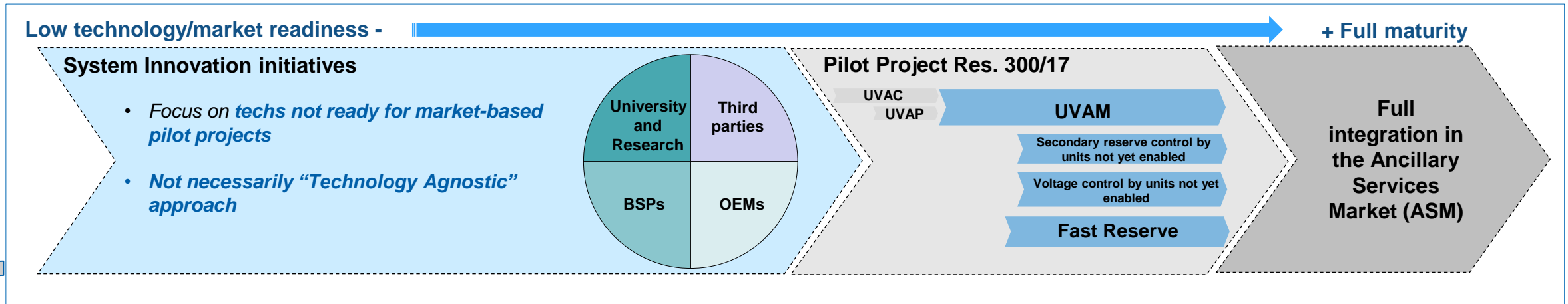

Energy System Innovation programme

Elisa Virone – Terna

9th June 2023

ESI Programme scope: Stimulate technical/market innovation of resources not yet ready for current Pilot Projects (i.e. Res. 300/17)



HOW? Dedicated projects in an Open Innovation framework → ESI (Energy System Innovation) Projects

The first wave of ESI Projects will investigate the world of **Distributed Energy Resources**, such as EVs and other modular loads (e.g. HVAC, boilers, etc.), that will be studied as:



SINGLE RESOURCES

Analysis of limits and potential of specific technologies with a view to grid integration (technical characteristics, communication protocols, ability to respond to specific commands, ...)



AGGREGATES OF RESOURCES

Evaluation of performance and reliability of aggregates of resources in relation to their ability to provide services to the Electricity System of the future.

Terna will evaluate, in agreement with the Italian Regulatory Authority for Energy, Networks and the Environment (ARERA), the opportunity to provide an **economic incentive to encourage the participation** of a large number of parties in the various ESI projects.

Results will be shared in a final report in anonymous and aggregated way, guaranteeing protection of sensitive information.

WHY? Allow that the electrification of consumption will be an added value on Grid System and not a criticality

	k POD* at 2030	MW at 2030
Highways <i>Ultra-Fast</i>	0,9	346
Extra urban roads <i>Ultra-Fast</i>	7,5	2.633
Urban <i>Fast</i>	13,0	1.313
<i>Quick</i>	25,0	1.100
Public EV Charging	46,4	5.392
At home	1.000,0	6.000
In the workplace	50,0	2.200
Private EV Charging	1.050,0	8.200
Residential	-	7.000
Industrial	-	2.600
Heating and cooking	0,0	9.600
Cold Ironing	0,1	682
TOTAL QUANTITY	1.097	23.874

Arera – Consultation Document
449/2022/R/EEL



- 1 Electrification scenario:
Increase of 24 GW of capacity committed on distribution networks in new sectors (+14% respect to current 172 GW).

Comparing to Fit-for-55 targets, real values will probably be higher.
- 2 Additional GWs can represent a challenge for the Grid System (due to possible contemporaneity factors) if not correctly managed.

They can be managed using i.e. smart charging functionalities for electric vehicles.

Energy System Innovation Programme

ESI Programme pathway: the ESI Projects



First project dedicated to electric mobility: ESI E-mobility

Project is now **LIVE** and open for partners participation.



Test **EV*/EVSE** capacity** to provide **ancillary services**

Test the **impact** of **ancillary services** on EV/EVSE

e-mobility Lab
Powered by Terna Forward



Experimentation in Terna's E-mobility Lab with technology manufacturers



Contribute to the definition of **grid-ready standards**

Driving the evolution of the Electric Market towards the inclusion of Distributed Resources



Results shared with the System

Second project dedicated to HVAC* systems: ESI Heating & Cooling

Project will be launched and open for partners participation starting from the **end of 2023**.

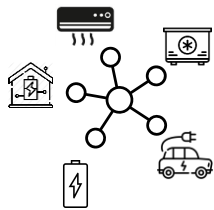


Test **HVAC systems capacity** to provide **ancillary services**



Experimentation in an external Lab with technology manufacturers

Third project dedicated to aggregates



The third ESI initiative will be dedicated to the aggregation of Distributed Resources. It will be launched during 2024, according to the evidence gathered in the first two ESI initiatives.



Test **capacity of resources' aggregates** to provide **ancillary services**



Experimentation to be conducted with BSPs, technology manufacturers, ...



Thank you for your attention!