

CONSULTATION RESPONSE TEMPLATE

NAME OF RESPONDENT	Dalkia Limited
CONTACT DETAILS	<p>Aine Murray, Strategy, Communications & Marketing Manager</p> <p>aine.murray@dalkia.ie</p> <p>Mark Coyne, Technical Director</p> <p>mark.coyne@dalkia.ie</p>
TYPE OF COMPANY	Energy Management & Facilities Management Company
INTEREST IN DSM	<p>Dalkia, as part of the Veolia environmental services group, is the leading European Energy Services Company (ESCO) with a turnover of €8.14bn and employing 52,560 energy and service delivery professionals in 42 countries. Dalkia operates in areas such as heating & cooling networks, industrial energy efficiency, global building energy management, biomass and energy conversion efficiency such as combined heat and power. In Ireland, Dalkia has over 450 full time employees with a turnover of €115m operating in the industrial and commercial sectors of healthcare, pharmaceutical, public, hi-tech, food & beverage industries providing operation, maintenance and energy services.</p> <p>Dalkia's core business is demand side management on our clients sites – either through efficiency retrofits and upgrades (e.g. lighting replacements and controls, heating controls, free cooling, building fabric upgrades etc), or through localised energy generation or conversion (e.g. replacement/upgrade of boilers, chillers, biomass generation, air compressors or through on site Combined Heat and Power generation). Dalkia's interest in Demand Side Management (DSM) is in energy efficiency, industrial / commercial demand side response and aggregation of distributed generation.</p>

SECTION 2

QUESTION 1: Do you agree with our characterisation of the four types of benefits that demand side management can provide?

ANSWER:

If a whole energy system viewpoint is taken, Dalkia believe that there is a fifth DSM benefit: *Energy Switching Displacement*. This type of benefit differs from demand shifting, because under normal circumstances the demand would never exist. Two examples of energy switching displacement are:

1. Fuel switching from non-electrical to electrical source (e.g. domestic hot water generation can switch from gas/oil heating to electrical heating in response to market / price signals)
2. Distributed generation shutdown (e.g. CHP, which under normal circumstances run according to on-site thermal demand may shutdown, again in response to market / price signals. In this case the gas imported for CHP electrical generation is displaced by imported electricity).

QUESTION 2: Are there other cost savings which you believe demand side management can deliver?

ANSWER:

The cost savings benefits identified are framed from the perspective of the system operator / market participants (MO, TSO, DSO, generators etc.). Since DSM measures rely on participation of *consumers*, the benefits should be stated from their viewpoint. Examples of these would be:

- Overall demand reduction (e.g. energy efficiency) as a direct cost avoidance
- Consumer market participation in DSM (e.g. load shifting or Distributed Generation aggregation) as a potential revenue stream

QUESTION 3: Are there additional studies and reports (to those listed in **Error! Reference source not found.**) which you are aware of and believe we should review?

ANSWER:

Link to article on utility experience with Distributed Generation (DG):

<http://www.powergenworldwide.com/index/display/articledisplay/8602432291/articles/cogeneration-and-on-site-power-production/volume-11/issue-1/features/utility-engagement.html>

Link to policy briefing on smart meters and peak load production:

http://wpweb2.tepper.cmu.edu/ceic/pdfs_other/CEIC_Policy_Brief_on_HB_2200_and_2201.pdf

QUESTION 4: What other insights do you have from your experience of demand side management adopted internationally?

ANSWER:

Dalkia has experience of demand side and energy efficiency measures adopted in Europe and beyond. One example deployed in France as an innovative mechanism for promoting energy efficiency is the Energy Saving Certificate scheme. The scheme is managed by ADEME (French energy and environment agency) for the last 3

years. The scheme places an obligation on energy suppliers to deliver energy savings through a variety of actions implemented on behalf of consumers. The target for the first period (2006 – 2009) was 54 TWh (primarily achieved via the domestic sector). The obligation is on electrical generators and gas / heating oil suppliers in proportion to their market share, while a penalty of 2c/kWh for any level of obligation not met. The cost of the works completed by the installers totaled €3.9 billion. The incentive to the owners of the home / building is that they obtain energy saving certificates for the works completed and sell these to the energy supplier to improve the return on their investment.

The main energy suppliers (e.g GDF and EDF) launched commercial offers to meet their obligations as a means of enhancing customer loyalty, rather than using the secondary market to purchase certificates. 84.5 TWh of savings was delivered in the first period largely exceeding the initial target. A new target of 345 TWh has been set for the second 3 year period.

QUESTION 5: Are you aware of other quantitative findings from international experience which you believe are important for us to capture and consider?

ANSWER:

See link below:

http://n.b5z.net/i/u/10007216/f/PJM_Load_Shifting_1_.pdf

QUESTION 6: Do you agree with our identified drivers of future value for demand side response/management? Are there any additional drivers we should consider?

ANSWER:

Dalkia is in broad agreement with the drivers outlined, and would add competitiveness / cost to consumers as a major driver. This can be achieved through lowering the cost of energy by reducing the need for expensive peaking plant, but also by enabling the consumer to take advantage (and therefore reduce costs) of the price volatility resulting from the high wind penetration levels.

SECTION 3

QUESTION 7: Are there any other aspects of current demand side activity in Ireland which should be captured?

ANSWER:

Dalkia would expect that the retrofit program (2 TWh savings by 2013, 8TWh of savings by 2020) would feature extensively in this demand side vision.

<http://www.dcenr.gov.ie/Energy/Energy+Efficiency+and+Affordability+Division/Retrofit+Consultation.htm>

QUESTION 8: Do you agree with our high level assessment of the potential for demand side management in Ireland by 2020?

ANSWER:

Hot Water Potential

The number of households in the republic of Ireland is 1.5m and in Northern Ireland 0.7m, and using the percentage of households which currently have electric water heating identified in ref. 1 below at 17%, the current nominal rated power of electric water heating is 935MW. Ref. 2 would indicate a diversified coincident peak load of ~15%, which would give a current demand side potential of 140MW using a 2.5kW average load. However this ignores the potential to “fuel switch” (from gas/oil to electricity), and assuming this can be achieved in the majority of households, the realisable potential is some 800MW. This fuel switching potential also exists in the commercial sector, although more difficult to quantify.

Ref. 1: Analysis of Energy Efficiency of Domestic Electric Storage Water Heaters

<http://gfxtechnology.com/AustriaEA-Sum.pdf>

Ref. 2: Methods for Reconstructing Water Heating Aggregated Load Curves and evaluating Demand Side Control

Benefits: <http://www-cep.ensmp.fr/english/themes/mde/pdf%20J%20Adnot/pdf2.pdf>

Distributed Generation Potential

The distributed generation potential is significantly underestimated in two areas:

1. Emergency generation in the republic of Ireland could be conservatively estimated at 300MW installed capacity, while we note the estimate in the demand side vision for Northern Ireland to be 120MW. Assuming that 60% of this installed capacity could operate under dispatchable generation aggregation by 2020 would yield 250MW.
2. The total CHP installed capacity in the republic of Ireland is 129MW, excluding Aughinish Alumina. Of that 129MW, 42MW is in the services sector and 87MW in industry. The target for 2020 is 800MW of CHP installed capacity, however under the current CHP adverse regime (carbon tax which is disadvantageous to CHP, and Large Energy User rebates which effectively penalise CHP operation) it is unlikely that this target will be met and we have assumed a more modest potential of 500MW. Dalkia estimate that some 20% of the industrial CHP capacity could operate flexibly as an aggregated generator, with 30% for the services sector. Assuming a similar growth ratio for services / industry as exists today, the potential for flexible generation by 2020 would be some 76MW. A more positive environment for CHP would increase this potential.

Dalkia therefore estimate the distributed potential to be 330MW+.

SECTION 4

QUESTION 9: Do you agree with our definition of each individual demand side measure?

ANSWER:

Aggregation of Distributed Generation: CHP's should be included in the definition of this measure.

Storage: Thermal storage (e.g. ice banks, hot water storage) should be included in the definition as it is the most readily accessible form of storage

QUESTION 10: Is our description of the current policy baseline for each demand side measure accurate and complete. If there are omissions please point them out.

ANSWER:

Energy Efficiency: The retrofit programme should be added to the current policy baseline

Distributed Generation: Dalkia have no evidence that the environmental restrictions on emergency diesel generation are as widespread as indicated in the report. This requires investigation.

QUESTION 11: Do you agree with our categorisation of different types of "market issue" and typical remedies for each?

ANSWER:

Dalkia would add the following market issues:

- Within the "imperfect information" issue, there are two sub-issues namely:
 - Lack of "know-how" to implement the demand side measure, even if the awareness of the measures exists. This has been identified as a market issue in the retrofit programme and sees the promotion and increase market entry of ESCo's as a mechanism to address it. Dalkia would see the role of ESCo's as a similar enabler to deliver other demand side measures
 - Lack of Real Time Pricing (RTP) to base demand side decisions on
- Within the "inability to finance due to short term view":
 - Again ESCo's can assist with short term view restriction, as an ESCo takes a performance commitment over a long term period, and due to the fact that the ESCo may deliver the finance package as part of the service.

QUESTION 12: Do you agree with our identified barriers and enablers for each of the specific demand side measures we have identified?

ANSWER:

Dalkia agree with the overall principle that the demand side measures adopted should be inherently self financing as this will ensure we maintain energy cost competitiveness. Other comments as follows:

Behavioral Change / Education: The patterns of consumption are mutually supported by a mixture of (a) Regulation (e.g. mandating the use of high efficiency equipment such as light bulbs or boilers); (b) Education and (c) Market delivery capability (e.g. ESCo's, energy contractors, innovation and competition with energy suppliers). Dalkia suggests a balanced approach to all of these areas.

Smart Meters: Comments as follows:

- Firstly, with regard to the disincentive for supplies to reduce consumer consumption, this issue was also recognised under the retrofit consultation process. In the retrofit response, Dalkia proposed a gradual move from a levy / fund based system (where a fund recycled from carbon tax is available to energy suppliers to implement efficiency measures) to an obligation system (suppliers have mandated targets – see French example in question 4 above).
- Secondly, the concern of consumer objection to “interference” by the operator / suppliers would be valid if there was an imposed direct control of consumer’s demand, which is unlikely to succeed. Rather, Time-of-Use (ToU) tariffs or RTP tariffs will create consumer “pull” towards DSM, enabled by the cost savings and benefits they can deliver to the consumer. This pull will also create innovation and competition amongst energy suppliers and DG aggregators as they try to deliver these benefits to the consumer, thereby creating loyalty to the supplier / aggregator.
- Lastly, Dalkia consider that the virtual integration / infra-marginal rent concern will diminished in a fully competitive market which we expect by 2020.

Home and Office Automation: With regard to the smart meter acting as a hub for Home Automation Network (HAN), a simpler and more cost effective approach would to focus the smart meter as an interval meter with ToU and RTP capability, and to use the internet to deliver consumer information, HAN communication etc. As broadband penetration increases through to 2020 and as alternative means of delivering this connectivity progresses (2G, 3G, Wimax, cable broadband, ADSL etc), this means of communication will be the norm.

Industrial / Commercial DSM: Dalkia consider that:

- The lack of *reflective* RTP is a barrier to large scale DSM participation within the industrial / commercial sectors. There currently can be substantial differences between Ex-Ante (D-1) pricing and Ex-Post (D+4) pricing and these differences are likely to become exaggerated as wind penetration increases, due to inaccuracies of wind prediction. Either a firm day ahead pricing, or true RTP (which reflects actual energy cost in real time) would address the issue.
- The SEM Demand Side Unit (DSU) restriction to export capacity sites is an unnecessary barrier
- The requirement for real time monitoring equipment could be met by low cost, wireless, non-tariff metering solutions. Dalkia has experience of such metering systems which we use as part of a monitoring and targeting solution with remote data access and reporting capabilities
- The adoption of more holistic DSM measures and benefits will necessitate the closure of existing schemes such as STAR, WPDRS etc.

Aggregation of Distributed Generation: The environmental barriers (noise, emissions) require quantification, and also to take cognizance of the fact that they would be displacing emissions elsewhere on the system. As the expected running hours of DG is expected to be low, a running hours limit may be a feature of any such review.

QUESTION 13: Do you agree with our identified market issues for each specific demand side measure and our proposed remedies to address these?

ANSWER:

Energy Efficiency: In the proposed working group to consider policy developments, Dalkia would consider it essential to have energy consumer representation (e.g. Large energy user group, potential generator aggregators, public sector consumers like OPW etc.).

Smart Meters: Currently the need for DSM is driven by consumer demand peaks which occur at predictable times, and under this scenario DSM metering benefits can be delivered through ToU tariffs. As wind penetration rises, the need for DSM will be driven by wind availability which is unpredictable, and under this scenario DSM metering benefits will be maximised through RTP tariffs. Smart meters should therefore have both ToU capabilities in the short term, but already enabled RTP capability in the medium term.

Industrial / Commercial DSM: Adopt day ahead pricing or true RTP.

Aggregation of Distributed Generation: Dalkia believe that the market size has been underestimated, hence we would propose a working group to investigate the potential further. Micro-generation could be included in this review. Also adopt day ahead pricing or true RTP.

Storage: In addition to the review of capacity payments in light of the benefits that pumped storage facilities provide, Dalkia propose a more wider review of the capacity payment mechanism to include a “flexibility payment” to account for the value of primary response, secondary response etc to the system (e.g. coal plant is not as flexible as CHP plant and this should be reflected accordingly).

QUESTION 14: What are your views on the likelihood and effectiveness of the identified policy options addressing the specified market issue and delivering the desired change?

ANSWER:

See above.

QUESTION 15: Are there any unintended undesirable consequences that any of the options might create elsewhere?

ANSWER:

A “whole energy system” approach (i.e. including thermal as well as electricity demand side issues) will avoid unintended consequences.

SECTION 5

QUESTION 16: Do you agree with our identified specific demand side measures and our assessment of the different types of benefits each demand side measure provides?

ANSWER:

The measures identified are comprehensive.

QUESTION 17: Are there any additional demand side measures that we should individually identify and assess? If so, what type of benefit(s) is it felt they provide?

ANSWER:

See above.

QUESTION 18: Have we identified all of the relevant criteria for assessing the individual and comparative merits of the demand side measures?

ANSWER:

Dalkia recommend that a specific metric for *consumer* savings be identified for the reasons discussed already.

QUESTION 19: What are your views about our approach to high level assessment of different demand side options?

ANSWER:

Dalkia agree with the overall methodology for overall assessment of the DSM options, with the following comments:

- Aggregation of DG is underestimated, hence we would rate this overall as a high priority. Additionally, aggregation of DG can be a “market primer” for consumer DSM participation, hence Dalkia would rate the Competition and Consumer Choice as “medium”
- The three energy efficiency options (industrial, commercial, domestic) are identified as “medium” in terms of green job creation. The retrofit program is an estimated €880m initiative with the potential to substantially increase the already 5,000 employment in this sector. Hence Dalkia would estimate energy efficiency as a “high” under green jobs creation.
- Due to the scale of the industrial/commercial energy efficiency potential (from the Energy Demand Reduction Target consultation paper, the industrial / commercial sector, represents the single largest opportunity for savings potential over and above the NEEAP targets at 5.6TWh), Dalkia would rate both industrial and commercial energy efficiency under security of supply as “high”

QUESTION 20: Do you agree with our assessment of each demand side measure against each of the identified

factors?

ANSWER:

See above.

QUESTION 21: Do you agree with our overall assessment of the relative merits of the different demand side options?

ANSWER:

See above.

QUESTION 22: Do you have any comments on our high level assessment of the benefits of different demand side measures?

ANSWER:

Aggregation of DG: High

Energy Efficiency Commercial: High

Smart Meters Static ToU tariff: "High" in the short term, but "low" in the long term

SECTION 6

QUESTION 23: Do you agree with our assessment of the relative priorities of different demand side options in developing a 2020 Demand Side Vision?

ANSWER:

New high value priority: Fuel switching from oil/gas to electricity for hot water in the domestic and commercial sectors. This is a large and accessible opportunity.

Move from medium value to high value priority: Aggregation of DG (due to underestimation of opportunity as discussed earlier)

QUESTION 24: What alternative views do you have on relative (merits and) priorities?

ANSWER:

See above.

QUESTION 25: Do you agree with our proposed high level 2020 Demand Side Vision as described above?

ANSWER:

Comments as follows:

- Considering the whole energy systems approach recommended earlier, the “2020 Demand Side Vision is for a world in which *energy consumers* (not just electricity consumers)....”
- They make choices about “the selection of appliances, *efficiency of their buildings and processes, and the way in which energy is controlled and used ...*”
- Rather than the expectation of “electrification of heat”, there will be *choice and diversity in electrical and non-electrical sources of heat*

QUESTION 26: What alternative vision would you put forward?

ANSWER:

See above.

QUESTION 27: Do you agree with our proposed policy pathways for implementation of the identified different policy options for realising our proposed 2020 Demand Side Vision?

ANSWER:

Energy Efficiency: The policy pathway for energy efficiency does not reflect the fact that retrofit program has already commenced, hence phase 1 of the program (years 1-3) is already an immediate measure. Phase 2 (years 4-10) would be the short to mid term target.

Smart Meters: As an immediate action, make interval import / export meters available to all consumers immediately

Industrial / Commercial DSR: Considering the size of the opportunity, the Short to Mid Term Target (engagement with I&C sector) should be moved to an immediate term target.

Aggregation of DG: As an additional immediate term target (but not just for DG) – review merits of flexibility payments to replace some of the capacity payment.

QUESTION 28: What alternative policy pathways would you propose based on your previous comments and responses?

ANSWER:

See above.

QUESTION 29: Do you have any additional view or comments you feel are important/useful for us in (a) establishing a Demand Side Vision for 2020; (b) identifying associated policy development and (c) determining policy pathways?

ANSWER:

As this consultation is likely to produce a wide, varied, and perhaps divergent view of DSM, some follow-up workshops would be warranted, particularly with emphasis on representation from consumers and actors on the demand side (the generators and market operators will naturally engage with this process). This may even include consumers who did not have the opportunity, or were not aware of, this consultation process.

QUESTION 30: Are there any final comments industry stakeholders wish to make about this consultation and the proposed next steps in the consultation process?

ANSWER:

The consultation paper is well researched and presented, and the process open in its nature. Dalkia would welcome further engagement as the DSM vision evolves.