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)	**VSE**
How would you describe your type of organization(s)?[1]	DSO, Association of Swiss Electricity Companies (VSE)
Respondent name	Christoph Maurer (Jürgen Schmitt)
Address	Verband Schweizerischer Elektrizitätsunternehmen, Hintere Bahnhofstrasse 10, CH-5001 Aarau
E-mail address	christoph.maurer@strom.ch (juergen.schmitt@swissgrid.ch)
Phone number	+41 62 825 25 01
Other contributors ***(optional)***	
Response submission date	08.05.2012

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

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

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?

The statements in Table 2 are correct in principle. However, all of the options mentioned need to be pursued in parallel in order to share the burden of providing adequate reserve capacities in the most efficient manner. In the future conventional generators shall provide system services as well.

The enforcement of Demand Side Response must be supported by an efficiency- & cost-benefit analysis. Such analysis shall weight the costs for the implementation of measures necessary against the socio economic benefit provided by such implementation and in light of the potential of the complementary options.

According to ACER's Framework Guidelines On Electricity Grid Connections, the scope of the subordinate Network Codes of ENTSO-E is explicitly limited to Significant Grid Users, as defined in chapter 1.3. Therefore, any regulation of the DCC related to DSR of a collective of Grid Users, out of which each single demand unit is not deemed to be Significant in the sense of the Frame Work Guidelines, has to refer to the corresponding DSO of that collective, if the latter is deemed to be a Significant Grid User.

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"?

The consideration of demand users as a potential source for system services is clearly beneficial. However, the efficiency, economic viability and adequacy of the implementation of measures related to DSR in any specific case is dependent on the local situation. Therefore, a decentralized approach in setting any rules related to DSR is more efficient, secure and reliable than a centrally determined and harmonized set of rules which shall be enforced on a European wide area. As a consequence the competency of setting up a legally binding framework for DSR for Grid Users, not deemed to be significant in the sense of the Frame Work Guidelines, shall be subject to national legislative authorities. This would enable the national legislative authorities to decide, whether for example a free end customer market for DSR would be the most preferable solution from a socio economical and security of supply point of view.

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?

ENTSO-E's interpretation of the level of detail seems to refer to two different aspects, which clearly need to be distinguished. On one hand it seems to refer to the level of detail of the rules applicable to Grid Users and on the other hand it is referring to the significance of Grid Users related to their impact on cross border system performance. The second aspect mentioned is already regulated in a final manner in the Frame Work Guidelines of ACER. As those Frame Work Guidelines are having a binding effect for ENTSO-E, any question related to that aspect is out of relevancy. ENTSO-E is mentioning that a need for harmonisation of national practice might justify an extension of the Scope to Non-Significant Grid Users. This argument cannot be followed, as harmonisation of national practices is not a goal in its end but only a potential mean to achieve the goals stated in §1.1 of the Frame Work Guidelines.

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

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?

	Yes
	No
There is no relation visible between the level of detail of regulation of DSR and the aspect of equality in burden sharing.	

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

	Yes
	No
This needs to be verified on a continuous basis.	

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?

The options, relying on a market based approach, are most efficient in achieving the goals stated in the Frame Work Guidelines (Option .1.2., 1.3., 1.4.).

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

	Yes
X	No
From the Group of users, which is subject to the provisions of the DCC, namely Significant Grid Users, no such class of users is identifiable at the moment.	

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 principle, the benefits related to the implementation of DSR should outweigh the costs.

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

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?

X	Yes
	No
Storage plants (e.g. Hydro, Battery) and appropriate generation facilities with an operation mode technical & economical designed to compensate the stochastic RES (traditional storage plants are mainly designed to compensate NON- stochastic load situation).	

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 question is not relevant as it is referring to demand users, which are not qualifyable as Significant Grid Users.

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 question is not relevant as it is referring to demand users, which are not qualifyable as Significant Grid Users.

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

If the use of DSR is regarded as the most appropriate and efficient solution in the local environment or country, such approach would constitute a considerable option.

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?

The question is not relevant as it is referring to demand users, which are not qualifyable as Significant Grid Users.

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?

The question is not relevant as it is referring to demand users, which are not qualifyable as Significant Grid Users.

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?

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

	Yes
X	No
It needs to be verified first, in how far Irish data is representative for all other European countries and therefore delivering adequate benchmarks.	

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
The question is not relevant as it is referring to demand users, which are not qualifyable as Significant Grid Users.	

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'):

- 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?

X	Yes
	No
It should be arranged nation-specific. A harmonisation has to be limited to requirements set up for Significant Grid Users only.	

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)?

X	Yes
	No
The DCC's scope is limited to Significant Grid users. Therefore, the distribution of burdens has to refer only to significant Grid Users and not appliances. Each Significant Grid User and/or the national legislative authority has to determine and manage, which appliances shall provide the required DSR capacity.	

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

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

No investigation possible.

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.

No investigation possible.

Section 3.3 – Reactive Power Exchange Capabilities

Questions on general reactive capability based on the Appendix 3:

3.3.1. General questions

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

X	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?

X	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
No detailed investigation possible. The DCC's scope is limited to Significant Grid users. Therefore, the distribution of burdens has to refer only to significant Grid Users and not appliances. Each Significant Grid User and/or the national legislative authority has to determine and manage, which appliances shall provide the required DSR capacity.	

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

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?

X	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?

X	Yes
	No
This might be one option. The Demand Side Response must be supported by an efficiency- & cost-benefit analysis. (ref 1.1)	

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?

All of the options mentioned need to be pursued in parallel in order to share the burden (ref 1.1)

Section 3.4 – Voltage Withstand Capabilities

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

X	Yes
	No

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

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

There are NO technical limits (but others)

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

There are NO technical limits (but others)

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

No evaluation possible.

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?

According to ACER's Framework Guidelines On Electricity Grid Connections, the scope of the subordinate Network Codes of ENTSO-E is explicitly limited to Significant Grid Users, as defined in chapter 1.3. Therefore, the requirements shall be defined for Significant Grid Users 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?

X	Yes
	No

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

According to ACER's Framework Guidelines On Electricity Grid Connections, the scope of the subordinate Network Codes of ENTSO-E is explicitly limited to Significant Grid Users, as defined in chapter 1.3. Therefore, the requirements shall be defined for Significant Grid Users only.

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.

No evaluation possible.

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.

No evaluation possible.

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

Synchronous machines, watches

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu

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.

No evaluation possible.

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.

No evaluation possible.

4 ANY OTHER BUSINESS

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

1. Regarding Demand Facility (Art. 6.2; Definitions in the context of this document) Auxiliary Supplies of a Power Generating Facilities are not a Demand Facility.

   According to international recommendations and practices for nuclear safety (IAEA, WANO, INPO) , nuclear facilities shall have a quality controlled feed at the auxiliary connection point and NPPs have to be considered as priority load centers by electrical power dispatching in the case of electrical disturbance and blackout.

   Does ENTSO-E intend to implement such requirement (high priority customer) in the EU code to harmonize practices for all EU NPPs?

2. The definition "Demand Unit" (Art. 6.2 Definitions in the context of this document) excludes hydro pump-storage. Could ENTSO-E please clarify the status of a pump storage facility having several connection points and it's status when pumping and generating simultaneously ?

   Which draft deals with the pumping operation modus of an hydro station? The issues concerning hydro plants should be treated in one document.

ENTSO-E AISBL • Avenue Cortenbergh 100 • 1000 Brussels • Belgium • Tel +32 2 741 09 50 • Fax +32 2 741 09 51 • info@entsoe.eu • www.entsoe.eu