



# Advanced Risk Management

Dominion mitigates its risk exposure with SAS®

## Industry

Energy and Utilities

## Business Issue

Needed a system that could calculate the value of Dominion's energy portfolio at any given time to mitigate financial risk, and generate management and regulatory reports with confidence.

## Solution

SAS for energy trading and risk management and SAS Enterprise Guide

## Benefits

The solution delivers timely and accurate valuations of commodity transactions and assets, produces accurate management and regulatory credit risk reports, enables faster decisions and more efficient market response.

No one can predict with any certainty what will happen tomorrow. Just ask any company engaged in trading energy commodities. With extreme price volatility the norm, predicting exactly where prices are headed – when they will spike or fall – and reducing risk on each commodity is a challenging task. To survive, energy companies today are increasingly enhancing traditional risk management with advanced analytics, to deliver real-time information that supports smart assumptions about all future transactions, which in turn helps to mitigate market, credit, regulatory and even reputational risk.

Headquartered in Richmond, VA, Dominion is one of the largest electric and natural gas companies in the US, serving more than 5.7 million retail energy customers. With a portfolio of energy assets – including 27,600 megawatts of generation; 12,000 miles of natural gas transmission, gathering and storage pipeline; 6,000 miles of electric transmission lines; 947 billion cubic feet of natural gas storage capacity; and retail energy customers in 14 states – Dominion is using SAS for energy trading and risk management to deliver timely and accurate valuations of its commodity transactions and assets, and SAS® Enterprise Guide® to deliver its management and regulatory credit risk reports.

### Faster decisions and market response

“We use SAS for mark-to-market (MTM), value-at-risk (VAR), stress testing and scenario analysis and position reporting,” explains Joe Cooper, Director of Risk Analytics at Dominion. “Dominion's trading focuses around the hedging of our large asset portfolio. We trade every day in natural gas, power, oil, emissions and coal

commodities and calculate the value of each trade and our position on them. We want to know what the value of our portfolio is and how it might change – SAS allows us to do that in a timely fashion so that we can react to changing operational and management conditions with greater speed. This translates into faster decisions and more efficient market response.”

Every day, Dominion uses SAS to value its portfolio and calculate its positions in hundreds of markets, using real-time pricing and transaction system feeds. The results are used to deliver reports through a portal, which commodity traders, business analysts, business line managers and senior management analyze and base their decisions on.

“We've been using SAS to manage our risk for 10 years and I think we've done that very well,” says Cooper. “Part of our success is due to our ability to forecast what might happen in the future, allowing management to consider all of the different possibilities before making decisions. No one knows the future, and no one knows what commodity prices will be tomorrow, but what we can do is generate probabilities of what they might be. By using these forecasts, we're able to see the total possible value of our portfolio.”

“The SAS risk management solution is flexible and customizable,” says David Holden, Vice President of Risk Management. “It allows us to take a very solid core product and customize it to our own business, our own needs and our own ideas about what risk management is. Without a doubt, Dominion is making better business decisions based on our enterprise risk management systems.”

“SAS allows us to develop what we need quickly and accurately. It's very powerful and it enables us to react fast to changes in the market.”

**Joe Cooper**  
Director of Risk Analytics, Dominion

### Reducing financial losses

According to Cooper, one of the main objectives of applying risk management is to reduce financial losses, and that means limiting the size of a portfolio to stay within a certain level of risk tolerance.

“We constantly strive to improve our modeling of price simulations,” explains Cooper. “We generate a set of next-day prices for what we trade and then construct a distribution of all the possible gains and losses in our portfolio. Most companies manage their portfolios by setting a limit on losses to a confidence interval of between 95 percent and 99 percent over a one- or three-day period. SAS enables us to calculate this number. A breach of the loss threshold gives management a signal that the portfolio is too large and should be trimmed.”

### Reporting with confidence

As well as helping to forecast losses and gains, SAS is also used to satisfy the requirements of regulators, such as the Federal Accounting Standards Board (FASB).

“Once they tell us how we're supposed to account for the various values we calculate, we have to assign a level of confidence to each valuation based on market liquidity,” says Cooper. “SAS enables us to meet guidelines relatively quickly because of its flexibility. I also expect SAS to help us meet the data requirements of the new Dodd-Frank

Wall Street Reform and Consumer Protection Act; I'm happy that we have SAS to work with instead of something else.”

Dominion's credit risk department – responsible for dynamically understanding how much each of the company's counterparties owes, and ensuring that the company is in compliance with how much credit to extend to any one of them – is using SAS Enterprise Guide for its management and SEC regulatory reporting, related to the requirements of FASB 161 and 157.

“We use SAS Enterprise Guide to write these reports because it allows us to own the process of report creation,” says Jason Bishop, Director, Credit Risk Management. “We have to sign off on those reports, and SAS allows us to be hands-on with the business logic process used to generate each report. I like SAS Enterprise Guide because when we have an idea for analysis, even though we're not programmers, we can write the logic ourselves based on our knowledge of the business process. Instead of writing SQL code to pull data out of multiple systems and then put it into Excel, which can be error-prone, SAS Enterprise Guide provides a convenient and robust way of getting at the information we need.

“The markets are always changing and new products being introduced; we can quickly alter our analytics to account for changes in real time,” he continues.

### Connecting the dots

The complexity of Dominion's business creates a data-management-intensive environment, with data coming from myriad sources.

“SAS connects these different data sources to use in our transaction value calculations,” explains Cooper, whose group also provides information to the Credit Risk Management team for analysis. “We collect a large amount of data for every transaction in real time and join it together to run calculations. SAS allows us to get this data quickly, aggregate it and distribute it in a timely fashion.

“Our needs are somewhat unique and specific to our business,” concludes Cooper. “The ‘black box’ alternatives that we examined didn't have the flexibility we required to write our own models and customize reports. SAS allows us to develop what we need quickly and accurately. It's very powerful and it enables us to react quickly to changes in the market.”



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