Omaha Public Power District and Primavera: Automating the Transmission and Distribution Schedule

Project Management Highlights:

- Integration between Primavera and work order management system
- Seasonal trends modeled using Primavera for forecasting

Omaha Public Power District (OPPD), Omaha, Nebraska, has improved scheduling of its transmission and distribution operations by implementing a new planning system. Using past methods, schedulers were so occupied with maintaining paperwork that there was little time left to address strategic issues. Switching to a more sophisticated project management system has streamlined the planning and scheduling process, which enabled more intelligent decisions based on more accurate information. "Primavera® software has improved our ability to manage and control the scheduling process," said Tom Larsen, Supervisor, Transmission and Distribution Construction Services for OPPD. "It reduces the chances that jobs will slip through the cracks and help us balance resources against our workload with a much greater degree of accuracy than was possible before."

OPPD is one of the largest publicly owned electric utilities in the United States, serving more than 280,000 customers in 13 southeast Nebraska counties covering 6,000 square miles. It is a business-managed electric utility, organized in 1946 as a political subdivision of the state of Nebraska. A public corporation, OPPD receives no tax support of any kind and serves 53 towns and surrounding farm areas in 13 southeastern Nebraska counties. The total number of customers served has more than tripled since 1947, OPPD's first full year of operation. The average annual kilowatt-hour usage by OPPD residential customers has increased by more than six times since that first year. In 1999, the average cost of electricity for the utility's residential customers was 6.92 cents per kilowatt-hour, which compares favorably with the national average.

Balancing Different Types of Jobs

The transmission and distribution section of OPPD operates five construction centers and one service department that are

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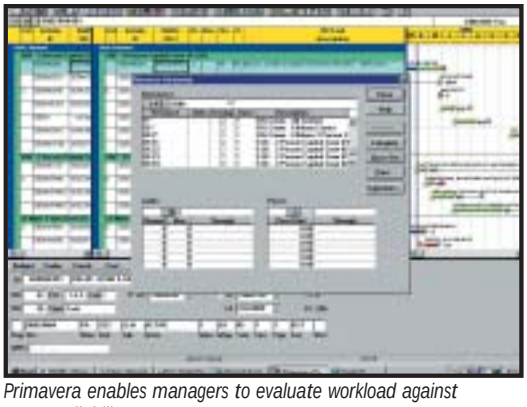
responsible for, first and foremost, restoring power in the event of an unplanned outage. Beyond reactive lights-out emergencies, the next priority is customer-driven projects such as a new business or subdivision that requires a new feeder line or additional distribution capacity.



Primavera enables managers to evaluate workload against crew availability.

Preventive maintenance and projects that are designed with a long-term impact that do not directly affect individual customers are given lower priority. Many projects in this category involve service guarantees. The job of the project manager is to carefully allocate resources between each of these jobs, devoting extraordinary resources to restoring service to a customer that has lost power while never ignoring the longer-term projects whose completion will substantially improve the company's transmission and distribution networks.

In the past, the schedulers that focused on the transmission and distribution area were heavily reliant on manual tools, essentially paper forms, and scheduling boards. Scheduling was accomplished using a spreadsheet or scheduling board and a work management system that was not enterprise-wide in nature. The biggest problem with this approach was that the schedulers were able to assign jobs to crews, but did not have an easy method of determining whether the crew was really able to complete the job in the required period of time. Even worse, multiple individuals could easily assign work to the same crew or reschedule jobs, resulting in little accountability to ensure the work was completed within the required deadlines.

Centers Operated in Isolation

Larsen was one of the early leaders to drive towards implementation of a more sophisticated scheduling and planning process. "The number one factor that led us toward improving this process was that each of our center's schedules operated essentially in isolation from the others," comments Larsen. "That made it difficult to move jobs and resources from one center to another. It was fairly easy for an individual center to ensure they were working on the right job at the right time in their geographic area, but we were not always able to ensure that the collective resources of the district were always doing the right work at the right time. Additionally, we felt there were opportunities for improvement by using a more sophisticated tool to balance workload with resources and dramatically improve allocation of resources at the corporate level."

To meet its needs, OPPD selected Primavera planning and scheduling software because it was capable of handling large-scale, highly sophisticated, multifaceted projects from a single database. Primavera also provided application-simultaneous access to project files by multiple users throughout the project.

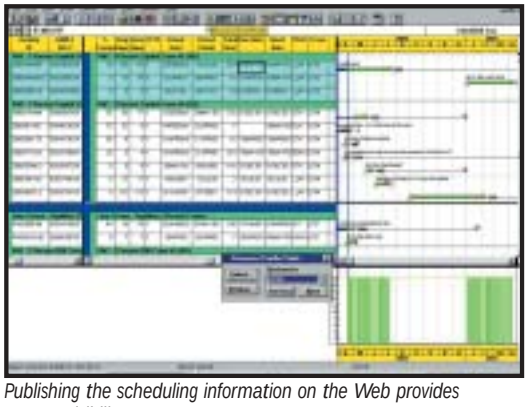
Managing Resources as Well as Projects

Forecasting techniques are used to model seasonal trends and adjust availability.

The key advantage of Primavera software is that it manages multiple projects and resources, making it easy to evaluate workload versus crew availability. "All five construction centers and the distribution engineering center can now be managed in an integrated fashion, showing construction and engineering relationships that weren't visible in the past," stated Larsen. "The project management system tracks the amount of time available for each crew and the projects that have been assigned to it. This has helped alleviate the problem of unequal allocation of projects between crews. In addition, the overall resource versus workload balance can be evaluated. When it becomes clear that customer workload has exceeded our capacity, we acquire contractor resources. Also, it is possible to provide more precise completion time estimates to customers."

OPPD developed an interface in C++ from Primavera to their work management system, called Passport. The interface program runs once a day and automatically

transfers all of the work orders over to the planning and scheduling system. The information transferred includes the description, location, size, deadline, skills required, and other information about the job. The interface also calculates an availability factor to account for sick leave, vacation time, union business, and interruptions due to inclement weather. The availability factor is also used to account for reactive work such as power outages. "We do not know exactly when these events will occur," explains Larsen, "but we can use forecasting techniques to model seasonal trends and adjust the availability factor accordingly. This factor is based on historical work force management data."



Publishing the scheduling information on the Web provides greater visibility.

New Scheduling Cycle

OPPD maintains a one-week scheduling cycle. An e-mail feature in Primavera generates automated messages to supervisors each day prompting them to record the status for each of their projects. When the e-mail is returned, the scheduler reviews the message and automatically enters it into the project upon approval. In cases where questions arise, supervisors at the individual construction centers are contacted to ensure that the scheduling system accurately reflects the current status of the project. Every week, schedulers meet with project managers from each of the five centers to review percentage of completion data.

On a regular basis, schedulers sit down with engineering and review the relationship between engineering and construction to see if the transmission and distribution projects are on track. Schedulers also meet with the customer sales staff and construction crews once a week to evaluate progress on these jobs. Service representatives working with smaller customers maintain close contact with their customers so they are able to help prioritize their jobs. After these meetings have been completed, schedulers lock in the schedule for the next week.

Distribution of Scheduling Information Via the Web

OPPD's scheduling process is normally completed every Friday by noon. Primavera is then used to generate Web pages on the company's intranet that provide the schedules for the next week. Each center has different pages for complex projects, job assignments, and a resource profile that shows availability for the next four weeks. Publishing the scheduling information on the Web provides greater visibility. Field supervisors, material planners, and managers can access the schedule at any time from their desktops or remote locations. This makes it possible for supervisors to plan their work a week in advance and eliminates delays caused by waiting for assignments or not having the right materials. The OPPD management team is considering to provide customers with access to some of the Web data to further streamline their communications process. The ability to easily post schedules on the Internet provides greater visibility to everyone involved in the scheduling process.

"In the near future, we are planning to upgrade Primavera, which will further increase our ability to schedule projects and resources across the entire organization," comments Larsen. "The ultimate target is to integrate the entire transmission and distribution resources into a single master plan."

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