UNITED ENERGY

Project Justification - Power of Choice – Demand Management AEMO Reporting

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Document Control

Change History

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1.0	6 March 2015	Tony Chenco	Issued
2.0	17 December 2015	Tony Chenco	Updated to support EDPR re-submission.

Note: Printed copies of this document are uncontrolled.

Document Review

This document has been reviewed by the following parties prior to approval:

Reviewer Name	Role	Date
Rodney Bray	Network Planning Manager	15/12/2015

Document Approval

Approval of the Project Justification for the Power of Choice – Demand Management AEMO Reporting project is provided by the signatories shown below.

Changes to this document will be coordinated and approved by the undersigned or their designated representatives via project change management.

The undersigned acknowledge they have reviewed and approved this document.

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On 22 October 2015, the AEMC completed its Final Determination on National Electricity Amendment (AEMO Access to demand forecasting information) Rule 2015 which enables Australian Energy Market Operator (AEMO) to access demand forecasting information. The information supports forecasting for each National Electricity Market (NEM) region over a 20-year period. The rule change is effective from 22 October 2015.

In addition, on 26 March 2015, the AEMC completed its Final Determination on National Electricity Amendment (Improving demand side participation information provided to AEMO by registered participants) Rule 2015. The rule provides a process by which AEMO may obtain information on demand side participation (DSP) from registered participants in the NEM. AEMO is required to publish the reporting guidelines by 26 September 2016 with a commencement date of at least three months from publication.

The Demand Management AEMO Reporting project will develop data collection, extraction, and reporting capabilities that will enable United Energy to comply with these rule changes.

2. Objectives/Purpose

The Demand Management AEMO Reporting project will deliver processes and system capabilities that support the following:

- Collection of demand side participation information for demand management activities from enrolment through to event execution;
- Reporting of connection point demand forecast information to support NEM regional forecasting[1]; and
- Reporting of demand side participation as required by AEMO[2]. This includes any load which has been agreed for curtailment and any agreed provision of unscheduled generation in specific circumstances. The guideline will require United Energy to provide AEMO with:
  - contracted demand side participation (e.g. agreement to non-scheduled load curtailment or the provision of unscheduled generation in certain circumstances). The final rule confirms that this includes generation which is exempt from registration i.e. solar or micro wind for example. The guideline can also require any other load curtailment or provision of unscheduled generation that is in response to demand or price[3];
  - the circumstances where the load curtailment or generation may be provided, the location, the quantity and any historic or current information[4];
  - when information must be provided and updated e.g. every year or 5 minute to meet dispatch;[5] and

[1] AEMC, Rule Determination, National Electricity Amendment (AEMO access to demand forecasting information) Rule 2015, 22 October 2015

[2] NER 3.7D (b)

[3] NER 3.7D (e) (1) (i) and (ii)

[4] NER 3.7D (e) (1) (iii)

[5] NER 3.7D (e) (2)

- data in a certain format and any other information that AEMO requires to assess accuracy of information[6].

3. Strategic Alignment

3.1. National Electricity Rules Expenditure Objectives Alignment

This project will be implemented in line with NER Expenditure objectives.

Capital Expenditure Objectives	UE Alignment with Objective
Meet or manage demand for SCS	This project enables United Energy to comply with the final rules which requires it to provide demand side participation and providing demand forecast information to support regional forecasting.
Comply with all applicable regulatory obligations or requirements	United Energy will comply with the rule changes and reporting guidelines or market information notices that will be published by AEMO.
Where no applicable regulatory obligations or requirements exist, maintain quality, reliability and security of supply	The purpose of this project is to meet rule changes and market information orders/notices..
Maintain safety of the distribution system	Criterion does not apply to this project.

The recommended option for delivering this initiative has been assessed against the NER's capital expenditure criteria.

Capital Expenditure Criteria	Justification
Efficient cost of achieving the objectives	In determining the proposed solution United Energy considered the cost of a largely manual solution. It is expected that as the number of customer engaged in demand management solutions increase that manual solutions will be no longer efficient and an automated solution will be required.
Cost that a prudent operator would require to achieve the objectives	As a prudent operator United Energy, is preparing for wide deployment of non-network options to meet customer demand for SCS (Standard Control Services). United Energy has trialled the use of demand management and determined cost effective deployment of non-network options, at scale, will require automation of critical processes including reporting.

[6] NER 3.7D (e) (3)

Capital Expenditure Criteria	Justification
inputs required to achieve the objectives	demand that could potentially be met by non-network options. This is considered by United Energy to be a realistic forecast. To manage non-network options without automation would render non-network options as uneconomic.

3.2. UE Strategic Themes Alignment

The primary justification for the Demand Management AEMO reporting project is to meet United Energy's regulatory obligations for the introduction of the Power of Choice reforms.

4. Options

The following options have been considered to implement the Demand Management AEMO Reporting project:

4.1. Option 0: Do Nothing

Adopting the "Do Nothing" option would result in United Energy not changing its systems and processes to meet the requirements of AEMO. Under this scenario, United Energy would not meet its obligations under the NER and NEL.

4.2. Option 1: Modify Existing Systems

United Energy's existing customer, market and metering systems were recently implemented and modified to support the requirements of the Victorian AMI roll out. The requirements to implement demand management are highly specialised and significant modification of existing systems will be required to support demand management requirements.

4.3. Option 2: Implement New Systems

Vendor supported systems are available for demand response management. This option involves the deployment of a specialised demand response management system integrated to United Energy's market and network management systems. Cloud based providers could be considered in this evaluation.

5. Economic Evaluation

The Economic Evaluation table below is the result from the "Business Case Output" from the "Financial Evaluation Spreadsheet Version 1.3". This is United Energy's Capital Project Evaluation tool. The tool comes with standard parameters and these are protected and cannot be altered.

The tool ranks the project based on Least Cost (Net Present Value). The least cost project will have a Project Ranking of 1.

	"Status Quo" Reference Case	Option 1: Modify Existing Systems	Option 2: Implement New Systems
Net Capex ($)	$0	$2,511,000	$1,395,000
Opex ($)	$0	$0	$756,084
STPIS ($)	$0	$0	$0
Loss of F Factor Benefit	$0	$0	$0
Risk*** ($)	$0	$0	$0
Least Net Cost ($) (PV)		$2,511,000	$2,151,084

Project Ranking		2	1

5.1. Economic Evaluation Recommendation

Option 2 is preferred as it delivers a superior benefit-cost outcome with a CAPEX cost of $1.4M and meets the regulatory requirements. Further evaluation will be in the final business case.

5.2. Benefits Summary

These reforms are expected to improve the efficiency of network investment that will ultimately result in lower prices for consumers than would otherwise be the case. This will be achieved by deferring capital investment in traditional network augmentation.

6. Proposed Solution

system integrated with United Energy's market and network management systems to support the reforms related to providing demand side participation information to AEMO. Option 2 is considered to be the least cost and lowest risk solution that provides the necessary capabilities. Cloud solutions are available to meet the specialised functional and may from part of this solution.

Option 0 was not selected as this option does not meet the requirements and would result in United Energy being unable to provide demand side participation information to AEMO. United Energy is obliged under its licence to adhere to the National Electricity Rules. As the number of consumers participating in demand response schemes increase manual systems for reporting demand response activity become unfeasible.

Option 1 was not selected as this is expected to be a higher cost and higher risk than Option 2. The proposed capabilities required are new and substantially different to those currently implemented at United Energy therefore it is expected that existing systems could not be modified to support the new capabilities at a lower cost than the addition of a specialised demand response management system.

6.1. Requirements

The status of the rule changes for Demand Management AEMO reporting are:

- NEA (AEMO access to demand forecasting information) Rule 2015, Final Determination and effective date on 22 October 2015; and
- NEA (Improving demand side participation information provided to AEMO by registered participants) Rule 2015, Final determination and effective date on 26 March 2015.

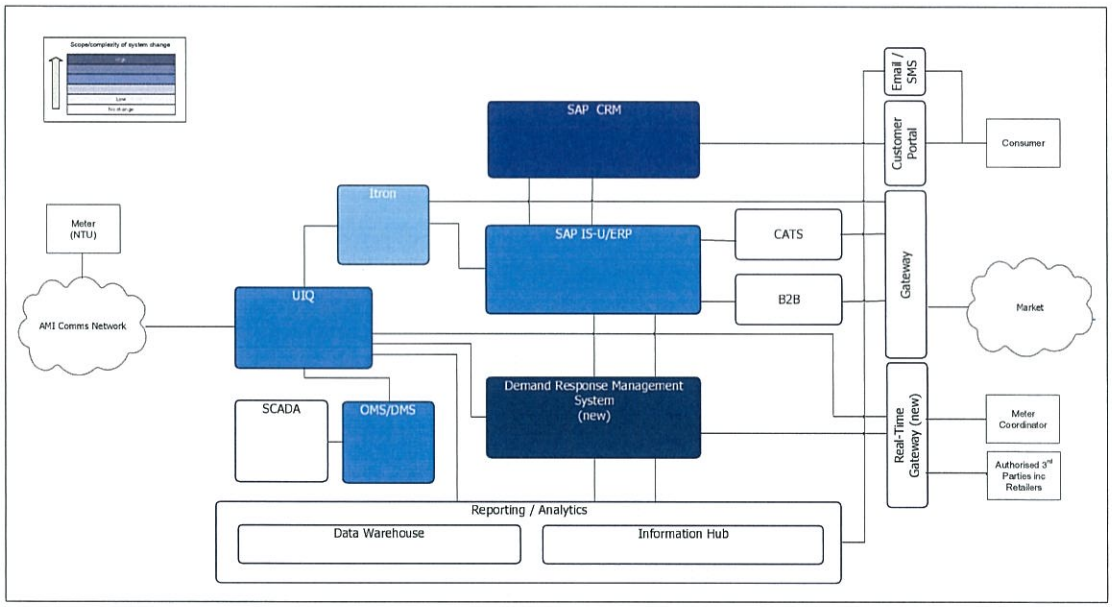
This project is to meet the following requirements:

- Develop processes and capabilities to capture data and generate the demand-side participation report for AEMO; and
- Develop processes and capabilities to support provision of demand forecast information to AEMO for regional forecasting purposes.

6.2. Solution Overview

The proposed solution implements a new demand response management system to deliver the required capabilities. This is mature technology that has been successfully deployed in other electricity markets. This system will be integrated with United Energy's existing customer, market and metering systems. In addition to the new system changes will be required to United Energy's Customer (SAP ISU & CRM) to enable customer to enrol and contracts to be recorded, Customer Portal to support customer registrations and notifications and Meter Management System (UIQ) to support communications to customer devices.

Demand management information will be available to AEMO to meet United Energy's regulatory obligation to provide this information.



6.3. Assumptions

The solution proposal assumes the following.

- Detailed requirements are not available at this stage. It has been assumed that, based on currently known requirements, the capabilities for establishing a management system to support the Demand Management AEMO reporting will require a new system integrated with existing market and network management systems.
- Estimates are based on synergies with other regulatory initiatives. For example changes to the contract management system and capabilities for the management of demand response.

6.4. Systems Impacted

The following table identifies the systems impacted.

System	Processes	Impact
Customer Engagement	Recording of customers and demand management information	Record customer information relating to demand management from DSP enrolment right through to event management.
Connection Point Management	Demand side participation	Record customers signed up for demand side participation.
Demand Management Platform	Demand forecasting Event data collection	Generate demand forecasts for connection points to support regional demand forecasting. Record customer participation in demand management (event specific).
Meter Data Management	Collection and storage of meter data during event	Capture meter data and meter events specific to a DM event. Data will be used for comparison with forecast and determining effectiveness of DSP.

No change | Low | Med | High | V. High

6.5. Project Plan

AEMO is tasked to develop and publish the first DSP information guidelines by 26 Sep 2016 with an effective date of at least 3 months after publication. Based on this the project will be executed during Q3-Q4 2016.

It is planned that the project delivery will be governed by United Energy's Project Delivery Framework and that integration services will be competitively procured from United Energy's IT Systems Integration panel. This may be complemented by specialist vendor resources where appropriate.

7. Outputs

The project will deliver the following:

- Implementation of a new demand response management reporting system.
- Changes to systems and processes that enable United Energy to meet its market obligations in delivering demand side information and completing market information notices.
- Testing of system and process changes with AEMO.

8. Project Capital Costs

Cost Category	Amount $M	Source / Explanation
Labour	1.02	Labour covers the resources required for the full project implementation. It includes resources to carry out the complete system development and requisite Business and IT change management initiatives.
Hardware (application specific)	0.08	Assume that minimal additional hardware is required.
Software	0.15	Additional software is required.
Security	0.01	Minor upgrade to security required.
PMO	0.14	Program Management Office and IT Capital Overheads
TOTAL	**$1.4**	

This is the forecast capex requirement to support demand management activities in the 2016-2020 regulatory control period and included in the IT capex budget.

Estimates are based on assessment of impacts on systems to be modified to meet the required functionality. Requirements for the estimates are derived from the two rule changes..

9. Operating Cost Impact

As this project introduces new systems, it is expected to increase IT operational costs. These operational costs will cover licence maintenance fees and application support costs and are expected to be approximately $0.2M pa.

10. Risks and Opportunities

Risk	Cause	Impact
Failure to deliver required capability	• Requirements not well defined or understood. • Project scope not well understood. • Poor project delivery methodology • Project team skills not appropriate to task.	• Benefits to consumers not realised. • United Energy's reputation diminished. • Potential market disruption. • Additional cost
Demand response not effective alternative to network investment.	• Consumer take up of demand response does not materialise. • Consumers do not maintain commitment to demand response program.	• Benefits to consumers not realised. • Additional network investment required.

Appendices

Appendix A – Requirements

The table below lists the high level requirements for this project.

Req't ID	Description
PJ25-01	**Capture and maintain customers signed up for demand side participation information.**
PJ25-02	**Capture demand management information during an event. This will include meter data and meter events.**
PJ25-03	**Produce demand-side participation report for AEMO. It is expected that the report will include the following:**
PJ25-03.01	• Consumers that are contracted to participate in demand management.
PJ25-03.02	• Type of participation – either through direct agreement with United Energy or through a third party aggregator.
PJ25-03.03	• The type of actions that will be taken during a DR event, such as curtailment of load or the provision of unscheduled generation in the response to the event, which may include: - The circumstances under which non-scheduled load may be curtailed or unscheduled generation may be provided. - The location at which non-scheduled load may be curtailed or unscheduled generation may be provided. - Effective dates of a response mechanism or action. - The quantity of non-scheduled load that may be curtailed or unscheduled generation that may be provided.
PJ25-04	**The report must adhere to guidelines determined by AEMO (to be defined) regarding format, frequency, delivery method, and verification of content.**
PJ25-05	**Produce connection point demand forecast for AEMO in line with the market information notice requirements.**

Appendix B – Process Impacts

The following United Energy processes will be impacted by this project.

ID	Description	Notes
PJ25-P01	Receive Meter Data and Events	Modify existing process to support DSP
PJ25-P02	Validate and store meter data for DSP where United Energy is not the MDP	Modify existing process to support DSP
PJ25-P03	Extraction of DSP information	New process to support AEMO reporting of DSP.
PJ25-04	Generate demand management reporting for AEMO	New process to generate and provide connection point data to AEMO **in line with the market information notice requirements.**

Appendix C - References

Improving demand side participation information provided to AEMO by registered participants - FINAL DETERMINATION - 26-Mar-2015

http://www.aemc.gov.au/getattachment/ae728fef-be54-40fa-a29b-e0d59bdb5a61/Final-rule-determination.aspx

FINAL RULE - 26-Mar-2015

http://www.aemc.gov.au/getattachment/1a82fefa-a1a1-453d-8afc-11c52a20851a/Final-rule.aspx

AEMO to receive better demand side participation information - INFORMATION SHEET - 26-Mar-2015

http://www.aemc.gov.au/getattachment/ed5ef0a1-39c3-4a21-88e3-fde2fcfc6cff/Information-sheet.aspx

AEMO access to demand forecasting information – FINAL DETERMINATION – 22 Oct 2015

http://www.aemc.gov.au/getattachment/a2e3c79a-78da-4020-9f0c-aa4cf3bc83fa/Final-rule-determination.aspx

FINAL RULE – 22 OCT 2015

http://www.aemc.gov.au/getattachment/003d849f-3705-40c3-8d0b-1e49fa903d45/Final-rule.aspx

AEMO to access demand forecasting information final rule – INFORMATION SHEET – 22 October 2015

http://www.aemc.gov.au/getattachment/77bb47a8-54cb-4c6c-bf0f-4b56d20213d2/Information-sheet.aspx

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