Generic Electricity Distribution Company - Asset Maintenance Process Improvement

Executive Summary

MIE463 – Team 12

Background and Scope

The Process Improvement Team will tackle the asset maintenance process at a generic electric utilities company, such as Toronto Hydro. Electric utility companies provide electricity to the public; Toronto Hydro provided 25,373GWh to 761,000 customers this past year. Not only does the asset maintenance process impact hundreds of thousands of people, but in the past few years, it has resulted in increased costs. In 2015, Toronto Hydro spent over $400M to renew aging infrastructure and maintain service and safety. It is also saw a $2.5M increased capital expenditure due to higher reactive costs, in addition to a $14.5M increase in operating expenses due to increased maintenance costs. These numbers shed light on the importance of improving the asset maintenance process.

Maintaining the assets is crucial to ensuring safe and reliable service. This project will evaluate the process of asset maintenance of a generic electric utility company like Toronto Hydro and provide recommendations for improvement through an integrated systems design approach.

Process Analysis

The team underwent several process analysis methodologies including a value added analysis, a cause and effect analysis and process problems to further understand the problem deficiencies. The main problem identified is an inefficient maintance process. The three main causes of this inefficiency has been determined to be:

1. The people
2. The process measurements
3. The process method

To further understand the process goals, the team analyzed the customers and their needs. The process has both internal and external customers; internal being the asset planning and legal departments, and external being the residents of Toronto. Understanding the customers is crucial in defining the needs of the process and the critical to quality characteristics. These characteristics help guide the metrics of success being:

1. The asset maintance cycle (decrease it to 24 hours)
2. The number of missed requests (reduce it to 0)

3. The number of assets reported defect (reduce it to 50%)
4. Data accessibility (up to date and accessible data)

Design Solution

The objectives of the project is to enhance the process ownership amongst the employees, increase the integration amongst the teams involved, increase the reliability of the process, and finally improve the overall flow of the process. The PIT will only investigate the processes from the moment an asset is flagged as defect until the resolvement of the defect. With the problem identified, the team proposed three kinds of approaches:

1. Software Based Solution including:

    a. Centralized database repository with Enterprise Resource Planning software.
    b. Dashboards that allow stakeholders such as the legal department and third-party contractors immediate access to relevant data.
    c. Automated notifications when a work order is still unresolved close to the deadline.

2. Communication Based

    a. Regular interdepartmental team meeting every month to coordinate enterprise strategy and implementation
    b. Regular updates provided to stakeholders
    c. Screens placed in high-traffic areas that provide updates on work orders and their status
    d. Hire a social media coordinator to interact with and provide updates to customers

3. Policy Based

    a. Assign process managers to be responsible for a certain subset of work orders and seeing them through to completion
    b. Change policy on work-order cycle times to be congruent with the realities involved in completing them
    c. Performance-based bonus system that incentivizes completion of tasks in better-than-average time spans

A cost value analysis guided the implementation plan, which includes both short and long term solutions.

Conclusion

With this analysis, the team was able to identity the problems with the process and suggests a number of solutions to help improve it. The team recognizes the potential of some pitfalls and resistance from employees, and explores intervention methods to help move the project forward. With the successful implementation of this project, the team is confident that it will increase the efficiency of the maintance process and reach the goals of the project identified earlier.