European Network of
Transmission System Operators
for Electricity

DEMAND CONNECTION CODE

CALL FOR STAKEHOLDER INPUT

FEEDBACK DOCUMENT

1 GUIDANCE

This feedback document is used in the „DCC - Call for Stakeholder Input“ as published on 5 April 2012 on the ENTSO-E website. It lists all questions raised in this Call and allows to provide answers in a structured format. Please use only this feedback document to formulate your responses which facilitates handling of responses by ENTSO-E and understanding by other stakeholders afterwards.

You are welcome to send additional information that supports your responses. In that case, please clearly refer in the foreseen text boxes to the supporting document where relevant. Please also provide the key message or data which is relevant in the foreseen text box in this feedback document.

Based on your background and your possible interaction with the Demand Connection Code, you are welcome to only respond to those questions you consider to be of relevance to you. In case a joint response is given on behalf of several organizations, please indicate this clearly in Section 2 (Respondent Coordinates).

In order for your responses to be taken into consideration in the further development of the Demand Connection Code, you are requested to send the completed form to consultations@entsoe.eu by 9 May 2012. All responses will be published shortly afterwards.

On behalf of ENTSO-E, we wish to thank you for your contribution.

2 RESPONDENT COORDINATES

Organization name(s)	CECED
How would you describe your type of organization(s)?[1]	Industry association for household appliance manufacturers
Respondent name	
Address	Boulevard Brand Whitlock 114, 1200 Brussels, Belgium.
E-mail address	celine.herion@ceced.eu, luigi.meli@ceced.eu
Phone number	+3227387817, +327387810
Other contributors *(optional)*	
Response submission date	

[1] Please try to be as specific as possible, e.g. Association, DSO, Industrial Customer, Research Institute, Regulator, …

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3 QUESTIONS

Section 1.2.2 – Options to increase RES penetration in the System

1.1. What is your view of the high level analysis presented in Table 2?

PRELIMINARY REMARK TO ALL SECTIONS

We have strong objections, supported by legal advice, on several ENTSO-E's proposals in relation to DSR. These proposals are outside the scope of its mandate.

Regulation 714/2009, in its current form, does not offer an adequate legal basis for imposing an obligation on manufacturers and the implementation of DSR should be based on an opt-in principle for consumers.

Nevertheless, CECED is willing to find a positive market model with ENTSO-E and all other relevant stakeholders within the Commission's Smart Grids Task Force and the CEN-CENELEC and ETSI Smart Grid Coordination Group.

ANSWER TO QUESTION 1.1.

- Table 2 (Overview of options to increase RES integration) is flawed in its basic logic. The purpose of the table appears to be a comparison of different system services that may be of interest to grid operators who have to ensure grid operation stability (within the institutional and commercial agreements they have to respond towards authorities and electricity retailers). If those services were available to grid operators, they should base their purchase decision on the commercial value of each service. The evaluation of the commercial value should also take as much as possible also into account externalities such as CO2 emissions abatement.

- The idea of developing a market for system services is not taken into consideration. Approaching the economic aspect of system services in terms of incentives or "low cost and no or minimum consumer inconvenience" means setting the whole analysis on a flawed basis. In fact, the proposed Cost Benefit Analysis leads to absurd results: the higher the cost the better it would be for society.

- The evaluation of the options to increase RES penetration cannot be based on merits without any weighting factor: is the value of consumer acceptance less important than the difficulty of RES generators to manage system services?

- Even within the proposed logical grid, the pros and cons argumentation on demand facilities is inconsistent. ENTSO-E states that there is no inconvenience but at the same time indicates that the public perception of inconvenience is one of the key negative aspects of the proposal. "Spreading the risk" depends on the penetration of products on the market, which in turn relies on the existence of a business case.

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Without a clear market driven approach, we fail to see any guarantee for consumers to pay less.

1.2. What is your view of the conclusion that the "Benefits from demand side response (DSR) are clear and that DSR has the potential not only to be relatively inexpensive, but also supports the EU goals to integrate RES and to empower customers to participate in the energy market"?

DSR with household appliances can contribute and empowers users to participate in the energy market if the right conditions are set. The system has to empower and not impose solutions to customers without an adequate compensation. Considerations about the relative inexpensiveness of DSR should be developed identifying who is selling and who is buying the service. From a consumer standpoint, a relatively inexpensive DSR may become true when technologies consolidate, pan European standards are in place for communication between utilities, smart meters and home area network, and consumers are familiar with this new product so they will not require specific communication and promotion material. The 5€ cost increase to enable DSR on domestic appliances cannot be considered at all as a reference. However, the value of the system service provided is not strictly dependent on its production cost. Cost for grid operators should be seen as linked to the value of the service, not to its production cost.

Section 2.2 – Level of Detail

2.2.1. What is your view on ENTSO-E's interpretation of the level of detail required in the NC DCC?

- The way ENTSO-E approaches the definition of significant users is unclear. Does it apply, in your view, to users or their demand facilities? - Even assuming that domestic end users are also to be considered significant users, they should also be treated as such, giving them the same options as industrial or business users have. So they cannot be imposed mandatory services and they have to be rewarded for the service they deliver.

Section 3 – Requirements of NC DCC in Light of future Challenges

3.1. Can equitable treatment be assured if the NC DCC includes only high-level requirements, with national legislative required to set specific requirements in each country? If so, how could equality in burden sharing be achieved in synchronous areas and across Europe?

	NO. Requirements for Smart Appliances capable of delivering DSR must be defined at European level.

3.2. In your opinion, is there any other new topic that should be included in the NC DCC?

x	Yes
	No
Whereas the penetration of RES and the modification of supply may bring changes to the grid stability at	

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fast(er) pace, any new DSR system service proposal has to consider a long phase-in period, during which the service capacity is reduced. An analysis of transitional periods is crucial to understand the validity of business models for different system services. This analysis is totally missing. Even remaining within the proposed framework, the analysis of the transitional period is essential to assess the validity of proposed options. An extended cost benefit analysis from the consumer's point of view and the diffusion of smart and energy efficient products is also required.

Section 3.1 – Demand Side Response delivering Reserve Services

Questions based on the different available options put forth in section 7.1.1 in Appendix 1

3.1.1. What is your view of the analysis presented on the challenge ahead associated with reduced availability of reserve services from synchronous generators at time of high RES production?

General comment: ENTSO-E states that the NC DCC sets technical requirements necessary to provide DSR services but not how they will be used. This approach can generate additional burdens and costs for equipment and product manufacturers, since they may be required to add features and functionalities that will never be used. CECED's request to ENTSO-E is to define requirements for DSR within the CEN-CENELEC and ETSI Smart Grid Coordination Group, where all relevant stakeholders are already present and defining through Use Cases what will be a relevant requirement.

3.1.2. Is there any class of users that should be excluded from providing these reserve services?

	Yes
X	No
In a market driven approach, no user should be excluded from the possibility of offering their services for purchase to grid operators.	

3.1.3. What would be the technical and economical limits to the development of DSR for industrial customers, commercial premises and Closed Distribution Network operators?

In a market driven approach, competition among different service providers would be the driving factor determining convenience limits.

3.1.4. In Appendix 1, options for the provision of mitigating the shortfall of reserves are given, are there any comparable alternative options other than the ones provided in Appendix 1?

	Yes
	No
The development of smart DSR services should be seen in a comprehensive perspective of integration of supply and demand. Restricting the analysis to reserves shortfall is quite limiting. A wider discussion is currently taking place about the development of smart grids. From this more general discussion, other options may emerge and so may relevant synergies/oppositions within the currently listed options.	

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3.1.5. What would be the typical cost to equip one appliance (e.g. a washing machine or a heat pump controller) under each of the 3 alternatives?

The price for consumers varies according to appliances, manufacturing chains, companies and legislation. In addition to the product cost, it is necessary to develop and maintain a system to enable communication with appliances. Finally, it is also necessary to build an ICT infrastructure for the utilities, TSOs, DSOs to be able to send signals to products or all the rest would be useless.

Unless ENTSO-E would mandate utilities and TSOs to build such an ICT infrastructure and define a communication standard, it makes no sense to talk about just enabling appliances.

A market model that will provide positive business cases to all different stakeholders is under discussion now in the Commission's Task Force Smart Grids Expert group 3. Many TSOs are part of that workgroup, we recommend that Authorities in charge with the implementation of the 3rd Package mandate ENTSO-E to join the activity and work within this group to find a positive market model.

3.1.6. What form and level of incentive do you believe is required to encourage consumers not to switch the reserve off under option 1 and 2?

The reference to incentives is excluding the fact that other more service market oriented solutions are developed. Consumers should have an economic interest in selling their service to grid operators. This approach would allow escaping from the incentive trap. Basing a model on incentives implies introducing a correction to remove a barrier. The barrier in ENTSO-E's proposal is the exclusion of any market approach from the considerations.

If we limit our comments to the current formulation, the main elements for consideration are the following ones:

The whole CBA analysis seems to be based on the identification of the consumer and the citizen. This is methodologically wrong. The advantage to the consumer has to be direct, not indirect (for example hidden in GDP).

In several instances ENTSO-E suggests that rewards should be granted to domestic end users for the forced uptake of products with mandatory SFC or DSR but then adds that it is not within the scope of the NC DCC to define how. But if the SFC or DSR are made mandatory no one will have a need to define the reward for the end user later on. Thus to respect the principle of equitable treatment, the NC DCC should also define the mechanisms to reward consumers and the amount of the reward.

Form: differentiated tariffs should be rethought to include services to the system, including smart response and energy efficiency. Long-term rebates at appliance purchase (long enough to contribute to a market transformation) are another possibility.

Level: a level that would even out the cost of the feature and the service cost over a period that is less than the average product's lifetime. It has to be seen that the value of loss load is different for households and the industry. If consumers can avoid a blackout for society at large, including industry, this should be factored in the benefits for consumers.

The incentive should be proportionate to the service provided, its frequency and length. The approach has to apply to the whole market.

3.1.7. Considering the cost and consequences of the alternatives, do you support use of DSR for this purpose?

CECED has always declared that smart appliances, with their capability to enable DSR, are part of the solution to the RES challenge and a fine complement to Smart Grid. Nonetheless we cannot endorse the

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suggested approach to make all appliances Smart by law, just because this may increase the probability that consumers could use DSR services. However, CECED will be glad to support and cooperate on initiatives to promote DSR and consumer awareness of the benefit it can deliver.

3.1.8. Which of the 3 DSR alternatives (1, 2 or 3) would be your preferred option to achieve the greatest societal benefit and for what reason?

Alternative 2, voluntary service capability with voluntary use: an option that empowers and leaves the choice to consumers from the beginning. The greatest societal benefits will be achieved if consumers recognise the benefits of providing a service. The cost benefit analysis must both be beneficial for consumers (including weighted social acceptance) and society. There might be an interest for a market, as long as no one is captive of it. The cost benefit has thus to be refined in order to understand the value of the provided service the user can provide.

3.1.9. If the services proposed here are provided, what further uses of these technical capabilities (see Appendix 1) would be most beneficial and why?

According to CECED's definition of Smart Appliance, load shedding and emergency shutdown are part of the capabilities of these products. This means that they can also provide a service equivalent to the SFC just by getting the appropriate signal. Any feature that avoids producing additional energy or de-loading renewables is positive. However, once available, it should only be used in last instance for loss load while safeguarding the interests of the user. The concept of DSR has to be part of strategies for energy efficiency. In this context, any mandatory requirement on products must fit in legislation on Energy-related products, whereas any market approach can be envisaged from a larger perspective.

Section 3.2 – Demand Side Response delivering System Frequency Control

Questions based on the different options outlined in Appendix 2:

Regarding the DSR application related to temperature controlled demand to deliver a smarter, robust and a more user friendly LFDD-capability to avoid frequency collapse and hence contain the impact of rare events with large system frequency excursions:

3.2.1. Do you agree with the conclusion to apply this service universally using European Standards proposed as a result of the initial CBA based on Irish data?

	Yes
X	No
The initial CBA based on Irish data is evidently flawed as it brings to the illogical conclusion that the higher is the cost of technology the shorter is the payback time. This outcome should be rejected as absurd and a sign that the approach contains methodological flaws that undermine its credibility. The limited time given for responding to this consultation does not allow us to present any alternative consideration but just highlight the contradiction. A different modelling of CBA should be developed that does not lead to internal contradictions, as the current one does. Elements that should be taken into consideration include:	

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- Market structure
- Frequency in the country
- Duration of interruption
- The value of the service given by the consumer

System Frequency control is considered today as an ancillary service and is paid for by TSOs and DSOs. By forcing such frequency control on products, the cost is shifted to end users. Smart Appliances can actually deliver the benefits that TSOs are looking for and the Use cases we submit to the CEN-CENELEC and ETSI Smart Grid Coordination Group (SG CG) already include what is required. The grid stability should be discussed in the SG CG and a solution of mutual satisfaction can be found there, if needed by improving the use cases. We challenge the concept that to maintain grid stability, the only way is to be able to respond to powerlines frequency shift.

TSOs should make best use of the potential offered by the 'smartness' of the grid and the EU subsidies they received to that extent and not try to impose solutions that shift the smartness to the end user only.

Balancing issue: a very large number of products that turn off at the same time and even worse kick in at the same time can give serious unbalancing issues to the grid. While signals (as in the case of smart appliances) from utilities can be staggered in time and gradually involve more users, the frequency will be read in a very vast area by all capable products that then would react at the same time.

Besides, there are already many patents on frequency control for domestic products. Forcing manufacturers to implement it can create severe technical issues to avoid patent infringement or force companies to buy rights to use proprietary technology. In both cases this is against free market rules.

Furthermore, there can be an issue of liability if appliances have to mandatorily respond to an external signal, especially if food safety is concerned. Are TSOs accepting the liability in case of issues? Of course, the point of having the product capable of overruling the frequency control would then make useless the fact that the system is made mandatory.

3.2.2. ENTSO-E believes this service can be introduced for new appliances (and temperature controllers) without any detectable difference to the primary purpose of the service of the appliance. Can you share any specific knowledge or experience and associated data you may have on this topic?

	Yes
	No
We challenge the first assumption, that primary performance of the temperature control function is not affected. What is this assumption based on?	

Regarding the use of the temperature controlled demand beyond LFDD-capability for frequency response, following assumptions are taken:

- Primary performance of the temperature controlled function is not effected (operating within the same temperature tolerances);
- Conditions of near total absence of synchronous generators during windy / sunny conditions;
- Moderate demand for synchronous areas with extreme real-time RES penetration (initially expected in Ireland and GB)

Three DSR alternatives have been identified (with a fourth alternative being ‘do nothing’):

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- Alternative 1: Voluntary service capability – mandatory usage
- Alternative 2: Voluntary service capability – voluntary use
- Alternative 3: Capability as standard, with mandatory delivery

3.2.3. If this further DSR for temperature controlled demand is introduced should this be arranged by each nation rather than at European level and if so should there be a requirement for harmonising within a synchronous area in order to provide burden sharing?

	Yes
	No
There is a discrepancy in this analysis between the market for DSR deployment (internal market) and the specificities of synchronous areas (national/area markets), which we believe is difficult to be reconciled over the timing imposed for the DCC.	

3.2.4. Are the types of demand suggested in Appendix 2 the most appropriate to provide this service giving continuous response to system frequency deviation away from the target frequency (50.0Hz)?

	Yes
X	No
On the contrary; we believe this service may not be the most appropriate for the types of demand.	

3.2.5. Please provide comments on the specific data used in the initial CBA presented.

We do not feel in the position to comment on a piece of a cost-benefit analysis which has not been presented to us at this stage.

3.2.6. The initial CBA indicates that alternative 1 may be able to provide the required services quicker than alternatives 2 and 3 (due to higher uptake). Do you have any comments about this conclusion and the underpinning assumptions, including

- 20% uptake for voluntary service capability;
- Increased unit cost for lower volume and supplying more than one option;
- The costs identified.

The point is not whether this option would give a higher uptake than the others, but whether it will deliver any benefit at all. Is it an effective way to deliver societal benefits? About the cost increase, the baseline that was considered is not clear. What if the starting product is electromechanical and doesn't have an electronic control?

Section 3.3 – Reactive Power Exchange Capabilities

Questions on general reactive capability based on the Appendix 3:

3.3.1. General questions

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a. Do you agree that increasing displacement of synchronous generation is a significant new challenge?

	Yes
	No
…	

b. Do you agree that a review of existing requirements is needed, to take into account the new challenges mentioned above in Section 1.2 and 1.3?

	Yes
	No
…	

c. Do you agree with the conclusion from the initial CBAs (Ireland & GB) that the societal benefits are greater for reactive management to occur closer to the reactive demand? In either case please provide the rational with supporting evidence where available on the aspects of the conclusion of the CBA that you agree or do not agree with.

	Yes
	No
…	

3.3.2. Question specifically relevant for DSO connections

a. Do you agree that the development of cables and embedded generation introduce further challenges regarding reactive power control, including risk of high voltage during minimum demand?

	Yes
	No
…	

b. Is it reasonable to ask DSOs to avoid adding to the problem of high voltage on the transmission system during minimum demand by avoiding injecting reactive power at these times?

	Yes
	No
…	

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3.3.3. What is your view on the most appropriate way forward, including but not limited to the following options:

- Do nothing. Leave the TSO to sort out reactive balancing. The CBA of the transmission located reactive capability option in the CBA is relevant here.
- General limit on power factor at transmission to distribution interface, e.g. better than 0.90 or 0.95, with the value set in each country by each TSO subject to public consultation and NRA decision or an equivalent process as provided by the applicable legal framework, such as the definition of a limit in MVAr.
- As in the previous point except the power factor limit set on a local (or zone basis) by the TSO following CBA & consultation / NRA decision.
- Total separation between distribution and transmission reactive flows (i.e. 0 MVAr at the interface).
- The DSO at network exit points treated in the same way as generation is treated in network entry points with the DSO expected to regulate voltage continuously. Should this be limited to slow time scales of minutes (e.g. achieved by means including transformer tapping) or extended to fast acting reactive power support for disturbed conditions?
- Establishment of full reactive markets (e.g. in zones) encompassing DSO contributions as exist in some countries with respect to generation today?

…

Section 3.4 – Voltage Withstand Capabilities

3.4.1. Do you agree with the analysis concerning the need of voltage withstand capabilities?

	Yes
X	No
Appliances today are built following specific standards in terms of voltage withstand capabilities. There are hundreds of millions of appliances in the market built according to these standards. Power line voltage must be kept within the already defined parameters to avoid safety issues with products and end consumers. If voltage requirements have to be changed in power lines, then this is under the competence of relevant authorities and should not be dealt within the NC DCC.	

3.4.2. What are the technical limitations to voltage withstand capabilities in your Demand Units in option iii?

…

3.4.3. What are the technical limitations to voltage withstand capabilities in your Demand Facility or Distribution Network in option iv?

…

3.4.4. What would be the costs induced by such requirements in option ii, iii and iv?

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…

3.4.5. Which alternative would you prefer? In case of option ii, iii or iv, shall the requirements be defined for all Demand Units/ Demand Facilities/ Distribution Networks or with specific voltage connection levels only?

…

Section 3.5 – Frequency Withstand Capabilities

3.5.1. Do you agree that certainty is required in the performance of elements in the electrical power system to ensure stable frequency operation and to minimise the cost of procuring frequency response?

	Yes
X	No
Certainty cannot be provided by any solution. It should be seen as a stochastic function linked to patterns of use and value grid operators would be ready to pay for procuring frequency response.,	

3.5.2. Which option (i or ii) would you prefer and for which reason?

None. The same consideration as for voltage withstand capabilities applies.

3.5.3. Please provide cost information to establish frequency withstand capability over the full range from 47.5 Hz to 51.5 Hz for Distribution Networks and Demand Facilities and explain which typical apparatus are needed.

…

3.5.4. Please provide cost information to establish frequency withstand capability over a limited range from 49 Hz to 51 Hz for Distribution Networks and Demand Facilities and explain which typical apparatus are needed.

…

3.5.5. Which frequency-sensitive installations do you have in your Distribution Networks or Demand Facility?

…

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3.5.6. Please provide cost information to reinforce frequency-sensitive installations with frequency withstand capability over the full range from 47.5 Hz to 51.5 Hz.

…

3.5.7. Please provide cost information to reinforce frequency-sensitive installations with frequency withstand capability over a limited range from 49 Hz to 51 Hz.

…

4 ANY OTHER BUSINESS

Are there any other items or suggestions you wish to raise on the topic of the Demand Connection Code?

Please mind the preliminary remark in section 1.2.2.

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