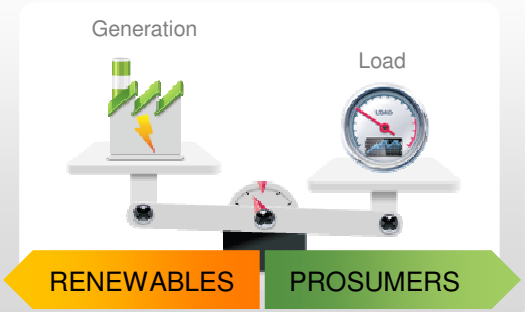
SIEMENS

Chris King, Global Chief Regulatory Officer
April 24, 2013

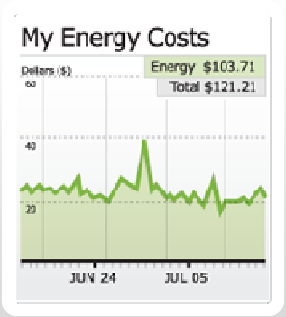
Smart Metering and Poland
What, Why, When

Global Critical Utility Challenges

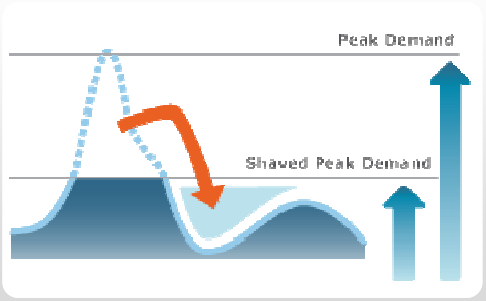
Balancing Renewables



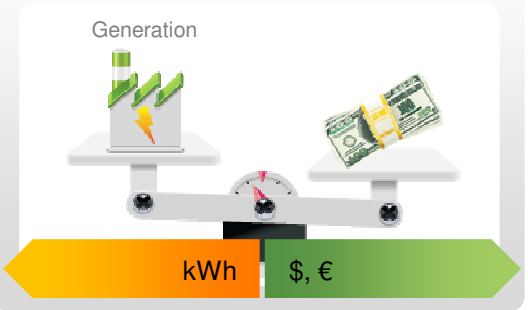
Customer Energy Saving Goals



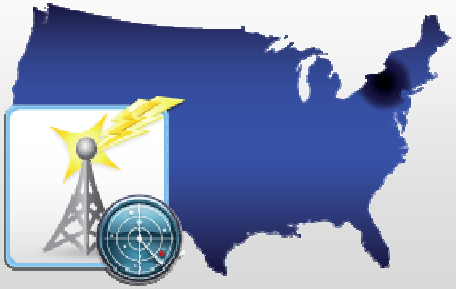
Peak Reduction



Reduction of System Losses



Outage Prevention / Restoration



Productivity

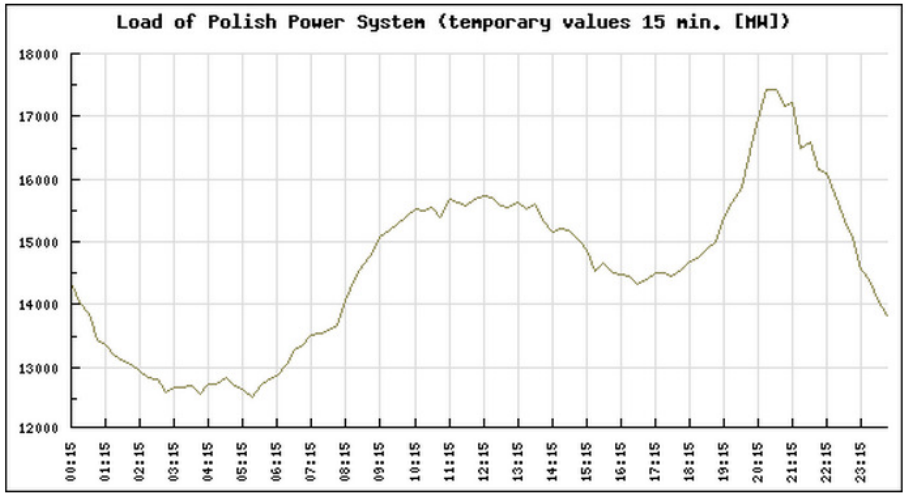
Polish Electricity System

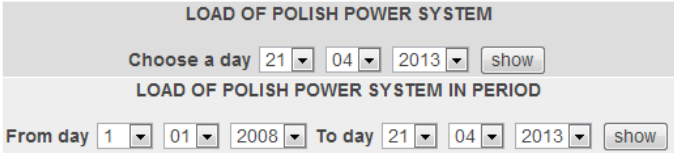
Demand side

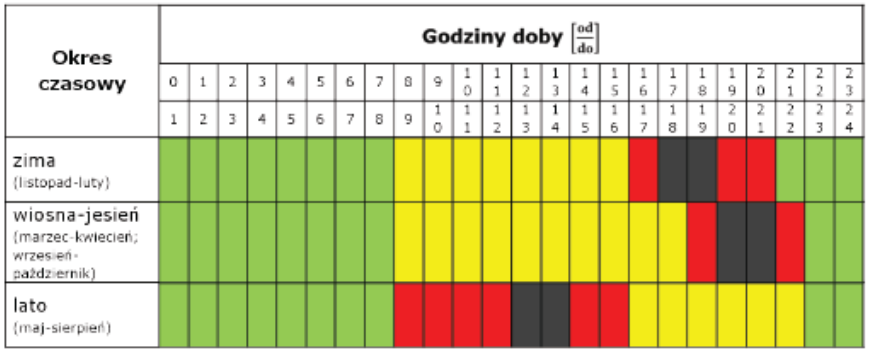
- Cold winters and electric heat drive evening peak
- Hot summers and growing air conditioning penetration drive afternoon peak

Wholesale costs

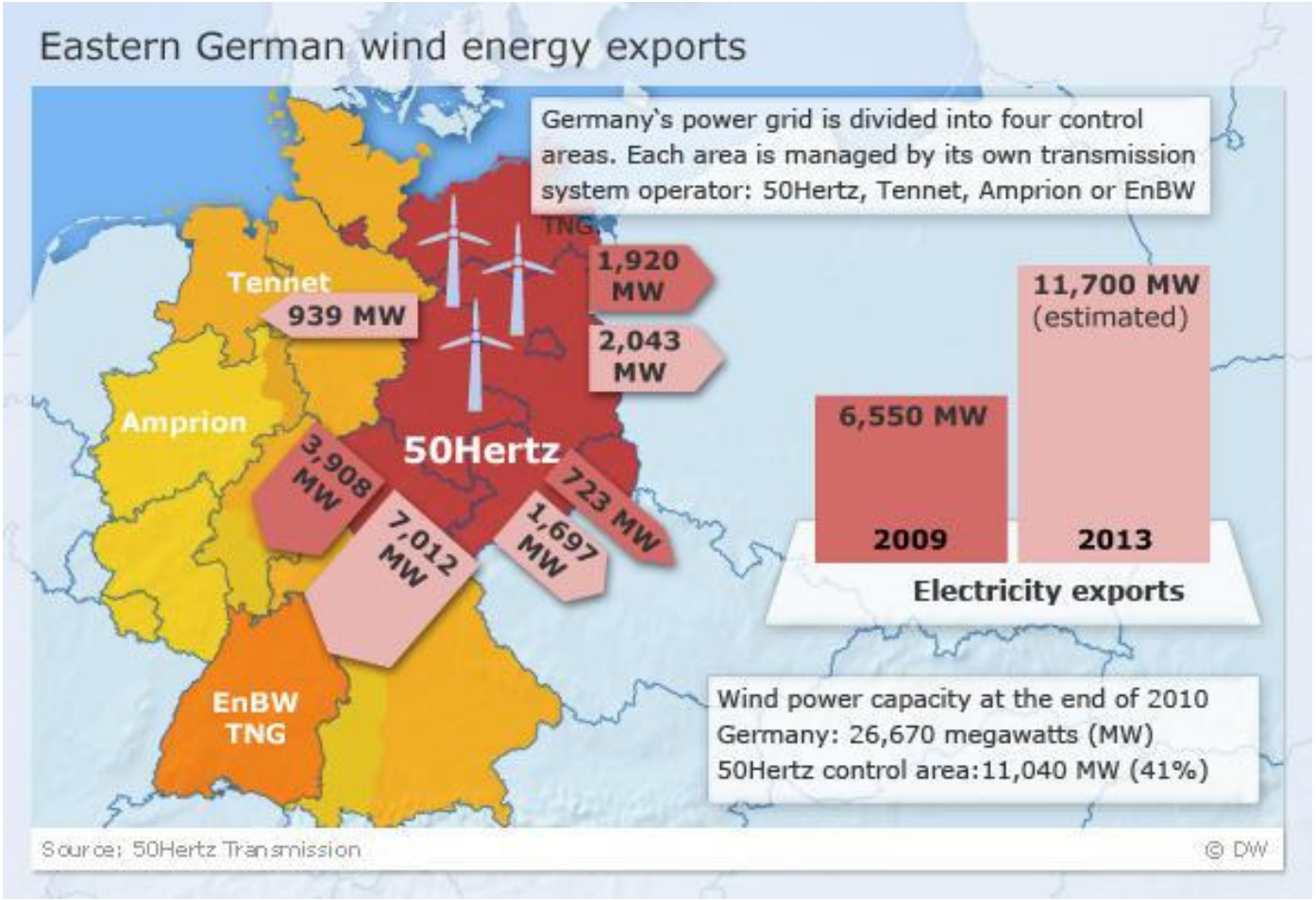
- Off peak generally 10 pm – 8 am, plus holidays and weekends
- Mid-peak
  - 8 am – 4 pm winter
  - 8 am – 6 pm fall and spring
  - 4 pm – 10 pm summer
- Peak
  - 4-5 pm, 7-9 pm winter
  - 6-7 pm, 9-10 pm fall and spring
  - 8 am-noon, 2 pm-4 pm summer
- Critical Peak
  - 5-7 pm winter
  - 7-9 pm fall and spring
  - Noon-2 pm summer





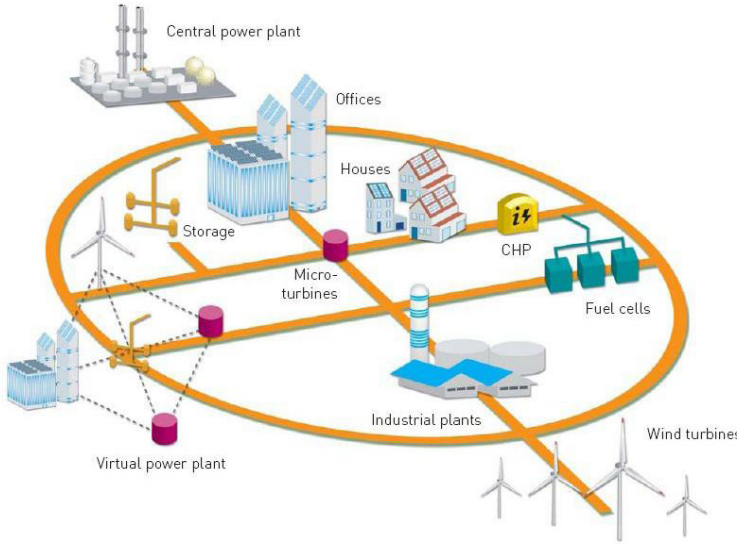


Wind Energy Load

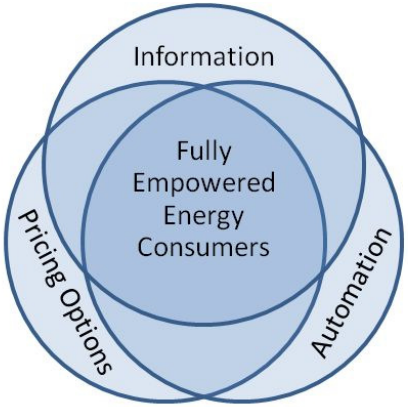


The Solution: Smart Grid – Defined

The Smart Grid is an electricity transmission and distribution network with a parallel **communications** network and **digital meters, sensors, and controllers** that enables utilities to **better use renewable energy** sources and **reduce outages**…



…while **empowering consumers** with **pricing** choices, detailed **information**, and **automated appliances** to save money, energy, and carbon emissions.



Smart Grid Consumer Empowerment Triad

Smart Grid Technology Layers

SIEMENS

System Layer

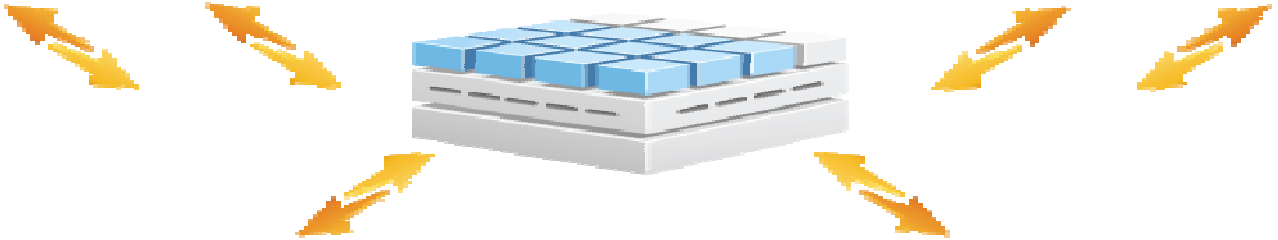
Users

Network Operator | Retailer | End Consumer

Apps

Trans EMS | DMS | OMS | Line Loss | EV Charge Mgmt | DR Mgt | MDM | Billing & CIS | Web-site

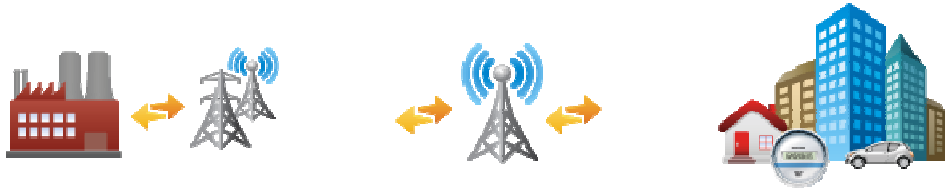
Integration Platform



Communications Networks

Grid-specific Communications

Grid Equipment and Customer Premise Devices



European Union Policy Direction

Policy drivers

- Transition towards low-carbon economy
- Guarantee high security, quality, and economic efficiency of electricity supply in a market environment
- End user empowerment
  - Informed and engaged: interested and equipped to play an active role in the market
  - Provided with choice of electricity suppliers and sources and the ability to exercise choice
  - Integrated in energy system so they can not only consume but also supply electricity

Directives 2009/72/CE and 2009/73/CE

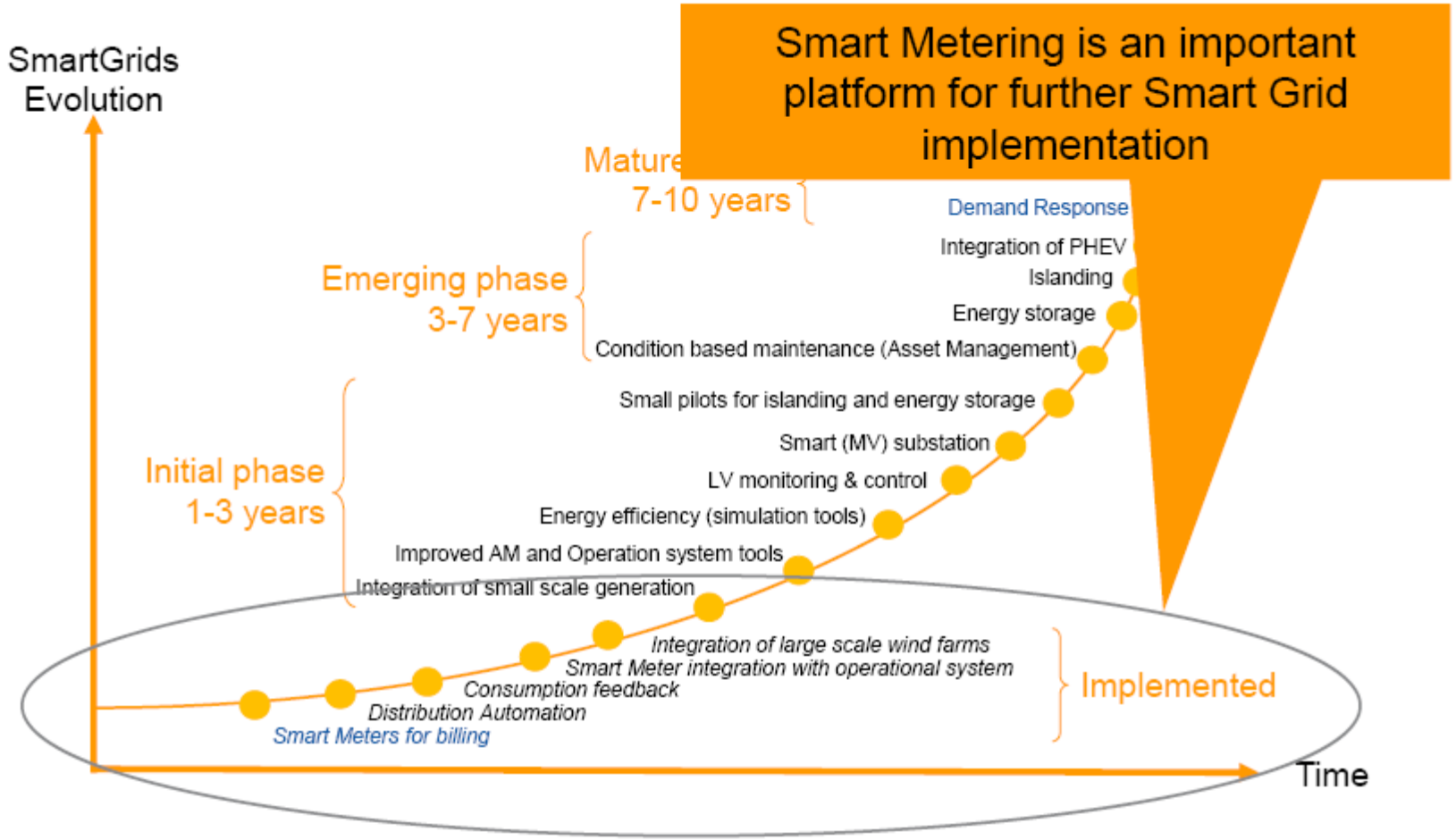
- At least 80% of consumers shall be equipped with intelligent metering by 2020, provided the member state's cost-benefit analysis is determined to be positive

European Commission Recommended Minimum Functionality for Intelligent Meters

SIEMENS

CONSUMER	• Provide readings directly to the consumer and/or any 3rd party • Update the readings frequently enough to use energy saving schemes
METERING OPERATOR	• Allow remote reading by the operator • Provide 2-way communication for maintenance and control • Allow frequent enough readings to be used for networking planning
COMMERCIAL ASPECTS OF SUPPLY	• Support advanced tariff system • Allow remote ON/OFF control supply and/or flow or power limitation
SECURITY AND DATA PROTECTION	• Provide secure data communications • Fraud prevention and detection
DISTRIBUTED GENERATION	• Provide import/export and reactive metering

Deployment Evolution – example from Nordics



Status – Smart Meters in Poland

Strong policy support for intelligent meter deployment

- Tool to meet Polish energy policy goals
- Technology solution to some grid challenges
- Support for EU direction

Preliminary business case suggests deployment likely to be cost-effective

- Majority of net benefits flow to end users

Parliament now debating energy law

- Scope and schedule of deployment
- Data access by market actors
- Data privacy and security for consumers

Poland's Major Energy Groups

Thank You!

Chris King
Global Chief Regulatory Officer
Smart Grid Services / USA

4000 E. 3rd Ave., Suite 400
Foster City, CA 94404

Phone: +1 (510) 435-5189

E-mail:
chris_king@siemens.com