Transizione Energetica ee i Fabbisogni dei Imprese: La Proposta di Enel X

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Enel X

Milano, 9/05/2018

The evolution of the energy sector

Decarbonization

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Renewables penetration by 2040: 60%

Electrification

By 2040, electricity will be the first source of energy consumption: share of 38%

Digitalization

Digital electricity infrastructure investments: +45% between 2014 and 2016

New customer needs

New customer needs lead to customized services development with sustainable approaches

The energy sector is experimenting a deep transformation
Digitalization and customer centricity will change the sector paradigm

Source: United Nations 2014; BNEF 2018, WEO 2017, IEA

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A new Global Business Line: Enel X

Our portfolio of solutions in the 4 Global Product Lines

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e-Industries	*e-Mobility*	*e-Home*	*e-City*
Consulting and auditing service	Charging infrastructure (public & private)	Installation, maintenance and repair services	Smart lighting
Distributed generation on/off site	Maintenance and other services	Automated home management	Fiber optic wholesale network
Energy efficiency	OEM back-end integration	Financial services	Distributed generation & energy services
Demand response and demand side management	Vehicle Grid Integration	Home 2 Grid	Demand response and demand side management

Flexibility

Our Recent Acquisitions

Targeted M&A operations to deliver in the new energy ecosystem

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Acquisition of Demand Energy and its best in class platform for the behind-the-meter distributed resources and storage management

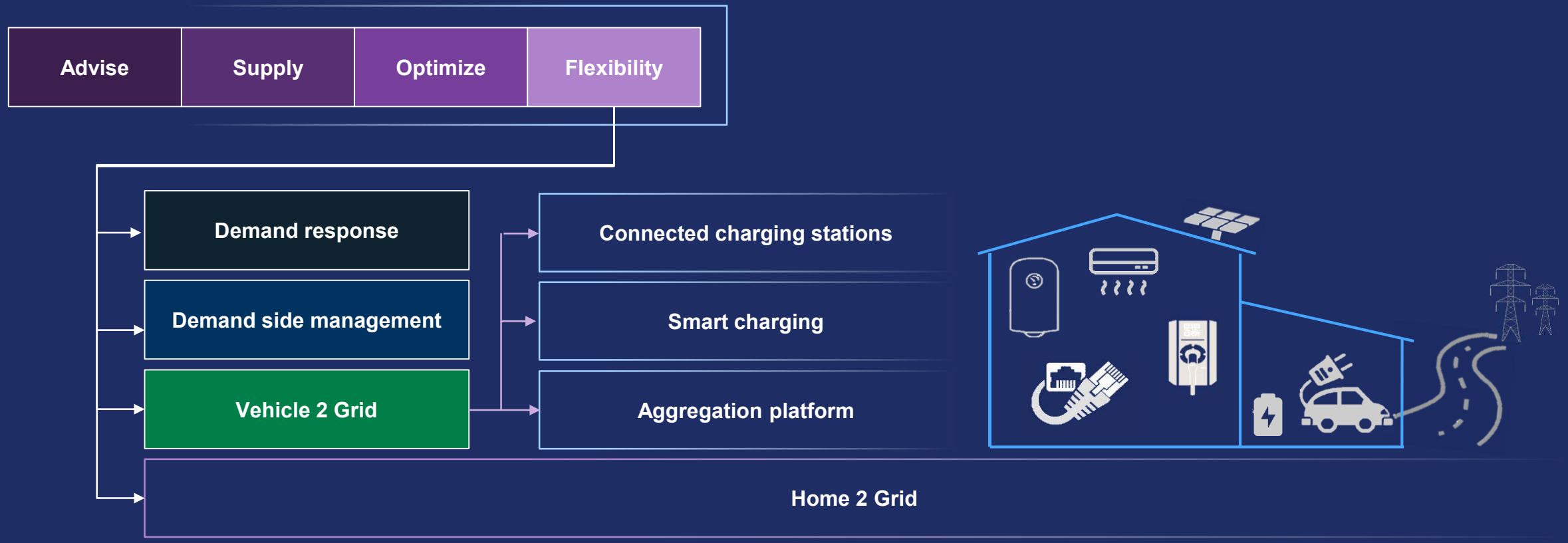
New industry understanding with the **acquisition of EnernNOC**, world's largest provider of demand response and energy intelligence software

Acquisition of EMotorWerks, developer of the market leading smart EV charging platform – Juice Net – that interfaces with local utilities & grid operators to optimise EV charging costs, reduce peak load and balance renewables.

The energy ecosystem we want to build

Flexibility throughout the entire energy system

The Energy as a Service value chain



Best positioned to serve new customers' needs

e-Mobility

How electric cars can help us in bulding the new energy ecosystem

Car manufacturers

Demand Response

Interruption of a charging session in progress **or deferred startup of** the charging session; **aggregation** of each single start and stop is equivalent to the contribution of an interruptible heavy energy consumer.

Ancillary services through Vehicle 1 Grid

Modulation of a charging session in order to provide frequency regulation services. It increases the flexibility of the network and helps mitigate overload risks or increase the capacity of renewables.

Ancillary services through Vehicle 2 Grid

Return of power from car battery to the network; it is used for frequency regulation. Each car contributes with the power that the **bidirectional** charging station makes available.

Energy 2 Grid

Return of energy from the car battery to the electricity grid **can allow the supply of portions of the network in emergency conditions or participate in the wholesale energy markets.**

Product developments

We chose Italy even if…

«Technological neutrality» when it comes to alternative transport policies

Tail-end when it comes to electric vehicles circulating on the road

Contradictory messages from main Italian carmaker strategy

We are pushing ahead because…

Secured partnerships with key committed carmakers and stakeholders

e-Mobility as an **opportunity of industrial development** in Italy

First mover in the e-Mobility Revolution

By 2022 14,000 infrastructures installed

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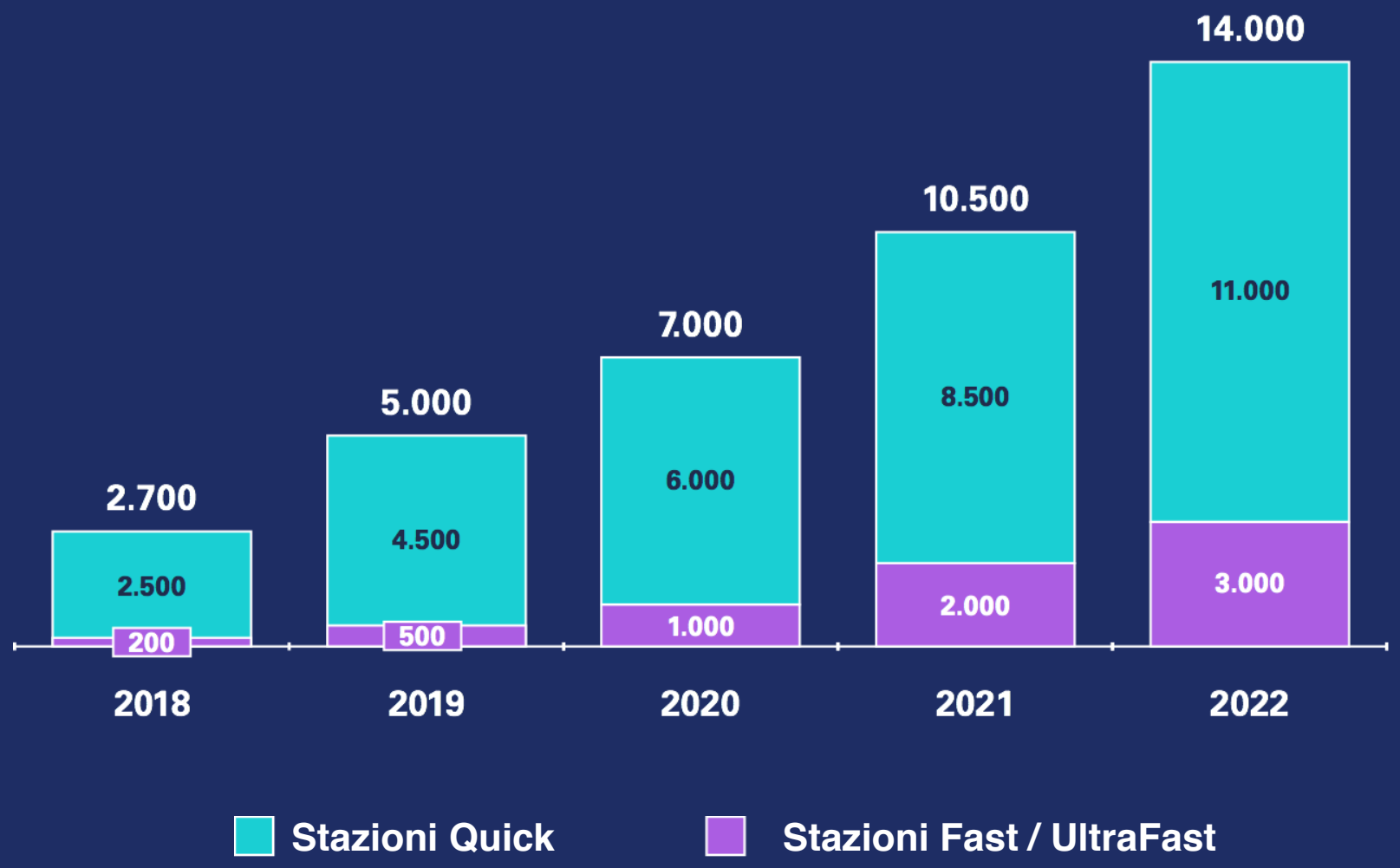
Up to 300 M€ CAPEX by 2022



Our e-Mobility supply chain

Supply

Specialized companies in the mecchanical sector, automation, inverter production and other electrical equipments

Installation and Maintenance

Medium enterprises specialized in electrical works

~2.000.000 working hours

~ 50 business partners to be selected with competitive processes

- Tender fo installation and maintenance: December 2017
- Tender for supply: March 2018

CAPEX ~200M€

Potential revenues in the e-Mobility Sector by 2030 in Italy: up to € 300 billion*

*Source: The European House Ambrosetti, Study e-Mobility Revolution

e-Industries

Il mercato elettrico è sempre più complesso…

Your efforts need to be focused on your core business without being worried about the continuous changes of the energy market

We can support you in turning complexity threats into opportunities

Our Mission

Manage opportunities and needs of our customers energy portfolio, leveraging on services and products which enable the optimization of energy use and cost, also through innovative financial tools and business models to mitigate risk exposure: from sourcing to utilization, from monitoring to demand/generation programming and control, from portfolio strategy to the aggregation of all the sources

Our values

We help thousands of businesses introducing Energy as a Service to take advantage of new technologies, leveraging on:

- Digitization
- Continuous innovation
- Customer centric approach
- Sustainability
- New paradigm mind set

Take advantage of new energy solutions to monetize the flexibility embedded in your business

- More than 50 years of technical expertise in enabling energy for our Customer: we know how to use energy and how to monitor it.
- New industry understanding through inorganic growth

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50 years enabling power

DEMAND energy

Best in class platform for the behind-the-meter distributed resources and storage management

ENERNOC

World's largest provider of demand response and energy intelligence software.

eMotorWerks SMART GRID EV CHARGING

The solution which would maximize the value of electric vehicles enabling revenues streams from grid services

The benefits we bring

We're the energy partner for our customers, seeking to empower their business through maximizing the value of energy

1. **Earn Revenue** – monetize flexibility of existing assets in electricity markets
2. **Reduce Cost** – use less energy, get the best price for energy, and lower demand charges
3. **Improve Resiliency** – protect against operational disruptions and power quality issues
4. **Improve Sustainability** – reduce green house gas emissions and waste; meet renewable energy goals
5. **Manage Risk** – address compliance issues, manage market exposure and budget certainty
6. **Increase Transparency** – increase visibility into how energy usage impacts all of the above

La proposta ENEL X

Advice

Enterprise-wide strategic energy advisory services to achieve organizational goals, assess historical energy performance and identify energy efficiency potential

Consulting and Auditing services

Discover yourself

Utility Bill Management

Automatic control of your bill management

Energy Procurement

Buy better

Supply

Electricity procurement options from off-site sources in deregulated markets or on-site generation including cogeneration systems, solar energy, energy storage, etc.

Distributed Generation

Your own supply

Infrastructure Projects

The energy backbone

Optimize

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Advanced ongoing monitoring of disaggregated user loads and building automation systems to optimize operations

Monitoring and verification

Open an eye on your energy portfolio

Energy Efficiency

Reduce your energy need

Progetti Industry

Progetti CHP Formula «ESCO»

PROGETTO			*MW*
ZEGNA	BI	CHP ESCO	3
PERDERZOLI	VR	CHP ESCO	0,8
RINO MASTROTTO	VI	CHP ESCO	1,2
CORDEN PHARMA	LT	CHP ESCO	6,8
ELMA CART SRL	FR	CHP ESCO	2,7
BUNGE SPA	RA	CHP ESCO	5,5
SIL SOCIETA' ITALIANA LASTRE SPA	BS	CHP ESCO	1,5
PETROLIFERA ITALO RUMENA SPA	RA	CHP ESCO	0,8
SKY (sede centrale MILANO)	MI	CHP ESCO	3,3
BONZANO GROUP (I-PAN)	AL	CHP ESCO	2,5
DOPLA	TV	CHP ESCO	1,2

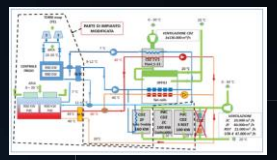
Progetti Industry

Progetti CHP Formula «ESCO» - Impianti in Esercizio

IMPIANTI IN ESERCIZIO	(MW)
Lanificio Zegna	3
Conceria Rino Mastrotto	1,2
Casa di Cura Pederzoli	0,8
Cordenpharma - Farmaceutica	6,8
TOTALE	11,8 MW

Progetti Industry – Case History

Torre World Trade Center Genova – Fornitura Pompe di Calore



Sostituzione di caldaia a gas metano con N. 2 pompe di calore e rimozione di gruppi frigoriferi esistenti

Il Progetto si è aggiudicato il premio **Energy Efficiency Award 2017** per il modello di finanziamento innovativo assegnato dal **Centro Studi sull'Economia e il Management dell'Efficienza Energetica** (CESEF)

In particolare il premio è stato assegnato per la **forma contrattuale innovativa** in un settore critico per l'efficienza energetica, quale quello dei grattacieli, che **coniuga gli strumenti di incentivazione e la leva finanziaria**

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Energy is now an opportunity