Outline of Discussion

• Where to begin? Your energy company
  • Understanding the lexicon of the industry and what is offered
• Managing Energy Data
• Load Factor & Power Factor – What do they mean?
• Energy Efficiency Projects
• Power Quality, Having a Plan
• Fundamentals of Energy Management
LQ Management LLC

- Headquartered in Irving, TX
- Founded 1968 in San Antonio
- 890 hotels in the US and Latin America
  - 316 Corporate Hotels
“Good judgement comes from experience, and a lot of that comes from bad judgement.”
La Quinta History
La Quinta History
“Light travels faster than sound. This is why some people appear bright until you hear them speak.”
Managing Electricity, Water, and Natural Gas

- Energy Efficiency Initiatives
- Utility and Vendor Partnerships
- Budgeting
- Energy Procurement
- Environmental Reporting
- Financial Analysis
What do Energy Companies offer?

- Rate or Tariff choices
- Voltage & Service choices
- Billing options
- Energy Efficiency incentives
Energy Lexicon Highlights

- **Kilowatt Hour**: (kWh) A quantity of electricity designated as 1000 watts of power used over a period of one...similar to the odometer on your car which measures miles traveled.

- **Kilowatt Demand**: (kW) The rate that electricity is consumed and typically is measured in a fifteen minute interval. It is not an instantaneous measurement within a fraction of a second...similar to the speedometer of your car that records the rate at which miles are traveled.

- **Basic Charge or Customer Charge**: A base charge for an account, regardless of energy consumption.

- **Minimum Billing**: With a rate selection for billing, there may be a minimum charge which could be applied on a monthly or annual basis.

- **Ratchet Charge**: This is a way to calculate current demand charges based upon previously set peak demands, that depends on your rate schedule or actual usage.

- **Fuel Adjustment**: Typically a pass through expense based on the type of fuel your energy company utilizes in generation.

- **Contract Riders**: A temporary fee or charge, typically based on consumption, that covers an expenditure incurred by the energy company. Or, this can be for contracted service outside the normal filed tariff or rate.
Energy Lexicon Units

- 1 cubic foot (cf) = 1,000 BTUs
- 1 ccf = 100cf = One Therm
- One Therm = one hundred cubic feet or one Ccf.
- Mcf = one thousand cubic feet = ten Ccf
- Mmbtu = one thousand cubic feet = one Mcf = one million btus = 1 Dekatherm
- 1 watt = 3.413 btu/h
- 1 hp = 2545 btu/h
- 1 hp = 746 kW

- 1 Mcf = one million btus
- 5.8 Mcf in a barrel of oil
- 25 Mcf in a ton of big sandy coal (12,500 btus per pound)
- 293 kWhs in one Mcf (at resistance heat value)
- 1760 kWhs in one barrel of oil
- 4.16 barrels of oil in a ton of coal
Rate Structures

- General Service
- Demand Based
- Seasonal
- Time of Day
- Real Time
- Curtailment
- Renewable
All about the details....

- Rate Comparisons
- Reports showing demand variances
- Cash deposits on electric accounts.....substitute LOC or Surety Bond?
- Rates/tariff schedules for your accounts.....be familiar with how they are structured
Energy is Energy; Your Data is Power

• Acquiring data for each location is vital

• Turning data into actionable information is the key

• Working without data is like driving a car without a gas gauge

“Knowledge is knowing that a tomato is a fruit. Wisdom is not putting it in a fruit salad.”
Bill Pay is Muy Importante

- Capture bill data
- Timely bill error detection

Customer Name:
Account Number:
Invoice Number:
Invoice Date:
# Metrics

<table>
<thead>
<tr>
<th>KWh/SqFt</th>
<th>Kgal/PAR</th>
<th>$Rev/KWh</th>
</tr>
</thead>
</table>

Unique to your organization!

“To be sure of hitting the target, simply shoot first and call whatever you hit the target.”
Understanding Load Factor

• Load Factor – The ratio of electricity consumed measured in kWh divided by the maximum amount of energy used at peak demand (kW) in every hour of a billing cycle.

\[
\text{Load Factor} = \frac{\text{Kilowatt hours measured}}{\text{Peak kW demand} \times 24 \text{ hours in a day} \times \# \text{ days in the billing period}}
\]

• Quantity is always a percentage.
• Factors are referred to as “high” or “low”, depending on the quotient.
Understanding Power Factor

- Power Factor – Power consumed in inductive or capacitive loads that requires specialized metering to measure in terms of kVAR (reactance).
- Based on this calculation with metered demand (kW) an adjustment may occur on your bill.
- In some situations customers capture data with kW, but the energy company provides kVA. This will take a conversion to calculate for billing.
Causes of Poor Power Factor

• Inductive loads present in circuits.
• Equipment – motors, ballasts and other machinery that contains magnetic wiring coils to induce load.
• Inductive loads can be brought into a lagging scenario with capacitors added to a circuit.
• Capacitors can be installed at equipment locations, sub-panel locations or at the service entrance to correct the variance.

Work with your energy company on these issues
Deregulated Markets

- There are many opportunities for savings
- Determine your baseline – vs. LY or vs. Utility
- Risk Management, Budget Certainty, Savings
Lighting Upgrades
I didn’t say it was your fault. I said I was blaming you.
HVAC Management
Water Management
Power Quality & Reliability of service

- Reliability of a circuit is measured and reported to respective state commissions in three main calculations:
  - SAIDI – System Average Interruption Duration Index (The average outage duration for each customer served).
  - SAIFI – System Average Interruption Frequency Index (The average number of interruptions that a customer would experience).
  - CAIDI – Customer Average Interruption Duration Index (SAIDI/SAIFI, which gives the average outage duration that any given customer would experience.....also viewed as the average restoration time).
Causes of service interruptions

• Weather
• Trees in ROW (right of way)
• Trees outside of ROW
• Trees anywhere NEAR ROW (jk)
• Car Hit a Pole
• Animal contact
Power Quality Problems

• 80% of Power Quality issues are caused internally
• Customer issues for poor power quality –
  • Start/Stop of sensitive equipment
  • Harmonics & transient voltage
  • Wiring or grounding errors
  • Overloaded circuits
  • Incorrectly sizing equipment
Power Distribution Grid Failure

- What can happen?
- Are you prepared?
- Do you have a plan?
What is your plan for a major storm impact?

• Corporate level –
  • Communication plan
  • Energy company account manager contact information
  • Location information accurate with energy company
  • Back up generation plan, electrician, quick connect, etc…
What is your plan for a major storm impact?

- Store level
  - System check plan -
    - Check breakers.
    - Report outage to energy company.
    - Activate corporate emergency communications plan.
  - Be prepared for days versus hours for restoration.
    - Keep in mind, energy companies must assess the damage first before identifying realistic restoration time frames.
The Storm Restoration Process

Every electric company has a detailed plan for restoring electricity after a storm. Typically, one of the first steps a company takes—to prevent injuries and fires—is to make sure that power is no longer flowing through downed lines. Restoration then proceeds based on established priorities.

Step 1: Power Plants
- Power plants, the primary source of power production, are inspected for damage and restored.

Step 2: Transmission Lines
- High-voltage transmission lines serving thousands of customers in wide areas are repaired.

Step 3: Substations
- Substations are brought online in order for power to reach local distribution lines.

Step 4: Emergency Responders
- Power is restored to emergency services and critical utilities, including hospitals, police, and fire stations, water reclamation plants, and communications systems.

Step 5: Large Service Areas
- Crews are dispatched to areas that will return service to large groups of customers in the least amount of time. Service is restored to commercial and industrial areas and businesses are systematically restored.

Step 6: Individual Homes
- Once major repairs are completed, service lines to individual homes are restored, concentrating on groups of customers.
Remember the Fundamentals

“You don’t need a parachute to skydive. You need a parachute to skydive twice.”

• Begin with the Data
• Choose something and focus on driving improvement
• Do not let perfection stand in your way
Remember the Fundamentals

“If you don’t read the news, you are uninformed. If you do read the news, you are misinformed.”

Energy Management Done Right:
- Financial Benefit
- Operational Improvement
- Environmental Impact
Thank You for Coming

Never miss a good chance to shut up.
- Will Rogers
Contact Information

- Matt Smith
  - Email: Matthew.Smith@laquinta.com
  - Office: 214-492-6717

- Darren Kelsey
  - Email: DWKelsey@aep.com
  - Office: 918-599-2655