



### Proven success at OG&E Electric Services

Using our combined solution approach, we developed long-term energy sales and customer forecasts for OG&E Electric Services. The SAS Forecast Server hierarchy focused on geography, revenue and rate classes, as well as customer segments, as defined by business or dwelling type and usage profile. As a result, OG&E is now better able to:

- Match capital improvement and expansion budgets to areas with higher growth rates.
- Manage the utility by adding new resources “just in time.”
- Forecast revenue and earnings by differentiating customers by their load characteristics, geography and weather sensitivity.
- Identify customer needs, and how they can benefit from energy efficiency and value-added services.
- Develop more cost-effective, targeted marketing efforts.



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TO KNOW**<sup>®</sup>

## SAS and Cadmus: Producing Multidimensional Electricity Demand Forecasts in Record Time

### Precise forecasting is a must for utility executives

Electric and gas utilities have traditionally developed load forecasts to predict the capital expenditure requirements necessary to meet long-term load requirements. They also use load forecasting to provide weather-normalized energy sales and revenue forecasts for near-term operational planning and budgeting.

The demand for timely, accurate forecasting has never been greater. Today's utility executives need to know:

- Where is load growth expected to occur on the distribution system?
- How much do growth rates vary across our territory?
- What kinds of customers are contributing to growth?
- What areas are going to see declining or even negative sales growth?
- What can we do to meet customer needs and manage growth better?

Utilities' needs have evolved and the level of accuracy and depth of information they require has increased. Although it was acceptable to be within +/- 5 percent a generation ago, utility executives now want forecast errors to be no larger than 1 percent.

Moreover, the traditional top-down aggregation into residential, commercial, industrial and governmental customer sectors no longer meets utility business requirements. Better, faster forecasting is now a must. Until recently, getting this type of detailed, disaggregated forecast information required a considerable – and unacceptable – investment of time and human resources.

### Cadmus and SAS provide a solution

Cadmus combines traditional top-down econometric load forecasting techniques with the sophisticated forecasting abilities of SAS<sup>®</sup> Forecast Server to quickly address thousands of related, disaggregated series. The resulting solution produces a series of rich, multidimensional forecasts that simultaneously maintain forecast accuracy requirements. It combines the best elements of top-down econometric and bottom-up SAS Forecast Server capabilities by:

- Adding the top-down model specifications to the SAS Forecast Server model repository. This allows each node in the hierarchy to choose a structural model dependent on weather and economic activity, in addition to the library of time series algorithms built into SAS Forecast Server.
- Fully calibrating the bottom-up forecasts to the top-down forecasts, ensuring that the long history of accurate load forecasting is transferred to the disaggregated forecasts.

Our combined solution provides detailed comprehensive forecasts that are both timely and accurate.

## Benefits of the SAS and Cadmus partnership

With the SAS and Cadmus partnership, utilities gain superior analytics that leverage their investments in customer billing/transaction, customer information and SCADA systems. All this data is transformed into answers – providing detailed, comprehensive and mutually consistent forecasts that support activities such as:

- Generation, transmission and distribution resource planning.
- Capital and O&M budgeting.
- Revenue forecasting.
- Retail marketing and customer management.
- Risk assessment of the activities mentioned above.

## SAS® Forecast Server

SAS Forecast Server generates large quantities of high-quality forecasts quickly and automatically, enabling organizations to plan more effectively for the future.

The SAS solution:

- Provides forecasts in a quick and timely manner through a user-friendly graphical interface.
- Generates forecasts that reflect the realities of business, improving your ability to plan future events with confidence.
- Improves forecasting performance across all products and locations, at any level of aggregation.

## About The Cadmus Group

Since 1983, employee-owned Cadmus has helped government, nonprofit and corporate clients address critical challenges in the environmental and energy sectors. Our multidisciplinary practice areas include Drinking Water and Water Quality, Communications and Social Marketing, Energy Services, Risk Assessment, Environmental Impact Assessment and Environmentally Sound Design, and Environmental Management. Our Energy Services Division was formed in May 2008 through a Cadmus merger with Quantec, a SAS Alliance member specializing in measuring and predicting customer behavior impacts on energy, financial and natural resources.

Many of our senior consultants are nationally recognized experts in their fields and several serve on high-level US government science advisory boards. Their deep SAS technical expertise delivers results in the rapid development and deployment of superior analytics and predictive models.

## About SAS

SAS is the leader in business intelligence and analytical software and services. Customers at 44,000 sites use SAS software to improve performance through insight from data, resulting in faster, more accurate business decisions; more profitable relationships with customers and suppliers; compliance with governmental regulations; research breakthroughs; and better products and processes. Only SAS offers leading data integration, storage, analytics and business intelligence applications within a comprehensive enterprise intelligence platform. Since 1976, SAS has been giving customers around the world THE POWER TO KNOW®.

### Company Facts

#### SAS:

- Is used by 96 of the top 100 companies on the 2007 FORTUNE Global 500® list.
- Has a 98 percent customer renewal rate.
- Is the world's largest privately held software company.
- Reinvests more than 20 percent of revenues in R&D each year.

#### Cadmus:

- Was twice named as one of Inc.'s 500 fastest-growing companies.
- Has a staff of 250 that includes scientists; engineers; statisticians; economists; MBAs; marketing, public relations and communications professionals; information technology specialists; and public policy analysts.
- Is a SAS Alliance Gold Member.



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