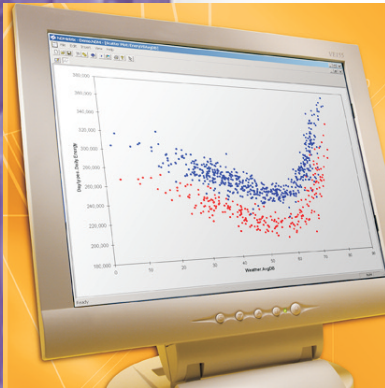


MetrixND[®]

specifications

MetrixND[®] Energy Forecasting Tool



Overview

Itron's MetrixND is a flexible modelling tool, widely used by top energy forecasters at major utilities and energy providers throughout the world. MetrixND gives users advanced modelling techniques to develop the accurate forecasts essential for making informed business decisions.

Designed to take advantage of advanced Windows capabilities, MetrixND's intuitive user interface and drag-and-drop architecture streamlines the development of forecasting variables and models. Evaluation graphs, diagnostic statistics and reports are readily available to assist in developing and analysing forecasts. This interactive design strategy allows forecast analysts to quickly evaluate alternative models and select the one that works best.

MetrixND techniques include:

- > Exponential Smoothing
 - Ideal for projecting customer growth trends that support monthly sales and peak forecasting applications.
- > ARIMA
 - For experienced time series professionals who want to see how historical data patterns extend into the future.
- > Regression
 - No other tool allows users to build multivariate models faster
- > Neural Networks
 - Essential for short-term forecasting where modelling the non-linear response between loads and weather matters most.



MetrixND forecasting applications

- > Monthly sales and revenue
- > Long-term energy demand
- > Short-term hourly and sub-hourly loads
- > Retail load schedules
- > Model-based load profiles
- > Daily or hourly gas send-out
- > Market price
- > Point-of-delivery loads
- > Individual customer loads

MetrixND features

- > Integration with Existing Data Sources
 - MetrixND works with Excel spreadsheets and a variety of databases, including Access, MV-90, MV-STAR, ORACLE, and SQL Server.
- > Data Frequencies
 - Works with all data frequencies: sub-hourly, hourly, daily, weekly, monthly, quarterly, and annually.
- > Graphical Analysis
 - Provides the most informative diagnostics and powerful graphics capabilities at the click of a button, helping users see, understand and present forecasts.
- > Variable Creation
 - Creates analysis variables as needed using spreadsheet-like formulas that enable different approaches and variables without you having to learn a programming language.
- > Hourly Modelling
 - Rapidly develops hourly or sub-hourly models that are calibrated automatically to forecasts for daily energy and peak demand.
- > Model Comparisons
 - Compares alternative model specifications to allow users to make a fast and efficient selection from the various alternative models.
- > Simulations
 - Monthly variance analyses can be created by simply dragging-and-dropping alternative forecast drivers into the model to view the impact on the forecast.
- > Time Series Residuals
 - Provides a one-step process for including a time series model of the residuals to improve the overall forecast.
- > Quantifying Forecast Uncertainty
 - Constructs dynamic confidence bounds using the GARCH option in the regression and neural network models.
- > Visual Basic for Applications Module
 - Microsoft's VBA is integrated in MetrixND, and therefore enables users to write powerful macros to build any MetrixND element, including models and modelling variables.

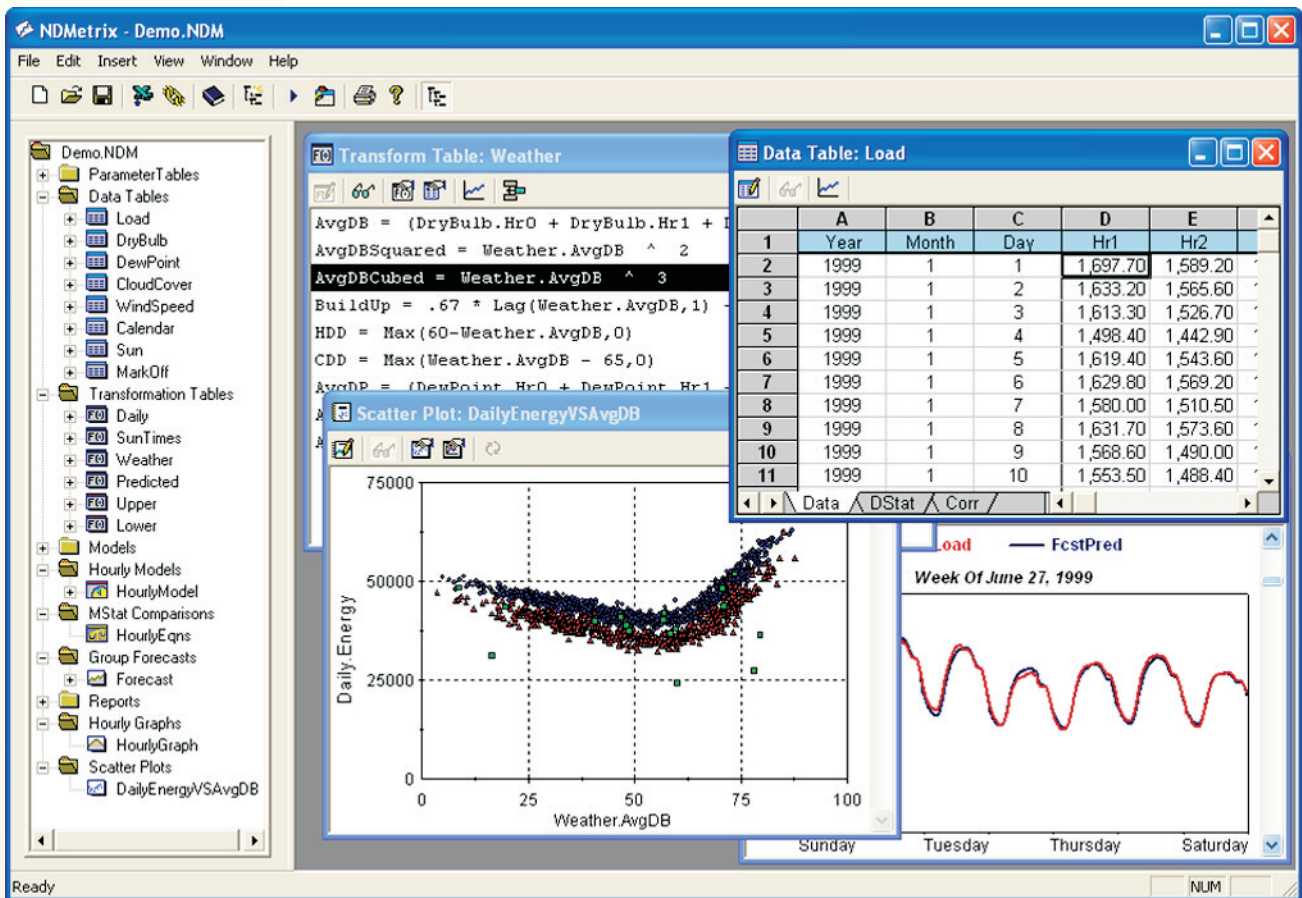
Neural network options

MetrixND builds customised neural network models quickly and efficiently to specify:

- > The functional forms of the nodes in the hidden layer
- > Customised variable lists for each node
- > The inclusion of time series residuals
- > The inclusion of GARCH residual variances
- > Test periods for model evaluation
- > The exclusion of bad spots in the data

Accelerated optimisation

Uses fast optimisation algorithms to reduce training time. As new data becomes available, continued model learning takes only a few seconds.



MetrixND user interface.

Applying MetrixND

Short- and long-term hourly forecasting applications

No other package provides the modelling power and flexibility of MetrixND. Models are customised to optimise accuracy for each location. The MetrixND modelling system allows users to quickly and efficiently evaluate load data and weather relationships, and compare the relative accuracy and stability of alternative model specifications.

Financial forecasting

Financial forecast applications cover a range of topics, including customers, sales volume, peak, revenue, variance analyses, normalised sales and revenues. MetrixND helps users estimate forecast models, generate sector sales forecasts and calculate weather impacts. Results can be exported for generating forecast and variance analysis reports.

Retail and delivery point forecasting

MetrixND supports Itron's retail and delivery point systems with sub-hourly, hourly or daily forecasts. Forecasts are created for portfolios of retail customers or lists of delivery points, where a portfolio can change on a daily basis. For individual customers or delivery points, the system provides a set of templates that are assigned on the basis of the load's properties. This allows simple models to be used for calendar-driven loads, whereas more complex models are used for loads driven by weather, price or other factors.

A knowledgeable user community

More than 120 energy service providers use Itron's forecasting tools. Licensed users have access to industry experts in energy forecasting, a quarterly newsletter to update users on the latest forecasting techniques, and an annual meeting to bring together industry peers.

profile

Itron

Itron is a leading technology provider and critical source of knowledge to the global energy and water industries. More than 3,000 utilities worldwide rely on Itron technology to deliver the knowledge they require to optimise the delivery and use of energy and water. Itron delivers value to its clients by providing industry-leading solutions for electricity metering; meter data collection; energy information management; demand response; load forecasting, analysis and consulting services; distribution system design and optimisation; web-based workforce automation; and enterprise and residential energy management.

To know more, start here: www.itron.com/global



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