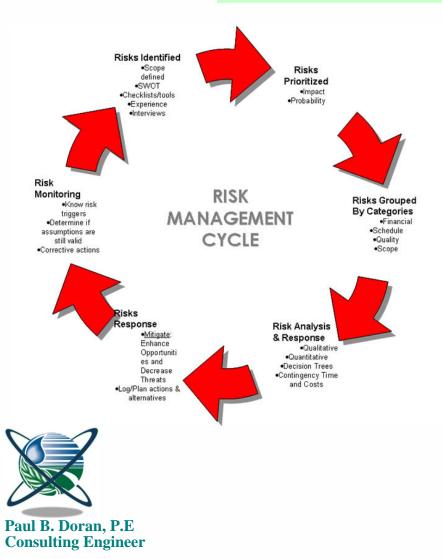
- Design Output Not Realized
- Feedstock Quantity/Quality Not Consistent
- Diminished Market for Products
- Qualifications/Experience of Operation Personnel
 - Non-Performance of Off-Take Agreements







Risk Mitigation



Risk Mitigation Strategies Participants and Planning Effort

✓ Comprehensive Review by Independent Engineer

Technology

- Pilot Studies
- ✓ Feedstock Analysis
- ✓ Laboratory Studies
- ✓ Comprehensive Review by Independent Engineer

Design/Construction Risks

- ✓ EPC Contract Terms
- ✓ Construction Performance Bond
- ✓ Labor & Materials Bond
- ✓ Performance Guarantee
- ✓ Acceptance Testing
- ✓ Liquidated Damages
- ✓ Default Provisions
- ✓ Various Insurance Policies

Operations

- ✓ O&M Contract
- ✓ O&M Performance Bond
- ✓ Letter of Credit





The Independent Engineer plays a "super partes" (Impartial) role and is asked to express an opinion as to the project's feasibility, perform technical due diligence to evaluate the project viability, assess risks and act as the lender's (bank's) representative on the finance team.



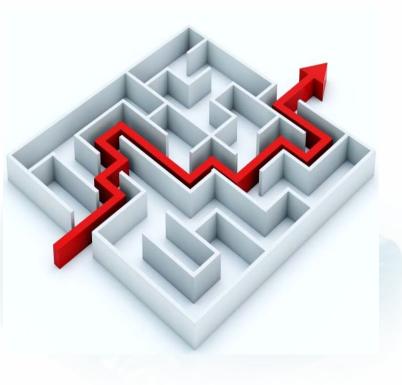


Independent Engineer in Financing

- Also Known as Lender's Engineer and Lender's Technical Advisor
- Integral Member of Finance Team
- Represent Lender (Trustee) & Bondholders
- Advises Developer of "Holes" in Documentation Prior to Approaching Lender
- Address Technical, Environmental, and Economic Matters which may Affect a Project's Revenue Stream and Success
- Provide Pre-Financing Activities
 - Fatal Flaw Analysis (Level 0)



- ✓ Preliminary Feasibility Review (Level 1)
 - Project Risk Assessment (Level 1)





Independent Engineer in Financing cont

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	City, State, Zip Code

- Provide Pre-Financing Activities cont
 - Independent Engineer Report Financing (Level 1)
 - ✓ Review of Revenue Producing Off-Take Agreements (Level 1)
- Provide Post Financing Activities
 - ✓ Construction Monitoring/Issue Loan Draw Certificates (Level 2)
 - ✓ Start-Up, Acceptance Test and Commissioning Review (Level 3)
 - ✓ Ongoing Operations Monitoring (Level 4)





Independent Engineer's Report -- Financing

- Appendix to Bond Issue "Official Offering Statement"
- Independent Evaluation of Project Impacts on Loan Repayment
- Accurate, Complete, Thorough and Factual Analysis
- Balanced and Comprehensive Project Review – Positive and Negative Opinions
- Based on Requested/Developed Documentation



 Report the Independent Engineer Opinions

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Independent Engineer Report

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Project Participants Capabilities, Qualifications, Experience & Role

Technology Review

Facility Review – Site Suitability

Environmental Site Assessment

Permit Review

Regulatory Compliance





Independent Engineer Report

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Independent Engineer Opinions

Project Participants Capabilities, Qualifications Experience & Role

- Developer Management Team
- Design Engineering Team
- EPC Contractor
- Operations & Maintenance Team
- **Other Key Participants**







Independent Engineer Opinions

Typical Project Development Documents Reviewed by Independent Engineer

- **Products Marketing Plan**
- **Business Plan**
- **Design Report and Pilot Plant**
- **Construction Plan**
- Value Engineering Summary
- **Operations** Plan

Typical Long-Term Project Agreements Reviewed by Independent Engineer

- **Operation and Maintenance**
- **Feedstock Supply and Transportation**
- **Fuel Supply**
- Power Purchase
- Interconnection
- **Product Sale/Purchase**
 - Water Supply





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EXAMPLE POWER PURCHASE AGREEMENT	
between	
NEBRASKA PUBLIC POWER DISTRICT RETAIL	Date:
and	Term:
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NPPD Retail.)

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(Generator name) will install gene (Check One): Policy Act (PURPA) facility.

total electrical requirement

NPPD can beneficially utilize the output of name) generating facilities to add to its resource mix

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Independent Engineer Opinions

Technology

- Technical Development
- Proven and Reliable
- Commercially Operating Facilities
- Performance
- Emerging Technology
- Estimated Useful Life
- Facility Availability
- Product Sales
- Energy Production





Independent Engineer Opinions



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Facility Review

- Site Conditions and
 Suitability for Project
- Geotechnical Report of Subsurface Conditions
- Environmental Site
 Assessment and Conditions
- Site Equipment and Building Arrangement
- Utility Access Provisions
- Potential for Extraordinary Development Costs

Independent Engineer Opinions

Permits

- Verify Necessary Permits Have Been Obtained
- Assess Project Ability to Meet Permit Requirements Under All Operating Conditions
 - Air Quality Operating
 - Odor Nuisance
 - Army Corps of Engineer
 - Wastewater Disposal (NPDES)
 - Stormwater
 - Local Building
 - Other Local Permits
 - Other Regulatory Compliance



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npliance	Kinder Morgan Upstream, LLC (Amended February 23, 2005) Douglas Gas Plant Sections 33-34, Township 33 North, Range 71 West Converse County, Wyoning is authorized to operate a stationary source of air contaminants consisting of emission units described in this permit. The units described are subject to the terms and conditions specified in this permit All terms and conditions of the permit are enforceable by the State of Wyoning. All terms and conditions of the permit, except those designated as not federally enforceable, are enforceable by facility.
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Independent Engineer Opinions

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Construction Costs Review

- Facility Direct Construction Costs
- Facility Indirect Project Costs
- Soundness of Methodology in Cost
 Development
- Equipment Supplier Data

Operation & Maintenance Costs

- Fixed
- Variable
- Soundness of Methodology in Cost
 Development
- **Basis for Costs**

Project Schedules

- Development Tasks
- Design Tasks
- Construction Tasks
- Start-up and Acceptance Testing
- Final Completion
- Commercial Operation Date

Independent Engineer Opinions

Projected Operating ResultsOperating Revenues

- Power Sales, Product Sales, Other Revenues
- Operating Expenses
 - Fuel, Fixed and Variable Expenses, Misc Expenses
- Annual Debt Service
- Debt Service Coverage Ratios
- Sensitivity Analysis
 - Reduced Biogas Production,
 Reduced Availability, Product
 Market Variables, Additional Capital
 Costs, Additional Operating Costs,
 Lower Revenues from Agreements

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ngineering Itilities Il Undistributed Expenses ss Operating Profit	\$ 67,117 \$ 16,779 \$ 67,117 \$ 117,455 \$ 268,469 \$ 791,823	2.00% \$ 0.50% \$ 2.00% \$ 3.50% \$ 8.00% \$	69,131 2.00% 17,283 0.50% 69,131 2.00% 120,979 3.50% 276,523 8.00%	\$ 71,20 \$ 17,80 \$ 71,20 \$ 71,20 \$ 124,60 \$ 284,81	01 0.50% 05 2.00% 08 3.50%	\$ 73,34 \$ 18,33 \$ 73,34 \$ 128,347 \$ 128,347 \$ 293,364	1 2.00% 5 0.50% 2.00% 3.50%	\$ 1,299,1 \$ 75,54 \$ 18,88 \$ 75,54 \$ 132,19;	11 2.00% 5 0.50% 1 2.00%	1
a penses al Estate Tax irance Fixed Expenses erating Income	\$ 100,676 \$ 67,117 \$ 167,793 \$ 624,030	3.00% \$ 1 2.00% \$ 1 5.00% \$ 1	837,700 24.24% 03,696 3.00% 69,131 2.00% 72,827 5.00%	\$ 887,041 \$ 106,807 \$ 71,205 \$ 178,012	3.00% 2.00% \$	\$ 940,055 110,011 73,341	25.64% 3.00%	\$ 302,165 \$ 996,962 113,312	5 8.00%	
		18.60% \$ 66	4,873 19.24%	\$ 709,029	5.00% \$ 19.92% \$	183,352 756,702	2.00% s 5.00% s 20.64% s	75,541	2.00% 5.00% 21.40%	





EPC Contract Review

Model EPC Agreement - All Source
ENGINEERING, PROCUREMENT AND CONSTRUCTION SERVICES AGREEMENT PROJECT) by and between PUBLIC SERVICE COMPANY OF COLORADO
and
2 Xcel Energy
[date]
Note 1: This Model may be used for a variety of different technologies. Appropriate changes will be required to reflect each technology and the specifics of a bid.

EPC Agreement

Scope

Commercial Terms and Conditions

- Warranty
- Changes
- Force Majeure
- Suspension/Termination
- Other: Retainage and Holdbacks

Performance Guarantees

- Biogas Output
- Power Output
- Product Output
- Noise
- Emissions

Acceptance Test Program Construction Schedule Payment Terms and Drawdown Schedule Change Request Procedures Limits of Liability Liquidated Damages Force Majeure



Additional Agreements Part of Bond Contract



- Trust Indenture
 - Agreement Between the Issuer of the Tax-Exempt Bonds and the Trustee (Lender) that Administers the Funds as Fiduciary to the Bondholders
- Support Agreement
 - Agreement Between a Third Party (Usually Parent Company of Developer) and the Trustee.
 - Defines to Pay All Necessary Project Costs not Covered by Construction Fund to Achieve Commercial Operation

Guarantee

 Agreement Between Developer, Subsidiary Guarantors and the Trustee Defining Security Documents that Secures the Bonds



Additional Agreements Part of Bond Contract cont

- * Loan Agreement
 - Designates the Engineer as Construction **Consultant**
 - Specifies Procedures for Draws on **Construction Fund**
 - Specifies Developer Documents Required
 - Specifies Construction Consultant Certificates Required

Disbursements/Drawing Agreement

- **Specifies Engineer Role in Trustee's Disbursement of Construction Fund**
- Monthly Draw Certificates Contents
- Mechanical Completion Certificate **Requirements**
 - **Substantial Completion Certificate**
- **Final Completion Certificate**

Blacklined 11/03/06 LOAN AGREEMENT between GULF COAST INDUSTRIAL DEVELOPMENT AUTHORITY and MICROGY HOLDINGS, LLC *********** Gulf Coast Industrial Development Authority has granted a security interest in and assigned to Wells Fargo Bank, National Association, as Trustee under the In and assigned to views range Dans, industrial resounded, as induce under the Trust Indenture, dated as of the date hereof, all of its interests in all "Loan, Payments" due pursuant to and under this Loan Agreement to secure its Environmental Facilities Revenue Bonds (Microgy Holdings Project) Series 2006. DEBTOR: Microgy Holdings, LLC LENDER: One Cate Street Gulf Coast Industrial Development 4th Floor Portsmouth, New Hampshire 03801 910 Bay Area Blvd. Houston, Texas 77058 ASSIGNEE AND SECURED PARTY: Wells Fargo Bank, National Association 4 Penn Center, Suite 810 1600 JFK Boulevard Philadelphia, Pennsylvania 19103

Attention: Corporate Trust Services Group



Post-Financing Activities of the Independent Engineer





Paul B. Doran, P.E Consulting Engineer

Construction Monitoring

- Monthly Review of Construction Progress
- Review Construction Schedule
- Determine Compliance with EPC Agreement
- Determine Compliance with Issued Permits
- Prepare Monthly Construction Progress Reports
- Review/Approve Payment Requisitions
- Prepare/Issue Requisition Certificate
- Review Changes to EPC Agreement

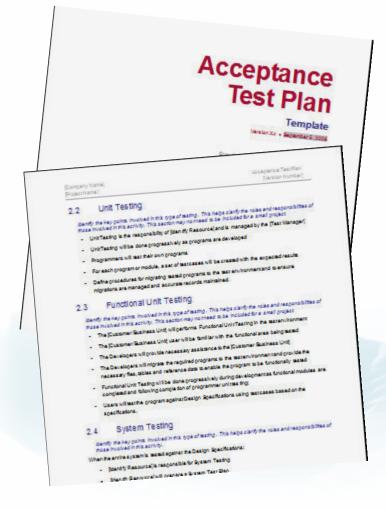


Post-Financing Activities of the Independent Engineer cont

Acceptance Test Review/Commissioning

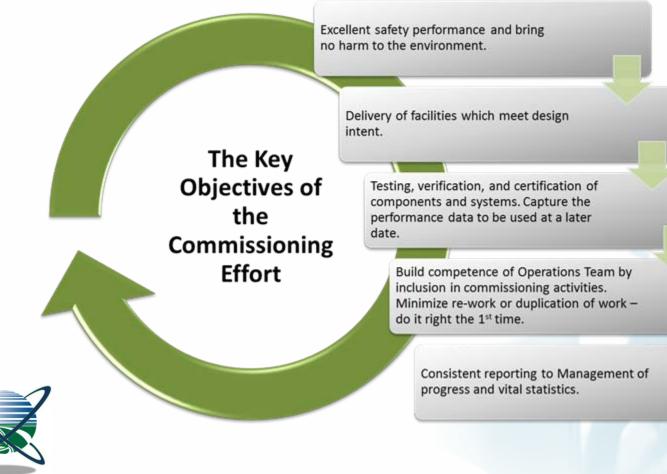
- Review Developer Start-Up Plan
- Review Developer Acceptance Testing Plan
- Review Developer Commissioning Plan
- Witness Start-Up and Acceptance Tests
- Review Acceptance Test Documentation
- Prepare Acceptance Test Report







Commissioning





Post-Financing Activities of the Independent Engineer cont





Paul B. Doran, P.E Consulting Engineer

Operations Monitoring

- Review Operations/Maintenance Plan
- Review Operation and Maintenance Expenditures – Fixed and Variable
- Compare Expenditures to Budgets
- Review Biogas Production
- Review Power Production
- Review Product Production
- Review Revenues
- Verify Permit Compliance
- Prepare Monthly O&M Report to Trustee (Bank)



Summary

Independent Engineer: Key Player in Putting the Pieces Together for Lender Financing



The Independent Engineer's Assessment of the following: Participants, Technology, Site Suitability, Design Review, Environmental Review, Construction and O&M Cost Review, Construction Schedules, Economic Pro Forma Analysis; Determines if the Project is Capable of Achieving the Necessary Revenue Requirements.

For Non-Recourse Project Financing Through Revenue Bond Sales or Bank Loans, the Independent Engineering Review and Report is a Key Critical Component of Project Finance and is Most Always Required by Trustees and Banks.





Thank You

Thank You For Your Attention

Send Comments to

Paul B. Doran, P.E.

P.B. Doran, P.E Consulting Engineer

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pbd@paulbdoranpe.com

