



**IAEA**  
International Atomic Energy Agency

### **IAEA offers education and training in nuclear power**

“The IAEA offers a wide spectrum of education and training activities. These include face-to-face training courses and workshops, as well as online learning, fellowship programmes and schools on various nuclear-related topics.”

“The Agency offers a wide spectrum of training courses and capacity-building programmes. They cover such diverse areas as nuclear safety, radiation protection, human resource management, sustainable energy development, emergency preparedness and response, and technical cooperation.”

The IAEA looks to experts outside the IAEA to contribute their expertise in designing and conducting training courses and as faculty and lecturers. The perspective of these outside experts, including those from NECG, is based on current real-world experience with nuclear power issues, academic research, and work for clients.

### **NECG role in IAEA training**

NECG experts have been asked to share our expertise in training courses, workshops, country missions, and other activities. The IAEA reliance on NECG experts is a strong endorsement. This Case Study provides examples of NECG participation in IAEA training courses, workshops, country missions, and other related activities.

## **IAEA Courses and Workshops**

**IAEA Inter-Regional Training Course on Financing NPPs;** Argonne National Laboratory; 12-16 November 2018; Argonne, Illinois.

- Edward Kee taught a course on Nuclear Fuel Supply Contracts (by video from Tokyo)
- Paul Murphy taught courses on Contracting and Ownership Structures; Project Due Diligence and Reputational Risks; Country Risk Factors; and Intergovernmental Agreements and Government-to-Government Financing
- Amjad Ghori taught courses on the UK Contracts for Differences; Financing Nuclear Power Projects; Financing SMRs; and Developing a Bankable Nuclear Feasibility Study

**IAEA Interregional Training Course on Integrated Management Systems and Developing of the Safety Culture;** Argonne National Laboratory; 22 Oct – 2 Nov 2018; Argonne, Illinois

- Paul Murphy taught courses on EPC Contracting Structures & Pricing Models for NPP Development and on Key Terms in EPC Contracts.

**IAEA Workshop on Funding, Risk Allocation, and Economic Issues for NPPs;** Astana, Kazakhstan for the Government of Kazakhstan; 2018

- Paul Murphy delivered presentations on Contracting Structures, Nuclear Financing Challenges, Financing Structures, Government-to-Government and Intergovernmental Agreements, and Country Case Studies on NPP development

**IAEA Training Course to Develop Member State Program Competencies Needed for a Nuclear Power Program;** Argonne National Laboratory; 5 – 23 Mar 2018; Argonne, Illinois

- Paul Murphy taught a course on Development, Procurement, Contracting, and Ownership Considerations for NPP Development and on Key Terms in EPC Contracts.

**IAEA Training Course on the Funding & Economic Aspects of a New Nuclear Power Programme;** Electricité de France (EdF); October 1-5 2018; Paris France

- Amjad Ghori taught a course on Potential Financing Options for SMRs

**IAEA Mission to Turkey;** training for Turkish state-owned Electricity Generation Company EÜAŞ (Elektrik Üretim A.Ş.); 6-8 February 2018; Ankara, Turkey.

- Edward Kee taught courses covering commercial and contracting issues related to Nuclear PPAs, Nuclear O&M, Nuclear Fuel, Spent Nuclear Fuel; and Nuclear Project Success and Failure.



- Paul Murphy taught courses covering Financing Consideration, EPC Contract Key Terms, and EPC Contracting Structures

**IAEA Inter-Regional Training Course on Financing NPPs;** Argonne National Laboratory; 6-10 November 2017; Argonne, Illinois.

- Edward Kee taught courses covering Nuclear Power and the Electricity Industry; Nuclear Power Purchase Agreements; and How Nuclear Projects Fail.
- Paul Murphy worked with representatives from Argonne, to organize and design the course, structured as an advanced financing curriculum. Mr. Murphy taught segments on Project Diligence by Financing Entities, Contracting and Ownership Structures, Alternative Contracting and Ownership Models, Country Risk Factors, and Reputational Risk.

**IAEA Inter-regional Training Course on Management Systems and the Development of Organizational Structure for Safety;** Argonne National Laboratory; 2017; Argonne, Illinois

- Paul Murphy taught a course on Development, Procurement, Contracting, and Ownership Considerations for NPP Development.

**IAEA Inter-regional Training Course on Management Systems and the Development of Organizational Structure for Safety;** Argonne National Laboratory; 2017; Argonne, Illinois

- Paul Murphy taught a course on Development, Procurement, Contracting, and Ownership Considerations for NPP Development.

**IAEA Train the Trainer - Workshop for Embarking Countries in Phase 1 of the Milestones Approach;** Argonne National Laboratory; 2016; Argonne, Illinois

- Paul Murphy taught two sessions on Financing and on Contracting and Ownership Structures.

**IAEA Building Capacity for the Implementation of a Nuclear Power Programme by Developing Human Resources, Institutional Capacity and the Legal and Regulatory Framework;** a special training program for a senior delegation from Kenya; Argonne National Laboratory; 2016; Argonne, Illinois

- Paul Murphy taught a segment entitled, “Basic Financing Challenges, Considerations, and Structures for NPPs”

**IAEA Technical Meeting on Financial Modeling;** Vienna, Austria; 2016

- Paul Murphy delivered presentations on Nuclear Financing Challenges, Nuclear Financing Structures, and Key Global Trends in Financing

**IAEA Inter-Regional Training Course on Financing NPPs;** Argonne National Laboratory; 5-9 October 2015; Argonne, Illinois.

- Edward Kee taught courses covering Nuclear Power and the Electricity Industry; Nuclear Power Purchase Agreements; and How Nuclear Projects Fail.

**IAEA Inter-regional Nuclear Energy Information Workshop;** Argonne National Laboratory; 3-6 August 2015; Argonne, Illinois.

- Edward Kee taught courses covering Comparative Cost Structure of Nuclear Energy and Impact of Alternative Electricity Industry Structures on Nuclear Power.

**IAEA Training Course on Nuclear Power Infrastructure Programs and Related Projects in Emerging Nuclear States;** two-week course is attended by representatives of over twenty foreign governments interested in developing nuclear power programs; Argonne National Laboratory; 2009 – 2015; Argonne, Illinois;

- Paul Murphy was the lead instructor for seven years on segments on financing nuclear power projects and the bidding / evaluation process for nuclear power projects

**IAEA Inter-regional Training Course on Financial Issues for a Decision in Countries Introducing or Expanding Nuclear Power;** attendees were from foreign governments interested in developing nuclear power programs, with individuals having financing and/or planning responsibilities; Argonne National Laboratory; 2014 – 2015; Argonne, Illinois

- Paul Murphy organized and designed this course, working with representatives from Argonne, and taught segments on Reputational Risk Analysis, Project Diligence by Financing Entities, Country Risk Factors, and Contracting Structures

**IAEA Nuclear Energy Information Workshop;** Argonne National Laboratory; 2015; Argonne, Illinois

- Paul Murphy taught segments on Reputational Risk Analysis and on Contracting and Ownership Structures for NPP Development

**IAEA Expert Mission on Economic and Environmental Aspects of Nuclear Energy: Issues of Relevance in the European Region;** Skopje, FYR Macedonia for the FYR Macedonian Government; 2015

- Paul Murphy five delivered presentations on Financing Strategies & Models for NPPs, Contracting Structures, Reputational Risk Analysis, Strategic Partnerships, and Project Diligence by Lenders

**IAEA Expert Mission on Financial Risk Management in Nuclear Power Projects;** Cairo, Egypt for the Egyptian Government; 2015

- Paul Murphy developed course materials on the topics of Country Risk Factors, Reputational Risk Analysis, Sources of Financing, and Working with Commercial Banks & Export Credit Agencies that were delivered by a colleague from Milbank on Mr. Murphy's behalf

**IAEA Inter-Regional Training Course on National Position, Legal and Financial Matters for Introducing Nuclear Power;** Argonne National Laboratory; 6-10 October 2014; Argonne, Illinois.

- Edward Kee taught courses covering Nuclear Power Purchase Agreements; Electricity Market Regulation; and How Nuclear Projects Fail.
- Paul Murphy taught courses covering Project Diligence by Financing Entities; Reputational Risk Factors; and Contracting Structures

**IAEA Workshop on NPP Contract Management;** Hanoi, Vietnam for the Vietnamese Government; 2014

- Paul Murphy provided a presentation, delivered by IAEA staff, on NPP Financing and EPC Contracting

**IAEA Technical Meeting on Becoming a Knowledgeable Customer;** Obninsk, Russia; 2014

- Paul Murphy presented courses that covered Contracting and Ownership Structures and Reputational Risk Analysis

**IAEA African Regional Training Workshop;** Tripoli, Libya; 2010

- Paul Murphy presented six courses that covered Financing and Risk Management

## **Texas A&M University / Nuclear Power Institute**

**International Nuclear Executive Leadership Seminar;** Texas A&M / Nuclear Power Institute / IAEA; multi-week course for senior officials from countries interested in starting nuclear power programs; Texas A&M; 2018

- Paul Murphy delivered five presentations on Contracting Structures, Nuclear Financing Challenges, Financing Structures, Nuclear Liability, and Reputational Risk.

**Uganda Training Course on NPP Development;** Texas A&M / Nuclear Power Institute / IAEA; senior delegation from Uganda; Texas A&M; 2018.

- Paul Murphy delivered presentations on Contracting Structures, Nuclear Financing Challenges, Country Risk Factors, and Reputational Risk.

**Inter-regional Group Fellowship on the Comprehensive Introduction to Nuclear Power;** four-week course for representatives from countries interested in starting nuclear power programs; Texas A&M / Nuclear Power Institute / IAEA; Texas A&M; 2017

- Paul Murphy delivered presentations on Financing Challenges and Structures, Reputational Risk Analysis, Nuclear Liability, Country Risk Factors, and Contracting and Ownership Structures.

**Inter-regional Group Fellowship on the Comprehensive Introduction to Nuclear Power;** four-week training course for representatives from countries interested in starting nuclear power programs; Texas A&M / Nuclear Power Institute / IAEA; Texas A&M; 2016

- Paul Murphy delivered presentations on Financing Challenges and Structures, Reputational Risk Analysis, Nuclear Liability, Country Risk Factors, and Contracting and Ownership Structures.

**Inter-regional Group Fellowship on the Comprehensive Introduction to Nuclear Power;** four-week training course for representatives from countries interested in starting nuclear power programs; Texas A&M / Nuclear Power Institute / IAEA; Texas A&M; 2015

- Mr. Murphy delivered presentations on Financing Challenges and Structures, Reputational Risk Analysis, Nuclear Liability, Country Risk Factors, and Contracting and Ownership Structures.

## **IAEA Working Groups & Technical Meetings**

Paul Murphy served on the working group drafting the IAEA Office of Legal Affairs' Volume 3 of the Handbook on Nuclear Law.

Paul Murphy served as the chairman, and as the lead writer, for "*Alternative Contracting and Ownership Policies for Nuclear Power Plants*" (released 2014).

Paul Murphy served as a key member of the IAEA's consultancy meetings on "*Issues for Improving Prospects for Financing Nuclear Power Projects*", which focused on identifying and analyzing all key elements integral to the success of a nuclear power program. Chaired all three meetings of the 2008 working group, whose final report was issued in 2009, served as a lead report editor, and drafted the appendices to the conference's final report, covering the areas of nuclear liability, nonproliferation, insurance, and finance.

Paul Murphy, in 2009, served on an IAEA working group, entitled: "*Invitation and Evaluation of Bids for Nuclear Power Plants*".

Paul Murphy chaired a two-day finance segment of IAEA Technical Meeting/Workshop on "*Milestones for Nuclear Power Infrastructure Development*" (November 2007), a Member State-level workshop that was sponsored by the governments of the United States, Canada, China, France, India, Japan, Republic of Korea, and Russia



Paul Murphy, in 2007, participated on the panel of international experts who served on the IAEA's working group that focused on "*Innovative Financing for Power Plants in Developing Countries*." The final paper, which was reviewed by Mr. Murphy and other select members of the working group, was presented at the IAEA's 2008 Annual General Conference in September at its headquarters in Vienna, Austria.

## **Benefits to IAEA**

The IAEA is able to bring current and real-world knowledge and experience to its training courses through the participation of industry experts like those at NECG.

NECG experts have brought data, insights, and lessons from our work with a range of corporate and government clients in the nuclear power industry and from a range of thought leadership efforts. Our client work and thought leadership puts NECG at the vanguard of global nuclear power industry knowledge.

## **Benefits to NECG**

NECG's participation in these events allows our experts to share views with other experts and to understand the issues and concerns of course participants, which may reflect perspectives of countries and individuals that are new to the nuclear power industry. The work by NECG experts to distill complicated nuclear power industry issues into coherent and effective training courses helps us refine, focus, and validate our industry knowledge.

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**Nuclear Economics Consulting Group (NECG) applies in-depth analysis to complex economic, business, regulatory, financial, geopolitical, legal, and other challenges related to the nuclear power industry. Our work for clients is based on analytical rigor, objectivity, and informed by real-world industry experience.**

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