1.7 Verification Plan

In Support of the Milestone 4 DEMOCRASI Submission to NRCAN

First draft: September 30th 2020

Final Version: October 20, 2020

Contents

Lexicon

PFC	Power Forward Challenge
BCA	B C Analysis
WPD	Western Power Distribution

1. Introduction

This document serves as an internal plan for how to assess the performance of the project against the Power Forward Challenge (PFC) end-to-end criteria, using the NRCan Final Report Template as a starting point. Items include flexibility services, situational awareness, data-enabled value creation, cyber security and interoperability.

The entire project team references SmartSheet for the overall project planning and tracking. Confluence® by Atlassian is used as a common repository for documents, including meeting agendas and minutes, technical document revisions and draft reports. Each of the partner organizations may use their own internal requirement and action tracking software, such as Atlassian's Jira®, Microsoft® Planner or Priority Matrix by Appfluence.

Models and Diagrams from Opus One are created using Microsoft® Visio®

, and stored in Confluence. Microsoft® Excel is used for Bracebridge Generation to track financials including NRCan schedules, budgets and payments. Invoices and funding payments are processed in the NorthStar Accounting software, with Purchase Order tracking being performed in the Worktech system. All financial transactions are reviewed during the annual financial audit.

2. 3rd Party Validation

This section describes how we plan to utilize the reports written by parties outside Bracebridge Generation, Opus One and Kiwi Power. The goal is to make sure the evaluation of the project is as un-biased as possible.

2.1. Cost-Benefit and Scalability report

The project team hired Guidehouse (Canada Office), an industry-leading consulting company, to evaluate the project results using actual data from the demonstration. They will first establish the baseline around five use cases:

- Peak Power Management
- Demand Response Optimization
- VPP Participation in Energy Markets
- Local Flexibility Management
- Islanding

From there, Guidehouse will collect the actual data from the project team and run various modelling scenarios and analysis. The scope of the report includes Identifying benefit and cost streams, developing an economic model, completing BCA and extrapolating to other markets ~~Ontario, Canada and the UK~~.

2.2. Discussion of Canada, UK/EU expansion

We will meet with various utilities in the UK, EU, and Canada to gauge the interest of the product so that we can incorporate the feedback in the product development. The discussion will include but

not be limited to the functionality utilities are interested in, policies and regulations they need to follow and budget constraints.

At the end of the project, the DEMOCRASI team will review and summarize the feedback to perform a self-check to determine if the product roadmap still matches the industry needs.

2.3. Regen

The DEMOCRASI project will hire Regen to perform policy comparison, product review and knowledge dissemination. Regen is a UK-based independent centre of energy expertise, market insight and analysis, dedicated to transforming the energy system for a zero-carbon future.

In the policy comparison and review, Regen will:

1. Summarize the opportunities and barriers to implementation for the DEMOCRASI final product in the UK.
2. Review the technology platforms being implemented as part of DEMOCRASI and comment on their applicability for the UK energy market.
3. Examine the value drivers for both Ontario and the UK and summarize the key differences between the two energy markets.

The knowledge dissemination is not part of the verification plan. However, during the process, there are opportunities to discuss with different industry audiences, who may provide useful feedback for future product development.

2.4. Western Power Distribution (WPD)

WPD is currently the observer of the project. We will interview them to collect their feedback and summarize it.

Note that we are currently negotiating with WPD to make them a market simulation partner. This will not affect getting their feedback as planned.

3. Internal Testing

3.1. User Acceptance Test (UAT) documentation

The technical partners (Opus One and Kiwi Power) will perform internal testing on the developed software and document the testing cases. Lakeland will consolidate and modify accordingly to create product testing cases for final testing.

3.2. Requirement check

In other reports, the project team outlines the use cases from the proposal. The technical partners (Opus One and Kiwi Power) will demonstrate those use cases either in the Lakeland deployment or the secondary market demonstration.

3.3. Technical performance analysis

The project team will collect and extract produced data from the system for analysis. For example, we will compare actual demand reduction to expected values during all simulation trials.

3.4. Validation against Power Forward Challenge

The project team will evaluate the project outcome against the Power Forward Challenge Criteria, which are:

- Delivery and Performance of the Demonstration Project [50%]
- Readiness to Scale the Impacts of the Demonstrated Solution [50%]

3.5. Security and safety test

The Lakeland team will evaluate the security and safety of the project by:

- Performing a security analysis of the project
- Documenting the approved data flows with sign-off from all parties
- Verifying the documented data flows with actual configurations
- Testing the system for vulnerabilities

3.6. Complete the NRCan final report

The project team will complete the final report using the template provided by NRCan.