Workshop L

New to the Energy Field? Energy 101: Supply Strategy and Policy ... How to Build an Energy Procurement Plan from Data Gathering through Implementation

Tuesday, February 21, 2017
1:45 p.m. to 3 p.m.
Biographical Information

John Verdile, President & Founder, XpenseSolutions  
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Over the past 26 years, John J. Verdile, President and Founder of XpenseSolutions, has partnered with clients to develop energy programs that address price, operational and process efficiency goals. Mr. Verdile has been involved in managing energy programs that range in size from less than $1 million dollars to over $125 million dollars in annual energy spend. As Director of Energy Consulting for the one of the nation’s largest integrated energy companies, he was responsible for managing an $800 million dollar natural gas and electric power portfolio. Mr. Verdile has developed demand side energy efficiency programs that range in size from $100,000 to over $15 million dollars per project.

In March 2005, Mr. Verdile formed XpenseSolutions, a company focused on reducing its client’s total cost of energy. Services include demand side management consulting, energy bill and rate analysis, development of energy procurement strategies, energy risk management, preparation of requests for proposal, evaluation of bids, contract development and implementation and negotiations with suppliers and utilities.

Services Offered
- Supply Side Management – Energy Portfolio Management
- Demand Side Management – Energy Conservation Measures
- Renewable Energy Consulting – Sustainability Planning

Boards and Committees
- Board of Directors, Cleveland Engineering Society 1998 - 2007
- The Visiting Committee, Fenn College of Engineering at Cleveland State University 2003 –2005
- The Manufactures Education Council Energy Conference Planning Committee

Featured Speaker on Energy Management
- Ohio Hospital Association (OHA)
- MAGNET – Manufacturing Advocacy & Growth Network
- The Cleveland Engineering Society (CES)
- Manufactures Education Council (MEC)
- Ohio Public Facility Managers Association (OPFMA)
- Association of Energy Engineers
- American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)
- Ohio Association of Realtors
- Ohio Public Utilities Commission (PUCO)
- General Electric Lighting Institute (GE)
- Building Owners and Managers Association (BOMA)
- Council of Smaller Enterprises (COSE)
XpenseSolutions
Energy Advisory Services

Energy 101
Supply Procurement Strategy

Business Decision
Information
Data
In March 2005, Mr. Verdile formed XpenseSolutions, a company focused on reducing its client’s total cost of energy. Services include developing energy strategy and policy addressing energy rate, energy procurement, risk management, requests for proposals, evaluation of bids, contract negotiation with suppliers and utilities, demand side management and program implementation.

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Mr. Verdile has been a featured speaker for numerous groups including:
- OHA - Ohio Hospital Association
- COSE - Council of Smaller Enterprises
- MAGNET - Manufacturing Advocacy & Growth Network
- CES - The Cleveland Engineering Society
- MEC - Manufactures Education Council
- OPFMA - Ohio Public Facility Managers Association
- AEE - Association of Energy Engineers
- ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers
- OAR - Ohio Association of Realtors

“As energy continues to increase in price and volatility, clients are looking for an increased level of security, reporting, price protection and access to accurate information to manage their business.”

John J. Verdile, President
Energy Strategy and Policy

- Strategy is the *thinking of the management* of an organization and *the action management* plans to take to achieve set goals.

- *Policy is a guideline* that is to be kept in mind all the time. Policy lies at the *core of all decisions* taken by the management of a company.
Building a Strategy

- Mission Statement
  - ABC is committed to providing the utmost in comfort for its customers and employees at the least cost of energy per square foot.
  - ABC is committed to minimizing the cost of energy per ton of product produced while providing the highest quality products in the industry.
Why have an Energy Management Strategy?

**Value**

- Energy Savings go directly to the Bottom Line. So what is the Top Line Value?

- If your organization produces a net profit of 5%, every $1.00 you save in energy spend is like generating $20.00 in sales.
History – Getting Started

Natural Gas

- In the 1970’s there were shortages of natural gas in the United States due to government regulations
- 1978 Natural Gas Policy Act – this allowed prices to rise which drove up prices which incentivized exploration and production – High Prices
- 1985 FERC Order 436 allowed pipelines to offer transportation-only services – Created Competition on Pipelines
- 1992 FERC Order 636 Mandated Open Access (Competition) on pipelines

Electric Power

- An integrated monopoly since the 1930’s hit by rising fuel costs, electric utilities turned to technology (nuclear) paid for by their customers
- 1978 Public Utility Regulatory Policies Act (PURPA) – Required utilities to purchase of power from competitive third parties when needed
- 1996 - 2000 FERC Orders 888, 889 and 2,000 led to the break up of integrated utilities to sell off generation to third parties or transferred to an unregulated affiliate, formation of Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) to control and monitor operation of the grid
# Basic Terminology – Getting Started

## Natural Gas
- **LDC – Local Distribution Company**
  - a company that maintains the portion of the utility supply grid that is closest to the residential and commercial consumer.
- **Mcf – Million Cubic Feet**
  - 1000 cubic feet a unit of measure in the oil and gas industry for natural gas, more often written Mcf 1,000,000 cubic feet
- **MMBtu - Million BTU's**
  - used in the natural gas and other industries to indicate 1,000,000 BTUs
- **Nymex**
  - New York Mercantile Exchange
- **Federal Energy Regulatory Commission – FERC**
  - FERC regulates the price, terms, and conditions of power sold in interstate commerce and regulate the price, terms and conditions of all transmission services.

## Electric Power
- **EDC – Electric Distribution Company**
  - a company that maintains the portion of the utility supply grid that is closest to the residential and commercial consumer.
- **Kilowatt**
  - unit of electrical power equal to one thousand watts
- **kWh – Kilowatt Hour**
  - unit of electrical energy which equals one kilowatt of power used for one hour
- **MW = Mega Watt**
  - A unit of electrical power equal to one million watts or one thousand kilowatts
- **kWd**
  - A measure of average load over a given period expressed in kilowatts. This measurement is used by utilities and wholesalers to determine a customer's average requirement.
Questions — Getting Started

1. Does energy price volatility affect my company profits?
   - Percent of cost of goods sold and/or manufactured?

2. How much do you spend on energy per year?
   - Electric Power
   - Natural Gas

3. How much do you spend on natural gas versus electricity?
   - Which fuel has a greater affect on cost?

4. How many facilities are in deregulated markets and regulated markets?
   - Where can you shop?
Questions — Getting Started

5. Do you regularly review your energy program?
   - Utility Rate (s)
   - Supply Contract (s)

6. Do you have a supply contract file?
   - Contract terms and conditions – payment, pricing components
   - Expiration dates
   - Rollover terms

7. Do you have a qualified supplier pool?
   - Supplier requirements

8. Do you track consumption history?
   - Electric load profile
   - Natural gas load profile
Natural Gas Delivery

- Natural Gas Production (Supply)
- Pipeline (Gas Transmission)
- Deregulated

- Local Distribution Company (LDC)
- Regulated
Electric Power Delivery

- Generation (Energy)
  - Deregulated

- Transmission
  - Regulated RTO/ISO (i.e. PJM) and RTO

- Distribution System
  - Local Utilities
    - Regulated

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Natural Gas Transmission System

Pipelines which transmit gas from a source of supply to one or more distribution systems, large volume customers or another pipeline; operate at higher pressures than distribution systems.
Regional Transmission Organizations – Electric (RTO)/Independent System Operators (ISO)

Independent System Operators grew out of Orders Nos. 888/889 where the FERC suggested the concept of an Independent System Operator as one way for existing tight power pools to satisfy the requirement of providing non-discriminatory access to transmission. Subsequently, in Order No. 2000, the Commission encouraged the voluntary formation of Regional Transmission Organizations to administer the transmission grid on a regional basis throughout North America (including Canada).
Distribution Company - LDC / EDC

- **Local Distribution Company (LDC)**
  - A business entity that owns and operates the pipelines and equipment necessary to deliver purchased natural gas to the end user. Most often, an LDC is a utility.

- **Electric Distribution Company (EDC)**
  - The company that owns and operates the power lines and equipment necessary to deliver purchased electricity to the end user. Most often, an EDC is a utility.
Today Deregulation by State

17 Electric 22 Gas (including DC)

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Seasonality – Natural Gas

Natural gas has two seasonal peaks, with consumption patterns predominantly driven by weather. The largest peak occurs during the winter, when cold weather increases the demand for natural gas space heating in the residential and commercial sectors. A second, smaller peak occurs in the summer when air conditioning use increases demand for electric power, an increasing portion of which is provided by natural gas-fired generators.

![Graph showing natural gas deliveries to customers by end use, Jan 2010 - Jun 2015](image)
Seasonality – Electricity

Electricity peaks with consumption patterns predominantly driven by weather. Peak occurs during the summer months when warm weather increases the demand for electric power for cooling in the residential and commercial sectors.

Electricity consumption by U.S. customer type
(billion kilowatt hours)

- Industrial
- Residential
- Commercial
Strategic Procurement Process

Gather Data

- Natural Gas Bills
- Electric Bills
- Supplier Contract (s)
- LDC Contract (s)
- EDC Contract (s)

Convert Data to Information

- Usage Profile
- Annual Consumption
- Bill Audit – Scrub Data
- Contract Review and Analysis
- Load Analysis
- Risk Profile

Make Business Decision

- Fixed Pricing Model
- Variable Pricing Model
- Blended Pricing Model
- EDC/ LDC Rate Confirmation
- Contract Modifications

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Data

- 12 to 24 months Natural Gas Bills
  - Utility – Distribution
  - Third Party/Natural Gas Marketer/Choice Partner

- 12 to 24 months Electric Bills
  - Utility – Distribution
  - Third Party/Electric Power Marketers

- All Current Contracts
  - Natural Gas, Electric
Data

Usage Load Profile – How You Use Energy
Utility Bill Audits review historical billings for accuracy and rate verification and apply for pertinent refunds and credits.

- It is an analytical review, audit and collection process of overpayments to utility suppliers as a result of billing errors, payment errors, inaccurate meter readings, incorrect tariff rates, pricing errors, neglected discounts, erroneously paid taxes and related errors.
- The utility suppliers are under no obligation to bill you at the lowest or best rate. They offer a large variety of services options, but it is the responsibility of the and tariff consumer to determine and apply for the most favorable rate.
Audit Process – Scrub Data

• Data Gathering / Data Processing
  • Facility and account list
  • (1) recent Bill Copy for each account
  • Letter of Authorization to communicate with suppliers
  • Historical billing records from utility suppliers

• Audit and Analysis Process
  • Audit team formats data into audit format
  • Reviews each item and tags any and all “questionable” accounts, billings, and/or billing periods.
  • Identifies Rate / Tariff Optimization opportunities

• Fee
  • Shared Savings on documented refunds, credits and rate changes
Information

- Consumption/Usage Profile
- Seasonal Demand
- Power Factor
- Document Review Complete
- Audit Results

- Implement Identified Opportunities
  - Negotiate Contract Terms and Conditions
  - Pricing Options - may need to change structure
  - Utility Billing Error Recovery
  - Rate Change Opportunities
Risk Management

- Speculation
  - Riding the market (volatility) and hoping the market moves in your favor.
  - 100% at Risk
  - Managing to Market

- Hedging
  - Eliminating market volatility by buying up to 100% of you energy requirements at a predetermined fixed price for a specified term.
  - Managing to Budget

- Blend
  - Reduce Value at Risk
  - Manage Risk by using multiple pricing options
What is your Risk Tolerance?

How do you manage volatility
Pricing Options

- **Fixed Price**
  - Set all-in price for all units (Mcf, kWh) consumed.
    - Percent Swing/Bandwidth
    - Full Requirements

- **Variable**
  - Pricing floats with the market
    - Float commodity
    - Float Basis / Fixed Adder

- **Blend**
  - Combination of fixed and variable
    - Load Following Block and Index
    - %Fixed  %Variable

- **Managed Products**
  - Utilize multiple pricing options together
  - Should be professionally managed
Fixed Price

Purchase 100% of load at Fixed Price

Fixed Price 100%

Time – TERM of Contract – July 1 2016 to July 1 2018
Variable Price

Purchase 100% of load at NYMEX plus (Variable)

Market Based 100%

Time – TERM of Contract – July 1 2016 to July 1 2018
Blended Pricing - % Fixed % Market

Purchase 50% of load at Fixed Price
Purchase 50% of load at NYMEX plus (Variable)

Fixed Price 50%
Market Based 50%

Time – TERM of Contract – July 1 2016 to July 1 2018
Load Following Block and Index – Managed Product

The Load Following Block and Index product solution is made up of two basic pieces:

**Load Following Hedges** – Around the clock hedge increments made as a percentage of actual hourly usage

**Index Market Exposure** – customers default to the short term market for any portion of the load that is not hedged

- Under LFBI a customer is able to proactively use a combination of index market exposure and fixed price terms
- Ability to get to 100% fixed energy price for the prescribed term. Will pass through losses.
## Pricing Options

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<tr>
<th>Product</th>
<th>Advantages</th>
<th>Disadvantages</th>
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| **Fixed** | • Price Certainty | • Only one chance to “time” the market  
• Risk and shaping premiums  
• No access to index market |
| **Index** | • Ability to participate in the Index market  
• Transparency | • Risk and exposure to market volatility  
• Inability to predict/manage costs |
| **Managed** | • Layering capabilities to mitigate risk and lock in value when market dips  
• Access to wholesale market and index markets  
• Maximize benefit from Total Energy Management Solutions | • Potential for risk depending on strategy and product structure  
• Hedging flexibility depending on size |
Contract Analysis

- Term – Start and End Date
  - Look for Evergreen, Renewal Notice or Automatic Roll Over language
- Service Level
  - Firm
  - Interruptible
  - Full Requirements
- Rate
  - Fixed, Variable, NYMEX Plus or Index
  - What is included in the price – any pass-through charges
- Delivery point
  - City Gate – The location where natural gas transfers from the interstate gas pipeline to the local utility’s distribution system
  - Burner Tip - Location where natural gas transfers form interstate gas pipeline to the local utility’s distribution system including all fuel and conversion charges
Contract Analysis

- **Termination - ETF**
  - Early Termination Fees
  - Rescission Period
- **Billing and Payment**
  - Typically 15 to 30 days net – billed by supplier
  - Consolidated Billing – on Utility Bill
- **Force Majeure**
  - An event that no human foresight could anticipate
  - Depending on the legal system, such an event may relieve a party of an obligation to perform a contract
- **Change in Law**
  - In the event there is a Change in Law that results in a supplier incurring additional costs and expenses, these charges will be the Customer’s responsibility
    - *Example – PJM Capacity Performance*
Procurement Process Options

Supplier Direct

- Single Supply Source
- Limited Structure Options
- Supplier Provided Price $

Using a Supply Consultant

- Large Supply Pool Options
- Multiple Deal Structure Options
- Lowest and Best Price $
Review Your Strategy Regularly

Guidelines for Energy Management Presented by the U.S. EPA EnergyStar Program

Main Elements of a Strategic Energy Management Program

- Make Commitment
- Assess Performance & Set Goals
- Create Action Plan
- Implement Action Plan
- Evaluate Progress
- Recognize Achievements
- Re-Assess
Questions
For More Information Contact

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