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Aggregation of the response of Dutch Distribution System Operators (DSO's) on the ERGEG Smart Metering Guidelines concept

30th of August, 2010

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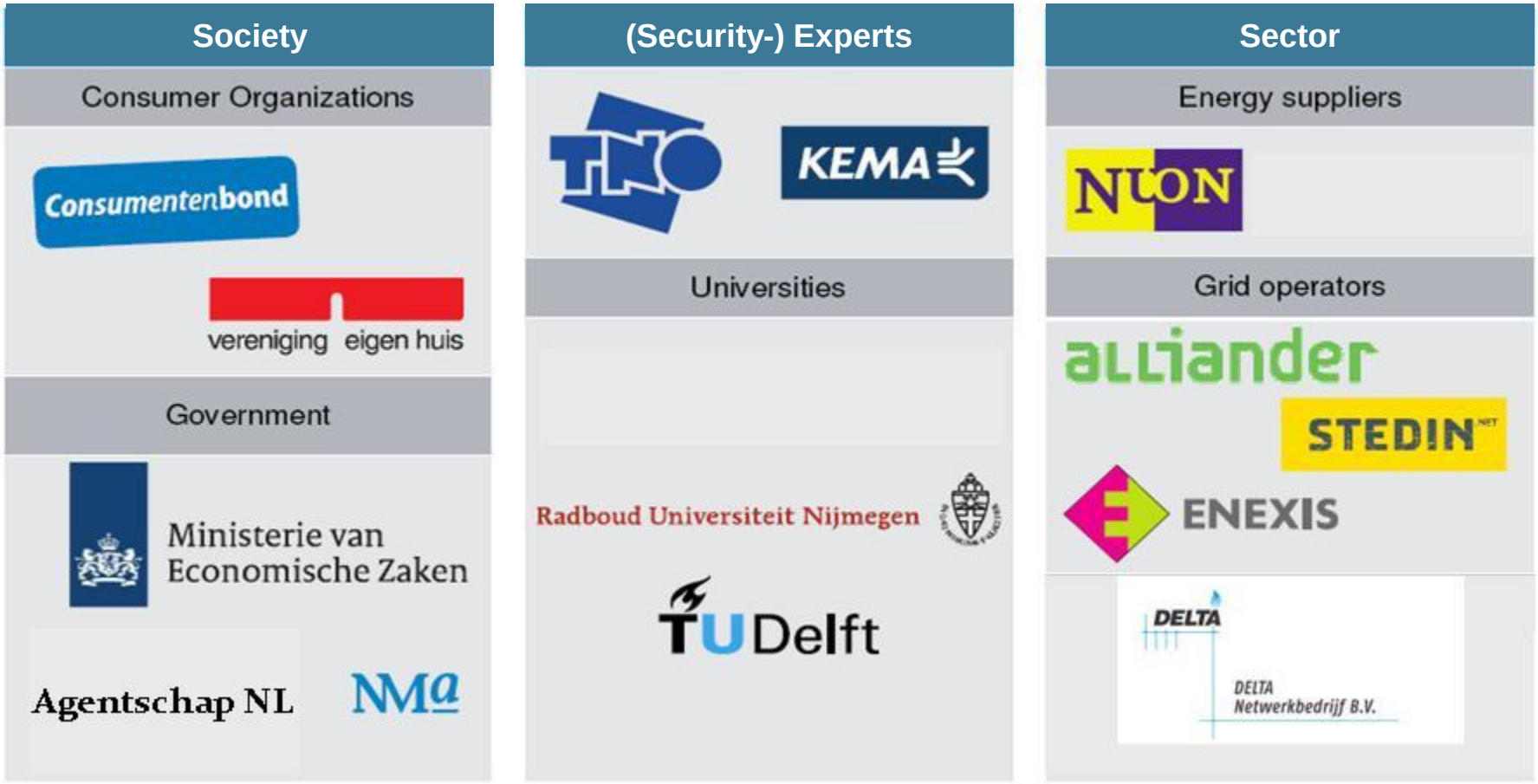
This Response is Consulted with the following organizations in The Netherlands



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Security & Privacy

Security: to protect our vital electricity infrastructure form attacks.
Privacy: to protect our customers' private information.

System security and data protection are crucial issues for the success of the rollout and operation of smart metering and is a vital part of the implementation work in The Netherlands. The Netherlands is taking a rigorous and systematic approach to assessing and managing these issues and developed a data security and privacy regime that both enables smart grid (and smart metering) and protects consumers personal information.

It seems that little security and privacy aspects are being addressed in the ERGEG Draft Guidelines of Good Practice. The Netherlands cannot agree on guidelines that do not sufficiently address security & privacy.

Overview of ERGEG recommendations

E	G	Recommendation	Service type
1	17	Information on actual consumption, on a monthly basis	Minimum customer services
2	18	Accurate metering data to relevant market actors when switching supplier or moving	Minimum customer services
3	19	Bills based on actual consumption	Minimum customer services
4	20	Offers reflecting actual consumption patterns	Minimum customer services
5		Power capacity reduction/increase	Minimum customer services
6		Activation and de-activation of supply	Minimum customer services
7		Only one meter for those that both generate and consume electricity	Minimum customer services
8	21	Access on customer demand to information on consumption data	Minimum customer services
9		Alert in case of an non-notified interruption	Optional services
	22	Hourly flow capacity reduction/increase	Optional services
	23	Enabling activation and de-activation of supply	Optional services
10	24	Alert in case of high energy consumption	Optional services
11	25	Interface with the home	Optional services
12		Information on voltage quality	Optional services
13		Enabling activation and de-activation of supply	Optional services
14	26	When making a cost benefit analysis, an extensive value chain should be used	Costs and benefits
15	27	All customers should benefit from smart metering	Roll-out
16	28	No discrimination when rolling out smart meters	Roll-out
29	29	Customer control of metering data	Data security & integrity

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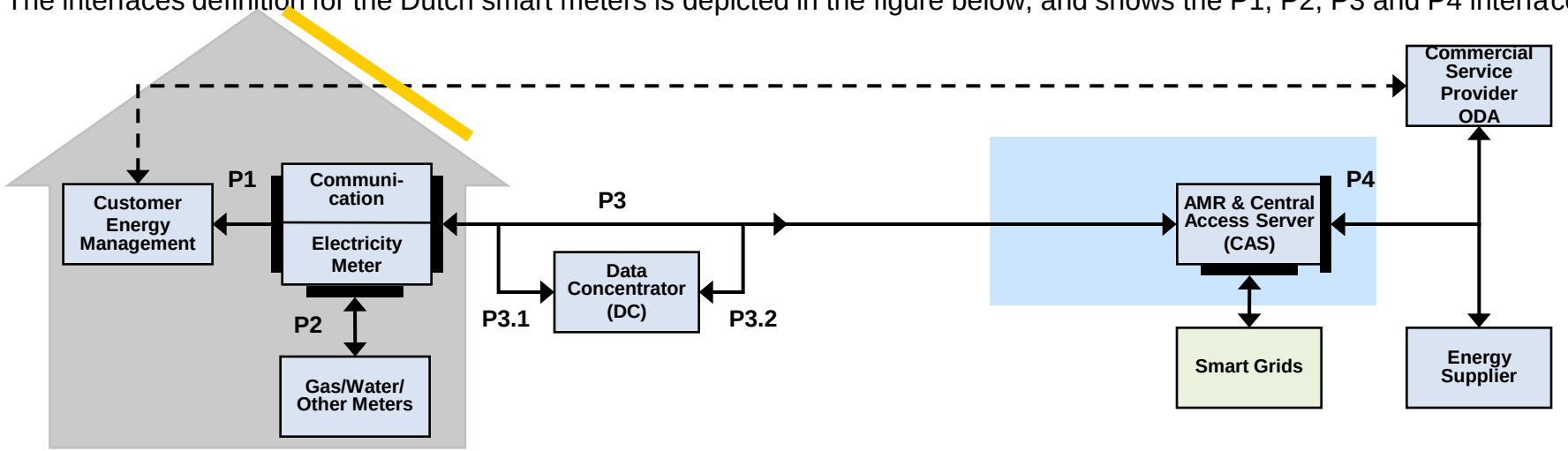
Specific smart metering aspects in The Netherlands

- **Consumer choice**
  Consumers have a choice whether to allow their consumption data to be collected (to `*opt in*', '*opt out*', or to use default settings). In case of an `*opt out*', no metering data will be remotely collected. Applying the default setting means that metering data will be collected every 2 months (+ event driven datacollection: for example: supplier switch), while an `*opt in*' serves as a mandate to collect detailed metering data as desired.

- **Consumer interface**
  The smart meter is equipped with a local consumer interface (P1), providing detailed data. External service providers (but also energy suppliers) can develop and deploy functionality based on this interface.

- **Gas temperature correction**
  In the Netherlands the flow of gas needs to be locally corrected (in the meter) for temperature differences to provide more accurate consumption data, and these data needs also to be presented on the meterdisplay.

- **Smart meter interface**
  The interfaces definition for the Dutch smart meters is depicted in the figure below, and shows the P1, P2, P3 and P4 interfaces.



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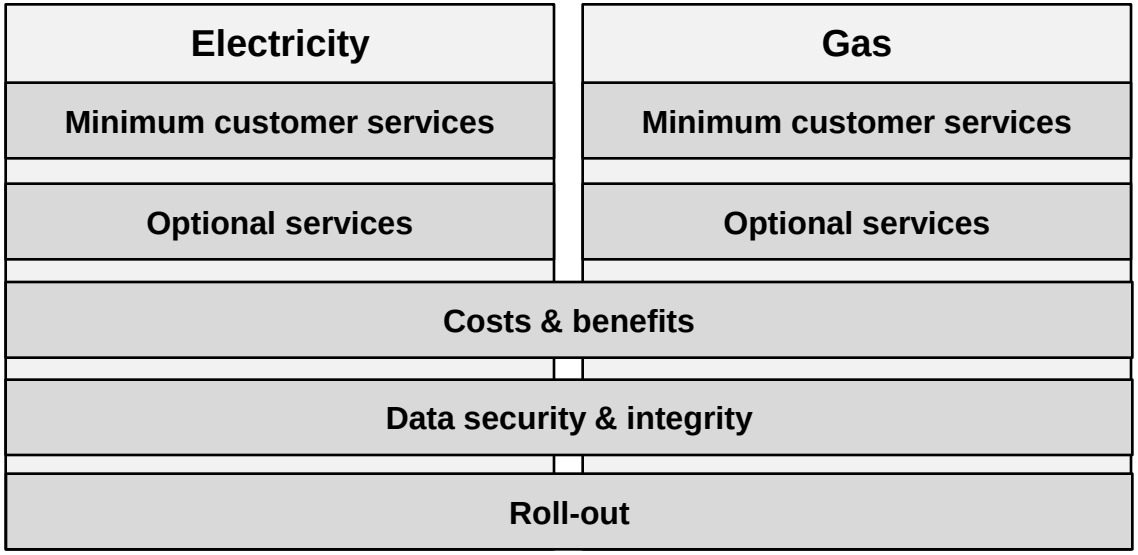
ERGEG Guidelines of Good Practice on Regulatory Aspects of Smart Metering for Electricity and Gas

- **Summary**
  The public consultation presents draft guidelines of good practice (GGP) on regulatory aspects of smart metering for electricity and gas which are directed at Member States, National Regulatory Authorities (NRAs) and industry. These draft GGP contain a set of minimum customer services for retail market customers (as well as for those that both generate and consume electricity) and a set of optional services. Furthermore, a set of recommendations are directed towards the Member States regarding roll-outs, cost benefit analyses and data security and integrity

- **3rd package**
  The basis for these GGP stems from provisions in Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas (hereinafter 3rd Package). The GGP will hopefully contribute to the effective implementation of the Directives as well as the continuous development of the European electricity and gas markets



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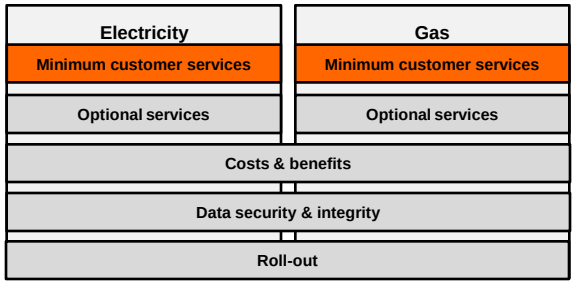
ERGEG Guidelines of Good Practice on Regulatory Aspects of Smart Metering for Electricity and Gas



E	G	Minimum customer services
1	17	Information on actual consumption, on a monthly basis
2	18	Accurate metering data to relevant market actors when switching supplier or moving
3	19	Bills based on actual consumption
4	20	Offers reflecting actual consumption patterns
5		Power capacity reduction/increase
6		Activation and de-activation of supply
7		Only one meter for those that both generate and consume electricity
8	21	Access on customer demand to information on consumption data

1/17. Information on actual consumption, on a monthly basis

Elaboration by ERGEG (E/G)	"...the customer should be properly informed of actual […] consumption and costs frequently enough to enable him/her to regulate the […] consumption. Furthermore, information should be given by using a sufficient time frame."
Overall opinion	Disagree
Comments	Currently the proposed Dutch regulations dictate a default 2-month basis (6x per year). A customer will have the possibility to choose for "opt-in", then more frequent information on actual consumption will be available to suppliers and can be used to inform the customer. See our comments on recommendation 7 (page 15). * What are the consequences of informing customers more frequent about their energy consumption in terms of "paper flow": there is probably a significant part of customers without access to digital media?

2/18. Accurate metering data to relevant market actors when switching supplier or moving

Elaboration by ERGEG (E/G)	“More accurate metering data and service to the customer and to the relevant market actors when switching supplier or moving should result from the ability to remotely read the meter and registering of data or interval metering.”
Overall opinion	Agree
Comments	Also holds for end-of-contract situations. Remote meter readings will result in “accurate metering data” instead of “more accurate metering data”.

3/19. Bills based on actual consumption

Elaboration by ERGEG (E/G)	“As a result of remote reading of the meter values, customers should no longer have to accept estimated energy bills. Bills should reflect consumers’ actual consumption.”
Overall opinion	Agree
Comments	See slide 3 for an elaboration on the consumers’ choice in the Netherlands. If a consumer demands that the smart meter does not send metering data, bills can only be based on inter- or extrapolated usage data. We assume that this minimum customer service is not about monthly billing based on actual consumption, but only about bills based on actual consumption instead of estimate bills.

4/20. Offers reflecting actual consumption patterns

Elaboration by ERGEG (E/G)	“It is key that the supplier should be able to make offers to the customer and those that both generate and consume electricity that better reflect actual consumption/injection divided into different time periods.”
Overall opinion	Agree
Comments	DSO’s facilitate this by providing load profiles and daily- as well as monthly readouts in set time intervals via the local customer interface or central market interface when consumer has given a mandate for this.
Answers to questions	**4a & 4b** We advise against stating technical implementations in guidelines. It isforeseen that future offerings to consumers for energy supply andfeed-in which require metering intervals which will not fit the proposedtechnical solution; e.g. are temporally finer grained. We advise thefollowing guideline: 'The meter should enable commercial offerings fromsuppliers which reflect actual patterns of both consumption andproduction'. The solution to enable this (metering interval, number ofregisters, tariffplans, etc). Should be stated in technical standards.

5. Power capacity reduction/increase

Elaboration by ERGEG (E)	If a customer has the possibility to regulate his/her electricity supply by capacity reduction/increase this would enable two main benefits. - The possibility to reduce power to [..] manage one's electricity consumption - The other benefit is that remote management of capacity offers the possibility for remote power capacity reduction and increase
Overall opinion	Agree, under condition…
Comments	Agree: DSO's and suppliers can provide the functionality for this, and can provide advanced payment plans to customers (pre-paid energy for instance). The functionality will not allow a customer to independently reduce or decrease the consumption limit on the meter itself. A suitable and feasible security level must also be implemented for this function. Power capacity reduction should not be an instrument for energy saving / energy management. Dutch situation: An electricity threshold can be set remotely via port P3 (see slide 3), individually or collectively. The breaker de-activates if the electric current is greater than the set threshold for longer than 30 s. De-activation does not take place as long as there is a net return supply to the network. The adjusted value for the threshold is available via port P1 and port P3. After the breaker has been switched off due to exceeding the threshold value, locally the breaker can be manually switched on.

6. Activation and de-activation of supply

Elaboration by ERGEG (E)	“Remote management allows the customer to remotely initiate activation and/or de-activation of the supply, thus reducing the time to perform either operation.”
Overall opinion	Strongly disagree
Comments	The Metering System has the functionality to switch off supply; this is a complex issue. A customer does not require the possibility to de-activate supply through the meter, there are other possible methods of doing this which do not require customer access to the meter, such as the use of the main switch. A suitable and feasible security level must be implemented for this minimum customer service. A risk based analysis is needed to determine suitable security measures (Personal Data Protection Act: Art. 13).

7. Only one meter for those that both generate and consume electricity

Elaboration by ERGEG (E)	“The possibility to register injected as well as consumed energy with only one metering device should be offered to all customers that both generate and consume electricity. The decision on the specific metering equipment needed, if varying from case to case, should be left to the customers that both generate and consume electricity.”
Overall opinion	Agree
Comments	The meter as described here registers the net consumed energy and the net injected energy (sum + / -). It does not provide measurements for the total consumer generated power.

8/21. Access on customer demand to information on consumption data

Elaboration by ERGEG (E/G)	“On demand, the customer should be able to access information on his/her up to date consumption data.”
Overall opinion	Agree
Comments	Possible through local consumer interface (P1) and central market interface (P4), see slide 6.

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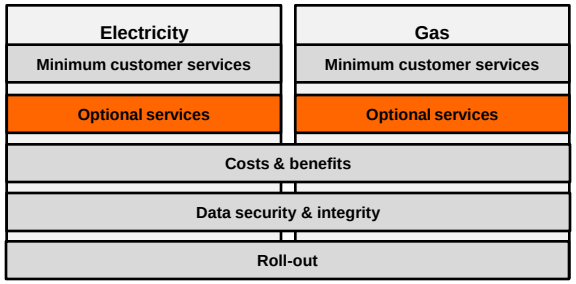
ERGEG Guidelines of Good Practice on Regulatory Aspects of Smart Metering for Electricity and Gas



E	G	Optional services
9		Alert in case of an non-notified interruption
	22	Hourly flow capacity reduction/increase
	23	Enabling activation and de-activation of supply
10	24	Alert in case of high energy consumption
11	25	Interface with the home
12		Information on voltage quality
13		Enabling activation and de-activation of supply

9. Alert in case of an non-notified interruption

Elaboration by ERGEG (E)	“In case of non-notified interruptions which originate on networks that are not monitored and controlled by tele-control systems (typically LV networks) smart meters could send an alarm to the central systems informing the grid operator of the ongoing interruption.”
Overall opinion	Disagree
Comments	This is not a function which should be integrated in the meter: -A customer will generally notice an interruption -Notifications of every interruption will have a very large impact on the telecom network and central ICT system -There are more technical solutions possible besides the one that is mentioned in the draft guidelines. Services should contain business or functional requirements and should not focus on solutions.

22. Hourly flow capacity reduction/increase

Elaboration by ERGEG (G)	“If a customer has the possibility to regulate his/her gas supply by capacity reduction/increase this would enable two main benefits: - the possibility to reduce hourly flow to better manage one’s consumption - remote management of capacity offers the possibility for the relevant market actor to execute remote hourly flow capacity reduction and increase”
Overall opinion	Disagree
Comments	Technically unfeasible to reduce/increase gas flow. this is neither a requirement, nor a recommendation in the Netherlands. Capacity reduction should not be an instrument for energy saving / energy management.

23. Enabling activation and de-activation of supply

Elaboration by ERGEG (G)	“There are certain situations when a customer may wish to activate or de-activate gas supply, for example when moving in/out or when leaving a second (or seasonal) residence. Remote management allows the customer to remotely initiate activation and/or de-activation of the supply, thus reducing the time to perform either operation.”
Overall opinion	Strongly disagree
Comments	The Metering System has the functionality to switch off supply; this is a complex issue. A customer does not require the possibility to de-activate supply through the meter, there are other possible methods of doing this which do not require customer access to the meter, such as the gas tap. A suitable and feasible security level must be implemented for this minimum customer service. A risk based analysis is necessary to determine suitable security measures (Personal Data Protection Act: Art. 13).

10/24. Alert in case of high energy consumption

Elaboration by ERGEG (E/G)	“With an alarm distress signal in the smart metering system, immediate information on a malfunction or a sudden high increase in consumption could be transferred to the customer. The alarm would depend on how often the meter values are being registered and transmitted.”
Overall opinion	Disagree
Comments	Not a necessary requirement to be built into the meter; this functionality can be achieved using the local customer interface. This is typically a service which can be provided by a supplier.

11/25. Interface with the home

Elaboration by ERGEG (E/G)	“Meters could be equipped with/connected to a gateway that enables home automation and which allows for future customisation as demand response and other technologies come online. This would allow the customer to react to a price signal and adapt consumption.”
Overall opinion	Agree
Comments	Can be achieved using the local customer interface. This should however be a one-way communication: from meter to customer, from a security perspective.

12. Information on voltage quality

Elaboration by ERGEG (E)	"..today's meters can provide information about voltage deviations which are important for the DSO, and can supply preliminary information for further measurements, even if not done according to relevant standards."
Overall opinion	Agree
Comments	The smart meter can not provide complete PQ measurements meeting the relevant standards, but can provide a limited set of PQ measurements, as specified in Dutch Smart Meter Requirements: "*The E meter shall provide the following:* • *Equipment identifier for the E meter that the information originates from;* • *Number of power swells (configurable for duration and threshold);* • *Number of power sags (configurable for duration and threshold);* *In case of a polyphase meter the settings for duration and threshold are valid for all phases; the sags and swells have to be counted for every phase individually."* *The definition of power swells and power sags is specified in a national standard (NEN-EN 50160:2000). The Grid operator uses the information to determine the quality of electricity* supply.*. The E meter shall have the functionality to record instantaneous values and average values for voltage, current, active power and reactive power"* The consumer will be able to locally access voltage quality information (actual electrical power specified with a resolution of 10 W) Recommendation: collective rules and processes should be in place to cope with customer questions and complaints about (in this case) voltage quality deviations.

13. Information on continuity of supply

Elaboration by ERGEG (E)	“Referring to the CEER 4th Benchmarking Report on Electricity Quality of Supply, "*Countries that do not monitor incidents at LV are encouraged to investigate the use of electronic energy meters (known as “smart meters”) in an automated scheme for logging interruptions*.“”
Overall opinion	Agree
Comments	DSO’s facilitate this; outages and interruptions are recorded in a log for compensation purposes.
Answer to question	**13** No further additions to list of services

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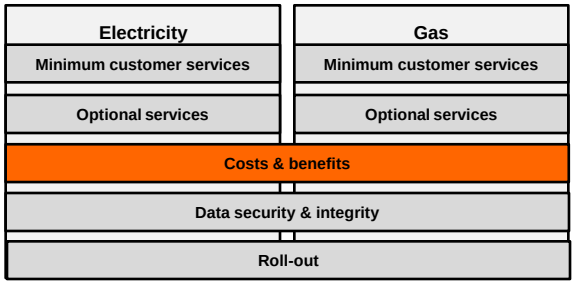

E	G	Costs & benefits
14	26	When making a cost benefit analysis, an extensive value chain should be used

14/26. When making a cost benefit analysis, an extensive value chain should be used

Elaboration by ERGEG (E/G)	“Apart from the customer benefits reached through the (minimum and optional) services described in the previous chapter, a CBA should also take into account an extensive value chain, covering DSOs, suppliers, metering operators, generators, etc. A CBA should also take into account the costs involved regarding metering data security.”
Overall opinion	Agree
Comments	Additional point: cost reduction following from more accurate measurement data. Recommendation: the Dutch Ministry of Economic Affairs will publish (mid September) a document containing several researches about smart metering implementations regarding to the business case. This publication is recommended as a reference.

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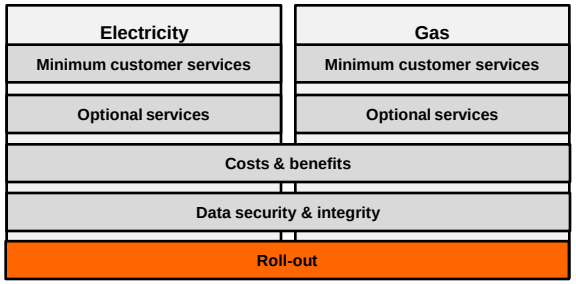
ERGEG Guidelines of Good Practice on Regulatory Aspects of Smart Metering for Electricity and Gas



E	G	Roll-out
15	27	All customers should benefit from smart metering
16	28	No discrimination when rolling out smart meters

15/27. All customers should benefit from smart metering

Elaboration by ERGEG (E/G)	“If assessed positively and a roll-out is decided, all customers should be eligible to obtain a smart meter. It is important for all customers to be able to benefit from the services developed through smart metering in order to enable customers to become active on the energy market.”
Overall opinion	Agree
Comments	As addition to the recommendation 15 & 27: it is important to manage expectations, not all customers can benefit from smart metering (obtain a smart meter) right away, since roll-out plans will last at least until 2020.

16/28. No discrimination when rolling out smart meters

Elaboration by ERGEG (E/G)	"Member States should avoid discriminatory behavior by the party responsible for the roll-out. For example: discrimination based on distinguishing between customers served by different suppliers than the vertically-integrated supplier or distinguishing between customers served under regulated prices in relation to customers served on the free market."
Overall opinion	Agree
Comments	- Not all customers will receive a smart meter at the same time. Potential geographically oriented roll-out is the most viable option. - The 3rd Package indicates that groups can be excluded from receiving smart meters based on technical or financial arguments from a cost-benefit analysis.

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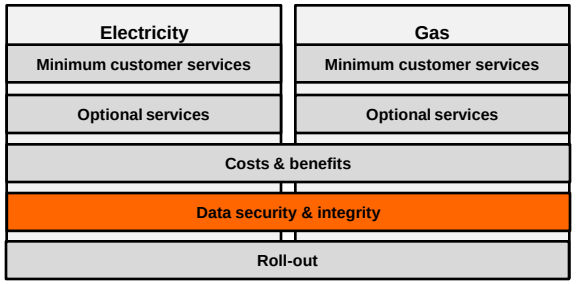


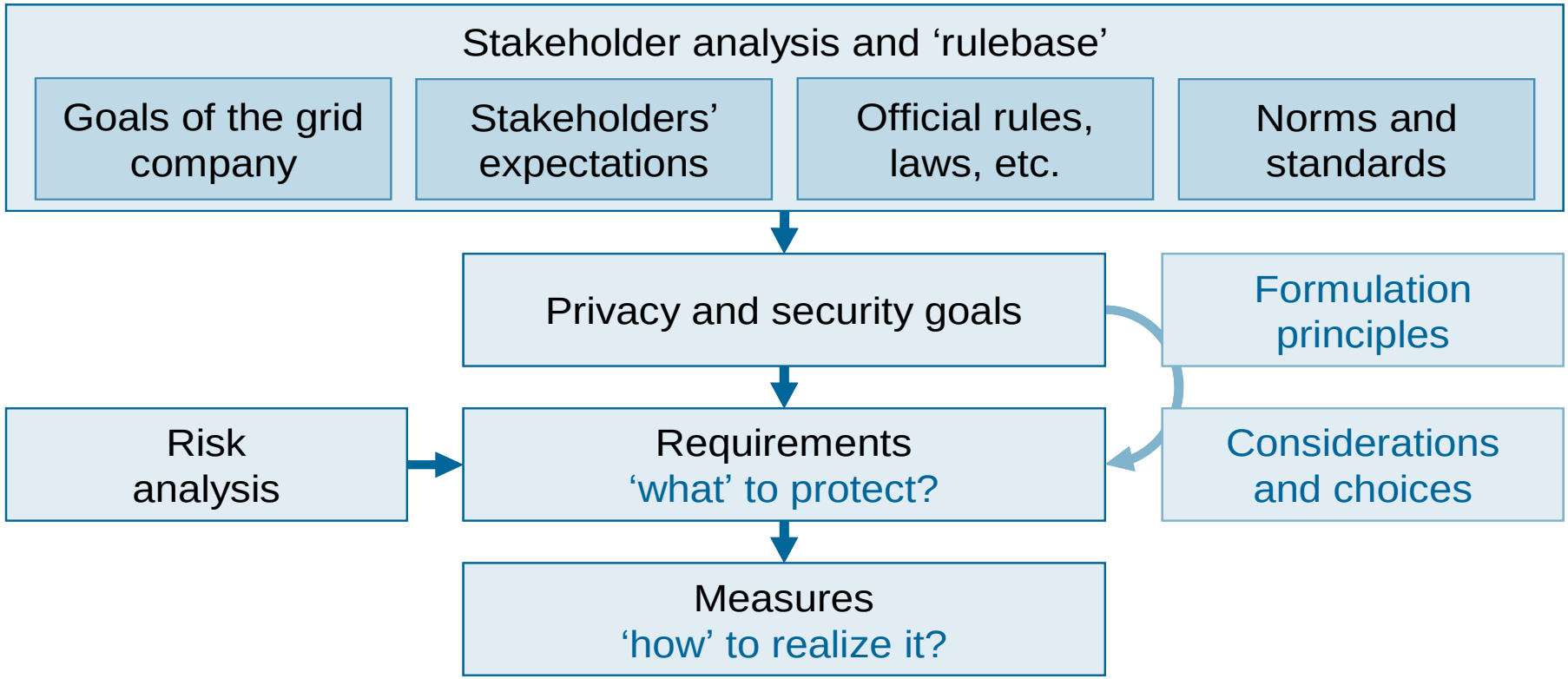
E	G	Data security & integrity
29	29	Customer control of metering data

29. Customer control of metering data

Elaboration by ERGEG (E/G)	“It is always the customer that chooses in which way metering data shall be used and by whom, with the exception of metering data required to fulfill regulated duties, within the national market model. The principle should be that the party requesting information shall state what information is needed, with what frequency and will then obtain customer’s approval for this.”
Overall opinion	Strongly agree
Comments	Privacy & security are the main issues in the preparation of the Dutch smart meter roll-out. There is also an increasing awareness on international level about the privacy & security issues. We cannot agree on guidelines that do not take privacy & security as a starting point. This should be addressed on European level and not nationally. At least the following privacy & security fundamentals need to be addressed, based on a risk analysis: • End-to-end security • Privacy by design We like to discuss with you the case in the Netherlands and the approach we followed to solve those issues on privacy & security. We think this will provides valuable insights for European guidelines. The work performed in the Netherlands can be used as a reference for European guidelines.

29. Customer control of metering data: Appendix

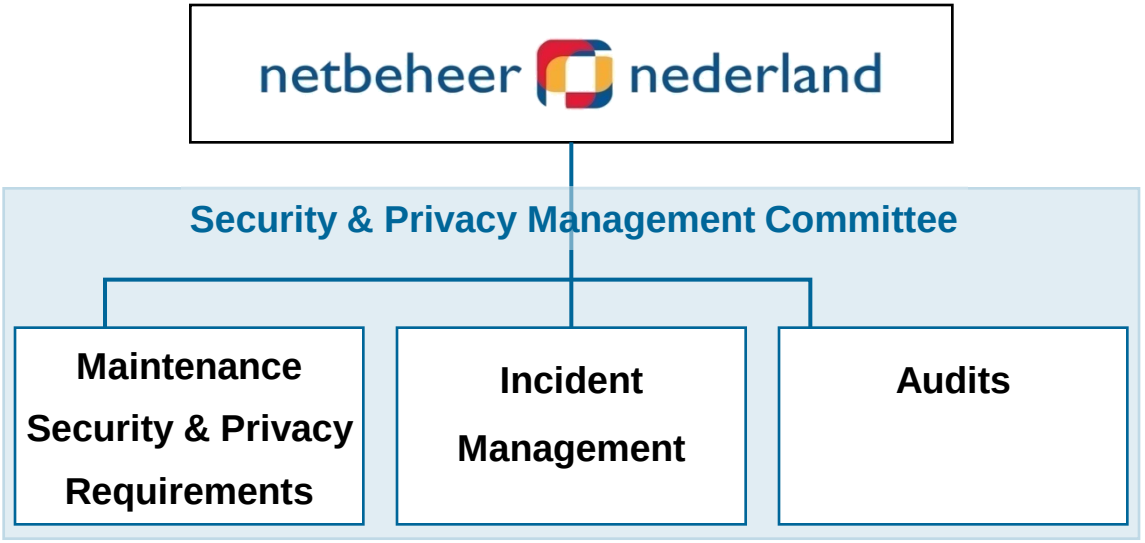
Dutch Framework Security & Privacy



29. Customer control of metering data: Appendix

Next steps Netherlands

- Finish framework implementation
- Develop the privacy code of conduct
- Set up a management and control organisation for enforcing security and privacy best practices



Start with international consultation and contribute to developing European policy and regulatory directives

29. Customer control of metering data: Appendix

Privacy by Design: Principles

1. Proactive not Reactive; Preventative not Remedial
   The Privacy by Design approach is characterized by proactive rather than reactive measures. It anticipates and prevents privacy invasive events before they happen. Privacy by Design does not wait for privacy risks to materialize, nor does it offer remedies for resolving privacy infractions once they have occurred – it aims to prevent them from occurring. In short, Privacy by Design comes before-the-fact, not after.

2. Privacy as the Default
   We can all be certain of one thing – the default rules! Privacy by Design seeks to deliver the maximum degree of privacy by ensuring that personal data are automatically protected in any given IT system or business practice. If an individual does nothing, their privacy still remains intact. No action is required on the part of the individual to protect their privacy – it is built into the system, by default.

3. Privacy Embedded into Design
   Privacy by Design is embedded into the design and architecture of IT systems and business practices. It is not bolted on as an add-on, after the fact. The result is that privacy becomes an essential component of the core functionality being delivered. Privacy is integral to the system, without diminishing functionality.

4. Full Functionality – Positive-Sum, not Zero-Sum
   Privacy by Design seeks to accommodate all legitimate interests and objectives in a positive-sum “win-win” manner, not through a dated, zero-sum approach, where unnecessary trade-offs are made. Privacy by Design avoids the pretense of false dichotomies, such as privacy vs. security, demonstrating that it is possible to have both.

5. End-to-End Lifecycle Protection
   Privacy by Design, having been embedded into the system prior to the first element of information being collected, extends throughout the entire lifecycle of the data involved, from start to finish. This ensures that at the end of the process, all data are securely destroyed, in a timely fashion. Thus, Privacy by Design ensures cradle to grave, lifecycle management of information, end-to-end.

6. Visibility and Transparency
   Privacy by Design seeks to assure all stakeholders that whatever the business practice or technology involved, it is in fact, operating according to the stated promises and objectives, subject to independent verification. Its component parts and operations remain visible and transparent, to users and providers alike. Remember, trust but verify.

Additional recommendations

- **Store data locally, except when needed centrally**
  As a basic principle, measurement data can be stored locally (in the smart meter) and is only collected when a customer has provided a mandate for this and when there is a valid reason to collect and use this data. By using this data-pull approach, privacy issues can be addressed, and this will result in a reduction in data communication requirements.

- **Interface with the home (ERGEG Draft Guidelines: table 2/ page 23)**
  The proposed Dutch smart meter configuration is equipped with a local consumer interface (see also page 6 of this document), providing detailed data. This data can be made available to external service providers (and to energy suppliers) by the consumer.

- **Additional functionality can increase complexity**
  System security and data protection are crucial issues for success, but additional requirements for meter functionality can also increase complexity. For example, the Dutch government wants “Customer access to communication data log of meter: insight in exchanged messages and content (in case of metering data). The communication data log is indisputable.”
  This additional functionality will increase the (technical and operational) complexity and cost of smart meter configurations.

- **Strong recommendation**: the discussion in the Netherlands on Smart Meters is focussed on three aspects: security/privacy, cost/benefit analysis and future proofness.The cost/benefit analysis conducted in the Netherlands will be translated in English for general use. The security/privacy issues are mentioned on page 4 & 31-34. Future proofness concerns the ability to cost effectively cope with changes in commercial and technical requirements for Smart Metering. The smaller the impact of a change, the larger the future proofness. In the energy market, 2 great unknowns exist: the development of new technologies and how future propositions will look like. The complete system should be able to cope with changes caused by these two items, to make it future proof. Specifications, rules and guidelines should be able to cope with possible future scenarios. European guidelines and national laws state the responsibilities within the energy market. Secondary legislation should state minimal functional requirements on Smart Metering. Technical standards should state the technical characteristics necessary for interoperability between smart metering solutions. Thus, the specifications on the metering interval and number of registers should be specified in the functional and technical standards, which are the documents most easy to change. This creates a future proof European meter.