

GRIDED

The Center for Grid Engineering Education

Business Case Analysis in the Electric Utility Industry

This course introduces participants to financial and economic principles and practices electric utilities employ to plan and operate power systems. Utilities are a business, but they operate under financial, commercial and regulatory conditions that in many respects differ from those of competitive firms. Principal among them is their charter to provide universally least cost, reliable service, and operating under a regulated rate of return. Moreover, those circumstances differ among utilities depending on the market structure they operate in.

Instructors will lay out a framework for understanding how utilities acquire capital to build assets and manage expenses the utility cost function. How are investment requirements and operating costs determined and financed? How does that effect the revenue to be collected through rates? What are the implications of customer-side investments in power generation assets? It extends that perspective to consider how those investment decisions are influenced by factors that utilities do not control, market and sector externalities that reflect social interests. Participants will better understand how utilities operate as a business in various levels of regulation revealing the complexities they face in responding to profound, structural changes in power supply and demand.

The principles and practices conveyed are reinforced through case studies of how utility decision making is influenced by: opportunities to invest in smart grid technologies; accommodating and maximizing the value of interconnection of distributed generation resources. Participants can expect to gain a new perspective on how their job influences company decision-making company, and how they can collaborate with others to inform and includes company decision making.

Who Should Attend

This course is designed to train and inform utility technical staff involved in designing, planning, or operating the electric power system. Others will benefit from a better understanding of the factors that influence how utilities make investment, operating, and customer services decisions.

Registration Information

Day 1: 8:00 am–5:00 pm

Day 2: 8:00 am–12:00 pm

PDH Available: 12 hours

For More Information

Tom Reddoch, treddoch@epri.com, 865.218.8120

Steven Coley, scoley@epri.com, 615.542.2882

Jeff Roark, jroark@epri.com, 650.855.8783

Meet the Instructors



Jeffrey Roark is a Technical Executive at the Electric Power Research Institute (EPRI). His primary responsibilities include extending the EPRI/DOE Cost/Benefit Analysis Methodology for Smart Grid Demonstration projects, as well as managing projects demonstrating operational and economic characteristics of intelligent devices deployed on the grid. Roark holds Bachelor's and Master's degrees in Electrical Engineering from Auburn University, and a Master's in Business Administration from the University of Alabama at Birmingham.



Steven Coley is a Technical Leader in the Integration of Distributed Energy Resources Program at the Electric Power Research Institute (EPRI). His current efforts include cost benefit analysis and business impacts of high penetration of PV on distribution systems and works as a market analyst to assess the economic viability of solar PV, and solar PV adoption and diffusion. Coley holds Bachelor's and Master's degrees in Mechanical Engineering as well as a Master's in Business Administration from the University of Tennessee, Knoxville.

Course Outline

Session 1 (Day 1 morning)

Utility Accounting, Finance and Planning (8:00am - 12 noon)

- **1.1 Regulatory Compact**
 - Utility, Regulator, Customer Roles, Responsibilities
 - Utility Revenue Requirement
 - Least-Cost Planning & Integrated Resource Plannings
- **1.2 Types of Economic/Financial Analysis**
 - o Textbook Financial vs Utility-Planning Analysis
 - o Perspective in Utility Planning Analysis
- **1.3 Utility Ownership Structures**
 - o IOUs, Munis, Co-ops, Government
 - o Implications for Regulation
 - o Regulator's Tool Box
- **1.4 Working session/discussion/exercise**
Students of the Business: Market Structures
- **1.5 Utility Finance and Accounting**
 - o Introduction to Visual Financial Statements
 - o The Income Statement (Revenue Requirement)
 - o The Balance Sheet (What does the utility own and who does it owe?)
 - o Cash Flow (Where did the money go?)
 - Discussion/Exercise: Utility financials and stats [from public sources]
- **1.6 Working session/discussion/exercise**
Students of the Business: Fixed/Variable Costs

Session 2 (Day 1 afternoon)

A Broader Perspective on the Utility Business

(1:00pm - 5:00pm)

- **2.1 Incremental Analysis - Marginal/Incremental Cost**
 - o Marginal/Incremental Cost
 - o Incremental Revenue Requirements
- **2.2 Deferral/Advancement of Investments**
 - o Formulas for Deferral/Advancement
- **2.3 The Integrated Grid Framework**
 - o What is a framework?
 - o Categories of costs and benefits

Continued

2.4 General Cost/Benefit Analysis Concepts

- o Comparison of Alternatives
- o Common Monetary Terms
- o Odds and Ends

2.5 Steps to Perform Cost/Benefit Analysis

- o Identifying and Measuring Impacts
- o Estimating Costs
- o Monetizing Benefits

2.6 Categories of Costs and Benefits

- o Utility Costs
- o Customer Costs
- o Societal Costs

2.7 Valuing Energy, Reliability, and Capacity

Session 3 (Day 2)

Utility Accounting, Cases Studies and Summary (8:00am - 12 noon)

Review of Day 1

- **Case Study 1**
 - o Distribution Automation – Using interruption cost in CBA
 - o Tool for Distribution Automation and CVR
- **Case Study 2**
 - o Guided vs. Unguided Deployment of Solar PV on Distribution System
- **Case Study 3**
 - o Time and Locational Value of DER

September 2020

Electric Power Research Institute

3420 Hillview Avenue, Palo Alto, California 94304-1338 • PO Box 10412, Palo Alto, California 94303-0813 USA
800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com