CROATIAN ENERGY REGULATORY AGENCY

METHODOLOGY AND CRITERIA FOR EVALUATING INVESTMENTS INTO ENERGY INFRASTRUCTURE PROJECTS

Zagreb, January 2024

1. INTRODUCTION

Pursuant to Article 17, paragraph 4 of Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013 (OJ L 152/45, 3 June 2022) (hereinafter: Regulation (EU) 2022/869), each national regulatory authority shall by 24 January 2023 submit to the Agency for the Cooperation of Energy Regulators (hereinafter: ACER) its methodology and the criteria used to evaluate investments energy infrastructure projects and the higher risks incurred by those projects, updated in view of latest legislative, policy, technological and market developments. Such methodology and criteria shall also expressly address the specific risks incurred by offshore grids for renewable energy referred to in point (1)(f) of Annex II and by projects, which, while having low capital expenditure, incur significant operating expenditure.

The subject Methodology and criteria for evaluating investments into energy infrastructure projects determine the method of evaluating investments into energy infrastructure priority corridors and areas projects of common interest in the European Union (hereinafter: projects of common interest), criteria and risk assessment procedure for projects of common interest and measures for risk mitigation or elimination.

Regarding electricity projects, this Methodology covers only the following project which falls within energy infrastructure priority corridors and areas including the Republic of Croatia in line with Annex I of the Regulation (EU) 2022/869:

- Priority Electricity Corridor: North-South electricity interconnections in Central Eastern and South Eastern Europe (NSI East Electricity);
- Priority Offshore Grid Corridor: South and East offshore grids (SE offshore);
- Priority thematic area: Smart electricity grids deployment.

In general, storage projects are neither subject to risk evaluation or investment cost evaluation (in view of a lack of allowed revenues and need for network upgrading) nor subject to any regulatory approval for cost recovery via regulated tariffs. Storage investment decisions are left fully to business interest.

Also, Regulation (EU) 2022/869 stipulates that gas projects are subject to energy infrastructure corridors and thematic areas including the Republic of Croatia, which in line with Annex I of Regulation (EU) 2022/869 refer to:

- Priority gas corridor: for hydrogen: Hydrogen interconnections in Central Eastern and South Eastern Europe (HI East):
- Electrolysers;
- Priority thematic area: Cross-border carbon dioxide network;
- Priority thematic area: Smart gas grids.

2. EVALUATING INVESTMENTS INTO PROJECTS OF COMMON INTEREST

2.1 EVALUATING INVESTMENTS INTO THE ELECTRICITY SYSTEM

The Croatian Energy Regulatory Agency (hereinafter: Agency) evaluates investments into the power system based on the provisions of the act regulating the electricity market.

The transmission system operator shall, in accordance with the provisions of the act regulating the electricity market, submit each year to the Agency for approval a ten-year transmission network development plan based on the existing and anticipated generation and system load, after consultation with all relevant parties concerned. The ten-year transmission network development plan contains effective measures aimed at ensuring network availability and security of supply.

In particular, the ten-year transmission network development plan:

- indicates to the electricity market participants the main transmission infrastructure, which shall be constructed or improved over the next ten years,
- contains investments on which a decision has already been made and determines new investments to be realized in the next three years and
- provides a timeframe for all investment projects.

When developing the ten-year transmission network development plan, the transmission system operator shall reasonably assume the development of the generation, supply, consumption and exchange of electricity with other countries, taking into account the network investment plans in the region.

The Agency consults with all actual or potential network users on the ten-year transmission network development plan during a 15-day public consultation. Any person or entity claiming to be potential network user may be required to provide adequate evidence. On its website, the Agency publishes the results of the consultation procedure, in particular any investment needs.

The Agency shall check whether the ten-year transmission network development plan covers all investment needs identified during the consultation procedure and the compliance of the ten-year transmission network development plan with the non-binding ten-year transmission network development plan at the EU level under Regulation 8(EU) 2019/943, and in the event of noncompliance, the Agency may consult with the Agency for the Cooperation of Energy Regulators and request from the transmission system operator an amendment of the ten-year transmission network development plan.

The Agency monitors and evaluates the implementation of the ten-year transmission network development plan.

The ten-year transmission network development plan shall be aligned with the valid Energy Development Strategy of the Republic of Croatia, Spatial Development Strategy of the Republic of Croatia and spatial plans, valid Integrated National Energy and Climate Plan for the Republic of Croatia (NECP), the ten-year distribution network development plan, requests for connecting network users to the transmission network,plans for the development of neighboring transmission networks, requests for securing minimal available capacity for cross-

zonal trading by action plan for mitigating structural congestions and other requests from Regulation (EU) 2019/943 and provisions from national transmission network codes which are related to the transmission network development planning.

The ten-year transmission network development plan includes detailed investments in the next three-year and one-year period, whereby the facilities for which the preliminary designs have been prepared in accordance with the physical plan, the act governing physical planning and construction and the regulations adopted on the basis of the subject act and other special regulations, subject to prior agreement with the distribution system operator with regard to joint plants.

When creating a ten-year transmission network development plan, the transmission system operator plans the development of electricity production and consumption in the Republic of Croatia and the exchange of electricity with other countries, taking into account investment plans for networks at the level of the entire European Union and regional networks, and is obliged to define the amount of annual energy savings as a percentage of the average total delivered electricity in the previous three years, and take into account demand side management, energy efficiency, use of energy storage facilities, use of flexibility, congestion management including planning of future generation facilities and energy storage facilities to provide ancillary services or other resources used by the transmission system operator as an alternative to strengthening the transmission network, which can reduce or postpone the need for strengthening the transmission network in a cost-effective manner.

2.2 EVALUATING INVESTMENTS INTO THE GAS SYSTEM

The Agency evaluates investments into the gas system based on the provisions of the act regulating the gas market. The current act regulating the gas market in the Republic of Croatia does not prescribe rules for the regulation of hydrogen infrastructure and carbon dioxide infrastructure. After the adoption of the relevant legal provisions for the regulation of hydrogen infrastructure, this methodology will be adjusted accordingly.

Evaluating investments into the gas transmission system

The transmission system operator shall, in accordance with the provisions of the act regulating the gas market, develop a ten-year transmission system development plan in accordance with the Energy Development Strategy of the Republic of Croatia and the Implementation Program of the Energy Development Strategy of the Republic of Croatia, and submit it to the Agency for approval, whereby the planned investments into the construction and the reconstruction of the transmission system shall be technically justified and economically efficient, as well as ensure an adequate degree of security of gas supply. The ten-year plan is developed for the period commencing in the year following the year in which the plan was submitted for approval.

In particular, the ten-year transmission system development plan:

- provides for effective measures that guarantee the adequacy of the transmission system and security of supply,
- indicates to the gas market participants the main transmission infrastructure, which must be constructed or expanded in the regulatory period,
- encompasses investments on which a decision has already been made and determines new investments to be realized in the regulatory period,
- provides a timeframe for the realization of all investment projects,
- provides a ten-year projection of the transmission system development.

The ten-year transmission system development plan shall in particular include the following:

- a plan of investments into the construction and reconstruction of the transmission system, including a plan for putting into operation of gas pipelines and other transmission system facilities, in natural and financial indicators,
- a feasibility study for the planned investments, including a projection of gas demand and supply in the Republic of Croatia, as well as plans for the development of the gas production system, gas storage system and liquefied natural gas terminal (hereinafter: LNG) and sources of financing the planned investments,
- analyses and background documents on which the ten-year projection of the transmission system development is based.

When approving the ten-year transmission system development plan, the Agency:

- verifies the compliance of the ten-year transmission system development plan with the Energy Development Strategy of the Republic of Croatia and the Implementation Program of the Energy Development Strategy of the Republic of Croatia, whereby the Agency may consult with the ministry competent for energy,
- verifies the compliance of the ten-year transmission system development plan with the non-binding ten-year transmission system development plan of the European Union pursuant to Regulation (EC) No. 715/2009, whereby the Agency may consult ACER,
- consults with all existing or potential transmission system users on the ten-year transmission system development plan through a 15-day public consultation, whereby the potential transmission system users may be requested to submit appropriate evidence and verifies whether the ten-year transmission system development plan covers all investment needs identified during the consultation process,
- may require the transmission system operator to amend the ten-year transmission system development plan.

Evaluating the investments into the gas storage system and LNG terminal

The gas storage system operator and the LNG terminal operator shall prepare the system development plan in accordance with the Energy Development Strategy of the Republic of Croatia and the Implementation Program of the Energy Development Strategy of the Republic of Croatia, whereby the planned investments into the construction and the reconstruction of the system shall be technically justified and economically efficient, as well as ensure an adequate degree of security of gas supply. In particular, the system development plan:

- indicates to the gas market participants the system infrastructure, which must be constructed or expanded in the regulatory period,
- encompasses investments on which a decision has already been made and determines new investments to be realized in the regulatory period,
- provides a timeframe for the realization of all investment projects.
- provides a ten-year projection of the system development.

The system development plan shall in particular include the following:

- a plan of investments into the construction and reconstruction of the system, including a plan for putting into operation of system facilities, in natural and financial indicators,
- a study of justifiability of the planned investments, including a projection of the need for system capacities in the Republic of Croatia, as well as assumptions on the needs for the system capacities in the region and sources of financing the planned investments.

The system development plan shall be prepared for the regulatory period, with a ten-year system development projection, and shall be submitted to the Agency along with a request for establishing the amount of tariff items and assessed by the Agency.

3. RISK ASSESSMENT CRITERIA AND PROCEDURE FOR PROJECTS OF COMMON INTEREST

In line with Article 17, paragraph 1 of Regulation (EU) 2022/869, where a project promoter incurs higher risks for the development, construction, operation or maintenance of a project of common interest falling under the competence of national regulatory authorities, when compared to the risks normally incurred by a comparable infrastructure project, Member States and national regulatory authorities may grant appropriate incentives to that project in accordance with Article 13 of Regulation (EC) No 715/2009, Article 18(1) and Article 18(3) to (6) of Regulation (EU) 2019/943, Article 41(8) of Directive 2009/73/EC and Article 58, point (f), of Directive (EU) 2019/944.

Previously mentioned statement shall not apply where the project of common interest has received an exemption:

a) from Articles 32, 33, and 34 and from Article 41(6), (8) and (10) of Directive 2009/73/EC, pursuant to Article 36 of that Directive;
b) from Article 19(2) and (3) of Regulation (EU) 2019/943 or from Article 6, Article 59(7) and Article 60(1) of Directive (EU) 2019/944 pursuant to Article 63 of Regulation (EU) 2019/943;
c) pursuant to Article 36 of Directive 2009/73/EC;
d) pursuant to Article 17 of Regulation (EC) No 714/2009.

Pursuant to the provisions of Article 17, paragraph 5 of Regulation (EU) 2022/869, by 24 June 2023, taking due account of the information received pursuant to paragraph 4 of this Article, ACER shall facilitate the sharing of good practices and make recommendations in accordance with Article 6(2) of Regulation (EU) 2019/942 regarding both of the following:.

a) the incentives referred to in paragraph 1 on the basis of a benchmarking of best practice by national regulatory authorities;
b) a common methodology to evaluate the incurred higher risks of investments in energy infrastructure projects.

The following criteria are applied to the risk assessment for projects of common interest belonging to the aforementioned categories:

1) The Agency may assess the risks for a project of common interest only if the project promoter submits to the Agency all required documents and data, i.e. evidence of possible risks.
2) The project promoter shall provide evidence as to whether the possible risks associated with a particular project of common interest are greater than a comparable project and to what extent they negatively affect the project promoter.
3) The project promoter performs a risk assessment for a project of common interest, and submits the documents and data to the Agency, which, among other, shall include the following:
   - cost-benefit analysis pursuant to the provisions of Article 11 of Regulation (EU) 2022/869,
   - evidence of sufficient project maturity,
   - description of risks, including the probability of occurrence and the quantitative estimate of the financial consequences,
   - explanation of the party affected by the risk, i.e. who shall bear the consequences of the risk,
   - an explanation of whether potential risks can be mitigated or eliminated using the system operator measures or existing regulatory measures, i.e. explanation as to why this is not possible.

Specifically for electricity projects which are Electricity infrastructure projects or smart electricity grid projects, promotors need to prepare CBA for projects with CAPEX threshold exceeding 5.3 million euros and which will cover at least following monetized indicators:

— Decrease of losses in the grid;
— Decrease of costs for expected electricity not supplied;
— Decrease of CO2 emissions;
— Increase of transmission capacity;
— Decrease of costs for redispatching;

The Agency may request from the project promoter additional information, documents and data if they are needed for an adequate risk assessment for a project of common interest.

The risk assessment procedure for a project of common interest is performed on the basis of the above criteria and consists of the following steps:

1) Risk identification

Risks can be divided into the following categories:

a) The risk of cost overruns - the risk that the actual costs during the development, construction, operation and maintenance of the project shall be higher than the expected costs that are *ex-ante* approved by the Agency,
b) The risk of time overruns - the risk that development and construction of a project takes longer than expected and planned according to the system development plan,
c) The risk of stranded assets - the risk that the demand for the services of a project of common interest shall be less than planned due to reasons that are not under the control of the project promoter,
d) Risks related to the identification of efficiently incurred costs - the risk that costs are not considered as being efficiently incurred based on benchmarking or other regulatory measures,
e) Liquidity risk - the risk that the project promoter shall not be able to fulfil its financial commitments.

2) Risk mitigation or elimination measures by the project promoter

The Agency assesses to what extent the risk can be mitigated or eliminated through the application of appropriate measures by the project promoter, such as certain economic instruments (e.g. contractual penalties, insurance, hedging and similar).

If these measures are available and applicable, no additional measures, i.e. incentives are required.

3) Assessment of systematic risk and definition of cost of capital, as well as regulatory measures of mitigating or eliminating risk that are applied

The potential impact of the risk on the project promoter is assessed by taking into account the overall regulatory framework. Bearing in mind the aforementioned, the Agency assesses to what extent the risk has already been taken into account when determining the cost of capital on the basis of the tariff methodology. Furthermore, the Agency shall assess which valid regulatory measures for mitigating or eliminating risk are applied to the appropriate risk.

4) Risk quantification

The Agency shall evaluate, if possible on the basis of the data provided by the project promoter, the risk exposure for a particular project of common interest in terms of higher costs or lower revenue for the project promoter.

5) Project comparability

When assessing the level and justification of the risks, the project is compared to another corresponding project. The Agency shall assess whether the possible risks for a particular project of common interest are greater than the risks of a comparable project.

6) Risk profile justifiability

The Agency shall assess whether there is a justification for a particular risk profile with regard to the net positive impact of the project compared to the lower-risk alternative, taking into account, among other, the results of the submitted cost-benefit analysis pursuant to

Article 11 of Regulation (EU) 2022/869. If necessary, the Agency shall consider reducing or eliminating the remaining uncovered risks by taking appropriate steps in relation to the specific nature of the risk.

4. RISK MITIGATION OR ELIMINATION MEASURES

4.1 RISK MITIGATION OR ELIMINATION MEASURES INCLUDED IN THE REGULATORY FRAMEWORK IN THE AREA OF ELECTRICITY

The methodologies for determining the amount of tariff items for power infrastructure activities in the Republic of Croatia are based on the cost-plus method including incentive for price for procuring transmission losses. The cost-plus method applied stipulates a regulatory period of one year. Determining of the amount of tariff items for the following regulatory year is based on the recognized total costs realized in the previous regulatory year, realized and estimated total costs for the current regulatory year and planned total costs for the considered future regulatory year. The expenses include eligible operating expenses (hereinafter: OPEX) and eligible capital expenses (hereinafter: CAPEX).

OPEX includes the costs of electricity losses, maintenance, measurement and billing, procurement of auxiliary services, staff costs and other operational expenses.

Methodology for determining the amount of tariff items for electricity transmission issued in July 2022 recognizes the incentive for transmission losses procuring price in previous calendar year. Therefore, transmission system operator is encouraged to buy losses in optimal way. Since costs for transmission losses represent a big share of overall OPEX costs, transmission system operator is consequently incentivized to decrease the physical volume of the losses as well as the (losses) procuring price.

Agency is giving a special attention to the projects which aim to decrease the level of transmission losses in the grid. If these projects have an impact on other countries as well and if their implementation helps to manage the grid in a better way using smart technologies, they are eligible to become project of common interest as the smart electricity grid projects.

Ane of the forms of flexibility is the possibility for new production units to connect to the grid with flexible connection agreements. This enables the faster connection of new producers who do not need to wait until necessary network expansion is built to receive total production from new producer at any time in a secure way.

Another way of using flexibility is aggregation of demand which can provide its services to the transmission system operator. There are several services and products which can be interested for aggregator for providing their offers. The most important ancillary service is providing manual Frequency Restoration Reserve (mFRR) capacity for security of electricity system. In the near future, transmission system operator will implement other products for which aggregator will be able to provide competitive bids together with other market parties.

Redispatching is one of the most efficient remedial actions to manage congestions in the network. Transmission system operator has the possibility to actively control the power flows in the network by demanding change of the production or demand pattern of grid users in the

specific area.

Due attention is given to the development of offshore projects. Transmission network will have to be prepared for possible upgrading of grid to enable the connection of offshore generation units. Agency will closely follow the activities in this respect in line with the valid Energy Development Strategy, NECP and other relevant national acts. CAPEX includes the amortization cost and the return on regulated assets. It recognizes an equity capital investment into a regulated energy entity, i.e. provides sufficient funds for the required investments into the construction and reconstruction of the system and to cover the regulated return on invested capital. Regarding capital expenses from the regulatory standpoint, the following elements have to be determined:

- the system operator assets recognized as regulated assets, i.e. regulatory asset base (RAB),
- the method of calculating the amortization,
- the rate of return on regulated assets (RoR).

Regulated assets consist of fixed tangible and intangible assets in use, which are part of the transmission or distribution system. The planned investments into the construction and reconstruction of the system shall be technically justified and economically efficient. Once the approved project is put into operation, the investment is included in the regulatory asset base and therefore there is no risk to the system operator. The application of the subject approach reduces the risk of investment and provides more investment incentives since the eligible capital expenses, i.e. amortization and return on regulated assets are determined by an *ex-ante* approach of the approval of investment plans as part of the analysis and approval of the request for the determination, i.e. change of the amount of tariff items. The aforementioned eliminates the risk of not covering the costs of infrastructure projects if they are eligible and economically efficient. Additional incentives in terms of correcting the content of regulated assets may lead to overinvestment and are therefore not required.

The nominal weighted average cost of capital before tax (WACC) is used as the rate of return on regulated assets. As a measure of avoiding systemic risk, the rate of return on equity is calculated using the CAPM model.

Methodology for determining the amount of tariff items for electricity transmission from July 2022 introduced another new characteristic which will help transmission system operator to implement new technologies in the form of the regulatory sandbox. It allows transmission system operator to invest in state-of-the-art technologies which enable to manage the grid in a smart and optimal way and at the same time allowing additional costs for its implementation.

4.2 RISK MITIGATION OR ELIMINATION MEASURES INCLUDED IN THE REGULATORY FRAMEWORK IN THE AREA OF GAS

The methodologies for determining the amount of tariff items for gas infrastructure activities in the Republic of Croatia are based on the incentive regulation method, i.e. on the revenue cap method. Thereby, projected allowed revenue shall cover reasonable operating expenses

generated when performing the energy activity and ensure the return on regulated assets. The revenue cap method applied stipulates the regulatory period as a multiannual period for which, separately for each regulatory year, the allowed revenues are defined, which consist of eligible operating expenses (hereinafter: OPEX) and the eligible capital expenses (hereinafter: CAPEX) and the amount of tariff items. The duration of the regulatory periods is five years.

The allowed OPEX is projected for the regulatory period on the basis of the 1+CPI-X formula (CPI = projected consumer price index for the regulatory year). In addition to the efficiency factor X, in the OPEX part, as an important incentive element for the system operator, a profit-sharing mechanism is also stipulated, which is implemented in such a manner that after expiry of the regulatory period the base OPEX for the following regulatory period is defined so that the system operator retains 50% of the realized savings from the base year.

The eligible CAPEX, which includes the amortization cost and the return on regulated assets, recognizes an equity capital investment into a regulated energy entity, i.e. provides sufficient funds for the required investments into the construction and reconstruction of the system and to cover the regulated return on invested capital. The regulated assets consist of tangible and intangible assets in use, which is a part of a particular gas system, and investments under an approved system development plan that are taken into account for the regulatory year in which it shall be in use. Capital expenses, i.e. amortization and return on regulated assets are not included in direct efficiency improvement mechanisms, but are defined by an *ex-ante* approach as part of approving the investment plans and the amount of tariff items, which reduces the investment risk and provides more investment incentives. Namely, the risk of not covering the costs of infrastructure projects if they are eligible and economically efficient is eliminated. Additional incentives in terms of CAPEX may lead to overinvestment and are therefore not required.

An important incentive element within the applied regulatory method is the regular audit of the allowed revenues, which is performed after the expiry of the regulatory period, and as part of which the difference is determined between the realised revenue (R) and the audited allowed revenue (AI) to be distributed to the following regulatory period, thereby eliminating the risk of asset underutilization. Since the applied revenue cap method guarantees to the system operator the level of revenue in the medium term, a significant part of the market risk is shifted to the system users. The reduction of market risk also affects the reduction of the liquidity risk and hence the reduction of the cost of financing the investment activities.

An additional measure aimed at mitigating the risk of the system operator business is the option of performing an extraordinary audit of the allowed revenue also during the current regulatory period at the request of the operator or according to the estimate by the Agency. The extraordinary audit of allowed revenue is performed due to unexpected changes in the market that have a significant impact on the conditions of providing the energy activity, which the system operator could not have foreseen nor prevented, eliminated or avoided. As part of the extraordinary audit, an audit may be performed of all the elements used in the calculation of the allowed revenue and in the calculation of the amount of tariff items for the current regulatory period.

An additional measure in the gas sector is the possibility of introducing a regulatory account. This is an optional model of economic regulation, which provides the possibility for the system operator, in the later years of the regulatory account, for the reimbursement of the revenue realised in the early years in the amount less than the allowed revenue that would have resulted from the application of the standard regulation model. Namely, in the case of significant investments in the existing infrastructure or with entirely new infrastructure, the standard regulation model is not appropriate, since significant investments, which by being put into use are included in the regulatory asset base, affect the strong growth in the amount of allowed capital expenses in the first years of the project. At the same time, large investments in the initial period are often accompanied by low system usage level. The aforementioned would result in uncompetitive high tariffs for using the system in the same period, which would represent a negative factor for the decision to invest in the project. Therefore, the regulatory account is approved in such a manner that the gas system operator achieves cumulatively the same allowed revenue as without the use of the regulatory account, but at a different time dynamics. The period for which a regulatory account is established may not be shorter than two regulatory periods nor longer than 30 years. Such a mechanism also prevents the discrimination against new users that use the system in the early years since the tariff items are unified and without fluctuations throughout the entire period for which the regulatory account is kept.

The nominal weighted average cost of capital before tax (WACC) is used as the rate of return on regulated assets. As a measure of avoiding systemic risk, the rate of return on equity is calculated using the CAPM model, and the rate of return on debt capital is determined as the average weighted interest rate on investment loans used by the system operator to finance regulated assets. The shares of debt and equity capital are defined as target shares in the amount of 50%, which is theoretically optimal capital distribution and approximates the effect of the financial leverage to a good extent. In this respect, a pre-defined ratio of debt and equity capital in the WACC calculation significantly reduces the regulatory risk, while at the same time encourages the system operator to consider the actual capital structure used. In addition, applying a targeted ratio provides for equal treatment and approach to WACC calculation for all energy entities in gas infrastructure activities. The decision on the actual capital structure in regular business and project financing remains with the system operator, while the target ratio defined by the methodologies for determining the amount of tariff items for gas infrastructure activities in the Republic of Croatia refers solely to the WACC calculation. In addition, as an incentive element of the WACC, a premium is prescribed for the development of the business of energy management of the LNG terminal, which reflects the additional risk of the development of the LNG terminal, and is applied for a certain period of time, and is determined depending on the utilization of the LNG terminal and other risks in accordance with the Methodology and criteria for evaluating investments in infrastructure projects.