



# **New challenges for national regulators beyond the third package**

**Presentation at the Nordic-Baltic Energy Conference in  
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# Outline of the presentation

- **Our mission and objectives**
- **Implementation of the third package**
- **Future challenges and priorities on national level**
- **The Swedish action plan for smart grid**

# National Energy Authorities

- The Energy Markets Inspectorate (Ei)
- The Swedish Energy Agency
- National Electrical Safety Board
- The Swedish National Grid





# Our Mission

- **Ei shall contribute to:**
  - **Efficient and well functioning electricity, natural gas and district heat markets**
  - **Good efficiency, quality and security in regulated network systems**
  - **Well informed and active customers**



# Areas of responsibilities

- Concessions (electricity and gas)
- Network regulation for electricity and gas (income cap)
- Connection fees (electricity)
- Electricity quality supervision
- Meter reading supervision
- Market surveillance
- Information to customers
- Market statistics and investigations
- International collaboration



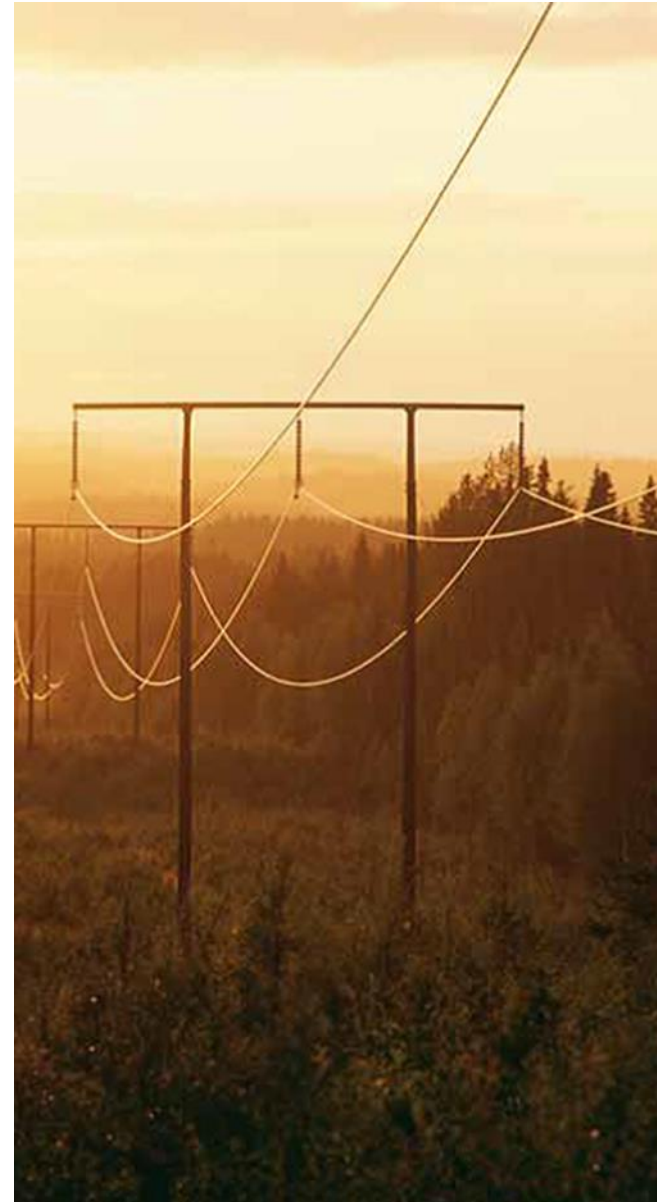
# Implementation of the third package

- **Basic legal requirement**
- **Roll out of smart meters**
- **Target model and Network codes**



# Basic legal requirements

- **Unbundling and certification of TSOs**
- **Unbundling of DSOs**
- **Independent regulator**
- **Cross border trade**
- **Consumer aspects – supplier switching, information, etc.**
- **Road map to abolish regulated prices for consumers**



# Roll out of smart meters

- **July 1, 2006; Mandatory hourly meter reading for all customers above 63 A; before above 200 A**
- **July 1, 2009; Mandatory monthly meter reading for all customers**
  - A major roll-out of remotely read electricity meters - 99 % of all meters was replaced by 1st of July 2009
  - No legal requirements concerning functionalities - 90 % of the meter capable of hourly meter reading
- **October 1, 2012; Obligation for network companies to deliver hourly data at no extra cost for customers subscribing to a hourly-based supply contract**



# Target model and network codes

- **Strong support for the target model - correlation between network codes and target model not always obvious**
- **Trust is key – communication to reach acceptance on national and European level**

## Regulatory challenges

- **Keep up an efficient supervision of the rules of today, while developing the new rules for tomorrow**
- **Time for necessary changes in national rules and regulations**

# Challenges beyond the third package



# Challenges from a system perspective

- Integration of large scale renewables
- Integration of distributed and embedded generation
- Shorter time frames - improve forecasts
- Handle ramping, peak load and excess power balance
- Keep and enhance quality and security of supply





# Challenges from a market perspective

- New consumption patterns - possibly large local influence from electrical vehicles
- New market actors as aggregators and energy service companies
- Empowered and active customers
  - Demand response
  - Storage solutions
- New demand profiles difficult to predict



# Flexibility is key!

- **Flexibility through smart grid solutions**
  - enabling technologies all along the value chain
  - Sensors, regulation and control big data, internet of things....
- **Flexibility is not only about technology!**
  - Understanding customer behavior and customers reactions to new market possibilities is crucial
  - Create incentives attractive enough to gain experiences from early adopters - different kinds of incentives for different kind of costumers
- **Market design**
  - Demand response and price formation – how do we get it right?



# The Proposal for a National Action Plan for Smart Grid







# Main objective and Characteristic

**Through increased cooperation, knowledge development and dissemination and a national action plan contribute to:**

- clear and fair rules on the emerging smart grid market
- customer empowerment
- favourable conditions for the development of smart grid in Sweden
- making smart grid a growing Swedish industry

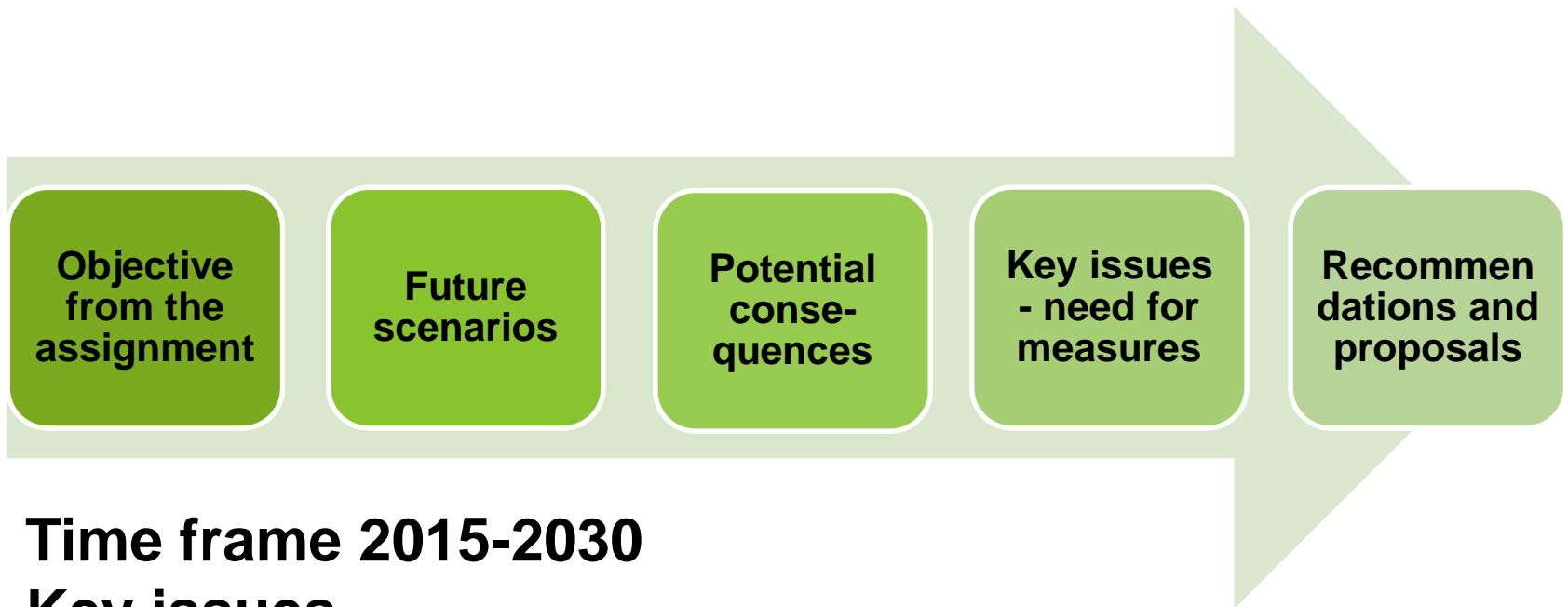


**Smart grid is not an aim in itself but offers a rational way to meet future challenges**





# The development process



**Time frame 2015-2030**

## Key issues

- Targets for renewable production
- Infrastructure development
- Demand flexibility
- Consumer empowerment





# Main areas in the action plan

## Political framework and market conditions

- Ground rules on the electricity market
- New conditions for the electricity grid
- Cooperation with other parts of the energy market
- Long-term development of the policy framework and market conditions

## Customer participation and societal aspects

- Smart grid from a customer perspective
- Customers' access to measurement data and information
- Synergies between smart grids and other societal development (community planning and products and services)

## R&D, innovation and growth

- Knowledge and skills development
- Research priorities and cooperation
- An integrated smart grid innovation strategy
- Conditions for pilot and demonstration projects
- Smart grid on a global market







# Structure – main areas and key issues

**Objective** for each main area

**Recommendations** for key issue identified, also valid in the longer term – 25 recommendations

**Motivation** explaining why this is important

**Responsible parties** identified

**Proposals** for concrete measures (short term) and further initiatives (mid/long term)

**Assessment** of work in progress and need for future steps





# Proposals and assessments

Rekommendation	Förslag och bedömningar	Ansvarig	2015	2030>>
<b>4.2 Politiska ramverk och marknadsvillkor</b>				
<b>Spelregler på elmarknaden</b>				
4.2.1 Marknadsdesign	Stimulera till flexibilitet	EI/Svk		→
4.2.2 Energilagring	Energilagring i distributionsnät	EI		→
<b>Nya förutsättningar för elnäten</b>				
4.2.3 Nätinvesteringar	Utvärdering av investeringsvilja	EI		→
	Stimulera investeringar	EM		→
4.2.4 Säkerhet	Ansvarsfrågor	Svk		→
	Nulägesanalys	Svk		→
	Risik- och sårbarhetsanalys	Svk/EI		→
<b>Samverkan med övriga delar av energimarknaden</b>				
4.2.5 Energibärare	Ökad samverkan	EM		→
4.2.6 Trafiksektorn	Effekter på kraftsystemet, laddinfrastruktur	EM		→
4.2.7 Energieffektivisering	Kunskapspridning	EM		→
	Åtgärder i byggnader	Boverket		→
<b>Långsiktig utveckling av politiska ramverk och marknadsvillkor</b>				
4.2.8 Systemansvar	Behov av nya kravregler	Svk		→
4.2.9 Systemeffekter	Analys och forskningsinsatser	EM		→

## Type of proposal

- Legal measures and regulation
- Economic instruments
- Specific programs and strategies
- Cooperation and knowledge dissemination

## Responsibility

## Time frame





# Proposals in the action plan – examples from different areas and type of measures

## Legal measures and regulation

- Introduce functional requirements on information management for next-generation smart meters
- An oversight of the regulatory framework to overcome obstacles to energy storage in the distribution grid

## Economic instruments

- Support to network companies aimed at mitigating risk when investing in commercial but as yet partly unproven smart grid solutions
- An integrated smart grid innovation strategy including new and supplementary forms for funding all along the value chain

## Specific programs and strategies

- Proposal for a thematic research plan to be further developed and included in the national research bill
- Develop programs to incorporate information security and integrity protecting technology in the electricity infrastructure

## Cooperation and knowledge dissemination

- Integration smart grid solutions and demand response in energy efficiency measures
- Promote knowledge exchange regarding the potential of smart grid in sustainable community planning





# The way forward.....

- **Public consultation until Mid-April**
- **The Councils proposes to establish a national forum for smart grid – this proposal will be handled by the government**
- **Proposed mission for the Forum**
  - promoting dialogue between the actors involved
  - monitoring implementation of the action plan
  - identifying the need for supplementary measures
  - coordinating the implementation and follow-up of certain proposals
  - responsibility for managing and developing the knowledge platform [www.swedishsmartgrid.se](http://www.swedishsmartgrid.se)



A landscape photograph featuring a large metal power line tower in the center. The tower is supported by two vertical poles and has several horizontal cross-arms. Power lines extend from the tower across the sky. The foreground is a green field, and the background is a dense forest of trees with some autumn-colored foliage. The sky is a clear, pale blue.

**Thank you for your  
attention!**

**[www.ei.se/Energy-Markets-Inspectorate](http://www.ei.se/Energy-Markets-Inspectorate)**