

## Background

VT DPS engaged Navigant Consulting, Inc. (Navigant) in October 2012 to assess administrative efficiency and business process metrics for the two Vermont energy efficiency utilities, Efficiency Vermont (EVT) and Burlington Electric Department. Navigant submits this memo as the deliverable for the EVT portion of task 2 of the project.

Under task 2, Navigant conducted meetings with key personnel from EVT to review process mapping and process improvement activities performed for two of EVT's critical business processes. These processes are Forward Capacity and Project Verification Metering (Metering) process and Prescriptive Rebate (Prescriptive) process. EVT's process owners explained the overall importance of these processes, described the process goals and objectives, and presented a detailed overview of the activities documented in the process maps. EVT further described the ongoing process improvement activities that were identified based on the process mapping exercises. Navigant followed the meetings with phone discussions with EVT. Navigant also reviewed process improvement related documents that EVT made available.

## Executive Summary

Based on our assessment, Navigant concludes that EVT's key business process improvement efforts meet the requirements outlined by VT Public Service Boards (PSB) Administrative Efficiency Quantifiable Performance Indicator milestone for August 30, 2012. 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*** – EVT followed the Lean approach to process improvement, which is applied across a multitude of industries and highly respected among practitioners. This approach can be applied quickly and has comparatively low training cost.

***Critical business process selection*** – EVT developed a list of key business processes as a starting point, using the definition for key business processes outlined by the Baldrige Performance Excellence Program<sup>2</sup>. From its list of key business processes, EVT selected the Metering process and the Prescriptive process for the initial process improvement phase. Both processes are key business processes in the energy efficiency industry. The process selection was based on a decision matrix that EVT developed for the purpose of selecting the most appropriate two initial business processes for improvement.

***Key process improvement activities*** – EVT conducted a series of steps to improve upon its key business processes. For both processes, EVT determined process improvement target metrics that would go along with the development of process improvements. The team documented the two future-state processes and determined an implementation plan for the identified improvements. EVT continually measures process performance of both processes to track the impact of changes and to take the first steps towards a continuous key business process improvement methodology.

Following our analysis, Navigant developed a set of recommendations that may be valuable to EVT when further developing its key business process improvements.

## Introduction

Navigant reviewed the methodology EVT used for developing, maintaining and updating key business processes. Further, we have developed recommendations that EVT may consider to further improve its key business processes. We considered three areas in assessing EVT's methodology:

1. Key business process improvement approach
2. Critical business process selection

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<sup>1</sup> See EEU-2010-06 Order Determining Electric Quantifiable Performance Indicators for Efficiency Vermont, Appendix B, QPI for Administrative Efficiency, available at <http://psb.vermont.gov/sites/psb/files/orders/2011/2011-2/EEU-2010-06%20Appendix%20B%2012.27.11.pdf>

<sup>2</sup> The Baldrige Performance Excellence Program is a prestigious nationwide quality program that certifies companies meeting stringent criteria of quality and performance.

- 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 process
  - d) Implementation of process improvements
  - e) Measurement of process performance on ongoing basis
  - f) Continuous key business process improvement

## Key Business Process Improvement Approach

### EVT's Approach

EVT approached continuous process improvement by utilizing Lean tools and methodologies. EVT partnered with the Vermont Manufacturers Extension Council (VMEC) to facilitate its Lean-based process improvement activities. As part of this effort, VMEC trained selected EVT staff in Lean Office introductory workshops. Participants of the workshop were selected based on their level of engagement with key business processes and with the intent that participants would act as thought leaders as the effort is extended further across EVT.

### Assessment of EVT's Approach

Lean is a credible approach to continuous improvement. Lean's strengths are:

- Fast and easy to learn and apply, allowing students to apply their knowledge quickly,
- Concentrates resources in a short timeframe to identify quick, easy and intuitive improvements, and
- Frequently used as a first approach to capture the "low hanging fruit" of process improvement activities.

These aspects of Lean match well with EVT's requirements for introducing continuous improvement, as outlined in VT PSB's administrative efficiency order. Navigant believes that Lean is the right approach for EVT at this point in time.

### Recommendations

Navigant recommends staying with the Lean approach over the course of the 2012-2014 evaluation period. The Lean approach best supports EVT's task to improve upon a significantly relevant portion of its critical business processes during the 2012-2014 timeframe. During this time, EVT will be able to make significant process improvements using Lean, essentially reaping the "low hanging fruit".

Following the 2012-2014 evaluation period, and as processes are revisited, Navigant recommends employing more sophisticated process improvement approaches that can produce gains above those

commonly accomplishment with Lean alone. These process improvement approaches focus more on long term, in-depth studies to implement process improvements. An example of tools used under these approaches would be “Process Capability”, which determines if a process can meet output requirements by applying statistical calculations.

## Critical Business Process Selection

In this assessment area, Navigant assessed EVT’s activities around:

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

### EVT’s Approach

EVT followed the Baldrige National Quality Program guidelines in determining its key business processes<sup>3</sup>. To determine its key business processes, EVT employed a committee (Key Business Process Committee) consisting of four Operations Leaders (Director of Engineering, Director of Operations and Implementations, Director of Strategy, and Director of Finance) which was led by the EVT Resource Manager and supported by the EVT Quality Manager. The Key Business Process Committee conducted several meetings to identify EVT’s key business processes and concluded the below list:

1. Prescriptive project process
2. Metering (FCM and individual project metering)
3. Demand Resource Planning Process
4. Technical Quality Assurance
5. Custom project process
6. Project management
7. Managing the partner process: market transformation through support of market players
8. Planning and budgeting process
9. Coordination and management of subcontractors
10. Internal communications

Following the identification of EVT’s key business processes, the Key Business Process Committee selected two processes for the initial business process improvements. An evaluation matrix was developed to compare processes that were nominated. The criteria for evaluation were:

- Suitability of the process for EVT team to apply the fresh learning of Lean methodologies
- Level of resources utilized to perform the process
- Importance of the process in delivering value to the customer
- Importance of the process in transforming energy efficiency resource acquisition in Vermont

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<sup>3</sup> See Baldrige Performance Excellence Program, 2011-2012 Criteria for Performance Excellence, pages 45 and 46, available at [http://www.nist.gov/baldrige/publications/upload/2011\\_2012\\_Business\\_Nonprofit\\_Criteria.pdf](http://www.nist.gov/baldrige/publications/upload/2011_2012_Business_Nonprofit_Criteria.pdf)

- Number of transactions performed in the process

To emphasize the importance of selecting a process that fosters hands-on learning, the Key Business Process Committee applied a higher weight to the first criterion. The processes selected were the Prescriptive process and the Metering processes.

### **Assessment of EVT's Approach**

EVT took a strategic approach to identifying its core processes. By following the Baldrige guidelines for key business process implementation, EVT exposed itself to part of the rigor that top quality organizations apply when seeking Baldrige certification.

When selecting two processes for the initial key business process improvements, EVT applied an evaluation matrix that was used to screen all ten key business processes identified. Navigant particularly values the foresight of the Key Business Process Committee in selecting two key processes that are suitable to enhance learning of the Lean methodology. By applying Lean methodologies successfully in a suitable pilot project, team learning is enhanced and team morale is increased.

The two processes selected for the initial business process improvements are identified by important attributes of key business processes. The Prescriptive process reaches ratepayers at various levels, because it is applied to commercial, residential and upstream customers. It is also a key vehicle for introducing and supporting new efficiency technologies across Vermont. EVT's analysis shows that the Prescriptive process flow continues to grow in importance and volume at EVT. The Metering process is an important sales tool for EVT, helping to demonstrate project value to prospective customers before energy efficiency measures are implemented. After measures have been implemented, the Metering process measures achieved verified savings reported to ISO New England. The Metering process has exponentially grown in importance for EVT over the past couple of years.

### **Recommendations**

EVT may be able to further streamline and strengthen the identification of its key business processes by engaging in conversation with peer organizations of comparable size and mission<sup>4</sup>. The conversation with peer organizations would focus around administrative efficiency activities undertaken by the peers to identify best practices for consideration by EVT. Further, Navigant is currently working on a list of key energy efficiency business processes for EVT to consider when structuring its key processes.

When selecting which processes to improve next, EVT should make an attempt to collect quantitative data for its evaluation matrix criteria to support the decision and to document the scoring detail for

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<sup>4</sup> A suggested list of peer organizations includes: 1.) Conservation Services Group, Westborough, MA, 2.) Energy Trust of Oregon, Portland OR, 3.) Wisconsin Energy Conservation Corporation, Madison, WI, 4.) SAIC under contract with the Hawaii Public Utilities Commission, Honolulu, HI, 5.) Efficiency Nova Scotia, Dartmouth, NS and 6.) Efficiency Maine, Augusta, ME.

future use. By relying on quantitative information, the danger of applying a bias for certain processes is reduced.

With regards to the Prescriptive process, EVT should consider adding the check processing steps that logically follow the prescriptive process to the key process analysis. This would complete the process in a way that it is considered a logically completed process stream from external data supplier (input) to external customer (output). EVT is currently scheduling this work.

## Key Process Improvement Activities

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

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

### EVT's Approach

*Determination of process improvement target metrics* – The improvement target metrics identified by EVT for both processes are: 1) lead time, and 2) amount of re-work to be performed. The selected targets are summarized in Table 1 below. Determination of the target metrics goes hand-in-hand with the next step: development of process improvements.

**Table 1: EVT Initial Processes Baseline and Improvement Target Metrics**

Process	Metric	Baseline	Improvement Target	Percent Improvement
<b>Prescriptive process</b>	Lead time	10-15 days	2-6 days	60-80%
	Rework	50%	5%	90%
<b>Metering process</b>	Lead time	12-142 days	4-96 days	32-67%
	Rework	30%	15%	50%

*Development of process improvements* – The desired process improvement targets influence the process improvements that are required to achieve the targets. Hence, the targets and the improvements are closely intertwined and need to be reviewed in parallel. To align process improvement targets and process improvements, EVT used value stream mapping, a Lean tool that connects process diagrams and process lead times<sup>5</sup>. This makes value stream mapping a useful aid in planning improvement targets.

<sup>5</sup> Lead time is the delay between the initiation and execution of a process. For example, the lead time between the placement of an order and delivery of a new car may be two months.

***Documentation of key business processes*** – When identifying process improvements, EVT generated a future-state process map that documented how the improvement team visualized the improved process. EVT documented the future-state process map by taking a picture of the whiteboard drawing created during the Lean event for future reference.

***Implementation of process improvements*** – The process improvements that are identified during a Lean event are referred to as “Kaizens” in the Lean methodology. EVT’s process improvements team assigned each Kaizen to a team leader. The team leaders took ownership for implementation of the Kaizen. Progress towards completion of each Kaizen is tracked in a status report. EVT presented process implementation status reports to the Operations Leaders and is planning to maintain a quarterly status reporting cycle to ensure the Kaizen implementation is tracked on an ongoing basis.

***Measurement of process performance on ongoing basis*** – To measure the impact of process improvements and to continuously monitor process performance, EVT established process performance measures that are tracked on an ongoing basis. For the Prescriptive and Metering processes, these measures are the same as the process improvement targets: lead time and rework<sup>6</sup>.

***Continuous key business process improvement*** – To maintain momentum on improving the selected processes, the Operations Leaders that Navigant interviewed voiced a commitment to continuously drive process improvement efforts. However, EVT’s main effort at this point is to complete implementation of the identified improvements. Following implementation, EVT’s efforts will shift to improving its remaining key business processes while maintaining the improvements implemented in the Prescriptive and Metering processes.

### **Assessment of EVT’s Approach**

***Determination of process improvement target metrics*** – EVT has set realistic and challenging improvement target metrics for both processes. EVT’s target improvements are almost all above 50% improvement over the status quo. While improvement goals of this magnitude appear overly challenging at first glance, Navigant believes these are realistic because EVT’s process improvement effort is the first formal approach undertaken and plenty of “low hanging fruit” is left to pick. Nevertheless, EVT will need to apply a strong focus to achieve and maintain improvements of this magnitude.

***Development of process improvements*** – EVT’s approach to developing process improvements is thoughtful and presents a good balance between cost effectiveness and desired results. The value stream mapping approach chosen has been practiced for many years in the manufacturing industry and also has been slightly modified and successfully employed in office settings. Value stream mapping is an ad-hoc, event based approach to process improvements that measures current process performance (lead time and cycle time<sup>7</sup>) 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. The process improvements selected by EVT

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<sup>6</sup> Process performance measure tracking for the Metering process is under development.

<sup>7</sup> Cycle time is the period required to complete one cycle of an operation, or to complete a job or task from start to finish.

address process changes and improved documentation/communication to reduce errors and speed up the lead time. These improvements represent a straightforward path to gain impactful process improvements.

*Documentation of key business processes* – EVT’s current process documentation fulfills the requirement outlined in the Order from VT PSB. However, Navigant believes that a more comprehensive process documentation method would be appropriate. By creating an electronic process map, the future-state process map can easily be shared and future reviews and updates are easy to document<sup>8</sup>.

*Implementation of process improvements* – EVT identified and documented the desired process improvements during the Lean event. Each process improvement was assigned to a team lead to further investigate and implement the improvement. To maintain momentum on the effort, EVT must ensure that team leads follow their assigned tasks through to completion. EVT uses status reports to track implementation towards the requested process improvements. Status reports will be generated on a quarterly basis going forward. The status reports are reviewed by the Operations Leaders, who have the ultimate responsibility that EVT follows through with its process improvements.

*Measurement of process performance on ongoing basis* – The success of process improvements should be measured on an ongoing basis and compared to the goals identified in the improvement target metrics. EVT measures lead time and rework for the Prescriptive process. The data is measured on a weekly basis and the reports are reviewed with the Operations Leaders. The process performance reviews provide the Operations Leaders with the information necessary to track the impact of process improvement implementations. Data measurement and reporting for the Metering process is currently under development. Once all reporting metrics are completely defined, data will be measured and reported on a monthly basis.

*Continuous key business process improvement* – With the recent kickoff of the Lean methodology, EVT has not had sufficient time to define a complete continuous business process improvement methodology. Further, EVT 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.

## **Recommendations**

*Determination of process improvement target metrics* – Navigant believes that EVT has set realistic and challenging improvement target metrics for the two selected processes for the current 2012-2014 evaluation period. Going forward to the next evaluation period, EVT could benefit from making sure that further process improvements are identified that would aid in further “fine tuning” these two initial processes and improve process performance further.

*Development of process improvements* – EVT’s current approach to develop process improvements is appropriate for its early stage in process improvements. After the initial process improvements have

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<sup>8</sup> An example of a process mapping application includes Microsoft Visio.



been completed for all key business processes, Navigant recommends shifting the effort of improvements towards more detailed process analysis. For example, a detailed process map that outlines process roles and responsibilities can be helpful to detect process inefficiencies. Another example would include analysis of process data in run charts which helps identify trends or patterns in a process over a specified period of time. The goal of both examples is to reduce process lead time and error rates. Where feasible, EVT may jumpstart these future efforts by starting to collect and store process lead time and error rate data.

***Documentation of key business processes*** – Along with our recommendation to consider more detailed process analysis in the future, Navigant recommends documenting the future-state key business processes in electronic format for future reference. Posting a digital version of the future-state process map at a high visibility location in the office boosts team morale and signifies the importance of the improvement effort. Process diagrams serve multiple purposes in an organization. Apart from identifying process improvements process diagrams also help to clearly align work responsibilities and are an effective training tool for employees new to the team.

***Implementation of process improvements*** – EVT uses status reports to track implementation towards the requested process improvements. The content of the status reports could be further improved by adding a section that tracks progress toward towards specific process improvements identified at the Lean events. Navigant suggests starting with the tables that list all identified improvements and adding columns for progress description and implementation due date.

***Measurement of process performance on ongoing basis*** – As EVT defines additional process improvement target metrics, Navigant recommends tracking these metrics on an ongoing basis and comparing progress towards the goals identified. EVT may find value in developing a dashboard style report that shows trending of several key business processes on one page. In the short term, EVT should focus on data measurement and reporting for the Metering process. This is important because process performance information is vital when implementing process improvements.

***Continuous key business process improvement*** – After the key business processes have undergone an initial Lean review and once a target improvement metric has been established, EVT should define a 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.