Daniel Klos
Klos Energy Consulting

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Mr. Klos offers information technology and data mining consulting services to a wide range of industries, specializing in service to electric and gas utilities. He has extensive experience analyzing monthly billing data, as well as interval data from meters, loggers and SCADA systems. He has also developed a wide range of Web-enabled applications to solve a variety of real-time research issues. Klos Energy Consulting is a purposely small shop, ensuring high quality work based on care and attention to each client's unique needs.

QUALIFICATIONS

➢ Over thirty-five years experience in the Information Technology (IT) field.

➢ Strong mathematical and analytical skills, including real-time optimization modeling.

➢ Expert in many computer languages. Current favorites are SAS, PHP, Java and VBA.

➢ Five years experience in energy services consulting

Energy Efficiency Evaluation

➢ Combined monthly gas and/or electric billing data with weather data to support econometric modeling of program impacts. Prepared data for analysis, including merging of multiple datasets with multiple key fields and cleaning of missing data and outliers. This was done for the following programs:
1. National Grid Opower Program (part of Massachusetts Cross-Cutting Evaluation) (2010)
2. Vermont Geo-Targeting Billing Analysis (2010)
3. Bonneville Power Authority EnergySmart Grocer Program Evaluation (2009)
4. Massachusetts Utilities' Small Business Services Evaluation (2009)
5. National Grid Residential Gas Weatherization program, including development of an optimized control group matching algorithm based on geography and historical energy use patterns (2009)
6. Kansas City Power and Light Low Income Weatherization Evaluation (2008)
7. Progress Energy-Carolinas In-Home Energy Display Pilot Evaluation (2008)

➢ Processed Aclara's online Home Energy Analysis customer characteristics data and merged with Arizona Public Service's customer billing data, doing fuzzy matches on names and addresses. (2010)

➢ Organized, cleaned and merged commercial measure data from seven Massachusetts utilities. Also processed and standardized commercial customer lists for each utility. (2010)

➢ Purchased InfoUSA data on HVAC businesses and merged it with conference attendee data to create a sample list for telephone surveys for Arizona Public Service. (2009)

➢ Developed an Access database for National Grid to manage EE measures data. (2007-2009)

➢ Used regression analysis to study impacts of the FlexPower program, a program that sent peak power alerts to radio and other broadcast media, asking customers to voluntarily reduce electric use

temporarily. Combined and analyzed summer usage data for all Residential customers of the three largest California utilities as part of this project. (2007-2008)

Web-enabled Survey Management Systems

➢ Prepared, merged and cleaned large population datasets to support sample design and sample list creation. Created a Web-enabled system for tracking outbound recruiting calls, scheduling site visits, and collecting field data. Included real-time optimization of call lists to meet multi-dimensional quotas as quickly as possible. Linked to mapping software for ease of use by schedulers and field technicians. Allowed clients to have real-time access to the tracking system for monitoring progress. Customized variations of this basic survey management system were built for the following projects:
  1. Pepco Holdings Direct Load Control Study (2010 to 2011)
  2. Commonwealth Edison Residential CFL Study of Illinois and Kansas, including automatic creation of individual cover sheets to go out in the field (2010)
  3. Puget Sound Energy Residential HVAC Duct System Evaluation (2010)
  4. Tucson Electric Power Residential and Commercial DSM Baseline and Potential Study (2010)
  5. PECO Energy DSM Baseline Study (2010)
  6. Arizona Public Service Commercial & Industrial Lighting Study (2010)
  7. Arizona Public Service Residential HVAC Quality Inspection Study (2010)
  8. AEP-Ohio DSM Baseline and Potential Study (2010)
  9. CPUC Low Income Solar Inspection Project (2010)
  10. Progress Energy-Carolinas Energy Efficiency Benchmarking (2010)
  11. Commonwealth Edison Residential HVAC Evaluation (2009-2010)
  12. Natural Resources Canada Net to Gross Study, including analysis of results using logit and probit models. (2009-2010)
  13. Ottertail Power DSM Baseline and Potential Study (2009)
  14. Palm Desert HVAC Study, including Commercial Refrigerant Charge and Airflow (RCA) sites. (2009)
  15. California Public Utility Commission High Impact Measure C&I Lighting Study, including creating of a centralized inventory system for loggers. (2009)
  16. Nova Scotia Potential Study (2009)
  17. Arizona Public Service Residential Lighting Study, including code to access the raw logger hexidecimal data and extract internal logger settings (2009)
  18. California Public Utilities Commission Residential Gas Study (2008-2009)
  19. Minnesota Office of Energy Security DSM Potential Study (2008-2009)
  20. Union/Enbridge Commercial Free-rider and Spillover Survey (2008)
  21. Northwestern Energy Home Energy Audit Evaluation (2008)

Energy Usage Studies

➢ Combined enduse load shapes with details of DSM plans to support the creation of an end-use based 20-year hourly forecast of impacts from DSM for Tucson Electric Power and Unitil. (2010)

➢ Analyzed billing data for all five million Consolidated Edison customers, both Residential and Commercial, to create accurate counts of customers by building type and their energy consumption category. This included in-depth analysis to identify residential use apartments within the Commercial rate class. (2008)

➢ Performed data mining on program tracking system information in Access databases to support estimates of energy efficiency market penetration for the Small Commercial and Industrial sector at MidAmerican Energy. (2007)

Validation, Estimation and Editing of Interval Data

➤ Developed Web graphics for real-time display of customer interval data for Integral Analytics. Used C++, Informix and DB2 on a Linux server. (2012)

➤ Used SQL and mainframe systems to directly download billing data and premise profiles for all of Wisconsin Public Service Corporation's Residential and Agricultural electric and gas customers over the last twenty years. Data was cleaned and merged by customer across years to facilitate analysis. Needed to standardize changes in rate codes and billing systems that occurred over the historical period. Gathered telephone and e-mail addresses to create population lists for general random sampling. Extended analysis from monthly data to hourly data to identify and investigate very low use customers. (2011)

➤ Prepared, merged and cleaned five-minute SCADA data for use in impact evaluation of a Conservation Voltage Reduction program for PECO Energy. This required understanding substation schematics so a database could be built that correctly accounted for all power flows and relationships between the components and transducers at each substation in the study. (2010)

➤ Worked with a team to compare AMI to non-AMI customers in Texas, looking at usage patterns and geo-location to see if the presence of an AMI meter affected usage. Daniel cleaned and merged the meter data for the study. This was a very large dataset: 47 million records for Oncor and 28 million for Centerpoint. He created logic to determine the best control group matches based on energy use levels and patterns for a treatment group of 2000 customers. He also compared error rates for different meter manufacturers and models. (2010)

➤ Analyzed generation, transmission and load data for a California Energy Commission study of the Los Angeles basin. Used probit and other regression models to model energy imports and exports to the region. Results were shown in three-dimensional graphics. (2009)

➤ Wrote code to automatically find all zip and logger files in multiple subdirecties, unpack them, and build a single dataset from them. This allows quick, error-free compilation of individual logger files without manually moving or unzipping any files. This effort is often combined with data preparation and cleaning. It was used to save time and improve data quality in the following projects:
   1. Pepco Holdings Direct Load Control Study (2010 to 2011)
   2. KCPL Direct Load Control Study (2010)
   3. Progress Energy-Carolinas Energy Efficiency Benchmarking (2010)
   4. University of California Lighting Logger Study (2009)

Weather Data and Analysis

➤ Created a Web-enabled map interface to allow anyone to find and download weather data from the historical records for 26,000 weather stations that are kept in a free access NOAA database. Used SAS, PHP, Java and MySQL. Contains complicated mathematical algorithms to determine which weather stations are inside or near each map polygon. (2012)

➤ Created sunrise/sunset data for estimation of lighting usage by day
   1. Empower 2010 (2010)
   2. Progress Energy-Carolinas Energy Efficiency Benchmarking (2010)

Demand Response/Dynamic Pricing Evaluation

➢ Combined electric hourly usage data with hourly weather data to support econometric modeling of program impacts. This usually included pre-analysis of the data and the creation of a large volume of individual customer graphics to quickly find data problems and patterns in the data. This was done for the following program evaluations:
1. Ameren-Illinois Utilities Power Smart Pricing (including merging of customer usage data with data from several previous surveys, analysis of weather data to determine hot days to study for pre-cooling analysis, and three-dimensional charts with custom colors to mark third dimension) (2008-2010)
2. Kansas City Power and Light Mpower Commercial and Industrial Curtailment Program (2009)
3. Kansas City Power and Light Residential Direct Load Control Program (2008-2009)
4. CPS Energy (Austin, Texas) Residential Direct Load Control Program (2007-2008)
5. Public Service Electric and Gas (New Jersey) myPower pilot, including a vendor survey to identify available control technology options and costs. (2007)
6. Progress Energy-Carolinas Residential Direct Load Control pilot, including development of a moving template method to use with 5-minute data to identify individual start times of randomized-start control events. (2007)

Web Scrapers

➢ Created a VBA webscraper to pull down NAICS data from the U.S. Census Bureau Business Patterns website by zip code so the client would not have to do it manually. SAS was used to merge the Census data with California Climate Zones. The whole project took approximately five hours, start to finish, costing only $400. (2012)

➢ Created a VBA webscraper to pull down all lighting and motor data from Grainger, Service Lighting, Marathon and Baldor websites.   (2007-2009)

➢ Created a VBA webscraper to pull down all known energy efficiency and renewable energy program descriptions from the Database of State Incentives (DSIRE) on-line database. (2007)

➢ Created a VBA webscraper to pull down business types from the local Yellow Pages website and merge with customer data, based on phone number matches for MidAmerican Commercial and Industrial customers. (2007)

SAS Consultation

➢ Provided SAS consultation to other SAS programmers. Expert in ODBC connections, large volume data processing, and linking to on-line, DOS and Windows features such as e-mail and internet. For example, one client was having difficulty analyzing manually-entered data because of misspellings. The solution was a SAS program linking to Google which automatically pulled down the recommended spelling for the misspelled words.

Other Web-enabled Applications

➢ Created a Web-enabled system called 'Energy Analyzer' for Tennessee Valley Authority. Residential customers use the site to learn more about customized energy efficiency opportunities for their home. Used PHP and Java. (2010)

➢ Created a Web-enabled system to track and report on Project Management at Summit Blue Consulting (2009-2010)

➢ Developed a Web-enabled mapping system to allow users to create trails, regions and insert sponser ads to maintain snowmobile, ATV and other customized trail maps. Used PHP, MySQL, and Java. (2011-2012)

➢ Developed a Web-enabled mapping system to show sites with seedlings data from the U.S. Forest Service FIA Data Mart. This gave the client a quicker way to find available seedling test plots in the geographical area of interest. Used PHP, MySQL, Java and SAS. (2012)

➢ Created a Web-enabled system to allow referees and sports officials to share their availability and enable easy scheduling of officials to games needing their services. (2011)

PUBLIC WEBSITES

Map-Based Hourly Weather System
http://www.klosenergy.com/weather/index.html

Lakeshore Officials Association
http://lakeshoreofficials.com/newsports/splogin.php

Custom Trails (Version 1)
http://www.nkmsnow.com/snow/snpublicview.php

Custom Trails (Version 2) (In development)
http://customtrails.com/customtr/ctshowmap.php?cgcode=awsc&mpkey=5

(All other websites created by Daniel Klos are secure and private. Please call for more information.)

EDUCATION

Beloit College
Bachelor of Science in Mathematics (BS)   *1979*

EMPLOYMENT HISTORY

Klos Energy Consulting   **Brillion, WI**
Owner/Principal   *2010 to present*

Summit Blue Consulting   **Madison, WI**
Senior Consultant   *2006 to 2009*
Performed IT and data-mining projects for the utility industry.

Abalux Computers   **Green Bay, WI**
Owner/Manager   *1994 to 2000*
Sold and serviced new and used computers in a retail setting. Rebuilt computer systems using new and used components. Dismantled and brokered computer mainframes and large industrial electrical devices. Assisted customers with typesetting and all other phases of document printing requests.

K&K Consultants   **Brillion, WI**
Owner/Principal   *1986 to 2005*
Designed, wrote and implemented PC-based scheduling systems. Programmed in Pascal, creating a Windows look-alike environment. Used systems utilizing the Paradox Engine, incorporating a concurrent multi-user platform. Contracted with SoftHead Software to create Windows-based software. Programmed using object-oriented Microsoft Visual C++ and Poet, an object-oriented database. Gained major software and hardware experience in Borland C++ 3.1, Turbo Pascal, Paradox, and Intel platforms.

Schneider National Trucking   **Green Bay, WI**
Systems/Marketing Analyst   *1982 to 1985*
Developed CICS IMS (mainframe) on-line programs. Designed and developed real-time modeling and optimization systems to determine the best route and tours for drivers. Designed software and hardware channels between mainframes and microcomputers. Conducted PC programming for Schneider Communications. Gained major software and hardware experience in CICS, IMS, VSAM, COBOL, PL/1, FORTRAN, Assembler, Motorola Minis, 68000 Assembler, 80286 Assembler, Pascal and SAS.

DASD/Cap Gemini America   (IT consulting)   **Milwaukee, WI**
Computer Consultant   *1980-1982*
Implemented an on-line system at Wick Buildings in Madison. Assisted Nekoosa Papers in Wisconsin Rapids using CICS. Designed and implemented an inventory system using Assembler on an HP3000 for Haysen Manufacturing in Sheboygan. Developed an on-line tracking system for independent truck drivers at Schneider National. Gained major software and hardware experience in CICS, COBOL, HP3000 Assembler, RPG and IBM mainframes).

Baker Manufacturing Company   **Evansville, WI**
Programmer Analyst/Database Systems Designer   *1980-1982*
Developed programs and systems for a network relational database using an NCR mainframe computer.

References available upon request.