Valley Clean Energy Alliance

“Power Particulars”

April 11, 2017
The Basic Power Industry

**Generation**
Where Electricity is Attained
- Nuclear
- Hydro
- Natural Gas
- Geothermal
- Cogeneration

**Transmission**
How Electricity is Moved
- High Level Lines to move over long distances (Oregon to Los Angeles, e.g.)

**Distribution**
Where Electricity is Used
- Lighting
- Cooking and Heating
- Air Conditioning
- Motors and Manufacturing

<table>
<thead>
<tr>
<th>Pre-1998:</th>
<th>NOW:</th>
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<tbody>
<tr>
<td>PG&amp;E / SCE</td>
<td>VCEA (Unregulated)</td>
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| PG&E / SCE | ISO (Regulated) | PG&E/SCE (Regulated) |
Why Manage Risk

A Peak Into the Past -- December 2000
PG&E was Losing a Million $ / hour

Avg Price = $ .31/kWh

Capped Rate @ 10.6 cents
100 Years of Electricity

• Edison’s light bulb ~1880, Pearl Street Station, sold by # bulbs!
• AC vs. DC, Westinghouse & Tesla v. Edison ("getting Westinghoused")
• AC “WON.” Transmit over long distance (one basis for consolidation)
• Two “models:” municipals and IOUs (Alameda, 1887, 19 streetlights and 90kw generator, oldest muni west of Mississippi)
• 1905 Chicago Edison, Sam Insull, 20 companies, scale and “cheap” electricity
• Natural monopoly, regulation (WI, 1907), Insull extolled regulation v. competition
• 1920s Holding Companies (GE’s EBASCO), TVA/REA circa 1933, PUHCA/SEC 1935
• PUCHA/SEC still allowed consolidation but with strict reporting requirements
• 1950s – 1970s, Increasing scales economies in generation and XM
• 1970/Today ~ 70% IOU / 30% Public Power (about 3,000 “publics”)
• 1970s “energy crisis”; formation of CEC, CA Title 24 building standards
• 1990s Low natural gas prices, cheap wholesale power, clamor for dereg
• AB 1890, CAISO and Power Exchange, DA, CA Energy Crisis, Bankruptcies
• Price spikes & Volatility, 2002 CCA Legislation, Climate and RPS regulations
• Low nat gas price, no demand growth, “cheap” renewables, excess capacity
• All conductive to CCA expansion.....
Particulars:

- **Project Scale**
- **Economies**
- **Energy Crisis**
- **CEC and Title 24**
- **Energy Efficiency**
- **Regulations, IRP, PURPA**
- **Cheap Natural Gas**
- **Restless Large Customers**
- **New Entrants (ENRON)**
- **AB1890 / CAISO**
- **Energy Markets**
- **California Energy Crisis, IOU**
- **Bankruptcies, CCA Legislation, RPS**
- **Standards, Climate Crisis**
- **Renewable prices declining, Volatile energy markets, Energy Risk**
- **Lots of new CCAs forthcoming**
VCEA Mission

To deliver cost-competitive clean electricity, product choice, price stability, energy efficiency, and greenhouse gas emission reductions to its customers.
Pro Forma Cost Drivers

• Power Supply / Capital Intensive ~85%

• Business Ops / Staff / Consultants / Office / Outreach / Leg & Reg / Legal ~5%

• Building Reserves ~5%

• Rate Savings ~ 5%
Objective: Meet Daily Load Curve
(Typical Summer Day)

Possible Banding

Forecast / Actual Hourly Load
Powers Supply Costs

- Resources / Contracts / Market / CAISO / NEM/FIT tariffs

- Resource “types”
  - Base Load / Intermediate / Peakers
  - Conventional / Renewable / Operational / CAISO
  - Regulation / black start / quick start / spinning / planning reserves (115%) / local capacity
  - Resources “paid” LMP (where power enters Grid)

- Meeting Load (r/t, HA, DA, MA, longer)
  - Leave to market (pay market price)
  - Build / buy / contract s/t RM policies and goals
  - Load pays DLAP (energy + losses + congestion)

- Hedge v. “Leave to fate”
  - Typically prefer known to unknown
Timing Is Important

CCAs most viable when “red line” below “green line”

$\$/MWh

~80-90% of CCA annual budget dedicated to wholesale power supply.
Footnote on Business Risk

• Any energy business must address risk management policies, practices and procedures (the “3Ps”)
  – Governing body will:
    • Set policy on risk limits
    • Adopt rules and procedures
    • Monitor and enforce
    • Revise policy as necessary
  – CEO/GM and staff will:
    • Follow 3Ps
    • Report exceptions
  – Risk Oversight Committee (ROC)
    • Meet regularly
    • Review and report conformance with 3Ps
    • Take necessary actions (disciplinary, recommend revisions, etc.)
  – **Regular reporting to Board**
GOVERNANCE

Establishment of policies, and continuous monitoring of their proper implementation by the members of the governing body. It includes mechanisms required to balance the powers of the members / customers (with the associated accountability), and the primary duty of enhancing the prosperity and viability of the organization.
VCEA Business Functions Include

- Customer Service / Public Relations / Key Accounts Reps / CIS / Information Technology
- Rates / tariffs and services / Cost of Service Analysis
- Planning and Forecasting
- Finance / Accounting / Budgeting / Credit / Commercial Banking
- Risk Management (business, insurance, power supply)
- Power Contracting / Resource Acquisition
- CAISO Schedule Coordination / Validation / Settlements
- Headquarters Infrastructure
- Legal Support
- Staffing / HR
- Regulatory Compliance / Reporting / Monitoring
  - CalCCA / oppose SB618 – IRP bill?
- Data and Billing interface with PG&E
- Governance
Governance Responsibilities

• In short: **Everything!**
• 7/24 Operations (“dairy farmers”)
• Usual Formalities (meeting schedules, notices, minutes, motions and approvals, special meetings and committees)
• Hire staff / consultants
• Approve contracts
• Build cash reserves
• Risk management / PG&E relationship
• Plan ahead / control destiny / be nimble / budget / insurance / personnel policies
• Don’t have to do all at once / prioritize
Governance Responsibilities

• Avoid being 1st adopter / tech “fix” often isn’t / Intuition plus diligence
• Worst case preparedness (disasters, mishaps, unexpected, who’s on 1st)
• Conservative approach / ask questions
• Long term business (100 year view)
• Awareness of energy market pulse (gas / oil/ power/renewables)
• Middle of road okay / “copy” others
• Revenues >= Costs (all else pales)
• Maintain relationships with other CCAs
• Listen to Customers (the “local” of Local Control)
Endnote

- Establish sound protocols
- Long-term conservative view
- Employ capable staff
- Set good examples and expectations
- Set priorities
- Ask lots of questions
- Do the right thing (way underutilized)
- Can’t know “everything” --- trust staff, consultants, and your business intuition

- Public power has attained nearly universal success and so will VCEA!