



**STATEMENT ON SECURITY OF ENERGY SUPPLY**

**REPUBLIC OF MACEDONIA**

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## LIST OF ABBREVIATIONS

CARDS	<i>COMMUNITY ASSISTANCE FOR RECONSTRUCTION, DEVELOPMENT, AND STABILISATION</i>
CEE	<i>CENTRAL AND EASTERN EUROPE</i>
CFCD	<i>CENTRAL FINANCING AND CONTRACTING DEPARTMENT</i>
TPES	<i>TOTAL PRIMARY ENERGY SUPPLY</i>
CPC	<i>COMMISSION OF PROTECTION OF COMPETITION</i>
CRES	<i>CENTRE FOR RENEWABLE ENERGY SOURCES AND SAVINGS</i>
DSO	<i>DISTRIBUTION SYSTEM OPERATOR</i>
ED	<i>ENERGY DEPARTMENT</i>
EA	<i>ENERGY AGENCY</i>
EBRD	<i>EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT</i>
EC	<i>EUROPEAN COMMISSION</i>
ECS	<i>ENERGY COMMUNITY SECRETARIAT</i>
ECT	<i>ENERGY CHARTER TREATY</i>
EE	<i>ENERGY EFFICIENCY</i>
EEAP	<i>ENERGY EFFICIENCY ACTION PLAN</i>
USAID	<i>UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT</i>
EPBD	<i>DIRECTIVE 2002/91/EC ON ENERGY PERFORMANCE OF BUILDINGS</i>
EPC	<i>ENERGY PERFORMANCE CONTRACT</i>
ERC	<i>ENERGY REGULATORY COMMISSION</i>
ESCO	<i>ENERGY SERVICE COMPANY</i>
ESIA	<i>ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT</i>
EU	<i>EUROPEAN UNION</i>
EUD	<i>EUROPEAN UNION DELEGATION</i>
GDP	<i>GROSS DOMESTIC PRODUCT</i>
GEF	<i>GLOBAL ENVIRONMENTAL FACILITY</i>
GHG	<i>GREENHOUSE GASES</i>
GIZ	<i>GERMAN AGENCY FOR INTERNATIONAL COOPERATION</i>
Government	<i>GOVERNMENT OF REPUBLIC OF MACEDONIA</i>
WtE	<i>WASTE-TO-ENERGY</i>
WTO	<i>WORLD TRADE ORGANISATION</i>
IEA	<i>INTERNATIONAL ENERGY AGENCY</i>
IPA	<i>INSTRUMENT FOR PRE-ACCESSION ASSISTANCE</i>

IRR	<i>Internal rate of return of an investment</i>
IT	<i>INFORMATION TECHNOLOGY</i>
Ktoe	<i>1000 tons of oil equivalent</i>
LSGUs	<i>LOCAL SELF-GOVERNMENT UNITS</i>
MACORA	<i>MACEDONIAN COMPULSORY OIL RESERVES AGENCY</i>
MANU	<i>MACEDONIAN ACADEMY OF SCIENCES AND ARTS</i>
MFA	<i>MINISTRY OF FOREIGN AFFAIRS</i>
MoE	<i>MINISTRY OF ECONOMY</i>
MoF	<i>MINISTRY OF FINANCE</i>
WB	<i>WORLD BANK</i>
Mtoe	<i>MILLION TONNES OF OIL EQUIVALENT</i>
NGO	<i>NON GOVERNMENTAL ORGANISATION</i>
WG	<i>WORKING GROUP</i>
NPV	<i>NET PRESENT VALUE OF THE CASH FLOW OF AN INVESTMENT</i>
OECD	<i>ORGANISATION OF ECONOMIC COOPERATION AND DEVELOPMENT</i>
PA	<i>PUBLIC ADMINISTRATION</i>
WtB	<i>WASTE-TO-BIOMETHANE</i>
PCA	<i>PARTNERSHIP AND COOPERATION AGREEMENT</i>
PCM	<i>PROJECT CYCLE MANAGEMENT</i>
PD	<i>PROJECT DIRECTOR</i>
PPP	<i>PUBLIC-PRIVATE PARTNERSHIP</i>
PSC	<i>PROJECT STEERING COMMITTEE</i>
QAS	<i>QUALITY ASSURANCE SYSTEM</i>
RE	<i>RENEWABLE ENERGY</i>
RES	<i>RENEWABLE ENERGY SOURCES</i>
RESMD	<i>REGIONAL ENERGY SECURITY AND MARKET DEVELOPMENT</i>
RES-H	<i>RENEWABLE ENERGY SOURCES – HEATING</i>
RUE	<i>RATIONAL USE OF ENERGY</i>
SAA	<i>STABILISATION AND ASSOCIATION AGREEMENT</i>
SC	<i>STEERING COMMITTEE</i>
SCM	<i>STEERING COMMITTEE MEETING</i>
SE	<i>SUSTAINABLE ENERGY</i>
SEA	<i>SECRETARIAT FOR EUROPEAN AFFAIRS</i>
TPP	<i>THERMAL POWER PLANT</i>
UN	<i>UNITED NATIONS</i>
UNDP	<i>UNITED NATIONS DEVELOPMENT PROGRAMME</i>
UNIDO	<i>UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION</i>



## 1. LEGAL REGULATION ON SECURITY OF SUPPLY

### 1.1 ENERGY LAW

#### Scope of the Energy Law

The Law on Energy (Official Gazette of Republic of Macedonia No. 16/2011, 136/2011, 79/2013, 164/2013, 41/2014, 151/2014, 33/2015, 192/2015, 215/2015, 6/2016, 53/2016 and 189/2016) is the primary piece of legislation that regulates the domestic energy sector. The Energy Law is presently updated within the framework of the EU/IPA Project for strengthening the administrative capacities of the Energy Department in the Ministry of Economy and the Energy Agency of Republic of Macedonia in order to be aligned with the prerogatives of the Third EU energy package on electricity and gas (Directives 2009/73/EC 2009/72/EC and Regulations (EC) 714/2009 and 715/2009), the Directive 2009/28/EC “on the promotion of the use of energy from renewable sources” and the Directives 2004/67/EC and 2005/89/EC.

The Energy Law governs:

- energy policy objectives and its enforcement;
- energy activities and the manner of regulation of energy activities;
- the construction of energy facilities;
- the status and competences of the Energy Regulatory Commission of the Republic of Macedonia;
- the electricity market;
- the natural gas market;
- the crude oil, oil derivatives and fuels for transport market;
- the heating energy market;
- energy efficiency requirements and the promotion of the use of energy from renewable sources; and
- other issues of importance in the energy field.

#### Objectives of the Energy Law

The Energy Law purports to ensure:

- securing reliable, safe and quality energy and energy fuel supply to consumers;
- establishment of an efficient, competitive and financially sustainable energy sector;
- encouraging competition on energy markets with respect for the principles of non-discrimination, objectivity, and transparency;
- integration of Republic of Macedonia's energy markets into the regional and international energy markets, pursuant to the commitments assumed under the ratified international treaties;
- increasing energy efficiency and promotion of the use of energy from renewable sources; and
- environmental protection from the adverse effects of particular activities in the energy field.

#### Objectives of the energy policy

In accordance with Article 9 of the Energy Law, the energy policy, which is set forth in the National Strategy on Energy Development, is geared towards securing:

- the reliable, safe and quality supply to consumers with all types of energy and energy fuels;
- the establishment of transparent and stable terms and conditions for competitive



and economically viable energy sector;

- the promotion of market competition in energy services provision, based on the principles of non-discrimination and transparency;
- the efficient service provision to consumers,
- the integration of the Republic of Macedonia's energy markets into the regional and international energy markets;
- the use of energy sources in a manner that provides sustainable energy development;
- the promotion of energy efficiency;
- the promotion of the use of renewable energy sources;
- the environmental protection from the adverse effects of energy activities performance;
- the fulfilment of commitments assumed under the ratified international documents; and
- measures aimed to protect citizens from energy poverty.

## 1.2. ENERGY REGULATORY COMMISSION

The **Energy Regulatory Commission** is the single legal entity that regulates issues pertaining to the performance of energy activities and which is an independent body in terms both of its operation and decision-making. The Energy Regulatory Commission (ERC) was established by the Law for amending the Energy Law (Official Gazette 94/2002) and became operational in 2003. The ERC is composed of five members, one of which acts as its president. The members and the president of the ERC are appointed and dismissed by the Parliament of the Republic of Macedonia, upon proposal of the Government of the Republic of Macedonia, after taking in consideration the adequate and just representation of all communities.

### Competences of the Energy Regulatory Commission

According to the Energy Law, for the purpose of securing the efficient, competitive and uninterrupted operation of energy markets, the ERC has the following competences:

- 1) to monitor the operation of energy markets, for the purpose of securing reliable energy and energy fuel supply;
- 2) to adopt regulations and tariff systems and to adopt or approve tariff-setting methodologies for regulated energy activities;
- 3) to adopt regulations, price setting, and tariff system methodologies on relevant energy type and/or energy fuel delivery to final customers;
- 4) to adopt decisions on prices and tariffs, based on relevant regulations, methodologies and tariff systems;
- 5) to adopt regulations on price-setting methodology for oil derivatives and fuels for transport and price-setting decisions for oil derivatives and fuels for transport, pursuant to the commitments assumed by the Republic of Macedonia;
- 6) to approve the Grid Codes adopted by the energy system operators, after taking into consideration of their compliance with the commitments the Republic of Macedonia has assumed under the international treaties or the commitments of the energy system operators stemming from their membership in international associations;
- 7) on the proposal from the relevant energy system operators, to approve the terms and conditions and connection and access charges for relevant transmission and distribution systems;
- 8) to adopt Electricity Supply Rules, Heating Energy Supply Rules, and Natural Gas Supply Rules;
- 9) to adopt Rules on Electricity Supply of Last Resort and Natural Gas Supply of Last Resort;

- 10) to adopt the Electricity Market Code and the Natural Gas Market Code;
- 11) when needed, to request relevant system operators or electricity market operator to change terms and conditions, tariffs, rules, mechanisms and methodologies governing the connection to, access to, balancing, or use of relevant systems or market;
- 12) to take decisions upon applications submitted for exemption from the obligation on allowing third party access to energy systems or new interconnection gas pipelines;
- 13) to keep the Registry of Preferential Generators and adopt decisions on awarding the status of preferential generator;
- 14) to take due care for the protection and promotion of rights of energy and energy fuel consumers and of energy system users;
- 15) to propose measures aimed to encourage competition on energy markets;
- 16) to stipulate the terms and conditions, manner and procedure and adopt decisions on issue, amendment, transfer, suspension, revocation and termination of separate energy activity licenses and to monitor the implementation of obligations stipulated in the energy activity licenses issued;
- 17) to approve transmission and distribution grid development and construction plans and monitor their timely adoption and implementation;
- 18) to approve and monitor the implementation of compliance programmes adopted by relevant energy system operators, by means of which they secure full legal, financial, management and operational independence of operation from the vertically integrated energy companies to which they belong, as well as from related energy companies;
- 19) to resolve disputes occurred between entities performing regulated energy activities and their users, including cross-border disputes;
- 20) to cooperate with competent state authorities, local self-government unit bodies, entities performing energy activities, energy users and other organizations and institutions;
- 21) to submit proposals to competent authorities on taking measures pursuant to their competences and in a procedure stipulated by law, against entities performing their activities in violation to the present law;
- 22) to raise initiatives and propose adoption of new and amendments to existing laws and other regulations in the energy field;
- 23) to participate in relevant regional and international organizations and cooperate with other regulatory bodies, for the purpose of contributing to development of regional energy markets, pursuant to the commitments assumed under the ratified international treaties;
- 24) to adopt the Book of Operation and other internal acts related to its operation; and
- 25) to perform other matters pursuant to a law.

### **Monitoring functions of the Energy Regulatory Commission**

Under the Energy Law, the ERC, for the purpose of securing efficient performance of its competences related to the operation of energy markets, is charged with the overall supervision of the energy sector by monitoring in particular:

- 1) the implementation of legally stipulated obligations of any entities performing regulated energy activities related to securing the reliability of electricity, natural gas and heating energy supply;
- 2) the operation of energy markets, for the purpose of securing their promotion, as well as for the purpose of securing non-discrimination, effective competition, transparency and efficient operation of markets;
- 3) the application of rules governing interconnection allocation and congestion management in the electricity and natural gas transmission systems, based on the commitments assumed by the Republic of Macedonia under the ratified international treaties;
- 4) the use of income generated from congestion management in the electricity and natural gas transmission systems;
- 5) the time needed by transmission and distribution system operators to perform connections and repairs;

- 6) the timely announcement of relevant information held by transmission and distribution system operators related to interconnections, grid use and capacity allocation to interested parties, taking due consideration of the need for individual information to be treated as commercially confidential;
- 7) the changes in the ownership structure of entities performing energy activities and submit proposals to competent state authorities on measures aimed to protect and promote competition on energy markets;
- 8) the application of tariff systems and stipulated tariffs;
- 9) the application of terms and conditions for connection of new generation facilities, taking due consideration of the costs and benefits related to different technologies on renewable energy sources, embedded generation and cogeneration of heating energy and electricity;
- 10) the operation of license holders as regards their obligations stipulated in the licenses issued;
- 11) the quality of services provided by license holders;
- 12) the effective unbundling of accounting records pursuant to the present law, for the purpose of avoiding cross-subsidies between energy o
- 13) r natural gas generation, transmission, distribution and supply activities and for the purpose of eliminating cross-subsidies between consumer groups and transfer of income and costs for the performance of regulated and/or non-regulated energy activities; and
- 14) the implementation of compliance programmes adopted by relevant energy system operators, by means of which they should secure full legal, financial, management and operational independence from the vertically integrated companies to which they belong, as well as from related energy companies, for the purpose of securing non-discrimination, transparency and objectivity in the operation of energy markets.

### 1.3. COMMISSION FOR PROTECTION OF COMPETITION (CPC)

The CPC is the competent authority for enforcing the Law on the Protection of Competition, which was adopted in January 2005. The CPC is an independent body in terms both of its operation and decision-making that has the status of a legal entity and which is composed of its President and four Members, who are appointed by the Parliament of the Republic of Macedonia for the period of 5 years. The President and at least two members of the CPC are professionally engaged in the CPS's work. Within the CPC the expert, normative legal, administrative, administrative-supervisory, financial, accounting, IT, and other activities of the CPC are performed by qualified supporting staff, who are organised in four departments (with two units in each department).

The basic competencies of the CPC are:

- to supervise the application of the provisions stipulated in the Law on the Protection of Competition,
- to monitor and analyse the conditions on the market (including the energy markets) to the extent necessary for the development of free and efficient competition,
- to conduct investigations; and
- to make decisions according to the provisions of the Law on the Protection of Competition.

In addition, from June 2006 the CPC is the competent authority for the monitoring and the control of state aid.

As such, the main responsibilities of CPC are:

- the appraisal of concentrations according to the Law on Protection of Competition;
- the appraisal of the compatibility of any proposed state aid according to the Law on State Aid Control;
- the investigation of any alleged anti-competitive practices; and
- the conduct of infringement procedures and the impositions of fines in cases of any restrictive agreements and/or any abuse of dominant position according to the

Law on Protection of Competition.

Additionally, the CPC provides written opinions upon draft laws and other acts that regulate issues pertaining to the economic activity and which may influence the competition on the domestic market. Furthermore, upon the making of any relevant request by the Parliament, by the Government of the Republic of Macedonia, by other state authorities, or by undertakings, or *ex officio*, the CPC may provide expert opinions on issues in the areas of competition policy, the protection of competition on the market and the granting of state aid.

#### 1.4. PUBLIC SERVICE OBLIGATIONS

An obligation on public service provision is defined in the Energy Law as one or more obligations imposed to the entities performing regulated energy activities for the purpose of public interest realization pursuant to the present law, and related to safety, including the reliability of supply, service affordability for users at all times, energy or energy fuel quality and price, services, as well as environmental protection, including energy efficiency and climate change protection.

As regards the description of a “*regulated energy activity*”, such an activity is defined as an energy activity by means of which the public service is provided and performed under terms and conditions, manner, prices and tariffs stipulated, i.e., approved by the Energy Regulatory Commission.

In the Energy Law, the following activities are regulated activities and the entities performing these activities are subject to public service obligations:

- electricity transmission;
- electricity market organization and operation;
- electricity distribution;
- natural gas transmission;
- natural gas transmission system operation;
- natural gas distribution;
- heating energy distribution;
- electricity supply of last resort; and
- natural gas supply of last resort.

Also, electricity generation for the needs of the electricity supplier of last resort is currently deemed regulated energy activity.

The Energy Law also states that entities performing regulated energy activities shall be obliged to comply with the obligations on public service provision. The Energy Regulatory Commission determines or approves the prices, terms, and conditions for public service provision. Any additional obligations on public service provision, imposed by the Energy Regulatory Commission, must be clearly stipulated, easily verifiable, and non-discriminatory, while such additional obligations should be determined in the relevant licence and published on the website of the Energy Regulatory Commission.

The Energy Law further stipulates that the services provided by entities performing regulated energy activities shall secure reliable, quality and uninterrupted energy and energy fuel delivery to consumers, under equal terms and conditions, prices and tariffs, after taking into consideration the need for energy efficiency improvements and environmental protection and promotion. The licence on the performance of a regulated energy activity must indicate the volume and contents of services stipulated under the present law, the service area where public services are provided, as well as the duration of the obligation on public service provision. In addition, prices and tariffs governing the provision of public service obligations should secure recovery of justifiable costs and reasonable return of capital for the entities performing regulated energy activities as regards their relevant public service provision, including the costs on efficient use of energy resources and environment protection and promotion.

It is also stated that, when the entities performing energy activities and being subject to an obligation on public service provision are awarded financial reimbursement, other form of reimbursement and/or exclusive rights, for the purpose of implementing the

obligations defined under the present law, this should be done in a transparent and non-discriminatory manner. Moreover, any reimbursements awarded must not exceed the costs incurred for the public service provision, decreased by the income generated from the service provision.

Furthermore, the Energy Law provides that the entities performing energy activities and being subject to the obligation on public service provision can be awarded state aid, pursuant to the State Aid Law. The legal entity performing one or more regulated energy activities cannot perform another energy activity or other activity, unless otherwise stipulated under the present law. In the cases when a legal entity performs one or more regulated energy activities or one or more energy activities and another energy activity or another activity, it shall be obliged to keep separate accounting for each regulated energy activity. For non-regulated energy activities or for other activities performed, the legal entity can keep consolidated accounting records. Added to this, a legal entity performing regulated energy activity is obliged to submit the Energy Regulatory Commission the audited annual financial reports and must publish them on its website. The relevant financial reports are required to be submitted and published for each regulated energy activity separately, whereas for non-regulated and other activities, the financial report submitted to the Energy Regulatory Commission can be forwarded in a consolidated form.

## 1.5. ELECTRICITY AND NATURAL GAS SUPPLIERS OF LAST RESORT

The Energy Law defines the Electricity Supplier of Last Resort and Natural Gas Supplier of Last Resort. **Electricity supplier of last resort** is an electricity supplier that provides the public service on electricity supply to households or small consumers in the cases stipulated under the law. **Natural gas supplier of last resort** is a natural gas supplier that provides the public service on natural gas supply to consumers connected to the natural gas system in the cases stipulated under the law.

Under the Energy Law the electricity supplier of last resort is obliged to secure supply to households and small consumers that have decided to be supplied by the supplier of last resort, for the purpose of exercising their right to electricity supply at all times, under reasonable and clearly comparable and transparent prices set by the Energy Regulatory Commission. The natural gas supplier of last resort is obligated to secure supply to consumers connected to the natural gas transmission or distribution system, for exercising their right to natural gas supply at all times, under reasonable and clearly comparable and transparent prices set by the Energy Regulatory Commission. Added to this, the suppliers of last resort are required to provide this public service and are obliged to secure electricity or natural gas supply to households or small consumers that have not signed contracts with any of the suppliers, or if their previous suppliers have discontinued the implementation of obligations assumed under the supply contracts. Lastly, it is stipulated that, in the case of electricity or natural gas supply of last resort to consumers, such supply shall be performed under approved and controlled prices that shall not prevent competition and normal operation of electricity and natural gas markets.

## 1.6. ENERGY SECURITY

The safeguarding of the security of energy supplies is one of the key aims of the Energy Law: Article 7 expressly states that reliability of the relevant energy type or energy fuel supply shall be secured, in particular, by means of:

- achieving supply and demand balance on the relevant energy type market;
- forecasting the level of expected future demand for a particular energy type and the possibilities to address the forecasted demand with the available energy sources and facilities;
- undertaking measures to construct new energy facilities;
- quality and high level maintenance of relevant energy type transmission and distribution grids; and
- measures to address peak loads and contingency measures in the cases of failure

to provide relevant energy type delivery.

The Energy Law further compels State authorities and entities performing regulated energy activities, as part of their stipulated rights, obligations and competences, to propose and undertake measures aimed to secure reliability of energy supply.

Also, the Energy Regulatory Commission is charged with the supervision of the compliance of entities performing regulated energy activities with the obligations on securing reliability of supply, and in its annual report is required to include data related to:

- reliability of the system operation;
- five-year energy balance;
- possibilities to secure reliable energy supply in the period of five to fifteen years after the year for which the report is prepared; and
- possible investments in interconnection capacities for the next five years.

## 1.7 ENERGY BALANCE

Article 12 of the Energy Law provides that the Government of the Republic of Macedonia by means of the energy balance for period of one (1) year as indicative plan document determines the total needs of energy and the need of certain types of energy, as well as the possibilities for their satisfaction from domestic generation and from imports. The energy balance is adopted by the Government of the Republic of Macedonia, on the proposal of the Ministry and upon previously obtaining the opinion of the Energy Regulatory Commission, by the end of each calendar year.

The Ministry of Economy, which is in charge of energy affairs, is responsible for monitoring the realisation of the energy balance for the current year, and, if necessary, can propose adequate measures to the Government of the Republic of Macedonia. Furthermore, as required by the Energy Law, the Minister of Economy has adopted the Rulebook on Energy Balances and Energy Statistics, which stipulates:

- ❖ the contents of energy balances;
- ❖ the contents, manner, and deadline for submission of data required for the development and monitoring of energy balances implementation;
- ❖ the contents, manner and deadline for submission of data required for the preparation of the Strategy on Energy Development and for the development and monitoring the outcomes of the Strategy's Implementation Program; and
- ❖ the bodies within the state administration and within the local self-government units, licence holders on energy activities, as well as energy and energy fuel final customers that will be required to submit data required for development and monitoring of energy balances implementation, as well as the deadlines on data submission.

The entities referred to in this Rulebook are obliged - in the request from the Ministry - to submit data for the development and monitoring of energy balances and data required for the preparation of strategies, programmes and reports on implementation programmes, whose adoption has been stipulated under the Energy Law.

## 1.8 ACTS FOR DECLARATION OF CRISIS

One of the principal priorities of the Government of Republic of Macedonia in the energy sector is connected with need to ensure the national goal of security of energy supplies and to tackle any unexpected event, which might jeopardise the reliability and security of energy supplies. For this purpose, Article 13 of the Energy Law states that, on the proposal from the Ministry, by means of an act, the Government of the Republic of Macedonia shall stipulate in detail:

- the criteria and terms and conditions for declaring emergency,
- the manner of relevant energy type supply under such circumstances,

- measures to be taken in cases of emergency, and
- the rights and obligations of license holders on energy activity performance, pursuant to the Law on Emergency Situation Management.

Moreover, in order to protect energy systems and secure reliability of relevant energy type supply in the Republic of Macedonia, the relevant energy or energy fuel transmission and distribution system operators are obliged, pursuant to this act, to develop contingency plans and submit them to the Ministry of Economy for approval.

It is further stipulated that any measures, which are necessary to eliminate any problems occurred and protect energy markets and energy systems of the Republic of Macedonia in emergency situations, should:

- be of temporary nature,
- last until the end of the emergency; and
- cause the least possible distortion to the energy markets operation in the Republic of Macedonia and in the region.

It is also provided that the Government of the Republic of Macedonia - in compliance with the commitments it has assumed under the ratified international treaties- must duly inform the neighbouring and any other countries that are, or can be, affected by any such emergency measures as well as any competent international institutions and bodies established under any ratified international treaties.

In line with Article 13 of the Energy Law, the Government of the Republic of Macedonia adopted the Ordinance on the criteria and conditions for the declaration of an electricity crisis, the manner of supply with electricity in these conditions, and the rights and obligations of the licence holder for performing energy activities (Official Gazette of Republic of Macedonia No. 53/2012). Pursuant to this Ordinance, the criteria on the basis of which an electricity crisis is to be declared are as follows:

- elements of the energy balance of Republic of Macedonia;
- published data for the available transmission capacity of the cross-border lines with the neighbouring countries;
- planned electricity needs in cooperation with the electricity market operator;
- forecasts for the electricity consumption;
- Grid code for transmission of electricity;
- Grid code for distribution of electricity;
- situation on the international electricity market, and
- the current situation of the generation and transmission facilities of the power system of Republic of Macedonia.

Also, in compliance with Article 13 of the Energy Law, the Government of the Republic of Macedonia adopted on 16 of October 2013 the Ordinance on the criteria and conditions for the declaration of a natural gas crisis, the manner of supply of natural gas in these conditions, the measures to be taken in the event of a crisis, and the rights and obligations of the licence holders for performing energy activities (Official Gazette of the Republic of Macedonia No. 143/2013). This Ordinance, which implements the provisions of the Directive 2003/55/EC concerning the specific customers (households) and protecting measures during the natural gas crisis, enumerates the protected natural gas consumers as follows:

- households;
- hospitals, clinics and special health institutions (first aid emergency stations, blood transfusion centres, dialysis centres and other health institutions)
- facilities of special interest to the economy, lives of people and defence of the country,
- care centres for elderly persons,
- kindergartens, and
- zoos.

It further sets the criteria for proclaiming crisis situation in supply of NG, namely:

- reduced import,

- extremely low temperatures in uninterrupted duration of five days,
- periods of extremely high consumption of gas during winter months.

Moreover, it obliges natural gas suppliers to lay down in the supply contracts they sign the minimal needed quantities of natural gas. For present purposes, minimal quantities are considered the contracted quantities between the suppliers and consumers. Moreover, the natural gas suppliers of protected consumers are obliged to inform the natural gas traders about the minimal quantities for protected consumers for the subsequent year not later than 1 October (in the current year).

The Ordinance on the criteria and conditions for the declaration of a natural gas crisis also provides for the establishment of a seven-member Commission for crisis situation in natural gas supply that must be set up by the Minister of Economy and which should regularly monitor the situation and recommends the proclamation of a crisis situation. In addition, it sets forth the procedure for the proclamation of a natural gas crisis situation and prioritise any proposed curtailment measures with the aim to ensuring:

- the reduction of natural gas supplies to consumers, who are directly connected to the transmission system,
- the reduction of natural gas natural gas supplies to maintain technical minimum (in the industry),
- the cessation of supplies to consumers, who are directly connected to the transmission system and who have alternatives sources of energy,
- the reduction of natural gas supplies to consumers that are directly connected to the transmission system to maintain minimal production in co-generation facilities (or technical minimum),
- the cessation of supplies to consumers, who are directly connected to the distribution network and who have alternatives sources of energy,
- the reduction of natural gas supplies to consumers that are directly connected to the distribution network to their technical minimum (except for protected consumers),
- the cessation of supplies to consumers natural gas are directly connected to the distribution network (except to those that use it for co-generation),
- the reduction of all NG supplies to the minimum levels of all consumers, except for the protected consumers, and
- the reduction of natural gas supplies to co-generation facilities.

Finally, this Ordinance specifies the rights and obligation of energy license holders in natural gas crisis situations. The most important of these obligations involves the preparation of management plans, which must be submitted by each relevant licence holder to the Ministry of Economy; the Ministry of Economy is then required to summarise these plans and to submit a consolidated crisis management plan to the Crisis Management Centre.

## 2. STRATEGY FOR ENERGY DEVELOPMENT

In April 2010, the Government of Republic of Macedonia adopted the Strategy for Energy Development to 2030 that defines the plan for ensuring the long-term development of the energy sector in order to provide a secure supply of energy to the consumers.

In order to meet the objective, the following priorities are identified:

- maintenance and modernization of the existing energy infrastructure;
- construction of new energy production, transmission and distribution facilities;
- improvement of energy efficiency;
- increased use of domestic resources (lignite and renewables);
- increased use of natural gas;
- establishment of economic market energy prices;
- integration of the Macedonian energy sector into the regional and European market of electricity and natural gas by constructing new interconnections; and
- harmonisation the legislation with the existing *acquis communautaire* for energy,



environment, competition and renewable energy sources.

The Strategy for Energy Development also defines:

- ❖ long-term objectives for security of energy supply;
- ❖ priorities for development;
- ❖ energy resources and facilities of strategic importance;
- ❖ long-term forecasts of investment needs for electrical generation, transmission, and distribution;
- ❖ facilities needed for ensuring that energy demand is met and security of supply is maintained;
- ❖ financial means for implementing the anticipated investment projects;
- ❖ incentives needed for increased energy efficiency;
- ❖ environmental protection measures to be enforced;
- ❖ fulfilment of commitments under international charters, agreements, treaties and conventions;
- ❖ energy market competition;
- ❖ protection of energy consumers; and
- ❖ international connection of the energy systems.

## 2.1. ENERGY DEVELOPMENT PROGRAMME

The Programme for the Realization of the Strategy for Energy Development 2013 - 2017 was adopted in March 2013. The document has been updated but is still in the draft form.

The programme reviews the energy policy of the Government of Macedonia and sets out the basic scenario for all the projects expected to be developed in the period together with the financial means that will be needed and the government departments responsible for their implementation. Where relevant, the latest projects are discussed in each of the electricity, natural gas and oil sectors below.

## 2.2. ENERGY CONSUMPTION IN THE PERIOD 2000-2015

Over the past 15 years, demand for oil products has increased by 30% and for electricity by nearly 70%. The continuing rise in the demand for these sectors has given increasing importance to the securing of these strategic supplies.

Ktoe	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Coal	104	95	69	138	90	109	136	182	146	68	113	338	128	195	98	99
Oil	670	587	686	689	707	726	715	776	751	741	837	866	859	874	856	950
Gas	7	26	32	30	32	33	34	34	31	29	41	43	23	27	33	31
Geothermal	15	21	12	12	11	9	9	9	8	9	10	11	9	8	7	7
Biomass	204	143	141	165	166	151	163	138	169	191	198	189	196	146	169	224
Electricity	448	432	428	490	496	536	554	580	593	550	583	644	602	584	578	569
Heat	153	132	136	128	122	127	118	107	103	99	54	57	52	44	40	46

Source: State Statistical Office

## 2.3 ENERGY DEMAND IN THE PERIOD 2015 - 2035

According to a recent MANU base line demand forecast for the next 20 years, by

2035 the demand for electricity and oil products will continue to rise and will be accompanied by a ten-fold increase in the usage of imported natural gas. With all oil products and a large proportion of electricity being imported and the production of indigenous lignite increasing only marginally, the implications for security of energy supply are apparent.

The increase in the usage of biomass and renewable energy will have only a marginal positive impact on the security of energy supply.

ktoe	2015	2020	2025	2030	2035
Coal	202	230	247	263	285
Oil	772	840	941	1060	1169
Gas	45	162	258	367	480
Renewables	13	13	16	20	24
Biomass	192	227	239	251	263
Electricity	611	638	702	758	786
Heat	56	52	55	58	58

Source: MANU baseline energy demand forecast for the year 2015-2035

### 3. MACEDONIAN POWER SYSTEM

#### 3.1. REGULATORY FRAMEWORK IN THE ELECTRICITY SECTOR

##### 3.1.1. Primary Legislation

On February 3, 2011, the Energy law was adopted (Official Gazette of Republic of Macedonia 16/2011). This key legal act regulates the legal environment for performing energy activities, including those relating to the electricity sector. The Energy Law has undergone several updates (Official Gazette of Republic of Macedonia 136/2011, 79/2013, 164/2013, 41/2014, 151/201433/2015, 192/2015, 2015/2015, 6/2016, 53/2016 and 189/2016), the most important of which for further purposes is its revision that was adopted by the Parliament on 13 October 2014 (Official Gazette of Republic of Macedonia 151/2014). This amendment set the pace of the opening-up of the domestic electricity market in the coming years. More specifically, in order to protect final consumers, the liberalisation of the electricity market is envisaged to be carried out on a step-by-step approach, which entails five phases stretching from July 1, 2016 to July 1, 2020, as follows:

- on July 1, 2016 the status of eligibility will be gained by small final customers with total electricity consumption in 2015 of over 1,000 MWh (more than 100 industrial customers will be included in this first stage);
- on July 1, 2017 eligible consumers will become those with total electricity consumption in 2016 of more than 500 MWh;
- on July 1, 2018 the status of eligibility will be given to small final customers with total electricity consumption in 2017 of over 100 MWh (about 900 customers will be free to select their suppliers in this phase);
- on July 1, 2019 eligible consumers will become those with total electricity consumption in 2018 of over 25 MWh (some 3.500 final customers will be included in this phase);

- on 1 of July 2020, the electricity market will be fully liberalised for households (approximately 600,000 households) and all the remaining electricity small customers (about 65 customers).

Electricity consumption has been selected as the most fitting criterion for dividing the classes of small final customers with the aim to determining the dynamics of getting the status of "qualified purchaser", who will be vested with the right to choose the supplier of electricity on the open market, for several reasons, such as:

- the availability of data and information division,
- the transparency of the procedure,
- the understandability and ease of communication,
- non-discrimination,
- the predictability of the resultant effects and of the potential risks,
- the stability of the regulated electricity sector,
- the prices for households, and
- the relevant European experience.

The adoption of this phased approach towards the liberalization of the electricity market has been necessitated by the urgent need to provide greater protection for households and small final customers because – in view of recent developments in the region's energy sectors and beyond - a considerable increase in the electricity prices on the open market is anticipated to occur. Besides, it needs to be reminded that over 47% of the domestic electric market has already opened up, which is much higher in comparison with other Contracting Parties to the Energy Community.

### 3.1.2. Secondary Legislation

The Energy Law requires the enactment of several pieces of secondary legislation in order to entirely implement its provisions and to fully define and refine the regulatory framework governing the performance of energy activities in the electricity market. In this respect, the Energy Regulatory Commission (ERC) played a pivotal role by continuing to adopt the legislative instruments, which are necessary for the further liberalization of the electricity (and natural gas markets). In the next paragraph, an outline is given of the secondary acts that have been put in effect in the last two years.

#### **Tariff system for sale of electricity to households and small customers**

On 17 February 2014, the ERC issued the Tariff system for sale of electricity to households and small customers, which was published in the Official Gazette of the Republic of Macedonia, No. 97/2014). Following the revisions of the Energy Law in 2014, the tariff system was subsequently amended by the ERC on 29 of July 2014 (published in the "Official Gazette of the Republic of Macedonia", No. 97/2014), and on 27 of November 2014 (published in the "Official Gazette of the Republic of Macedonia", No. 177/2014). This tariff System sets the elements for the calculation of sale prices of electricity to households and small customers in a liberalized electricity market, which also extends to households and small customers. In line with the 2014 amendments of the Energy Law, the latest revision of this Tariff system has gradually opened up the domestic electricity market under the following timetable:

- ❖ after 30 June 2016, for small customers who in 2015 had a consumption of over 1000 MWh,
- ❖ after 30 June 2017, for small customers who in 2016 had a consumption of over 500 MWh,
- ❖ after 30 June 2018, for small customers who in 2017 had a consumption of over 100 MWh,
- ❖ after 30 June 2019, for small customers who in 2018 had a consumption of over 25 MWh,
- ❖ after 30 June 2020, for households and all other small customers.

As a result of the issue of this tariff system, the rules for electricity supply to tariff customers, which was issued by the ERC in June 2011 ("Official Gazette of the Republic of Macedonia", No. 88/2011).

### **Rules for electricity supply**

ERC issued this rulebook on 30 of October 2015 ("Official Gazette of Republic of Macedonia", No. 191/2015), These rules specify the general conditions and terms and the manner of electricity supply and further lay down the relations, obligations and responsibilities of the suppliers of electricity, consumers of electricity, TSO and DSO.

More specifically these Electricity Supply Rules sets the procedure for supplier swithing on the open market, contractual relations between suppliers and consumers, dealing with complaints of consumers, providing conditions for single point of contact for consumers, etc. Also these Rules provide methodology for reimbursement of consumers if interruption of electricity occurs.

### **Rules for electricity supply for last resort**

ERC adopted this Rulebook on 13.11.2012 and was published in the Official Gazette of Republic of Macedonia No. 144/2012. The Rulebook, which was amended in 2013 ("Official Gazette of Republic of Macedonia", No 91/2013 and on 27 of November 2014 ("Official Gazette of Republic of Macedonia" No. 177/2014), sets the rules governing the electricity supply of last resort by specifying the general conditions and the manner of electricity supply to households and small final customers, who have opted to be supplied by the electricity supplier of last resort as well as by delineating the relations, obligations and responsibilities of the electricity supplier of last resort, households and small final customer and of the electricity distribution system operator. The 2014 amendment postponed the entry into force of this Rulebook to 1 July 2016.

### **Rules on allocation of cross-border transmission capacities of JSC MEPSO Skopje**

AD MEPSO, in its capacity as the electricity transmission system operator, prepared the Rules on the allocation of cross-border transmission capacities. On 13 October 2016, the ERC issued a Resolution, which approved these rules that were also published in the "Official Gazette of the Republic of Macedonia", no. 195/2016. among other things:

- define the manner of calculating available interconnection capacity,
- specify the manner of awarding interconnection transmission capacity, after taking into due consideration any electricity transmission system congestions,
- detail the manner of payment for the use of interconnection transmission capacities in cases of congestions in the electricity transmission system and interconnection lines, and
- stipulate the manner of data publishing.

### **Electricity Market Rules**

In compliance with Articles 27 and 73 of the Energy Law, the ERC issued on 13 October 2016, the Amendments of Electricity Market Rules ("Official Gazette of Republic of Macedonia", No.190/16), which introduced market based methodology for procurement of ancillary services and transparent methodology for calculation of price for imbalances.

### **Tariff system for sale of electricity to small customers connected to the distribution system in the ownership of JSC ELEM – Skopje**

Following the 2014 amendments of the Energy Law, the ERC issued on 29 July 2014 the Tariff system for sale of electricity to small customers connected to the distribution system in the ownership of JSC ELEM – Skopje ("Official Gazette of Republic of Macedonia" No. 113/2014), which repealed the earlier Tariff system for distribution of electricity for the customers connected to the distribution system in ownership of AD ELEM – Skopje (issued by the ERC on 23.02.2012, published in the "Official Gazette of the Republic of Macedonia", no. 27/12). These rules, which were subsequently revised on 27 November

2014 ("Official Gazette of the Republic of Macedonia", No. 177/2014) specify the manner and conditions for the setting and approval of the tariffs for the calculation elements for distribution of electricity to small customers connected to ELEM's distribution system, by which ELEM invoices its customers for its system's use. The tariffs for the calculation elements provide for ELEM (as a Distribution System Operator) to realise the regulated maximum revenue, as determined by the ERC's decision in accordance with the Rulebook on the manner and conditions for determination of regulated maximum revenue and regulated average tariffs for transmission, organization, and operation of the electricity market and distribution of electricity ("Official Gazette of Republic of Macedonia", no.21/11 and 168/11), as amended on 31.10.2012 ("Official Gazette of the Republic of Macedonia", No. 135/2012). Moreover, the latest amendment of this Tariff system, which was adopted on 27.11.2014 ("Official Gazette of the Republic of Macedonia" No. 177/2014), introduced a gradual timetable for the free selection of the electricity supplier by the small customers and households until 30 June 2020.

### **Grid code for distribution of electricity of EVN Macedonia JSC Skopje**

According to Articles 77 and 193 of the Energy Law, EVN Macedonia AD Skopje, as Distribution System Operator, in previous years has adopted several changes of the Distribution Grid Code upon the approval of the Energy Regulatory Commission. Most of the changes were in favour of the customers and they were connected in shortening the time for construction of the connection to the grid and physical connection to the grid.

### **Tariff system for distribution of electricity to customers connected to the distribution system of EVN Macedonia, SAC Skopje**

In line with Article 25, paragraph 1 of the Energy Law, the ERC issued on 28 of February 2014 the Tariff system for distribution of electricity to customers connected to the distribution system of EVN Macedonia ("Official Gazette of the Republic of Macedonia", No. 42/2014). This Tariff system, which replaced the Tariff system for distribution of electricity, which was issued by the ERC in 2012 (and was revised in 2013), sets the calculation elements and the methodology for the setting of tariffs for using the electricity distribution system that the DSO charge the users of the distribution system.

## **3.2. KEY MARKET PARTICIPANTS AND THEIR RESPONSIBILITIES (ELECTRICITY MARKET)**

One of the principal goals of the electricity market model in Macedonia is to promote and enhance the competition in the domestic electricity sector on the basis of the principles of non-discrimination, objectivity and transparency. For this purpose, the further liberalisation of the electricity market has been carefully planned so as to safeguard the reliable operation of the electricity sector and to secure the provision of adequate electricity supplies, while in parallel, protecting households and small final customers from any unexpected steep increase in electricity prices.

Added to this, another objective revolves around the need to strengthen the integration of the national electricity sector into the regional and international energy markets in accordance with the obligations undertaken by the Republic of Macedonia under ratified international agreements, such as the Treaty establishing the Energy Community. To this end, the electricity market model is geared towards providing sufficient flexibility to interface with market designs considered in the region and to fit well in the regional market and the European electricity internal market. In this respect, the Electricity Market Design Plan is based on the adoption of a gradual approach for opening-up the Macedonian electricity so that the taking of each successive step will allow final customers, as well as the electricity sector as a whole, to capture the greatest gains with the least risk and at the lowest implementation cost.

In what follows, we shall present in brief the essential attributes of the Key Market Participants. These are as follows:

**JSC ELEM** is the major electricity producer in the country, which is also subject to the obligation to provide public service by means of electricity generation aimed to address the demand of households and small consumers, who are supplied by the electricity supplier of last resort. For this purpose, by 30 November in the calendar year the latest, the producer and the electricity supplier of last resort is compelled to submit for approval to the Energy Regulatory Commission the electricity purchase and sale contracts for the next year, whose duration cannot be shorter than one calendar year. The aforementioned contract shall specify in particular:

- 1) the manner of harmonizing the planned electricity delivery by the generator and the demand of consumers supplied by the supplier of last resort for each month of the year, based on the annual forecasts developed by the supplier of last resort;
- 2) the manner of daily harmonization of the planned electricity delivery by the generator and the demand of consumers supplied by the supplier of last resort for each hour of the following day, based on the detailed forecasts developed by the supplier of last resort and taking due consideration of the availability and optimal use of generator's generation capacities;
- 3) the manner and procedure on exchange of data, changes to and harmonization of quantities agreed on monthly, daily and hourly level;
- 4) the price under which the supplier of last resort shall purchase the electricity, as approved by the Energy Regulatory Commission, and
- 5) mutual rights and obligations of the generator and the supplier in the case of the situation where there is an issue securing reliability of supply to households and small consumers.

Upon meeting the demand of small consumers and households, JSC ELEM, as an electricity producer who is also subject to the public service obligation to act as the electricity supplier of last resort, can sell the excess electricity on the electricity market pursuant to the rules previously approved by the Energy Regulatory Commission. In this dual capacity, ELEM is obliged:

- 1) to secure availability of agreed energy and/or ancillary services at the receipt point in the transmission or distribution system, pursuant to its licence;
- 2) to operate in compliance with the laws, other regulations, as well as Transmission Grid Code or Distribution Grid Code, Market Code and the terms and conditions stipulated in the licences;
- 3) to submit reports, data and information to the Energy Regulatory Commission, pursuant to the terms and conditions stipulated in the license;
- 4) to submit reports, data and information to the electricity transmission system operator or distribution system operator, pursuant to the Transmission or Distribution Grid Code;
- 5) to submit the electricity market operator and the electricity system operator data and information on electricity purchase and sale contracts, the availability of generation capacity and/or ancillary services, except for commercial and financial data, pursuant to the Market Code; and
- 6) to secure electricity for its own consumption from its facilities or on the open market.

In addition to the obligation stipulated above, ELEM, in its capacity as an electricity producer who is also required to act as the electricity supplier of last resort, is further obligated:

- 1) to submit the Energy Regulatory Commission financial reports, pursuant to the provisions of the Energy Law; and
- 2) to keep separate accounting records for the sales made to the supplier of last resort and the sales of electricity and ancillary services on the market, as well as

to maintain the entire documents and records and to enable access thereto, on the request from the Energy Regulatory Commission.

**JSCMEPSO**—JSCMEPSO is both the electricity transmission system operator (TSO) and the market operator of the Republic of Macedonia. In its capacity as the transmission system operator, MEPSO is the owner of the electricity transmission system and is responsible for the maintenance, planning, expansion and construction of the transmission network.

As a transmission system operator, MEPSO is obliged:

- 1) to secure the reliable and safe operation of the electricity transmission system of the Republic of Macedonia, pursuant to the applicable regulations that stipulate the technical rules;
- 2) to secure safe, reliable and quality electricity transmission through the transmission grid of the Republic of Macedonia, in a non-discriminatory and transparent manner and under stipulated quality;
- 3) to connect generators, consumers and distribution system operators to the transmission grid, as well as to allow third party access for electricity transmission system use, pursuant to the present law and the Transmission Grid Code, and based on the principles of objectivity, transparency, and non-discrimination;
- 4) to construct new interconnection capacities with the neighbouring countries, taking due consideration of the efficient use of existing interconnection capacities and the balance between investment costs and benefits for the consumers;
- 5) to provide cross-border electricity flow through the transmission grid of the Republic of Macedonia within the available transmission capacity;
- 6) to develop, upgrade and maintain the transmission system, for the purpose of safe and efficient system operation, pursuant to the applicable regulations that stipulate the technical rules and to provide long-term system ability to address the reasonable electricity transmission demand;
- 7) to develop the grid maintenance plan pursuant to the Transmission Grid Code, and submit it to the Energy Regulatory Commission and publish it on the operator's website;
- 8) to provide real-time management of electricity flows, by taking due consideration of electricity generation in the Republic of Macedonia, declared import, declared export and declared transit through the transmission system of the Republic of Macedonia, based on the nominations submitted by market participants to the electricity market operator, pursuant to the Electricity Market Code;
- 9) to provide concurrent operation of the electricity system of the Republic of Macedonia and the neighbouring electricity systems, as well as exchange of data with the operators of other electricity transmission systems pursuant to the commitments the Republic of Macedonia has assumed under the international treaties or the commitments of the operator stemming from its membership in international associations;
- 10) to publish data on available transmission capacities at interconnection lines with the neighbouring systems, for the purpose of securing non-discriminatory, objective and transparent access to and use of the electricity transmission system;
- 11) to install and maintain metering devices at all metering points on the receipt and delivery points in the transmission system;
- 12) to meter electricity at the receipt and delivery points in the transmission system and submit metered data to relevant transmission system users and to the market operator;
- 13) to purchase electricity to cover losses in the electricity transmission system, under market terms and conditions and in a transparent, non-discriminatory and competitive manner, pursuant to the Electricity Market Code;

- 14) to purchase ancillary services and relevant operation reserve, under market terms and conditions and in a transparent, non-discriminatory and competitive manner, pursuant to the Electricity Market Code;
- 15) to address peak loads in the transmission system, pursuant to the Transmission Grid Code;
- 16) to balance deviations between the actual and planned electricity consumption in real time, pursuant to the Electricity Transmission Grid Code;
- 17) to provide transparent and non-discriminatory application of balancing procedures to announced and realized electricity market transactions and service billing and collection;
- 18) to establish the required changes to the schedule and time of engagement of generation facilities and electricity purchase in cases of risks to the reliability of electricity supply, outages or major deviations in electricity consumption from the anticipated quantities;
- 19) to allow users access to metering devices owned by the operator, pursuant to the present law and Transmission Grid Code;
- 20) to secure confidentiality of commercial and business data of system service users; and
- 21) to cooperate with electricity transmission system operators and relevant associations, pursuant to the commitments assumed under the ratified international treaties or the commitments assumed by accessing to international organizations.

**JSCMEPSO**, in its capacity as the **electricity market operator**, is responsible for the electricity market organization and management and the market's efficient operation and development, pursuant to the principles on publicity, transparency, non-discrimination and competitiveness and it is further obliged to provide the services falling under its competences, pursuant to the law and the terms and conditions stipulated in the license. The electricity market operator is subject to several duties, such as:

- to prepare and submit to the electricity transmission system operator the information required for the development of dispatching schedules, pursuant to the Electricity Market Rules.
- to keep the records on electricity physical transactions, based on the information on electricity purchase/sale and transit transactions submitted by electricity market users; and
- to secure confidentiality of commercial and business data that the electricity market participants are obliged to submit.

**JSC EVN** Macedonia is another major player in the domestic electricity market who acts as an electricity supplier of last resort and electricity supplier of tariff consumers. In its capacity as **an electricity supplier of last resort**, JSC ENV Macedonia purchases electricity to address the demand of households and small consumers, who have decided to be supplied by the supplier of last resort. The Energy Law provides that the purchase prices and relevant contracts with the producer that performs public service obligation are approved by the Energy Regulatory Commission.

For the purpose of addressing the demand of its consumers, EVN Macedonia, as an electricity supplier of last resort, is required to secure the necessary transmission and/or distribution capacity, as well as the services of the electricity market operator. Furthermore, it is obliged to invoice its consumers for the electricity delivered and services provided pursuant to the Tariff System on electricity sale to households and small consumers. On the other hand, it is entitled to purchase electricity at the market and under market, prices provided that:

- 1) market terms and conditions and market prices are more favourable compared to terms and conditions and prices set for the generator referred to in Article 66 from the present law; or
- 2) at given periods, the electricity generated by JSC ELEM, in its capacity as an



electricity supplier of last resort, does not suffice to meet the electricity demand of households and small consumers.

The Energy Law also stipulates that - to the extent necessary in the light of securing reliability of supply to households and small consumers - on the request from the supplier of last resort and by means of a decision, the Energy Regulatory Commission can temporarily charge another market participant that holds the obligation on public service, provision to purchase electricity for the households and small consumers for a period determined in the decision. The supplier of last resort must provide evidence in support of its inability to purchase electricity in a manner in which it secures reliability of supply. The Energy Regulatory Commission can revoke this decision as soon as it has determined that the reasons for its adoption do no longer exist.

**EVN Elektrodistribucija Ltd**, in its capacity as a **distribution system operator**, legally unbundled from EVN Macedonia starting from 1<sup>st</sup> of January 2017 is responsible for the maintenance, upgrade, expansion, and operation of the distribution system used to perform its activity, and shall be obliged to secure its connection to the electricity transmission system. As such, it is responsible for the long-term electricity distribution system development planning in the area where it performs the activity. Pursuant to the Energy Law, an electricity distribution system operator is obliged:

- 1) to secure safe and reliable operation of the distribution system, pursuant to the applicable regulations that stipulate the technical rules;
- 2) to secure reliable, safe and quality electricity distribution and delivery through the distribution system it operates, in a non-discriminatory and transparent manner and under stipulated quality;
- 3) to connect generators and consumers to the distribution system, as well as to allow third party access for distribution system use, pursuant to the present law and the Distribution Grid Code, and based on the principles of objectivity, transparency and non-discrimination;
- 4) to develop, upgrade and maintain the distribution system, pursuant to the applicable regulations that stipulate the technical rules, and to provide long-term system ability to address the reasonable electricity distribution demand;
- 5) to develop the grid maintenance plan pursuant to the Distribution Grid Code, and submit it to the Energy Regulatory Commission;
- 6) to harmonize operations in the distribution system with the electricity transmission system operator;
- 7) to purchase electricity and ancillary services to cover the losses in the distribution grid, under market terms and conditions and in a transparent, non-discriminatory and competitive manner, pursuant to the Electricity Market Code;
- 8) to meter electricity received from generators and the electricity transmission system and energy delivered to consumers connected to the distribution system, as well as to submit metered data to the generators, suppliers, or traders, and to the market operator;
- 9) to allow users access to metering devices owned by the distribution system operator, pursuant to the present law and Distribution Grid Code;
- 10) to prepare reports on the financial and actual volume of planned and realized services and to submit them to the Energy Regulatory Commission in a manner and under terms and conditions and within deadlines stipulated in the license;
- 11) to keep the dispatch log, records on the communication systems reliability, data from the supervision and operation system, metered data, to keep such data, logs, and records for at least ten years; and
- 12) to secure confidentiality of commercial and business data of distribution system users.

The Energy also states that the distribution system use charge shall be settled by electricity consumers connected to the distribution grid. The electricity distribution

system operator must invoice the electricity distribution system use charge to consumers connected to the electricity distribution system, as well as the electricity transmission system, use charge, pursuant to the published tariffs. As an exception from this, the electricity distribution system operator can sign contracts with electricity suppliers or traders by means of which it shall authorise them to collect the charges.

Another important participant in the national electricity market is **JSCNegotino**, which is an electricity producer that can sell electricity and/or ancillary services to domestic and foreign traders, electricity suppliers, electricity transmission system operator and electricity distribution system operators. Being an electricity generator, JSC is obliged under the Energy Law:

- 1) to secure availability of agreed energy and/or ancillary services at the receipt point in the transmission or distribution system, pursuant to the license;
- 2) to operate in compliance with the laws, other regulations, as well as Transmission Grid Code or Distribution Grid Code, Market Code and terms and conditions stipulated in the licences;
- 3) to submit reports, data and information to the Energy Regulatory Commission, pursuant to the terms and conditions stipulated in the licence;
- 4) to submit reports, data and information to the electricity transmission system operator or distribution system operator, pursuant to the Transmission or Distribution Grid Code;
- 5) to submit the electricity market operator and the electricity system operator data and information on electricity purchase and sale contracts, the availability of generation capacity and/or ancillary services, except for commercial and financial data, pursuant to the Market Code; and
- 6) to secure electricity for own consumption from its facilities or on the open market.

Since JSCNegotino uses mazut as fuel for electricity generation, it is obliged to dispose at all times with operation reserves of mazut in the quantity equal to at least fifteen-day operation demand under maximum operation capacity.

Currently, JSCNegotino is engaged by JSC ELEM for electricity production, power and ancillary services and as a reserve in the power system.

Under the domestic electricity market model, other important players are:

- **electricity suppliers**, who can shall purchase electricity in the country and from abroad, for the purpose of selling it to consumers, traders, other suppliers, the electricity transmission system operator or the electricity distribution system operators, as well as to customers abroad; and
- **electricity traders**, who can purchase electricity in the country and from abroad, for the purpose of selling it to other traders, suppliers, the electricity transmission system operator and electricity distribution system operators, as well as for selling it to customers abroad.

### 3.2.1. System Balancing Mechanism

The Energy Regulatory Commission of Republic of Macedonia in October 2016 adopted the Amendments of Electricity Market Rules, (“Official Gazette of Republic of Macedonia”, No. 190/2016). One of the novelties introduced with the Market Rules refers to the procedures for calculating of the imbalances of the nominated and realized transactions based on the data from the measurements made by the transmission system operator and the distribution system operators.

The Electricity Market Rules, among other things, stipulate that:

- every participant on the electricity market will have balance responsibility under which it shall be obliged to submit to the TSO sufficient information that is included in the relevant bilateral transactions in order to ensure the reliable, secure, and stable operation, work, and balance of the national power system; and
- all participants in the electricity market must undertake financial responsibility for the influence of their actions with the view to safeguarding the confident, safe, and

economic working, management and balance of the power system of Republic of Macedonia.

The duration of the trade interval and the interval of settlement must occur within one (1) hour.

For the purpose of ensuring that the participants on the electricity market will reduce the expenses that may occur due to imbalances on an hourly level, the Electricity Market Rules envisage that the participants on the electricity market can form balance groups freely on personal selection and based on bilateral or multilateral agreements. A balance group may be composed of only one participant on the electricity market. Every balance group has its own balance responsible party (BRP), which represents the balance group and submits all of the necessary data to the corresponding operators. Every BRP submits physical schedules to the TSO (JSCMEPSO) and the electricity market operator (JSCMEPSO) so that electricity generation and purchase, including electricity imports for the hour of the physical schedule, correspond to the consumption and sale, including the export of electricity made by every member of the balance group and for which the relevant BRP undertakes the balance responsibility. Each BRP has financial responsibility for every imbalances of its balance group that occurred as difference between the planned and realized generation, consumption, purchase, sale, import, and export of electricity. The rights and financial obligations among the members of the balance group are regulated with mutual agreement.

Each BRP for its balance group is required to submit physical schedules for every hour to the TSO and the electricity market operator. The submitted physical schedules can be changed at latest 1 hour to the real hour for which they refer which is another facilitating circumstance in the process of implementation of the calculation of imbalances on an hourly level. The submitted data of the physical schedules present the basis for calculation of any imbalances.

Pursuant to the Electricity Market Rules, the Operator of the electricity distribution system (EVN Elektrodistribucija) is obliged to prepare standard daily load curves for the consumers that do not have installed meters with possibility for hourly metering and remote reading and to submit them to the TSO and the electricity market operator upon previously obtaining the approval of the Energy Regulatory Commission.

The calculation of the imbalances is effected pursuant the Methodology for calculation of the fee for the services for balance of the Market Rules. More specifically, the imbalances of BRS ( $E_{IMB}$ ) are determined on the basis of the difference between the aggregated (in absolute value) nominated (physical schedules) exchanges of electricity of BRS ( $E_{PN}$ ) and the factual realized exchanges of electricity ( $E_{AR}$ ) of BRS.

### 3.2.2. Third Party Access Exemption

In accordance with Article 124 of the Energy Law, the electricity transmission system may request the Energy Regulatory Commission to grant an exemption from the obligation on allowing third party access when investment is made in new interconnection lines or the investment significantly increases the capacity of the existing interconnection lines, for increasing the supply possibilities. On any such occasion, the Energy Regulatory Commission is required to approve the relevant application, provided the following requirements are met:

- 1) the investment results in increased competition in, and reliability of, electricity supply;
- 2) the investment risks are such so that the investment cannot be realised unless the exemption from the obligation on third party access is provided;
- 3) the interconnection line, for which the exemption from the obligation on allowing third party access was requested, must be owned by a natural person or legal entity which, at least in its legal form, is independent from the system operators where the line is to be constructed;
- 4) the interconnection line users will settle the charge on the line use;
- 5) not a single portion of investment made or of operation costs for the interconnection

line can be recovered through the relevant system use charge for the systems connected by the interconnection line;

- 6) the exemption from the obligation on allowing third party access does not affect the electricity market competition and efficiency or the efficient operation of the regulated transmission system to which the line is connected.

### 3.2.3. Electricity supply and consumption

Most of the electricity generated in Macedonia comes from thermal and hydro electric plants. The thermal power plants, with an installed capacity of 1322MW, represent 64% of the total installed capacity. The hydro plants, with an installed capacity of just under 675,21MW, account for most of the remaining 33%.

The major generation plant is the lignite thermal plan TPP Bitola with an installed capacity of 700 MW. TPP Bitola is located in the south-west of the country and has undergone major modernisation in recent years. This plant, combined with the 125 MW lignite plant TPPOslomej covers 80% of the domestic electricity consumption.

A 227 MW gas-fired combined cycle CHP was commissioned in 2011 and is owned by the Russian SINTEZ GROUP and operated by the Skopje district heating company, TOPLIFIKACIJA.

There is also a 210 MW heavy fuel oil TPP at Negotino, which is no longer normally operational, but held in reserve. In the past, there have been plans to build a 300 MW coal plant on this site, but the project is not proceeding.

Depending on weather conditions, about 20% of the country's generation output is provided by hydropower.

There is also a good potential for the building of new large and small hydro stations.

The hydro power plants are set out in the table below.

#### Large Hydro Power Plants (LHPP) 2016 (with capacity greater than 10 MW)

HPP	Basin	No. of units	Installed capacity MW	Available annual production GWh	Operational
Vrben	Mavrovo	2	12.8	45	1957/1973
Vrutok	Mavrovo	4	172.0	390	1959/1973
Raven	Mavrovo	3	21.6	53	1959
Tikves	Crna River	4	113.0	184	1966/1981
Kalimanci	Bregalnica	2	13.8	17	2006
Globocica	CrnDrim	2	42.0	213	1965
Spilje	CrnDrim	3	84.0	300	1965
Kozjak	Treska	2	82.0	150	2004
St. Petka	Treska	2	36.4	63	2013
Matka <sup>1</sup>	Treska	2	10	40	2009
<b>Total</b>			<b>584.6</b>	<b>1455</b>	

Source: Annual Report of the Energy Regulatory Commission for 2016.

The Mavrovo hydropower system includes the Vrben, Vrutok and Raven units on the Vardar River. This is the largest hydropower system in Macedonia (203.4 MW) with 36% of the installed capacity for all large hydropower plants.

The system on the river CrnDrim has two power plants, Globocica and Spilje. The plants are connected to the Ohrid Lake. The capacity of the two plants is 126 MW and constitutes 22% of the installed capacity for large hydropower plants.

On the Crna River, the Tikves plant has a capacity of 113 MW.

The modern 13,8 MW Kalamanci plant is on the river Bregalnica.

On the Treska River there are two modern plants, the 82 MW Kozjak unit and the 36,4 MW Sveta Petka plant.

In recent years most of the large hydropower plants have been rehabilitated with modern equipment. Most of the large hydro power plants are owned and operated by ELEM. The Matka power plant is operated by EVN.

Output from the hydropower plants varies considerably according to the weather conditions.

In 2012 – a year with relatively low production – the hydro output constituted 15% of the final electricity consumption. The future estimates of annual production for each plant are therefore based on an expected average over 5 years. Most of the generation comes from the LHPP units and there is only a limited contribution from the small hydro power plants.

### Potential Large Hydro Power Plants

At present there are 8 potential large power plants in Macedonia: Boskov Most at Radika River, Lukovo Pole connected to the Mavrovo complex, Galiste and Cebren at the Crn River, Gradec, Veles and 10 medium plants at the Vardar River. Feasibility studies have been prepared for these sites. ELEM has been assigned to develop the Boskov Most and Lukovo Pole projects, while Cebren is expected to be developed as a public private partnership. For the remaining potentials no specific plans for development have yet been approved. The total capacity of the potential plants is 924 MW, which is almost double of the existing large hydro power plant output. Estimated annual output is 2,220-2,720 GWh compared to the average output of the existing LHPP of 1,415 GWh. Hydrological analysis and feasibility studies have been carried out but the economics of the investments are not yet published. The tendering procedures have been initiated but no contracts have yet been signed. In addition to the technical designs, environmental assessment reports will be necessary and land ownership agreements signed. It will be some time before these potential projects can be realised.

**Basic features of the potential large hydro power plants**

	Basin	Planned Capacity MW	Annual production GWh
<b>Boskov Most</b>	Radika	68.2	117
<b>Lukovo Pole and CrnKamen</b>	Mavrovo	5	109
<b>Galiste</b>	Crna River	193.5	263
<b>Cebren</b>	Crna River	333/347	340/682
<b>Gradec</b>	Vardar	54.6	252
<b>Veles</b>	Vardar	93.3	300
<b>10 HPP Vardar Valley</b>	Vardar	176.8	784
<b>Total</b>		924.4/938.4	2165/2507

Source: ELEM 2014 and ATC estimates for Cebren.

**Boskov Most** will be located at the river Radika. The planned capacity is 68.2 MW and expected annual output 117 GWh. In the RES Strategy 2010, the investment over 4 years was estimated to be EUR 70 million but later revisions set it in the order of EUR 143 million. Boskov Most is to be developed by ELEM and construction should have

started in 2013 but has not yet started. It is estimated that the plant could be operational in 2019 if the tendering of construction works are completed according to schedule.

**Lukovo Pole and CrnKamen** are located close to the Mavrovo complex. Apart from the 5 MW generator, the main benefit is the provision of extra water inflow to the Mavrovo system, which will expand production. The total annual production potential of the project is estimated to be 109 GWh for an investment of EUR 84 million. The Lukovo Pole project is to be developed by ELEM and the project could be operational in 2019 if no delays are encountered.

**Galiste** will be located at the Crna River and includes construction of a reservoir. Capacity is planned to be 193.5 MW with an annual production 264 GWh. Current investment costs are estimated at EUR 216 million.

**Cebren** will also be located at the Crna River and includes the construction of a reservoir. The capacity is planned to be 333/347 MW and annual production 340/682 GWh. Current investment costs are estimated to be EUR 345-366 million. The project includes a possibility of increasing the production considerably by establishing a pumping system utilizing the reservoir OrlovKamen and thereby reuse of the water flow. However, this solution is promising from a technical point of view, but there will be considerable operating costs for electricity for the pumping and such options are only feasible if there is a considerable difference in the electricity price peak/off peak,

**Gradec** will be located at the Vardar River. Capacity is estimated to be 54.6 MW and annual output to be 252 GWh. Current investment is estimated to be EUR 175 million excluding investments for reallocation of the flooded railway.

**Veles** will also be located at the Vardar River. Capacity is planned to be 93.3 MW and annual production 300 GWh. Current investments are estimated to be EUR 158 million excluding costs for reallocation of the railway.

**10 HPP in the Vardar Valley.** Mainly between Gradec and Veles construction of 10 hydro power plants are planned, the capacity of each one is between 17 and 24 MW. Combined capacity of the system is 176.3 MW and the annual output of the system is estimated to be 756 GWh. Total investments is estimated to be EUR 730 million. It is considered that some but not all 10 could be constructed.

In addition there is also a possibility to develop Globocica 2 which could add a capacity of 29 MW and an annual generation of 41 GWh. Also construction of a channel between Tetovo-Kozjak could provide additional annual production from the plants at Treska up to 110 GWh. There are no detailed feasibility studies and are interesting but not necessarily feasible.

LHPP are characterised by long construction and development time and a long lifetime. Even if a project at present electricity prices could appear to be unattractive, increasing prices must be expected over the longer term which would improve the economics.

Apart from Boskov Most and Lukovo Pole, the other plants will not be operational by 2020 taking into consideration the time needed for tendering procedures, necessary studies and construction time. However the plants represents a large potential for renewable electricity generation amounting to an annual output of at least 2000 GWh.

### **Small hydro power plants**

These are plants with a generation capacity of up to 10 MW. All SHPPs are operating without reservoirs as “run of river” generators.

Macedonia has a significant potential for construction of small hydropower plants located at roughly more than 400 sites throughout the country. The generation from these units could potentially meet up to 16% of the country's current electricity needs. Not all of these sites are economically attractive as data on hydrology is often not accurate and the connection to the grid is problematic in some cases. An estimated additional 874 GWh could be generated annually from this resource.

In addition to the major generating plants there are small generating units owned by industrial consumers with a total capacity of around 50 MW together with small contributions from wind and solar power installations.

The total generation from all sources is listed in the table below together with the annual consumption.

#### Electricity generation and consumption 2016 (MWh)

Import	2190606
Export	32,477
Net import	2,158,129
Total electricity production	5,302,275
Main thermal power plants	2,699,115
CHP and other thermal plants	591,078
Hydro power plants (larger than 10 MW)	1,490,056
Small hydro power plants (smaller than 10 MW)	389,313
Solar	23,699
Wind	109,483
Losses in the transmission system	116,080
Losses in the distribution system	889,582
Final consumption	6,455,211

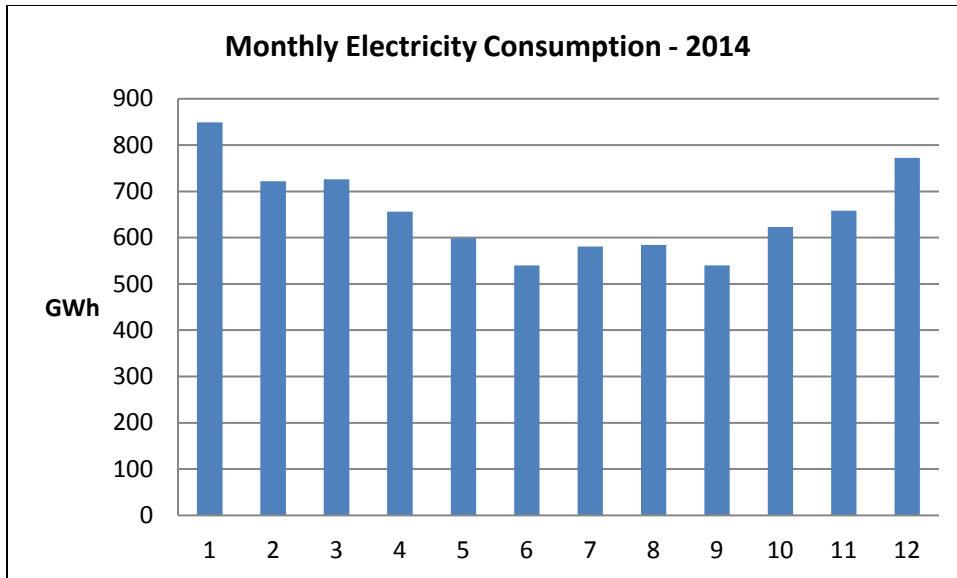
Source: Energy Regulatory Commission, Annual Report 2016

During the year, imports accounted for 34% of the total final consumption. The consumption in the household sector was 3057 GWh which represents around 47% of the total final consumption. The household load has a major winter space heating element which adds to the winter demand and to increased import liability.

#### 3.2.4. Peak electrical load

Under normal winter conditions, Macedonia imports electricity for most of the time over a 7 week period between week 51 one year and week 5 of the next. The relatively high demand for electrical space heating makes a large contribution to this import. In the event of a severe winter, the import period would be of 8 to 10 weeks duration. During a typical year with a total electricity output of around 8000 GWh, the winter import of electricity will be around 2500 GWh. The cost of this import corresponds to an annual balance of payments deficit of at least EUR 100 million.

The monthly annual load profile for 2014 is shown below. This shows the impact on the winter demand of the excessive space heating load.



Source ENTSO-E

The latest ENTSO-E figures show a 2013 peak load of 1527 MW recorded at 18:00 on 22 December 2013. The lowest demand was 520 MW on 3 June 2013 at 06:00.

Peak load is predicted to reach 1900 MW by 2020.

### 3.3. GENERATION

#### 3.3.1. Procedure for construction new generation facilities

According to Article 49, paragraph 1 of the Energy Law, new generation facilities and cogeneration facilities can be constructed based on an **authorization**, which is issued by the Government of Republic of Macedonia. The procedure on issuing the decision on the authorization for construction of electricity generation facilities and cogeneration facilities must be based on the principles of objectivity, transparency, and non-discrimination. The authorization decision is issued pursuant to criteria that refer to:

- 1) reliability of relevant energy type supply;
- 2) safety and reliability of the energy system, facilities and relevant equipment;
- 3) protection of public health and safety;
- 4) environmental protection;
- 5) use of land and sites;
- 6) use of public land;
- 7) energy efficiency;
- 8) primary energy type; and
- 9) specific characteristics of the applicant as regards its technical, financial, and economic ability.

Article 49, paragraph 2 of the Energy Law also provides that the authorization shall not be necessary provided that:

- the energy generation facility has total installed electricity equal to or less than 10 MW;
- the expansion of the energy generation facility results in total installed electricity and/or heating energy capacity increase by up to 10 MW; or
- the energy generated by the energy facility will be used only for its own consumption.

Under Article 56 of the Energy Law, the authorization for the construction of new electricity generation facilities and cogeneration facilities should stipulate in detail:

- 1) the type, features, installed capacity and expected annual energy output, fuel type and necessary quantity;
- 2) the facility's location, in compliance with the relevant urban planning documents;
- 3) the authorization's validity period;



- 4) the proceedings with the facility upon the termination of its operation;
- 5) the manner of public infrastructure use;
- 6) the environmental protection requirements to be fulfilled pursuant to the law;
- 7) the efficiency requirements concerning the facility's operation; and
- 8) other terms and conditions related to the facility construction.

Moreover, the Energy Law provides that in any case where -based on the issued authorizations for construction of new electricity generation facilities and cogeneration facilities, in compliance with the Strategy on Energy Development of the Republic of Macedonia, the forecasts on electricity consumption, after taking into account the measures on energy efficiency improvement and consumption management and the possibilities for address the said demand - it has been assessed that the reliability of energy supply is disturbed, the Government of the Republic of Macedonia, on the proposal from the Ministry, can adopt a decision and announce an **open call (tender)** for the construction of electricity generation facilities and cogeneration facilities. Any such open call must contain in particular:

- the type of energy facility for which the open call is announced;
- its planned capacity;
- the deadline for the initiation of facility construction works;
- the location where the facility is to be constructed, as this is determined on the basis of the excerpt from the existing urban planning documents, the state urban planning documents or the local urban planning documents;
- the required economic, technical or operational ability of bidders; and
- possible incentives offered, and the manner and deadline for the bid submission.

### 3.3.2. Renewable energy Sources and Preferential producers

For the purpose of stimulating construction of new power plants using renewable energy sources or high-efficiency cogeneration plants, Article 149 of the Energy Law prescribes that these facilities can obtain the status of preferential producer, and thereby the right to sell electricity under feed-in tariffs. The feed-in tariffs can be applied in a manner and under procedure stipulated in the Energy law and the by-laws adopted pursuant to the law.

In the previous period feed-in tariffs for sale of electricity produced and delivered from SHPP, wind energy, solar energy, biomass, and biogas from biomass were determined, as follows:

Type of RES	Feed-in tariff for electricity generation (€/kWh)	Duration of usage (years)
Hydro  (with installed capacity lower or equal to 10 MW)	- monthly quantity of delivered electricity per blocks: I block: 12,00 ( $\leq$ 85.000 kWh) II block: 8,00 ( $>$ 85.000 and $\leq$ 170.000 kWh) III block: 6,00 ( $>$ 170.000 and $\leq$ 350.000 kWh) IV block: 5,00 ( $>$ 350.000 and $\leq$ 700.000 kWh) V block: 4,50 ( $>$ 700.000 kWh)	20

<b>Wind</b> <b>(with installed capacity lower or equal to 50 MW)</b>	8.9	20
<b>PV</b> <b>(with installed capacity lower or equal to 1 MW)</b>	16 ( $\leq 0,050$ MW)  12 ( $> 0,050$ MW $\leq 1$ MW)	15
<b>Thermal power plants on biomass</b> <b>(with installed capacity less or equal to 3 MW and percentage share of the fossil fuels in the total energy values of the used fuels lower or equal to 15%)</b>	15	15
<b>Thermal power plants on biogas</b> <b>(with percentage share of the fossil fuels in the total energy values of the used fuels lower or equal to 10%)</b>	18	15

The electricity market operator is obliged under Article 153 of the Energy Law to purchase the electricity generated by preferential electricity producers. On the request from the preferential producers, the electricity market operator is required to sign the electricity purchase contract in compliance with the terms and conditions set forth in the Energy Law, the decision on the application of feed-in tariff issued by the Energy Regulatory Commission and the Electricity Market Rules. Furthermore, electricity suppliers and traders are obliged to purchase the electricity generated by the preferential electricity producers from the electricity market operator on a daily basis and pursuant to the shares established on the basis of announced electricity demand of their consumers in the total demand of electricity consumers in the Republic of Macedonia. The price under which the electricity market operator sells RES electricity to suppliers and traders is calculated at the end of the month as the average price according to which the operator has purchased the electricity from preferential generators, increased by the costs incurred for balancing and required ancillary services related to the operation of preferential electricity producers.

On another note, it needs also to be mentioned that the Energy Regulatory Commission is under the duty to oblige the relevant energy system operator to cover the grid connection costs of preferential producers and recover the costs incurred as part of the regulated services price, when needed for the purpose of:

- providing incentives for electricity generation from renewable energy sources or at high-efficiency cogeneration plants; or
- attaining the targets set forth in the Strategy on Energy Development, Energy Efficiency Strategy and Strategy on Renewable Energy Sources.

The Energy Law further stipulates that the electricity transmission or distribution

system operators, within the operational possibilities in the relevant system, must provide priority access to electricity systems for the electricity generated from renewable sources.

Also, the Energy Law sets forth other supporting schemes for the promotion of the use of RES, such as the issue of guarantees of origin, while the administrative procedures regarding the issue of such guarantees precisely in secondary legislation, as required under the Energy Law.

As regards the possibilities for the use of renewable energy sources in the national energy mix, these are analysed in the Strategy for utilization of the RES in Republic of Macedonia until 2020, which was adopted in September 2010 by the Government of Republic of Macedonia.

According to the Strategy, there is a possibility for construction of 400 **small hydropower plants**. Until now, the Government has conducted eight (8) tendering rounds for granting water concessions for the construction of small hydro power plants and signed 64 Concession Agreements. The total installed capacity of the 85 SHPPs is 60 MW with an envisaged 230 GWh annual production and an estimated investment value of €100-120 million. Until May, 2015 seventeen (17) small hydropower plants have been constructed and commissioned with a total installed capacity of 12 MW and a total investment of €20 million. At present, fifteen (15) other small hydropower plants are under construction with an installed capacity of 16 MW (for an investment of €27 million).

The construction of the **wind power plants** would contribute in the decrease of energy imports dependence, the quality in electricity supply, local and regional development, increase in the participation of the renewable energy in the total electricity generation and could further enhance environmental protection by lowering the level of CO<sub>2</sub> emissions, in accordance with the commitments assumed by the Republic of Macedonia under the Kyoto protocol. In this sector, the most advanced project is JSCELEM's wind farm, which was commissioned in March, 2014 for a total investment of €55,5 million. The project is constructed in the area of Bogdanci and Valandovo and - owing to its complexity – its implementation is planned to be carried out in two phases. **The first phase**, which included the construction of access road and of a substation and the installation of 36.8 MW capacity wind turbines (of an individual turbine size of 2.3 MW), has already been finalised and the facility is now operational. In the **second phase**, the wind park Bogdanci would be fully completed following the construction and assembly of the remaining wind turbines (13.2 MW) so that the plant will reach the target of 50 MW of installed capacity.

Up to now, 102 **photovoltaic plants** have been licensed and 91 such plants have been put into operation with a total installed capacity of 16,713 MW. Of these 80 are small photovoltaic plants (with capacity of up to 50 kW) with total installed capacity of 3,8 MW, while 24 are large photovoltaic plants (with capacity between 50 kW and 1 MW) with a total installed capacity of 13 MW.

Four plants for the development of **electricity generation from biogas** have been licensed by the ERC in the period 2013-2014 with a total installed capacity of 5,999 MW. As a result, the quota for feed-in tariffs (FIT) for electricity generation from biogas of 6 MW, has *de facto* been fully utilised. These power plants are operational.

On the other hand, there has been very little interest in the development of **biomass-powered power plants**. So far, the Energy Regularly Commission has awarded licence for electricity generation from biomass, with total installed capacity of 2,20 MW. It is expected to be operational in 2017-2018..

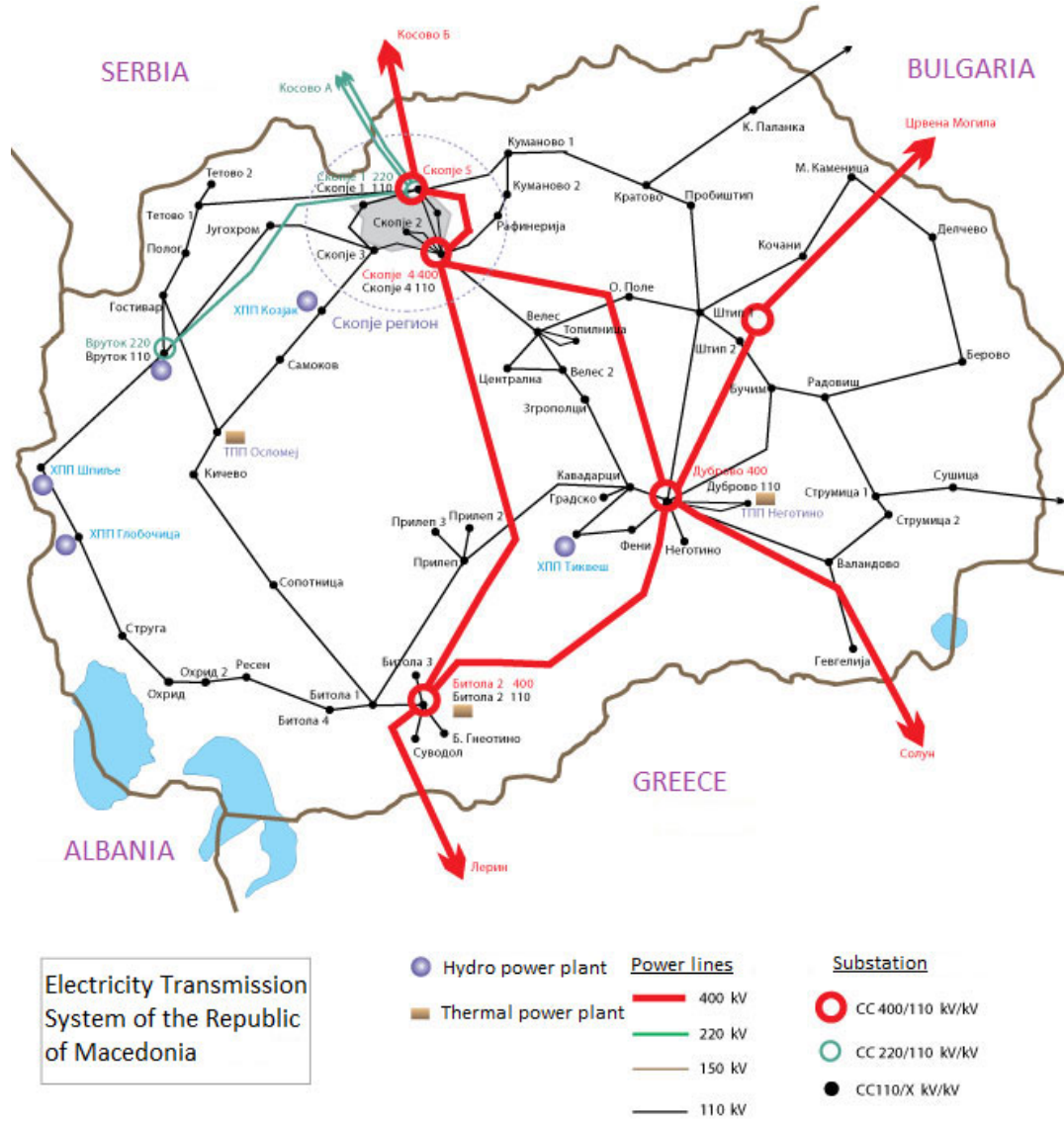
## 3.4. TRANSMISSION

### 3.4.1. National transmission network

The line diagram below shows the main high voltage transmission system in Macedonia and the existing international connections. The 400 kV system forms a ring of three lines connecting the largest consumption concentration in the northern part of the country with the largest production facilities in the south west. The 400 kV transmission

lines are used for interconnection to the neighbouring power systems. The 110 kV transmission grid connects the large hydro power plants, the major cities and towns and the industrial centres.

Transmission line diagram - 2012



3.4.2. International connections

Macedonia has borders with Serbia to the north, Kosovo to the north west, Bulgaria to the east, Greece to the south and Albania to the west.

International 400kV connections allow electricity import capacities with Serbia, Bulgaria and Greece at a rating of 250 MW from each country. The 400 kV line transmission line SS Skopje 5 - SS Kosovo B and the 400 kV transmission line SS Stip – SS Vranjeconnect the northern border. To the south there are two 400 kV interconnecting transmission lines: SS Bitola 2 - SS Florina and SS Dubrovo - SS Thessaloniki.

The main 400 kV interconnection with Bulgaria is by the SS Shtip - SS CervenaMogila Basic transmission line. There are also two 110 kV connections.

Details of the lines is given in the table below.

Node 1	Country	Node 2	Country	Voltage Level (kV)	Line Length (km)	Type of Circuit	Type of Conductor	Conductor per phase	Rated Current (kA)
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KrivaPalanka	MKD	Skakavica	BUL	110	18.1	single	3xAl/Fe 240/40	1	0.647
Susica	MKD	Petric	BUL	110	32.6	single	3xAl/Fe 240/40	1	0.647
Bitola 2	MKD	Meliti	GRE	400	40	single	3xAl/Fe 490/65	2	1.92
Dubrovo	MKD	Thessaloniki	GRE	400	115.3	single	3xAl/Fe 490/65	2	1.92
Dubrovo	MKD	C. Mogila	BUL	400	150	single	3xAl/Fe 490/65	2	1.92
Skopje 5	MKD	Ferizaj 2	KOS	400	53.2	single	3xAl/Fe 490/65	2	1.92
Stip	MKD	C. Mogila	BUL	400	150	single	3xAl/Fe 490/65	2	1.92

According to ENTSO-E statistics, export capabilities exist for 200 MW to both Serbia and Bulgaria. In 2014, 3409 GWh was imported from Bulgaria, 2166 GWh from Serbia and 23 GWh from Greece. Exports from Macedonia were 2632 GWh to Greece and 5 GWh to Serbia.

MEPSO allocate cross-border transmission capacities on yearly, monthly and weekly level using Net Transfer Capacity (NTC) model. MEPSO signed the Agreement for accession to Coordinated Auction Office (CAO). With this MEPSO agrees to allocation of capacity to be performed by on previously set procedure and revenue distribution methodology on some borders.

Models are exchanged and merged into a common regional model for Albania, BiH, Bulgaria, Croatia, Greece, Hungary, Austria, Macedonia, Romania, Slovenia, Serbia, Montenegro, Ukraine and Italy.

When calculating Macedonian north and east border transmission capacity, simulations consider the joint import of Macedonia, Greece and Albania from Bulgaria and Serbia. Export from to Greece and Albania is simulated. In that manner, typical borders are "coupled" into a composite NTC calculation, assessing maximum bulk power flow to maximize the transmission capacities and improve the level of security of supply.

#### **Macedonia - Serbia interconnection**

This border is congested in the direction Serbia to Macedonia. The capacity is evaluated and distributed yearly, monthly and weekly and shared 50% between two TSOs in both directions. On the Macedonian side there is a yearly, monthly and weekly procedure of allocation based on the explicit auction. On the Serbian side there is a yearly and monthly procedure of allocation based on the auction. A 50:50 method allocation of capacity is applied.

#### **Macedonia - Greece interconnection**

This border is congested in direction Macedonia to Greece. Capacity is shared 50% between two TSOs in both directions. On the Macedonian side there is a monthly and weekly procedure of allocation based on the explicit auction. On the Greek side there is also a yearly, monthly and daily procedure of allocation based on the explicit auction.

#### **Macedonia - Bulgaria interconnection**

This border is congested in the direction Bulgaria to Macedonia. Capacity is shared 50% between two TSOs in both directions. On the Macedonian side there is a yearly, monthly and weekly procedure of allocation based on the explicit auction. On the Bulgarian side there is a yearly and monthly procedure of allocation based on the explicit auction.

As well as introducing and/or operating the bilateral allocation procedures, the TSOs are investigating the possibilities for implementing coordinated flow-based explicit auctions.

### **3.4.3. Development of the transmission network**

In accordance with the Grid Code, MEPSO prepared a study on the development of transmission network for the period 2010-2020 in order to fulfil obligations for network maintenance, development and security of supply. This study covers short, medium and long term forecasts for a 10 year timescale to insure that the least cost development of the transmission system is able to cope with future demands and maintain a quality in compliance with the ENTSO-E reliability standards. This study is based on the forecast

demand, the assessment of the generation adequacy (if generation can meet the demand for the following years with respect to the N-1 criterion), the assessment of the transmission capacity and transmission system adequacy and the need for interconnection with other power systems. The aim of this report is to propose a list for the construction of new transmission network elements and network enhancements.

New international interconnections that will significantly improve the security of electricity supply include the 400 kV line to Serbia which is put into operation in 2016.

Node 1	Country Current	Node 2	Country	Voltage Line	Type	Type	Conductors	
				Rated Level	Length	of	of	per
				(kV)	(km)	Circuit	Conductor	phase
				(kA)				
Stip	MK 1.920	Nis (Vranje)	SER	400	195	single 3 x 2 x Al/Fe	490/65	2

The 400 kV Interconnection overhead line Macedonia - Serbia is a major investment for MEPSO. The line is nearly 70 km long and will significantly improve the security of supply for Macedonia.

A new 400kV line is also planned to connect the western border with Albania.

Node 1	Country Current	Node 2	Country	Voltage Line	Type	Type	Conductors	
				Rated Level	Length	of	of	per
				(kV)	(km)	Circuit	Conductor	phase
				(kA)				
Skopje 5	MK 1.920	Kosovo B	SER	400	84	single 3 x 2 x Al/Fe	490/65	2
Bitola 2	MK 1.920	Elbasan	ALB	400	160	single 3 x 2 x Al/Fe	490/65	2

The interconnection line will provide a link between Bitola in Macedonia and Elbasan in Albania.

During 2014, the environmental impact assessment and technical design documentation have been completed.

The tender procedure for the selection of a contractor is expected to begin in the next period, and construction is planned to be completed after 2020. MEPSO has received information that EBRD has expressed an interest to provide funding for this project whose total estimated value is EUR 43.5 million.

This connection will be the first between the two countries and will improve the security of supply in the south of Macedonia. This project will include a new major 400kV substation at Ohrid in the south of Macedonia near to the Albanian border.

#### 3.4.4. Security of Supply Operations

MEPSO, as the TSO, is responsible for disturbance management according to a Defence Plan, in order to secure electricity supply to customers.

There must be enough generating units with isolated operation and black-start capability backed up by suitable signalling equipment to eliminate a disturbance or limit its effects.

To prevent voltage drop, there is a provision for reduction of the voltage controller

set point values and/or blocking of the voltage controllers on the substation transformers for the transmission and distribution systems in the Connection Agreement.

MEPSO reserves the right to perform load shedding (either manually or automatically according to the voltage) and will make arrangements with the distribution companies for controllable load shedding through voltage reduction and/or customer disconnection.

Should limit values for system operation variables (e.g. voltage, short-circuit current) or equipment loading (e.g. current loading) continue to be violated following the performance of corrective measures or should a risk exist of the disturbance spreading, MEPSO may order disconnection of the sections of the installation in which the disturbance originated, in order to ensure reliable system operation and/or rapid restoration of the network subject to the disturbance.

If necessary, adjustments must be made to the generating units schedule for the purpose of overcoming congestion in the system.

A load shedding plan shall apply for load shedding as a function of the frequency to avoid total blackouts. The amount of load to be shed at each stage shall be defined by MEPSO taking into account the technical requirements of the system users. Every distribution operator and transmission system user must ensure automatic load shedding at low frequency or voltage according to the requests of the transmission system operator.

MEPSO is responsible for monitoring and coordinating maintenance and for maintaining continuously adequate and reliable operation backup telecommunication facilities to assure coordinated control of operations during normal and contingency situations. Restoration of the normal operation after a system-wide blackout in relation to already defined scenarios is to be conducted as fast as possible based on the Defence Plan where supply restoration measures are included. MEPSO shall develop various scenarios to re-establish the power system in order to define further operation effectively and responsively. This plan must be verified and tested periodically under MEPSO authority. Telecommunication facilities used to implement the plan shall be periodically tested. MEPSO operators and the operating personnel of the generating units involved in the process shall be trained in the implementation of the plan.

## **3.5. DISTRIBUTION**

### **3.5.1. Security of Supply Investments**

In late 2013, the distribution company EVN Macedonia, announced an investment programme of over one billion EUR in the next twenty years to be devoted to the electrical distribution system as part of the company's Master Plan.

Since entering the electricity market in 2006, EVN has already invested substantial resources into the distribution system. During the period 2015-2017 EVN has maintained the grid in accordance to the high level standards and has invested into the grid in order to provide secure and quality of electricity delivery. In the past two years EVN has constructed new 894 km low, medium and high voltage lines. From these lines 363 km are overhead lines and 529 km are cables. Also 176 new substations have been built. Several projects can be pointed out which have contributed to the security of supply and improving of the conditions to the distribution grid such as: new medium voltage cables Zapad-Saraj and Skopje 1 – Radishani, increasing of the installed power of TSSaraj, TSKumanovo 1, TS Bitola 4, TSKozle, TSDemirKapija, etc.

In the next period EVN plans to construct new TSCentralna 110/10 (20) kV and two new 100 kV lines and more projects to further modernise the network from which will benefit the existing and the potential new users of the system.

### **3.5.2. Dispatching**

The management of the electricity distribution systems in Macedonia is performed

by EVN via a single dispatch centre in Skopje.

All 110 kV and 35 kV transformer stations are remotely monitored by SCADA equipment which also monitors the small hydro plants owned by EVN.

Radio links provide rapid transfer of data and voice information and the system incorporates a computer Distribution Management System that controls maintenance as well as distribution control.



## 4. MACEDONIAN NATURAL GAS SYSTEM

### 4.1. REGULATORY FRAMEWORK IN GAS SECTOR

The Energy Law, which was adopted on February 3, 2011 (Official Gazette of Republic of Macedonia 16/2011), as subsequently revised (Official Gazette of Republic of Macedonia 136/2011, 79/2013, 164/2013, 41/2014, 151/2014, 33/2015, 192/2015, 215/2015, 6/2016, 53/2016 and 189/2016), is the key legislative instrument, which regulates the performance of energy activities, including those pertaining to the natural gas sector. The amendments of the Energy Law coupled with the introduction of the relevant secondary legislation (especially the adoption of the market rules for natural gas by the Energy Regulatory Commission in 2014) created the conditions for the opening-up of the domestic natural gas sector and also determined the start date for the liberalization process. More specifically, it was initially agreed that the liberalization of the natural gas market for all customers, except households, will commence in October 1, 2014. However, because of the lack of real competition in the market, which was in large measure owing to the fact that there was only one active natural gas supplier, the date of the start of the liberalization of the natural gas market for all customers, was postponed until 1<sup>st</sup> of January 2015. The liberalization of the natural gas market for the households also commenced on January 1<sup>st</sup> 2015.

#### 4.1.1. Secondary Legislation

As stipulated in the Energy Law, a number of secondary legislative acts have been enacted to further formulate and refine the legal regime governing the performance of natural gas activities. In what follows, we shall give a concise account of these acts and the issues they respectively address.

#### **Grid Code for the transmission of natural gas of AD GA-MA**

According to the Article 88 of the Energy Law, the natural gas TSO is obliged to adopt and, upon previous approval from the Energy Regulatory Commission, to publish in the “Official Gazette of the Republic of Macedonia” and on its website the Natural Gas Transmission Grid Code, one year after the entry into force the Energy Law.

Because of the *status quo* with the gas TSO, the existing Grid Code for transmission of natural gas was prepared by AD GA-MA, the natural gas transmission system operator, which was approved by the Energy Regulatory Commission on 30<sup>th</sup> of March 2009 (“Official Gazette of Republic of Macedonia” No 45/2009). However, GAMA did not amend the grid code in order to be in compliance with the Energy law from 2011.

The natural gas transmission Grid Code specifically governs:

- the technical conditions for connecting natural gas distributors, direct customers of natural gas, and other natural gas transmission systems to the natural gas transmission system;
- the technical and other conditions for secure and safe functioning of the natural gas transmission system;
- the transmission system planning, maintenance and development;
- the measures, activities and procedures in cases of the system’s breakdown;
- the terms and conditions for third party access to the natural gas transmission system;

- the functional requirements and precision class of measuring devices,
- the natural gas quality standards;
- the criteria for providing system services;
- the natural gas nomination and scheduling procedures; - data collection and communications protocols; and
- the supervision and control of operational management systems.

### ***Tariff system for transmission of natural gas***

On 11 January 2013, the Energy Regulatory Commission issued the Tariff System for transmission of natural gas ("Official Gazette of the Republic of Macedonia", No. 7/2013, which sets forth:

- the manner for calculation of the fees that the transmission system users are bound to pay for the use of the natural gas transmission system and transmission grids,
- the manner and conditions for the calculation of the tariff for the transmission of natural gas,
- the tariffs for the management of the transmission system, and
- the categories of users that are directly connected to the natural gas transmission system.

The amendment of the Tariff system for transmission of natural gas of 29<sup>th</sup> of June 2016 and 16<sup>th</sup> of July 2017 provided that if a consumer realizes more than 20,000,000 nm<sup>3</sup> of natural gas in the third quarter of the current year, in addition to the planned quantities for that year, the operator of the natural gas transmission system may reduce the tariffs for carrying out the activities transport of natural Gas and for management of the natural gas transmission system for that consumer up to 50% of the ones determined by the relevant Decision for that period.

### ***Natural gas supply rules***

According to the Energy Law, the ERC issued on 7 of May 2012 the natural gas supply rules ("Official Gazette of the Republic of Macedonia" no. 56/12). These rules, which implement provisions of the Directive 2003/55/EC, determine the general terms and conditions governing the supply of natural gas, as well as the mutual rights, obligations and responsibilities of natural gas suppliers, customers, the operator of the natural gas transmission system, and the natural gas distribution system operators.

### ***Tariff system amending the Tariff system for sale of natural gas to tariff customers***

On 18 January 2012 the ERC issued the Tariff system amending the Tariff system for sale of natural gas to tariff customers ("Official Gazette of the Republic of Macedonia" no. 9/12). This Tariff system specified the procedure for submitting request for approval of the natural gas sale price on monthly level for tariff customers directly connected to the natural gas transmission system. A subsequent amendment was made by the ERC on 18 of July 2012 ERC ("Official Gazette of the Republic of Macedonia" no. 13/12), which aligned the tariff system with the newly introduced natural gas supply rules and introduced changes regarding the full recognition of the trade charge.

### ***Rules on natural gas supply of last resort***

The ERC issued on 4 May 2012 the Rules on natural gas supply of last resort

("Official Gazette of the Republic of Macedonia", No. 56/2012), which implements provisions of the Directive 2003/55/EC. These Rules lay down the general conditions for natural gas supply of customers, who have decided to be supplied by the natural gas supplier of last resort and further enumerates the mutual rights, obligations and responsibilities of the supplier of last resort, its customers as well as those of the operators of the natural gas transmission and distribution systems.

#### ***Tariff system for sale of natural gas to the supplier of last resort***

The ERC issued on 11 of January.2013 the Tariff system for sale of natural gas to the supplier of last resort ("Official Gazette of the Republic of Macedonia", No. 7/2013). This Tariff system, whose provisions apply to the licence holders that provide the service of supply of natural gas in last resort as well as to the natural gas consumers, who are being supplied by the suppliers of natural gas in last resort, lays down:

- the manner and conditions for the calculation of the tariff for the supply of natural gas in last resort,
- the charging of the fees for the use of the natural gas transmission and distribution system,
- the methodology for calculating the consumed quantity of natural gas, and
- the methodology for calculation of the fees for the supplier in last resort.

#### ***Rulebook for prices of natural gas for the supplier of last resort***

On 29 December 2014, the ERC issued the Rulebook for prices of natural gas for the supplier of last resort ("Official Gazette of the Republic of Macedonia", No. 198/2014), which implements provisions of the Directive 2003/55/EC. This Rulebook enumerates the manner and the conditions for setting, approving and controlling the prices pursuant to which the regulated maximum revenue, which is necessary for the performance of the regulated energy activity of natural gas supply of last resort, is realised.

#### ***Natural Gas Market Rules***

Following lengthy deliberations, the ERC adopted on 24 of January 2014 the Natural Gas Market Rules ("Official Gazette of the Republic of Macedonia", No. 16/2014), which were subsequently revised on 29 September 2014 ("Official Gazette of the Republic of Macedonia", 91/2014). In conformity with Article 90 of the Energy Law, these rules delineate in particular:

- the organization of the natural gas market;
- the terms and conditions required to be met by natural gas market participants;
- the manner and terms and conditions for grouping of natural gas customers and/or sellers into balancing groups for the purpose of reducing balancing costs;
- the rules governing the establishment, organization and control over trading of natural gas and ancillary services, including cross-border trading;
- the methodology for setting the balancing charge and the manner of the charge's collection, as well as the financial guarantees for the liabilities of natural gas market participants related to the settlement of balancing services;
- the procedure on the calculation of deviations between the agreed and realized transactions, based on the metered data from the natural gas transmission system operator and distribution system operators;

- the terms and conditions, the manner and procedure regulating the purchase of natural gas and ancillary services by entities performing regulated energy activities, for the purpose of implementing the purchases in a transparent and non-discriminatory manner, and for securing equal access to all interested domestic and foreign bidders; and
- the procedure and manner of data collection and their submission to the Energy Regulatory Commission as regards the status and events on the natural gas market.

### ***Tariff system for distribution of natural gas***

The Energy Regulatory Commission adopted the Tariff system for distribution of natural gas supply on 11 of January 2013, which was published in the “Official Gazette of Republic of Macedonia”, No 19/2013. This Tariff system enumerates the formulas for calculating the consumer fees for the use of the natural gas distribution system, the manner and conditions for the calculation of the tariff for the distribution of natural gas, as well as the categories of users that may be directly connected to the distribution system. The Tariff system defines four categories of users of the natural gas distribution system:

- producers of heat energy that are under an obligation for public service provision,
- combined heat-power plants,
- households, and
- other consumers, who are using the relevant natural gas distribution system.

The ERC sets the tariffs for distribution of natural gas for each distribution system for a period of one year. Each category is linked to a specific tariff for distribution of natural gas.

### ***Natural Gas Distribution Grid Codes***

Two public enterprises for energy services, "Strumica Gas" and "Kumanovo Gas", which respectively own and operate the local natural gas distribution network in the region of Strumica and Kumanovo, have prepared the natural distribution grid code for the area for which they operate. Both Grid Codes were approved by the ERC on 28 of April 2015 (“Official Gazette of the Republic of Macedonia”, No. 73/2015 – for Strumica Gas - and No. 76/2015 – for Kumanovo Gas). As required under Article 94 of the Energy Law, each of these natural gas distribution Grid Codes specify:

- 1) the technical terms and conditions for connecting natural gas consumers to the relevant distribution grid, based on the principles of transparency and non-discrimination;
- 2) the methodology on setting the distribution grid connection charge, based on the principles of transparency and non-discrimination;
- 3) the terms and conditions and manner of third party access to the relevant distribution system, based on the principles of transparency and non-discrimination;
- 4) the technical and other terms and conditions on reliable and safe operation of the system in question;
- 5) the measures, activities and procedures in case of outages and emergencies;
- 6) the manner and procedure on distribution grid supervision and testing;

- 7) the manner and procedure on regulating natural gas flow and pressure through the relevant distribution grid;
- 8) the manner and procedure on harmonizing the operations in the relevant distribution system with the operations in the natural gas transmission system;
- 9) the operational requirements and accuracy class of metering devices, as well as natural gas metering method;
- 10) the distribution grid maintenance and development planning;
- 11) the contents of distribution system development plans, as well as the manner and procedure under which system users shall submit information required for the preparation of development plans;
- 12) the quality of natural gas delivery, pursuant to the natural gas Supply Rules;
- 13) the natural gas demand forecasting, based on data obtained from suppliers and consumers' development plans;
- 14) the manner and procedure on information provision for system users; and
- 15) the manner of cooperation with other natural gas system operators.

***Rulebook on the manner and conditions for regulating tariffs for transmission, operation of transmission system and distribution of natural gas***

On 31 of October 2011, the ERC issued the Rulebook on the manner and conditions for regulating tariffs for transmission, operation of transmission system and distribution of natural gas and published it in the "Official Gazette of the Republic of Macedonia", no. 151/11. This Rulebook sets forth the manner and conditions for the calculation, approval and control of the tariffs, by which the regulated maximum revenue needed to perform the following regulated natural gas activities are carried out:

- natural gas transmission,
- operation of the transmission system of natural gas; and
- natural gas distribution.

The amendment of the Rulebook on the manner and conditions for regulating tariffs for transmission, operation of transmission system and distribution of natural gas was issued on 04<sup>th</sup> of November 2016.

#### **4.1.2. Cooperation measures**

In Article 13 of the Energy Law, it is stated that - in compliance with the commitments assumed under the ratified international treaties - the Government of the Republic of Macedonia shall duly inform the neighbouring and other countries that are, or can be, affected by any measures taken to tackle any natural gas emergency situation, as well as any the competent international institutions and bodies established under the ratified international treaties.

#### **4.1.3. Measures to cover peak demand**

According the Article 7 of the Energy Law, the reliability of relevant energy type or energy fuel supply (including natural gas) shall be secured, in particular, by means of measures to address peak loads and contingency measures in the cases of failure

to provide the delivery of the relevant energy type. Article 85 of the Energy Law further stipulates that the transmission system operator shall be obliged to award available transmission capacities and to address peak loads in the transmission network, pursuant to the Natural Gas Transmission Grid Code and the Natural Gas Market Rules.

#### 4.1.4. The regulatory incentives for new investment

Article 86 of the Energy Law prescribes that the natural gas transmission system operator shall be responsible for the long-term transmission system development planning. It is further stated that the natural gas transmission system operator - in cooperation with the transmission network operators - shall be obliged to adopt an annual plan for the natural gas transmission system development it operates covering the period of the next ten years. To this end, by 31 October in the calendar year at the latest, the operator must submit the plan to the Energy Regulatory Commission and upon its approval by the ERC is required to publish the plan on its website. The plan should contain the necessary information related to the system expansion and upgrade, as well as the obligations of natural gas transmission network operators in the plan's implementation.

Allied to that, as part of the development plans, the transmission system operator must determine which network operator will be tasked to finance the necessary investments in the network development. The transmission network operator is also obliged to submit all data required for the planning process and should fulfil its obligations, as these are set forth in the development plan. Moreover, in the event that the natural gas transmission network operator - except in cases beyond its control - fails to initiate the realisation of the relevant network investment pursuant to the development plan within the next three years, it must request the Energy Regulatory Commission to task the natural gas transmission network operator with the following:

- 1) to initiate the realization of planned investments within a given deadline; or
- 2) to organize and implement an open call for the realization of planned investments by other investors, by applying the provisions from the law governing public procurement procedures; or
- 3) to accept funding of planned investments by increasing investment capital from other investors.

## 4.2. KEY MARKET PARTICIPANTS AND THEIR RESPONSIBILITIES

As it has already been stressed, the Energy Law, as subsequently amended, has set up the prerequisites for the full opening-up of the natural gas market in the Republic of Macedonia by regulating all issues related to the legal and financial aspects pertaining to the performance of natural gas transmission, transmission system operation, distribution and supply activities. In the next sections, we shall present a concise account of the key participants in the domestic natural gas sector and describe in brief their respective functions and tasks.

The natural gas **transmission network operator** performs natural gas transmission through the natural gas transmission network in its ownership or through the network for which it has been granted right to use, and shall cooperate with the natural gas transmission system operator for the purpose of maintaining, upgrading and expanding the transmission network. Under the Energy Law, the natural gas transmission network operator is obliged:

- to invest in the transmission network, pursuant to the transmission system development plan prepared by the natural gas transmission system operator

and approved by the Energy Regulatory Commission;

- to maintain the network on the request of the natural gas transmission system operator, pursuant to the procedures set forth in the Transmission Grid Code;
- to construct connections and connect new transmission system users or other transmission network operators, based on the connection approval issued by the natural gas transmission system operator;
- to cooperate with other network operators and transmission system operator; and
- to secure confidentiality of commercial and business data of users connected to the transmission network.

The **natural gas transmission system operator** operates the natural gas transmission system and is required to connect it to the transmission systems of the neighbouring countries. Its key responsibilities, as these are laid down in the Energy Law, are the following:

- 1) to secure reliable, safe, cost-effective and quality natural gas transmission and delivery through the transmission system, in a non-discriminatory and transparent manner and under stipulated quality;
- 2) to secure reliable and safe transmission system operation, pursuant to the applicable regulations that stipulate the technical rules;
- 3) to plan the development of the transmission system under cost-effective terms and conditions, for the purpose of reliable and efficient operation of the transmission system, and by taking due care of environmental regulations and pursuant to the applicable regulations that stipulate the technical rules, as well as to secure long-term system ability to meet the reasonable natural gas transmission demand;
- 4) to plan the construction of any new interconnection capacities with transmission systems abroad, by taking due care of efficient use of existing interconnection capacities and balancing the investment costs and benefits for the consumers;
- 5) to adopt the transmission system development plan pursuant to the Transmission Grid Code and submit it to the Energy Regulatory Commission for approval, as well as to publish the plan on the website of the transmission system operator;
- 6) to maintain the natural gas transmission system, pursuant to the natural gas transmission system maintenance plan;
- 7) on the proposal from the transmission network operators, to adopt the natural gas transmission system maintenance plan pursuant to the Transmission Grid Code and submit it to the Energy Regulatory Commission for approval, as well as to publish the maintenance plan on the website of the transmission system operator;
- 8) to approve users' applications for connection to the transmission system;
- 9) to allow third party access for transmission system use, pursuant to the present law and the Transmission Grid Code, and based on the principles of objectivity, transparency and non-discrimination;
- 10) to award available transmission capacities and to address peak loads in the transmission network, pursuant to the Natural Gas Transmission Grid Code and Market Code;
- 11) to harmonize operations in the transmission system with the transmission systems it is directly connected to, as well as to cooperate and exchange data with operators of other transmission systems, pursuant to the commitments the

Republic of Macedonia has assumed under the international treaties or the commitments of the operator stemming from its membership in international associations;

- 12) to publish data on available transmission capacities at interconnection lines with the neighboring transmission systems or transnational gas pipelines, for the purpose of securing non-discriminatory, objective and transparent access to and use of the transmission system;
- 13) to purchase natural gas to cover losses in the transmission system and the necessary ancillary services, under market terms and conditions and in a transparent and non-discriminatory manner, pursuant to the rules previously approved by the Energy Regulatory Commission;
- 14) to provide daily dispatch of planned import and export transactions and transit transactions through the transmission system it operates, based on the nominations submitted by natural gas market participants, and to update the schedule of regular time intervals, pursuant to the Transmission Grid Code;
- 15) to balance deviations between the actual and planned natural gas consumption in real time, pursuant to the Natural Gas Market Code;
- 16) to provide transparent and non-discriminatory application of balancing procedures to announced and realized natural gas transactions and service billing and collection;
- 17) to keep records and physical transaction schedules and to calculate deviations from announced transactions and charge the users for the imbalances occurred;
- 18) to establish the required changes to the natural gas dispatching schedule in cases of risks to the reliability of natural gas supply, outages and major deviations in natural gas consumption from the determined quantities;
- 19) to secure confidentiality of commercial and business data of system service users;
- 20) to provide information to transmission and distribution systems operators to which it is connected, for the purpose of securing reliable and efficient operation of the systems and interconnection lines;
- 21) to prepare reports on the financial and actual volume of planned and realized services and to submit them to the Energy Regulatory Commission, in a manner, under terms and conditions and within the deadlines stipulated in the license;
- 22) to keep dispatch logs, records on transmission systems reliability, data from the supervision and operation system, metered data and to keep such data, logs and records for at least ten years, and
- 23) to keep records on the transmission system operation and report thereof to the Energy Regulatory Commission, on request.

Another important class of market participants are the **natural gas distribution system operators**, each of which must operate and maintain the distribution system for the area in which it performs the activity of natural gas distribution and - when deemed cost-effective - upgrade and expand the relevant system. Each natural gas distribution system operator is also required to secure its system's connection to the natural gas transmission system and is further obliged:

- 1) to secure reliable, safe, cost-effective and secure operation of the distribution system, pursuant to the applicable regulations that stipulate the technical rules;
- 2) to secure reliable, safe and quality natural gas distribution through the distribution system, in a transparent and non-discriminatory manner;



- 3) to connect consumers to the distribution grid, as well as to allow third party access for distribution system use, pursuant to the present law and the Distribution Grid Code, and based on the principles of objectivity, transparency and non-discrimination;
- 4) to develop, reconstruct and maintain the distribution system, pursuant to the applicable regulations that stipulate the technical rules and to provide long-term system ability to address the reasonable natural gas distribution demand;
- 5) to develop grid maintenance plan pursuant to the Distribution Grid Code, and submit it to the Energy Regulatory Commission and publish it on the operator's website;
- 6) to purchase natural gas quantities required to perform its activities, under transparent, non-discriminatory and market-oriented procedures, pursuant to the rules previously approved by the Energy Regulatory Commission;
- 7) to meter natural gas quantities delivered to consumers and submit metered data to suppliers;
- 8) to allow users access to metering devices owned by the distribution system operator, pursuant to the present law and Distribution Grid Code;
- 9) to prepare reports on the financial and actual volume of planned and realized services and to submit them to the Energy Regulatory Commission, in a manner and under terms and conditions and within deadlines stipulated in the license;
- 10) to keep the dispatch log, records on communication systems reliability, data from the supervision and operation system, metered data and logs and records thereof, and to keep such data for at least ten years; and
- 11) to secure confidentiality of commercial and business data of distribution system users.

Furthermore, under the Energy Law, the natural gas distribution system operator is responsible for the long-term distribution system development planning in the service area where it performs the activity.

The **natural gas suppliers** form another important category of participants in the domestic natural gas market. A natural gas supplier can sell natural gas to consumers, traders, other suppliers, electricity and/or heating energy generators, natural gas transmission or distribution system operators, as well as to customers abroad. In order to meet the demand for the natural gas demand of its customers with whom it has signed supply contracts, a natural gas supplier can supply natural gas in the country and from abroad. Moreover, for the natural gas it has committed to deliver to its customers, a natural gas supplier is required to secure the relevant transmission and/or distribution capacity and regulated services pursuant to the applicable tariffs, Natural Gas Transmission Grid Code and Distribution Grid Code. Finally, each natural gas supplier should, based on metering performed by the relevant grid operator, invoice its customers for the quantities of the natural gas delivered, under the agreed prices and transmission and/or distribution system use charges.

Another crucial participant is the **natural gas supplier of last resort**, which must supply the consumers in the Republic of Macedonia who are connected to the natural gas transmission or distribution system and who have not signed contracts with any natural gas supplier or whose previous supplier has discontinued the implementation of its obligations that stem from any natural gas supply contracts. The natural gas supplier of last resort is obliged to prepare the natural gas purchase rules that must be approved by the Energy Regulatory Commission and which should stipulate in detail the terms and conditions as well as the manner and procedure for

the purchase of natural gas from the supplier of last resort on the basis of the principles of transparency and non-discrimination.

The **natural gas traders** are another important class of participants in the national gas sector. Each such trader can purchase natural gas, for the purpose of selling it to other natural gas traders or suppliers, to electricity and/or heating energy generators, to the natural gas transmission and distribution system operators, as well as to natural gas customers abroad. Each trader - in the capacity of natural gas supplier - may sell natural gas to customers that fulfil the requirements for independent participation in the natural gas market, as stipulated under the Natural Gas Market Code. The mutual rights and obligations between the trader and its customers, as well as its obligations towards the transmission system operator and/or distribution system operators should be specified in a contract. Any natural gas trader is also obliged to submit to the natural gas transmission system operator information on the natural gas quantities and relevant time schedules related to all natural gas purchase/sale contracts which it has committed to deliver to its customers, as well as the transit contracts through the transmission system. Moreover, when performing natural gas export or transit, each natural gas trader is required to secure sufficient transmission capacity, pursuant to the applicable tariffs and the Transmission Grid Code.

Finally, the last significant group of natural gas market participants involves the **natural gas customers** all of which are now deemed eligible natural gas customers. Any natural gas consumers can sign supply contracts with natural gas suppliers pursuant to the terms and conditions stipulated in the Supply Rules. Furthermore, any customer, who meets the requirements for independent participation in the natural gas market, as stipulated under the Natural Gas Market Code (as well as the electricity and/or heating energy generators) are entitled to purchase natural gas from traders and from abroad. For the purpose of meeting its own demand, any natural gas customer must secure relevant transmission and/or distribution capacity or transfer this obligation to its supplier(s). A natural gas customer may also be supplied with natural gas from direct lines as well.

So far 16 licences have been issued for trade and four for supply. *Makpetrol* imports gas under long-term contract with *Gazprom* and five big consumers import gas individually for their own needs. *Promgas*, a subsidiary of *Makpetrol*, acts as a supplier of last resort and, since 15 December 2014. The three DSOs since 2017 acts as a suppliers of last resort, too.

### 4.3. THE EXISTING NATURAL GAS SYSTEM

#### 4.3.1. Transmission and distribution

Macedonia has neither indigenous natural gas resources nor a gas storage facility and all gas is imported from Russia (via Bulgaria, Moldova, Romania, and Ukraine) through a single transmission line that crosses the Bulgarian border at Deve Bair.

The pipeline was constructed in 1997 and runs almost 98 km to Skopje, connecting Kriva Palanka, Kratova, Shtip and Kumanovo on the way. The installed capacity is 0.8 bcm/y at 54 bar with a possibility of an upgrade to 1.2 bcm/y at a higher pressure. The present throughput capacity is 145,000 m<sup>3</sup>/h.

In June 2016 JSC MER has finished the construction of the gas pipeline, section „Klecovce-Block Stanica 5(Shtip)” that was financed through funds provided by the “Agreement between the Government of the Republic of Macedonia and the Government of the Russian Federation for regulation of obligation of foreign SSSR upon

the calculations related to the stock exchange between foreign SSSR and foreign SFRJ” The total length of the Section „Klecovce-Block Stanica 5(Shtip)” is 61km with pipe diameter 500mm.

The existing natural gas network is concentrated in the northern and eastern part of Macedonia and mainly serves the Skopje area.

## The Natural Gas System in Macedonia

### Gas transmission pipelines

Pipeline	Length (km)	Diameter (mm)
Bulgarian border to Skopje	98	500
Klecovce- Shtip branch	61	500
KrivaPalanka branch	1.5	100
Ginovci branch	1.7	100
Kratovo branch	4.6	100
Kumanovo branch	7.0	200
Skopje South branch	8.3	400
Skopje North branch	1.3	300
TIDZ – Bunardzik branches	5.6	200

The system has eight main branch points from the main line and 51 pressure reduction stations, 3 metering stations, 7 valve stations and a pig launcher station.

In 2017, GAMA (the gas transmission joint stock company) continued the construction of a gas ring around Skopje connecting more major customers from the public sector and industrial plants. The gas ring will also serve the planned distribution system in Skopje, which is in the process of being tendered for construction. The gas ring is operated by GAMA and operates at a pressure of 12 bar. At present, some 6.5 km still needs to be constructed. The original plan was that GAMA would pay the connection charges for any new customers on the distribution system. This offer is no longer available, as GAMA does not have sufficient funding. New customers will have to pay for their own connection costs.

The transmission system operator, GAMA, is jointly controlled by *Makpetrol* and the state, operating 98km of the main transmission pipeline and 82 km of branch pipelines.

There are three distribution companies, in Kumanovo with gas network length of 11km that supplies 20 local public buildings and 20 households and DTIRZ (Directorate for Technological Industrial Development Zones, Skopje) with 5km gas network length serving 8 industrial consumers. There is also a small usage of natural gas in the Strumica region with gas network length 24.5km in the south of the country where compressed gas (CNG) is supplied by road from Bulgaria. The customers are 22 public buildings and 184 households that are the only residential consumers of natural gas in Macedonia. The municipality initiated the project and owns the distribution company and the license to operate.

### 4.3.2. Consumption

#### Final Energy Consumption in Macedonia 2000-2015 (ktoe)

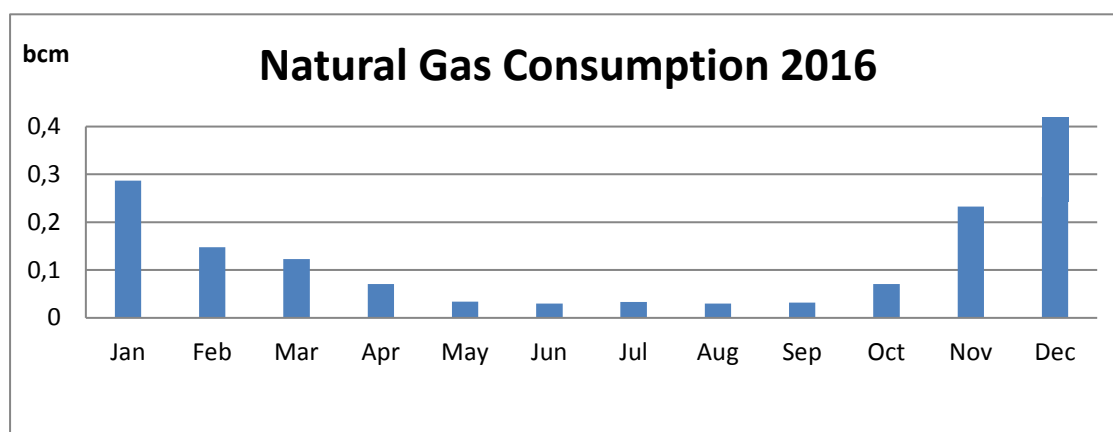
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Coal	104	95	69	138	90	109	136	182	146	68	113	338	128	195	98	99
Petroleum Products	670	587	686	689	707	726	715	776	751	741	837	866	859	874	856	950
Natural gas	7	26	32	30	32	33	34	34	31	29	41	43	23	27	33	31
Geothermal	15	21	12	12	11	9	9	9	8	9	10	11	9	8	7	7
Biomass	204	143	141	165	166	151	163	138	169	191	198	189	196	146	169	224
Electricity	448	432	428	490	496	536	554	580	593	550	583	644	602	584	578	569
Heat	153	132	136	128	122	127	118	107	103	99	54	57	52	44	40	46
<b>Total</b>	<b>1601</b>	<b>1436</b>	<b>1504</b>	<b>1652</b>	<b>1624</b>	<b>1691</b>	<b>1729</b>	<b>1826</b>	<b>1801</b>	<b>1687</b>	<b>1856</b>	<b>2148</b>	<b>1830</b>	<b>1878</b>	<b>1781</b>	<b>1926</b>

Source: Energy Balance 2015 – State Statistical Office

The contribution of natural gas to the overall energy consumption has not increased significantly over the past decade. Gas accounts for less than 4% of the country's energy supply. According to the annual GAMA reports, in 2016 gross inland consumption was 0.213bcm of which over 78% was consumed in heat and CHP plants. Only a minimal amount 2 % is supplied to residential customers.

A recent maximum yearly of 0.047 bcm was recorded in December 2016 with a maximum daily flow rate of 0.0019bcm. This is well within the 0.8 bcm/y or 0.0029bcm/d capacity of the pipeline. In the winter peak day period, the utilisation of the capacity could approach 70%.

#### Natural Gas Gross Inland Consumption 2016



The heavy seasonal consumption is apparent with most of the gas used for heating and CHP plants in the winter (78%). The small industrial load is maintained throughout the year. A winter disruption would obviously have the most economic and social impact.

#### 4.3.3. Market operations

The gas market operations are, for all practical purposes, controlled by GAMA (a joint venture between the company Makpetrol and the State) supervised by the Energy Regulatory Commission and finally by the Government of Macedonia.

The precise division of the ownership of GAMA is still the subject of a long-standing legal dispute. At present, operations are based on an agreement that sets ownership at 50/50 between the two parties.

Due to its involvement in both transmission and supply, Makpetrol is an important player in the market.

According to the Implementation Report prepared by the Energy Community Secretariat, the present organisation of GAMA is in line with Second EU Energy Package on Gas, but it is not fully compliant with the most recent Gas Directive (Directive 2009/73/EC). At present, the TSO is GAMA, which is a separate legal entity. However, one of the GAMA shareholders, Makpetrol, operates as the sole importer of Russian gas and owns a daughter company Prom Gas, which supplies customers and is subject to public service obligations. This means that a vertically integrated company is involved in both supply and transmission system operations, which contravenes the unbundling requirements of Third EU Energy Package on Gas.

There have been 16 licenses issued for natural gas trading by the ERC and 4 for supply. A licence for the supplier of last resort was issued to Prom Gas by ERC on 15.12.2014.

As already mentioned, there are three licensees for distribution system operations: DTIRZ, Kumanovogas (both supplied by Prom Gas) and Strumica Gas (using CNG traded from Bulgaria via road) with incorporated licensees for supply. A licence for the supplier of last resort was issued to the three DSO's by ERC in 2016 too.

All gas customers are granted eligibility status according to the Energy Law but, in practical terms, only seven active eligible consumers are supplied at unregulated prices in Skopje: five TPP/CHP and two big consumers. At present there are no household consumers connected directly to a gas main except for those in Kumanovo and Strumica on the compressed system.

Beside Makpetrol as a trader, presently TE-TO, KOGEL and Toplifikacija (BEG) have made supply contracts directly with foreign natural gas trading companies.

At the beginning of 2012, a new state-owned company, Macedonian Energy Resources (MER), applied for a TSO licence based on the 2011 Energy Law. This licence is based on the planned expansion of the Macedonian natural gas transmission system and has not yet been issued.

Prom Gas issues annual contracts to the customers, with Makpetrol operating a medium term contract with Gazprom. It is understood that the Macedonian companies pay Gazprom directly at the Bulgarian border without the intervening transit fees.

#### 4.3.4. Planned expansion of the natural gas system

There are plans to expand the gas distribution system throughout Macedonia. According to a feasibility study conducted in 2010, the total annual natural gas demand in 2030 could be 1.84 bcm compared to the present annual consumption of 0.16 bcm.

##### Planned main pipelines

The 2010 feasibility study allows for the construction of several pipeline projects to complete the national distribution system.



**Lot1. Klecovce–Stip–Negotino 96.7km**

**Lot2. Negotino–Prilep–Bitola 91.7km**

**Lot3. Stip–Radovis–Hamzali (Bulgarian border) 60km**

**Lot4. Hamzali–Stojakovo (Greek border) 50.4km**

**Lot5. Skopje–Tetovo–Gostivar (possible connection to Kicevo) 110km.**

On another plane, given that one of the major challenges facing the Republic of Macedonia revolves around the need to strengthen the use of alternative fuels, important legislative developments have taken place in order to expand the existing natural transmission and distribution networks. In particular, in January 2014 the Law on realization of infrastructure project for the construction of gas pipeline, section „Klekovce-Block Stanica 5” was adopted (“Official Gazette of the Republic of Macedonia”, No. 13/2014), which gave the green light for the implementation of the infrastructure project for the construction of the gas pipeline, section Klekovce-Block Stanica 5 that is to be financed through funds provided by the “Agreement between the Government of the Republic of Macedonia and the Government of the Russian Federation for regulation of obligation of foreign SSSR upon the calculations related to the stock exchange between foreign SSSR and foreign SFRJ” of 19.06.2010. AD MER Skopje also signed an agreement on 9 July 2014 with OAO Strojtransgas, Moscow for the construction of section “Klekovce-Blok Stanica 5” and the construction of the section started on 14<sup>th</sup> of March 2015 and was completed by June 2016.



The Republic of Macedonia with loan from Commercial Banks started financing the project "Gasification of the Republic of Macedonia - Phase 1 - section Stip - Negotino - Bitola (length 127km) and section Skopje - Tetovo - Gostivar "(length 76 km), as the first phase of construction of the national gas transmission system of the Republic of Macedonia. The construction is planned to take place in the period 2016 - 2019.

In August 2016 started the construction of the Section „Valve station six(Shtip)– Negotino” with total length 36km and diameter 500mm(75%done).



In April 2017 started the construction of this section „Skopje - Tetovo – Gostivar” with total length 75 km and diameter 500mm(15%done).



In April 2017 started the construction of this section „Negotino(Kavadarci)-Prilep- Bitola” with length 92 km and diameter 500mm(13%done).



Action Plan for Projects of Phase 1

The second phase of construction of the national gas transmission system of the Republic of Macedonia, sections Stip-Radovis- Hamzali -Strumica- border with Republic of Greece, sections Hamzali-Novo Selo- border with Republic of Bulgaria (134km in length) and Gostivar-TPPOslomej-Kicevo (length of 39 km) and the rest of the main gas pipelines of the National Gas Pipeline System in the Republic of Macedonia is envisaged to develop in the period 2018 - 2022.

So far, only part of Lot 1, Lot2 and Lot 5 has been approved by the Government.

The funds for the construction of the remaining sections of the gas pipeline system of the Republic of Macedonia are expected to be provided by international financial institutions, СЕВ, European Investment Bank, European Bank for Reconstruction and Development, WB,KfV and others.





A public call commenced in 2017 for the establishment of a PPP for all Regions of the distribution system but were after that stopped by the new Government. A crucial element in the tendering was the cost of connecting end-users to the grid. The government have estimated that the potential heat market, which could be connected to the Skopje system, would be 1720 GWh/y, equivalent to 0.190bcm of natural gas. If this were to be achieved, it would account for over 50% of the Skopje heating demand. At present, GAMA has enough pipeline capacity to cover this increased gas flow. The required investment cost is estimated at EUR 98 million. The investment costs involved would be EUR 27.5 million for the East for the construction of a 220km network over four years. The Western region would require an investment of EUR 22.2 million for a 180km system over four years. When these plans are completed, the forecast natural gas demand has been estimated by the feasibility study and is outlined in the table below.

#### Forecast of the total consumption of natural gas (bcm)

Year	2020	2025	2030
Residential	0.095	0.170	0.310
Commercial/public services	0.043	0.070	0.095
Industry	0.140	0.210	0.335
<b>Total end users</b>	<b>0.280</b>	<b>0.450</b>	<b>0.740</b>
Power generation	0.930	1.100	1.100
<b>Grand Total</b>	<b>1.210</b>	<b>1.550</b>	<b>1.840</b>

Source: Executive Summary of Feasibility study for the gas pipeline system in the country (2010)

This substantial increase in gas demand, all of which would be supplied from one connection and one supplier, would obviously have serious implications for the security of supply. The effects of a disruption would be much more damaging and costly.

## 4.4. SECURITY OF SUPPLY

### 4.4.1. Background

In January 2009, the South Eastern European region including Albania, Bosnia Herzegovina, Bulgaria, Croatia, Greece, Macedonia, Montenegro, Romania, Serbia and Kosovo suffered from a disruption of the flow of Russian gas supplied through the Ukraine. The disruption in supply coincided with a period of particularly cold weather and severely affected a region already suffering the adverse effects of the economic crisis. The region is supplied from Russia through three different transit routes. Romania, Bulgaria, Greece, and Macedonia take gas directly from the Ukraine. Serbia and Bosnia Herzegovina are also supplied from the Ukraine, but the connection is through Hungary. Croatia takes the gas through Austria and Slovenia. As the three systems are not connected, there could be no cooperation in the event of a major disruption.

Of all the States in the region, Bulgaria and Macedonia are particularly vulnerable to interruption from the Ukraine as these countries are 100% reliant on

Russian gas. Bulgaria has a very small gas storage capability of just a few days, whilst Macedonia has no gas storage facilities. Most of the other Balkan States now have gas storage and interconnection facilities to enable them to cope with any gas supply interruption of up to two months.

Bearing in mind the present political difficulties between Russia and the Ukraine, another disruption in natural gas supplies is possible. Only the development of alternative cross-border connections and gas storage facilities will improve the security of gas supply.

The cancellation of the South Stream project whereby a Russian pipeline route would cross the Black Sea and make landfall in Bulgaria has put on hold the Macedonian plans to connect to this system. Officially, the project is closed, but it may not be necessarily completely dead. The original plan to connect a Black Sea pipeline may still be viable. The planned South Stream components can be used to build an alternative route via a landfall in Turkey to transport large amounts of gas to Southern Europe. A great deal of design and feasibility work has already been done on these routes. It is interesting that a flow of 63 bcm has been mentioned for an alternative route – the same volume as would have been provided by South Stream. Of this, 13bcm would go to Turkey and a further 50 bcm to a Greek border hub for further distribution.

If a new gas hub were to be created in Turkey, then Bulgaria and Romania could be supplied merely by reversing the flow in existing pipelines.

Other promising routes are the Trans-Adriatic Pipeline (TAP), which would bring Azerbaijani gas to Italy via the Balkans, and LNG imports via a proposed terminal on the Croatian island of Krk (which now looks increasingly likely) and an existing LNG facility in Revithoussa in Greece.

These sources of supply can in no way be seen as alternatives to South Stream as their combined flow rates will be much less. The TAP will initially provide 10 bcm and the Krk terminal up to 6bcm and it is likely that Russian gas will maintain a price advantage.

#### **4.4.2. The 2009 natural gas supply crisis in Macedonia**

Aware that a probable gas supply interruption was imminent following a warning from Gazprom, the prime minister held a meeting in early January with GAMA to discuss the risks involved in the disconnection of gas supplies and to plan the management of the crisis. All gas customers had been instructed to ensure that they had access to adequate alternative fuels and the ability to switch fuels at short notice. A clause in the gas delivery contracts stated that deliveries might be interrupted. After the crisis meeting, GAMA informed the customers to be prepared for interruption.

The supply disruption began on 6 January 2009 and the effects lasted until 21 January (15 days). For 2 to 3 days, the situation was critical with a total cut in supply. In all, 15 industrial consumers were disconnected. Supplies from the line pack pressurised system was reserved for those priority heat plants and public buildings such as schools and hospitals with no dual-fuel capability. The line pack with a capability of a million cubic metres was used for 2 to 3 days and at the same time Bulgaria made limited quantities available to maintain pressure. Throughout the crisis, GAMA was in direct contact with the Gazprom engineers. The design pressure of the transmission pipeline is 54 bar but normally operates at 40 bar. On disruption, the pressure fell to 33 bar and reached a low of 17 bar before the situation began to improve. The supply was reduced by 0.0107 bcm. Although all the industrial consumers should have been able to switch to alternative fuels, two of the major plants could not change over in time. These two steel companies had to stop production for 2 to 3 days. Although natural gas was being used as compressed fuel

for transport, it was possible to switch to alternative fuels and there was minimal effect on transportation.

It was estimated by the Macedonian Energy Department that the financial costs attributable to the crisis amounted to EUR 5.7 million.

The pattern of natural gas consumption has changed since 2009 when the major customers were mainly industrial and heat plants. From 2012, the usage of natural gas for CHP has expanded and this is now the largest consumer category, accounting for 57% of the total consumption, which is a much larger load than in 2009.

The CHP gas demand is highly variable due to influence of electricity prices. At present, the CHP plants will sign contracts for only limited supplies of gas. A typical contract for November 2014 stipulates a take of only 10 days in the month. At the present electricity tariff prices, it is not economic for the CHP plants to run on generation only. They need the revenue from heating to make an economic case for running the plant with gas prices at current levels.

#### **4.4.3. Supply crisis management**

Since 2009, the Government has taken steps to manage a gas supply interruption. The Ordinance on Natural Gas Supply Crisis published in 2013 allows a committee to be formed in the event of a supply interruption. This committee is established under the leadership of the Minister of Economy and is comprised of two officials from the Ministry of Economy and representatives from the system operator for natural gas, the distribution companies, gas traders, suppliers, and the Energy Regulatory Commission. In the event of an interruption, the committee assembles, evaluates the crisis together with the Centre for Crisis Management, and informs the government.

The measures to be taken are ranked into 11 levels according to the severity of the supply situation. The measures start with a reduction of all deliveries from the transmission system excepting the CHP plants and district heating systems, which are regarded as the priority. The next step is to disconnect all consumers that have a dual fuel capability and are able to switch to an alternative fuel.

Finally, a gradual reduction of supplies can be made whilst maintaining deliveries to the CHP plants, district heating and protected consumers as long as possible.

Macedonia now participates in the Security of Supply Coordination Group and the Gas Subgroup under the Energy Community. The Secretariat of the Energy Community participates in the EU Gas Coordination Group.

#### **4.4.4. Impact of future disruptions**

During the summer of 2014, a stress test was carried out under four possible scenarios.

- Disruption of the Ukrainian route to the EU during a period of 1 month (1.2.2015-28.2.2015)
- Disruption of the Ukrainian route to the EU during a six month period (1.9.2014-28.2.2015)
- Disruption of all Russian supplies to the EU during a period of 1 month (1.2.2015-28.2.2015)
- Disruption of all Russian supplies to the EU during a six month period (1.9.2014-28.2.2015)

In parallel with the stress test, the Energy Department conducted a survey on the expected loss of supply to each consumer and their status as far as ability to switch to an alternative fuel. The results of the survey are set out in the table below.

**Natural gas disruption and alternative fuel availability – all figures in bcm:**

Category	Loss of NG Feb 2015	Loss of NG Sep to Feb 2014/15	Alternative fuel options Feb 2015	Alternative fuel options Sep to Feb 2014/15	Plants with no alternative fuel
CHP	0.0337	0.2089	0.002	0.010	2 of 3
Heat plants	0.0111	0.0511	0.0111	0.0511	0 of 4
Industry	0.00374	0.0190	0.0028	0.0135	9 of 25
Commercial and public	0.00118	0.00371	0.00106	0.00344	5 of 12
Total	0.0498	0.2827	0.01699	0.0781	16 of 44

The main effect of disruption will be felt by the two CHP plants that have no dual-fuel capability. The heat plants can switch to heavy fuel oil and they can cover the heat supplied from the CHP plants so that the effect on residential heating should be minimal. The electricity produced from the CHP plants can be replaced by the existing generation or imports. There are nine industrial loads, which cannot switch fuels, and these include the two steel plants. In the commercial and public building sectors, five of the consumers are not able to switch fuels. Any transport using compressed natural gas can readily switch to other fuels.

A survey was conducted of the interrupted consumers asking for them to estimate the costs involved in switching fuels. Of those plants that responded, the total estimates were equivalent to EUR 1.7 million for one month in winter and EUR 8.8 million for the six winter months. The Energy Department estimated that if all customers had responded, the six monthly cost would have been some EUR 76 million but this is a very rough estimate, as the methodology for calculating the financial losses is not specified.

As the supply comes effectively from one supplier along one pipeline, the location of the interruption is irrelevant. The only crisis measure that can be adopted is a gradual reduction in gas pressure and the interruption of all consumers that have a dual fuel capability. Operating the essential consumers on reduced gas pressure would maintain adequate supplies for a maximum period of one week but possibly for only 2 to 3 days.

At present, there are no residential consumers directly connected to the gas distribution system but the district heating customers would be threatened if supplies to the CHP and heating plants were cut off. As these plants take 80% of the current supply, the situation would soon be critical. The CHP plants account for nearly 60% of the consumption and have no dual fuel capability. The heating plant boilers are dual-fuel and can switch to heavy fuel oil and these could meet the peak load lost from the CHP plants.

If the extension of the gas transmission and distribution systems goes according to the existing plan, then the residential consumption will expand rapidly leading to an increased vulnerability in the event of the gas interruption.

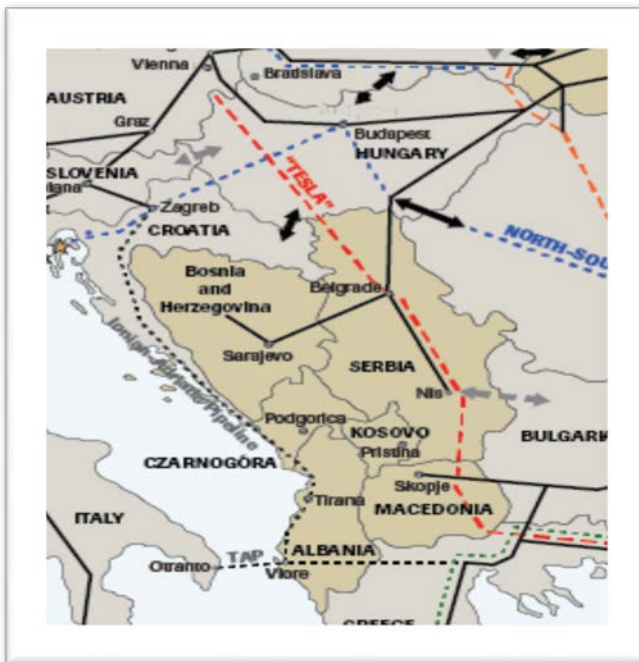
#### 4.4.5. Options to strengthen the security of supply

In order to reduce the possibility of interruption, it would be ideal if alternative sources of gas supply could be made available. If the alternative plan to transport Russian gas via the Black Sea to Turkey is implemented, then there would be large amounts of gas available at the proposed Greek hub or through connections through Bulgaria and Romania.

**TESLA** Project where MERJSC Skopje was assigned to be a signatory of the Memorandum of understanding of this gas pipeline project.

The main characteristics of TESLA Project are:

- TR-GR-RM-SRB-HU-AT gas corridor concept with the aim to create a link between TR and CE
- 42 BCM/y at TR-GR border, 36/20 BCM/y at RS-HU border
- Multi-source (S ⇌ N: RU, RO, AZ, GR LNG)
- Bidirectional (N ⇌ S: CEGH)
- Third party access
- No single TSO
- PCI Project!



Initiative **CESEC (Central and South East Gas Connectivity)** that aims to promote the diversification of natural gas supply and security of supply in the region by enhancing the regional infrastructure and improving the integration of markets through joint engagement of all EU Member States and of the Parties to the Energy Community.

Memorandum of understanding (MoU) and its action plan under the European Commission initiative of Central Eastern and South-Eastern European Gas Connectivity (CESEC) was signed in 2015 in Dubrovnik, Croatia. The document will pave the way for the closer integration of the EU and Energy Community energy markets. The “Interconnector Greece/Bulgaria – Republic of Macedonia” was also listed among “other projects” in the CESEC Action Plan. Accordingly Macedonia has fulfilled its obligations regarding the CESEC Action Plan 2.0 monitoring reports.

MoUs with Republic of Bulgaria and Greece were signed by Macedonian authorities about this interconnector.



### **The list of projects of interest for the Energy Community (“PECI/PMIs”)**

During 2016 the Energy Community Secretariat concluded agreement with a consortium of REKK and DNV GL to help the Energy Community Secretariat and the Groups for electricity and gas for evaluation of projects of interest for the Energy Community in the development and application of methodology to identify projects of interest to the energy community. Representatives of the Ministry of Economy participated actively in the work of this Working Group. As a result of this the preliminary list of PECIs/PMIs was agreed by the group for gas and electricity at the meetings at technical level. Following the positive opinion of the Regulatory Board of the Energy Community (“ECRB”) of the consistent application of the assessment criteria and the cost / benefit analysis, the proposed list was then discussed and agreed at the Permanent High Level Group of the Energy Community (“PHLG”), and adopted by a Decision of the Ministerial Council of the Energy Community to establish a list of projects of interest for the Energy Community and Projects of mutual interest (PECIs/PMIs”). The 10 selected PECIs projects will benefit from streamlined permitting and the possibility of regulatory incentives, cross-border cost allocation and funding under the EU’s Instrument for Pre-Accession Assistance and the Neighbourhood Investment Facility.

The list of projects of interest for the Energy Community (“PECI”) covers one project in the Republic of Macedonia, such as (PECI) Project of interest for the Energy Community for gas connection with Republic of Serbia and additional one Project of mutual interest (“PMI”) for gas connection with Greece. Pursuant to the Decision of 16 October 2015 the Ministerial Council of the Energy Community the concept of project of mutual interest (“PMI”) is introduced, giving the possibility for those projects which are not granted a “PECI” status to be still developed on a voluntary basis by Contracting Parties and Members States supporting the project.

#### **Project of mutual interest (“PMI”) for gas connection with Greece**

In relation to above mentioned must be stress a Memorandum of understanding (“MoU”) was signed between Greek gas TSO DESFA and JSC MER, in October 2016 in Skopje.

The signing of the Memorandum with DESFA is in line with the realization of the project for the construction of gas interconnection for natural gas transmission that should connect the Republic of Macedonia and Greece. The Feasibility study, EISA and the Final Project Designs for construction by the Macedonian side have been already prepared, which indicates that the project is in its mature stage. Please note that this

project is nominated by JSC MER to be included in the process for becoming a “PCI” project in accordance with the EU Regulation 347/2013.

DESFA has also applied for said project to be included into the 2017 list of the PCI list (Projects of Common EU Interest) and has submitted a project financing request from the NSRF (National Strategic Reference Framework).

The benefits for the Republic of Macedonia of realization of this project are enormous because it will provide additional quantities of natural gas of other sources in the Republic of Macedonia and further through Serbia to Central Europe as well as possibility of using natural gas from the Southern Gas Corridor and at the same time it allows connection to the existing Revithoussa and Alexandroupolis LNG terminals in Greece. This leads to diversification and security of supply.

For the economy it is important that it will enable development of competitive component and possibility of decreasing the import price of natural gas because it will ensure availability of natural gas from various producers and suppliers.

The Greek partner has already been involved in the preparation of the feasibility study that assesses the technical, environmental and economic feasibility of the extension of the transmission of the DESFA transmission system (NNGS) from NeaMessimvria to the Greek RM border and of the MER transmission system from the Greek/RM border to Stip. The aim is to assess the technical, environmental and economic feasibility of the project in order support the investment decisions by the sponsors and application to be submitted to national and international financing institutions that will provide grant and/or loans for the implementation of the project. DESFA has necessary experience and expertise, provides technical consulting services for managing and planning of natural gas projects and give advisory services such as studies and/or suggestion for the feasibility of projects and also have long-standing cooperation with the EIB for the financing of many of their projects.

Following the finalization of their feasibility study (in August), a joint meeting with E.I.B., and also with the E.C. will be organized in order to investigate all financing opportunities for the whole project.

So far EIB has expressed interest to finance the Macedonian part of the Project up to 50% of its total cost.

In consultation with DESFA Macedonian partner will apply for investment grants (INV GAF) on the next call of the Western Balkans investment framework (WBIF).

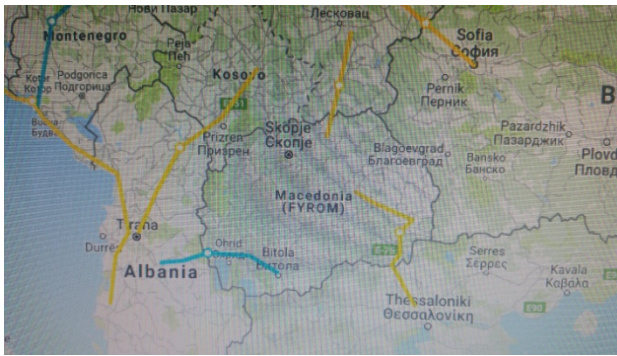
### **Project of interest for the Energy Community (PECI) for gas connection with Republic of Serbia**

Considering (PECI) Project of Energy Community Interest- Gas Interconnector between Macedonia with Republic of Serbia, there are ongoing activities for signing the similar MoU with the Republic of Serbia, like previously was signed with Greece. The Feasibility study for the Macedonian side of the interconnector has been already prepared, but the Final Project Designs still need to be prepared. For this purpose Macedonian partner will apply for Technical grants (TA GAF) on the next call of the Western Balkans investment framework (WBIF). No financial institution has expressed interest about this project so far.

In line with Regulation 347, the Project Promoters submitted their Annual Reports ECS and drew up an Implementation Plan. ECS Report is based on the project promoters own Annual Reports submitted to the Energy Community Secretariat, and in line with the Art.18, The Secretariat established an infrastructure Transparency Platform, published on its website: <https://www.energy-community.org/regionalinitiatives/infrastructure/PLIMA.html>



### **PECI/PMI Projects**



Another option that could be considered is a connection to the Trans Adriatic Pipeline (TAP) through Greece. This connection would have the advantage of providing an alternative supplier – that of Azeri gas from the Shah Deniz field in the Caspian basin that is expected to come on stream in 2020. The pipeline could also transport gas from Iraq, Turkmenistan and Israel in future so would form a secure supply route.

### **Proposed routes for the Trans Adriatic Pipeline**



There is also a proposal to connect the TAP between Albania northwards along the Croatian coast, the Ionian Adriatic Pipeline (IAP). This connection, along with a proposal to build an LNG terminal on the island of Krk of the Croatian coast, would substantially increase the security of supply in the region. This coastal pipeline would form part of the Energy Community gas ring concept whereby the gas markets of Albania, Bosnia-Herzegovina, Croatia, Kosovo, Macedonia, Montenegro and Serbia could be linked. The ring would have the advantage of having the capability of being supplied from multiple directions and would facilitate the development, regional gas market. Another advantage would be that this system could be developed incrementally by adding new entry points and pipeline sections. A system of gas-fired power stations could help underpin the world in countries with relatively small gas demands such as Macedonia, Albania, Montenegro and Croatia.

Access to storage facilities would also strengthen the security of supply but this is prohibitively expensive for Macedonia to consider building and there is limited storage in Bulgaria. Access to Greece via a two-way Trans Balkan pipeline is a possibility. At present Macedonia has no agreement to use the Sidirokastro to Kulata pipeline from Greece to Bulgaria that was used in the 2009 crisis to provide LNG from the Revithoussa terminal in Greece to Bulgaria. There is over 8.5 bcm of unused entry capacity available from the Greek system, most of it from the underused LNG terminal. An agreement to supply Macedonia via this system would greatly improve the country's security of supply.

At present Macedonia will remain in a highly vulnerable position as far as

security of natural gas supply is concerned but with clear vision and strong determination to overpass all its obstacles in the future process of securing the energy supply.

#### 4.4.5. Options to strengthen the security of supply

In order to reduce the possibility of interruption, it would be ideal if alternative sources of gas supply could be made available. In July 2013, the government signed an agreement with the Russian Federation for cooperation on the construction of a gas pipeline to connect Macedonia to the South Stream system. The decision of the Russian government, taken in early 2015, to cancel the South Stream project will remove this option as an alternative supply route for Macedonia. If the alternative plan to transport Russian gas via the Black Sea to Turkey is implemented, then there would be large amounts of gas available at the proposed Greek hub or through connections through Bulgaria and Romania.

Another option that could be considered is a connection to the Trans Adriatic Pipeline (TAP) through either Albania or Greece. This connection would have the advantage of providing an alternative supplier – that of Azeri gas from the Shah Deniz field in the Caspian that is expected to come on stream in 2018. The pipeline could also transport gas from Iraq, Turkmenistan and Israel in future so would form a secure supply route.

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At present there appear to be no favoured options for establishing further connections to the international gas network. Until clear options are available, Macedonia will remain in a highly vulnerable position as far as security of natural gas supply is concerned.

## 5. OIL AND BIOFUEL SECTOR

### 5.1. Legal framework

Within the framework of the Government of the Republic of Macedonia, the Ministry responsible for the oil sector is the Ministry of Economy.

The strategic commitments of the Republic of Macedonia in the oil sector and its obligation to harmonise its national legislation with the oil *acquis*, have been incorporated in the Law on Energy, as subsequently amended, and the recent Law on Compulsory Oil Reserves ("Official Gazette of the Republic of Macedonia", No. 144/2014 and 178/2014), which repealed the previous Law on Compulsory Reserves of Oil and Oil Derivatives (Official Gazette No. 84/2008, 35/2011 and 84/2012).

As it is the case with the other segments of the domestic energy sector, the supervision of the performance of oil activities, which are set forth in the Energy Law, falls within the competences of the Energy Regulatory Commission (ERC) of the Republic of Macedonia. In the context of the oil sector, the ERC is also responsible for:

- adopting the Ordinance and methodology for oil derivatives and fuels for transport; and
- stipulating the manner of setting, approving and controlling of refinery and retail prices for petrol, diesel fuels, light fuel oil and mazut, as well as of retail prices for blends of fossil fuels and biofuels for transport.

On the other hand, the new Law on Compulsory Oil Reserves has harmonised the national legislation with the EU Council Directive 2009/119/EC and in the main regulates:

- the principles governing the establishment, structure, maintenance, storage and calculation of compulsory oil reserves coupled with the corresponding statistical reporting requirements;
- the functions, structure and responsibilities of the Macedonian Compulsory Oil Reserves Agency;
- the manner of financing of the compulsory oil stock scheme;
- the rules pertaining to the maintenance of oil derivatives in the form of specific reserves, including the terms and manner of usage of these specific compulsory reserves; and
- the supervision of the compulsory oil reserve scheme, including the penalties to be imposed in any event of non-compliance.

The oil market in Macedonia is primarily driven by market-based forces, although the maximum refining and retail prices for oil derivatives and the maximum retail prices for blends of fossil fuels and biofuels are set pursuant to the price-setting regulations that are issued by the Energy Regulatory Commission. The maximum retail prices for oil derivatives are set by the ERC at an interval of fourteen (14) days.

Macedonia has no domestic production of crude oil. Up to 2013, the main avenue of oil supply was the crude oil pipeline, which connected Hellenic Petroleum's Thessaloniki refinery in Greece with the OKTA refinery outside Skopje. This pipeline has been agreed to be converted into an oil products pipeline and the relevant requisite technical operations are in the process of being implemented. At present, oil imports are solely effected through the use of tank trucks, which transport oil products mainly from Greece and Bulgaria. It needs further to be mentioned that the OKTA refinery was agreed to cease its refining operations in 2013, although - owing to its large tank capacity - it is still used as a main hub for the distribution of oil products.

As regards the biofuel sector, it is in the early stages of its development and the penetration of the market remains limited. Makpetrol, a domestic energy conglomerate, has set up a factory for the production of biodiesel with a production capacity of 20.000 tons per year. In the legislative front, as part of the EU/IPA project, a new Law on Biofuels has been drafted along with all corresponding pieces of secondary legislation in order to ensure that the biofuel provisions of the Directive 2009/28/EC are fully transposed into the Macedonian legal order. This whole legislative package has been submitted to, and commented by, the ECS and it is planned to be adopted by the Macedonian Parliament in the very near future. Added to this, within the framework of the EU/IPA project, a draft National Biofuel Action Plan of the Republic of Macedonia has been prepared, which covers a period of ten years with the aim to promoting the production and use of biofuels in the domestic transport sector. The primary objective of this Plan is to further elaborate the manner for the attainment of the compulsory national target and the estimated trajectory for the share of energy from different types of biofuels consumed in transport in the coming years with annual targets defined for each technology (biofuel type). It further streamlines and enforces the proposed supporting measures for the promotion of biofuel production and use, which are laid down in the Law on Biofuels and the related secondary legislation. Last but not least, it includes information on adopted and additional planned policies, instruments and measures and responsible bodies for biofuels production and use as well as indicative amounts of crops' production in the agricultural sector that will be utilised for biofuels production.

## 5.2. KEY MARKET PLAYERS IN THE OIL SECTOR

The Energy Law primarily regulates the activities of whole and retail traders in fuels. In particular, a **wholesale trader** in fuels is entitled:

- to purchase crude oil, oil derivatives, biofuels and/or fuels for transport from the producers;
- to trade with other wholesale traders in fuels; and
- to supply the retail traders in fuels and final customers.

Any wholesale trader in fuels is required to own, or to have the right to use, the storage premises for crude oil, oil derivatives, biofuels, and/or fuels for transport. It is further obligated to hold operational reserves in oil derivatives and fuels for transport at all times in the quantity sufficient to cover at least five-day average volume of trade, calculated on the basis of actual trade in each oil derivative separately for the previous year.

The Energy Law vests in final customers the right - without requiring them to obtain a licence on wholesale trade in crude oil, oil derivatives, biofuels or fuels for transport - to purchase oil derivatives and transport fuels also from abroad, provided that the relevant oil products are used for a customer's own consumption.

On the other hand, a **retail trader** in fuels must perform its activity at petrol

stations or at appropriate facilities, which meet the requirements stipulated by the Energy Law or any other related regulation. The retail trader in fuels can display or otherwise use the logo of fuel producers or of the wholesale trader in fuels pursuant to a mutual agreement, for the purpose of indicating the origin of the oil derivative or fuel for transport, thus guaranteeing its customers reliable and uninterrupted supply in oil derivatives and transport fuels under the quality guaranteed by the relevant producer of wholesale trader.

### 5.3. CURRENT INFRASTRUCTURE

Oil products account for over 40% of the total energy consumed in Macedonia. Usage is divided approximately between the transport (60%), industrial (30%), and residential and commercial (10%) sectors.

Macedonia is landlocked and totally dependent on oil import through neighbouring countries. Recently, the main supplies have come through Greece from the refinery and harbour in Thessaloniki.

There is a pipeline connecting the OKTA refinery in Skopje with refineries and hubs in Thessaloniki. This pipeline is presently not functioning because it is being converted to carry oil products instead of crude as the refinery is being closed down but preserved for possible future operation.

At present all oil products are imported by road with the refinery, with its substantial tank storage capacity, being the main hub for distribution. Once the pipeline is operational and able to transfer oil products, it would have an annual capacity of 2500 thousand tonnes, which is more than enough to secure the domestic supplies as well as some export.

The oil market is dominated by three large companies: OKTA, Makpetrol and Lukoil, which operate along with a number of smaller oil traders. The three main oil companies possess the majority of the gas stations, but there is a small number of independents.

Most of the oil storage capability is located at the Skopje refinery that can hold around 470 thousand cubic metres. Makpetrol can store a further 75 thousand cubic metres. This would correspond to a total storage capacity of around 485 thousand tonnes.

Much of the oil storage capacity has been used to store crude oil and is at present not suitable for storing lighter products. It is reported that there is around 18,300 cubic metres of storage available at present. Current stocks are estimated at 57 days of average supply and this level cannot be increased at present owing to the lack of suitable storage.

#### Total oil product consumption 2016 - thousand tonnes

LPG	Gasoline	Kerosene	Diesel	Gasoil	HFO	Coke	Total
61	101	12	422	45	74	90	805

Source Ministry of Economy

### 5.4. COMPULSORY OIL RESERVES

The new Law for on Compulsory Oil Reserves (“Official Gazette of the Republic

of Macedonia”, No. 144/2014 and 178/2014) has transposed the Directive 2009/119/EC with the view to.

- meeting the obligation of the Republic of Macedonia to provide a high level of security of supply of crude oil and oil derivatives; and
- ensuring the uninterrupted supply of the market with crude oil and/or oil derivatives in the event of impaired energy security caused by extraordinary disruption and significant and sudden decline in the oil supply.

This Law sets the terms and conditions of the scheme for the gradual establishment, storage and maintenance of minimum stocks of crude oil and/or oil derivatives in the form of compulsory oil reserves. Under this scheme, the total quantities of compulsory reserves for each type of oil derivative should reach coverage of realised average daily consumption of that oil derivative for a period of 90 days in the previous calendar year (or 25% of the total realised consumption of the relevant type of oil derivative in the previous calendar year). The scheme's implementation is entrusted to the Macedonian Compulsory Oil Reserves Agency (MACORA)- an independent and non-profit state administration authority with the status of a legal entity –which is designated as the central body for storing compulsory reserves and which is the sole body that is authorised to establish, maintain, store and sell the compulsory reserves of the Republic of Macedonia. To this end, MACORA is responsible for:

- the creation, preservation, renewal and management of the compulsory reserves of the Republic of Macedonia;
- the purchase and sale of crude oil and/or oil derivatives in order to establish and replenish compulsory reserves;
- the conclusion of contracts for the optional purchase of crude oil and/or oil derivatives-tickets and of contracts related to other financial instruments for establishing the compulsory reserves and for limiting any market and price volatility exposures during the establishment and maintenance of the compulsory reserves;
- the calculating the stocks' level of compulsory reserves on the basis of data from the relevant reference year;
- record keeping of the level, type and territorial distribution of the compulsory reserve stocks;
- the preparation and maintenance of a register of the compulsory reserves and the specific reserve stocks;
- the taking of insurance for the compulsory reserves stocks from risks;
- proposing a manner to determine and calculate the amount and the payment of the fee for compulsory reserves;
- collecting the fee for compulsory reserves;
- record keeping about the payment amount of the fee for compulsory reserves;
- caring for the earmarked expenditures of the funds for the operations of the Compulsory Reserves Agency;
- proposing a manner to determine and calculate the payment of the expenditures regarding the storage, preservation and maintenance of the compulsory reserves;
- monitoring the availability of the storage facilities for the storage of the compulsory reserves;
- building, upgrading and maintaining new and/or existing storage facilities;
- concluding contracts for the storage of the compulsory reserves and their registration;
- proposing the manner and procedure for the use, physical accessibility and availability of oil reserves in the event of any disruption of energy security in the country caused by large-scale disruptions in oil supply;
- releasing compulsory reserves in the event of some major supply disruption in the market;

- monitoring and managing the compulsory reserves that are stored in the Republic of Macedonia or in the territory of another State according to the provision of the Law on Compulsory Oil Reserves;
- monitoring the oil reserves of other countries, which - under bilateral agreements - are stored in the Republic of Macedonia;
- supervising the implementation of the regulations of the Law on Compulsory Oil Reserves;
- cooperating with the competent authorities and institutions and commercial entities in the Republic of Macedonia as well as with international institutions and
- regularly monitoring the domestic and international market of crude oil and oil derivatives.

On this subject, it is worth noting that MACORA does not possess its own storage for petroleum products. Moreover, Macedonia has a limited capacity to store the total quantities of compulsory reserves that should be established in accordance with the requirements of the Law on Compulsory Oil Reserves for 90-days consumption. In order to overcome these difficulties, MACORA is authorised to build its own capacity and store the reserves in rented capacity outside its national borders on the territory of EU Member-States by concluding bilateral agreements between Macedonia and EU Member-States, or hold part of the stocks in the form of tickets. The realisation of the Mid-term Programme *“for the establishment of compulsory reserves of oil and oil derivatives, construction, maintenance and purchase of storage capacities 2010-2015”*, which was adopted by the Government on 9 of March 2010 and which was amended on 12 of July 2012, requires having 70% of the stockholding obligation in Macedonia and provision for the remaining 30% by tickets in other countries. Until the end of 2015, the required investments could be covered by the average fee paid by the importers and manufacturers of petroleum products per litre of gasoline, gas oil, residual fuel oil, and LPG placed on the market.

The Directorate for Compulsory Reserves of Oil and Oil Derivatives is also entitled to make agreements with authorised trading and storage companies that hold a license for storing oil or petroleum products and which - under the Law on Compulsory Oil Stocks - are obliged to store the compulsory reserves. Furthermore, MACORA is authorised to perform inspection of the compulsory reserves, which are stored in the oil tanks of the licensed trade companies.

Added to this, the Law on Compulsory Oil Reserves regulates the maintenance and management of specific reserves. In this regard, it is stated that MACORA may maintain oil derivatives in the form of specific reserves, which shall be an integral part of the compulsory reserves, calculated in days of consumption pursuant to the conditions stipulated in the Law on Compulsory Oil Reserves. The specific reserves shall be maintained in order to provide an appropriate intervention by putting in circulation oil derivatives, which are necessary for an initial response in the events of special emergency or to overcome some local crisis which is not triggered by the changes in prices of the crude oil or oil derivatives, and which may relate to the supply disruptions with natural gas. These specific reserves shall be the property of the Republic of Macedonia and shall be managed by the MACORA.

As regards the financing of the compulsory oil stocks' scheme, the Law on Compulsory Oil Reserves stipulates that the funds to be allocated for covering the costs of establishing, maintaining and storing the compulsory reserves and for ensuring the regular operations of MACORA shall be provided by:

- the fee for compulsory reserves of crude oil and/or oil derivatives;
- assets acquired on the basis of international cooperation for programmes and projects;
- credits; and

- other sources.

These funds shall represent income of MACORA and are to be paid into a separate account, which is held by the Treasury.

Finally, it needs to be mentioned that - in compliance with the requirements of the Law on Compulsory Oil Reserves - the Government of the Republic of Macedonia, on the proposal of MACORA, is in the process of formulating an Action Plan for the establishment of compulsory reserves, which shall provide a framework regulation for:

- the dynamics of the formation of compulsory reserves as of 31.12.2022, expressed in days of crude oil and / or oil derivatives coverage,
- the dynamics and the manner of recovery of the compulsory reserves,
- the arrangement of the storage and territorial distribution of the compulsory reserves, and
- the methods of the investments towards the renewal of the existing, and the construction of new, storage capacities.

Allied to that, the Government, on the proposal of the Ministry of Economy, is currently working on the drafting of the Decree that will specify the measures to be implemented in cases of some emergency disruption of the supply of the energy market with crude oil and oil derivatives.

As of 31 December 2014, the stored quantities of the compulsory oil reserves correspond to 57 days of the average daily consumption of oil derivatives in the Republic of Macedonia during the previous calendar year.



## 6. OVERALL CONCLUSIONS

The domestic energy production that Macedonia is forecasted to produce is clearly insufficient to satisfy the increasing consumption of energy, principally in the forms of imported fossil fuels and electricity. As a consequence, Macedonia will remain an importer of oil, gas and electricity and thus reliant on imports to satisfy the final energy demand. At present, the level of security of supply is not ideal with further diversification in supply needed; however, Macedonia has made significant steps toward addressing these challenges.

The electricity security of supply appears sound with an effectively controlled transmission and distribution network that is internationally connected to a diversity of suppliers.

The improved connection to Kosovo and the new high voltage link to Albania will improve an already robust security of supply.

As far as natural gas is concerned, gas Interconnection to Greece (PMI) and Serbia (PECI) will enhance the security in gas sector in Macedonia and will enable establishing further connections to the international gas networks and gas hubs (TAP, Turkish Stream, LNG terminals). If these projects are not realised, Macedonia will remain in a highly vulnerable position at the moment as far as security of natural gas supply is concerned.

The proposed expansion of the gas distribution network, whilst remaining dependent on a single supplier via a single pipeline will only serve to compromise the security of supply further.

The import of oil is flexible as all products are imported by road at present. Should intensive use be made of the single oil product pipeline, then this would have negative implications as far as security is concerned but at the same time would produce economic benefits. This reduction in security should be offset by increasing the oil storage capability to at least 90 days of average consumption for all oil products

Macedonia has made significant efforts to transpose existing EU laws regarding security of supply into its own legislation so as to adhere to the EU acquis.

The country has made considerable efforts to make strategic partnerships but has been slowed down by geopolitical and economic issues outside its control.

Overall Macedonia looks well placed to meet the expected requirements that have been presented by the adoption of the EU energy acquis.