



# **UTILITY REGULATORY TRAINING PROGRAMS**





# ERRA TRAINING PROGRAMS

## *Background*

Professional development in energy regulation requires a working knowledge of regulatory economics, good understanding of policy impacts and the ability to navigate national policy processes. Among others it requires effective agency management of the legal and organizational processes necessary for adequate due process protection in regulatory activities.

As our association evolved and members faced staffing issues (recruitment of qualified staff, staff changes etc.) it became clear that there was a strong need for formal, structured in-house training programs to augment the best practices transfer exercised in ERRA meetings and other activities of the association. The diversity of students on these courses is a reflection of the high demand for relevant education.

## *Main Characteristics of ERRA Training Programs*

The majority of ERRA's course instructors are current or former regulators, creating a strong link between applied knowledge and the theoretical concepts that guide regulation. This characteristic allows ERRA to design training courses that focus equally on practical applications and theoretical methodology, and include the transfer of relevant direct experience. This is a distinct comparative advantage in a market that is populated by academic institutions and training centers that often focus on the theoretical background and less on the day to day reality of regulatory challenges faced by regulators. The ERRA training programs feature a variety of junior to advanced level courses offered in traditional classroom format.



# ERRA TRAINING PROGRAMS

In addition to its in-house training programs, ERRA is ready to offer on-site educational programs to enhance the capacity building initiatives of energy regulators or other organisations active in the energy sector.

ERRA educates participants through a variety of methods, including group exercises, mock simulations, participant case studies, on-site visits and self-testing; providing them a foundation to adapt regulatory procedures to their own national legal and regulatory frameworks.

Participants receive a vast array of documentation to support the different themes and modules. These materials include a training handbook, powerpoint presentations of all course instructors, list of suggested readings and reference materials. Personalized certificates are awarded to participants who successfully complete the programs.

## *Location*

ERRA's training centre for the in-house training programs is Budapest, Hungary. The price of accommodation, breakfast and lunches and social programs are included in the tuition fee. In case of interest, ERRA is ready to offer on-site, tailor-made educational programs.



# INTRODUCTION TO ENERGY REGULATION

(SUMMER SCHOOL)

## *COURSE OBJECTIVE*

The prime objective of the course is to provide basic technical, economic and legal regulatory skills that are needed to design and manage successful regulatory systems for the energy industry and to act as regulatory staff member.

This 5-day training course is organised into thematic modules focusing on the burning issues of energy sector regulation. The training program combines “classic” regulation under the traditional vertically integrated industry structure with up-to-date issues of regulation in developing a competitive industry environment.

## *COURSE STRUCTURE*

### **Day 1 – ROLE AND FUNCTIONS OF THE REGULATOR**

The principal objectives of the regulatory institutions are a) to protect energy consumers from monopoly pricing and behaviour; b) to protect private investment from politically influenced prices and from regulatory uncertainty, c) to monitor and foster energy market competition. In order to meet the above objectives under a private and increasingly competitive industry setting, the regulator should be a decision making body highly independent from short-term political influences and direct industry interests.

### **Day 2 – TARIFF SETTING AND PRICE REGULATION**

One of the principal tasks of energy regulators is to set or authorise regulated prices for the energy companies under regulation. The participants will be provided with the theoretical basics and also an overview of the price regulatory process, including the setting of the revenue requirements, tariff design alternatives and questions when deciding on price regulatory regime. Incentive price regulation is covered extensively.



### **Day 3 – COMPETITION AND REGULATION IN ELECTRICITY AND GAS**

A major change in electricity and gas industry structure which also transforms the regulator's entire job is when competition is introduced into the operations of these traditionally vertically integrated monopoly dominated sectors. This part of the course will introduce the basic ideas and principles behind recent restructuring and liberalisation process in the electricity and gas sectors, with a special emphasis on the European experience.

### **Day 4 – RENEWABLE ENERGY AND SECURITY OF SUPPLY**

RES regulatory policy enjoys bipartisan support, however, its realization needs a thoughtful set of regulatory policies that provide a level playing field and certainty to make long-term investments. The following module of the session analyses the relationship between security of supply in electricity and gas services and regulatory practices. After a discussion on the global trends affecting the future of energy security, an assessment of the impacts of the regulatory environment on both generation adequacy and the reliability and quality of network operations is given.

### **Day 5 – MONITORING AND CUSTOMER PROTECTION**

Market integrity and transparency is essential for well-functioning energy markets and for promoting the confidence of market players including final consumers. Regulatory monitoring is presented through the case of REMIT which is a sector specific legal framework to monitor wholesale markets with the objective to detect and deter market manipulation. In addition, in order to build confidence among customers so that they will actively participate in the liberalised energy market, it is vital that their concerns and complaints are dealt with in a transparent, effective and non-discriminatory manner. Customer complaint data are important for market monitoring and critical for learning about customer satisfaction and expectations. Customer perception of retail energy markets can be monitored through the collection and analysis of customer complaint data (alongside other market indicators).

For the schedule of the offered modular courses please refer to the ERRA website at: <http://www.erranet.org/Training>



# PRINCIPLES OF NATURAL GAS MARKET REGULATION

## *COURSE OBJECTIVE*

The course aims to give a general introduction into the gas value chain with special emphasis on upstream gas supplies. It is supposed to give a good understanding of the restructuring process of the gas industry and of wholesale markets. It puts special emphasis on regulators approaches of gas infrastructures, gas storage and security of supply issues.

## *COURSE STRUCTURE*

### **Day 1 – UPSTREAM GAS SUPPLY**

The first day deals with the gas value chain, global picture and players, geopolitical dimension (including the role of LNG). The issues of supply and upstream; supply and midstream are discussed. Industry facts and economics of gas industry are presented together with competition between LNG and gas by pipeline. Upstream issues, the risks and costs of exploration and production of hydrocarbons, conventional and unconventional gas exploration techniques, fracking and related environmental consideration will also be addressed. Evolution of demand over time with an emphasis on EU, Southeast Europe and Eurasia is presented. Addresses the factors affecting short and long term demand for natural gas, seasonality, factors influencing gas demand by consumer groups: residential, industrial, electricity generation, etc. Interruptibility of consumption is discussed. Finally the day concludes with a simulation of energy policy.

### **Day 2 – RESTRUCTURING GAS INDUSTRY AND WHOLESALE MARKETS**

Introduces the role of long-term contracts, take-or-pay, volumes, pricing & oil-indexation, flexibility, nominations, defaults, supply-security, destination clauses, transits. Deals with vertically integrated companies; regulatory issues at a vertically integrated industry: licensing and monitoring; end customer tariff setting; network connection and its



costs; business conduct rules and consumer protection. Investigates the role of competition and (EU) competition law; the EU Gas Directives, the Third package and the main institutions involved into the enforcement of EU law in the energy sector. Gas market designs: hubs, wholesale markets, price correlation; gas trading in practice.

### **Day 3 – ACCESS TO GAS INFRASTRUCTURES – REGULATORY APPROACHES**

Focuses on the TSO function: transmission, system operation and balancing; storage; unbundling regimes. Describes the tariff setting and third party access rules to networks and storage; exit-entry tariffs and their implementation. Practicalities of the Network Codes: introduces cross border trade, pipeline capacity allocation and congestion management, transit, new pipelines, quality issues.

### **Day 4 – GAS STORAGE AND SECURITY OF SUPPLY ISSUES**

Deals with security of supply in terms of short-term and long-term policies and approaches, the external dimension, strategic stocks, pipeline projects and exemptions from TPA rules. Finally the day concludes with a presentation on gas storage regulation in the restructured gas sector.

### **Day 5 – RETAIL MARKETS**

The competition issues of the retail market, supplier switching process and consumer protection will be addressed. Monitoring and the role of the regulators in informing consumers about their rights, the role of transparency will be tackled. The retail market price regulation and universal supply, definition of vulnerable consumers and the institution of supplier of last resort will be presented. Social issues related to energy prices and the tools to address the problems.

For the schedule of the offered modular courses please refer to the ERRA website at:

<http://www.erranet.org/Training>



# ENERGY REGULATION IN EMERGING COUNTRIES

## *COURSE OBJECTIVE*

It is a very unique training initiative designed for regulatory experts from emerging or developing regions of the world. This 5-day course equips participants with the core concepts, objectives and techniques of energy regulation with special focus on the needs and burning issues for developing countries. The programme is particularly popular among regulators from different countries of Africa and Asia.

## *COURSE STRUCTURE*

### **Day 1 – GLOBAL TRENDS IN ELECTRICITY MARKET DESIGN**

The programme starts with an introduction on global trends in energy sector design and regulation. Then, it focuses on the performance of hybrid electricity market models, prices and generation investment incentives. Cross-border electricity trade arrangements are presented in case study format. The day concludes with a practical exercise on electricity market design.

### **Day 2– ECONOMIC REGULATION OF THE ELECTRICITY SECTOR**

The programme continues with presenting the fundamentals of price regulation in the energy sector followed by a case study on power sector price regulation. Energy price regulation is further examined from the perspective of social issues in emerging economies. The day closes with a simulation group exercise on Tariff design.



### **Day 3 – ECONOMIC REGULATION OF THE ELECTRICITY SECTOR – continued**

Economic regulation is further presented from the perspective of service quality regulation. Regulatory monitoring is explained in the same session with introducing those skills which enable regulators to organize monitoring procedure in order to set fair and reasonable prices; how to monitor service quality and environmental performance.

### **Day 4 – INVESTMENT INCENTIVES TO MEET GROWING ELECTRICITY DEMAND**

This session is supposed to provide some guidance on issues of particular interest to regulators from emerging markets such as how to provide access to electricity services; how to plan, regulate and finance electricity grids. It features a presentation on potential success factors for Independent Power Production projects in emerging countries. It also includes extensive information on renewable energy solutions.

### **Day 5 – OWNERSHIP AND REGULATION**

The session takes stock of possible challenges in regulating publicly owned energy utilities. It shares regulatory experiences related to privatised electricity sector companies in transition economies in case study format. Finally, there is a presentation on the experience of the post-privatisation issues between investors and the regulator in the Central and South East European region.

For the schedule of the offered modular courses please refer to the ERRA website at:

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# PRINCIPLES OF ELECTRICITY MARKETS

## *COURSE OBJECTIVE*

Liberalisation of the electricity sector has been a very important development worldwide in the past two decades, and is still an ongoing process in many transition countries.

This 5-day Training Course aims to provide a thorough introduction to the most important economic issues surrounding the creation and successful operation of electricity markets.

## *COURSE STRUCTURE*

### **Day 1 - ECONOMICS OF COMPETITIVE MARKETS**

Provides an introduction on the development from regulated to liberalized markets in electricity. Tools, objectives, methods of economic analysis as well as behavioural assumptions are investigated. Then the role of incentives, markets, efficiency of competitive markets, driving forces for short and long run investments presented with an emphasis on market failures. Methods of organizing market transactions, bilateral contracts and auctions are discussed. It also addresses the issue of the necessary legal, institutional framework for the development of markets. Finally the day concludes with a simulation of competitive markets; auctions and identification of market failures.

### **Day 2 - SUPPLY AND DEMAND OF ELECTRICITY**

Supply is discussed in terms of technical and economic features of generation; fuel choice and plant size; cost side assessment of plant operation and investment; practical issues in operation, entry to (investment) and exit from (decommissioning) the generation market; environmental effects of electricity generation; cost and form of environmental regulations; feedback on investment. It also includes an exercise on determinants of generation costs and constructing a merit order curve. Demand side is investigated in terms of electricity usage; daily fluctuations; seasonality; measurement; consumer profiles; billing and collection.



### **Day 3 –WHOLESALE AND RETAIL MARKETS**

Focuses on models of industrial structure in electricity, natural monopolies and competitive segments, ownership structures and unbundling. It describes the wholesale market models, integrated (pool-type) vs. decentralized (bilateral) markets, role of the system operator, ancillary services. It includes the issue of the role of traders and power exchanges, price evolution and price spikes; risk management; spot (day-ahead, real time) and forward markets. It features a presentation on retail market operation.

### **Day 4 – NETWORK ISSUES**

Deals with technical features of transmission, network losses, congestion management, interconnectors. Introduces regulated transmission pricing, third-party access, effect of transmission constraints on the market and the transmission network governance: ISO vs. TSO and ITO model with an emphasis on the role of transparency; survey of practice.

### **Day 5 – MARKET POWER**

Introduces definitions, forms and exercising of market power in electricity generation theory and cases. It includes an exercise on measuring market power in the electricity industry (application of measurement tools). Market-based locational pricing methods; physical vs. financial transmission rights; theory and survey of practice are presented. Finally a simulation of oligopoly is offered.

For the schedule of the offered modular courses please refer to the ERRA website at:

<http://www.erranet.org/Training>



# RENEWABLE ENERGY REGULATION

## INTRODUCTION

One of the major challenges energy companies (the most prominent contributors to local, regional and global environmental degradation) face today is related to develop and operate energy facilities in an environmentally sustainable way. The efforts required from the energy sector to meet regulations related to climate change, local environmental clean-up and energy security are tremendous and have far reaching implications for the costs, prices and technological developments on energy markets. These developments shape the future of energy markets and will most probably have lasting impacts on investments, technology choices and the way transmission and distribution networks are operated in the electricity and gas sectors.

These developments also reshape the job of energy regulators. While the authority of implementing environmental regulations remains mostly the job of environmental regulators, energy regulators also have to understand their impacts and the new regulatory challenges they are to face. Energy sector regulators are also expected to be active in designing tariffs, network access related regulations and developing certification regimes for RES producers in order to promote the dispersion of renewable energy technologies.

## COURSE OBJECTIVE

The objective of this 5-day training course is to provide the participants with an overview of those aspects of environmental regulation that affect the life of energy companies and of those regulating them in the most significant way. The emphasis of the training is put on the discussion of three specific areas: the promotion and regulation of renewable energies, the operation of emerging greenhouse gas markets and the regulatory tools of controlling local pollutions caused by energy companies.



## COURSE STRUCTURE

### Day 1 – RENEWABLE ENERGY REGULATION: THE POLICY AND BUSINESS CONTEXT

After introducing the policy and business content of renewable energy policies, the session takes stock of the growing market expansion opportunities of RES in ERRA member countries focusing on national RES policies, support systems and levels, the general investment and economic environment and of the appropriate regulatory background. Renewable energy support policies in the ERRA countries. The day concludes with a presentation on the techno-economic background of RES technologies.

### Day 2 – TECHNOLOGY AND GRID INTEGRATION

The day starts with a general presentation on regulatory tasks of RES-E grid integration related regulatory tasks followed by case studies on how to integrate massive intermittent RES into energy networks and RES-E queue management. The day features a group simulation exercise on creating the regulatory environment for wind development in “Wonderland”.

### Day 3 – SUPPORT SCHEME DESIGN

The program continues with presenting regulatory tools to support renewable energy and provides an evaluation of different policy schemes. The introductory presentation is backed by case studies on feed-in tariffs and green bonuses/green certificates. The day is closed with a group exercise on designing feed-in tariff.

### Day 4 – OTHER IN-DEPTH REGULATORY ISSUES

The session starts with outlining RES-E licensing activities and regulatory monitoring of RES-E performance. A presentation on regulatory failures in the RES-E sector (Investment bubbles and regulatory responses) makes the session more practical and hands-on.

### Day 5 – A NEED FOR REFORMING ELECTRICITY GRID REGULATION

The session provides an overview of possible ways how to re-thinking grid regulation and gives insight into some innovative investments into distribution networks that assist to utilize existing assets in times of high RES penetration.

For the schedule of the offered modular courses please refer to the ERRA website at: <http://www.erranet.org/Training>



# SEMINAR FOR NEWLY APPOINTED COMMISSIONERS AND CHAIRMEN

## SEMINAR OBJECTIVE

This 3-day Seminar allows newly appointed Regulators and Commissioners to engage in discussions and seek guidance on issues of energy sector regulation from the experienced peers as they assume their new regulatory functions. The Seminar programme combines “classic” regulation under the traditional vertically integrated industry structure with up-to-date issues of regulation in developing a competitive industry environment.

## SEMINAR STRUCTURE

### Day 1 – ORGANIZATIONAL STRUCTURE AND MANAGEMENT OF A REGULATORY BODY AND PRICE REGULATION

The morning session raises all the relevant organizational and management issues that new commissioners face when managing their institution and performing their job. Issues include: authority/ autonomy/ accountability of the regulator; overview of the decision making process; managing the Commission and relationships with the Government, Parliament, the license holders/investors and the public; how to deal with the government/ parliament/ public/ energy companies.

The afternoon session discusses the basic principles of and issues related to the most important regulatory task: energy price and tariff regulation. Issues cover: economic principles of price regulation, rate base determination, principles for tariff setting, price adjustment regimes including rate of return, but also incentive price regulatory schemes. The problem of vulnerable consumers discussed in its relation to energy pricing.



## Day 2 – ELECTRICITY MARKET MODELS AND EUROPEAN ENERGY POLICY INITIATIVES

The morning session gives an overview on the basic building blocks as well as on principal models of electricity markets. Introduction is provided on the operations of wholesale markets as well as on retail choice of customers. Major issues in network regulation under liberalized circumstances are discussed, including the regulation of cross-border trade. International experience with the operation of electricity markets is provided. An overview of efforts to create regional electricity markets is given. Finally, specific issues related to electricity market developments in the ERRA countries are provided (impacts of increasing private participation in the sector; removing cross-subsidies; non-payment).

The afternoon session introduces the participants to the basics of European energy policy initiatives. Motivations for and details of the EU Electricity and Gas Directives and associated regulations are discussed. A critical overview of market developments is provided.

## Day 3 – SUPPLY SECURITY AND REGULATORY MONITORING AND REPORTING

This is a global session on regulation and energy supply security. Discussions include regulatory roles in broader sense; the impact of regulatory behaviour on investment decisions, gas dependency and security of supply. Finally, the session gives an introduction to the monitoring activities that regulatory authorities are to set up in order to support their regulatory and enforcement activities. It introduces the participants into the most important areas to monitor and the techniques they can use in order to collect and analyze data to support their major activities.

For the schedule of the offered modular courses please refer to the ERRA website at:

<http://www.erranet.org/Training>

**SEMINAR FOR NEWLY APPOINTED COMMISSIONERS  
AND CHAIRMEN**



# MARKET MONITORING ACTIVITIES OF ENERGY REGULATORY COMMISSIONS

## *COURSE OBJECTIVE*

The course features 4 days dedicated to core responsibilities of energy regulatory authorities / commissions with regard to a) monitoring the behaviour of individual licensees as well as the overall outcome of the behaviour of a group of companies and b) regulatory role in enforcing rules and potential regulatory tools in cases of detected non-compliance.

The purpose of this course is to equip the students with skills on how to organize the monitoring procedure in order to set fair and reasonable prices; how to monitor service quality and environmental performance; how the electricity markets function and other important issues related to market monitoring.

## *COURSE STRUCTURE*

### **Day 1 – ECONOMICS OF COMPETITIVE MARKETS**

The programme starts with a general overview of the process from regulated to competitive and integrated electricity markets with special emphasis on the changing role of the regulators. Then, it goes into detail about market economics and market design amended with a group simulation game on competitive markets.

### **Day 2 – MARKET POWER AND ITS DETECTION**

The session examines market power in electricity generation and transmission in detail. It gives insight into various methods to exercise market power, how to detect market power and takes stock of practices to be monitored and possible remedies.



## **Day 2 – MARKET POWER AND ITS DETECTION – continued**

It makes the topic more practical through a case study of the California power crisis of 2000. The session concludes with a group simulation game on market power.

## **Day 3 – MARKET MONITORING IN PRACTICE**

The session strives to introduce market monitoring through the practical example of REMIT, a legal framework compiled by the European Union in order to monitor wholesale energy markets with the objective to detect and to deter market manipulation. It is extended by country case studies, followed by a presentation on monitoring market abuse by insider information.

## **Day 4 – MARKET MONITORING IN PRACTICE – continued**

The last session takes ancillary services under examination with special focus on monitoring of system reserves. It is followed by a case study of the South East European Electricity Market Monitoring Project. The presentation introduces congestion management in the SEE region, the establishment of the Coordinated Auction Office.

For the schedule of the offered modular courses please refer to the ERRA website at:

<http://www.erranet.org/Training>



# INTRODUCTION TO WATER UTILITY REGULATION

## *COURSE OBJECTIVE*

This 5-day training course will be organised into thematic modules focusing on the current issues of water sector regulation. The prime objective of the course is to provide basic technical, economic and legal regulatory skills that are needed to design and manage successful regulatory systems for the water sector.

## *COURSE STRUCTURE*

### **THE REGULATOR**

- The purpose of regulation.
- Authority, autonomy, and accountability of a water regulator.
- Organizational structure and management of a regulatory body.

### **FUNDAMENTALS OF WATER UTILITY ECONOMICS**

- The economics of natural monopolies.
- Supply and demand characteristics, customer profiles.

### **REGULATORY MODELS**

- Licensing, tariffs, service quality.
- Models of ownership and operation.

### **PRICE REGULATION I - PRICE SETTING**

- Economic principles of price regulation.
- Cost of capital, expected rate of return considerations.
- Tariff designs.
- Incentive regulations.
- Periodic reviews.
- Appeal mechanisms



## PRICE REGULATION II – SPECIAL CONSIDERATIONS

- Demand management.
- Smart metering.
- Low income consumers, affordability, social considerations.
- Revenue and tariff consequences of non-payment and late payment.

## ASSET MANAGEMENT

- Valuing the asset base.
- Depreciation policy.
- Length of asset cycles.
- Financing long term asset replacement and new investments.

## PERFORMANCE BENCHMARKING

- Utility initiated vs. regulatory benchmarking.
- Data collection and data verification, quality control.

## WATER UTILITIES WITHIN THE LARGER WATER MANAGEMENT CONTEXT

- Global trends.
- Climate change and where it leads.
- Management of scarce water resources.

## INNOVATIVE DEVELOPMENTS WITHIN THE WATER UTILITY SECTOR

- Smart water metering.
- Smart networks.
- Leakage reduction programs and their economics.
- Risk management.
- Synergies with the regulation of other network services.

## GOOD REGULATORY PRACTICES

- Worldwide advances in water utility regulation.
- Synergies between energy and water regulation.

For the schedule of the offered modular courses please refer to the ERRA website at:

<http://www.erranet.org/Training>



# PRICE REGULATION & TARIFFS

## COURSE OBJECTIVE

The purpose of this 5-day Training Course is to equip students with the core concepts, objectives and techniques of designing and evaluating rate structures in the energy sector. It also considers the cost effective regulation of environmental liabilities. During the programme, participants will learn the basic economic principles of “good” price regulation, the major steps in regulated tariff setting and alternative price regulatory methods, network access tariffs, social tariffs. They are engaged in numerous practical exercises on how to calculate simple regulated tariffs.

## COURSE STRUCTURE

### Day 1 – FUNDAMENTALS OF PRICE REGULATION IN THE ENERGY SECTOR

Introduces financial analysis, one of the basic inputs of tariff development and control, provides an understanding of the role and objectives of tariff planning under alternative market models. It also describes the method of determining the revenue requirement of regulated energy companies and the monitoring needs for assessing the necessary data for rate setting. The day concludes with a practical exercise for calculating the revenue requirement.

### Day 2 – INCENTIVE PRICE REGULATION

Deals with price regulation theory specific to the energy sectors, provides a short introduction of basic economic concepts, describes the general normative approaches and methods of tariff design. It includes discussion of generation costs and tariffs, network cost and tariff structure in electricity as well as setting final consumer prices. It gives an insight into information asymmetries (fixed vs. variable price contracts, productive vs. allocative efficiency). It gives a general overview of price cap regulation and yardstick competition.

Sector: **Electricity**

Selected data:

Wholesale Prices

Currency: **EUR**



Generate

Years:

- 2014  2015  
 2010  2009  
 2006  2005  
 2002  2001  
 1998

Electricity Wholesale

Expert

	Q4	
	Pre-tax	Total
Albania	1.57	
Armenia	4.10	
Bosnia and Herzegovina	5.79	
Croatia	5.1	
Georgia	2.28	
Hungary	5.47	
Lithuania	8.7	
Macedonia	4.09	
Moldova	6.23	
Mongolia	2.85	
Montenegro	7.32	
Poland	4.61	
Romania	3.84	
Russia	9.0	
Serbia	3.5	
Slovakia	4.49	
Turkey	5.85	

### Day 3 – TARIFF DESIGN EXERCISES

Compares the practical policies of rate-of-return and incentive regulation under different industry conditions, and draws attention to the often conflicting objectives involved in the process of designing a practical regulatory policy. This day concludes with an exercise during which the participants could try themselves as regulatory decision makers.

### Day 4 – TARIFF SETTING REGULATORY TASKS UNDER A LIBERALIZED MARKET ENVIRONMENT

It examines tariff setting regulatory tasks from the perspectives of pricing network access, tariff design for transmission and distribution, and the pricing of ancillary services. Pricing network access also deals with regulatory models of network upgrade and expansion and explains the challenges of renewables penetration.

### Day 5 – TARIFF SETTING REGULATORY TASKS RELATED TO PUBLIC SERVICE OBLIGATIONS

Addresses the issue of renewable energy support schemes and pricing. It also introduces how the likely effects of different policy measures can be investigated, and raises some important aspects to be considered when assessing social impacts of energy policy decisions as well as provides a summary of the energy price reforms in ERRA Member countries.

For the schedule of the offered modular courses please refer to the ERRA website at:

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The screenshot shows a web interface for generating data. At the top, there is a 'Hide Toolbar' option. Below it, the 'Sector' is set to 'Electricity' and 'Selected data' is 'Wholesale Prices'. The 'Currency' is set to 'EUR'. A 'Generate' button is visible. Below this, there is a 'Years' section with checkboxes for 2014, 2010, 2006, 2002, 1998, and 2011 (which is checked). The main part of the screenshot is a table titled 'Electricity Wholesale' with an 'Expert' button. The table shows data for Q4, with columns for 'Pre-tax' and 'Total'. The rows list countries and their corresponding values.

	Pre-tax	Total
Albania	1.57	
Armenia	4.10	
Bosnia and Herzegovina	5.79	
Croatia	5.1	
Georgia	2.28	
Hungary	5.47	
Lithuania	8.7	
Macedonia	4.09	
Moldova	6.23	
Mongolia	2.05	
Montenegro	7.32	
Poland	4.61	
Romania	3.84	
Russia	n.d.	
Serbia	3.5	
Slovakia	4.49	
Turkey	5.55	



The certification system is based on credits which can be earned during successfully completed training courses. In order to receive the certificate, participants should collect at least 30 credits within 3 years. Credits could be collected in the following way:

- Successful completion of ERRA Summer School: Introduction to Energy Regulation: 10 credits
- Successful completion of any of the ERRA modular classroom training courses 10 credits. (For the modular training courses please refer to <http://erranet.org/Training>).

The total number of credits must be collected within 3 years in order to receive the certificate.

The following are the criteria for a successful completion of the classroom training courses:

- Students must attend at least 80% of the classes and exercises of the training course
- Students must accomplish the final test of the training course within the classroom in a time period specified by the organizers
- Students must achieve 60% of the final test in order to earn 10 CER credits. Test scores below 60% will result in 5 CER credits only.

For more information please visit our website:

[www.erranet.org](http://www.erranet.org)