

# Wisconsin Public Utility Institute Fundamental Course: Energy Utility Basics

October 5 – 9, 2015

Promoted by



National  
Association of  
Regulatory  
Utility  
Commissioners

## Draft Agenda

### Eligible for CLEs

**Site: The Pyle Center, 702 Langdon St., Rm 235, located on Lake Mendota**

**Accommodations: The Graduate Madison**

**Parking is available for hotel guests**

**Additional Parking available in UW Lot 46 (Lake & Johnson St Ramps at 301 N. Lake St.)**

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## October 5, Monday

### Electricity: Industry Structure

Pyle Center, Room 235

Time	Session Title	Speaker (s)
7:30-8:00	Continental Breakfast	
7:30-8:00	Registration	
8:00-8:20	Introduction	<b>Cara Lee Mahany Braithwait</b> <i>Wisconsin Public Utility Institute</i>
8:20-9:45	Why a regulated monopoly? Who's regulated, why and how: The Federal and State Perspective 1600's to 1985 <ul style="list-style-type: none"> <li>• Why a monopoly</li> <li>• What is a public interest</li> <li>• The role of federal level commissions</li> <li>• The relationship between the utility and the regulator</li> </ul>	<b>Enrique Bacalao</b> <i>Wisconsin Council on Economic Education</i>
9:45-10:00	Break	
10:00-11:15	<ul style="list-style-type: none"> <li>• Regulation from 1985 Forward</li> <li>• And the history of energy regulation from 1985-2015</li> <li>• For this second talk I would like to cover:</li> <li>• What started the demand to deregulate the electric industry?</li> <li>• First Gas--piece of cake and why</li> <li>• Then electric generation and it worked pretty well.</li> <li>• Then the concept moved to distribution</li> <li>• Then the recognition of market power (ENRON if you like)</li> <li>• Then the transmission was deregulated and the birth of regional operations planning, then agencies like MISO and ATC/ITC.</li> <li>• Then the introduction of distributed generation.</li> </ul>	<b>David Gilles</b> <i>Godfrey and Khan</i>
11:15-11:30	Break	
11:30-12:30	The Public Service Commission-Roles and Rules, Balance of Power <ul style="list-style-type: none"> <li>• PSC Authority and Jurisdiction</li> <li>• Organizational Structure of the PSC</li> <li>• A Case: Start to Finish</li> </ul>	<b>Cynthia Smith</b> <i>Public Service Commission of Wisconsin</i>
12:30-1:30	Lunch	

Time	Session Title	Speaker (s)
1:30 – 3:00	Utility Company Models-Presentations and Panel Discussion <ul style="list-style-type: none"> <li>Utility Company Models-Presentations and Panel Discussion</li> <li>Why was this form of a public service company formed</li> <li>What do you own and operate--</li> <li>How are you regulated or managed--(show differences for transmission, generation etc.)</li> <li>Who are your stakeholders (stockholders for IOUs)</li> <li>How do you secure power</li> <li>How do you sell power (retail only, wholesale customers etc)</li> <li>What other services do you offer customers</li> <li>Who are your customers</li> </ul>	<b>Moderator: Cara Lee Mahany Braithwait</b> <i>Wisconsin Public Utility Institute</i> <b>Brian Rude</b> <i>Dairyland Power Coop</i> <b>John Sumi</b> <i>Madison Gas and Electric</i>
3:00 – 3:15	Break	
3:15 – 4:15	Transmission-The Overlooked Connection Until 1970 <ul style="list-style-type: none"> <li>History 1970 to date</li> <li>Order 2000 RTOs and then Repair Bill Order 890</li> <li>The Underlying Driver for FERC</li> <li>FERC Order 1000 and then the Repair Bill 1000-A</li> <li>Right of First Refusal—Current Status</li> </ul>	<b>Flora Flygt</b> <i>American Transmission Co.</i>
4:15 – 4:30	Break	
4:30– 5:15	The Independent System Operator <ul style="list-style-type: none"> <li>History</li> <li>Responsibilities</li> <li>Areas of influence</li> </ul>	<b>Matt King</b> <i>GDS</i>
5:15	Adjourn	

**October 6, Tuesday**  
**Electricity: Industry Operations**  
*Pyle Center, Room 235*

Time	Session Title	Speaker(s)
7:00-8:00	Continental Breakfast	
8:00-9:15	From Heat to Electricity-How we make Electricity in the U.S. <ul style="list-style-type: none"> <li>How much energy do we use</li> <li>What is the difference between energy and power</li> <li>Creating electricity</li> <li>AC/DC—what does this mean?</li> <li>How does a generator make electricity</li> <li>Start-up</li> <li>Black starts</li> <li>Who uses what</li> <li>Cost of electricity</li> </ul>	<b>Jake Blanchard</b> <i>UW Madison College of Engineering</i>
9:15-9:30	Break	
9:30-11:15	Field Identification Guide to the Electric Industry <ul style="list-style-type: none"> <li>Recognizing a power line from a phone line</li> <li>Substations, boosters, inter-tie, DC lines</li> <li>Technical language used in the field</li> <li>Power flows</li> <li>Transmission basics</li> <li>Step-up &amp; step-down</li> <li>Counterflows</li> <li>Curtailments</li> <li>Line losses</li> <li>Line loading</li> <li>Buses</li> <li>Basics of LMP</li> <li>Congestion</li> </ul>	<b>Ken Copp</b> <i>American Transmission Co.</i>
11:15-11:30	Break	
11:30-12:30	A Day in the Life of a Distribution Company <ul style="list-style-type: none"> <li>The New Responsibility (Opportunity)</li> <li>Physical characteristics</li> <li>A typical day in 1990</li> <li>A typical day in 2012</li> </ul>	<b>Merlin Raab</b> <i>Wisconsin Public Service Corporation/Integrus</i>
12:30-1:30	Lunch	

Time	Session Title	Speaker(s)
1:30-2:30	A Day in the Life of a Transmission Operator <ul style="list-style-type: none"> <li>• What they do and why they do it</li> <li>• Scheduling</li> <li>• Forecasting</li> <li>• Selling into the market</li> <li>• Good days and bad days</li> <li>• Transmission investment decisions</li> <li>• Meeting renewable portfolio standards</li> <li>• Planning and cost allocation</li> </ul>	<b>Eric Dietzman</b> <i>American Transmission Co.</i>
2:30-2:45	Break	
2:45 – 3:30	Demo – What happens to carbon with different generation portfolios? Dealing with trade-offs and risks	<b>Scott Patrick Williams</b> <i>UW Madison, Dept. of Engineering Physics</i>
3:30-3:45	Travel to Co-Gen Plant	
3:45-5:15	Field Trip: West Campus Co-Generation Power Plant Tour	<b>Jim Jenson</b> <i>Madison Gas and Electric</i>

**October 7, Wednesday**  
***Ratemaking for Electric and Gas Companies***  
*Pyle Center, Room 235*

Time	Session Title	Speaker(s)
7:00-8:00	Continental Breakfast	
8:00-9:15	What drives utility stock prices? <ul style="list-style-type: none"> <li>• How do investors value utility stock?</li> <li>• What is changing about the utility's business climate for earnings growth?</li> <li>• What are the implications of the changes on future stock value?</li> <li>• What are the value implications for utility investment in environmental infrastructure projects?</li> </ul>	<b>Steve Kihm</b> <i>Seventhwave</i>
9:15-9:30	Break	
9:30-10:45	Basics of Rate Setting <ul style="list-style-type: none"> <li>• Cost of Service</li> </ul>	<b>Bruce Chapman</b> <i>CA Energy</i>
10:45-11:00	Break	
11:00-12:30	Basics of Rate Setting <ul style="list-style-type: none"> <li>• Traditional Rate Design</li> <li>• Dynamic Pricing and Rate Efficiency</li> <li>• Niche Designs</li> </ul>	<b>Bruce Chapman</b> <i>CA Energy</i>
12:30-1:30	Lunch	
1:30-2:45	Basics of Rate Setting: Conclusion Challenge of Renewables Cost and Pricing	<b>Bruce Chapman</b> <i>CA Energy</i>
2:45-3:00	Break	
3:00-3:45	Strategies for Addressing Fixed Cost Recovery Issues	<b>Dan Hansen</b> <i>CA Energy</i>
3:45 – 4:00	Break	
4:00 – 4:45	One Utility's Response to Changing Customer Expectations	<b>Greg Bollom</b> <i>Madison Gas and Electric</i>
4:45	Adjourn	

**October 8, Thursday**  
***Electricity/Gas: Environmental Issues & Gas Markets***  
*Pyle Center, Room 235*

Time	Session Title	Speakers(s)
7:00-8:00	Continental Breakfast	
8:00 – 8:45	Nuclear Future—The Base Load of the Future?	<b>Jake Blanchard</b> <i>UW Madison College of Engineering</i>
8:45 – 9:00	Break	

Time	Session Title	Speakers(s)
9:00-12:20	Work Done Without (or with a small) Carbon Footprint— <b>Moderator Rich Hackner, GDS Associates</b> <ul style="list-style-type: none"> <li>• <b>Introduction to Renewables</b> – Rich Hackner, GDS (9:00 – 9:20)</li> <li>• <b>Efficiency: First, fix the holes in the bucket</b> – Rich Hackner, GDS(9:20 – 10:00)</li> <li>• <b>Biogas</b> – Rebecca Larson, UW Madison (10:00 – 10:40)</li> <li>• <b>Break</b> (10:40 – 11:00)</li> <li>• <b>Wind</b> – Richard Hasselman, Tetra Tech (11:00 – 11:40)</li> <li>• <b>Solar</b> – Mike Rivérún, SunPeak (11:40 – 12:20)</li> </ul>	
12:20 – 1:20	Lunch	
1:20 – 3:30	Gas Markets How do traders evaluate options <ul style="list-style-type: none"> <li>• What do customers pay for in a therm of gas—production, pipeline and distribution?</li> <li>• How does the stock market treat gas sales? What effect on the economy?</li> <li>• Driving Factors in Gas Prices.</li> <li>• General outlook for supply</li> <li>• How has the gas market changed in the past 4 years?</li> <li>• The role of storage.</li> <li>• New LNG markets? And its effect on domestic pricing</li> <li>• Short and long term pricing implications</li> <li>• Price outlook caveats</li> <li>• Implications for states current fuel portfolios</li> </ul>	<b>Valerie Wood</b> <i>Energy Solutions Inc.</i>
3:30 – 3:45	Break	
3:45-4:30	The Clean Power Plan—What is, isn't and might be	<b>Brian Potts</b> <i>Foley and Lardner LLP</i>
4:30	Adjourn	

**October 9, Friday**  
**Gas: Status and Operations**  
*Pyle Center, Room 235*

Time	Session Title	Speaker
7:00-8:00	Continental Breakfast	
8:00 – 10:30	What Everyone Ought to Know About Gas <ul style="list-style-type: none"> <li>• Where does natural gas come from</li> <li>• What is unconventional gas</li> <li>• How does the near term supply look</li> <li>• What about the future</li> <li>• Typical composition of a gas molecule</li> <li>• How natural gas is normally used—by time of day, coincident hourly demand, and month and by industry type</li> <li>• How efficient is natural gas as an energy source—and how clean is it compared to other fossil fuels</li> <li>• What is the natural gas production break-even point (Basin production cost per MMBtu)</li> <li>• Big picture of historical natural gas prices</li> </ul>	<b>Alan Carroll</b> <i>UW Madison, Department of Geology</i>
10:30 – 10:45	Break	
10:45 – 11:45	A Day in the Life of a Gas Company <ul style="list-style-type: none"> <li>• Regulatory requirements</li> <li>• Trading</li> <li>• Forecasting</li> <li>• Dispatch</li> </ul>	<b>Sarah Mead</b> <i>Integrays Energy Group</i>
12:00	Adjourn	