



Project Summary

Texas Department of Transportation

0-6065: Integrating Utility Conflict Elimination and Environmental Processes

Background

The interaction between utility and environmental activities in the project development process has not received proper attention over the years. One of the reasons is that, although the collection of data about existing and abandoned utility installations is part of the environmental data gathering process, in practice the collection of detailed underground utility-related data normally starts in the design phase, which typically occurs after the environmental process is complete.

The purpose of the research was to evaluate the feasibility of 1) obtaining better existing utility data during preliminary design and coordinating this activity with the environmental process, and 2) increasing the level of definition of design components during preliminary design without affecting environmental requirements to support the earlier application of utility processes.

What the Researchers Did

To answer these issues, the researchers:

- reviewed utility and environmental processes at TxDOT and other states,
- reviewed potential impacts associated with the TxDOT regionalization plan,
- analyzed optimization strategies,
- developed an integrated business process model and viewer,
- analyzed utility delays and related costs, and
- developed recommendations for implementation.

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What They Found

The review of environmental and utility activities included a review of manuals and business process diagrams, as well as meetings with stakeholders. The meetings with stakeholders also enabled the researchers to gather input from stakeholders about pressing utility and environmental issues and discuss potential strategies to integrate utility and environmental processes. In addition, the literature review and interviews facilitated an analysis of the potential impact of regionalization on the optimization strategies developed during the research and/or the integrated business process diagram.

During the review of current practices and subsequent meetings with TxDOT officials, the researchers identified a number of potential strategies to integrate the utility and environmental processes and to integrate both processes into the project development process more effectively.

The identified strategies were as follows:

- involve environmental and right-of-way staff in planning and programming,
- establish planning advisory teams and support tools,

- coordinate environmental and utility data collection,
- enhance and coordinate preparation of scopes of services,
- require utility owners to verify utility facility information,
- gather some quality level B (QLB) data during preliminary design,
- include some drainage design elements during preliminary design,
- include some design elements during preliminary design,
- address utility issues in constructability review during preliminary design, and
- develop and/or update curricula for utility coordination stakeholders.

An additional strategy discussed with stakeholders dealt with the need to integrate reference manuals at TxDOT more effectively to address the issue of project development process complexity expressed during the recent sunset review process. A review of several TxDOT manuals found issues such as redundancy and inconsistency in structure, information aggregation levels, activity code designations, and supporting documentation such as flowcharts. To address the issue of redundancy and inconsistency, the researchers developed a conceptual framework that replaces the current “silo” approach for manuals at TxDOT with another approach in which the *Project Development Process Manual* becomes a central “bookcase” with thematic shelves that present detailed information related to a topic only once (in its corresponding shelf and volume).

The researchers developed an integrated environmental/utility business process model based on a detailed review of current practices, potential regionalization impacts, and the optimization strategies discussed previously. The development also included a prototype web-based application called TxDOT Business Process Explorer (TxBPE) to facilitate access to project development process information graphically.

A research objective was to measure the economic impact resulting from planned and unplanned utility adjustments, as well as extract information to infer potential economic benefits that would result from implementing the strategies discussed above. However, the type of data needed to conduct a traditional economic analysis was not available. The process of gathering, reviewing, and analyzing available cost data did enable the researchers to develop an understanding of the type and quality of relevant utility-related cost data that TxDOT collects, which, in turn, enabled the researchers to make general observations about specific deficiencies and formulate recommendations for business process changes.

What This Means

Based on these findings, the researchers make the following recommendations:

- implement the 10 strategies discussed above,
- implement the prototype environmental/utility business process model,
- implement TxBPE,
- overhaul the TxDOT manual structure,
- implement a standard for business process models, and
- improve utility-related data recording practices during letting and construction.

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