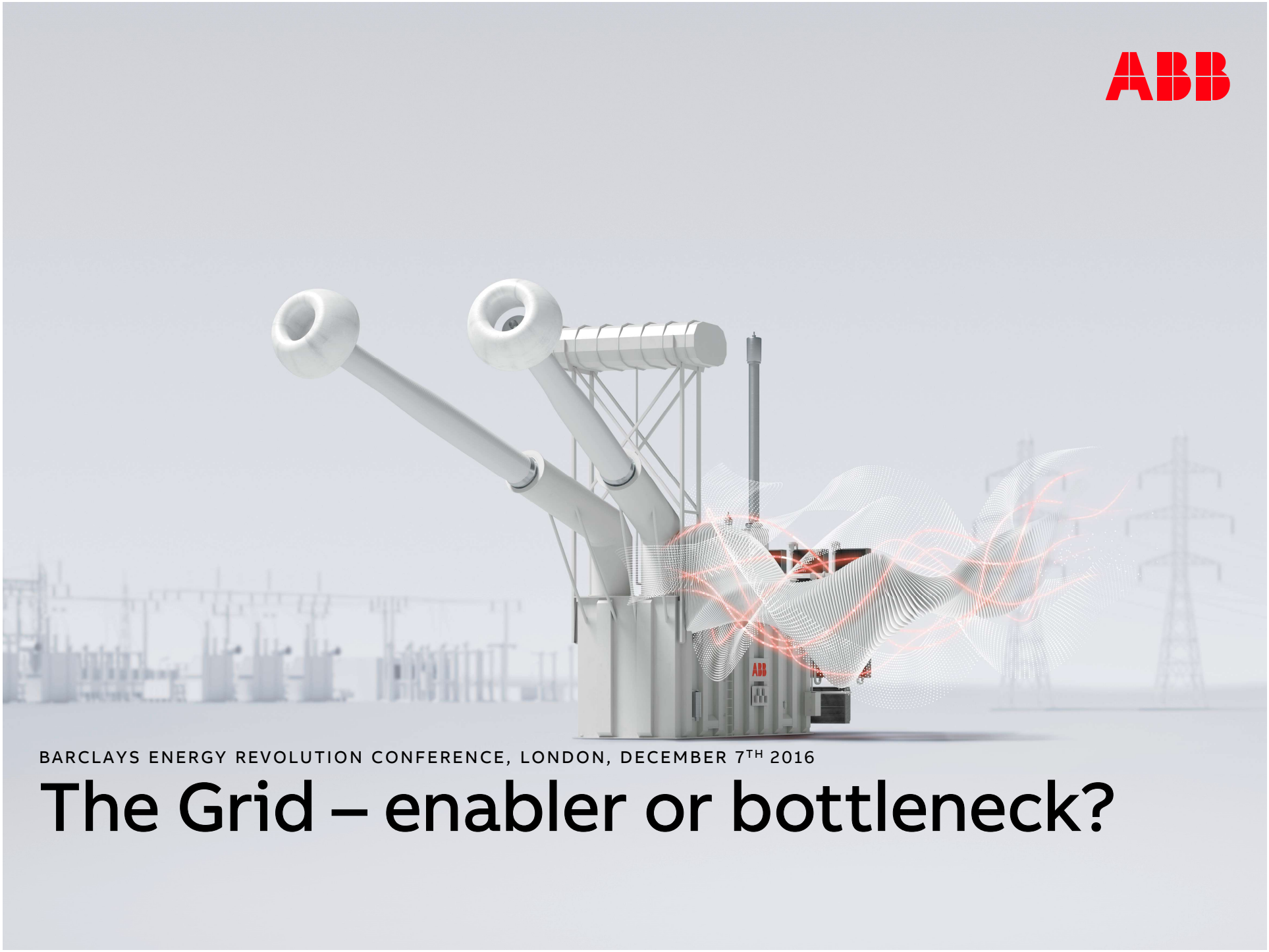


BARCLAYS ENERGY REVOLUTION CONFERENCE, LONDON, DECEMBER 7TH 2016

The Grid – enabler or bottleneck?

Important notices

This presentation includes forward-looking information and statements including statements concerning the outlook for our businesses. These statements are based on current expectations, estimates and projections about the factors that may affect our future performance, including global economic conditions, and the economic conditions of the regions and industries that are major markets for ABB Ltd. These expectations, estimates and projections are generally identifiable by statements containing words such as “expects,” “believes,” “estimates,” “targets,” “plans,” “outlook” or similar expressions.

There are numerous risks and uncertainties, many of which are beyond our control, that could cause our actual results to differ materially from the forward-looking information and statements made in this presentation and which could affect our ability to achieve any or all of our stated targets. The important factors that could cause such differences include, among others:

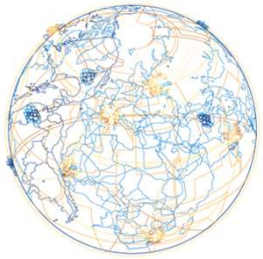
- business risks associated with the volatile global economic environment and political conditions
- costs associated with compliance activities
- market acceptance of new products and services
- changes in governmental regulations and currency exchange rates, and
- such other factors as may be discussed from time to time in ABB Ltd’s filings with the U.S. Securities and Exchange Commission, including its Annual Reports on Form 20-F.

Although ABB Ltd believes that its expectations reflected in any such forward-looking statement are based upon reasonable assumptions, it can give no assurance that those expectations will be achieved.

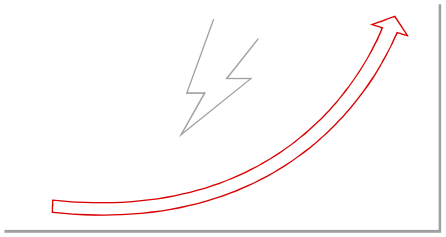
The energy revolution

Elements of the evolving grid

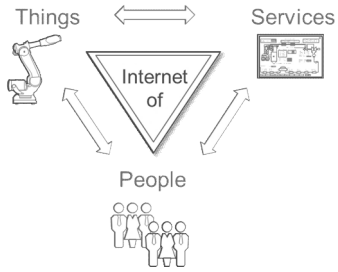
Grid interconnection



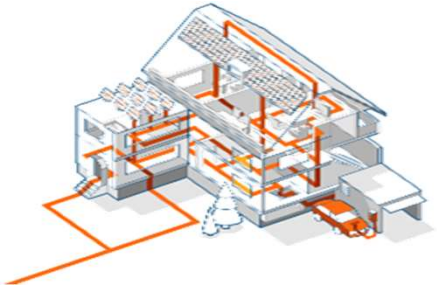
Power quality & demand mgmt.



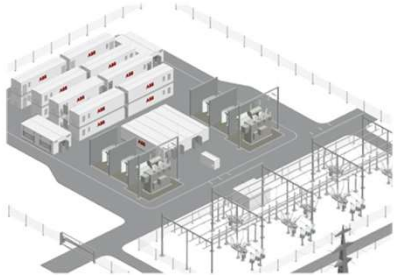
Digitalization



Residential roof top solar plus Micro- and Nano-grids



Energy storage



New business models

UBER airbnb NETFLIX

The energy revolution

Changing power generation balance

Power generation

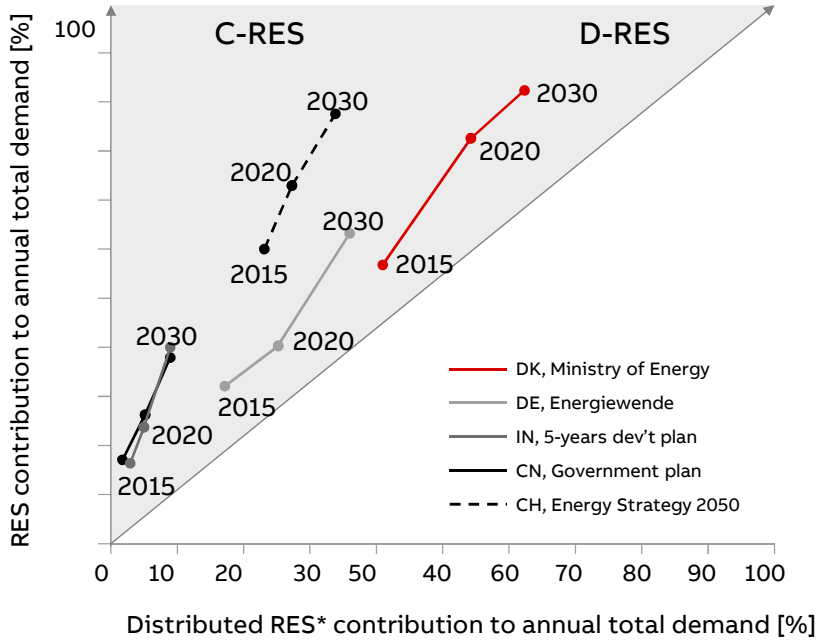
Power balance tipping towards renewables, driven by policy & disruptive technology cost reduction

Main growth in variable renewables such as wind and solar

Two growth paths

- Mainly centralized renewables
- Mainly distributed renewables

Centralized vs decentralized



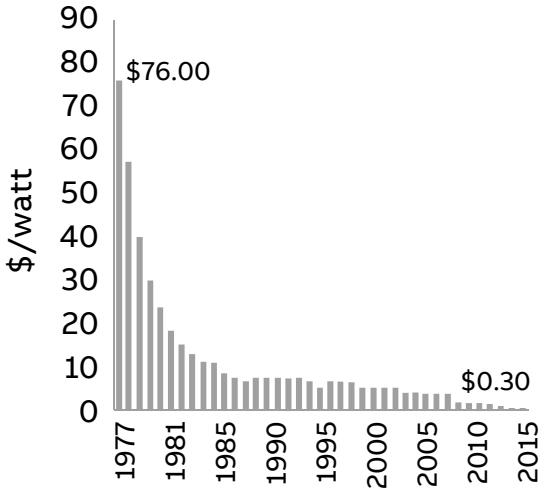
Renewables expected to be dominant source for electrical power generation

* units <50 MW connected to MV/LV grids, source: governmental plants, ABB analysis

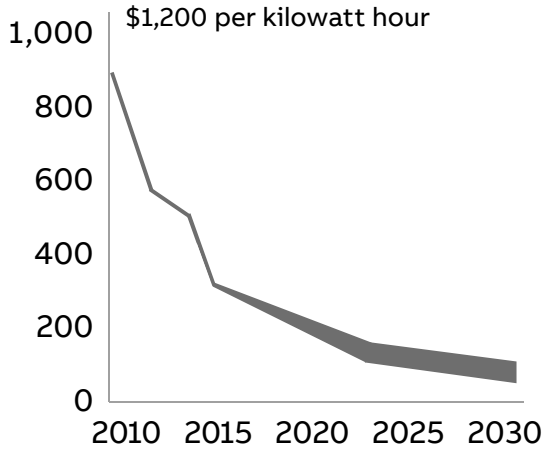
The energy revolution

Disruptive developments driving key changes in future grids

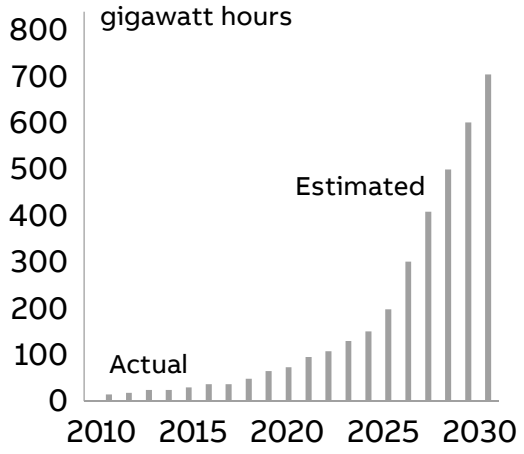
Price history of silicon PV cells[1]



Cost for lithium-ion battery packs[2]



Yearly demand for EV batt. power[2]



Batteries & photovoltaic

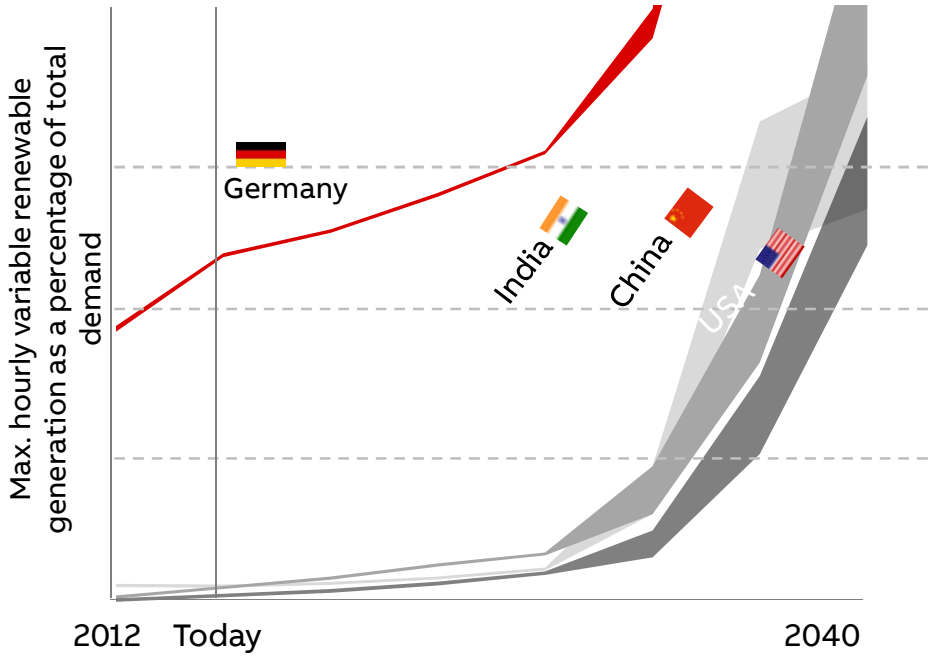
- Dramatic cost reduction – to be continued
- Scalability of technologies
- Consumer investment across market segments accelerating developments

[1] Source: Bloomberg New Energy Finance & pv.energytrend.com
[2] Source: Data compiled by Bloomberg New Energy Finance

The energy revolution

Grid – enabler or bottleneck …

Technical challenges countries encounter



Short circuit power & significant variable RES curtailment

System inertia & grid voltage

Grid capacity & reserve

Conventional operation

Grid investments and technologies required to address challenges

The energy revolution

Grid interconnection

Opportunities

Renewable integration across regions

- Fluctuations during the day
- Seasonal variations

Optimal use of reserve and peaking capacities

Diversification of electricity supply

Reduction of wholesale electricity price volatility

Strengthening grid operation in case of fault conditions

Increase capacity utilization factor of conventional generation

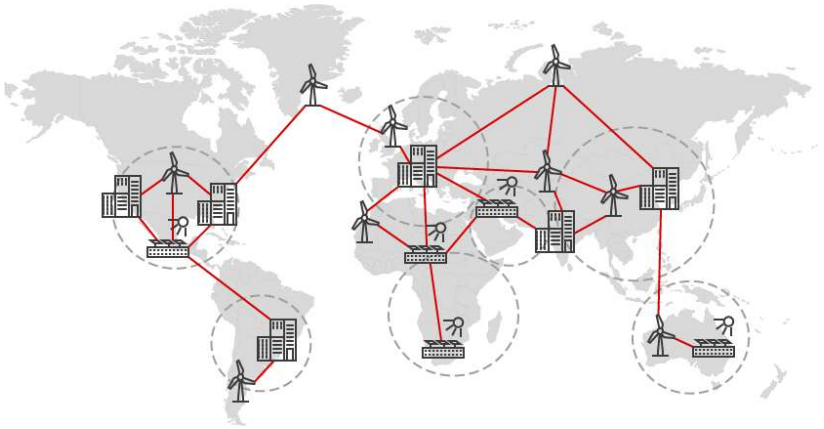
Challenges

Political factors

Economic framework

Technological capabilities

Coordinated operation (global harmonization of standards, grid codes and operational practices)



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Grid interconnection: Ultra High Voltage

World's most powerful UHVDC link

Chiangji-Guquan, China

1100kV DC

12000MW

>3000km

World's first multi-terminal UHVDC link

North-East Agra, India

800kV DC

6000MW

>1700km

UHVAC transmission

Bina Substation, India

1200kV Circuit breaker & transformer

The energy revolution

Microgrids and integration of renewables

Resilient and cost-effective technology

Grid code compliant integration of wind & solar

Stabilizing weak grids

Microgrids acting as one controllable generator or load

Access to power in remote locations

Marble Bar, Australia

- PV* (300 kW)
- Diesel (1’280 kW)
- Flywheel (500 kW)

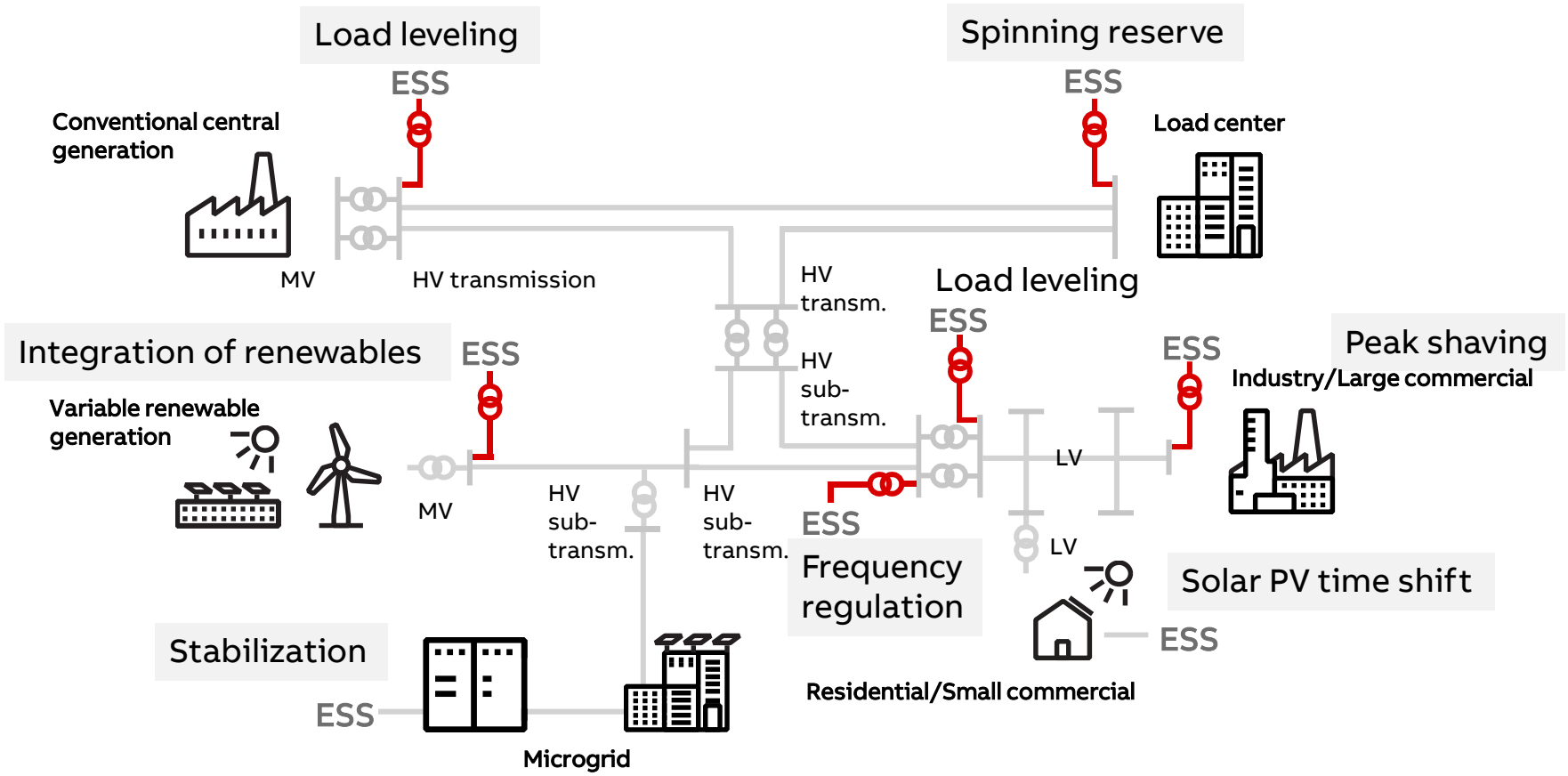
Kodiak Island, Alaska, USA

- Wind (9MW)
- Diesel (31MW)
- Flywheel (2 x 1MW)

* PV -Photovoltaic

The energy revolution

Energy storage – a key element across the power value chain



The energy revolution

Power quality & demand management

Distributed renewables

Line voltage regulator

On-load tap-changers for distribution transformers

Extended control algorithms

Bulk renewables

Extremoz substation (BR): Static Var Compensator to connect wind energy (>1000 MW) to 230kV level

Demand response management

Frequency regulation through short term balancing of supply and demand

Smart home and building management

Electric vehicle (charging) infrastructure

The energy revolution

Evolution from a conventional to a digital substation

Fit for future grid requirements

Standardized digital signal transfer

- Compatibility & interchangeability
- Signal supervision
- Fast communication
- Data acquisition for monitoring

Reduced cabling

Reduced footprint (AIS)

Safety

Reduced installation times

Queensland, Australia

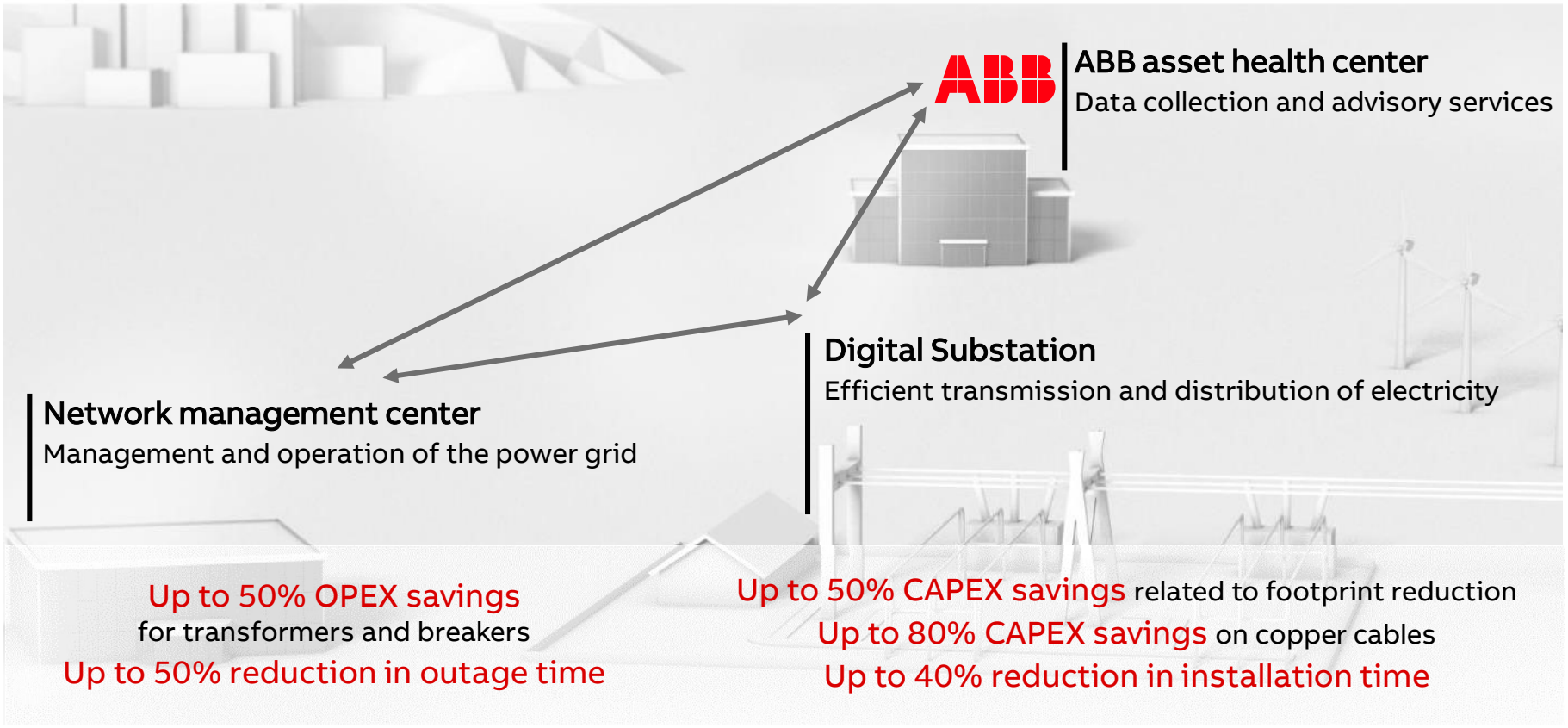
275 kV digital substation including NCIT[1] & 61850 process bus communication in operation since 2011

Enabling flexibility for new and existing substations

[1] NCIT – Non Conventional Instrument Transformers

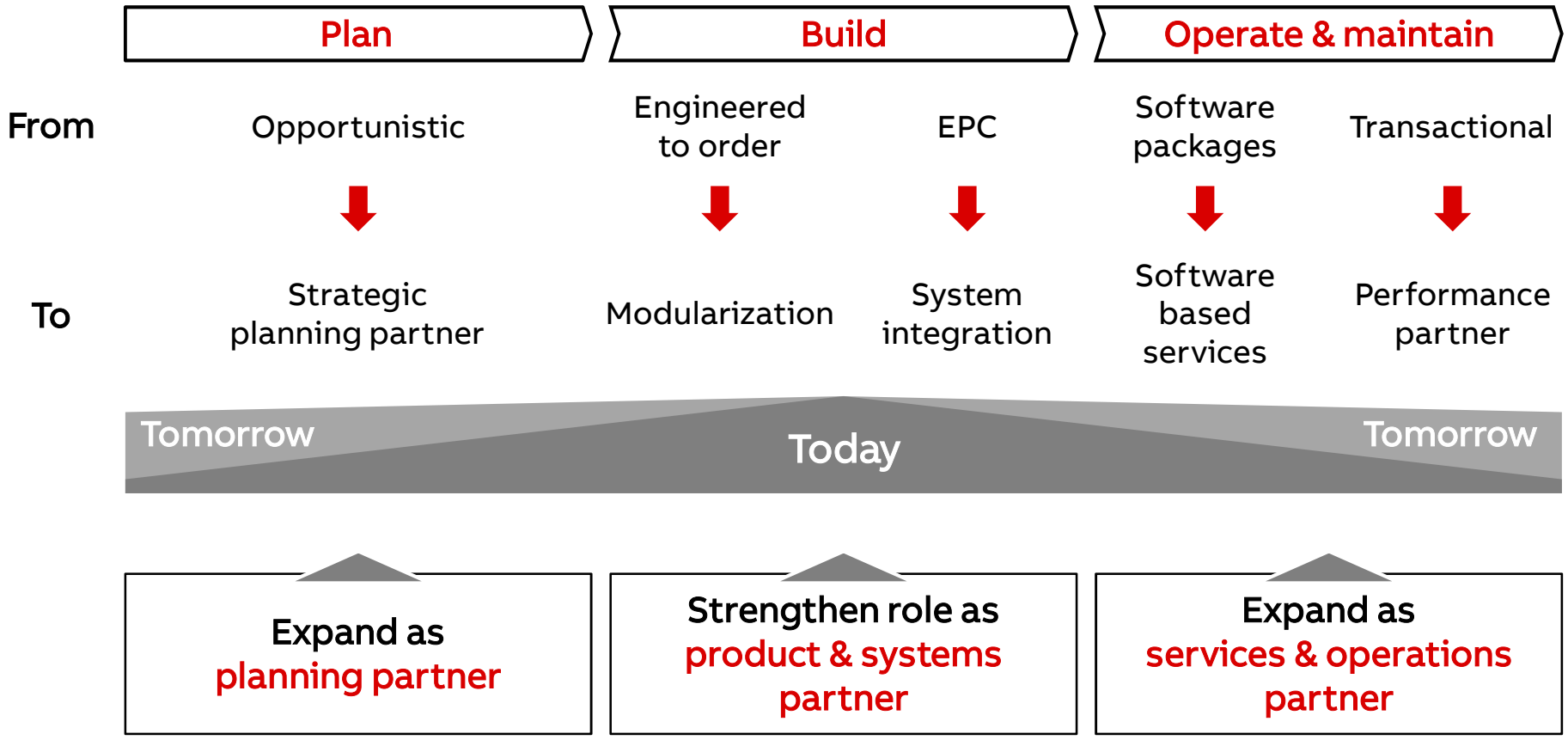
The energy revolution

Higher efficiency in operation and maintenance



The energy revolution

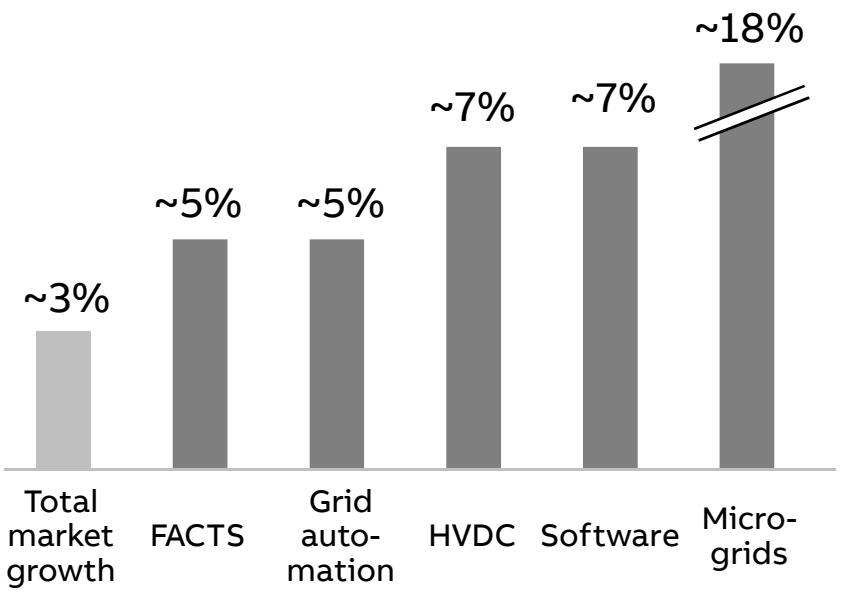
Strategic partnering with our customers throughout the life-cycle



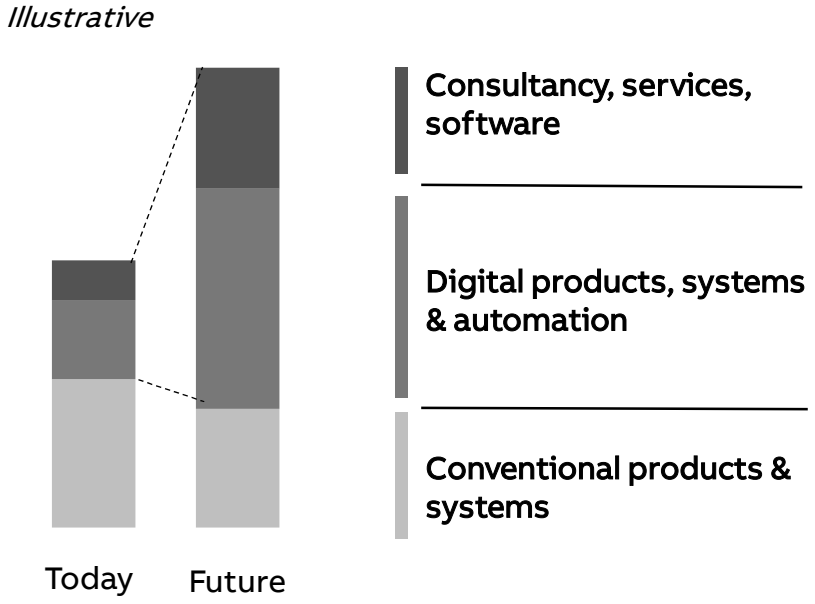
The energy revolution

ABB - unlocking value by enabling a stronger, smarter and greener grid

Energy revolution drives high growth segments



Portfolio shift reflects shift to higher growth segments



Well positioned to enable and debottleneck the grid for market and technological requirements

More information available at ABB Investor Relations

Name	Telephone	E-Mail
Alanna Abrahamson Head of Investor Relations	+41 43 317 3804	alanna.abrahamson@ch.abb.com
Beat Fueglistaller	+41 43 317 4144	beat.fueglistaller@ch.abb.com
Annatina Tunkelo	+41 43 317 3820	annatina.tunkelo@ch.abb.com
Ruth Jaeger	+41 43 317 3808	ruth.jaeger@ch.abb.com