

Russo on Energy LLC
www.russoonenergy.com
Tom Russo 703-375-9482

Please note any of the following courses can be customized with input from target audience

Introduction to the Natural Gas Industry, Infrastructure and Regulation (1 day)

Course Overview

This online program is for utility and service personnel who need a comprehensive overview of the natural gas industry that lays the foundation for understanding physical and financial natural gas markets. Attendees will discuss natural gas terminology, measurements and conversions. They will review the basics of natural gas production, gathering, operations and markets. It will provide an in-depth understanding of natural gas processing plants, pipelines, storage, LNG peak shaving plants, LNG Import and Export terminals and local distribution companies (LDCs). The course will address important components of natural gas transportation, including regional costs of firm and interruptible pipeline transportation, nominations, balancing, and FERC section 4 and 5 ratemaking proceedings on natural gas pipeline transportation.

Who Should Attend?

This program is ideal for personnel who need to broaden their understanding of all elements of the natural gas supply chain. The course also lays the foundation for understanding natural gas markets and pricing.

Physical and Financial Natural Gas Markets (1 day)

Course Overview

This online program will present an overview of physical and financial natural gas markets. Attendees will review natural gas market basics, including terminology, concepts, and the mechanics of physical natural gas trading. They will discuss the role of NYMEX Natural Gas Futures Contract in determining the value of physical natural gas. Our expert instructor will provide an in-depth understanding of gas indices, fixed price, and physical basis deals. He will address major trends on how sellers and purchasers price physical natural gas. Attendees will gain an understanding of where to find price information, what affects prices, and the role of the natural gas index publishers. They will leave the course with the ability to assess the importance of liquidity in physical natural gas markets and review considerations used to determine whether or not to hedge. The course will discuss the role of FERC, the Commodity Futures Trading Commission (CFTC), states, and other participants in regulating natural gas markets. The course will conclude with a discussion regarding where natural gas markets are headed.

Who Should Attend?

This program is ideal for personnel who need to broaden their understanding of natural gas markets, pricing and hedging.

Russo on Energy LLC
www.russoonenergy.com
Tom Russo 703-375-9482

Natural Gas Utilities 101 (1.5 days)

Course Overview

This online program is ideal for utility and service personnel who need to broaden their understanding of the natural gas supply chain, the infrastructure, and operations of natural gas utilities. The instructor will also discuss regulation of natural gas utilities by State Public Utility Commissions (PUCs), State Authorities, Federal Energy Regulatory Commission (FERC) and Pipeline & Materials Safety Administration (PHMSA). It will include an overview of the domestic natural gas industry, with emphasis on shale gas, pipelines, underground and surface storage, and liquefied natural gas imports and exports. We will also discuss how FERC sets interstate pipeline transportation and storage rates and the role of peak shaving plants.

Since natural gas utilities actively purchase and transport wholesale natural gas to serve their customers, the course will cover how gas is priced in bidweek and daily markets, pipeline nominations, and how natural gas utilities can physically and financially hedge their gas supplies and price volatility. Finally, decarbonization of natural gas is a growing challenge of the natural gas industry, so the instructor will discuss decarbonization via renewable natural gas, hydrogen blending, methanation, and responsibly-sourced natural gas.

Who Should Attend?

This program is ideal for personnel who need to broaden their understanding of liquefied natural gas (LNG) infrastructure and markets.

Introduction to Liquefied Natural Gas: Infrastructure, Regulation and Markets (1.5 – 2 days)

This online program is ideal for utility and service personnel who need a detailed overview of Liquefied Natural Gas (LNG). Attendees will receive a comprehensive understanding of the supply chain, types of infrastructure, costs, siting and safety regulations, and LNG markets. The instructor will also discuss how an LNG plant operates (import, storage, and vaporization) and types of vessels used to transport LNG. Attendees will have a better understanding of the relationship between U.S. shale gas and LNG, and the latter's role as a fuel for the 21st century.

Attendees will also learn about inland and offshore LNG import and export terminals, and LNG peak shaving plants used to mitigate temporary natural gas supply and price risks. The course will address the roles played by the Department of Energy, FERC and USCG in siting and safely operating U.S. LNG projects. Attendees will learn about LNG pricing mechanisms, sales purchase agreements, how LNG is priced for domestic use, and natural gas and LNG futures contracts used to hedge risk.

Who Should Attend?

Russo on Energy LLC
www.russoonenergy.com
Tom Russo 703-375-9482

This program is ideal for personnel who need to understand LNG as a fuel in gas and electricity utilities.

Hydropower 101 (1 day)

Course Overview

This online program will provide utility and service personnel who know little or nothing about hydropower and want to accelerate the learning curve of this power technology. The instructor will present a detailed overview of dams and hydropower operations, including: how hydropower works, project types and definitions, and benefits and challenges associated with hydropower development. Attendees will learn about costs associated with hydropower, including engineering considerations, including: flood control, irrigation, navigation, fish passage, entrainment mortality, in-stream flows, water quality, ramping rate, recreation, and dam safety. The instructor will discuss hydropower's role energy transition to fight climate change and it's relative value in organized electricity markets and balancing areas.

Who Should Attend?

This course is designed for personnel who want to need an overall understanding of hydropower to interact with the general public, resource agencies and regulators

FERC Hydropower (1 day)

Course Overview

This online program will provide utility and service employees a detailed overview of FERC's hydropower program and how it operates. It is for those who know very little or need a refresher about how FERC licenses and administers the 1,700 non-federal hydropower projects under its jurisdiction. Attendees will leave with an overall understanding of FERC hydropower fundamentals and current issues facing existing and new FERC hydropower project proposals. They will learn about and compare the pros and cons of using FERC's Integrated Licensing Process (ILP), Alternative Licensing Process (ALP) and Traditional Licensing Process to facilitate review of a hydropower application. In addition, FERC license amendments, dam safety, and hydropower compliance requirements will be covered.

Who Should Attend?

This course is designed for personnel who wants to broaden their understanding of how FERC administers its hydropower program and need to interact with FERC. Participants will benefit from the program regardless of their level of experience or field of work.

FERC Hydropower Licensing (1 day)

Course Overview

This online program is for utility and service personnel who need a deep and comprehensive dive into FERC's three licensing processes and preparation of applications for original license and new license (relicense) and associated regulations. It assumes that the attendee understands FERC's hydropower program or the equivalent to Introduction to FERC Hydropower. The course will describe in detail the steps in FERC's Integrated Licensing Process (ILP), Alternative Licensing Process (ALP) and the Traditional Process. The course will also detail preparation of the various exhibits of the license application, especially the Exhibit E and offer insights and tips to ensure prompt FERC and agency reviews to expedite decision making as well as the issuance of mandatory conditions under Federal Power Act section 4(e), 18, section 401 and 404 of the Clean Water Act and coastal zone determinations required by the Coastal Zone Management Act.

Who Should Attend?

This program is ideal for personnel who need the details in preparing or managing the preparation of acceptable hydropower licensing applications for band new projects or those undergoing relicensing.

FERC Hydropower Compliance (1 day)

Course Overview

This online program will present a detailed overview of compliance and administration required at 1,000 active hydropower licenses and more than 600 projects that are exempted from licensing by the Federal Energy Regulatory Commission (FERC). Together, these include over 2,500 dams. Attendees will learn how to administer and comply with conditions in licenses and exemptions. Compliance during construction, and surrendering and transferring licenses will also be covered. The course will provide attendees with insights on how to work with FERC staff to achieve good compliance while maximizing project benefits. The instructor will also provide details on what licensees must consider and do when planning to add generating capacity and amending their existing licenses, including how FERC handles allegations of non-compliance of environmental conditions.

Who Should Attend?

This program is designed for utilities who own and operate FERC hydropower projects.

Fundamentals of US Electricity Markets (5 hour course)

Power System Basics, Types of Generation Resources and Loads, and Regulatory Oversight

- Fundamentals of electricity, definitions, and units
- Overview of source to socket components: Generation, transmission, distribution, and loads
- Power flow demonstration
- Load characteristics, load duration curves, load factor, and customer classes
- Demand response
- Power system losses
- Regulatory oversight: Role of FERC, state regulatory agencies, and market monitor

Types of Energy Markets and Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs)

- Wholesale electricity prices and volatility
- Review of supply and demand relationship
- Types of electricity markets: Real-time (spot) versus bilateral markets
- RTOs/ISOs in U.S. and Canada
- RTO functions and characteristics
- RTO drivers
- Advantages and disadvantages of RTO /ISO participation
- Regulatory framework and role of FERC and state regulatory agencies
- RTO stakeholders

RTO/ISO Wholesale Electricity Markets

- Economic merit order and unit commitment
- Security constrained economic dispatch
- Cost of transmission congestion and losses
- Day ahead and real-time market, scheduling, and dispatch
- Capacity market
- Ancillary services – whose responsibilities?
- Ancillary services market
- Comparison of markets offered by RTOs/ISOs in the U.S.
- Overview of generator/load offer/bidding considerations, bid and offer curves, and three-part bid
- Overview of RTO/ISO financial settlement

Risk Management and Credit Requirements

- Potential risks
- Overview of risk hedging tools for real-time and bilateral markets: FTRs, virtual trading, options, futures, and SWAPs

Russo on Energy LLC

www.russoonenergy.com

Tom Russo 703-375-9482

- Credit requirements

Brief Overview of Vertically Integrated Utilities