NL-Status
DSM, DG, RES and Storage
René Kamphuis, ECN/Intelligent Grids
DSM -> Demand Response // Demand side integration

- Nationwide inventory of role of DR undertaken; potential estimated
- Increasing interest (also from retailers)
- SmartGrids is a definitive issue
  - Dutch task force installed
  - What does it exactly mean to every stakeholder
- There will be a rollout to various testing areas
- Main drivers:
  - Energy replaces natural gas as energy carrier (heat pumps)
  - Local dispersed generation (e.g. micro-CHP)
  - Electric mobility
DG-RES embedding in the Netherlands

- Long history of DG CHP and PV, favoured during ’90s, subsidies stopped ’00s; now breaking point to new opportunities
- First domestic transition technology is Stirling/CHP
- Smart Power Systems initiative (HR/E heater; E-production is 70% of demand
  - Electricity and ICT network
  - Technology development and field-tests in progress
- ECN in Stirling development Enatec -> Rinnai and Merloni
- ‘Smart’ usage of natural gas
- SOFC/PV
- SmartGrids
- Collect filtered information from most relevant projects worldwide
- Dual optimization goals (net management capacity (kW) vs. commercial goals (energy kWh));
- Conflicting interests and horizons (trade 1+ year; distribution management 30+ years) and how to cope
- Not only look at newly built infrastructures but also at renovation
- Grid level to 10 MVA; storage capacity related to grid losses
- Role of storage batteries (large and small)
• Relation to grid-planning (simultaneousness w.r.t. demand as compared to supply)
• Influence of DG-RES hotspots (in regions with ambitious DG implemented)
• Possible service models contract forms (behind the meter); in how far, what detail do we have to meter intelligently
• Business case for small customers in moderate climate regions
• Cost effectiveness of current technologies
• How important is smart metering; experiences with smart control
• Datapath and architecture in homes
• DG-RES and distribution tariffs (kW (t?) or kWh(t)); smart tariff differentiation; tariff schemes
• Demand differentiation; lighting power, washing power, comfort appliance power
• User interfacing (technical behavior control or fully automatic); contract structures
• Legal consequences; responsibilities
• Prepaid vs. Monthly yearly bills; electronic billing
• Metering and link to factoring systems
• Experiences with bills -> Service contracts
• Cost savings at what point in value chain
• Profiling <> real-time prices
• What market type/design fits optimally to DR, DG-RES and Storage