

Comments
to NAESB
Smart Grid PAP 09
Round 2

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In response to NAESB letter of November 17, 2009, please find below our comments and suggestions for the DR/DER Framework document V1.3 dated November 12, 2009 and Retail DR Use Cases document Release 0.1, draft 1.1.

We appreciate the opportunity to provide feedback and hope our comments are useful for moving the work along quickly.

Please feel free to contact me if you need further clarification of our comments or suggestions.

1.0 DR/DER Framework document

1.1 Section 4.3 DR Use Case Classification

The introduction into the Use Cases starts off with categorizing the DR use cases, without an overview explanation: “*Right now, we have three dimensions to categorize the DR use cases . . .*”¹.

While describing the dimensions, the reader is not given an overview of what Use Cases are, and why they are used.

When the Use Cases are shown, Figure 13, it is shown in a very complex and unreadable form. It would not be reasonable for the reader to understand it at this point in the document.

¹ *Framework for Integrated Demand Response (DR) and Distributed Energy Resources (DER) Models, Release 0.1, Version v1.3, November 12, 2009; Section 4.3, Page 43*

Suggestions:

- 1.1.1 We suggest the title of this section be “*DR Use Cases*” instead of “*DR Use Case Classification*”. The purpose of this section is to introduce the DR Use Cases – classifying them is only one part of this section.
- 1.1.2 It is suggested this section start off with:
“In order to describe how to accomplish DR, a set of sequences of interactions (“Use Cases”) are defined and described in detail in Appendix 6.3. These Use Cases describe how the external entities (“Actors”) communicate with each other.”
- 1.1.3 It is suggested that the next section show the top level stages of the Use Cases in a diagram – we suggest to do this before the classification section. It is suggested that the complex, detailed diagram not be included in this section at all. The descriptions of each top level stages should clearly define the difference between each stage and the need for communication. The top level stages and suggested description are:
- ***“Administrate DR Program***
A service provider sends the details of a specific DR program that may be used sometime in the future to its customers and energy managers.
 - ***Administrate Customer for DR***
A specific customer informs the service provider and energy managers of its enrollment/registration requests.
 - ***Administrate DR Resource***
The DR resource owner sends the details of its specific DR resources to the DR controlling entity and also executes the bidding process for specific DR resources.
 - ***Execute DR Event***
The DR controlling entity informs the DR resource owner that a specific DR event is to occur.
 - ***Post DR Event Management***
After the DR action has occurred the DR resource owner performs measurement and verification and sends this information to service providers and energy managers. ”

1.2 Section 3.2.3 What is a Distributed Energy Resource

We note the following statement:

“This document addresses resources that can be controlled by the Customer or the utility, and thus does not address weather dependent variable resources like photovoltaic (PV) nor wind generation.”²

While it is understandable to limit DER to grid connected systems, it does not seem logical to exclude PV or wind generation for many reasons.

- The referenced DER document referred in footnote 4 on page 10 of the NAESB framework document clearly includes wind and PV within the definition for DER³. The definition from DOE for DER:
“DER systems may be either connected to the local electric power grid or isolated from the grid in stand-alone applications. DER technologies include wind turbines, photovoltaics (PV), fuel cells, microturbines, reciprocating engines, combustion turbines, cogeneration, and energy storage systems.”⁴
- The DR messaging system already has to deal with generation not available because other DER systems may also not be available. For example, Plug-in Electric Vehicles could be at other locations. Some DER systems may not be available due to maintenance or shutdowns.
- In the goal to combat climate change and reduce Greenhouse Gases, to exclude PV and wind would be sending the wrong message.
- To redefine DER could cause confusion.
- There is no logic behind specifically excluding weather dependency.
- There may be areas in which these PV or wind resources are very consistent – we would not want to exclude them.
- PV or wind combined with storage could remove the intermittent nature of the generation – we would not want to exclude those.

Suggestion:

1.2.1 We suggest to remove the following statement from the document:

~~***“This document addresses resources that can be controlled by the Customer or the utility, and thus does not address weather dependent variable resources like photovoltaic (PV) nor wind generation.”***~~

² Ibid., Section 3.2.3, Page 25

³ Ibid., Section 2.1 Page 10, Footnote 4

⁴ Ibid., Section 2.1, Page 10, Footnote 4 - “Using Distributed Energy Resources”, DOE, Page 1, <http://www1.eere.energy.gov/femp/pdfs/31570.pdf>

1.3 Section 2.1 Purpose

We note the following statement:

*“The purpose of this document is to provide standards developers with a context for understanding the range of scenarios to which DR programs and DERs may be applied and implemented across the various electricity systems and jurisdictions in the United States of America **with some overlaps to Canada.**”⁵ [**emphasis added**]*

We note the use of “some” overlaps to Canada – this implies there is not a lot of correlation between US and Canada. We suggest that there are many similarities and request a description of the ways in which the material **does not** “overlap” with Canada.

Suggestion:

1.3.1 We suggest the wording in Section 2.1 should be changed to:
“ . . . with significant overlaps to Canada.”

1.3.2 Similarly, in Section 2.3, Assumptions⁶, we suggest:
“ . . . with significant overlaps to Canada.”

1.4 Section 4.1.2 Domains

We find the Conceptual Model diagram and table of Domain Names⁷ to be quite helpful.

Suggestions:

1.4.1 It is suggested that all the Business Entities in section 4.1.3⁸ and list of actors the Use Cases include a reference to the Domain Names (e.g. in the form of a table). For example, “End-Use Consumer” in Business Entities is a type of “Customer” in the Domain Name list.

⁵ *Ibid.*, Section 2.1, Page 10

⁶ *Ibid.*, Section 2.3, Page 11

⁷ *Ibid.*, Section 4.1.2, Page 32

⁸ *Ibid.*, Section 4.3, Page 33

2.0 Retail DR Use Cases

2.1 Section 1.2 Glossary

Suggestion:

- 2.1.1 The abbreviation for Demand Side Management⁹ is incorrect: it should be changed to “*DSM*”.

2.2 Section 3.1.2 DR Use Cases

The overview diagram of DR Use Cases, Figure 3¹⁰, is shown in a very complex and unreadable form. It would not be reasonable for the reader to understand it at this point in the document.

Suggestions:

- 2.2.1 It is suggested that only the five top level stages (“*Administrate DR Program*”, “*Administrate Customer for DR*”, “*Administrate DR Resource*”, “*Execute DR Event*”, “*Post DR Event Management*”) be shown at this point.
- 2.2.2 It is suggested that a description of each top level stages should be included and clearly define the difference between each stage and the need for communication. The top level stages and suggested description are:
- “*Administrate DR Program*
A service provider sends the details of a specific DR program that may be used sometime in the future to its customers and energy managers.
 - *Administrate Customer for DR*
A specific customer informs the service provider and energy managers of its enrollment/registration requests.
 - *Administrate DR Resource*
The DR resource owner sends the details of its specific DR resources to the DR controlling entity and also executes the bidding process for specific DR resources.

⁹ Retail DR Use Cases Document, Release 0.1, Version Draft 1.1, Section 1.2

¹⁰ Ibid., Section 3.1.2

- **Execute DR Event**
The DR controlling entity informs the DR resource owner that a specific DR event is to occur.

- **Post DR Event Management**
After the DR action has occurred the DR resource owner performs measurement and verification and sends this information to service providers and energy managers. ”

2.3 Throughout Section 3.1.2 DR Use Cases

The acknowledgement messages appear inconsistent throughout the diagrams:

- labeled “*Acknowledgement*” with a dashed line in Administrative DR Resources (sections 3.2.1 to 3.3.2) and other sections
- labeled “*ACK-*” or “*Ack-*” with a solid line in Execute DR Event (sections 4.5 and 4.5.1) and Post DR Event (sections 5.1 to 5.3)

Suggestion:

- 2.3.1 It is suggested that, unless there are good reasons for the differences in Acknowledgement messages, that all Acknowledgement messages be consistent in wording and graphics – we suggest to use the “Ack-“ format (so that the association to the originating message is preserved). Possible reasons for differences might include “simple” acknowledging or more complex acknowledging with further information in the response.**

It seems to be inconsistent and unclear on whether the messages are to be used sequentially or as options. For example, the “*DR Bidding to Supply*” diagram, section 3.3.1, has four messages which are all supposed to be used sequentially. This contrasts to the “*Register Customer for a DR Program*” diagram, Section 3.1.2.2, in which the 3 messages are all supposed to be options (e.g. the Electricity Consumer sends a message to the LSE, or Energy Service Provider or the DR Aggregator).

Suggestion:

- 2.3.2 It is suggested that the diagrams clearly indicate whether the messages are to be used sequentially (and if so, which messages), or to be used as options (and if so, what combinations of options – e.g. one or both).**

2.4 Section 3.1.2.1 Administrate DR Program

The diagrams labeled “*Administrate DR Program*” (Figure 4), “*Administrate Customer for DR*” (Figure 5), “*Administrate DR Resource*” (Figure 6), “*Execute DR Event*” (Figure 7) and “*Post DR Event Management*” (Figure 8) seems to a confusing mixture of combining the overall top level stages with the steps and actors within that stage.

For example within the Figure 4, “*Administrate DR Program*” diagram, it is not clear what exactly is supposed to be inside the center step called “*1.0 Administrate DR Program*”.

Suggestions:

2.4.1 It is suggested that Figure 4 should only describe the details within the overall stage called “*Administrate DR Program*”. Therefore, it is suggested that the step called “*1.0 Administrate DR Program*” be removed from the diagram itself.

2.4.2 It is suggested that the all diagrams (including the ones noted above) be updated accordingly.

The diagrams labeled “*Create DR Program*”, “*Update DR Program*” and “*Cancel DR Program*” do not show any acknowledgement messages in response to the outgoing messages. This means that the LSE will have no way of knowing whether or the messages have been received by the consumers.

Suggestions:

2.4.3 It is suggested that Acknowledgement messages be sent back to the LSE for these diagrams.

2.4.4 It is suggested that all Use Case diagrams be checked to determine whether or not Acknowledgements messages should be used and diagrams should be updated as necessary.

The diagram labeled “*Create DR Program*”, “*Update DR Program*” and “*Cancel DR Program*” show identical messages from LSE to DR Aggregator and LSE to Electricity Consumer and seems to be typo.

Suggestions:

2.4.5 It is suggested that second set of messages from LSE to DR Aggregator and LSE to Electricity Consumer be removed.

2.4.6 It is suggest that all Use Case diagrams be checked for similar errors and diagrams should be updated as necessary.

Within the section labeled “1.1 Create DR Program” is a table including “Customer Size”, “Customer Type” etc. with no title or introduction, or how it is different than the previous list. There is description to any of the columns.

Suggestions:

2.4.7 It is suggested that the table be labeled and explained, and the meaning of columns be explained.

The LSE sends its messages to either the Energy Service Provider, DR Aggregator or Electricity Customer.

Suggestions:

2.4.8 Does the DR Aggregator include a single DR Resource; if so, update the description?

2.4.9 Should the Electricity Customer be a DR Resource instead; if so, update the diagrams (e.g. as in section 4.3 and 4.4)?

2.5 Section 3.1.2.2 Administrate Customer for DR

The diagrams show the Electricity Consumer initiating the customer registration and sending a message to the LSE, Energy Service Provider or DR Aggregator. Can the customer be registered through other means (e.g. manually) ?

Suggestions:

2.5.1 Determine if a customer can be registered through other means, and if so, update the diagrams.

2.6 Section 3.1.2.3 Administrative DR Resource

The diagram “*Administrative DR Resource*”, Figure 6, is confusing, and does not clearly indicate the order of steps nor indicate which steps are prerequisites of each other.

Suggestion:

- 2.6.1 Update the diagrams so that it is clear which steps are prerequisites within this stage. For example, “*Demand Response Bidding occurs after the DR Assets and Resources that to be comprise the desired bid have been registered*”¹¹ yet the “*3.2.2 Register DR Resource*” step does not connect to “*3.3 Bidding*” step in Figure 6.**

There is no description for the “*3.1 Administrative Bulk Power DR Resource*” step.

Suggestion:

- 2.6.2 Add a description for the “*3.1 Administrative Bulk Power DR Resource*” step, and include its significance in connecting to “*3.2.1 Declare DR Resource*”, “*3.2.2 Register DR Resource*” and “*3.2.3 Remove DR Resource*”.**
- 2.6.3 Similarly, add descriptions to any other steps that are missing descriptions.**

2.7 Section 4 Execute DR Event

It is unclear at what point a customer can refuse to allow a DR event from occurring.

Suggestion:

- 2.7.1 Clarify how a customer can refuse to allow a DR event from occurring.**

The Sequence Diagram “*Activate Demand Response Event*”, Section 4.1.1, shows an Acknowledgement message being sent from the DR Controlling Entity to the SO or MO.

¹¹ *Ibid.*, Section 3.3

Suggestions:

- 2.7.2 Confirm whether or not the Acknowledgement message relies on an Acknowledgement from the DR Resource to DR Controlling Entity; and if necessary update diagram.**
- 2.7.3 Similar issue should be considered for Cease Demand Response Event, Section 4.1.3.**