

# PROJECT FINANCE AND ECONOMICS IN THE ENERGY SECTOR

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12<sup>th</sup> – 15<sup>th</sup> April 2016

**MERALCO CENTER**  
**ORTIGAS, PASIG CITY**  
**PHILIPPINES**



**Expert Course Trainer:**

**Dr. Edward Bodmer**

Former Vice President of the National Bank of Chicago  
BSc in Finance and MBA and PhD specializing in  
econometrics from CBS Chicago University

*Dr. Ed Bodmer has developed and taught more than 250 financial modeling seminars in the past decade.*

*His courses have addressed mergers and acquisitions, project finance modeling, credit analysis modeling, general corporate modeling, Monte Carlo simulation and real options, energy modeling, electricity valuation modeling and modeling for debt restructuring*

- Learn how project finance and economics apply to the energy industry
- Understand project finance models and financial statements, project viability and risk analysis

ALL PARTICIPANTS WILL RECEIVE  
DR. BODMER'S EXTENSIVE COLLECTION  
OF FINANCIAL MODELING TEMPLATES

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## About this Training Course

Project Finance and Economics is an essential management course with tools and techniques for leaders, managers and analysts involved in project or program development, evaluation and implementation in the specialized areas of utilities, infrastructure, transport and energy.

With the collaboration of the Meralco Power Academy, this course has been designed to include case studies on global and regional energy issues.

## Learning Outcome

**This training course will equip you with the following:**

- Global best practice techniques to build your business case, project finance and cash flow models on key scenarios
- Critical assessment of project cash flow, liquidity, debt covenants and equity IRRs
- Determining the best structure to get you to a “financial close”
- Tools to determine the appropriate funding market
- Knowledge on the pricing points to invest in infrastructure assets
- The use of several model templates

## Who Should Attend

**This 4 day workshop is ideal for professionals involved in project development including:**

- Project Managers / Engineers
- Investment Bankers
- Contract Managers and Contract Engineers;
- Project Financiers
- Financial Analysts

## Expert Course Trainer

**ED BODMER** has over 28 years of experience in a variety of modeling topics (project finance, credit analysis and M&A modeling). He has played a key role in restructuring complex financial projects across Asia, Middle East and Europe. His consulting activities include developing complex M&A, project finance, corporate and simulation models, providing expert testimony on financial & economic issues before US regulatory agencies, and advisory services to support merger and acquisition projects.

Ed has been involved in formulating significant government policy related to electricity deregulation and has evaluated energy purchasing decisions for many corporations. His clients include Tenaga Nasional Berhad, Malakoff, Asian Development Bank, Temasek Holdings Singapore, PwC, KPMG and many others.

Ed has created a wide variety of models for energy companies, investment banks, commercial banks and government agencies. He has constructed a unique framework for electricity price forecasting and valuation using production cost modeling techniques combined with price theory and Monte Carlo simulation. His recent work includes testimony in distribution rate cases on cost of capital, rate design and sales forecasts.

Formerly a Vice President of the National Bank of Chicago, he directed and created financial modelling techniques used in advisory projects. He received a BSc in Finance (with highest university honors), MBA and PhD specializing in econometrics (with honors) from CBS Chicago University

## 4 Day Course Outline

### Module 1: Introduction to Project Finance and the Context of Project Finance in the Philippines Energy Market

#### Overview of Project Finance Terms, Project Finance versus Corporate Finance

- Project Finance in the Phils compared to other areas of the world
- Definition of Terms
- Phases in Project Financing
- Structure & Contracts in Project Financing
- Use of project finance for plants with bilateral or PPA contracts vs plants facing merchant risk
- Characteristics of Project Finance Debt & Debt Service Coverage
- Project Finance in the context of Financial Theory

#### Risk Identification and General Terms in a Project Finance

##### Transaction

- Overview of Transaction Structure and the Project Finance in the context of Electricity Policy in the Philippines
- Risk Classification – Risks During Different Project Phases, Political, Market
- Risk Identification
- Risk Mitigation: Alternative Techniques and Limitations
- Risk Coverage – Breakeven analysis and Debt Source Coverage
- Cash Exercise: Measurement of Breakeven for Merchant Plant in Phils with Alternative Capacity Factors & Prices

### Module 2: Electricity Independent Power Projects and Quezon Power Plant

#### Introduction to Independent Power

- Recent development of Large Power Projects
- History of Independent Power
- General Concepts of Risk Allocation for IPP Projects
- Allocation of Risks between Off taker and SPV
- Calculation of Carrying Charges and Levelized Cost of Electricity

#### Risk Allocation in PPA Contracts

- Demand Risk and Capacity
- Addition Risk for Merchant Power Plants
- Fuel Cost Risk and Fuel Cost Volatility
- Construction Phase Risks
- Operation and Maintenance Risk
- Availability Risk and Costs of Reduced Power
- Heat Rate Risk and Use of Target Heat Rates
- Currency Risk and Inflation Risk

#### Other Risks in PPA Plants

- Exchange Rate Risk and Indexing of Capacity Charges
- Interest Rate Risk and Interest Rate Swaps
- Political Risk
- Off Taker Default Risk

#### Off Taker Analysis

- Review of IPP Defaults and Problem Loans
- Potential Problems with Off Taker from Cost Increases
- Exchange Rate Risk for Off taker and Purchasing Power Parity
- Case Study on Off Taker Risk

### Module 3: Technical Mechanics of Project Finance: Case Study of Quezon Power

#### General Contract Structure in Project Finance Using Case Study

- Concession Agreements and Build Own Operate
- Relationship Between Contracts and Back-to-Back Contracts
- Insurance and Third Party Support
- Structuring Special Purpose Vehicles
  - Structure of Financing and Dividends
  - Flip Structures
  - Conflicts of Interest and Limits on Negotiation
- Concession Contract/Off-take Contract
  - Applicability to Different Industries
  - Structure and Usage versus Availability Payments
  - Timing and Costs of Delay
  - Termination Issues
- Construction Contract
  - Lump-sum Fixed Price vs Cost Plus
  - Limited Recourse and Responsibility for Cost Over-runs
  - Relationship with Operation Contract and Off-take Contract
  - Completion Tests
  - Liquidated Damages for Performance
  - Liquidated Damages for Delay
- Operation and Maintenance Contract and Supply Contracts
  - Relation with Construction Contract
  - Incentives in Operation Contract
  - Responsibilities of Operator
  - Take or Pay Supply Contracts

### Module 4: Risk Analysis in Project Finance; Problems with IRR; Interpretation of DSCR, LLCR and PLCR

#### Evaluation of Project Finance Statements

- Accounting issues in Project Finance – Depreciation, Interest During Construction, Income Taxes, Dividends
- Equity Cash Flow, Project Free Cash Flow and Cash Flow Available for Debt Service
- Importance of Cash Flow in Project Finance Relative to Income
- Cash Flow Waterfall

#### Analysis from Sponsor Perspective

- Cash Flow as Basis for Valuation
- Project IRR and Pre-tax IRR versus Equity IRR
- Problems with IRR – Project Length; Re-investment; Development Probability; Holding Period; Changing Risk

#### Credit Analysis in Project Finance

- Risk Classification, Risk Mitigation and Risk Allocation Matrix
- Understanding Alternative Fundamental Business Risks in Project Finance
  - Risks from Statistical Analysis in Renewable Resource
  - Risks of Commodity Prices, Volatility and Long Term Prices
  - Risks of Traffic Studies and Track Record of Forecasts
  - Risks of Unconventional Technology
  - Off-taker Risks
- Why DSCR is the Central Measure of Risk for Lenders in Project Finance
- Construction of Realistic Downside Case Assumptions

#### Analysis of Debt Sizing, Debt Structuring and Returns in Project Finance

- Bank Loans versus Bonds
- Debt Structuring in Tight Transactions versus Loose Transactions
- Debt Structuring
  - Timing of Debt and Equity Draws During Construction
  - Pricing of Debt and Changing Spreads
  - Debt Tenor and Grace Periods
  - Alternative Debt Repayment Methods (Level, Annuity, Sculpted)
  - Debt Service Reserve Account, Covenants, Cash Flow Sweeps

#### **Module 5: Merchant Power and Contract Power**

##### Policy Analysis and Electricity Project Finance

- Alternative Electricity Policy Options in Electric Power
- State Ownership Advantages and Disadvantages
- Regulated Power Pros and Cons
- Deregulated Market Benefits and Costs
- Single Buyer IPP Model Issues
- Cost Analysis of IPP from Off-taker Perspective with Lease Treatment

##### Electricity Technologies and Case Study

- Capital and Operating Cost Data
- Carrying Charge Analysis
- Levelized Cost Analysis of Different Technologies
- Comparison of Costs with Different Cost of Capital

##### Merchant Power and Risk Allocation in PPA Contracts

- Review of Electricity Prices
- Bid Price Simulation
- Analysis of Supply and Demand and Electricity Prices
- Simulation of Prices with PPA Contracts and Merchant Plants
- Use of Electricity Price and Electricity Cost in PPA Analysis of Availability

#### Case Study of Mixed Merchant/Bilateral Electricity Plant

- Factors that Drive Electricity Price Movements
- Changes in Market Structure and Electricity Price Movement
- Debt Capacity of Merchant Power Plants
- Use of Scenario Analysis in Evaluating Power Plants

#### **Module 6: Understanding Project Finance Models and Financial Statements**

##### Objectives of Project Finance Models

- Structuring and Tight DSCR Projects
- Computation of Contract Prices and Other Contract Terms
- Risk Analysis and Sizing in Downside Cases
- Development of Assumptions and Alternative Scenarios
- Key Parameters in Project Finance Models
- Analysis of Models and Evaluation of Key Decisions
- Project Finance Models vs Other Kinds of Models

##### Mechanics of Project Finance Models

- Setting up project phases in model
- Sources and uses of funds statement during the construction period
- Debt schedule and connection with cash flow statement for Sweeps, Traps, Defaults and DSRA
- Income Statement to compute Income Taxes
- Cash Flow Statement and Cash Flow Waterfall
- Computation of Model Outputs – Equity IRR, DSCR, LLCR and Debt IRR

##### Avoiding Bad Practices in Modelling

- Best Practice Objectives
- Inputs and Organization
- Transparent Calculations
- Simple Formulas
- Auditing, Balance Sheet and Model Checks

##### Technical Issues After Construction

- Computation of Tax Depreciation and Amortisation of Fees
- Cash Flow Waterfall Mechanics and Issues
  - Debt Service Reserve Account Cost and Benefits
  - Working Capital Facilities
  - Cash Flow Sweeps
  - Cash Flow Trap Covenants
  - Subordinated Debt
  - Maintenance Reserve Accounts
  - Alternative Computation of Debt Service Coverage Ratio
  - Equity Cash Flow and Free Cash Flow

##### Project Finance Valuation with Models

- Cash Flow as Basis for Valuation
- Project IRR to Screen Projects
- Equity IRR to Structure Projects
- Modified IRR and NPV versus Unadjusted IRR
- Payback and Other Valuation Metrics

Reading and Interpreting Models

- Recreating Models
- Testing Models for Extreme Changes in Key Variables
- Computation of Equity IRR

**Module 7: Understanding Project Finance Models and Financial Statements**

Debt Service Reserve Accounting and Modelling

- Accounting for debt service and other reserves
- Illustration of impacts in project model
- Circularity Problems
- Interest Income

Modelling Issues for Plant with PPA Contract

- Review of Power Project Models
- Modelling PPA Contract and Target Heat Rate
- Modelling Actual Costs and Actual Heat Rate
- Evaluating Exchange Rate Risk
- Modelling Interest Rate Risk

Computing Bid Prices with Different Financing

- DSCR and IRR Criteria for Different Projects
- Computing Debt Size from DSCR and Leverage Constraints
- Computing Capacity Charges from Equity IRR
- Determining Bid Prices and Debt Size from Financial Constraints

**Module 8: Modelling in Renewable Energy Project Finance**

Introduction to Renewable Power

- Comparison of Alternative Technologies
- Feed in Tariffs versus PPA Contracts
- Importance of Cost of Capital in Renewable Projects
- Changes in Capital Cost of Renewable Projects
- Policy Issues for Renewable Power
- Different Financial Issues for Different Types of Projects

Resource Assessment

- Resource Assessment for Alternative Project Types
- Variability in Wind Resources versus Solar Projects
- Quantity Risks from Resource versus Technical and Statistical Factors
- Interpretation and Use of P90, P75 and P50
- Statistical Analysis of Power Production
- Power Curves and Solar Efficiency
- Degradation of Power in Solar and Wind

Risk Analysis and Contract in Renewable Electricity

- Construction Phase and Technological Risks
- Contracts State with Suppliers for Plant Efficiency
- Scenario Analysis for Capacity Factor Risk
- Off-taker and Counter party Analysis

Modelling and Analysis of Renewable Projects

- Computing Resource Assessment and Capacity Factor
- Effect of Financial Structure and Sculpting on Equity IRR
- Effect of DSRA and Cash Sweep on Returns
- Analysis of Mini-perm

**Module 9: Re-Financing, Covenants and Risk Mitigation in Project Finance**

Refinancing in Project Finance

- Benefits from Re-financing
- Effects of Re-financing for Different Types of Projects
- Mechanics of Re-financing and Dividends

Measurement of Risk and Return

- Risk Analysis using break even points on debt
- IRR and Risk with different senior and junior debt
- IRR and risk with different cash flow trap structures

Covenants in Project Finance

- Positive and negative covenants
- Project finance covenants versus corporate covenants
- Covenants and risk analysis of projects
- Examples of covenants

**PROGRAM INVESTMENT**

|                             | <b>Regular Rate</b> | <b>Early Bird<br/>(Deadline: March 31, 2016)</b> | <b>Group of 3 or more</b> |
|-----------------------------|---------------------|--|---------------------------|
| <b>RATE PER PARTICIPANT</b> | Php 67,200 net      | Php 61,600 net                                   | Php 61,600 net            |

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