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# PSEC 720

## Economic Transmission Planning

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### At a glance

Today's transmission system is challenged with renewable energy integration, competing interests of investors, consumers and environmental advocates, and the increasing role information technology plays in the delivery of electric energy. The growth in behind-the-meter solutions from demand response to on-site generation, and the emergence of alternative networks, such as micro-grids, means that the transmission system's reliability function has become more complex, and the economic evaluation of competing projects, less straightforward. The range of potential market outcomes is greater than ever before, and the evolving design of America's power delivery system is more uncertain.

The primary objective of this course is to teach fundamental and advanced economic concepts as an integral component of transmission planning and project evaluation. The objective is to instill in transmission planners the economic and transmission concepts that will allow for best in class project planning and analysis.

#### PSEC 720 course participants will:

- Understand the fundamentals of economic transmission planning such as project capital costs and their time value, costs-benefits based on

production cost, and how to measure the societal costs and benefits

- Learn how revenue requirements is used as a calculation method to compare different transmission alternatives on an equivalent base (first year present value)
- Understand energy market concepts including: scarcity, surplus, supply-demand curve, day-ahead market, real-time market, firm transmission rights, reliability vs. economics
- Learn about production cost modeling (software agnostic) including the input data requirements such as generator and transmission data and outputs such as production costs, emissions and market prices
- Review comparative approaches and best practices
- Understand societal costs-benefits and metrics
- Learn about economic criteria required to evaluate transmission projects i.e. comparative system costs with and without project and thresholds as defined by specific regions
- Learn how to identify opportunities to build market efficiency projects i.e. evaluating multiple projects vs a single project to the same end
- Understand how to account for uncertainties such as: reserves, regulation, spinning and non-spinning,

black start, transmission out-ages, generation and load forecasts, generation volatility, fuel cost volatility and emissions

Upon completion of this course participants will be able to apply these concepts for short, intermediate and long-term planning studies and to judge the relative merits of competing transmission projects.

### Prerequisites

The course requires no specialized background in power system engineering, but does presume a general understanding of transmission systems and basic economics.

### Course structure

This is a two day course. Material is presented in both morning and afternoon sessions for a total of six hours of daily instruction. Standard course hours are 9:00 am to 4:00 pm each day.

**To view the PSEC 720 Course Schedule on the web:**

[https://siemens.coursewebs.com/cart/pageCourseInfo.aspx?Course\\_ID=PSEC\\_720](https://siemens.coursewebs.com/cart/pageCourseInfo.aspx?Course_ID=PSEC_720)

## Instructors

All courses offered through Siemens Power Academy are developed and taught by leading industry engineers. In addition to their proven instructional ability, our engineers have advanced degrees complemented by first-hand knowledge and experience solving power system problems throughout the world.

## Continuing Education Units (CEUs), Professional Development Hours (PDHs):

Licensed engineers, on a voluntary or mandated basis, attend continuing professional education for licensure renewal to ensure competency. All courses offered through Siemens

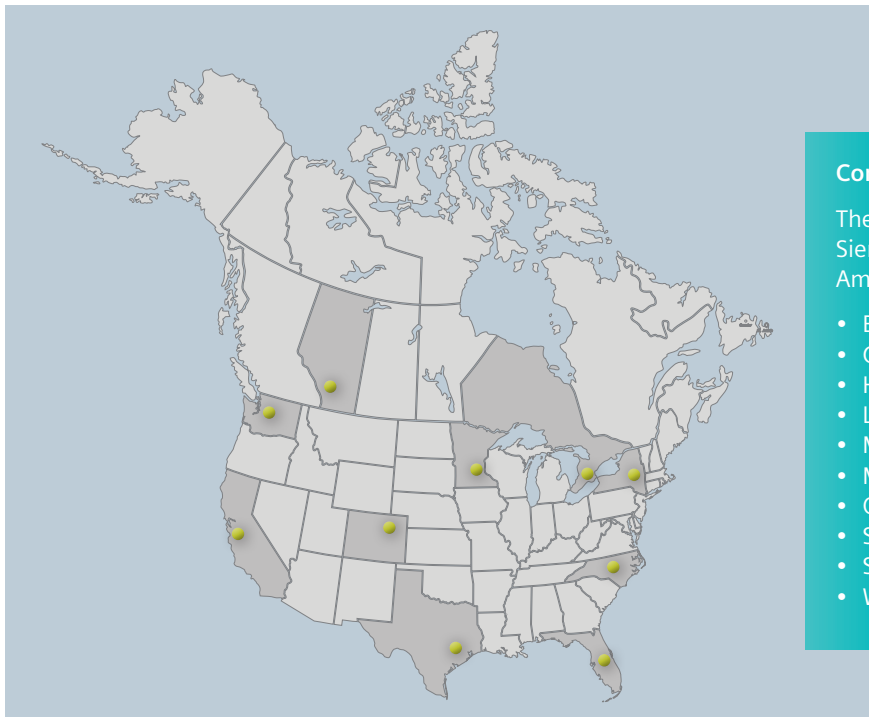
Power Academy meet the requirements for CEUs and PDHs.

- Continuing Education Units (CEUs) are the nationally recognized units for recording participation in professional development and noncredit educational programs. Participants completing this course will be awarded CEUs based on the instructional hours of the course: one CEU is awarded for 10 classroom hours of instruction.
- Professional Development Hours (PDHs) – Continuing education training for the Professional Engineer (PE) – that needs to earn annual Professional Development Hours

(PDHs). Through our instructor-led training, participants earn one PDH for each one hour of instruction. The participant is responsible for maintaining records of courses taken in support of licensure.

## Client site and custom training

All courses are available for presentation at any client's location by special arrangement. At client sites, it is recommended that sufficient computer terminals be available to enable a fully interactive and productive class, if applicable. Client site courses can also be tailored to address specific topics of local importance.



## Convenient training locations

The course is scheduled on a regular basis at Siemens offices located throughout North America, including:

- Burlington, Ontario, Canada
- Calgary, Alberta, Canada
- Houston, Texas, USA
- Littleton, Colorado, USA
- Minnetonka, Minnesota, USA
- Mountain View, California, USA
- Orlando, Florida, USA
- Schenectady, New York, USA
- Seattle, Washington, USA
- Wendell, North Carolina, USA

## Contact us

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