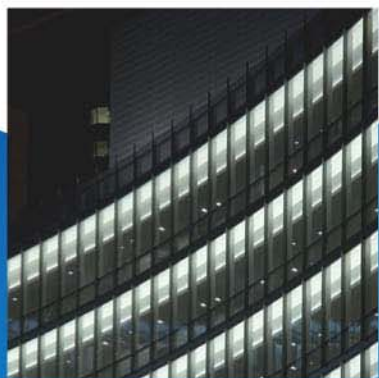


# UCTE



Annual Report 2005

union for the co-ordination of transmission of electricity

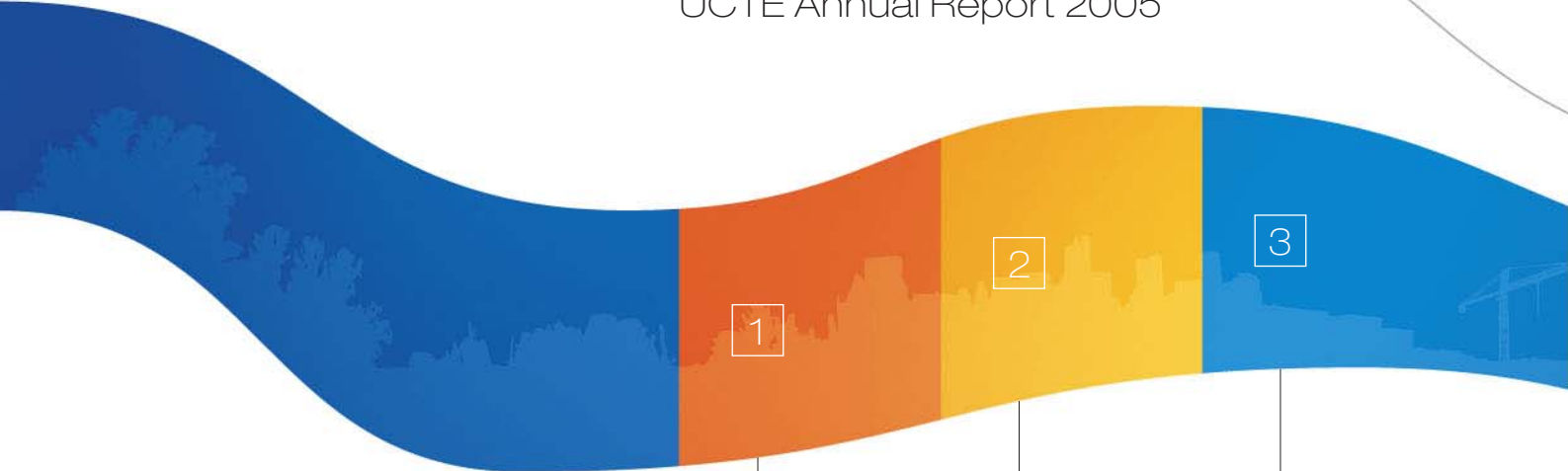




# A visit to UCTE in 2005

union for the co-ordination of transmission of electricity

# UCTE Annual Report 2005



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## Achievements 2004 – 2005

The most remarkable achievement in 2004 was without any doubt the historic reconnection of the second UCTE synchronous zone. It re-established and re-strengthened the power links between Southeast Europe and the European Union that had been destroyed during the Balkan War in the 1990s. Let us be proud of our work over months and years which came to a successful end on 10 October 2004. Loyola de Palacio, EU Energy Commissioner at that time, said that the reconnection of the two UCTE synchronous zones would have a »Europe-wide positive impact on the electricity sector and beyond«, as it physically integrated »electrical Europe«. This would be »the first step towards an integrated Internal Electricity Market«, she said.

The enlargement of UCTE to the benefit of all consumers and the secure and reliable operation of the interconnected power system have been a matter of permanent concern to the association. However, especially the year 2005 may exemplify UCTE's continuous efforts to implement both pillars of this programme.

When I start mentioning recent achievements of UCTE enlargement, I have to emphasise its trans-national dimension first. Electricity connects people, connects countries, and connects economies. Looking back to the nineties, UCTE integrated the electrical system of the CENTREL countries, namely Poland, the Czech Republic, Slovakia and Hungary. Nine years later, in 2004, these countries joined the European Union. A similar pacemaker function was taken over by UCTE for Bulgaria and Romania connecting their electrical network to the former second synchronous zone of UCTE in advance of their future EU membership in the years to come.

For the future, UCTE feels committed to find out whether it can build further electrical »bridges«. In this regard, on 19 April 2005 a feasibility study was kicked-off to investigate technical options for a possible interconnection between the UCTE grid and the Eurasian IPS/UPS system. The dimension of such a project, which would create a single electrical heartbeat from Lisbon to Vladivostok, is unprecedented worldwide. Therefore, the technical stability and reliability must have priority over any other issue. >>>



>>> But east is not the only direction for a possible system enlargement. On 28 September 2005, a major study investigating a potential interconnection of Turkey with UCTE started and a further project to upgrade the Albanian grid is still going on. Further UCTE activities have taken place over the last two years in Northern Africa where experts work on a step-by-step procedure how to create an electrical system around the Mediterranean Sea. To cut a long story: The great number of countries asking for interconnection with UCTE shows that UCTE is a story of success.

However, we have to be careful as the larger a system is, the more difficult its operation gets. For that reason and in order to strengthen the co-operation among TSOs, UCTE has continuously worked on the drafting and implementation of its security package which is the second pillar of its programme. In this context, UCTE agreed on a first compendium of requirements and reliability standards – called Operation Handbook (OH) – laying down the fundament of a secure operation of the interconnected grid in day-to-day practice. The Operation Handbook was made legally binding by an inter-TSO Multilateral Agreement (MLA) which entered into force on 1st July 2005 and followed an UCTE commitment at the Florence Forum in the past. A Compliance Monitoring and Enforcement Process (CMEP) will consolidate the whole security package which is conceived as a basis for proactive measures in order to avoid any non-compliance with the standards of the Operation Handbook.

Many representatives coming from 33 Transmission System Operators out of 23 European countries work successfully for the common goal of providing the best achievable security of electrical supply all over continental Europe.

What about the future? The challenges will not become less. Some I have already mentioned and they will continue keeping UCTE busy. Others will arise in new fields. TSOs will continue to take a sensitive approach in balancing regulatory demands, enlargement and system needs. I am convinced that under the presidency of Mr. José Penedos, my successor, UCTE will remain an important advisor to energy policy makers and cope with all future challenges. <<<

Martin Fuchs

## UCTE 2006 – 2007 : PRIORITIES FOR THE NEW PRESIDENCY

My first thought goes to my predecessor, Martin Fuchs, who managed over his two president terms to transform UCTE from a prestigious UCPTe into a new TSO's organisation covering the largest synchronously interconnected grid in Europe that is still pushing its geographical limits. I underline Martin's personal contribution to open the door in the last years to new system development phases with the Study on the Synchronous interconnection of Turkey with UCTE, the investigations about an interconnection between Tunisia and Libya and last but not least with the IPS/UPS Study, all of these projects building up on the successful reconnection to UCTE of the South-east of Europe.

The new challenges we have been facing since the start of the liberalization process in the electricity sector in Europe came first from the market side: the grids must play a decisive role in coping with the dramatically growing cross-border flows due to commercial reasons and also to the substantial amount of wind energy fed in grids without simultaneous reinforcement of the transmission infrastructures. How should UCTE tackle these changes?

>>>





>>> In order to keep the interconnected network operation under reliable conditions, UCTE TSOs must be sure first of all of the compliance by all the TSOs with the technical standards and requirements as these are defined in the UCTE Operational Handbook. It is the first and essential priority of UCTE.

Beyond this and as an outlook for UCTE for the years 2006–2007 towards the horizon 2010 we must shape a vision about how to master the upcoming challenges, essentially in two areas:

- System Operation Challenges
- System Development (Internal/External)

<<<

## Contribution of UCTE to market integration and security of electricity supply

Seen from January 2006, the priorities of the new Presidency for the UCTE action in the next 2 years will be:

- Finalizing the Operation Handbook
- Launching CMEP
- Implementation of n-1 solutions (fine-tuning of coordination levels within UCTE at bilateral, regional, system level, or over the borders of the European electricity systems)
- Start of coordinated planning activities
- System development studies (synergies between on-going studies and new projects e.g. European Wind Integration Study EWIS) including solutions about resources input and funding.
- Adapted approach to interconnected and non interconnected system operators in the Medring zone

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## UCTE and the system operation challenges

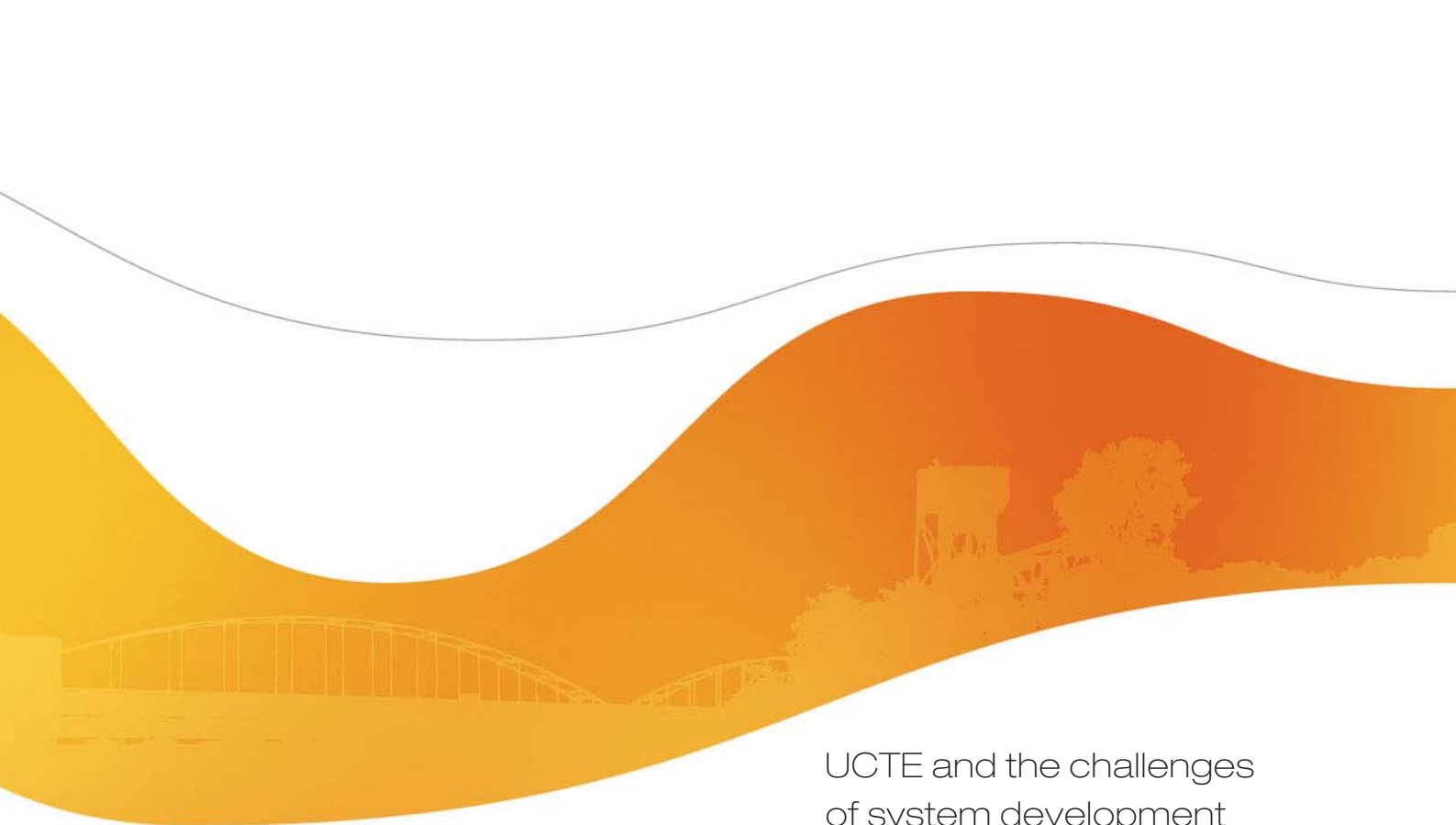
### *The development of regional electricity markets*

- The development of regional markets is a fact. Following the initial idea of creating the »IEM« from scratch, it appears that the regional markets – also within the UCTE perimeter – are likely to be the building blocks to integrate in order to achieve any broader European market integration that will necessarily encompass non EU countries.
- This was in-between clearly recognized e.g. by EC with the launch of the mini-fora, most of them within the UCTE area.
- However, the UCTE »integration objective« is different: it consists in standardizing power system security standards as much as possible within each European system and as much as possible »independently« of market models: this is the UCTE »security first« objective.
- This will also table the issue of the different levels of operational coordination that UCTE will need to address for itself – as the major European electricity system remaining always in the focus of the stakeholders' considerations.
- This development may finally request adapted or even additional security (sub) standards for better market facilitation to be engineered by the involved TSOs.

### *Operation Handbook (OH), Compliance Monitoring and Enforcement Process (CMEP)*

- Completing the OH as foreseen (8 Policies) and launching a CMEP for TSOs in order to monitor their compliance with the UCTE standards.
- Extending the UCTE security standards to grid users within the UCTE area: the implicit/explicit different levels of implementation will need to be clearly specified.
- UCTE shall communicate on a regular basis about the compliance monitoring activities to be launched in 2006.
- Besides the function of CMEP for the TSO community itself (better knowledge about the real operational practices), this process shall mainly underline towards stakeholders the effectiveness of the UCTE self-regulation as this has been announced at the Florence and Athens Fora over the last years.

>>>>



## UCTE and the challenges of system development (internal/external)

From the UCTE perspective, there are no geographical limits to the development of the synchronously interconnected UCTE system, as long as such extensions are realized in a legal framework that is compatible with the MLA in which the UCTE standards are embedded. This shall ensure that system security is not jeopardized.

However, »technical« limits could arise if:

- incidental wide-area oscillations became structural and/or
- no agreement with parties requesting the extension can be achieved about the costs for additional security devices/measures.

A very large system could necessitate protective countermeasures to avoid large-scale cascading of severe incidents (black-outs, etc.) Finally, substantial system extensions could lead to an organizational problem, i.e. complex decision-making and coordination mechanisms, etc., with many sub-entities reflecting the different levels of coordination. <<<

### >>> Critical Infrastructure Protection (CIP)

- UCTE in close cooperation with ETSO is already actively contributing to the formulation of the EC program on critical infrastructure protection (CIP) and is participating on a related broader industrial consultation platform among all sectors (electricity, gas and oil).
- Clarifying the scope, roles and responsibilities in the protection programs is essential for further progress.

### Energy Technology Platform

- UCTE is part of the advisory board of the Energy Technology Platform launched by the European Commission in order to enhance the research and development activities relevant to the TSO business. <<<

José Penedos

# 3

## UCTE SECURITY PACKAGE : OH, MLA AND CMEP

UCTE promotes the reliable and efficient operation of the interconnected power systems in Europe via the 3 complementary pillars of its Security Package: the Operation Handbook establishing the standards for system operation in the UCTE synchronously interconnected system, the Multi-lateral Agreement providing the legal framework between TSOs for handling the standards and the Compliance Monitoring and Enforcement Process as a tool for the recurrent evaluation of the observance of standards.



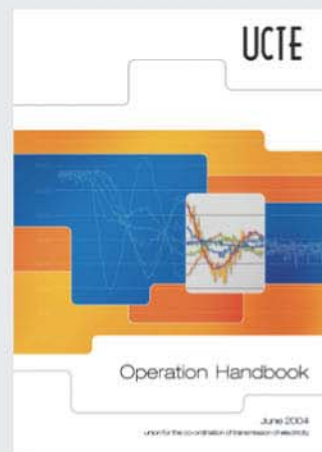
## The Operation Handbook (OH)

The development of the Operation Handbook started before the corresponding mandate was given by the Regulatory Forum in Florence to UCTE in 2001. It quickly became UCTE's trademark recognized by industry and stakeholders. The support of the OH to security of supply is explicitly recognized in the Directive 89/2005 concerning measures to safeguard security of electricity supply and infrastructure investment.

The former technical recommendations developed as a result of the experience gained over 50 years of interconnected operation were based on a vertically integrated industry structure and scattered in many documents. With the unbundling of the sector and liberalization of the electricity market, UCTE decided to reshape and update its operational standards and gave this task to the »Operations and Security« Working Group.

The Operation Handbook was designed according to a new structure which divides the operational issues into separate Policies which comprise the relevant rules. Finally, UCTE came up with a proposal of 8 Policies which are internally arranged into criteria, requirements, standards, guidelines and measures.

>>>



- Load-Frequency Control and Performance
- Scheduling and Accounting
- Operational Security
- Coordinated Operational Planning
- Emergency Operations
- Communication Infrastructure
- Data Exchanges
- Operational Training



## The Multilateral Agreement (MLA)

>>> The development process was divided into two main phases:

- Phase 1:  
Transformation of old UC(P)TE rules and their adaptation to new circumstances (Policies 1, 2 and 3)
- Phase 2:  
Description of new operational practices in new Policies (Policies 4, 5, 6 and 7)

The first phase of the process was successfully finished in 2004, when Policies 1–3 were approved by UCTE governing bodies, following a broad and transparent consultation with stakeholders.

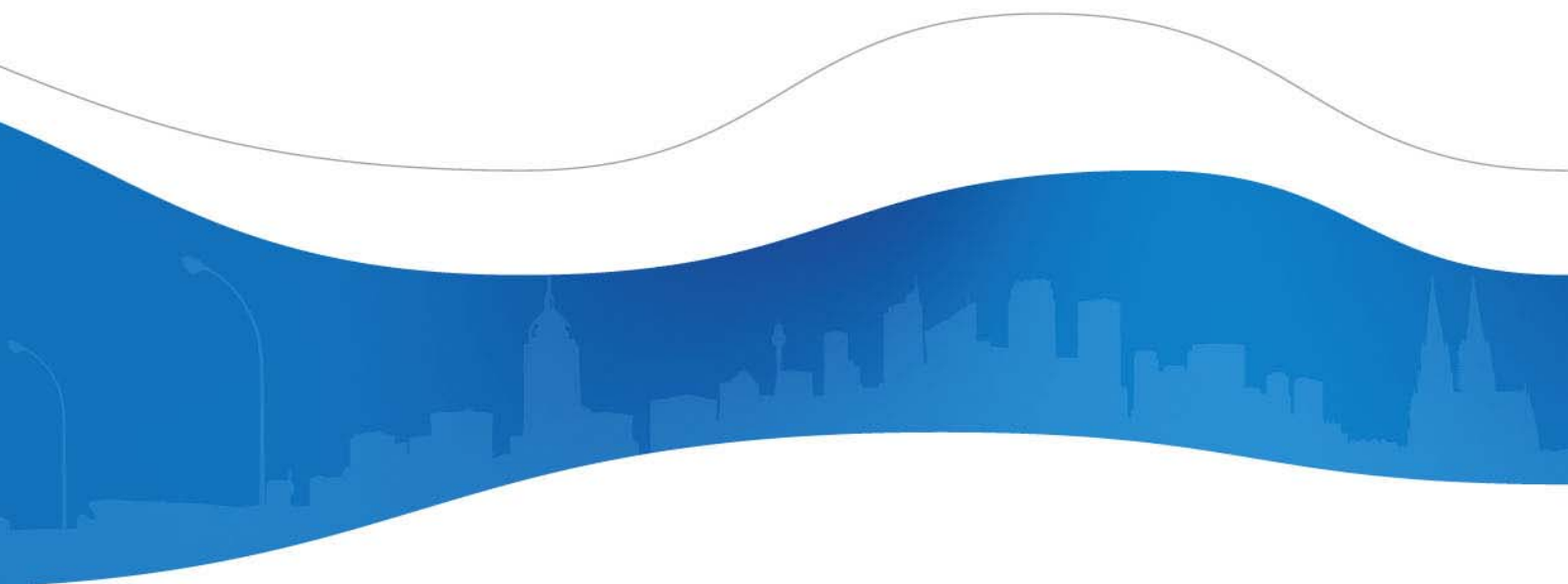
In 2005, UCTE came to the second phase of the development process laying down new rules and describing current operational practices not included in the former UCPTTE recommendations. This triggered a broad discussion within the community, also taking into consideration the input gathered during the consultation with stakeholders. Finally, at the end of 2005 the editing of Policies 4–7 was closed, only minor issues being left for fine-tuning. Policy 8 describing operational training procedures is under development and will be finalized in 2006 as well. <<<

The Multilateral Agreement (MLA) was selected as the most suitable legal instrument to make the technical standards of the Operation Handbook binding among TSOs. Its development started shortly after the initiation of work on the Operation Handbook.

Although the task was very ambitious, UCTE met this challenge and all UCTE members signed the Multilateral Agreement which came into force on 1st July 2005.

The MLA primarily defines the procedure of handling alleged infringements of standards of the Operation Handbook. Since security of a synchronously interconnected system is indivisible, the MLA had to be signed by all UCTE member companies to come into force. Today, signing of the MLA is a pre-requisite for UCTE membership. As such, the agreement goes beyond the borders of the European Union granting to each UCTE member equal rights and obligations in the crucial context of operational security regardless of whether this TSO is operating in an EU Member State or not. The MLA refers to the UCTE operational standards as defined in the UCTE Operation Handbook which is an integral part of the agreement.

With the inter-TSO Multilateral Agreement entering into force, UCTE fulfilled its commitment of the Florence Forum 2002 to give a legally binding character to technical standards. <<<



## The Compliance Monitoring and Enforcement Process (CMEP)

The introduction of the Operation Handbook standards implies a procedure to monitor the compliance with the standards also to make sure that the TSO community keeps credible with regard to its commitment to a reliable operation of the interconnected system. Therefore, UCTE started the development of a new Compliance Monitoring and Enforcement Process as a platform for an efficient recurrent monitoring of the security standards as described in the UCTE Operation Handbook. Besides improving the credibility of UCTE towards stakeholders, CMEP will be useful for the TSO community itself by increasing internal transparency and improving the mutual knowledge of real operational practices.

The new process is based on the assumption that UCTE, on behalf of its members, will co-ordinate the efforts of individual TSOs to monitor the compliance with the Operation Handbook standards. Each TSO will assess compliance via dedicated self-assessment questionnaires with the administrative and advisory assistance of UCTE which should contribute to keep the evaluation of the compliance as close as possible to the operational reality.

The first process for the year 2006 has been designed as a trial learning process for individual TSOs and for the whole community and will cover standards and requirements from the first three Policies. The results of this trial process will form the basis for future modifications of the process itself as well as of the contents of the Operation Handbook.

The introduction of permanent CMEP in the UCTE synchronously interconnected system should contribute to demonstrate in a transparent and a non-discriminatory way that UCTE members are committed to keep a high level of reliability of the interconnected grid and strengthen the credibility of TSOs' performance within the community. <<<

## Feasibility study: Synchronous interconnection of the power systems of IPS/UPS with UCTE



Born in the context of the EU-Russia energy dialogue, a request was filed to UCTE in 2002 to investigate the technical and operational feasibility of synchronously coupling the power systems of IPS/UPS\* and UCTE\*\*. Bearing in mind the major political and economical implications of a project whose complexity has never been experienced before, UCTE performed a thorough consultation with all stakeholders based on the common understanding that the operational feasibility constitutes one of the pillars for any industrial implementation of such a project (besides reciprocity in market opening and convergence of environmental standards), UCTE prepared the launching of the study with a direct support of the EC. This largest system study in the history of UCTE was then kicked-off in 2005.

\* IPS/UPS: Comprises the Power Systems of the Baltic States (Estonia, Latvia and Lithuania), Azerbaijan, Belarus, Georgia, Moldova, Mongolia, Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine and Uzbekistan.

\*\* UCTE: The »Union for the Co-ordination of Transmission of Electricity« (UCTE) is the association of transmission system operators in continental Europe.





This three-year project will evaluate in different scenarios the feasibility of synchronously coupling the power systems of IPS/UPS and UCTE and identify all necessary measures and their respective costs, being well aware that the fundamental prerequisite to any system development is to maintain or increase the security of operation of both systems, once coupled.

The study is performed as a joint project under the responsibility of UCTE. More than 100 experts from UCTE and IPS/UPS are involved in the project. This huge amount of personnel resources is an attribute not only to the size of the system to be investigated, but also to the broad aspects of the tasks to be fulfilled: each of the two synchronous systems has undergone an independent development in technical, organizational and legal terms in the past. The overall project budget amounts to approximately 10,000,000€. The UCTE part of the budget is co-financed by the European Commission (EC) from the Trans European Network (TEN Energy) Program.

>>>



Geographical extension of the UCTE and IPS/UPS systems

 power systems of UCTE

 power systems of IPS/UPS



Kick-off ceremony, B. Ayuev IPS/UPS (left), M. Fuchs UCTE (right) in Brussels on 20 April 2005

>>> On the working level, five working groups deal with sub-tasks such as steady-state analysis, system dynamics, power system control, operational and organizational issues and legal aspects. The total project duration of three years – until April 2008 – is globally divided into several main phases such as data collection and modelling, system simulation and verifying and summarizing of results.

The results will be used as a basis for further decisions on system extension on both sides.

The feasibility study is another milestone in the history of the interconnected systems: the interconnection would finally lead to synchronously interconnected power systems with a total installed capacity of 800 GW spanning 13 time zones and serving about 800 million customers. Presently, no other example of such an extended synchronous interconnection exists all over the world.

>>>

### >>> *Study Objectives*

The study comprises all necessary investigations to define the requirements to be met for the feasibility of synchronous interconnection of the two systems and operation under stable conditions. Hereby the main objectives, beyond technical aspects, will cover operational, organizational and legal issues related to the East-West synchronous interconnection.

The three major questions to be answered by the study are:

- Is a full synchronous interconnection of IPS/UPS with UCTE feasible?
- What are the mandatory requirements on both sides?
- What are the associated costs?

One major technical challenge is to secure dynamic system stability for the interconnected systems without any reduction of system security and reliability on both sides of the interface.

>>>

>>> *Project Organisation*

The study is mastered by a UCTE-Consortium of 11 transmission system operators (TSO) from 9 countries:

	E.ON Netz GmbH (Germany)		
	ELIA System Operator S.A. (Belgium)		
	MAVIR ZRt. Hungarian Power System Operator Company (Hungary)		
	Natsionalna Elektricheska Kompania EAD (Bulgaria)		
	PSE-Operator S.A. (Poland)		
	Red Elctrica de Espana S.A. (Spain)		
	Réseau de Transport d'Electricité (France)		
	RWE Transportnetz Strom GmbH (Germany)		
	Slovenská elektrizačná prenosová sústava, a.s. (Slovak Republic)		
	National Power Grid Company »Transelectrica« (Romania)		
	Vattenfall Europe Transmission GmbH (Germany)		
			Belenergo (Belarus)
			Eesti Energia (Estonia)
			KEGOC (Kazakhstan)
			Latvenergo (Latvia)
			Lietuvos Enerija AB (Lithuania)
			Moldelectrica (Moldova)
			Ukrenergo (Ukraine)
			System Operator – Central Dispatch Organisation of Unified Energy System of Russia

The consortium on IPS/UPS side consists of the companies of:

>>>

Other UCTE-TSOs support the project with data and model provision.



Kick-off ceremony, UCTE and IPS/UPS experts in Brussels, 20 April 2005

>>> All internal and external activities are coordinated by the project management. Further project entities are:

- A Project Representative Board (PRB), which accompanies the project on the political level with representatives from the European Parliament, European Commission, UCTE, Baltic States and CIS countries.
- A Project Management Board (PMB), which is responsible for steering the project and deciding on further steps as well as for approving reports. This joint board consists of representatives from UCTE and IPS/UPS.
- Five working groups dealing with Steady-State Analysis, System Dynamics, Power System Control, Operation and Organization and Legal Aspects.

Since implementation of the project in 2004, Dr. Matthias Luther (E.ON Netz Germany) has been the responsible Project Manager and in charge of organizing and managing all the aspects of the project and reporting to appropriate bodies. In particular, he is coordinating all the technical aspects in relation with working group leaders.

>>>

### >>> *Achievements and status of work*

The Project was kicked-off on 20 April 2005. Based on a data questionnaire for IPS/UPS, data collection started in summer 2005. Since that time, system data have been collected from the TSOs concerned. Not only technical parameters of the network system but also economic and statistical data are required to determine possible power transports across a possible interface. On the basis of these data, experts will set up simulation models and verify them by using measurements gained in existing systems. For this reason, a Wide Area Measurement System (WAMS) will be installed in IPS/UPS similar to the system operated within UCTE.

Project communication is performed via a website ([www.ucte-ipsups.org](http://www.ucte-ipsups.org)) and internally via a member-net for all project members.

Until the end of 2005, the project work focused on data collection. First common seminars as well as technical and legal workshops were held to support the data collection phase. Once individual system models are prepared and verified, system simulation and analysis will be started.

<<<



## Principles of System Developments

The grids of South-East Europe have been part of the UCTE synchronous system since 1974. From 1995, the power systems of Poland, Czech Republic, Slovak Republic and Hungary have been synchronously interconnected with UCTE. The North African countries Morocco, Algeria and Tunisia were interconnected with the main European electricity system via Gibraltar in 1995. After meeting technical conditions, and successful completion of numerous tests, Bulgarian and Romanian operators of transmission systems became full members of UCTE in 2003. Western Ukraine has been running permanent operation with the UCTE system since 2003.

For the last fifty years, UCTE has contributed to building one of the largest synchronous interconnected power systems in the world, supplying hundreds of millions of customers in a safe and reliable way. However, in the recent past power outages have been experienced around the world and, in particular, in the UCTE system which have had dramatic consequences. The outages and their consequences confirm that the main focus of the work of UCTE is, must be and will remain the security and adequacy of the interconnected system.

These electrical »enlargements« pioneered the political and economic integration of Europe, the electricity sector being a vanguard of integration in other spheres. In this regard, UCTE paves the way to European unity.

The focus on security applies particularly to the issues of the extension of the UCTE synchronous zone. The effort of UCTE in these matters, as it has been in the process of creation of the present system, is to investigate all possible consequences of an extension on the system. UCTE has always pursued its efforts to develop the synchronous area while observing objective criteria and procedures in order to maintain the whole system at the present high level of reliability and stability. <<<



On 28 September 2005 Nuri Ercan Tortop, director of CFCU (Central Finance and Contracts Unit) and Gerard A. Maas, Chairman of the UCTE Steering Committee together with Marcel Bial, Secretary General signed a Service Contract concerning the synchronization of the Turkish Power System with UCTE. The agreement was endorsed by Hans-Jörg Kretschmer from the financing European Commission and İlhami Özşahin, Chairman of the Board and CEO of TEIAS. (Left to right: MM Tortop, Aliş, de Montravel, Durukan, Özşahin, Koronides, Maas, Bial)

## Preparation of electrical integration of Turkey has started

On 28 September 2005, Nuri Ercan Tortop, director of CFCU (Central Finance and Contracts Unit) and Gerard A. Maas, Chairman of the UCTE Steering Committee together with Marcel Bial, Secretary General, signed a Service Contract concerning the synchronization of the Turkish Power System with UCTE. The agreement was endorsed by Hans-Jörg Kretschmer from the financing European Commission and İlhami Özşahin, Chairman of the Board and CEO of TEIAS.

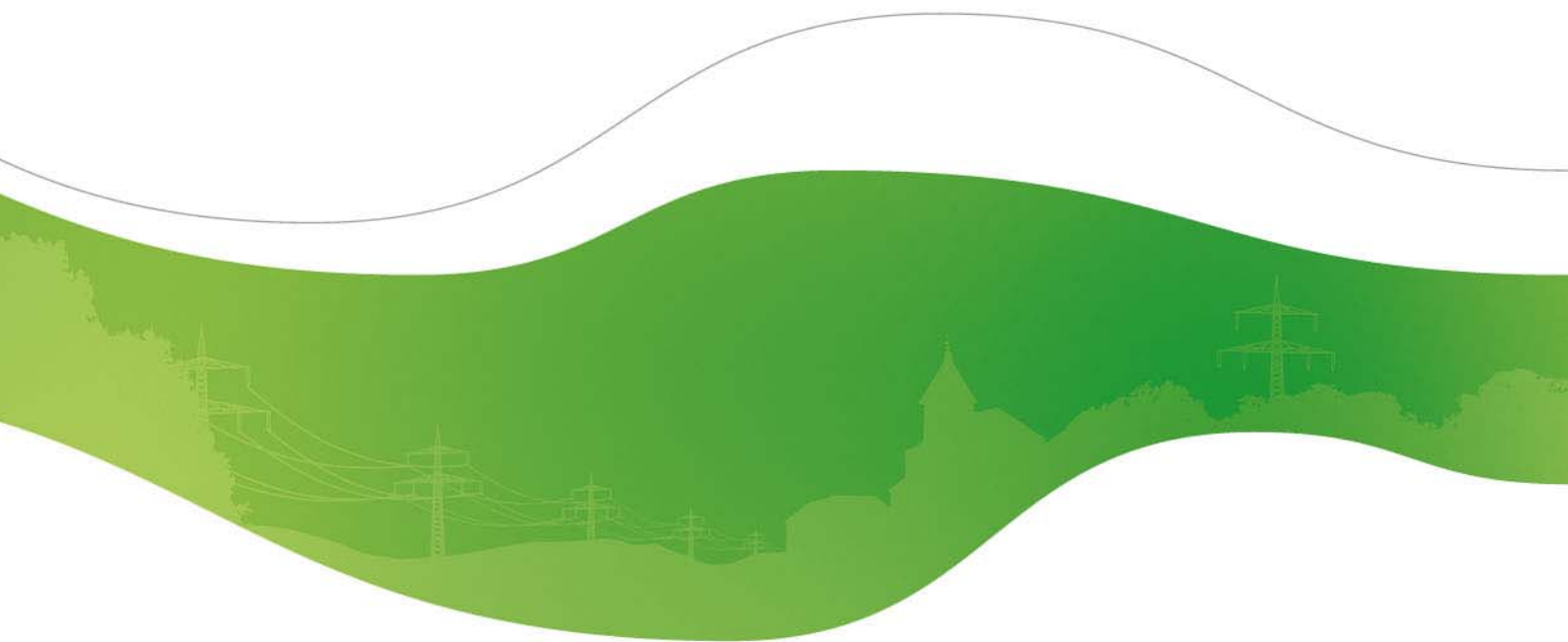
The study is performed by UCTE as the body in charge of assessing any extension of the interconnected system. It is actively supported and financed by the European Commission. This project is of major political importance, especially when the political and economic integration of Turkey is under intensive political debate both within Europe and in Turkey.

The study is fully in line with the EU policy towards enlarging the Internal Electricity Market beyond the perimeter of the European Union.

UCTE delegates the performance of the study to an Association of UCTE members – RWE TSO (Germany) and HTSO (Greece) being the leaders of the investigations together with E.ON Netz (Germany), HEP (Croatia), NEK (Bulgaria) and RTE (France). TEIAS – the transmission system operator of Turkey – plays an active role in the study by providing certain data and specific knowledge of the Turkish power system. The results of the study are expected to be available at the beginning of 2007.

The Turkish power system is currently not prepared for synchronous operations with other countries, but there are many interconnections such as to Azerbaijan, Armenia, Bulgaria, Georgia, Iran, Iraq and Syria. Turkey's rapid growth in electricity demand, which has led to almost doubling of installed generating capacity over the past decade, is expected to continue in the foreseeable future. This could lead to building a total installed generating capacity of as much as 65,000MW by 2010. With a view to covering the future peak demand of electricity, synchronous operation of the Turkish and UCTE system would be helpful from a system adequacy point of view and would bring electrical Turkey into a market of over 500 million electricity consumers.

<<<



## Tunisia – Libya: launching of measurement campaign

The closure of the 220kV lines between Tunisia and Libya may lead to the connection of the following five countries: Libya, Egypt, Jordan, Syria and Lebanon (LEJSL), to the already synchronously connected countries Morocco, Algeria and Tunisia.

Although the total installed capacity of these eight countries represents only about 40,000MW (approximately one third of the French capacity), UCTE pays great attention to the possible impact of this connection on the UCTE system. The main issue is related to potential inter-area oscillations between the generators of the two systems.

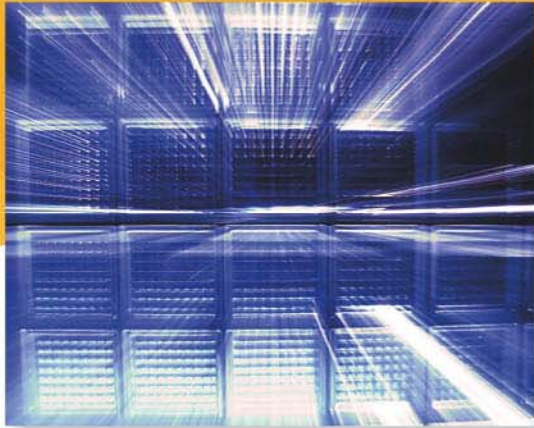
Taking account of the studies already implemented, UCTE decided to proceed to a series of measurements that will help UCTE to take a decision. These measurements, first on the LEJSL system alone, were carried out during the first six months of 2005. After a two-month campaign, UCTE decided to carry out a second three-day measurement campaign with the link closed, which was interrupted on 21st November 2005. The in-depth analysis of this trial will help to define the UCTE position on this issue.

As regards these two projects, UCTE is following the imperative process of keeping reliability and stability of the whole system at the high quality level known. As the most recent developments of the UCTE system have shown, this attitude is beneficial to all grid users, both on the UCTE side and on the applicant side. <<<

## Growing interest for UCTE Statistics

Also in 2005, the ongoing developments of the Internal European Electricity Market led to a significant increase of interest in UCTE statistics. This year has been a very active and successful one with many new statistical initiatives performed and launched in order to support the transparency, cooperation and reporting requirements. The web traffic measured on UCTE data requests and publications has been growing for another year, the System Adequacy Assessments have been facing high interest amongst UCTE stakeholders, and major associations in the electricity sector have been approaching UCTE for support and better coordination.





## UCTE as Reference Source for Reliable Data

UCTE and especially the Working Group »Statistics« put also in 2005 the emphasis on strengthening its reference position in the European mainland for consistent and reliable electricity data. The definitions based on the established methodology and the complex data processing flows are subject to a regular quality management process to keep the high standards – also in the field of statistics.

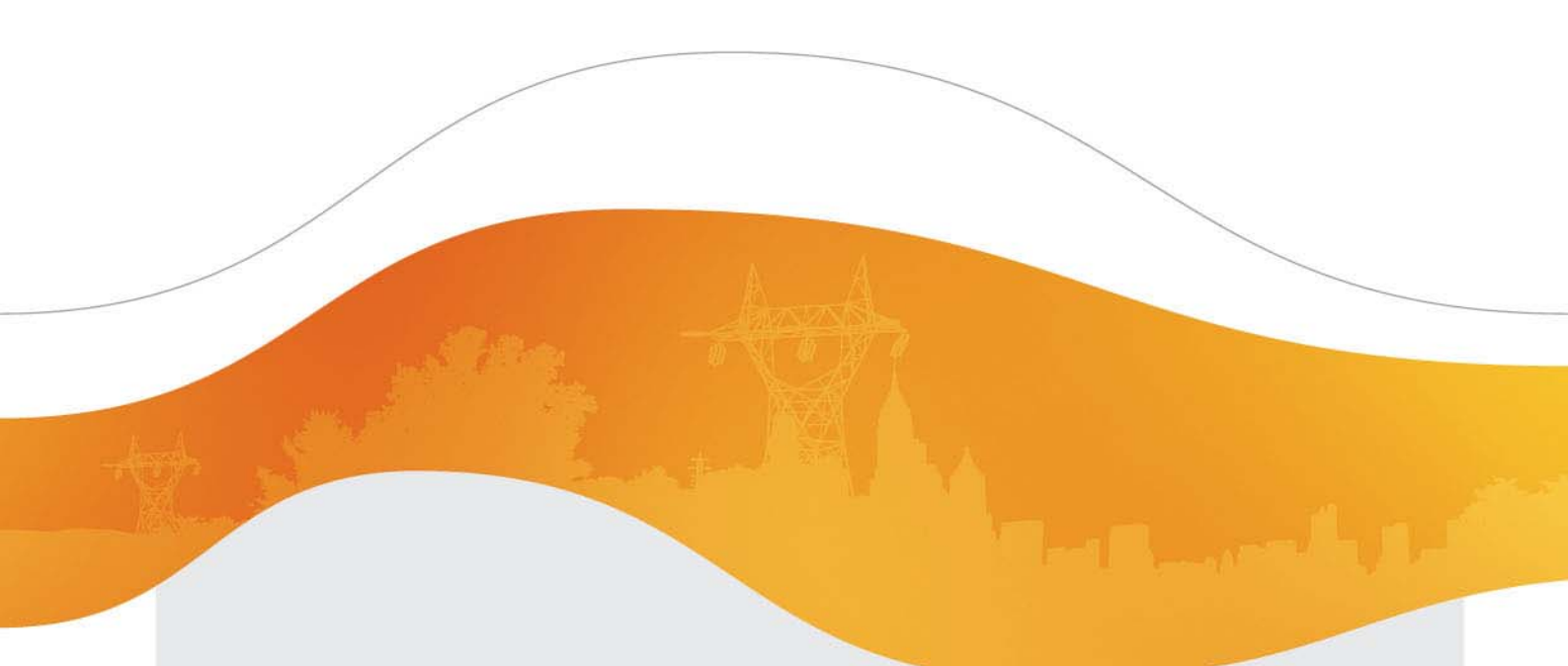
Growing external interest, via the increasing web traffic monitored on the UCTE online database, more quotations in external reports and increasing direct external contacts with other partners, illustrate that all those efforts are highly appreciated by market participants, political and regulatory bodies and consultants. <<<

## System Adequacy Assessments

This year, the system adequacy forecast report provided data from 2006 to 2015. Reacting to stakeholder comments, UCTE has continued consolidating and fine-tuning the forecasting exercise that was extended in 2004 to 10 years. This major product of UCTE statistics has become a well appreciated paper allowing dynamic monitoring of the system adequacy in the UCTE system – as a prerequisite for the security of supply.

Taken as a whole, the UCTE System Adequacy should stay at an acceptable level over the 2006–2008 period; substantial developments of generation capacities are expected, among which renewable energy sources represent a growing share. The period 2008–2010 shows a decrease of firmly decided power plants commissioning; the security margin is slightly decreasing but stays at a reasonable level. Between 2010 and 2015, security will be at risk if further investments are not decided in due time. More than 10 GW of firm investment decisions would be necessary to counterbalance the potential deficit in generation.

Many guests attended the Press Conference on the System Adequacy Forecast 2006–2015 (media, traders, producers, EC, ...) on 12 January 2006 on the UCTE System Adequacy Forecast 2006–2015. The echoes in the specialised media about the importance of the report were very positive. Suggestions were made about further improvements of the forecast via a more detailed transmission system analysis. <<<



## UCTE issues new system adequacy report (retrospect on 2004)

The overall electricity consumption in mainland Europe increased by 1.7%, which was less than in 2003 due to mild weather conditions. Generation capacities increased by 4%: most of capacity developments were in combined-cycle plants and renewable sources (up to 20%).

Although the retrospect shows sufficient generation capacities, two incidents leading to black-outs occurred in Greece and in Luxembourg. Congestions in the Eastern part of UCTE were more severe than in 2003. Strong increases of wind generation in Germany led to high unscheduled flows on interconnections (the full »UCTE System Adequacy Retrospect 2004« can be downloaded from <http://www.ucte.org>).

The Union for the Co-ordination of the Transmission of Electricity (UCTE) just released its annual retrospective report on the adequacy of the electric systems in the 22-country region of mainland Europe extending from Portugal to Poland and from Germany to Greece.

The results of the monthly survey show sufficient generation reserves for the sum of the UCTE countries' remaining capacities. According to UCTE experts, some 5% are needed for secure operation, which was the case on reference days\* during 2004.

Non-hydro renewable generation has once again increased by more than 30%, mainly due to wind power generation development. This strong evolution noticed particularly in Spain and Germany has a significant impact on transmission system operation and brings grids close to their limits.

International exchanges remain on a high level: on average, 11.5% of the UCTE countries' national consumption originate from imports from other UCTE countries.

The most significant event was the successful reconnection of synchronous zones 1 and 2 of UCTE on October 10, 2004. UCTE is now a single synchronous zone.

Interconnection capacities were also reinforced between Spain and Portugal, Hungary and Croatia and between Germany and Nordel through the Baltic cable.

Very bad weather conditions affected the Eastern part of UCTE in November, especially Poland and the Czech Republic which lost their interconnection.

Unscheduled flows resulting from wind power variations stressed security limits on the interconnections between Germany, Poland, the Netherlands, Belgium and France and caused the curtailment or reduction of commercial contracts. <<<

\* 3rd Wednesday of each month



## UCTE System Adequacy Forecast 2006 – 2015

Reacting to stakeholder comments, UCTE has made continuous efforts to improve the system adequacy forecast reports: the time horizon has been progressively extended up to ten years, different forecast scenarios were introduced and allow for a more dynamic monitoring of the system adequacy in the UCTE system – as a prerequisite for security of supply.

Taken as a whole, the UCTE System Adequacy should stay at an acceptable level over the 2006–2008 period; substantial developments of generation capacities are expected, among which renewable energy sources represent a growing share.

The period 2008–2010 shows a decrease of firmly decided power plants commissioning; the security margin is slightly decreasing but stays at a reasonable level. Between 2010 and 2015 security will be at risk if further investments are not decided in due time. More than 10 GW firm investment decisions would be necessary to counterbalance the potential deficit in generation.

### *Regional conclusions*

The CENTREL block (Czech Republic, Hungary, Poland and Slovakia) seems to have a long term orientated export position. But future environmental legislation could affect this position.

In the UCTE main block, which represents the main part of the installed capacity and was until now exporting towards the surrounding areas, the remaining capacity is decreasing and barely matches the indicative adequacy margin in 2010. This block could become a net importer under unfavourable conditions and/or in case the foreseen investments (according to TSOs' knowledge) would not be realized.

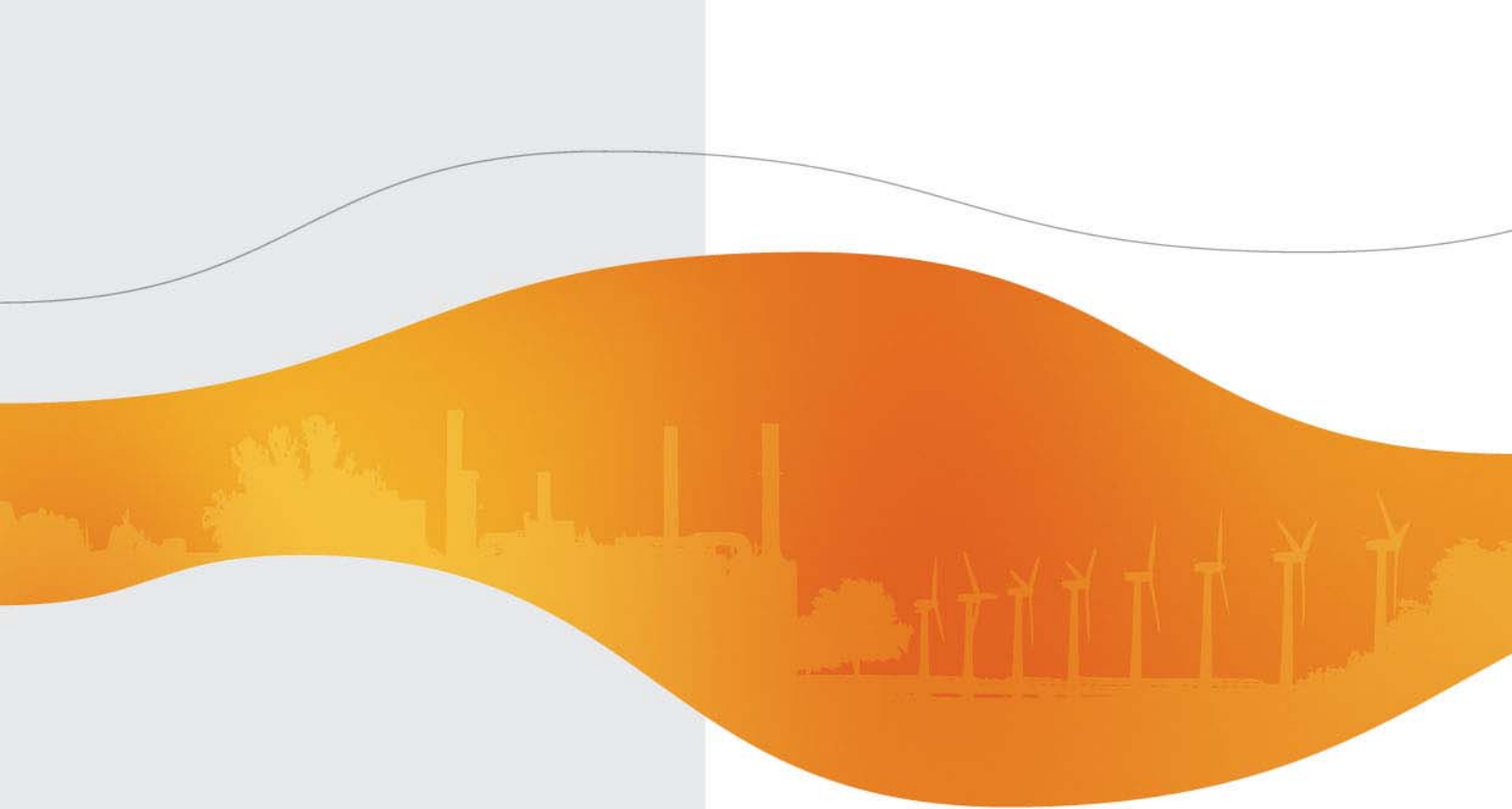
Adequacy in the Iberian block is reached till 2008. The remaining Capacity\* decreases from this date on. Additional investments, probable but depending on market conditions, and the development of interconnections are needed to ensure reliability for this region.

A strong development in generation is expected in Italy; the margins are significantly improving and the situation of this system is much more comfortable than in the past.

Serbia and Montenegro, FYROM and Greece stay in a weak position concerning generation adequacy. Power exchanges inside this area and with Central Europe – made possible after the reconnection of the second UCTE zone in 2004 – will be of utmost importance for the reliability of this region.

Generation adequacy should be maintained at a satisfactory level in Romania and Bulgaria over the period 2006–2010.

>>>



## >>> *Trends*

The present forecast confirms the increasing role of renewable energy sources, mainly wind power, in the generation mix of the UCTE system. They should represent at least 13% of the generating capacity in 2015. This development is very likely to trigger problems in terms of the availability of sufficient balancing power and to generate large short-term variations of flows across the international transmission system; new 400kV lines are necessary in some countries.

The projects concerning the development of international interconnections should help to improve the reliability of the surrounding blocks and of deficit areas, but are limited or delayed by difficulties in getting the necessary authorizations.

The comparison with the previous reports shows an increase of the Remaining Capacity\* at all time horizons. In the short-term, this increase results from a consolidation of forecasts but also reflects some uncertainties affecting the information available to TSOs.

Concerning the medium and long-term, it appears too early to draw any firm conclusion as to whether this trend reflects the ability of the market to deliver appropriate signals for investments. This is still to be confirmed in the coming years.

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## Enhancing International Cooperation

UCTE and COMELEC, the Maghrebian Committee of Electricity, that includes the three countries Morocco, Algeria and Tunisia synchronously interconnected with UCTE, have officially started cooperation in the field of statistics. Both associations agreed to set up a project to harmonise their methodologies and to grant better access and visibility to both of their statistics in order to let them converge. This shall enhance transparency and make data more comparable and consistent over the whole synchronous area for the benefit of TSOs and market participants.

UCTE welcomes an enhanced coordination of statistical activities with EURELECTRIC for better consistency in the full respect of the different associations' missions. It aims at ensuring consistency of individual databases. Common initiatives will be evaluated according to their positive impact on the correspondents' networks and the quality of processes and data. Therefore, UCTE and EURELECTRIC will identify possibilities for a more efficient use of the individual resources for common aims and define the major milestones of a first road map with concrete steps for better coordination of their statistical activities.

Disclosure obligations according to Article 3/6 of the Internal Electricity Market Directive (2003/54/EC) that affect the work of electricity traders have led EFET (European Federation of Energy Traders) and AIB (Association of Issuing Bodies) to contact UCTE for support and consultation. They developed own approaches to cope with those obligations and decided both to get in touch with UCTE and to base their concepts on UCTE data considered as most reliable in the sector.

UCTE supported EFET's efforts while providing reliable and more differentiated data on thermal conventional production. UCTE is also in contact with AIB in the context of defining an »International Residual Mix (IRM)« based on the European Fuel Mix data delivered by UCTE on a monthly basis. The IRM is an effort to adjust the European production-fuel mix to reflect tracked production attributes eliminating the double counting error introduced into disclosure information. <<<

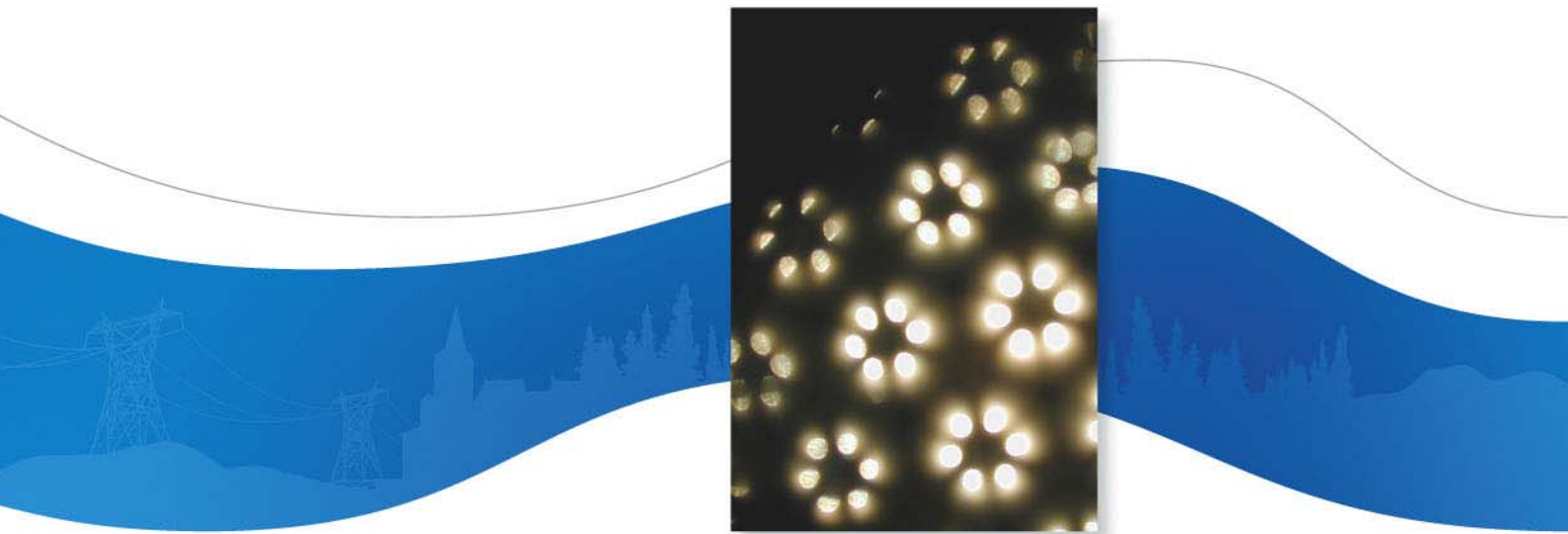


## 6

# CHALLENGES OF WIND ENERGY TO SECURE OPERATION OF THE UCTE SYSTEM

## Seven Actions for successful integration of wind power into European electricity systems

Renewable energy sources (RES) play an increasingly important role within the European electricity system. Regarding the future growth in Europe's RES capacities the major contribution will come from new wind power. According to EWEA, the European Wind Energy Association, a five-fold increase in European wind power capacities is expected: from about 34,000MW in 2004 to 180,000MW in 2020. As of 2004 about two thirds of the wind power capacities worldwide are located on the European continental UCTE grid.



Fast capacity growth, limited predictability and the geographical concentration in coastal and remote areas constitute an enormous challenge to the successful integration of wind power into the European electricity system.

In order to cope with this challenge, UCTE proposes a number of actions and investigations that need to be taken by legislators, regulators, grid operators and grid users aiming at establishing a harmonised set of rules for the integration of wind power. This set of rules for the operation of electricity networks in presence of intermittent generation is vital for guaranteeing the security of electricity networks.

#### *Speed up authorisation procedures for new grid infrastructure*

The installation of new large-scale wind capacities, especially off-shore wind farms, must be synchronized with the parallel development of additional and properly planned grid infrastructure both on a national and international level. Compared to the rapid construction of new wind capacity, realisation periods for new power lines last far too long and may take up to 10 years or more due to time-consuming licensing procedures and legal proceedings. UCTE therefore calls upon both European and national legislators to take appropriate steps to accelerate approval procedures and thus significantly shorten realisation periods for new grid infrastructure.

#### *Enable wind turbines to actively contribute to grid stability*

Unlike conventional power plants, most wind turbines do not actively contribute to grid stability. In the event of slight voltage drops in the transmission network – even if they are correctly cleared by the protection systems – the protection of wind generators may cause instantaneous disconnection of a significant number of wind farms with the consequent loss of power generation. With growing wind power capacities, stability risks increase accordingly. In order to effectively tackle this problem all power generators – including wind power producers – should be obliged to meet certain fault-ride through capability standards. Regulatory documents (preferably harmonised at international level) should be published in every country.

Such documents should be applicable to existing wind turbines which do not (yet) provide the necessary voltage support and system stability need to be technically refurbished or re-powered by modern turbines. Otherwise the increasing share of wind power and the regional concentration in certain areas might lead to grid situations with sudden capacity losses of more than 3,000 MW which could be followed by large-scale blackouts. UCTE therefore calls for harmonised grid code requirements to be fulfilled by wind power plants to minimize risks to system stability.

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>>> *Re-examine priority rules for RES electricity*

In addition to the aforementioned technical provisions, sufficient capacity of conventional generation is required to maintain system stability, particularly when it comes to huge long-distance load flows. Such long-distance load flows will happen more frequently in the future due to the need to transport the energy from remote wind power production areas to regions with high electricity demand. European and national legislation must prevent that conventional power plants are driven out from these production areas due to limited grid capacity.

In order to maintain sufficient conventional capacities as well as their reasonable allocation over the respective grid areas, the existing priority rules for the transport of renewables-based electricity need to be re-examined. Furthermore, it should be noted that national priority rules become legally questionable as they do not only discriminate against conventional electricity but also against »green« electricity from other EU member states. UCTE calls for the re-examination of RES priority transport rules and for equal treatment of electricity transports regardless of generation sources and origin.

Furthermore, UCTE considers it important that intermittent generation will be regularized at European and national level in order to safeguard the obligation for TSOs to reduce or switch off wind generation when security and stability of the transmission grid are endangered.

*Safeguard sufficient balance management and frequency control*

Due to limited predictability of the output of wind power capacities, sufficient reserve and balancing power capacities are required to cover the difference between demand and generation. The necessary grid and generation capacities must be available. With growing wind power feed-in, the demand for reserve and balancing power grows disproportionately. With a view to reducing this demand, an obligation on wind power producers to self-market wind power should be considered. Mandatory self-marketing creates incentives to reduce integration costs as well as an innovative environment for new solutions regarding reserve demand, storage techniques, DSM options, etc.

>>>





>>> *Analyse future RES scenarios and related integration tasks*

The expansion of intermittent wind power generation in some EU Member States has significant repercussions on the European electricity system as a whole. For example: The concentration of wind power in Northern Germany is already producing huge load flows through the neighbouring transmission systems in Benelux and Central Europe. These spontaneous flows reduce system stability and increasingly affect trading capacities. In order to better analyse the future development of RES generation in Europe, the related impact on the electric infrastructure as a whole and the future tasks for infrastructure development, a thorough examination is needed and should be carried out on the European level. UCTE calls upon the European Commission to launch a research project, and offers the support of the association and its member companies.

In order to maintain frequency stability, new connection requirements and regulatory provisions should ensure that wind power turbines are obliged to reduce their power output in defined cases of overfrequency or critical grid situations. Depending on the results of the previous research projects, it could be advisable to consider the possibility for wind power producers to self-market the energy produced.


*More R&D for improved grid integration*

Along with an in-depth analysis of the shape of the future European transmission network, a special R&D focus should be on the development of advanced technical solutions that will help to integrate wind power more easily. Such R&D activities could concern improved forecasting tools (wind and electricity), new or better storage systems as well as technically improved grid infrastructure.

*More planning security through RES capacity steering*

To maintain a high level of security of supply, more planning security for future grid extensions/enforcements is needed. Against this background, UCTE suggests the introduction of a European wind capacity steering mechanism, e. g. through RES quotas. Capacity steering within a stepwise harmonised promotion scheme for RES in Europe would be a cornerstone for better coordination of RES extension and infrastructural development. Moreover, better planning security would not only benefit grid operators but all market participants including the providers of balancing power and wind plant operators.

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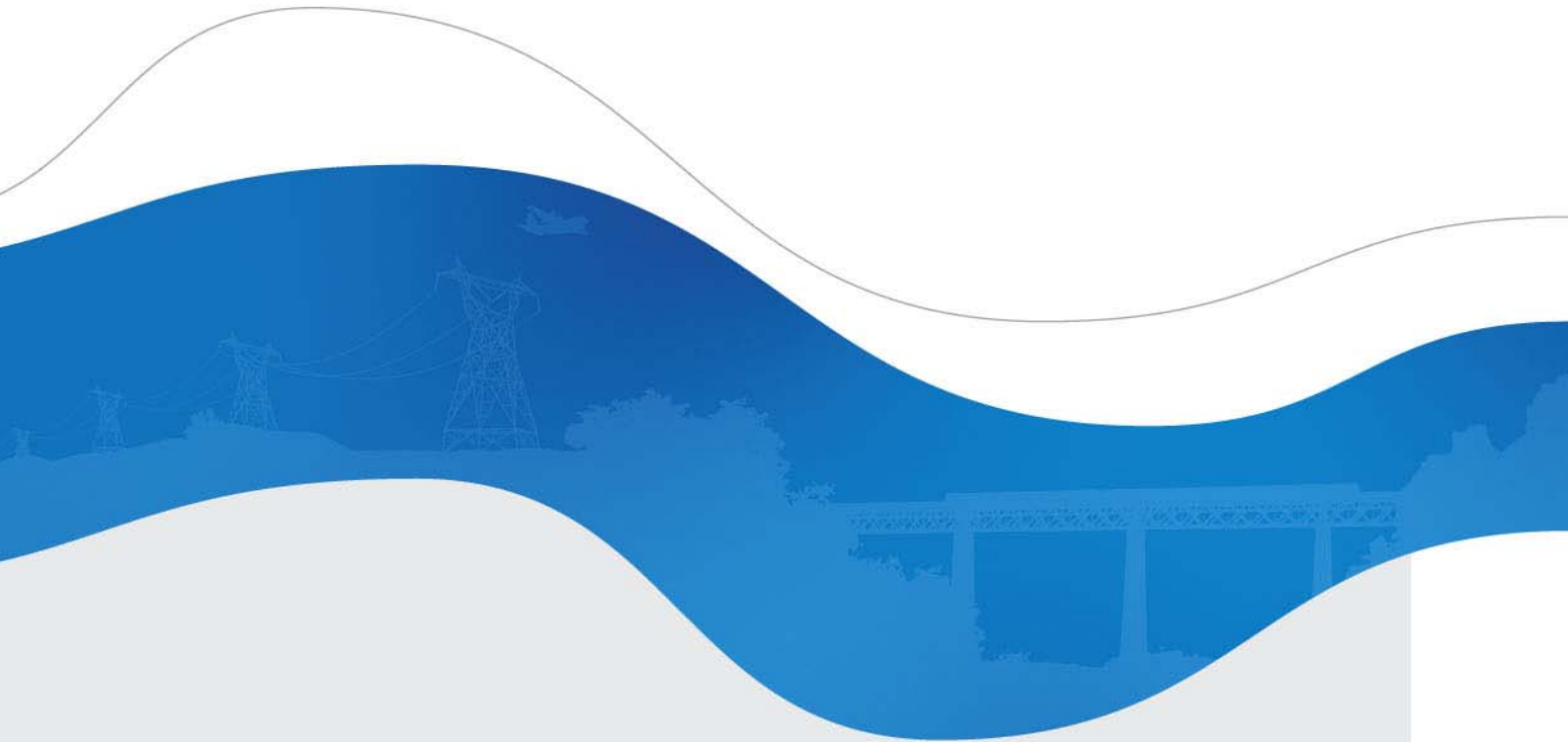
## Declaration of UCTE concerning the challenges and risks of integrating booming wind power into a reliable electricity system of continental Europe

The members of the Union for the Co-ordination of Transmission of Electricity (UCTE) support the development of Renewable Energy Sources (RES) as well as their integration into the European power systems. Currently, more than 70% of the wind power installed worldwide is integrated in the UCTE synchronous interconnected network of continental Europe. Until now, the integration of wind power could be managed without serious problems due to extra operational and technical measures taken by the Transmission System Operators (TSOs) at times of large-scale wind power generation. The integration of large amounts of wind power planned for the near future as announced in national targets or by individual legal entities can only be realised with additional capacity in the actual transmission infrastructure and additional reserve generating capacity.

These wind farms to be newly installed on-shore and off-shore will normally be built far away from the areas where the electricity demand is concentrated. Bulk transport of electricity over long distances will strongly increase. Due to the limited predictability of this intermittent generation the development of this RES is a very big challenge for TSOs in operating the European electricity system at the high quality level known to the European community today.

### *Grid and system adjustment*

It must be emphasized that the continuous and rapid expansion of wind power generation with a growing share of large scale off-shore projects requires significant equivalent grid expansion, improved system operation and control. Also more flexible generation (additional balancing and reserve power, start-up and shut-down ability of base-load units, etc.) is needed, as well as market arrangements and incentives compatible with these requirements. These infrastructural, operational and market challenges must be taken seriously and require a close co-operation of the organizations involved (e.g. renewable energy developers, market participants, regulatory authorities, governments) with the grid operators to ensure the security and reliability of the electricity system of continental Europe. >>>



### >>> *Reliability standards*

The members of UCTE have agreed upon a comprehensive collection of the relevant security and reliability standards and re-recommendations, referred to as the Operation Handbook. This Handbook becomes legally binding among the UCTE TSOs by a Multilateral Agreement (MLA) in which they assume their responsibility in operational network security and system integrity and express their willingness to safeguard interoperability of the respective transmission systems as well as their intention to act and to co-operate accordingly.

Notwithstanding their own responsibilities, the Parties to this MLA are seriously concerned about growing risks to operational security and system integrity of the European electricity system in the near future. These risks which are outside the sphere of influence of the TSOs are due to

- the unfavourable geographical spread and the increasing share of intermittent power generation which causes extensive long-distance energy transports. Additionally, these transports stress the existing congested regions and can detrimentally influence the secure operation of neighbouring grids,
- the increasing share of generation units fed by Renewable Energy Sources (RES) connected to the medium/low voltage level without legal relation to a TSO, so that the compliance of system requirements cannot be assured and needs extra attention within each national regulatory system.

Against this background, the Members of UCTE feel themselves responsible and obliged to inform the European Union and the national governments, as well as the community, about the growing risks arising from those situations and difficulties they are facing in order to maintain electric system security and reliability to meet the customers' high expectations.

### *The recommendations of UCTE are*

- a harmonized approach for studies of new technology for accommodation of new RES generation
- a European promotion scheme for RES taking account of the conditions of the transmission infrastructure
- compatible market arrangements required for permanently safe and stable power supply in Europe
- harmonization and synchronization of grid planning and RES expansion
- national rules and procedures expediting the process of granting licences and authorisation for new urgently needed high-voltage transmission lines and grid reinforcements

UCTE's member TSOs share the common aim to synchronize the expected expansion of RES with the adequate grid development with a view to ensuring sustainable and reliable electricity supply for the European industry and community. <<<

# 7

## INTEGRATION OF CENTREL SYSTEMS AND UCTE RECONNECTION: SUCCESS STORIES

Since the reconnection of both former UCTE zones on 10 October 2004, the UCTE interconnected system has been operated on stable conditions, providing thus a sound basis for further market development. As such, the reconnection was also a major building block for finalizing the Treaty of the Energy Community of South-East Europe signed in June 2005.

These achievements were in the focus of the Athens Forum and the international workshop »One Year After Reconnection – Experiences« held in Zagreb on 11 October 2005, where experts from Germany, Switzerland, Hungary, Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro and Romania shared their experience gained in terms of the impact of the reconnection on the power system as a whole.

Reconnection resulted in *many positive technical effects* in the South-East European part of the UCTE grid which can be summarized as follows:

- increased security of grid operation,
- improved voltage profile,
- increased frequency stability, and
- increased reliability and quality of electricity supply.

The major technical benefit of the reconnection derives from diminished technical congestion problems in the South-East European network, which is true both for tie lines and the individual grid parts of the respective TSOs in the South East of Europe.

>>>



>>> The reconnection has allowed for a *new direction for electricity flows*, namely from east to west, in addition to the north–south power flows that existed already before reconnection.

The additional transport capabilities from areas with power surpluses to power deficit areas helped load management.

Another important benefit after reconnection are increased opportunities for electricity trading, that stem from overall reinforced power system security and reliability.

Indeed, reconnection also had a *positive effect on the process of liberalization* in electricity markets in South-East Europe, by giving an impetus and swing to the process of market opening in the region.

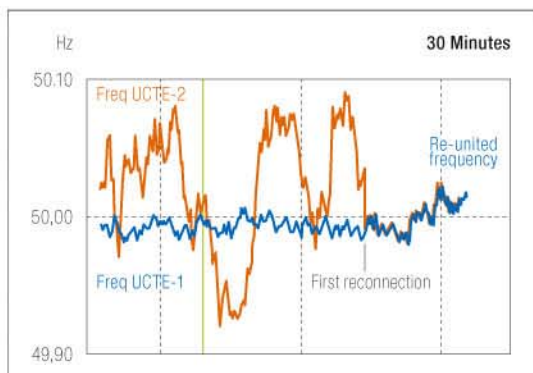
After the reconnection and enlargement of the UCTE interconnected system, the biggest technical challenge for TSOs will be an *effective monitoring and control of increased inter-area oscillations* within the UCTE network.

Efforts for *enhancement of system stability* will have to be made by additional analyses of potential nodes where existing PSSs (power system stabilizers) should be returned and where new ones should be installed. Furthermore, investigations will have to be carried out as to where new nodes for installation of WAMS (wide area measuring system) for efficient monitoring are required.

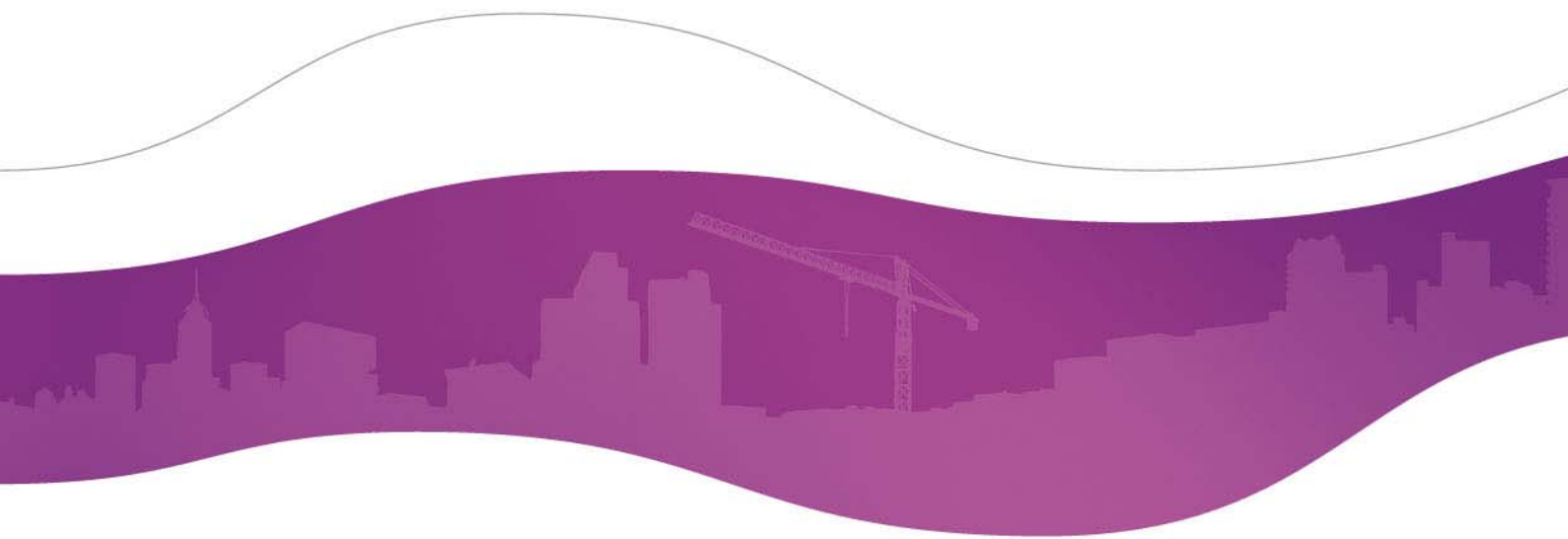
The experience gained from the reconnection process will be valuable for any further enlargement of the UCTE synchronous area.

A strong and reliable system is a prerequisite for developing unified electricity market which is crucial for further economic and political integration of the South-East region. Apart from its technical and economic effects, the reconnection is an *important political message*; it paves the way to the final common goal – a united Europe in all sectors, with electricity industry playing a pioneering role in the future single market of an enlarged Union.

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UCTE reconnection: frequency diagram



## UCTE reconnection: 10th Anniversary of Synchronous Intercon- nection of CENTREL – UCTE Networks

During a festive event in Warsaw on 17 –18 October 2005, hosted by PSE-Operator, the UCTE and CENTREL community commemorated the 10th anniversary of the historical step changing the »electrical« map of Europe.

The interconnection of the Czech, Hungarian, Polish and Slovak systems with the then-UCPTE networks on 18 October 1995 took place just several weeks after resynchronization of the separated power systems of the Federal Republic of Germany and the former German Democratic Republic together with West Berlin. As a matter of course, these achievements were only made possible as a result of the political changes which happened in Central and Eastern Europe in 1989.



Very soon after these changes, technicians and economists on both sides of the »iron curtain«, which for tens of years also divided Central Europe in the power sector, took the challenge of electrical interconnection between West and East. The high-voltage DC interconnections in operation or under construction in Austria and Germany had fulfilled their functions of the electrical bridge by then.

The first step towards achieving the synchronous interconnection of Central Europe was to electrically connect the divided parts of Germany. The island operation of West Berlin was finished in December 1993 between West and East Berlin, and in 1995 three new high-voltage lines were commissioned as a prerequisite for the Germany-wide interconnection on 13 September 1995. In-between, primary and secondary regulation of the East German system was upgraded to UCPTTE standards.

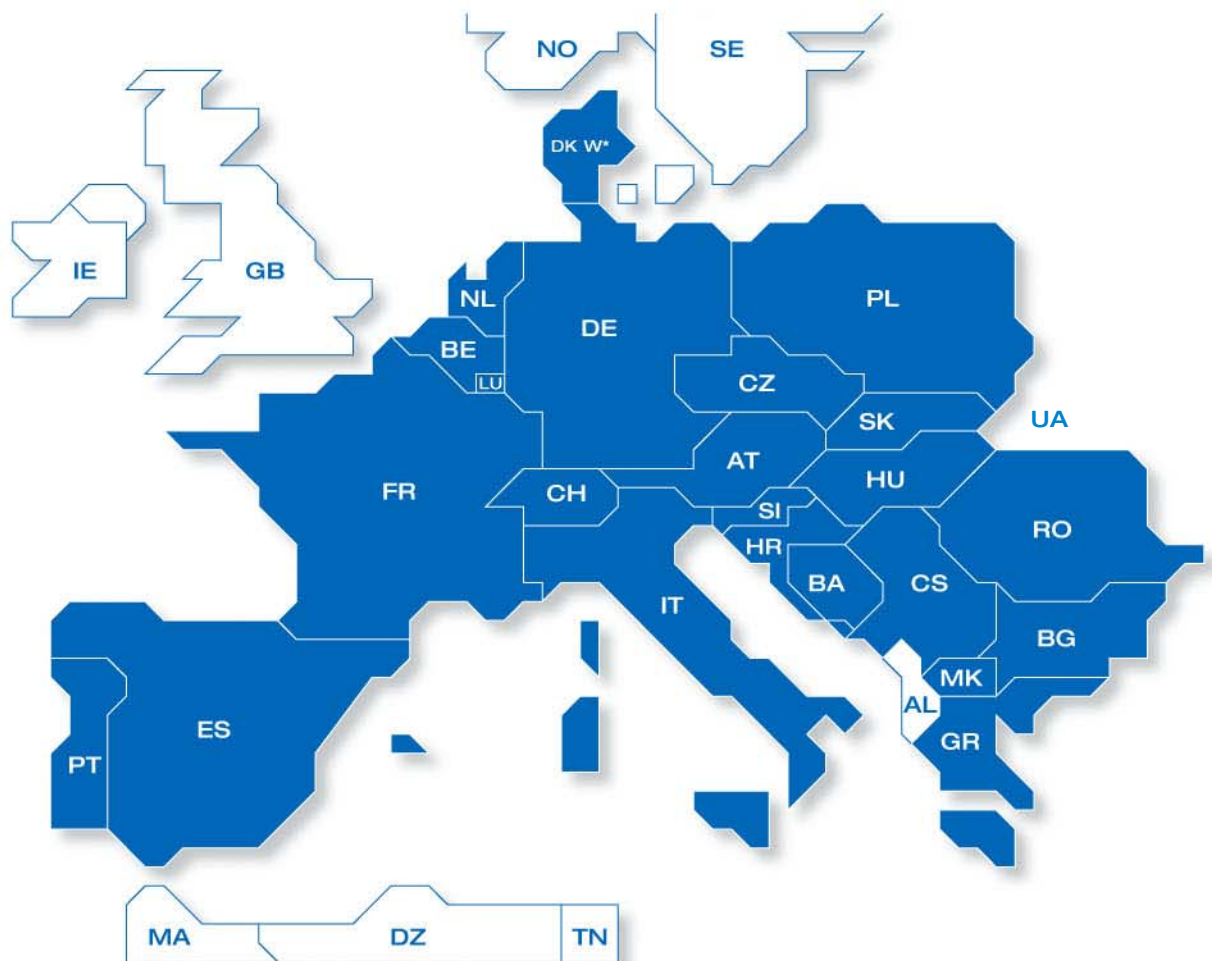
In parallel, four companies from the Visegrád group of countries – Czech Republic, Hungary, Poland and Slovak Republic, started their considerations to cease their synchronous operation with Eastern Europe and to join the UCPTTE system. After their founding of CENTREL on 11 October 1992, and signing the Catalogue of Measures by the eleven-sided UCPTTE/CENTREL Executive Committee, all activities carried out together with UCPTTE concentrated on the preparation of synchronous interconnection. Since November 1993, the IPS-CDO system had been divided into three zones, in one of which the Czech Republic, the eastern part of Germany, Hungary, Poland and Slovakia run their networks in parallel operation.

After fulfilling all requirements of the Catalogue of Measures, making considerable investments, and implementing technical and organizational measures which resulted in upgrading the national systems according to the UCPTTE rules, the CENTREL system was successfully synchronized with the UCPTTE grid on 18 October 1995. For the interim period of one-year trial operation, the accounting and controlling functions towards UCPTTE were performed by VEAG (eastern part of Germany) until the commissioning of the Energy Accounting and Control Centre (EACC) in Warsaw on 1st October 1996, which later assumed the permanent operation on 30 September 1996 after a successful one-year test period.

These achievements in the mid-nineties were topped by further steps of political and commercial success – Czech, Hungarian, Polish and Slovak TSOs became the founding members of UCTE in 2001, subsequently joined ETSO and all four countries became EU members on 1st May 2004.

The successful synchronization of the electrical systems pioneered, as well as in other cases, the economic and political integration of the countries involved. <<<

The European area covered by UCTE





## Member companies in UCTE as of 1st January 2006

Austria	APG TIWAG-Netz VKW-Netz	<i>Verbund – Austrian Power Grid AG TIWAG-Netz AG VKW-Netz AG</i>
Belgium	Elia	<i>Elia System Operator SA/NV</i>
Bosnia-Herzegovina	ISO BiH	<i>Nezavisni operator sustava u Bosni i Hercegovini</i>
Bulgaria	NEK	<i>Natsionalna Elektrieska Kompania EAD</i>
Croatia	HEP-OPS	<i>HEP-Operator prijenosnog sustava d. o. o.</i>
Czech Republic	CEPS	<i>CEPS, a.s.</i>
France	RTE	<i>RTE EDF Transport S.A.</i>
Germany	EnBW Transportnetz E.ON Netz RWE Transportnetz Strom VE Transmission	<i>EnBW Transportnetz AG E.ON Netz GmbH RWE Transportnetz Strom AG Vattenfall Europe Transmission GmbH</i>
Greece	HTSO/DESMIE	<i>Hellenic Transmission System Operator/ Diachristis Elinikou Sistimatos Metaforas Ilektrikis Energias</i>
Hungary	MAVIR ZRt.	<i>MAVIR Magyar Villamosenergia-ipari Rendszerirányító Zártkörűen Működő Részvénytársaság.</i>
Italy	Terna S.p.A	<i>Terna – Rete Elettrica Nazionale SpA</i>
Luxembourg	CEGEDEL Net S.A.	<i>Compagnie Grand Ducale d' Electricité du Luxembourg</i>
FYR of Macedonia	AD MEPSO	<i>Operator na elektroprenosniot sistem na Makedonija AD</i>
The Netherlands	TENNET	<i>TenneT bv</i>
Poland	PSE – Operator S.A.	<i>Operator Systemu Przesyłowego</i>
Portugal	REN	<i>Rede Eléctrica Nacional, S.A.</i>
Romania	Transelectrica	<i>C.N. Transelectrica S.A.</i>
Serbia-Montenegro	EPCG JP EMS	<i>Elektroprivreda Crne Gore JP Elektromreža Srbije</i>
Slovakia	SEPS, a.s.	<i>Slovenská elektrizačná prenosová sústava, a.s.</i>
Slovenia	ELES	<i>Elektro Slovenija</i>
Spain	REE	<i>Red Eléctrica de España S.A.</i>
Switzerland	ATEL BKW ÜTN EGL Grid EOS ETRANS NOK	<i>Aare-Tessin Ltd. for Electricity BKW Übertragungsnetz AG EGL Grid AG Energie Ouest Suisse ETRANS AG Nordostschweizerische Kraftwerke AG</i>
Denmark West	Energinet.dk*	<i>Energinet.dk</i>

\* Associate member



The Bureau, from left to right:  
Antonio Serrani † (IT), Vice-President  
Martin Fuchs (DE), President of UCTE  
Marcel Bial, Secretary General  
Gerard Maas (NL), Chairman  
of Steering Committee.

## Bodies

The decision-making bodies of UCTE are the Assembly consisting of all 33 members of UCTE and one associated member, and the Steering Committee with one representative from each of the 22 member countries represented in UCTE.

Within the Bureau representing the Association externally, President Martin Fuchs (Germany) served his second term until 31 December 2005. José Penedos (PT) took over the responsibilities as President on 1st January 2006. The Vice-President of the Association, Antonio Serrani (IT), the Chairman of the Steering Committee, Gerard Maas (NL), and the Secretary General, Marcel Bial were re-elected and re-appointed in their positions. <<<

## Secretariat

The Secretariat is led by Marcel Bial. The premises of the Secretariat are located in Brussels,

Boulevard Saint-Michel 15, B-1040 Brussels  
Tel. +32 2 741 69 40, Fax +32 2 741 69 49  
<http://www.ucte.org>  
E-Mail: [info@ucte.org](mailto:info@ucte.org)

The Secretariat is responsible for the assistance and support to the bodies of the association. Furthermore, it is responsible for the UCTE web site, the information system, all kinds of publication and the implementation of all the statistical and communication measures decided by the Steering Committee. <<<

## Working Groups

The 5 Working Groups composed of experts from the member companies, focus their activities on operations and security, system development, communication and European issues, statistics and legal issues. They are installed and entrusted with specific missions by the Steering Committee to which they report according to the Articles of Association. <<<



## National representatives in the Steering Committee as of 1st January 2006

All member countries are represented in the Steering Committee,  
which is the executive body of the association.

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AT *Heinz Kaupa*

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BA *Omer Hadzic*

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BE *Hubert Lemmens*

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BG *Mitju Christozov*

---

CH *Hans Peter Aebi*

---

CS *Dusko Tubic*

---

CZ *Petr Zeman*

---

DE *Wolfgang Neldner*

---

ES *Angel Landa*

---

FR *Pierre Bornard*

---

GR *Ioannis Theodorakopoulos*

---

HU *Antal Tombor*

---

HR *Ivica Toljan*

---

IT *Carlo Sabelli*

---

LU *Georges Bonifas*

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MK *Alexandar Sekerinski*

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NL *Ben Voorhorst*

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PL *Jerzy Dudzik*

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PT *Jorge Lica*

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RO *Octavian Lohan*

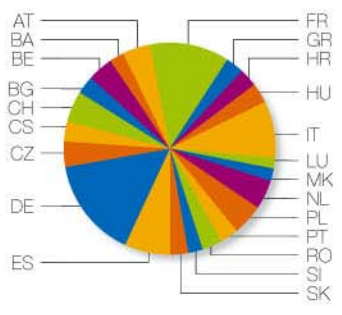
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SK *Alena Salamonova*

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SI *Gorazd Skubin*

## Organisational chart as of 1st January 2006

<i>Bureau</i>	<i>Assembly</i>	<i>Secretariat</i>
<ul style="list-style-type: none"> <li>– President: José Penedos (PT)</li> <li>– Vice-President: Antonio Serrani † (IT)</li> <li>– Chairman SC: Gerard Maas (NL)</li> <li>– Secretary General: Marcel Bial</li> </ul>	<p>33 TSOs from 23 countries</p> <p>President: José Penedos (PT)</p> <p>Voting rights as of May 2005:</p>  <p>DK – TSO as Assembly guest without voting rights</p> <p><i>Steering Committee</i></p> <p>1 representative per country</p> <ul style="list-style-type: none"> <li>– Chairman: Gerard Maas (NL)</li> </ul> <p><i>Subgroups</i></p>	<ul style="list-style-type: none"> <li>– Secretary General: Marcel Bial</li> </ul>
<p><i>Working Groups</i></p> <hr/> <p><i>Operations and Security</i> Convenor: Klaus Kleinekorte (DE)</p> <hr/> <p><i>System Development</i> Convenor: Georges de Montravel (FR)</p> <hr/> <p><i>Statistics</i> Convenor: Jacek Ratz (PL)</p> <hr/> <p><i>Liaison Advisory</i> <i>Interim</i> Convenor: Marcel Bial</p> <hr/> <p><i>Legal Issues</i> Convenor: Luigi De Francisci (IT)</p>	<ul style="list-style-type: none"> <li>– <i>Network Models and Forecast Tools</i></li> <li>– <i>TSO Forum</i></li> <li>– <i>Electronic Highway</i></li> <li>– <i>Medring</i></li> <li>– <i>Study Tool</i></li> <li>– <i>System Adequacy</i></li> </ul>	<p><i>Technical Committees/ Studies</i></p> <hr/> <p><i>IPS-UPS Study</i> Project Manager: Matthias Luther</p> <hr/> <p><i>EWIS (European Wind Integration Study)*</i> Interim Project Manager: Hubert Lemmens (BE)</p> <hr/> <p><i>TC Albania</i> Convenor: Antonio Serrani (IT)</p> <hr/> <p><i>TC Turkey</i> Convenor: Athanasios Koronides (GR)</p> <hr/> <p><i>SYSTINT**</i> Convenor: Georges de Montravel (FR)</p>

\* together with  
ETSO, NORDEL, UKTSO, ATSOI

\*\*joint Task Force  
UCTE/EURELECTRIC





## Abbreviations used

CENTREL	<i>Control block covering Czech Republic, Hungary, Poland and Slovakia</i>
CIS	<i>Commonwealth of Independent States</i>
CMEP	<i>Compliance Monitoring and Enforcement Process</i>
COMELEC	<i>Comité Maghrébin de L'Electricité</i>
EC	<i>European Commission</i>
ETSO	<i>European Transmission System Operators</i>
LEJSL	<i>Libya, Egypt, Jordan, Syria and Lebanon</i>
MLA	<i>Multilateral Agreement</i>
OH	<i>Operation Handbook</i>
PSS	<i>Power System Stabiliser</i>
R&D	<i>Research &amp; Development</i>
RES	<i>Renewable Energy Sources</i>
TEN	<i>Trans European Networks</i>
TSO	<i>Transmission System Operator</i>
UCPTE	<i>Union for the Co-ordination of Electricity Generation and Transmission</i>
UCTE	<i>Union for the Co-ordination of Transmission of Electricity</i>
UPS/IPS	<i>Unified Power System/Interconnected Power Systems (of CIS and Baltic Countries)</i>
WAMS	<i>Wide Area Measurement System</i>

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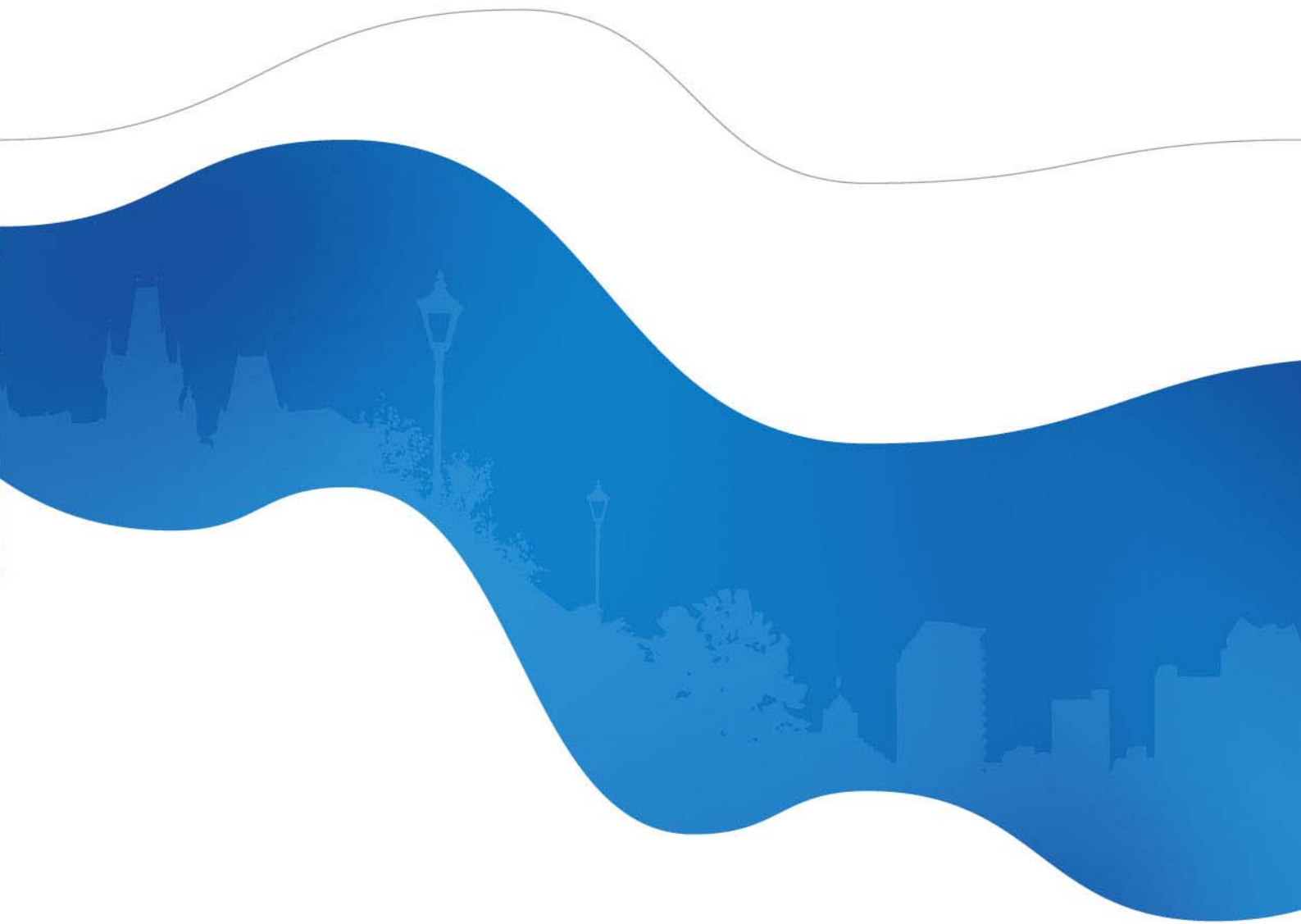
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