AutoCAD®
Utility Design

Model-based design for electric utility distribution networks.

Rendering of a street corner view showing overhead electric distribution lines and underground service lines. Rendered in Autodesk® 3ds Max® Design software.

Autodesk®

Design. Analyze. Deliver.

Streamline design layouts, optimize asset selection, and automate delivery of documentation in a familiar AutoCAD environment.

We automated our time-consuming procedures, yielding significant efficiencies and improvements to our design process.

—Ray Pearce
Municipal Light & Power
Anchorage, Alaska

AutoCAD® Utility Design 2012 software is a model-based design solution for electric utility distribution networks that combines design and documentation with standards-driven workflows and analyses. Utility designers and engineers can improve productivity, analyze and optimize network performance and reliability, and deliver more consistent and coordinated construction documentation—all in a familiar AutoCAD® environment.

Adapt to a Changing Utilities Environment
Infrastructure is changing. Aging infrastructure, smart grids, and urbanization cause more work and more complex designs for utilities and their design partners. AutoCAD Utility Design drives greater consistency and helps to make designers more productive with easy-to-use, rules-driven templates and workflows.

The workforce is changing, too. Knowledge transfer is critical to maintaining productivity and consistency across designers. New engineers and drafters often have to correct designs multiple times to achieve internal and industry standards. AutoCAD Utility Design introduces rules-based, standards-driven design that builds intelligence into the solution and provides analysis tools that help create consistency across design teams.

There is greater-than-ever emphasis on accountability and transparency. Utilities are required to provide more information on networks and assets to stakeholders and regulatory agencies. With records backlogs and project data in silos, network information can be inconsistent, leading to delays or rework with maintenance, operations,

or reporting. AutoCAD Utility Design can share industry models and intelligent engineering design information with AutoCAD® Map 3D 2012 software, as well as other geographic information and operational systems to minimize backlogs and create a single source of truth.

Design: Model-Based Productivity and Consistency
Design overhead and underground electric distribution networks in a familiar AutoCAD environment, more quickly and easily evaluate alternatives, and generate construction drawings and bills of materials (BOMs). Use the powerful data access tools to create intelligent base maps from contractor drawings, geographic information system (GIS) data, and external imagery and data sources. Extend the power of AutoCAD software with industry-specific design tools that create an intelligent 3D connected network model as you design. Create and lay out designs more quickly and easily with standards-driven, easy-to-use templates and workflows, and access a user interface that takes you through the process with access to feature information, validation results, and materials editing and analysis.

Build more intelligence into the design process with rules-driven engineering standards that utilize shared templates and workflows to help drive consistency across design teams.

- Use the intuitive, natural language rules engine to build on the preconfigured industry standards.
- Implement design standards for asset type—such as wire, transformer, equipment, and structures—and status, such as existing install or remove.

Construction of ducts. Image courtesy of Kansas City Board of Public Utilities.
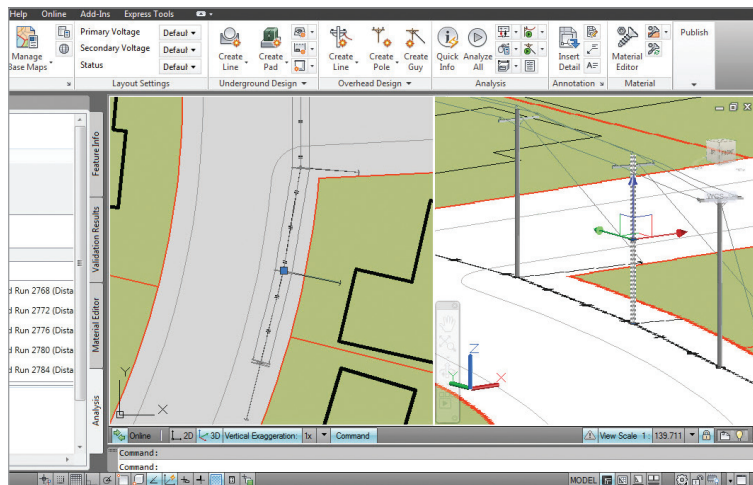

Create intelligent models as you design.

Analyze: Optimize Designs and Enhance Reliability

Streamline selection and placement of facilities with predefined engineering rules that are applied during the design process. AutoCAD Utility Design provides a comprehensive set of rules-driven engineering tools, including voltage drop and flicker calculations; underground cable pulling tension; overhead sag calculation for wind, ice, and temperature; and pole sizing and guying. These calculations help you correctly size and locate facilities based on utility standards.

Improved engineering reports enable you to make design changes and generate updates on the fly. Reducing extra steps during important tasks, such as calculating voltage drops and sag, helps to optimize the material ordering process.

Deliver: More Consistent, Coordinated Construction Documentation

Simplify delivery of construction documentation and improve the design-to-construction process by automating the delivery of a coordinated construction model that better conforms to cost and materials estimates. Automating this process can help save time and money: it provides a more complete, standardized, and accurate materials list to help reduce rework, truck rolls, and material costs, as well as greater accuracy for budgeting and cost planning during construction. Deliver your project construction documentation—all estimated costs, materials, and construction details—in a single package. A complete BOM report is

automatically created, and you can associate the materials with unique stock numbers from your materials management or inventory system.

- Integrate with work management to automatically assign jobs, enabling designers, estimators, and planners to directly manage work orders related to the design.
- Integrate with materials and billing to generate a complete report of material and labor cost estimates and automatically populate construction documentation.
- Integrate with asset management and financial systems to "close the loop" on projects and properly account for assets.

Collaborate by sharing intelligent industry models across design teams and throughout the plan-design-construct-manage lifecycle. Make the design model available to GIS and records management, providing necessary symbology and attributes to help minimize as-built backlogs. Share an intelligent design, including geospatial and 3D information, within the context of the existing environment with visualization tools for proposal development or stakeholder communications.

For more information, visit **www.autodesk.com/autocadutilitydesign**.

AutoCAD Utility Design helps engineers select the right equipment and materials for the job. That can save money by preventing over-engineering and save time by ensuring crews bring the right material quantities to job sites.

—Tim Benedict
Colorado Springs Utilities

Applying Building Information Modeling (BIM) to Utility Networks

BIM is an intelligent model–based process that provides insight for creating and managing building and infrastructure projects faster, more economically, and with less environmental impact. The adoption of BIM continues to spread across the architecture, engineering, and construction industry, and its benefits can easily translate to the complexities of the utility industry.

Traditionally, individual users working on CAD applications drafted utility networks and delivered construction drawings in paper or CAD files. Then, designers started to use GIS data as the base maps for design. Now, applying the principles of BIM to utilities, designers and engineers can:

- Access GIS and design data in a single cohesive model
- Document and lay out networks with rules-driven productivity tools, standards, and workflows, and evaluate multiple options during the design
- Simulate loads and demands during the design process, and analyze design alternatives in the context of current conditions
- Automate processes for documentation: designs, materials, and costs estimates
- Visualize and share data with project stakeholders
- Collaborate and share intelligent industry models throughout the plan-design-construct-manage lifecycle

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