

# FLEXIBLE AND FAST RESPONSE CAPACITY MEASURES IN ENERGY MARKETS

May 18 – 19, 2017  
Hyatt Regency Sacramento  
Sacramento, CA

POST-CONFERENCE WORKSHOP

**Revenue Opportunities  
Involving Flexible and Fast  
Response Market Strategies**

FRIDAY, MAY 19, 2017



EUCI is authorized by IACET  
to offer 1.1 CEUs for the  
conference and 0.4 CEUs  
for the workshop

## OVERVIEW

The increasing penetration of renewable energy resources — combined with the gradual but inexorable shift away from traditional baseload generation and other changes in the grid profile — are creating new challenges for utilities/load-serving entities, balancing area authorities and transmission system operators. The increasing need for flexible response, fast ramping and balancing resource options has led to definition of new products and prospective solutions for energy markets. It has also stimulated efforts to create incentives for such flexible resource characteristics over a long-term planning timeframe to ensure grid stability and reliability.

This program will explore what North American and international utilities, load-serving entities, merchant generators, balancing authorities, and regional transmission system operators are doing to define, evaluate and implement strategies that allow their systems to better integrate flexible resource approaches into their operations. It will examine how the need for flexibility is changing due to wind and solar integration, distributed generation, smart grid innovations and other shifts in the resource mix. In addition, it will describe how grid managers must prepare their plans to ensure adequate flexibility, detailing the characteristics of existing and new ancillary services and performance incentives to meet these needs. Ideas under consideration for multi-year forward incentives and/or procurement of the required characteristics will be discussed. The program will also assess the role that market participants, project developers, and technology providers will play in bringing these services, products, and other flexible resource strategies to market. Finally, it will consider the likely “winners and losers” in the process.

## LEARNING OUTCOMES

- Discuss why the issues of flexible resources in grid operations is an issue that now affects utilities, load-serving entities, merchant generators, balance authorities and ISOs
- Discuss the impacts that flexible resources have on power system planning issues
- Identify planning tools to project short-term and long-term sub-hour flexibility requirements
- Evaluate specific modeling approaches for aligning operational requirements to meet flexibility needs
- Assess through case studies what some utilities have done to evaluate their need for flexibility
- Analyze what technology options are available as solutions to meet grid flexibility
- Consider how various ISOs are incorporating intra-hour bidding and marketing
- Review market-based initiatives undertaken by ISOs and power balancing jurisdictions and track what outcomes they are yielding

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***“Both informative and timely content, not only germane to California market, but also every market/system facing the multiple and overlapping challenges surrounding renewable integration.”***

Regional Sales Manager, Siemens Energy, Inc.

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***“Great opportunity to meet and network with current and future customers, grid operations & planning. Helped OEM’s better see the market.”***

Technology Solutions, GE

# AGENDA

THURSDAY, MAY 18, 2017

- 8:00 – 8:30 am**      **Registration and Continental Breakfast**
- 8:30 – 10:00 am**      **What is Flexibility and Why Are Flexible Resources a Big Issue Now?**
- Flexibility described
  - What are the changes that make flexibility important
  - Where and why it is needed now
- Alex Papalexopoulos, President & CEO, ECCO International, Inc. (ECCO)**
- 10:00 – 10:20 am**      **Morning Break**
- 10:20 – 11:45 am**      **Evaluating Flexibility Exposure at Utility, Balancing Area and System Operator (Organized Market) Levels**
- Short term identification and actions
  - Long-term identification and actions
- Alex Papalexopoulos, President & CEO, ECCO International, Inc. (ECCO)**  
**Clyde Loutan, Sr. Advisor - Renewable Energy Integration, Market Analysis and Development, California ISO (CAISO)**
- 11:45 am – 12:45 pm**      **Group Luncheon**
- 12:45 – 2:15 pm**      **Flexible Resource Generation: What Technology Options Are Available**
- Gas generation
    - o Combustion turbines
    - o Reciprocating engines
  - Demand response
  - Storage
  - Battery
  - Other technologies
- Thomas Graves, Market Strategist, Burns & McDonnell**  
**Jennifer Potter, Electricity Markets and Policy Group, Lawrence Berkeley National Laboratory (LBNL)**  
**Josh Rasin, Project Manager – Energy Research & Development, Sacramento Municipal Utility District (SMUD)**
- 2:15 – 3:30 pm**      **Flexibility Planning and Modeling Considerations**
- Flexibility planning framework
  - Analytical tools
  - Flexibility modeling
  - Application of integration models
- Arne Olson, Partner, Energy and Environmental Economics (E3)**  
**Nick Schlag, Senior Consultant, Energy and Environmental Economics (E3)**
- 3:30 – 3:45 pm**      **Afternoon Break**



*“Excellent cross section of attendees, allows a lot of learning in adjacent fields.”*

Technical Sales Support Manager, GE Distributed Power

# AGENDA

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THURSDAY, MAY 18, 2017 (CONTINUED)

**3:45 – 5:15 pm**

**Flexible Resources in Action**

- ISO projections vs actual flexibility needs
- Assessment of multiple variables and their impact on flexibility requirements
- Utility/load-serving entity case studies

***Clyde Loutan, Sr. Advisor - Renewable Energy Integration, Market Analysis and Development, California ISO (CAISO)***

***Alex Papalexopoulos, President & CEO, ECCO International, Inc. (ECCO)***

***Josh Rasin, Project Manager – Energy Research & Development, Sacramento Municipal Utility District (SMUD)***

**5:15 pm**

**Program Concludes for the Day**

FRIDAY, MAY 19, 2017

**7:30 – 8:00 am**

**Continental Breakfast**

**8:00 – 10:00 am**

**Flexible Resource Mechanisms in Re-structured Markets**

- FERC Orders and directives
- Power market design elements
- Market changes and new products
- ERCOT
- PJM
- NYISO
- CAISO
- European Union
- Demand response
- Distributed energy resources (DERs) and Virtual power plants (VPPs)

***Alex Papalexopoulos, President & CEO, ECCO International, Inc. (ECCO)***

***Clyde Loutan, Sr. Advisor - Renewable Energy Integration, Market Analysis and Development, California ISO (CAISO)***

***Midcontinent Independent System Operator (MISO)***

**10:00 – 10:30 am**

**Networking Break**

**10:30 – 11:45 am**

**How Important Will Flexible Resources Be Going Forward?**

- Solving policy issues
- Addressing customer and stakeholder issues
- Balancing the need for capital with the need to do something

***Alex Papalexopoulos, President & CEO, ECCO International, Inc. (ECCO)***

***Arne Olson, Partner, Energy and Environmental Economics (E3)***

***Clyde Loutan, Sr. Advisor - Renewable Energy Integration, Market Analysis and Development, California ISO (CAISO)***

***Kelly Murphy, Director, Steffes***

## POST-CONFERENCE WORKSHOP

# Revenue Opportunities Involving Flexible and Fast Response Market Strategies

FRIDAY, MAY 19, 2017

12:30 – 1:00 pm	Registration
1:00 – 4:45 pm	Workshop Timing
4:45 pm	Workshop Adjourns

## OVERVIEW

This post-course workshop provides a detailed examination of strategies in which current and future opportunities exist for market participants to offer in flexible and fast response products or services.

## LEARNING OUTCOMES

- Identify the flexibility resources that can be offered into specific markets
- Evaluate the revenue margins that different flexibility products can offer
- Discuss the impact of the proposed FERC NOPR and Orders on the products and margins associated with flexibility products
- Assess the risk/reward organizational appetite for developing and/or marketing dedicated flexibility services

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*“If you want to learn more about any aspect of your industry, EUCI has the class for you. You will learn outside of your day-to-day to better you overall.”*

Director - Strategic Accounts, Trane

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*“Two days full of information that I will lean on for years.”*

Program Manager, Solar Turbines

# AGENDA

FRIDAY, MAY 19, 2017

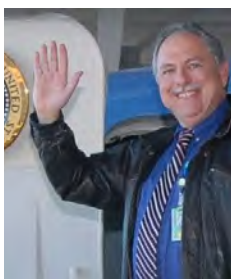
- I. Current Market Structures
- II. Revenue Opportunities from the Ancillary Services Markets
- III. Revenue Opportunities from the Regulation Energy Management Process
- IV. Opportunities from Resource Aggregation
- V. Opportunities from New AS Products and Services
- VI. Revenue Opportunities in the Energy Market
- VII. Revenue Opportunities in the Capacity Markets
- VIII. Specific Examples from the CAISO, PJM, ERCOT, NYISO and EU markets
- IX. PPAs, Risk/Reward Analysis and Organization Readiness

# INSTRUCTORS



**Alex Papalexopoulos**  
**President & CEO, ECCO International, Inc.**

Dr. Alex Papalexopoulos is CEO and founder of ECCO International, a specialized energy consulting and software company, which provides consulting and software services and expert advice worldwide to a wide range of clients such as governments, utilities, independent system operators and regional transmission operators, power exchanges, regulators, marketers, brokers and software vendors. These services range from strategic planning, electricity market design and implementation, system and market operations and planning, market simulation studies and renewable energy resource modeling and analysis. Dr. Alex Papalexopoulos has designed some of the most complex energy markets in the world including North and South America, Western and Eastern Europe and Asia. He is currently the key designer of the energy markets in Greece, Poland and Cyprus. He was the technical lead of the MRTU Nodal market redesign for the CAISO. Prior to forming ECCO International in 1998, Dr. Papalexopoulos was a director of the Pacific Gas & Electric Company's electric industry restructuring group in San Francisco, California. In that capacity, he became heavily involved in the California energy industry restructuring effort since its inception in 1994. He was one of the key energy market designers of the California Power Exchange and the California Independent System Operator (CAISO).



**Tom Cook**  
**Director – Renewable Integration, ECCO International, Inc.**

Tom Cook is Director of Renewable Integration, ECCO International, an energy consulting company providing consulting services on electricity market design, power systems, energy management systems and financial settlement systems within and outside the U.S. to a broad range of clients including regulators, governments, utilities, independent system operators as well as regional transmission organizations, power exchanges, marketers, developers, brokers, and software vendors. In his role at ECCO, he has supported multiple engagements focused on origination, PPA negotiation, risk analysis, finance, and dispute resolution. Prior to joining ECCO International, Mr. Cook served over 30 years in the electric utility industry. The last 5 years were as Manager of Contract Compliance and Analysis for Southern California Edison (SCE). His experience includes origination, negotiation, administration, and financial settlement for conventional, CHP, transmission, gas, wind, solar, and geo-thermal contracts. While at SCE, he exercised oversight of a resource portfolio with over \$5 billion in annual invoicing. He has a wide background in power plant and system operations and maintenance, reliability, and root cause analysis, along with instrumentation and distributed control systems. In addition to his MBA from Pepperdine University, he possesses certificates in Statistical Process Control, and Six Sigma Lean from several universities.



## INSTRUCTIONAL METHODS

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PowerPoint presentations, case studies, and workshop exercises will be used in this conference.

## REQUIREMENTS FOR SUCCESSFUL COMPLETION

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Participants must sign in/out each day and be in attendance for the entirety of the conference to be eligible for continuing education credit.

## IACET CREDITS

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EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

**EUCI is authorized by IACET to offer 1.1 CEUs for the conference and 0.4 CEUs for the workshop.**

## EVENT LOCATION

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A room block has been reserved at the Hyatt Regency Sacramento, 1209 L St, Sacramento, CA 95814, for the nights of May 15-18, 2017. Room rates are US \$229 plus applicable tax. Call **1-916-443-1234** for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is April 15, 2017 but as there are a limited number of rooms available at this rate, the room block may close sooner. **Please make your reservations early.**

## REGISTER 3, SEND THE 4TH FREE

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Any organization wishing to send multiple attendees to these conferences may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

**REGISTRATION**  
*to register [CLICK HERE](#) or*

**Call: 201 871 0474**  
**fax: 253 663 7224**  
**email: [register@pmaconference.com](mailto:register@pmaconference.com)**  
**web: <http://pmaconference.com/>**  
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Please make checks payable to: "PMA"

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## PLEASE SELECT

- FLEXIBLE AND FAST RESPONSE CAPACITY MEASURES IN ENERGY MARKETS**  
 CONFERENCE AND WORKSHOP: MAY 18 – 19, 2017: US \$1895  
 EARLY BIRD on or before APRIL 28, 2017: US \$1695
  
- FLEXIBLE AND FAST RESPONSE CAPACITY MEASURES IN ENERGY MARKETS**  
 CONFERENCE ONLY: MAY 18 – 19, 2017: US \$1495  
 EARLY BIRD on or before APRIL 28, 2017: US \$1295
  
- POST-CONFERENCE WORKSHOP ONLY: FRIDAY, MAY 19, 2017: US \$595**  
 EARLY BIRD on or before APRIL 28, 2017: US \$495

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name Job Title

Company

What name do you prefer on your name badge?

Address

City State/Province Zip/Postal Code Country

Phone Email

List any dietary or accessibility needs here

### CREDIT CARD INFORMATION

Name on Card Account Number

Billing Address Billing City Billing State

Billing Zip Code/Postal Code Exp. Date Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx)

**OR** Enclosed is a check for \$ \_\_\_\_\_ to cover \_\_\_\_\_ registrations.

### Substitutions & Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before April 14, 2017 in order to be refunded and will be subject to a US \$195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of conference cancellation, EUCI's liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, contact our offices at (201) 871-0474.