



## **ANNUAL TRAINING ON THE REGULATION OF ENERGY UTILITIES**

### 2020-21 Edition

Honorary Course Director: Prof. Ignacio Pérez-Arriaga | Florence School of Regulation / MIT

Course Director: Prof. Carlos Batlle | Florence School of Regulation | MIT Energy Initiative

### **OVERVIEW: EMPOWERING THE NEXT GENERATION OF ENERGY REGULATORS**

During the Annual Training, you will gain extensive knowledge of the fundamental principles of the regulation of the power and gas sectors through theory and practice, learning from European leaders, former regulators, leading academics and industry specialists and practitioners.

After this nine-month online course, you will be equipped to take adequate positions on competition, the integration of markets and networks, quality of service, economic efficiency, and security of supply, with the ultimate goal of protecting the interests of consumers and the better integration of market participants and networks into a common European energy market.

Every other week, you will have the chance to discuss and learn from a different instructor via two interactive live classes, a Q&A session, and a master class led by a leading expert (around 35 live sessions in total). To ensure you have close and personalised interaction with the instructors, this online course will have a limit of 30 participants.

## **COURSE STRUCTURE**

The training is structured around three blocks: an initial one reviews the regulatory fundamentals; then Block II is the core of the course, in which the key issues are analyzed and participants are asked to contribute with their own analyses, and finally Block III gathers a series of live discussions on the hottest energy regulation topics.

## BLOCK **O:** BASICS ON ENERGY SYSTEMS

October 5, 2020Participants are offered selected readings describing how energy systems are operated and<br/>managed.October 25, 2020How do energy (power and gas) systems manage to provide end-users with energy supply<br/>continuously with an adequate quality of service, at an affordable price and with an acceptable<br/>environmental impact

### BLOCK I: THEORY AND PRINCIPLES OF REGULATION

October 26, 2020 Three introductory modules (one-week long) to review the fundamentals of regulatory practice needed to delve into the subsequent study of the regulation of the different energy activities.

The modules consist of two interactive lectures at the start of the week. In the lecture, updated and selected support material is offered to the participants, so they can improve or consolidate their knowledge.

## BLOCK II: REGULATION OF ENERGY SUPPLY ACTIVITIES

November 23, 2020A six-month online and fully interactive course, in which energy regulatory principles and case-studies are studied together in-depth in a well-structured, flexible e-learning environment,May 16, 2021featuring live lectures and discussions with the course instructors and participants.

### BLOCK III: FINAL WEBINAR SERIES: CURRENT REGULATORY KEY DISCUSSIONS

- June 14, 2021
- Three live sessions, devoted to the discussion of case studies and the presentation of other topics of specific interest to the course participants, and
- June 25, 2021

 A final one-day panel on energy and sustainability, which marks the end of the course with the awarding of diplomas to participants

### LEGEND













#### Online Interactive Lecture

1h 15' (+ 15' voluntary additional Q&A)

Participants can raise hands and make questions during the lecture and instructors also address participants via quizzes to motivate participation Lectures are recorded to allow for further reviewing

#### **Review Period**

- Time to review the lectures and the suggested reading materials **Participants Forum** 
  - Interactive forum in which participants can exchange questions for clarification or topics for discussion

#### **Evaluation Quiz**

Test your understanding: 5 to 10 multi-choice questions

Self-assessment quiz to give participants an overview of the content and information about their knowledge level.

#### **Case Study Assignments**

Participants are presented a real-life and recent case study related to the topics reviewed in the previous weeks.

They are asked to analyze it and submit their personal discussion on the issue.

Submissions are graded and reviewed by the case study instructor in a live session

#### Live Office Hour

Voluntary live and interactive session (30').

Forum discussion and Q&As with the module's instructor.

#### Master class

30' (+ 15' Q&A) in which one leading expert discusses a hot regulatory matter related to the topics reviewed in the previous modules.

# **BLOCK I: THEORY AND PRINCIPLES OF REGULATION**

### **I.1.** REGULATORY MODELS FOR ENERGY SYSTEMS

Prof. Carlos Batlle | MIT Energy Initiative & Florence School of Regulation

Tuesday October 27	<b>Energy services pricing: from regulated costs to price competition</b> Cost-of-service regulation. Incentive regulation. Competitive bidding. Market competition
Thursday October 29	<b>Energy systems' governance: activities, structure, stakeholders' roles</b> Unbundling. System and market operation
Fri. to Sun. Oct. 30 to Nov. 1	

### **I.2.** FUNDAMENTALS OF ENERGY SYSTEMS ECONOMICS

### Prof. Pablo Rodilla | Comillas Pontifical University

Tuesday	Centralized versus market-based planning
100.3	Cost minimization versus profit maximization
Thursday	Basics on energy contracts
Nov. 5	Physical versus financial contracts.
Fri. to Sun. Nov. 6 to 8	

# **I.3.** COST ALLOCATION METHODOLOGIES

### **Prof. Carlos Batlle**

Tuesday Nov. 10	<b>Practical case example of cost allocation</b> Discussion of a real life (non-energy related) case example of cost allocation
Thursday Nov. 12	<b>Cost allocation theory</b> Efficiency and equity. Long-run marginal costs. Residual costs
Fri. to Sun. Nov. 13 to 15	

# **II.4.** LIVE OFFICE HOUR

#### **Prof. Carlos Batlle**

Thursday, Nov. 26	Voluntary live Q&A session with the module's instructor

## **BLOCK II: REGULATION OF ENERGY SUPPLY ACTIVITIES**

## **II.1.** WHOLESALE ELECTRICITY GENERATION

## II.1.1. Pricing electricity generation

#### **Prof. Carlos Batlle**

Tuesday	Investment and operation planning
Nov. 24	From central planning and operation to wholesale markets
Thursday Nov. 26	Energy markets design elements Market-based economic scheduling: Market design elements
Fri. to Sun. Nov. 27 to 29	

## II.1.2. Complements to energy markets: ancillary services and capacity mechanisms

### Prof. Carlos Batlle

Tuesday	Flexibility markets
Dec. 1	Intraday, reserves and regulation markets.
Thursday	Capacity and RES-support mechanisms
Dec. 3	Design elements of capacity and RES promotion mechanisms
Fri. to Sun. Dec. 4 to 6	

## II.1.3. Case study on wholesale electricity generation

### Prof. Carlos Batlle

Thursday, Dec. 3	A+, A, B	Case study formulation
		Instructors' description of the problem to be analyzed.
Sunday, Dec. 13		Submission deadline

### II.1.4. Leading expert master class

#### Alberto Pototschnig | FSR Part-time Professor. Former Director of ACER (2010-19)

Thursday, Dec. 10	Current regulatory challenges of wholesale electricity markets

## II.1.5. Live office hour

#### **Prof. Carlos Batlle**

Thursday, Jan. 28	Voluntary live Q&A session with the module's instructor

# **II.2.** ELECTRICITY NETWORKS

## II.2.1. Interplay between transmission and generation

#### **Prof. Carlos Batlle**

Tuesday Jan. 12	Locational pricing Fundamentals of nodal (and zonal) pricing
Thursday Jan. 14	<b>Regulatory treatment of transmission investment planning</b> Golden rules, net-social welfare maximization
Fri. to Sun. Nov. 15 to 17	

## II.2.2. Regulated revenues and cost allocation

#### Prof. Carlos Batlle

Tuesday	Remuneration mechanisms for distribution
Jan. 19	Cost-of-service, RPI-X, TOTEX
Thursday	Network costs allocation
Jan. 21	Transmission and distribution tariffs
Fri. to Sun. Jan. 22 to 24	

## II.2.3. Case study on network regulation

### Prof. Carlos Batlle

Thursday, Jan. 21	A+, A, B	Case study formulation
		Instructors' description of the problem to be analyzed by the participants.
Sunday, Jan. 31	· · ·	Submission deadline

### II.2.4. Leading expert master class

Prof. Elena Fumagalli | Copernicus Institute of Sustainable Development, Utrecht University



# II.2.5. Live office hour

#### **Prof. Carlos Batlle**

Thursday, Jan. 28 Voluntary live Q&A session with the module's instructor

## **II.3. GAS MARKETS AND NETWORKS**

### II.3.1. Gas markets

### Aad Correlje | Delft University of Technology

Tuesday	A tale of three natural gas markets
Feb. 9	Evolution of economic, commercial and political coordination of gas markets
Thursday Feb. 11	<b>Regulating the Natural Gas Industry</b> Challenges to regulating the national gas industry in a global gas market
Fri. to Sun. Feb. 12 to 14	

### II.3.2. Gas networks

### Ilaria Conti | Florence School of Regulation

Tuesday	Regulatory models and tariffs
Feb. 16	The gas industry, transmission, LNG and storage tariffs
Thursday Feb. 18	<b>Transmission access and distribution</b> Capacity allocation, tariffs,
Fri. to Sun. Feb. 19 to 21	

## II.3.3. Case study on gas regulation

### Aad Correlje

Thursday, Feb. 18	А+, А, в	Case study formulation
		Instructors' description of the problem to be analyzed.
Sunday, Feb. 28		Submission deadline

### II.3.4. Leading expert master class

**Andris Pielbags** | FSR Part-time Professor. Former European Commissioner for Development (2010-14) and Commissioner for Energy (2004-09)

Tuesday, Feb. 23	<b>D</b> OIO

The Role of Renewable Hydrogen

# II.3.5. Live office hour

### Aad Correlje



# **II.4.** END-USER ENERGY PRICING

## II.4.1. End-user tariffs

### Prof. Carlos Batlle

Tuesday	Principles and basic tariff structures
Apr. 6	Efficiency & equity. Additivity, components.
Thursday	Time and locational granularity
Apr. 8	Dynamic, TOU, fixed,
Fri. to Sun. Apr. 9 to 11	

### II.4.2. Retail markets

### Prof. Carlos Batlle

Tuesday	Business models
Apr. 13	Retail activities, stakeholders roles
Thursday	Consumer protection
Apr. 15	Data management, switching, vulnerable customers
Fri. to Sun. Apr. 16 to 18	

# II.4.3. Case study on end-user pricing

### Tim Schittekatte | Florence School of Regulation

Thursday, Apr. 15	А+, А, в	Case study formulation
		Instructors' description of the problem to be analyzed.
Sunday, Apr. 25		Submission deadline

### II.4.4. Leading expert master class

#### Prof. Leonardo Meeus

Tuesday, Apr. 20 Citizen Energy Communities
---

# II.4.5. Live office hour

#### **Prof. Carlos Batlle**

Thursday, Apr. 22	Voluntary live Q&A session with the module's instructor

# **II.5.** LEGAL ASPECTS OF APPLIED ENERGY REGULATION

## II.5.1. Case study on regulatory authorities

### Prof. Leigh Hancher | University of Tilburg & Florence School of Regulation

Tuesday, May. 4	A+, A, B	Case study formulation
		Instructors' description of the problem to be analyzed.
Sunday, May. 16		Submission deadline

## II.5.2. Live office hour

### Prof. Leigh Hancher

Thursday, May 13		Voluntary live Q&A session with the module's instructor
------------------	--	---

### **BLOCK III: FINAL WEBINAR SERIES: CURRENT REGULATORY KEY DISCUSSIONS**

[Disclaimer: As an illustration, the program for Block III of the 2019-20 follows. The 2020-21 version will be updated to the current discussions alive in June 2021]

### III.1. Case study 1

Dennis Hesseling | Head of Gas Department, ACER

Tuesday, June 15	Cross-border issues in EU wholesale markets

### III.2. Case study 2

#### Prof. Ignacio J. Pérez-Arriaga | MIT And Florence School of Regulation

Thursday, June 17		Distribution challenges in the developing world
-------------------	--	---

### III.3. Case study 3

#### Prof. Carlos Batlle

Tuesday, June 22		Gas and electricity interplay in the Peruvian energy markets
------------------	--	--

### III.4. Panel discussion

**Jos Delbeke** | School of Transnational Governance, EUI. Former Director-General of the European Commission's DG Climate Action (2010-18)

**Christopher Jones** | Florence School of Regulation / Baker & McKenzie. Former Deputy Director General at DG Energy (2014-18)

Andris Pielbags | FSR Part-time Professor. Former European Commissioner for Development (2010-14) and Commissioner for Energy (2004-09)

