Paris Session 2022

Benefits and Lessons Learned from Implementation of Intelligent Substation Design

Study Committee B3
PS3.3 Are benefits already recognizable regarding cost reduction for operation and maintenance and increase of reliability?

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Benefits Observed by Early Adopters of Building Information Modelling (BIM) Tools and Workflows

- For protection and control drawings, an estimated 40% reduction in designer time.
- For physical design, potential for 30% to 70% reduction in design time when digital assets can be reused.
- Faster approval, construction, and commissioning of substations.
- Significant reductions in change orders during construction, leading to cost savings of 1% to 4% of total contract cost (US$100,000 to $300,000 or more per substation), depending on project size/complexity.
- Total cost savings between 3% and 7% of project budget.

Lessons Learned

- Utility leadership needs to engage actively in change management to ensure a successful transition.
- There is a significant learning curve for use of BIM-based design tools, and proficiency requires extended use of tools after training.
- Adopting BIM technology requires implementing a system for organizing and managing a multitude of electronic files.
- Adoption of BIM can help to recruit designers who want to use this new approach.
- When evaluating the business case for BIM-based design, utilities need to look at the complete lifecycle of a substation—including construction, operation, and maintenance—to document value added.

Thank you for your attention!