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Joint Webinar Series on Implications of the Global Pandemic on Tariff Design and Utility Finances

Webinar 2: The Regulatory Role in Supporting Cybersecurity Investments

June 17th, 2020

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USAID/NARUC CYBERSECURITY PUBLICATIONS

- **Evaluating the Prudency of Cybersecurity Investments: Guidelines for Energy Regulators**
  https://pubs.naruc.org/pub.cfm?id=9865ECB8-155D-0A36-311A-9FEFE6DBD077

- **The Utility Regulators Role in Promoting Cybersecurity: Resilience, Risk Assessment and Standards**
  https://pubs.naruc.org/pub.cfm?id=C3597EE6-155D-0A36-31AC-3F82F33A665B

- **Black Sea Cybersecurity Strategy Development Guide**
  https://pubs.naruc.org/pub.cfm?id=E20048B4-155D-0A36-3117-F2F0A7A692F4

- **Cybersecurity Evaluative Framework for Black Sea Regulators**
  https://pubs.naruc.org/pub.cfm?id=E3CE75B5-155D-0A36-31FD-1B268F7BD125

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MR. DANIEL C. SCRIPPS
COMMISSIONER, MICHIGAN PUBLIC SERVICE COMMISSION

Daniel C. Scripps was appointed by Governor Gretchen Whitmer to the Michigan Public Service Commission on February 25, 2019. His term ends July 2, 2023. Prior to his appointment, Commissioner Scripps was the Energy Foundation's Midwest Policy Program Director, where he coordinated strategies and grantmaking across 13 states relating to the power sector, transportation, and other issues, and led efforts to double regional grantmaking to groups engaged in equity-oriented climate and energy work. He previously served as president of the Michigan Energy Innovation Business Council and Institute for Energy Innovation, where he led efforts to expand deployment of advanced energy resources in Michigan, and as a Vice President with Advanced Energy Economy, focusing on energy finance. An attorney, Mr. Scripps practiced law in the Washington D.C. office of Latham & Watkins LLP, advising regulated utilities, project developers, and financial institutions on cutting-edge domestic and international energy projects. Mr. Scripps served one term representing Benzie, Leelanau, Manistee, and Mason counties in the Michigan House of Representatives (2009-2010), where he chaired the House Banking and Financial Services committee, and served on committees dealing with energy, telecommunications and environmental protection.

Currently, Commissioner Scripps serves on the Upper Peninsula Energy Task Force created by Governor Whitmer in June 2019. He also serves on the board of directors of the Organization of MISO States, and in August 2019 was selected to serve as the president of the Mid-America Regulatory Conference. He is a member of the National Association of Regulatory Utility Commissioners and serves on its Committee on Electricity, Committee on International Relations, and the Washington Action Program.

Mr. Scripps is a graduate of Alma College and a 2005 honors graduate of the University of Michigan Law School.

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Ms. Elena Ragazzi

Mr. Stefano Bracco

Mr. Ymer Rudari

National Association of Regulatory Utility Commissioners

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MS. ELENA RAGAZZI

SENIOR RESEARCHER, RESEARCH INSTITUTE ON SUSTAINABLE ECONOMIC GROWTH (IRCRES), ITALY

Ms. Elena Ragazzi has been working at the Research Institute on Sustainable Economic Growth of the National Research Council of Italy (CNR-IRCrES) as a researcher since 1989. She is also an external professor at the Polytechnic University of Turin. She has authored more than two hundred works of applied economics and policy evaluation. She has served as a project leader of several projects, both European and national, coordinating the action of numerous partners, integrating multidisciplinary working groups, and mixed groups of researchers and professionals. She organized and chaired special sessions on impact assessment and counterfactual methods at the annual conferences of the European, Italian and French regional science associations.

Her research activity in recent years has focused on the theme of policy evaluation - in particular on training and work, on regulation for the electricity sector and for cybersecurity - coordinating the IRCrES working group in large-scale work that combined sophisticated and rigorous quantitative methods to qualitative insights, fully integrating the two types of contributions.

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Regulatory approaches to cybersecurity investments

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Consiglio Nazionale delle Ricerche
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ISTITUTO di RICERCA sulla CRESCITA ECONOMICA SOSTENIBILE
RESEARCH INSTITUTE on SUSTAINABLE ECONOMIC GROWTH

A regulatory perspective on cybersecurity

Four main themes of Evaluating the Prudency of Cybersecurity Investments: Guidelines for Energy Regulators:

- **definition of a cybersecurity strategy**
- **identification and benchmarking of cybersecurity costs**
- **performance assessment,**
- **and regulatory approach to cybersecurity**

***this presentation will focus on the last one**

A regulatory approach- the process of how decisions are made, from theories and ideas on how to improve the cybersecurity posture of a country to implementation.

The approaches are represented by a sequence of decisions in accordance with a regulatory framework (cost+/performance based)

Roles – who, what, and where?

	WHO (Roles)	
WHAT (Activities)	**Cost plus**	**PBR**
Definition of the cybersecurity strategy	☑ Policy maker (general objectives) ☑ Regulator (practical cybersecurity strategy) ☒ The operator just adheres to the cybersecurity strategy	☑ Policy maker (general objectives) ☑ Regulator (variables representing these objectives) ☑ The operator (practical cybersecurity strategy)
Cost identification	☑ Regulator (identifies costs to be approved in investment plans) ☑ Only if required, the operator provides a separate indication of cybersecurity costs	☒ The regulator does not assess the investments ☑ The operator identifies the most cost-effective investments to reach the objectives
Performance metrics	☑ The regulator and the policy maker may use metrics to benchmark different types of investments and better define future cybersecurity strategies ☑ The operator may use metrics for internal risk management	☑ The regulator adopts the metrics to provide incentives to companies investing in the desired direction ☑ The operator may use metrics for internal risk management

☑ Fundamental role ☑ Contribution ☒ Nothing to do

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The general strategy is the starting point of any decision process

The general strategy is defined through some grounded decisions on:

- **general direction:** my objectives and the values that I address with a specific regulation (e.g.: increase the share of renewables in the generation mix)
- **steps to take** (e.g.: increase the diffusion of prosumers with a solar roof)

Tasks :

1. Identifying expectations – such as what changes in the electricity system are expected as a result of my strategy?
2. A clear-cut definition of the above – you undoubtedly have to understand if a situation responds to the definition or not.

Defining a regulation in the Cost Plus framework

1. Define a cybersecurity strategy for the power system

2. Define the countermeasures coherent with this strategy
   - by requiring compliance to a standard;
   - or by defining a list of required/suggested countermeasures;
   - or by agreeing on a list of countermeasures with the operators.

3. Define the regulation for the expenses connected to these countermeasures (e.g., coverage of all compliance costs, or fines if the minimum requirements are not reached, funding if further countermeasures are adopted)

4

Define accountability procedures. *If the cybersecurity stance is one important aim of the policy maker, the related expenses must be clearly identifiable in investment plans.*

5

Verify ex post the compliance of performed activities and of expenses to the plan. *Make sure you have skilled people to accomplish these activities.*

6

Schedule a constant update of step 2, based on feedback from experts, operators, and your own experience. *The problem with the compliance philosophy is that it is not reactive to environment and that it may give a false sense of security.*

Defining a regulation in Performance Based regulation

1. Define a cybersecurity strategy for the power system

2. Define objectives coherent with this strategy that must be
   - Clear-cut;
   - Measurable;
   - Reasonable.

3.
   - Define indicators
   - Define targets to be reached
   - Define incentives linked to each target

4 Define procedures to calculate the indicators

5 Perform controls and inspections on the way indicators are calculated *(audits in field and sanctions)*

6 Schedule a constant update of Steps 3 and 4, based on experts, feedback from companies and your experience. *The problem with the incentive philosophy is that incentives have to be constantly fine tuned with the evolution of the context*

Practical application of the regulatory approches

Examples of practical application of these principles to cybersecurity regulations are provided in the scenarios of the final chapter of the Guidelines

Thank you for your attention!

The authors will welcome feedback and comments on the Guidelines

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CYBER SECURITY CO-CHAIR, ACER-CEER, SLOVENIA

Mr. Stefano Bracco is Knowledge Manager and Team Leader at the Knowledge Management Team in the Director's Office at the Agency for the Cooperation of Energy Regulators. Among his functions, he is also Security Officer since the foundation of the Agency. He has been working in EU Institutions/ Bodies for the past 20 years, focusing on implementation of policies in different areas. He has been a researcher and co-author of papers and books published in peer-reviewed international journals or presented at international scientific conferences, covering several topics (Law, Cybersecurity, Energy, Nuclear Energy, Natural Language Processing and Bio-Informatics).

He has an extensive knowledge of energy cybersecurity in Europe. He is chairman and co-chairman of Task Forces focusing on cybersecurity for Energy from a Regulatory perspective and member of the Expert Group 2 of the Smart Grid Task Force of the European Commission. He studied Computer Science at the University of Rome "La Sapienza". He has been serving the EU Institutions and Bodies around Europe and is actually living in Slovenia, where the Agency is located.

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Cybersecurity investments despite unexpected events

Prepared by: Stefano Bracco (Stefano.BRACCO@acer.europa.eu)
(Knowledge Manager and Security Officer at the Agency for the Cooperation of Energy Regulators)

Cybersecurity investments despite unexpected events

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Before....

Severe acute respiratory syndrome coronavirus 2 isolate Wuhan-Hu-1, complete genome

During....

Entso-E targeted in recent cyberattack

The European Network of Transmission System Operators for Electricity said on Monday that unidentified hackers recently targeted its computer networks.

MARCH 10, 2020 BRIAN PUBLICOVER

GRIDS & INTEGRATION | INSURANCE | MARKETS | MARKETS & POLICY | POLICY | TECHNOLOGY | TECHNOLOGY AND R&D | FINLAND | SWEDEN | WESTERN EUROPE

Image: Sfedor/Pixabay

Photo credit: Getty Images

Cyber Attack On U.K. Electricity Market Confirmed: National Grid Investigates

Davey Winder Senior Contributor
Cybersecurity
I report and analyse breaking cybersecurity and privacy stories

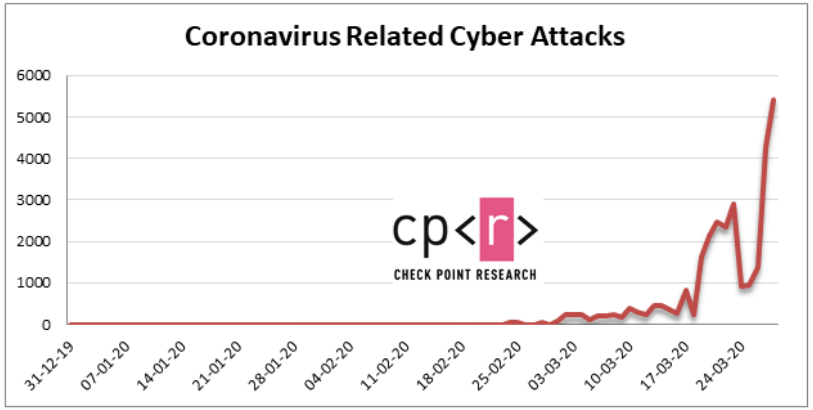
A key player in the U.K. electricity market has fallen victim to a cyber-attack GETTY

The company that facilitates payments on the U.K. electricity market, tracking the trade between those who produce electricity and those who supply it and resolving the differences, has fallen victim to a cyber-attack. Elexon is at the center of the balancing and settlement system, working with Great Britain's National Grid Electricity System Operator (ESO) to keep the lights on. The lights didn't go off across the U.K. as a result of this cyber-attack, but internal IT systems and laptops at Elexon went dark.

WORLD ECONOMIC FORUM Agenda Platforms Reports Events About English TopLink

Global Agenda | COVID-19 | Cybersecurity | Cybercrime

Why COVID-19 is making utilities more vulnerable to cyberattack - and what to do about it



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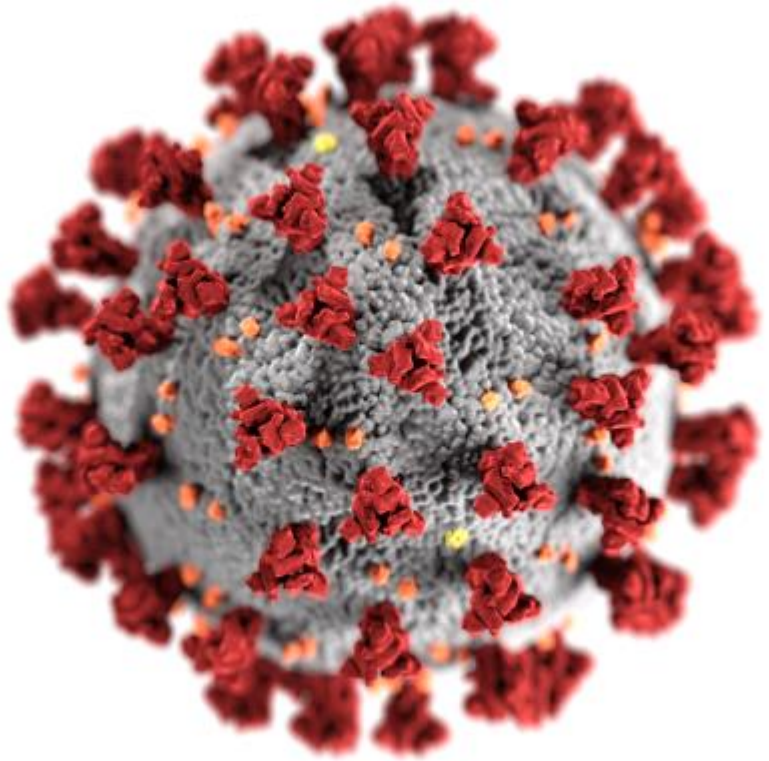
And after?



My lessons learned…

- **Trends linked to cybersecurity in the energy sector are unpredictable**: it is almost impossible to be prudent when all elements fluctuate around an unreasonable level of risk.
- For today, let's focus on **prudent investments for a "secure digitalization"** and let's stop talking of "digitalization" and "cybersecurity" on two parallel rails: they must converge to achieve a prudent approach.
- **Regulators** must stop, assess status of plans, assess and understand status of cybersecurity markets, assess cybersecurity trends and priorities (in terms of "measures"), review objectives, and talk to consumers and operators.
- **Operators** must stop, assess their own risks and the risks they may create for others, re-assess costs of projects in a high demand time, make a consistent evaluation of absolutely necessary priorities, and focus on those priorities (e.g. cyber hygiene).
- **Consumers must sustain the markets**, and due to the reduction of energy prices (at least in the case of Europe), will be more open to understanding that cybersecurity expenses are not another "tax" but a well-justified need.

At the end of the pandemic, I expect we will…

- …be more **mature** and more **prudent** in **respect to the cybersecurity** approach and the way it shall be tackled;
- ...be more aware of the **need to act as a «system»** without the need of having prescriptive regulations, but rather in common interest;
- ...be more **cooperative and open to listen** when the topic starts with the word «cyber»;
- ...be fully aware that there is **no perfect and prudent plan in an emergency**, but **«prudence» can and shall still be the «core» of good regulatory efforts**.
- ...understand that **frameworks** can give us **substantial help** in setting-up regulatory efforts, but during an **emergency**, **prudence of investments is also delegated to the individual responsibility of all actors taking part in the life of the global energy community and of the grid** (We cannot rely on the Regulator only, but we rely on all of «Us»).
- ...be aware that the **grid is essential** (not solely «critical») **infrastructure**, and together we need to be very **prudent in investing money in order to safeguard and defend** (but not only) **its underlying cyber space**.

Thank you for your attention!

Read something more about Europe and Cybersecurity in the energy sector

https://www.ceer.eu/1913

Please, share with me (us) your feedback, reflections and comments:

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PRICING AND TARIFF ANALYST, ENERGY REGULATORY OFFICE, KOSOVO

Mr. Ymer Rudari serves as a Pricing and Tariff Analyst at the Energy Regulatory Office in Kosovo. While in the position, he has been directly involved in the process of establishing a regulatory framework regarding tariffs, setting revenues and tariffs for licensees, including setting feed-in tariffs and PPAs for renewable energy sources. He is a member of the working group responsible for drafting the 'Strategy for Energy of Republic of Kosovo 2017-2026" and participates in many local and international working groups regarding tariff issues.

His experience in the electricity sector started in 2008 in the branch of tariff and regulatory issues in Kosovo Energy Corporation (KEK), where he worked as a Specialist for Revenue Requirements, Cost of Services and Tariff Design. After the unbundling of KEK, Mr. Rudari served as a Manager for Tariffs and Regulatory Issues from 2013 until 2016 in KEDS (Kosovo Electricity Distribution and Supply). From 2016-onwards, Mr. Rudari has been a part of Energy Regulatory Office (ERO).

Recently, Mr. Rudari has been part of ERO's working group responsible for drafting the Cybersecurity Concept document for Kosovo's electricity sector and for the evaluation of capital investments related to cybersecurity.

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ENERGY REGULATORY OFFICE

Webinar on The Regulatory Role in Supporting Cybersecurity Investments

Ymer Rudari & Mehdi Godeni
Energy Regulatory Office - Kosovo
June 2020, Prishtinë

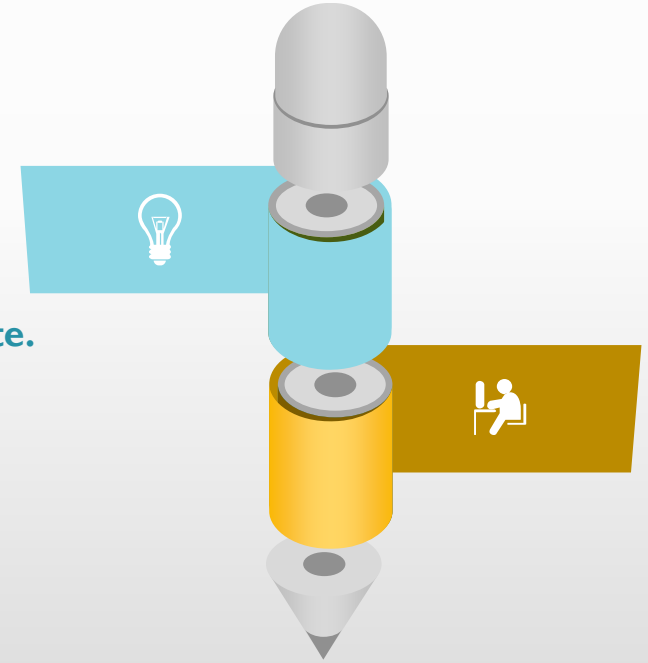
www.ero-ks.org

INTRODUCTION
LEGAL FRAMEWORK RELATED TO CAPEX

- ✓ **Rule on Capital Projects Assessment in Transmission and Distribution Network**

TECHNICAL CRITERIAS:

In the case of the project necessity, the project with the lowest negative NPV is to be selected as the most appropriate.



ECONOMICAL CRITERIAS;
CBA, NPV, IRR, etc.

REQUEST FOR CS PROJECT APPROVAL 2018-2022

Projects:

- **Replacement of the existing SCADA/EMS System**
- **Server room rearrangement**
- **Supply with new hardware**
- **Migration of the Microsoft platform from Windows server operating system 2008 into 2019**

Case 1.
Replacement of the existing SCADA/EMS System

Justification:

- Actual system is outdated and does not meet the conditions for safe and reliable operation 32 bit vs 64 bit servers;
- For SCADA / EMS system KOSTT is using e-terraplatform 2.7 which was stable in 2008, and now the market offers e-terraplatform 3.2 which can work on 64 bit systems, and has incorporated all the requirements with new ENTSO-E and EU codes. Also other SCADA / EMS manufacturers are at this level;
- The operating system installed on the servers is MS Windows Server 2003 R2 not protected from viruses, damage, etc.
- HDDs are SATA technology with capacities up to 32GB - now the market offers SAS technology with capacities over 100GB, so that damaged HDD servers are out of use;
- On existing servers, MS SQL Server 2005, MS Visual Studio 2005, MS Office 2003, and other software (Java, ORACLE, ...) support from manufacturers has expired;
- Communication between RTUs and the SCADA / EMS system is being developed through IEC60870-5-104, and based on the publications in ENTSO, especially the platform named CGMES since 2018, will be the IEC61970 or IEC61970 standard known to the public as the CIM mandatory standard for application to EMS (non compatible).
- ……..

CS - COST APPROVAL APPROACH

1. PBR

- ➢ No metrics were set ?
- ✓ General objective (ERO&Utility)
- ✓ Utility assessed costs

2. COST +

- ➢ Unit cost – N/A?
- ➢ Benchmarking N/A?
- ✓ General objective (ERO&Utility)

Conclusion:
-ERO & utility set general objective, costs were assessed by utility;
-ERO will monitor actual costs and make necessary adjustments ex-post

NEXT STEPS

- Actual cost vs approved - ERO
- Check maturity level of CS (C2M2) – ERO & Utility
- Analyze new threats - Utility
- Evaluation of countermeasures and cost - Utility
- Update strategy – all stakeholders

THANK YOU!

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