

SECURING THE SMART GRID TOWARDS 100% RENEWABLES SUCCESS Irish Open Day Event

Dr. Mihai PAUN
Vice-President - Romanian Energy Center

28th November 2018, Leopardstown Pavilion, Dublin



IMPLEMENTING SUCCESS RESULTS – INDUSTRY VIEW

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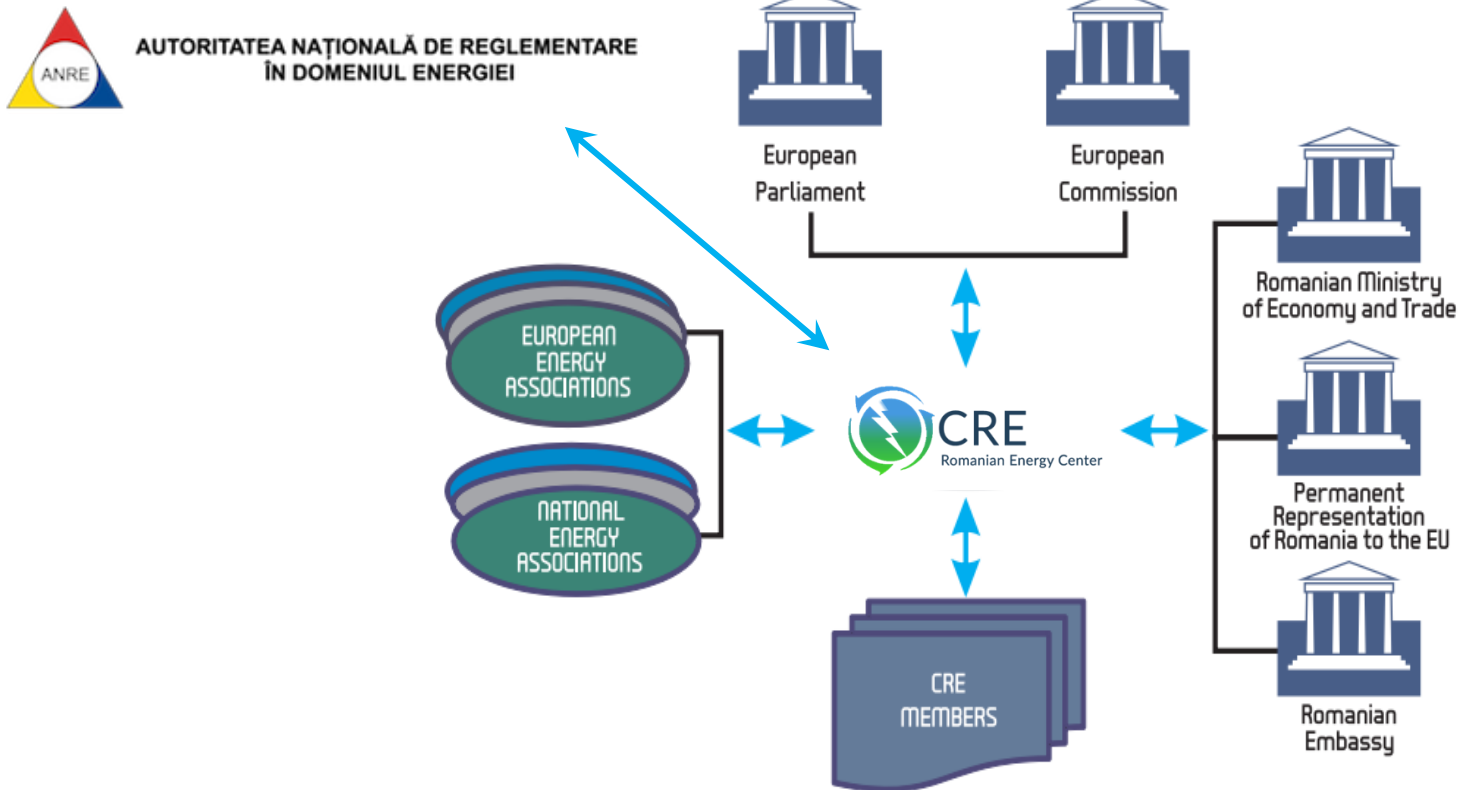
- The Romanian Energy Center is a **non-governmental and non profit Association** representing the interest of state-owned and private companies operating in the Romanian Energy Market, in relation with EU and National Institutions;
- Active in all relevant areas including: **electricity, oil and gas, coal, renewables, energy equipment and services plus R&D&I, and Legal assistance;**
- CRE contributes to the European and National **decision-making process**, promotes infrastructure investments and supports the transition to a decarbonized energy system.

23 Members - Public and Private Sector

- ADREM INVEST
- BIOENERGY
- CEZ România
- Complexul Energetic Oltenia
- CONPET
- ELECTRICA
- ECRO
- ELECON
- E.ON România
- ELECTROALFA
- ENEL România
- ENERGOBIT
- EXIMPROD
- HIDROELECTRICA
- INSTITUTUL DE STUDII SI PROIECTARI ENERGETICE
- NUCLEARELECTRICA
- ROMGAZ
- ROMPETROL
- TELEKOM
- TRACTEBEL ENGINEERING – GDF SUEZ
- TRANSELECTRICA
- TRANSGAZ
- TUCA ZBARCEA & ASSOCIATES



CRE: INTERACTIONS & REPRESENTATION





Position papers to Romanian and European Energy Policy consultations



EU Projects



Events in Romania and Brussels



Coordinator of the Center for Dialogue and Cooperation 16+1 (CEE Countries + China)

CRE POSITION PAPERS

 <p>Energy Strategy - Strategia de energie</p> <p>Poziția Centrului Român al Energiei Privind STRATEGIA ENERGETICĂ NAȚIONALĂ A ROMÂNIEI</p> <p>23 March 2016, Bucharest</p>	 <p>Energy Strategy - Strategia de energie</p> <p>Aprobatul Memorandumului de Înțelegere între Guvernul României și Guvernul Republicii Moldova privind realizarea proiectelor necesare interconectării rețelilor de gaze naturale și energie electrică între Republica Moldova și România</p> <p>Document de Poziție al asociației CENTRUL ROMÂN AL ENERGIEI</p> <p>Octombrie 2015</p>	 <p>Energy & Infrastructure - Infrastructură și energie</p> <p>EUROPEAN COMMISSION PUBLIC CONSULTATION ON RISK PREPAREDNESS IN THE AREA OF SECURITY OF ELECTRICITY SUPPLY</p> <p>Answer Paper By the ROMANIAN ENERGY CENTER</p> <p>October 2015, Bucharest</p>	 <p>Energy & Infrastructure - Infrastructură și energie</p> <p>EUROPEAN COMMISSION PUBLIC CONSULTATION ON A NEW ENERGY MARKET DESIGN</p> <p>Answer Paper By the ROMANIAN ENERGY CENTER</p> <p>October 2015</p>	 <p>Energy Strategy - Strategia de energie</p> <p>Poziția Centrului Român al Energiei Privind PROGRAMUL DE REGLEMENTĂRI ALE ANRE 2016</p> <p>Document de Poziție al asociației CENTRUL ROMÂN AL ENERGIEI</p> <p>Octombrie 2015</p>	 <p>Energy Strategy - Strategia de energie</p> <p>Poziția Centrului Român al Energiei Referitoare la Proiectul de Lege pentru aprobarea Ordonanței de Urgență privind Guvernarea Corporativă a Întreprinderilor Publice nr. 109/2011</p> <p>Document de Poziție al asociației CENTRUL ROMÂN AL ENERGIEI</p> <p>Octombrie 2015</p>
Romania's National Energy Strategy	MOU Between Romania's Government and Republic of Moldova	Risk Preparedness in the Area of SOS	New Energy Market Design	Regulation Programme of ANRE 2016	Corporate Governance – Law 109/2011

- Position Paper of CRE on the Preparation of the New EC Directive on Renewables after 2020 ([Link](#))
- Position Paper of CRE on the Modification of Energy Efficiency Law ([Link](#))

CRE EVENTS – ROMANIAN ENERGY DAY 2018

“REGIONAL ENERGY SECURITY IN THE CONTEXT OF THE EUROPEAN INTERNAL ENERGY MARKET”

7th Romanian ENERGY DAY, Bruxelles, 5-6 June 2018

- **OBJECTIVE – To Inform** the representatives of EU institutions in Bruxelles and **to contribute to EU decision making process** on energy priorities, projects & programs in **Central and South-East Europe & in Romania;**
 - **To Facilitate investments in energy infrastructure, to support Energy Market Integration and to increase energy security in the Region;**
 - **To proactively contribute to the development of HV electricity, oil and gas corridors and to increase interconnection capacity in the Region;**



Center for Dialogue and Cooperation on Energy Projects (CDCEP) 16+1



Cooperation between China
and Central and Eastern European Countries
中国—中东欧国家合作

16+1 represents the economic cooperation enhancement format between China and Central and Eastern European Countries

Priority Domains/ Committees	Renewable Energy Sources	Smart Grids	Energy Efficiency	Coal	Nuclear Energy
Investments and Finance	WG	WG	WG	WG	WG
Commercial Cooperation	WG	WG	WG	WG	WG
Research and Development	WG	WG	WG	WG	WG
Legislation and Regulation	WG	WG	WG	WG	WG



16+1 Energy
Conference and Fair
8-10 November 2017
Bucharest

EUROPEAN PROJECTS CRE – IMPLEMENTATION



Renewables in a
Stable Electric Grid



Enabling Smart
Energy as a Service
via 5G Mobile Network
advances



SUCCESS - Securing
Critical Energy
Infrastructures



CROSS BOrder management of variable
renewable energies and storage units
enabling a transnational Wholesale market



Wide scale demonstration of
Integrated Solutions and
business models for
European smart GRID



SOGNO - Service
Oriented Grid for the
Network Of the Future



EXPERIENȚE ÎMPREUNĂ.

WISEGRID CONSORTIUM RECEIVES 'GOOD PRACTICE OF THE YEAR' AWARDS FROM COMMISSIONER FOR ENERGY, MIGUEL ARIAS CAÑETE

*Technology
and
Design*

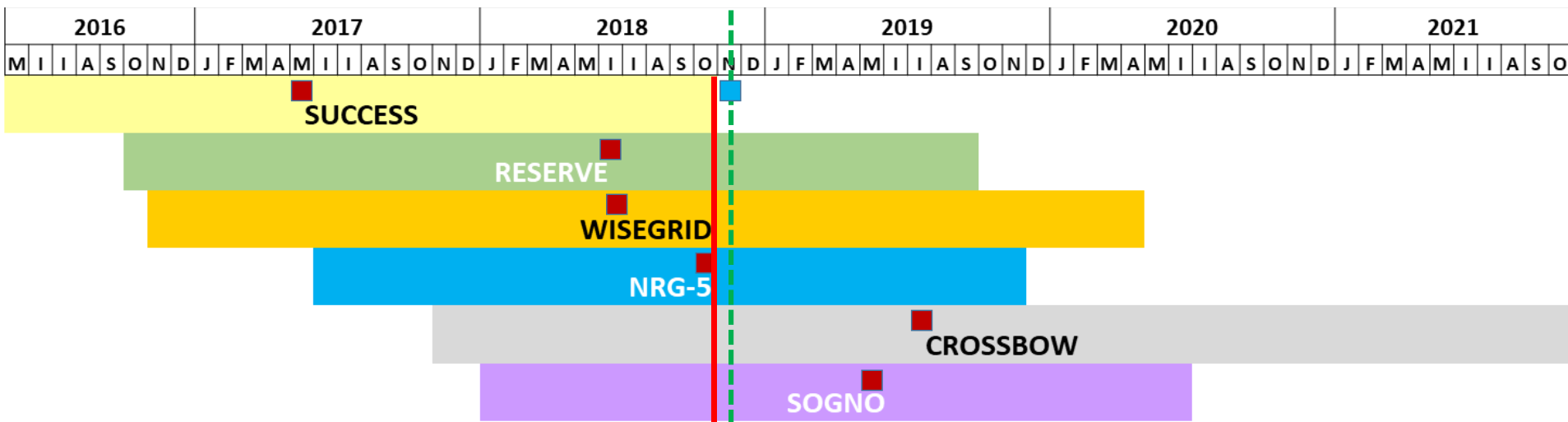


WISEGRID CONSORTIUM WINS 'TWO EU SUSTAINABLE ENERGY AWARDS FROM COMMISSIONER FOR ENERGY, MIGUEL ARIAS CAÑETE

- The Best Project in the **Business and Citizen's choice categories**, winning **two EU Sustainable Energy Awards**.
- The prizes recognise outstanding **Innovation In Energy Efficiency And Renewables**
- *European Sustainable Energy Week 5 June Brussels (EUSEW 2018)*



CRE – EU PROJECTS IMPLEMENTATION



 EVALUARE PROIECT - R1

 EVALUARE PROIECT - R2

IMPLEMENTING SUCCESS RESULTS – INDUSTRY VIEW

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IMPLEMENTING Key SUCCESS Results

- **SUCCESS has been the Right Project at the Right Time** – cyber-security has constantly grown in importance → the interest of Industry representatives in **SUCCESS results** has grown during the project
- **Constant Dialog** with key industry representatives in Romania and **Presentation of SUCCESS Project solutions for Securing the Smart Grid towards 100% Renewables**
- CRE Members address the next decade's **challenges for the electricity grids** and **provide insights and solutions** through **Innovative Projects and Demonstrators** → e.g. **SUCCESS**

DSOs Members IMPLEMENTING SUCCESS Results

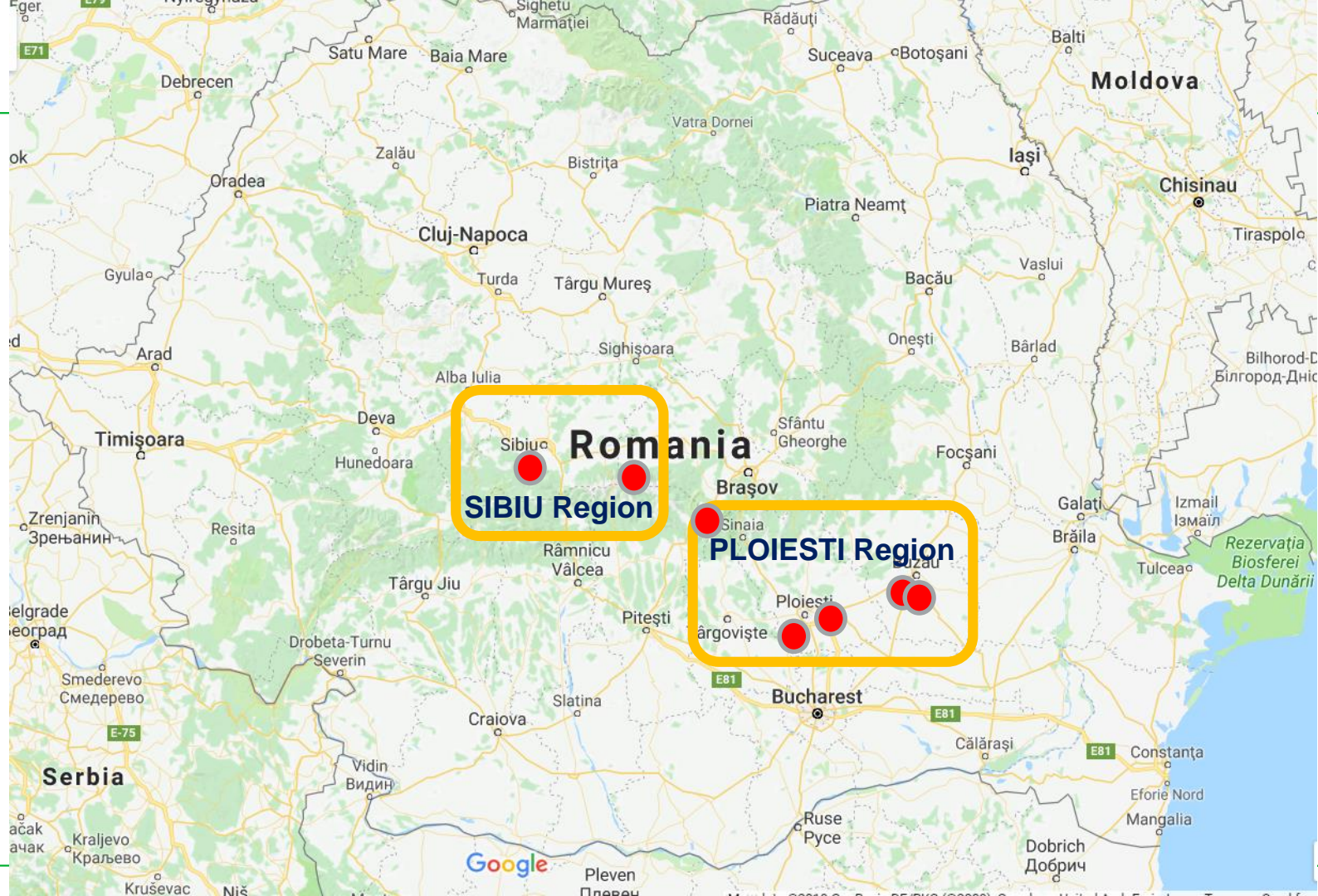
- CRE Members DSOs are **Implementing** threat analysis, and further **developing and deploying prototypes of solutions to threats** → better addressed now; DSOs more open to change
- **SUCCESS knowledge gained** has been communicated to ALL DSO's Members of CRE: ELECTRICA, CEZ Romania, E.ON Romania, ENEL Romania and internally to ALL Members organizations: events, publications, presentations
- CRE is **promoting sharing of information and communication between DSOs Members in Romania** to improve **awareness of attacks and better protection of infrastructures** (increases resilience)



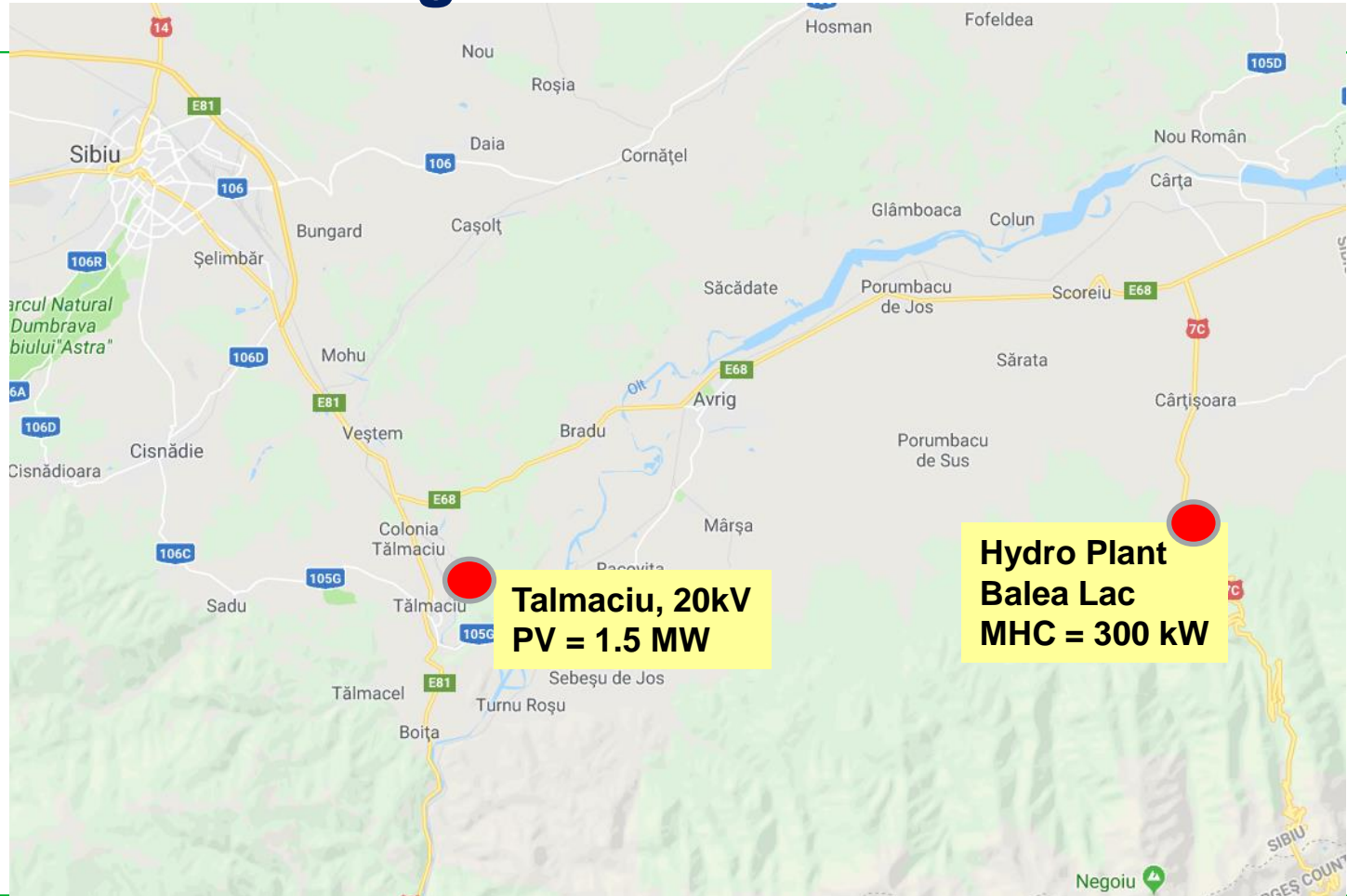
SUCCESS

**Romanian
Trial**

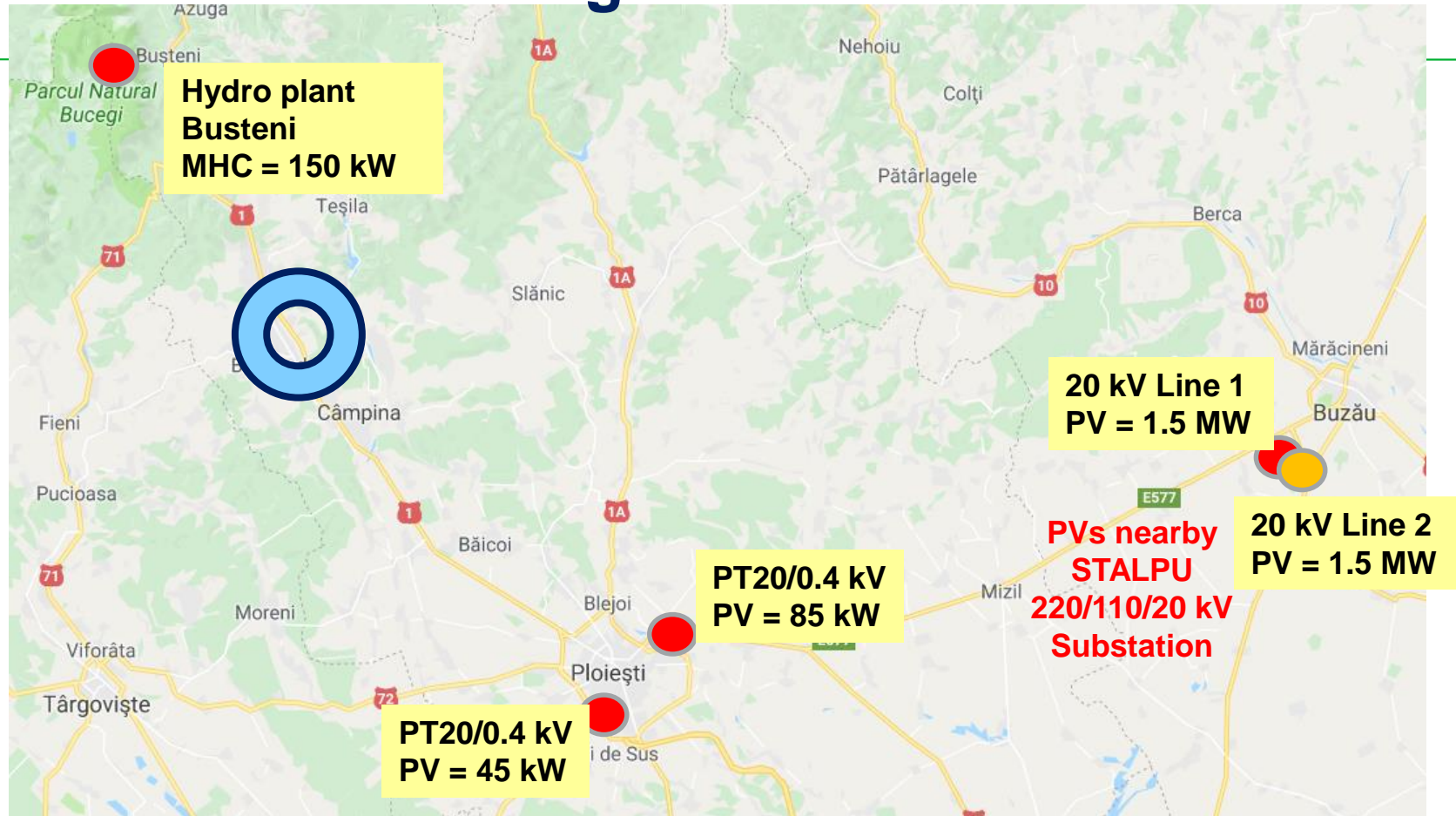
**7 NORM
deployment**



SIBIU Region: 2 x NORM - Details



Ploiesti Region: 5 x NORM - Details



SYNERGIES FOR IMPLEMENTING SUCCESS Results

- CRE promotes exploiting Synergies amongst the Telecoms, Energy and Transport sectors in terms of ICT, digitalization and infrastructures
- CRE encourages Close Collaboration amongst these sectors in order to use resources efficiently and effectively.
- CRE supports more interaction with DSOs to present results of **SUCCESS** to them individually to help them to understand **what they can do with the results of SUCCESS** and how they can **evolve their own business** using the results



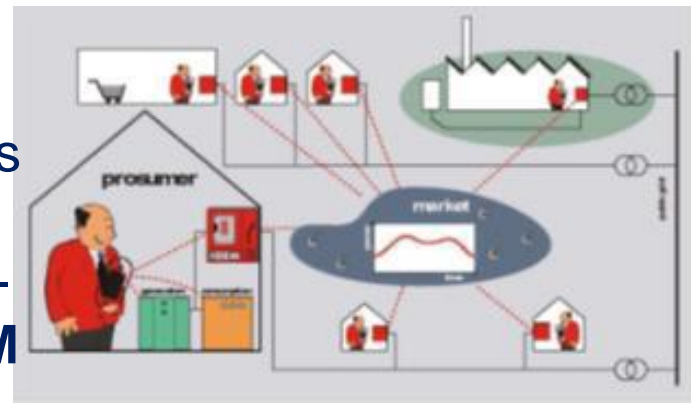
BUILDING ON SUCCESS Results – Business Case

NORM → considered as a potential future equipment to replace existing **Smart Meters** in the next wave of Smart Meters deployments → May be considered as a third generation.

Task	2019				2020				2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Start-up Phase																
Trial Phase																
Launch Phase																
Expansion Phase																

BUILDING ON SUCCESS Results – Digital Grid Pilot Project

- CRE promotes setting up a **Digital Grid Pilot Project (DG PP)** targeting more than **5.000 users** in Romania, building on the results of SUCCESS, **enabling innovative applications** and bringing **added value** through **new services** within the emerging **Smart Decentralised Energy System**.
- **SUCCESS** has designed, developed and validated on small scale Field Trials a **novel holistic adaptable security framework** which is able to significantly **reduce the risks of cyber threats and attacks** when next generation, real-time, scalable, **unbundled smart meters NORM** are deployed in Smart Electricity Grids.



CRE Industry Members Using SUCCESS Results - #1

- **DG PP** will ensure further development of the **security of Critical infrastructures** based on data produced by Smart field Equipment.
- In **SUCCESS** → several nodes with significant impact for the project, where **NORM equipment** has been installed in order to monitoring the renewable generation and impact in the MV/LV.
- Furthermore, **ELECTRICA** is interested to deploy **NORM devices** in its electricity distribution area in the **LV and MV network with RES generation connected** to the grid.
- Other Romanian DSOs are exploring similar opportunities.



CRE Industry Members Using SUCCESS Results - #2

- Finally, as part of the **DG PP - ADREM's Dispatching Center** uses a **custom SCADA Integration Solution** to monitor the customers parameters as well as power plant internal operation parameters, performance indicators and condition monitoring signals for various internal components
- Improve energy services provided by DSOs → **Adrem Invest** has entered into **Strategic Partnerships with Advanced Metering Management (AMM)** providers and **Smart Meter suppliers** →
- **Looking forward to deploying NORM for increasing customer benefits and society as a whole!**



Thank you for your attention!

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THANK YOU FOR YOUR ATTENTION!

