Managing Utilities in Kentucky
SHRP2 CASE STUDY

SHRP2 SOLUTIONS
STRATEGIC HIGHWAY
RESEARCH PROGRAM

Managing Utility Conflicts in Kentucky through the SHRP2 Solution:
Identifying and Managing Utility Conflicts (R15B)

Photos courtesy: District DOT, FHWA, FEMA

Challenges in addressing utility conflicts

Utility relocations are a significant investment for departments of transportation (DOTs) and utility companies. This investment in Kentucky can easily total in the tens of millions annually, so minimizing the cost holds intrinsic value to the DOT. As a result, the Kentucky Transportation Cabinet (KYTC) is working to streamline and create standard procedures for its designers and utility experts, while minimizing utility conflicts.

Although the KYTC has worked effectively with its utility companies in the past, the second Strategic Highway Research Program (SHRP2) opened the door to an opportunity to improve this coordination. By incorporating new methodologies developed through *Identifying and Managing Utility Conflicts* (see sidebar), the agency is enhancing and upgrading its current tracking database while offering training to all potential users.

Under KYTC's prior utility program, roadway projects were often designed to a significant degree before utility companies were actively involved. Consequently, utility relocations could not be completed prior to road construction. In some cases, this situation set up serious consequences, such as increasing the potential for utility strikes. These strikes can delay the roadwork and traffic, be a safety concern, and result in a loss of utility services. The possibility of utility strikes and longer construction and design time frames can also lead to added costs.

No clear standards or policies for utility conflict identification existed to help designers communicate and mitigate utility conflicts during the design process. In addition, with 12 separate KYTC Districts, the process of identifying and managing utility locations was inconsistent.

UTILITIES & RAILS
KENTUCKY TRANSPORTATION CABINET

Kentucky's implementation activities have led to the development of new, "smarter" software that may be applicable to other states.

KYTC developed a new vision for executing its utility program based on initial SHRP2 research findings conducted by the Transportation Research Board (TRB). Working with its information technology (IT) staff, analysts, and central and District office utility branches, they designed

What is the SHRP2 Solution, *Identifying and Managing Utility Conflicts*?

Identifying and Managing Utility Conflicts (R15B) was developed through the second Strategic Highway Research Program (SHRP2) to help public agencies, utility companies, and transportation professionals improve the overall process of minimizing utility relocations on highway improvement projects.

By using the tools and methodologies included in the product, these agencies can identify, resolve, and manage utility conflicts, which will ultimately expedite the project development process.

The materials included are:

- Utility Conflict Data Model and Database (UCM)
- Utility Conflict Matrix (UCM) Training Course

Seven state departments of transportation are now implementing *Utility Conflicts* through the FHWA/AASHTO Implementation Assistance Program. This case study documents activities underway in the Kentucky Transportation Cabinet to address utility conflict management during roadway project process.
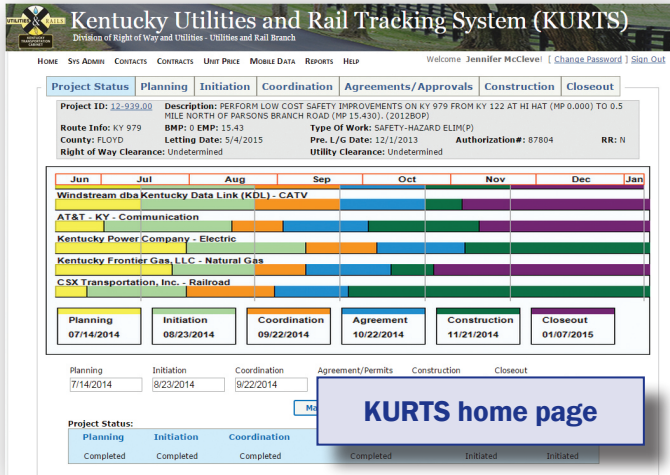
KURTS screen shot:

KURTS home page

the Kentucky Utilities and Rail Tracking System or KURTS.

Deployed in March 2014, KURTS is a database that allows utility and design subject matter experts to access project information remotely and securely with an Internet connection. The system provides a streamlined experience for approval of relocation plans, agreements, and invoices, as well as the ability to view utility relocation change orders and project status changes.

The system is intuitive and requires minimal training. The database has been designed to retain historical records of all documents. With a diverse set of audiences, KURTS allows all users to interact with the utility conflict matrix (UCM) in ways that are most helpful for them and their organization.

Multiple Benefits

"*If you don't identify utility conflicts on the front end of a project, the costs can be significant ….the SHRP2 Utility Conflict Matrix enables utility subject matter experts to communicate with design subject matter experts in a forum that is standardized and understandable to both.*"

—Jennifer McCleve, Branch Manager for Utilities and Rail, KYTC

Utility companies will have read-only access to the status of invoices and change orders. Four utility companies are working with KYTC to pilot KURTS, including Columbia Gas, Duke Energy, and two small municipal water companies. Currently 390 active projects at various degrees of completion throughout the 12 District offices have been entered into the system.

Steps to enhance KURTS using SHRP2 funding and technical assistance are underway.

Now KYTC is using the funding and technical assistance provided by the SHRP2 FHWA/AASHTO Implementation Assistance Program to improve upon the UCM already built into the first release of the system. The implementation, named KURTS Release 2, involves the expansion of the UCM to include the collection of alternative solutions for each conflict. These alternatives can include cost comparisons and schedule impacts, thereby giving KYTC decision makers a clearer perspective of the potential impacts to the road project as a whole. Release 2 will also enable the field collection of relocation inspection logs and the establishment of a database to collect historical unit prices.

As part of the statewide roll out of KURTS Release 2, Kentucky will be developing instructional materials to allow new users to learn about the system and educate themselves on its functionality and potential. The KYTC

is currently updating its processes and procedures for utility coordination within the system, and making UCM and inspection data collection available through mobile applications. This will allow for real-time and spatially tied project updates in the field or in the office.

With the development of KURTS Release 2, efforts are under way to ensure that highway design and utility

As part of SHRP2 implementation, upon completion of KURTS Release 2, KYTC has offered to work with other states to share their findings in regard to the development of this utility coordination management system, UCM, and mobile device application.

staff are aware of the advantages of bringing utility coordination earlier into the project planning and design process. In July, KYTC will hold a two-day workshop with its utility and design staff to discuss how the utility conflict matrix will work in KURTS. In August, an annual conference held in Kentucky will provide an opportunity to educate other potential users about KURTS and utility conflict matrix concepts. The conference will be a platform to help educate utility subject experts, consultants, and

What's in the KURTS System?

KURTS is web-enabled, using SQL Server database written in .NET C#. Documents are stored in Sharepoint (Version 2012); and can be used with mobile devices (tablets) using ArcGIS for Mobile.

Capabilities and information included:

- Project search by county, district, utility company

- Links to preliminary line and grade projects

- Links to spatially enabled data

- Program to create cost estimates, spend-down plans, funding requests

- Program to create standardized letters and agreements

- Access to invoices, change orders, and status of agreements

- Tracking capability of all documents

- Capability for utilities to upload and share documents: facility maps, relocation plans, and estimates

- Electronic approvals of documents maintained in the system

Lessons Learned During Implementation

Kentucky identified four specific users for their system: utility matter experts, design matter experts, project consultants, and utility companies. Each user comes into a project with a wide range of skills, knowledge, and capabilities. Developing a standardized and technologically based system in an industry with few standard protocols has been a challenge for the transportation agency. Implementing the utility conflict matrix (UCM) as part of KURTS is expected to encourage improvements to existing business processes and utility coordination. As more users engage the system and the UCM, the value will become evident and become incorporated into standard project development practices in Kentucky.

Benefits of Using a Utility Conflict Matrix

By using the tools and methodologies included in the product, these agencies can identify, resolve, and manage utility conflicts, which will ultimately expedite the project development process.

Capabilities and information included:

► Lists all utility conflicts to aid in coordination and resolution

► Provides alternative conflict resolution pathways

► Provides opportunities to avoid and minimize impacts, not simply relocation

For more information on the KURTS system or on Kentucky's Utility Program, contact Jennifer McCleve at jennifer.mccleve@ky.gov or by calling 502-782-4944.

For information on the SHRP2 implementation of *Identifying and Managing Utility Conflicts*, contact Matthew DeMarco at FHWA, Matthew.DeMarco@dot.gov or 720-963-3520, or Keith Platte at AASHTO, at kplatte@aashto.org or 202-624-3697.

KURTS Release 2: Mobilization of KURTS through Mobile Device Data Collection

KURTS

Inspection and conflicts are created in KURTS with location information captured in both the KURTS database and the SDE server.

Data Storage

Spatial coordinates stored in both KURTS and the SDE server. This feature accommodates access to saved conflicts using the mobile devices.

Mobile Device Docking

Using MS Excel, project data is downloaded to the mobile devices. The docking process uploads data to the KURTS and SDE databases. Photos are uploaded to the SharePoint repository.

Field Collection of Inspection and Conflict Data

Field data is collected using 'out of the box' software. All information collected on Inspections are considered a new inspection. Conflicts can be created in KURTS and edited using the mobile devices.

Share Point

SDE (SQL)

KURTS (SQL)

Utility Conflict Matrix
Conflict Location
Conflict Type/Detail
Attributes of Utility(s)

Inspections
Per Project / Per Agreement
New Inspection Location
Date of Inspection
Inspection Attributes (Subset of Inspection Data)
Inspection Status

Excel Spread Sheet

Project ID
Agreement ID
Primary Utility Company
Additional Utility Company
Utility Contact Names

Phone Numbers
Agreement #'s
Agreement Type
Agreement Amount