



255 Alhambra Circle  
Suite 810  
Miami, FL 33143  
(305) 341-7844

## Background

VT DPS engaged Navigant Consulting, Inc. (Navigant) in October 2012 to assess administrative efficiency and business process metrics for two Vermont energy efficiency utilities, Efficiency Vermont and Burlington Electric Department (BED). The effort consisted of two Phases with Phase I focusing on two business processes identified by BED to improve administrative efficiency, and Phase II which commenced in February, 2014 focusing on assessing three additional business processes identified by BED as key business processes to be improved. Navigant submits this memo as the deliverable for the BED portion of task 1 of Phase II of the project. The benchmarking initiative also included in Task 1 will be addressed in a separate memo describing the review of peer companies for both BED and EVT, and recommended Administrative Quantifiable Performance Indicators (QPIs).

Under task 1 of Phase II, Navigant conducted meetings with the Director of Energy Services for BED to review process identification, process improvement initiatives and expected output from the process improvement initiatives performed for the three BED key business processes identified. These key business processes are:

- On-Site Customer Audit and Engineering Visits (including pre and post metering for small and medium size commercial projects)
- Project Savings Analysis and Customer Report Production Process (small and medium sized commercial customers)
- Technical Reference Manual (TRM) Measure Updates into BED's V2 Access Database

During the meetings, BED's process sponsor explained the overall importance of these processes in achieving administrative efficiency, described the process goals and objectives, and presented detailed overview of the on-going process improvement activities – performed or being considered – including the status and outcome of previously reviewed processes (Phase I of this effort). Navigant also reviewed process improvement related documents provided by BED.

## Executive Summary

Based on our assessment, Navigant concludes that BED's key business process improvement efforts meet the requirements outlined by VT Public Service Board's (PSB) Administrative Efficiency Quantifiable Performance Indicator milestone for January 31, 2014. Navigant's assessment addresses

three critical areas based on our understanding of the VT PSB Order<sup>1</sup> and based on our experience with continuous process improvement activities:

**Key business process improvement approach** –To complete the requirements outlined by VT PSB, it is not necessary to select a key business process improvement approach. BED has taken a problem-solving approach to improve its key business processes, identifying opportunities based on their inherent knowledge and qualifying initiatives to address these opportunities.

**Critical business process selection** – BED prepared a detailed list of five core energy efficiency business processes performed. From this list of key business processes, BED selected the Customer Incentive Check Production (Incentive Check Processing) process and Project Savings Data Entry into the DSM Tracking Database for Complex Projects (Project Data Entry) process for the initial process improvement in Phase I. For Phase II, the remaining three business processes were selected to be reviewed and improved. These processes are:

- (1) On-Site Customer Audit and Engineering Visits (including pre and post metering for small and medium size commercial projects),
- (2) Project Savings Analysis and Customer Report Production Process (small and medium sized commercial customers), and
- (3) TRM Measure Updates into BED's V2 Access Database.

All three key business processes were identified due to their administrative efficiency cost benefit potential.

**Key process improvement activities** – As established in Phase I, BED is performing the key business process improvement steps required by the VT PSB. For Phase II, BED established a baseline for each process and based on the identified process improvement initiatives determined process improvement target metrics. During the evaluation/implementation of the process improvement initiative, it was determined that the TRM Measure Updates process was no longer required as the opportunity is being addressed by VT PSD. It has been recommended that BED documents their overall macro process and its key business processes using process maps and process improvement methodology (flowchart format and keep a copy in electronic format that could easily be updated and distributed), rather than narratively as BED has done, and track its process indicators as part of their on-going process performance improvement effort.

To continue to improve its administrative efficiency performance, Navigant identified a set of recommendations that may be valuable to BED when further developing its key business process improvements.

## Introduction

---

<sup>1</sup> See EEU-2010-06 Order Determining Electric Quantifiable Performance Indicators for Burlington Electric Department, Appendix B, QPI for Administrative Efficiency, available at <http://psb.vermont.gov/sites/psb/files/orders/2012/2012-1/OrderElectricQPisBEDAppendixB.pdf>

Navigant reviewed the methodology BED used for developing, maintaining and updating key business processes. Based on our knowledge with continuous process improvement efforts, we have also identified a set of recommendations that BED may consider to further improve its key business processes. Three areas were considered in assessing BED's methodology:

1. Key business process improvement approach
2. Critical business process selection
  - a) Process identification method for key business processes
  - b) Process selection method for processes to be improved
3. Key process improvement activities
  - a) Determination of process improvement target metrics
  - b) Development of process improvements
  - c) Documentation of key business processes
  - d) Implementation of process improvements
  - e) Measurement of process performance on ongoing basis
  - f) Continuous key business process improvement

## Key Business Process Improvement Approach

### **BED's Approach**

Given the relatively small size of BED, a critical factor to a successful approach is that it is cost effective and practical--minimizing required time to analyze and implement. The approach must be hands-on, based on value-added initiatives and yield improvements quickly. BED's current approach is pragmatic, and focused on results.

### **Assessment of BED's Approach**

BED has not selected a formal approach to process improvement. To complete the requirements outlined by VT PSB, BED was not required to select a key business process improvement approach. Navigant included this assessment criterion because a defined process improvement approach enables process improvement activities and points to appropriate actions and next steps.

### **Recommendations**

As stated in Phase I, Navigant recommends that BED selects a key business process improvement approach to bring structure and focus to its key business process improvement efforts. The Lean process improvement approach would be beneficial for BED, because:

- It is logical, fast and easy to learn and apply,
- It concentrates resources in a short timeframe to identify quick, easy and intuitive improvements,
- It is very effective to capture the "low hanging fruit" of process improvement activities,
- It provides structure, format and tools that, when performed correctly, will improve analysis, establish documentation, facilitate tracking process metrics and results, and

- Since EVT's staffs are trained in the Lean approach, it will add consistency in approach for VT PSD and help BED with resources to address specific questions if needed.

BED can facilitate the Lean approach in-house once BED's staff completes basic Lean training.

BED would likely benefit from training a small number of employees in Lean principles. These employees can then facilitate the Lean approach and train others as needed. It will provide a common language and structure to the organization for analyzing processes and to identify non-value added activities, improving efficiency and effectiveness throughout. Lean training is available in multiple formats, including books, electronic learning and classroom sessions. Various levels of Lean expertise certification are available from multiple sources, but certification is not required to practice process improvements<sup>2</sup>.

## Critical Business Process Selection

In this assessment area, Navigant assessed BED's activities around:

- a) Process identification method for key business processes, and
- b) Process selection method for processes to be improved.

### BED's Approach

In 2012, during the Phase I of this initiative, BED's energy efficiency team, led by the Director of Energy Services, prepared a detailed list of core energy efficiency services performed. For each energy efficiency service, BED provided a brief explanation of its scope, key players involved in the service and key processes required to complete each service. The energy services identified by BED are:

- Residential Energy Services
  - Residential Existing Buildings
  - Residential New Construction
  - Efficient Products Program
- Commercial Energy Services
  - Business New Construction
  - Business Existing Facilities

BED identified key processes performed for each service performed. Some of the key processes identified overlap across services. Following is the list of eleven unique key processes performed by BED:

1. On-Site Visits or Plan Reviews
2. Analysis

---

<sup>2</sup> The American Society for Quality (ASQ) offers a full range of credible Lean training and resources at <http://asq.org/knowledge-center/lean/index.html>

3. Report Production
4. Inspections (Pre-Sheetrock, Blower Door, Preliminary Site, Final)
5. Project Data Entry
6. Incentive Check Processing
7. Continuous Commissioning (Cx) / Fault Detection and Diagnostics (FDD) Monitoring
8. Energy Federation Inc. (EFI) Data Uploads to Enter Savings Data in Savings Database
9. Technical Reference Manual (TRM) Measure Updates
10. Project Team Meetings
11. Savings Analysis

BED's energy efficiency team then identified five processes for business process improvements, again led by the Director of Energy Services. BED selected the first two processes to be improved during Phase I based on the following selection criteria:

- Amount of hours expended on the process within the BED organization,
- Suitability of the process as a first time process improvement project, and
- Importance of the process in delivering value to the customer.

Based on these selection criteria, the team selected the Incentive Check Processing process and the Project Data Entry process for the initial process improvement phase. For Phase II of the process improvement initiative the remaining three processes were selected. These three processes are:

- On-Site Customer Audit and Engineering Visits (including pre and post metering for small and medium size commercial projects)
- Project Savings Analysis and Customer Report Production Process (small and medium sized commercial customers)
- TRM Measure Updates into BED's V2 Access Database

BED determined there were opportunities for improving the efficiency and effectiveness of these processes based on the following process characteristics:

- Amount of time required to complete activities within the process,
- Redundancy in process steps necessary to complete the work, and
- Manual work and repetition increasing the opportunities for human error.

### **Assessment of BED's Approach**

BED took a pragmatic approach to identifying its core processes. The team had already identified all the energy services provided, and had ensured that all critical outward facing processes were included. After the team had identified all the processes required for each energy service, and determined which processes apply across services with opportunities for improving, they selected the two processes to improve during Phase I and decided to improve the remaining three processes during Phase II.

The three processes selected in Phase II for business process improvements are characterized by manual work with opportunities for automation and use of technology to increase efficiency, accuracy, and timeliness.

The Incentive Check Processing process reaches ratepayers at various levels, consumes a lot of BED's time, and is a key factor for customer satisfaction and recurring program participation. The Project Data Entry process is critical for tracking overall energy efficiency program success and also consumes a considerable amount of BED's time.

### **Recommendations**

In Phase I, Navigant recommended that BED consider major internal processes in addition to its outward facing key business processes in order to identify significant efficiency opportunities given that many times internal processes require significant staff time. Some examples of the suggested internal processes identified for consideration are:

- Regulatory submission and reporting,
- Key account management,
- Project management,
- Coordination and management of subcontractors,
- Marketing and external communications,
- Customer service, etc.

It is recommended that BED documents the macro processes of its operations using a formal documentation approach, as opposed to an informal narrative format as BED has done, that instead utilizes flow charts and process improvement methodology in order to provide a complete picture of key steps or processes required to meet its obligations. This will allow a better understanding of the opportunities for improvement due to:

- Magnitude of committed resources to specific processes (or steps within the macro process),
- Areas of high risk stemming from errors or process variation,
- Reliability of supporting processes and administrative tasks,
- Variation in inputs and outputs for each of the "macro steps",
- Frequency or repetition of tasks within a specified cycle, and
- Value or benefits compared to costs.

Whenever possible BED would also benefit from quantifying the opportunities based on actual data; if data is not tracked or available for a key process or step, BED could either take a random sample and determine its associated quantifiable information or gather data for a specified period of time. Using data to make decisions improves the validity of the decision-making process; it removes potential biases, and provides a more concrete and objective basis for evaluating and selecting further processes for improvement.

BED may also want to evaluate the opportunities for process improvement in terms of overall expected impact to the process output or tracked key performance metrics. This step will also facilitate a more consistent comparison between the expected improvements when selecting processes to improve.

Additionally, BED may be able to further streamline and strengthen the identification of its key business processes by identifying best practices within peer organizations and determining their applicability to BED. Further, Navigant is currently working on a benchmarking effort to identify best practices, and key performance metrics that measure administrative efficiency, which BED may consider when structuring its key processes.

## Key Process Improvement Activities

Under this assessment area, Navigant assessed BED's activities around:

- a) Determination of process improvement **target metrics**,
- b) Development of **process improvements**,
- c) **Documentation** of key business processes,
- d) **Implementation** of process improvements,
- e) Measurement of **process performance** on ongoing basis, and
- f) **Continuous** key business process **improvement**.

### BED's Approach

*Determination of process improvement target metrics* – The improvement target metrics identified by BED for all three processes are “time spent” completing the task or process, improving overall efficiency. The selected targets are summarized in Table 1 below and are based on BED's best knowledge. Determination of the target metrics goes hand-in-hand with the next step: development of process improvements.

**Table 1: BED Initial Process Baseline and Improvement Target Metrics**

Process	Metric	Baseline	Improvement Target	Percent Improvement
<b>On-Site Customer Audit and Engineering Visits</b>	Time Spent	2.5 hours /average	about 35 minutes	25%
<b>Project Savings analysis and Customer Report Production Process</b>	Time Spent	2 hours/ average	30 minutes	25%
<b>TRM Measure Updates into BED's Database</b>	Time Spent	1 to 2 hours	30 to 60 minutes	50%

*Development of process improvements* –Targets and the improvements are closely intertwined since one may affect the other and need to be reviewed in parallel and/or adjusted as appropriate. To establish the process improvement targets, BED's energy efficiency team established the baseline based on their best approximation and expected improvement. Then potential solutions were

identified to address the process improvement opportunities. For the On-Site Customer Audit and Engineering Visits Process, BED determined that to address the process improvement opportunities, BED will purchase tablets for program managers to take to the field and avoid hand writing the field notes and then re-entering them into their electronic files. BED evaluated the different tablets available and purchased tablets for all program managers. They are currently using Excel worksheets to track all the data points collected during the customer audits and engineering visits. For the Project Savings analysis and Customer Report Production Process, BED has determined that a template with automation will substantially diminish the amount of time currently invested in completing this task. For the third process, TRM Measure Updates into BED's Database, automating the measure savings calculations into BED's database would have saved significant time spent due to entering the required information manually. However, VT PSD will be implementing this initiative and therefore this is no longer a process to be improved by BED. VT PSB order requirements have been met.

***Documentation of key business processes*** – BED documented its key business processes using a narrative format rather than a formal documentation approach utilizing standard process improvement methodology such as flowcharts or swim lanes. Given the relatively small size of BED's energy efficiency team, the team determined that its key business processes are well internalized by all team members and formal documentation was not considered a necessity.

***Implementation of process improvements*** – BED has begun the implementation of some of its identified process improvement initiatives. The BED team has started process improvement implementation and considered short term solutions where a permanent countermeasure has not been identified. For example, purchasing software to be used with the tablets to facilitate taking notes during field visits; instead an excel worksheet has been developed to be used by program managers when documenting the audits as the right software has not been identified. The VT PSB order requirements have been met.

***Measurement of process performance on ongoing basis*** – To measure the impact of process improvements, process performance must be continuously monitored. At this point, BED has not implemented continuous process monitoring mechanisms. The VT PSB order did not require BED to implement process performance measurements.

***Continuous key business process improvement*** – To create and maintain momentum around process improvement activities, management buy-in and support of the improvement effort is critical. During interviews with Navigant, BED's Director of Energy Services voiced his support for the key business improvement effort and was very open to quantifying and documenting processes to continue to improve processes and output. He views the VT PSB order as the start of an ongoing continuous improvement effort that will benefit BED and its customers over the long term.

### **Assessment of BED's Approach**

***Determination of process improvement target metrics*** – BED set realistic improvement target metrics for all processes, although perhaps somewhat conservatively per their own admission. As they have begun implementing some of the process improvement initiatives, process implementers believe the results may exceed initial targets once the initiative are fully implemented and the program managers become familiar with the tools. BED's target improvements of 25 % over the status quo are

significant but BED will need to determine how the performance improvement will be tracked to validate the initial baseline and improvement expectations. It will also be valuable to establish early on the overall impact from this process improvement initiative to their overall administrative efficiency metric.

***Development and implementation of process improvements*** – BED has selected concrete process improvement activities and executed some of its recommendations such as purchasing the tablets and identifying the templates for the Customer Report Production Process.

***Documentation of key business processes*** – BED documented the key business processes selected using an informal, narrative format, rather than a formal documentation approach using a specific process improvement methodology. While it was not a requirement of the VT PSB order to use a specific process improvement methodology, Navigant believes that formal process documentation is essential to facilitate future process improvements and aid with process standardization and consistency. By documenting process maps, personal biases are minimized enhancing consistency, future reviews are easier to conduct, and process updates/documentation are easy to maintain<sup>3</sup>.

***Measurement of process performance on ongoing basis*** – To understand the impact of process improvements, process performance should be measured on an ongoing basis and compared to the goals identified in the improvement target metrics. BED has estimated the baseline and expected results for all processes. However, measurements should be based on actual performance and ongoing measurements should be tracked to facilitate continuous improvement.

***Continuous key business process improvement*** – BED has not had sufficient time to define a complete continuous business process improvement methodology, which was not a requirement of the VT PSB order. Further, BED does not have a pressing need to implement a continuous business process improvement methodology at this time because all key business processes are undergoing their first round of improvements. The need for a continuous key business process improvement methodology will likely arise once all key business processes have been mapped and BED is looking to gain further efficiency from its key business processes.

## **Recommendations**

***Determination of process improvement target metrics*** – Navigant believes that BED has set realistic, easy to achieve improvement target metrics for the two processes currently being improved. To validate the estimated baseline for the Onsite Audits, BED could track for a week or so the time spent in performing the targeted activities manually. Moving forward BED will also need to determine how it will measure time spent on this activity to confirm the performance improvement. One effective solution may be to establish the impact of the process improvement effort on an overall efficiency metric and then monitor it to track the higher level metric target is achieved. Understanding the overall effect on the tracked metrics is one way to establish value and identify future business processes for improvement.

---

<sup>3</sup> An example of a process mapping application includes Microsoft Visio. Basic process flowcharts can also be generated in Microsoft PowerPoint.

***Development of process improvements*** – BED has begun its process improvement development. However, BED will benefit from following a more structured approach for process improvement, such as EVT's lead of approaching process improvements with a value stream mapping event. Value stream mapping is an effective way for identifying solid process improvements while at the same time training the team in a process improvement methodology, and providing a common language and approach to improving processes. It is an ad-hoc, event based approach to process improvements that measures current process performance and uses the results to plan improvements. With its focus on the big, overall process picture rather than very detailed sub-processes, value stream mapping provides a good starting point for process improvement. Additionally, the outcome of the value stream mapping exercise generates a list of process improvements to target and a future state process map. The additional required time for planning and executing these activities are well worth the investment afterwards in facilitating the identification of solutions, minimizing obstacles during implementation and achieving the results.

***Documentation of key business processes*** – In conjunction with our recommendation to consider value stream mapping or process improvement methodology to identify process improvements, Navigant recommends documenting the future-state key business processes in a flowchart format for future reference and preferably in electronic format. Placing a poster of the future-state process map at a high visibility location in the office boosts team morale, focuses team efforts and signifies the importance of the improvement effort. Process maps serve multiple purposes in an organization. Apart from identifying process improvements, process maps also help to clearly align work responsibilities and are an effective training tool for employees new to the team.

***Implementation of process improvements*** – In the future, once BED identifies key business process improvements, it would likely benefit from a detailed implementation plan. Thinking through the enablers and potential obstacles to be faced during implementation would also aid BED in mitigating unexpected interruptions or leveraging existing knowledge. The plan should assign an owner to each process improvement identified, along with a timeline by when improvements have to be completed. It should also identify potential obstacles and enablers to be considered during implementation. Each process improvement owner should produce a periodic status report that tracks implementation towards the identified process improvements. To maintain momentum on the effort, BED should ensure that each process improvement owner follows his or her assigned tasks through to completion. BED would likely benefit from preparing status reports to track implementation towards the requested process improvements. Status reports would be generated on a periodic basis (monthly or quarterly) and be reviewed by the Director of Energy Services to determine if progress is sufficient.

***Measurement of process performance on ongoing basis*** – In the short term, BED should focus on data measurement and reporting for the two processes identified. This is important because process performance information is vital when implementing process improvements. To track the impact of performance improvement implementation, trended process performance data should be a section in the status reports. For example, process lead times and error rates could be measured on a weekly basis to identify weekly trends on how performance improvement implementations impact process performance. Process performance data provides the Director of Energy Services with the information necessary to track improvement team progress. As BED defines additional process improvement target metrics, Navigant recommends tracking these metrics on an ongoing basis and comparing progress towards the goals identified. BED may find value in developing a dashboard style report that shows trending of several key business processes on one page.

***Continuous key business process improvement*** – After the key business processes have undergone an initial process improvement cycle and once a target improvement metric has been established, BED would benefit from a defined program for continuous key business process improvement. This approach will ensure that the initial efficiency gains are maintained and further improved upon as opportunities arise. However, BED's main effort at this point should be to improve upon the previously improved processes and continue the implementation of the Phase II processes, and document the future state processes using electronic process maps (or flowcharts) to increase consistency and ensure goal achievement of the selected processes.