

EDUCATION: Master of Business Administration, Finance
Auburn University, 2006

Bachelor of Science in Industrial Engineering
Cooperative Program, With Highest Honors
Georgia Institute of Technology, 2000

ENGINEERING REGISTRATION: Registered Professional Engineer in Georgia

PROFESSIONAL MEMBERSHIPS: National Society of Professional Engineers (NSPE)
American Statistical Association (ASA)
Institute of Industrial Engineers (IIE)

EXPERIENCE:

1996-Present: GDS Associates, Inc.

Employed as cooperative student and began full time employment in 2000. Compiled three years of work experience in GDS' Distribution Services Department as cooperative student. Project experience includes load & financial forecasting, residential consumer surveys, cost of service studies, retail rate design, economic impact analysis, benefit-cost analyses, load management evaluation, and market research.

Specific experience includes:

- ◆ Completed an economic impact analysis of instituting a Renewable Portfolio Standard in the state of North Carolina. Utilized IMPLAN Input/Output software to determine the job impacts on the state economy of various RPS portfolios compared to a portfolio composed of conventional fossil fuel resources. Direct, indirect, and induced job impacts were measured for construction, operations and maintenance, and pertinent fuel supplies for various conventional and renewable resources, as well as effects of electricity price increases on residential and commercial consumers.
- ◆ Developed benefit-cost and net present value evaluations of existing and possible expansion of demand response and load management systems for electric utilities in Indiana, Michigan, South Carolina, Texas and Wisconsin. Specific work included development of costs associated with the system, estimating benefits gained through load reduction, identification of alternative and new technologies for possible expansion, and creation and use of simulation models for testing sensitivities. Analysis has included load control devices on various residential appliances as well as commercial, agricultural, and industrial applications.
- ◆ Designed cost of service models for municipals and cooperatives in Texas, Virginia, Ohio, Massachusetts, Alaska, Florida, South Carolina and Georgia. Specific work has included development of cost allocation factors in various areas of operation, calculation of impacts of rate changes to customers, determination of the company's financial competitive position, classification of plant investment and operating expenses, development of pro forma financial statements, and alternative rate design calculations.
- ◆ Developed conservation water and wastewater rates for municipals in Georgia. The rates

were compliant with Metropolitan North Georgia Water Planning District guidelines. Analysis included development of revenue-neutral and rate increase inverted block designs, customer impact evaluations, and design of criteria for new large use commercial rates.

- ◆ Assisted in development of wholesale rates for G&Ts in Wisconsin and Indiana. Work involved projections of cost pools and billing units, development of pro forma rates and impacts on member systems, evaluation of rate alternatives and riders, and considering the implications of an aggressive load management program.
- ◆ Prepared financial forecasts for electric cooperatives in South Carolina, Virginia, Tennessee and Georgia. Work included regression analysis, review of current long-term debt situation, customer and demand forecasts, plant forecasts, and sensitivity analysis. The work in Tennessee was in support of a case involving annexation in which scenarios were developed wherein certain consumers and plant were annexed by a local municipal. Work has also included modifications to a custom-made financial forecast to increase its functionality (completed in Microsoft Excel and Visual Basic).
- ◆ Various energy management related projects for a municipal water and wastewater utility in Georgia.
 - Developed an electric power usage and billing analysis model. The model is used to calculate bills on over 60 different electric accounts on various rate schedules that belong to the utility. It then generates graphical representations of key parameters and trends needed by the management to determine ways to reduce power costs.
 - Performed economic analyses of various electric rate options for several of the utility's larger electric accounts. Rates examined included time-of-use, real time pricing, contract off-peak pricing and other specialty rates.
 - Estimated benefits and costs associated with purchase and operation of both diesel-fired and methane-fired generators for use at their Water and Wastewater Treatment Facilities.
- ◆ Developed long-term load forecasts for electric utilities in Arkansas, Missouri, Kentucky, Texas, Oklahoma, Virginia and South Carolina. Work included end-use, statistically adjusted engineering (SAE) models and econometric modeling, weather normalization analysis, development of economic and weather forecast scenarios, and sensitivity analysis of key model input parameters. Also included updating and maintaining various databases related to the projects.
- ◆ Developed state-wide energy supply and consumption projections by major customer classification and type of fuel for Vermont Department of Public Service and Virginia Department of Mines, Minerals, and Energy. Utilized Energy Information Administration data and econometric and trending techniques to complete projections.
- ◆ Developed day-ahead load forecasting models for utilities in Virginia, Texas, Kentucky and Louisiana. Work included evaluation of regression and neural network model specifications, weather normalization, sensitivity analysis and statistical testing of the validity of the models chosen. A program was developed through Excel/VBA to allow the utilities to use the models easily and efficiently on a daily basis and to create and maintain a database of forecast parameters and historical data. One project also included a training session with

the clients, highlighting the mechanics and differences of neural networks and regression models.

- ◆ Used regression modeling and other statistical analysis to estimate load reduction impacts for a water heater control program in South Carolina. Data included samples of hourly data for individual residential accounts with and without water heater controls.
- ◆ Assisted with conducting residential consumer surveys for cooperatives in Texas. Specific work included questionnaire design, sample selection and validation, data tabulation and formulation of survey databases, analysis of results and reporting findings. Analytical work has also been performed on end-use and energy efficiency surveys conducted for municipalities and cooperatives in New York, Vermont, and Massachusetts.
- ◆ Programmed commercial retail market analysis models in SAS and Excel/VBA for a marketing research firm. The models produce the statistical analysis and reporting of survey data collected electronically. Outputs include voluminous reports with extensive analysis and graphical representation. Benchmarking analysis is also conducted.
- ◆ Prepared data mining applications and statistical billing estimation models for an electric utility in Georgia. The models are utilized by the utility to ensure greater meter-reading accuracy and to monitor/investigate possible situations of power theft. Work included general data cleaning and mining techniques, extensive regression analysis and weather normalization of data, and statistical testing of the validity of the models chosen.

SOFTWARE/PROGRAMMING EXPERTISE:

Statistical Analysis System (SAS), Visual Basic, Microsoft Office, MetrixND forecasting software, Crystal Ball simulation software, IMPLAN Economic Input/Output Analysis software, Lotus 1-2-3, Word Perfect, Quatro Pro, OrgPlus, SQL, Minitab.