SOLAR DEVELOPMENT ON LANDFILLS AND BROWNFIELDS

November 1 – 2, 2017
Law Offices of Nixon Peabody, LLP
Boston, MA

POST-CONFERENCE WORKSHOP

Financing Strategies for Solar Projects on Landfills and Brownfields

FRIDAY, NOVEMBER 3, 2017

EUCI is authorized by IACET to offer 0.9 CEUs for the conference and 0.6 CEUs for the workshop
OVERVIEW

With solar power moving into the mainstream of energy resources, the aggressive search for suitable greenfield sites has prompted savvy investors, project developers, suppliers and power organizations to consider sites with less conventional development characteristics.

Ironically, these blemished sites often turn out to be attractive siting options for solar projects. Business is flourishing. Renewable energy policies, coupled with multiple tax and related financial incentives, contribute to the development appeal of these types of sites. Yet, there are special considerations unique to closed landfill and brownfield sites as compared with greenfield locations.

This symposium will examine the significant aspects of developing solar energy on landfills and brownfields. It will consider utility interconnection, engineering, permitting, environmental and regulatory, legal, risk and financing issues. Developers, regulatory officials, investors and legal specialists with expertise in this very special arena will conduct the program, using case studies and examples from successful projects.

LEARNING OUTCOMES

The content is intended as a survey (fundamentals) course for utilities, project developers, regulators and community stakeholders in states that are just now beginning to turn their attention to this prospective solar development tool.

Attendees will gain practical and technical skills that allow them to:

• Analyze PV technical and economic factors unique to landfills
• Design solar projects on these areas
• Assess the environmental engineering aspects of siting
• Identify interconnection considerations and constraints
• Evaluate the insurance and risk management connected to these projects
• Analyze landfill reuse permits
• Identify legal aspects of development and financing
• Evaluate the technical and practical considerations municipalities must consider when planning these projects

“The EUCI conference on Solar Projects on Brownfield sites gave a detailed overview of issues and opportunities associated with these Developments!!”

Consumers Energy

“This is the most focused and practical conference about landfills and development I have ever attended!”

Hanergy America

“Very informative, tailored conference.”

Renova Partners
AGENDA

WEDNESDAY, NOVEMBER 1, 2017

12:30 – 1:00 pm  Registration

1:00 – 1:15 pm  Welcome and Introductions

1:15 – 2:00 pm  EPA Landfill, Brownfield and Solar Program Support
This session will detail the U.S. Environmental Protection Agency’s (EPA) ongoing initiative to encourage and facilitate renewable energy development on current and formerly contaminated lands, landfills and mine sites when such development is aligned with the community’s vision for the site. The RE-Powering America’s Land Initiative identifies the renewable energy potential of tracked EPA and state sites and provides useful resources for communities, developers, state and local governments and other interested stakeholders. The focus in this session will be on opportunities for future development, with supplemental information on the program’s efforts to date and observed trends.

Adam Klinger, Program Manager for the RE-Powering America’s Land Initiative, U.S. Environmental Protection Agency (EPA)
John Moskal, Senior Adviser for Energy Policy and Infrastructure – Region 1, U.S. Environmental Protection Agency (EPA) (invited)

2:00 – 2:45 pm  Resources and Tools for Landfill / Brownfield Development
Successful solar development on landfill and brownfield sites requires that many process hurdles be overcome. This segment will review the state and federal resources and tools, as well as non-tax/non-financial incentives, available to both private and public project developers as they navigate through the process. It will also survey resources and tools available for identifying high potential compromised lands such as landfills and brownfields, as well as opportunities and pitfalls for solar development on these sites. Among those discussed will be:
• PV Watts
• Solar Advisor Model (SAM)
• Jobs and Economic Development Impact model (JEDI)
• EPA’s mapping tool and its related database
• EPA’s Solar Decision Tree

Gail Mosey, Project Lead/Senior Energy Research Analyst – Strategy Policy & Implementation, National Renewable Energy Laboratory (NREL)

2:45 – 3:15 pm  Networking Break

“Speakers welcomed questions, which was helpful to fill in the gaps of presentations and the responses were candid.”

SunEdison

“This was a very functional conference with industry leaders detailing interesting and demonstrative projects.”

ISM Solar Solutions
3:15 – 5:00 pm

Site Preparation and Environmental Remediation Considerations

As the numbers of brownfields and landfills multiply as solar project host sites, the engineering, environmental science and preparation practices particular to these contaminated properties advance as well. The choice of remediation methods, site engineering practices and applications, racking systems and foundations all can have profound effect on the risk mitigation and finance-ability of a project. This segment, conducted by site remediation specialists, will examine the critical knowledge needed by those interested in developing solar projects on these sites including:

• Site assessment, remediation and prep
  o Reviewing site closure documents
  o Evaluating topography, settlement and venting conditions
  o Identifying the brownfield and contamination
  o Determining any level of remediation needed
  o Permitting and risk management
• Special landfill considerations
  o Landfill characteristics discussion
  o Cap depth, wastewater and outgassing consideration
  o Accommodating landfills with active gas collection systems
  o Fire suppression
• Foundation and racking systems selection
  o Identifying the appropriate systems for the site
  o Construction techniques for landfills
  o Maintenance considerations
• Corrosion mitigation
  o Long term effect of brownfields on PV panels and balance of system
• Construction best practices
  o Equipment selection
  o Field conditions verification
  o Staging
  o Weather variability
• Risk and insurance
  o Environmental insurance
  o Risk mapping through the project phases
  o Contractual risk allocation
  o Insurance options and considerations

Kevin Magayah, Manager, The Conti Group

5:00 pm

Adjourn for Day

“The conference participants proved to be knowledgeable and provocative practitioners active in various segments of the solar project development process. This was a most worthwhile gathering.”

Brightfields, LLC
Permitting a solar project is a laborious process that typically involves obtaining approvals from an array of local, state and federal agencies with jurisdiction and oversight responsibilities for: solid waste, environmental standards, public utility commissions, land use, etc. In some respects, even the local utility can be considered part of this important category. The session will analyze the process on both the state and local level, and address the following topics:

- Storm water runoff
- Gas control
- Integrity of the cap
- Modifications to the existing gas system
- Planning
- Zoning
- Building
- Post-closure use permits
- Environmental compliance
- Issuing “comfort” letters
- Liability
- Soil contamination, if relevant

Brian Morrissey, Managing Director, Citizens Energy
James Duffy, Partner, Nixon Peabody LLP

Addressing Interconnection and Transmission Access Challenges

Upon the completion of the permitting and financing processes, utilities and developers alike must address the interconnection issues unique to PV development on landfills and brownfields. This session will explore differing design structures and interconnection strategies to consider when designing these projects. It will cover the following topics:

- PV overview
- Interconnection permits
- Interconnection considerations specific to landfills
- Interconnection with local utility
- State-specific considerations

Frank Griffin, Executive Vice President – Engineering and Construction, groSolar
11:15 am – 12:00 pm  Project Development Expense Assumptions
As with any development project, the numbers have to add up. This segment will provide pragmatic
guidance, financial ranges and lessons learned by one of the solar landfill sector’s longest-standing
development organizations, touching upon these critical elements:
• Due diligence
• System design
• Equipment selection
• Construction
• Commissioning
• Operation
Jim Falsetti, Director, BQ Energy
Rich Cogen, Partner, Nixon Peabody LLP

12:00 – 1:15 pm  Group Luncheon

1:15 – 1:45 pm  Superfund Site Complexities
Building a solar project on a superfund site often is accompanied with additional challenges. The
monitoring can be more complex than a closed landfill and there can often be multiple parties involved
outside of the current owner of the land. EPA adds another level of complexity and must have access
which can cause additional considerations to design. This case study will review a recently completed
project in Concord, MA which highlights some of these issues.
Andrew J. Bernstein, Managing Partner, Kearsarge Energy LP

1:45 – 2:15 pm  Largest Non-Federal Solar Landfill Project in America
The Annapolis project is the largest non-federal solar landfill project in America to date, covering some
80 acres of a closed landfill near Interstate 97 in eastern Maryland. It has taken eight years to process.
Over the course of its 20-year lease, the revenue from the power will generate more than $5 million for
the city of Annapolis. This case study will discuss what financial commitments the company has been
making since signing the development agreement to show its commitment to the project until the
project comes online this winter, with the final connection point with BGE to be completed by the end
of the first quarter of 2018.
Paul Curran, Managing Director, BQ Energy

2:15 – 2:45 pm  Initial Superfund Project that Led to Ongoing Development
In 2013, EPA approved the installation of a 1.75-megawatt solar project on the capped area of the
Sullivan’s Ledge Superfund site, located in New Bedford, Massachusetts. Project partners BlueWave
Capital LLC, SunEdison, Beaumont Solar and Pro-Tech Energy Solutions completed the system’s
construction in September 2014. The 10-acre system includes more than 5,000 solar panels, and forms
part of a larger EPA superfund remediation project that incorporates a neighboring golf course and 13
acres of wetlands, which provide habitat for many wildlife species, including the great blue heron, great
egret, red-tail hawk and spotted turtle. The City of New Bedford buys energy generated from the solar
arrays, which enables the City to increase its use of renewable energy sources and save 30 percent on its
municipal electricity bills. Over the course of 20 years, New Bedford will accumulate about $2.7 million
in energy savings through the purchase of solar net metering credits. This case study will examine the
elements that earned the project team EPA Region 1’s first Excellence in Site Reuse award in 2014. It
will also discuss an ongoing partnership between BlueWave Capital and the City of New Bedford that is
helping further solar projects around New Bedford.
Eric Graber-Lopez, President, BlueWaveSolar
THURSDAY, NOVEMBER 2, 2017 (CONTINUED)

2:45 – 3:15 pm  
**Stafford Hill Solar Project — Non-profit Partnership**
This 2.5-MW solar project, with a 4MW of lithium ion and lead acid battery storage component, was developed on a brownfield in an economically depressed area. In addition, it is part of a resilient micro-grid, designed to power an emergency shelter in a nearby school. In an area hit hard by “Superstorm Sandy”, this combination of features was welcomed by renewable energy advocates and local stakeholders. Developed by Green Mountain Power of Vermont in conjunction with two partner firms, the energy storage component of this project is co-funded by a federal-state-NGO partnership. Featured in this discussion will be:
- Site specific environment concerns
- Frequency regulation value of storage
- Coordinating federal, state, local and NGOs
- Project financing

3:15 – 3:45 pm  
**Networking Break**

3:45 – 4:45 pm  
**Best Practices Roundtable: Project Developers**
Project developers will engage in a roundtable discussion re: aspects of landfills and/or brownfields project development that prospective developers, utilities, investors, integrators, EPC providers and others will find instructive and insightful.

4:45 pm  
**Symposium Adjourns**

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**“EUCI developed a strong program of industry practitioners – well worthwhile.”**

groSolar

**“Conference is a ‘must-attend’ for stakeholders in this niche market space.”**

Arcadis U.S. Inc.

**“EUCI provides the highest quality events – from the facilities to the quality of the content. If you’re looking for the ‘state of the state’ of the industry from the people who are driving things. Look no further than EUCI.”**

Watershed Geosystems

**“Every EUCI meeting and/or conference I have attended provides relevant and tangible resources.”**

City of Atlanta
POST-CONFERENCE WORKSHOP

Financing Strategies for Solar Projects on Landfills and Brownfields

FRIDAY, NOVEMBER 3, 2017

OVERVIEW

As with development of any renewable energy project, one of the biggest challenges in executing a solar project on landfills and brownfields is financing. Financing options differ according to the building site. Just as the interconnection, construction and permitting process differs from traditional solar projects, financial institutions often seek a different approach from municipalities, private owners, utilities and developers.

This workshop will assess the variety of landfills and brownfields financing options available and determine effective strategies for raising funds for these projects. It will analyze the fine details of financing these solar projects and highlight the contrast of landfill and brownfield projects to projects developed on green fields. Case studies of successfully financed projects of varying structures will be compared and discussed. Finally, this workshop will break down the detailed financial models associated with each of the case studies.

LEARNING OUTCOMES

Attendees will gain practical and technical skills that will allow them to:

• Review the fundamental mechanics and process of financing renewable energy, especially solar, projects
• Analyze the special financing challenges associated with solar landfill/brownfield projects
• Differentiate the financing process of a landfill or brownfield project from a greenfield project
• Discuss different financing structures for solar landfill/brownfield projects
• Determine the financing structure most effective for a particular type project

“The conference was well organized and informative and brought together a varied and knowledgeable group of presenters and attendees.”

Phillips Lytle

“Well organized, informative conference.”

Antea Group
WORKSHOP AGENDA
FRIDAY, NOVEMBER 3, 2017

8:00 – 8:30 am  Registration and Continental Breakfast

8:30 – 8:45 am  Welcome and Introductions

8:45 – 9:30 am  Fundamentals of Solar Project Financing Process
• Key features
• Project financing vs back leverage
• Key players
• Business interests and focus of key principals
  o Sponsor
  o Lender
  o Cash equity
  o Tax equity
• Differentiation of project types
  o Commercial DG
  o Utility scale
• Key financing issues
  o PPAs
  o EPC contracts
• Power Purchase Agreements (PPA)

9:30 – 10:30 am  The Financial Driver: Tax Incentives
• Basic financial structure
  o Stages
  o Operating revenues and expenses
  o Federal Investment tax credit
    - Criteria
    - Construction and in-service timing
    - Vesting and recapture provisions
• Monetizing the ITC
  o Entity selection
  o Revenue Procedure 2007-65
  o Interests
    - Owner
    - Investor
  o Exceptions
    - IRS Chief Counsel's Memorandum 201524024
• Validity of a transaction's allocations of tax credits
  o Historic Boardwalk Hall decision
  o Revenue Procedure 2014-12
• Depreciation rules
• Cash flow
• Return to tax equity investor
• Other ITC-specific provisions relating to...
  o Depreciation
  o Additional transaction structures
  o Alternative minimum tax (AMT)
### WORKSHOP AGENDA

**FRIDAY, NOVEMBER 3, 2017 (CONTINUED)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>10:30 – 10:45 am</td>
<td>Morning Break</td>
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<tr>
<td>10:45 – 11:30 am</td>
<td><strong>Transaction Structures</strong></td>
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<td>• “Flip” Model</td>
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<td>• Traditional Sale-Leaseback structure used for equipment leasing</td>
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<td>• Lease Pass-Through (or inverted lease) structure</td>
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<td>• 100% facility ownership</td>
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<td>• Which structure is best?</td>
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<td>11:30 am – 12:00 pm</td>
<td><strong>Structures, Terms and Documents Specific to Landfills and Brownfields</strong></td>
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<td>For the most part, the financing processes associated with landfill and brownfield projects are closely related to those with renewable energy in general and solar projects specifically. There are a few wrinkles associated with these contaminated sites, including more local and state policies and resources, and how investors and lenders view this special project class.</td>
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<td>11:45 am – 12:45 pm</td>
<td><strong>Group Luncheon</strong></td>
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<td>12:45 – 1:45 pm</td>
<td><strong>Deal Structuring Components: Selecting the Right Financing Instrument(s) for Multiple Projects</strong></td>
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<td>In March 2013, after almost two and a half years of development and construction, Citizens Energy commissioned the final project in a 9.25 MW portfolio of 5 solar assets in Massachusetts. These projects ranged in size from 1-3 MW and were located on a variety of sites including a capped and closed landfill, unused industrial land, and unproductive farmland. All projects are included in the Massachusetts SREC I program, and sold power under a mixture of net metering agreements and wholesale power contracts. Additionally, these projects were Treasury 1603 grant recipients, yet still utilized a leveraged, partnership flip financing structure in addition to Citizens' sponsor equity. This session will discuss the development history of the portfolio to include the challenges and risks during each development phase that ultimately led to the specific development and financing decisions that will be discussed during the remainder of the workshop. It will also broadly consider these elements:</td>
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<td>• A project development perspective on different financing scenarios</td>
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<td>• How tax incentives, grants and other financial instruments have compelled different financial structures</td>
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<td>• Construction financing</td>
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<td>• Capital structure</td>
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<td>• Permanent financing</td>
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<td>1:45 – 2:45 pm</td>
<td><strong>Examining Two Detailed, Successfully Financed and Developed Projects</strong></td>
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<td>During this segment of the workshop, two case studies of operating PV systems will be presented. The structuring and financing process for each project will be analyzed and compared. In breaking down each case study, the factors causing each structure to operate independently will be explained.</td>
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<td>2:45 – 3:15 pm</td>
<td><strong>Networking Break</strong></td>
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<td>3:00 – 4:00 pm</td>
<td><strong>I. Analyzing Detailed Financial Models</strong></td>
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<td>The final session of the workshop will expand the financial models discussed and provide a detailed explanation of the factors determining each financial model. It will allow attendees to compare the drivers for financing the case studies to the needs of their prospective projects.</td>
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<td>4:00 pm</td>
<td><strong>Workshop Adjournment</strong></td>
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WORKSHOP INSTRUCTORS

Rich Cogen  
**Partner, Nixon Peabody LLP**  
Richard Cogen represents project sponsors, investors and lenders with respect to the development, financing, permitting, acquisition and sale of energy, renewable energy and solid waste projects. He is the former chair of the firm's Energy and Environmental practice group and a member of the Firm's Policy Committee. He works closely with clients to develop, finance, buy and sell energy and solid waste projects. Much of his practice involves working with senior management on complex projects and financings, which has resulted in assisting clients in acquiring, constructing and financing over a billion dollars' worth of solar energy projects and in developing large fossil fuel and wind electric generating facilities and electric transmission projects.

James Duffy  
**Partner, Nixon Peabody LLP**  
James F. Duffy is a partner in the Boston office of the national law firm, Nixon Peabody LLP. He serves as the Chair of the firm's Renewable Energy Tax Credit Team and concentrates his practice on structuring and closing transactions involving federal income tax credits and other significant federal and state income tax incentives, including Production Tax Credits for wind and other forms of renewable energy, Energy Investment Tax Credits for solar and certain other forms of renewable energy, as well as Treasury cash grants in lieu of Energy Investment Tax Credits. His practice also covers New Markets Tax Credits, Historic Rehabilitation Tax Credits, and Low-Income Housing Tax Credits. He has represented numerous developers, investors, syndicators and lenders in structuring and closing renewable energy and other transactions. He is a member of the American, Massachusetts, and Boston Bar Associations. He has served as the chair of the Equity Finance Committee of the Real Estate Section of the Boston Bar Association and as a member of the Real Estate Steering Committee of the Boston Bar Association and is admitted to practice in Massachusetts. He is a graduate of the University of Rhode Island, B.A., summa cum laude (1978), and The Harvard Law School, J.D. (1981).

Tony Grappone  
**Partner, Novogradac & Company LLP**  
Tony Grappone is a partner in the Boston, Mass. office of Novogradac & Company LLP, where he specializes in providing accounting, tax and consulting services to developers, syndicators and investors of projects that qualify for federal and state tax credits such as the low-income housing tax credit, historic rehabilitation tax credit, new markets tax credit and renewable energy tax credits. Mr. Grappone has contributed several articles on renewable energy to the Novogradac Journal of Tax Credits and serves as a technical editor of the firm's Renewable Energy Tax Credit Handbook. Prior to joining Novogradac & Company LLP, Mr. Grappone worked at Ernst & Young LLP specializing in partnership taxation within the affordable housing industry and servicing many of the nation's largest tax credit syndicators and investors. In addition, he served several leading venture capital firms as well as commercial real estate developers and investors. Mr. Grappone serves as a member on the Northeastern University Undergraduate Accounting Group Advisory Board and is on the board of directors of the Women's Institute for Housing and Economic Development. He received a bachelor's degree from Northeastern University, and is licensed in Massachusetts and New Hampshire as a certified public accountant.
WORKSHOP INSTRUCTORS

Brian Morrissey  
Managing Director, Citizens Energy Corporation

Brian Morrissey is a Managing Director at Citizens Solar. He founded Citizens’ solar business in 2010 and is responsible for all solar related activities, including project origination, development, construction management, financing, and asset management. Citizens Energy Corporation is a national developer and owner / operator of distributed generation and small utility scale solar projects. The company finances all of its projects with typical project finance structures and provides all sponsor equity for each portfolio. Prior to joining Citizens Energy Corporation, Mr. Morrissey was on the Global Power team at Cambridge Energy Research Associates (CERA), a leading energy consulting and research firm to international energy companies, governments, financial institutions, and technology providers. Before his tenure at CERA, Mr. Morrissey worked in GE Energy’s central marketing and strategy group, and was an officer in the U.S. Army.

Joe Ritter  
Senior Vice President, Seminole Financial Services, LLC

Joe Ritter is a Senior Vice President of Business Development at Seminole Financial Services, LLC - a full-service national investment management and financial services organization. Since 2009, Seminole has directly funded construction and permanent financing for over 300 MW worth of solar and wind projects, totaling over $700 million of its own managed capital. In addition to the debt capital deployed, Seminole has also closed over $100 million worth of investment tax credit equity for solar projects. Joe has been with Seminole since the company’s formation and has personally originated, underwritten and managed over $350 million in construction and permanent financing for renewable energy projects (plus an additional $224 million in commercial real estate debt and equity financing). Joe holds a Bachelor’s Degree in Finance from the University of Central Florida.
INSTRUCTIONAL METHODS

Case Studies, classroom exercises, open discussion will be used at this event.

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for a minimum of four hours to be eligible for any continuing education credit.

IACET CREDITS

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 0.9 CEUs for the conference and 0.6 CEUs for the workshop.

REGISTER 3, SEND THE 4TH FREE

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

EVENT LOCATION

Law Offices of Nixon Peabody, LLP
100 Summer Street
Boston, MA 02110-2131
1- 617-345-1000

NEARBY HOTELS

The Langham, Boston
250 Franklin St
Boston, MA, 02110
(617) 451-1900
0.2 miles away

InterContinental Boston
510 Atlantic Ave Boston, MA, 02210 (617) 747-1000
0.3 miles away

Kimpton Nine Zero Hotel
90 Tremont St
Boston, MA, 02108
(617) 772-5800
0.3 miles away

Boston Omni Parker House Hotel
60 School St,
Boston, MA, 02108
(617) 227-8600
0.3 miles away
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 September 29, 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 course 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, please contact our offices at (201) 871-0474.

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