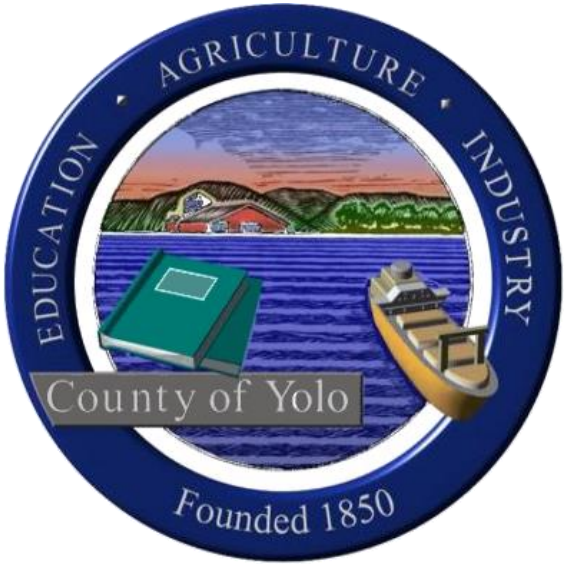
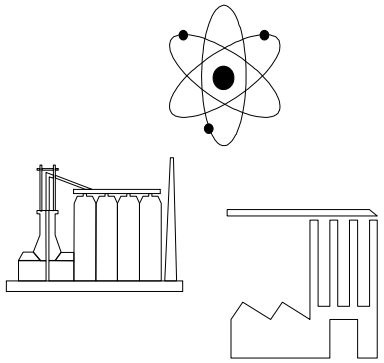
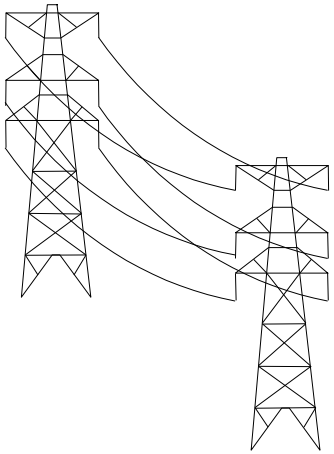
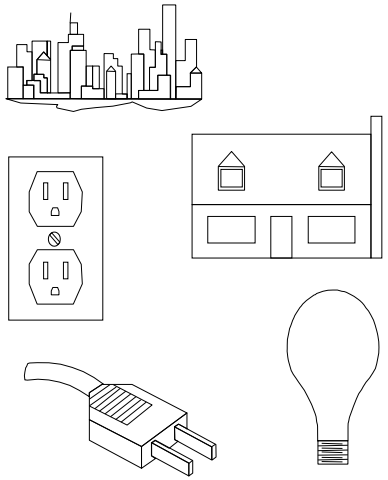
Valley Clean Energy Alliance

“Power Particulars”

April 11, 2017



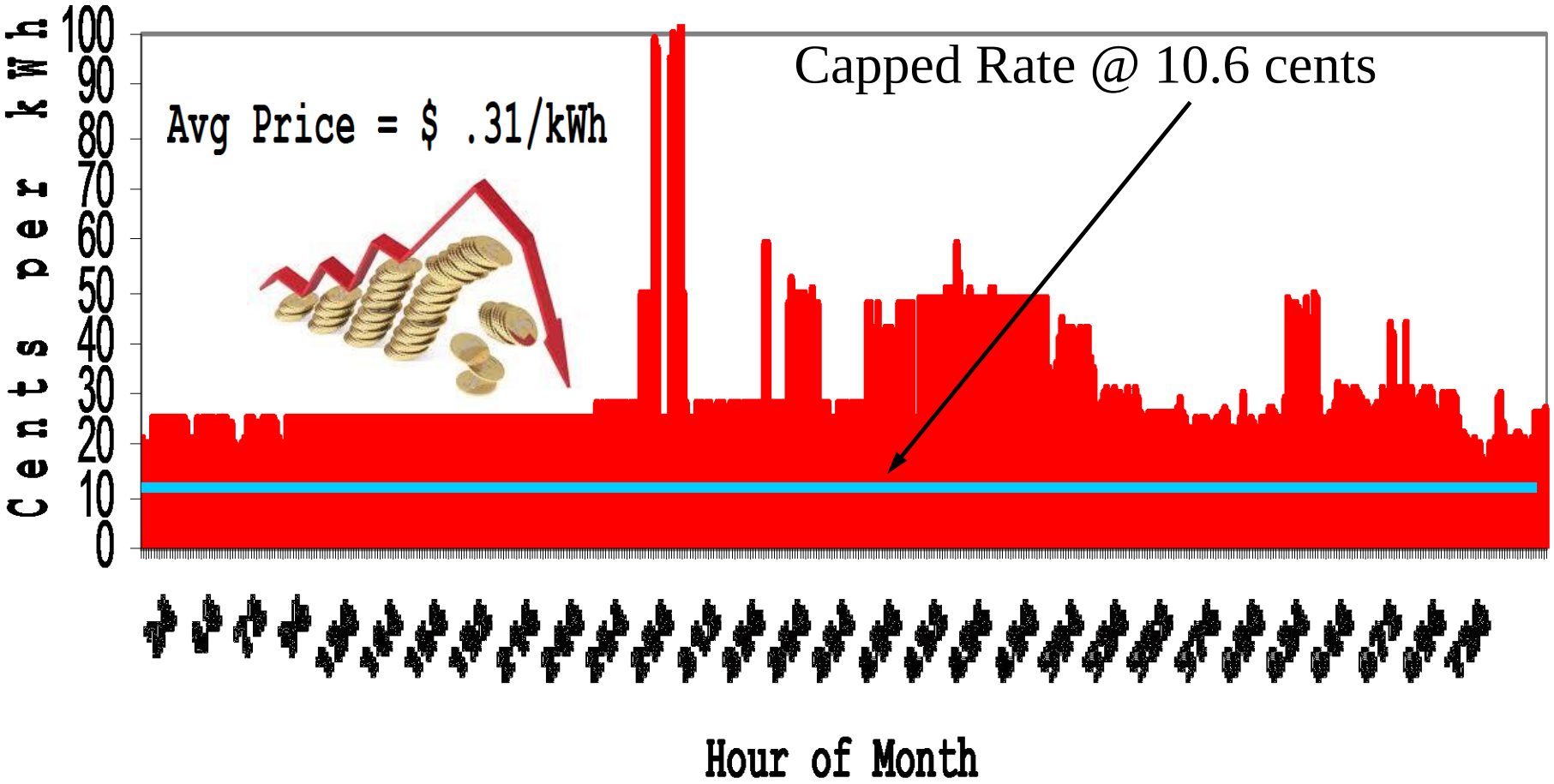
The Basic Power Industry

	Generation	**Transmission**	**Distribution**
	Where Electricity is Attained	***How Electricity is Moved***	***Where Electricity is Used***
			
	Nuclear ***Hydro*** ***Natural Gas*** ***Geothermal*** ***Cogeneration***	***High Level Lines to move over long distances (Oregon to Los Angeles, e.g.)***	***Lighting*** ***Cooking and Heating*** ***Air Conditioning*** ***Motors and Manufacturing***
Pre-1998:	*PG&E / SCE*	*PG&E / SCE*	*PG&E / SCE*
NOW:	*VCEA (Unregulated)*	*ISO (Regulated)*	*PG&E/SCE (Regulated)*

Why Manage Risk

A Peak Into the Past -- December 2000

PG&E was Losing a Million $ / hour

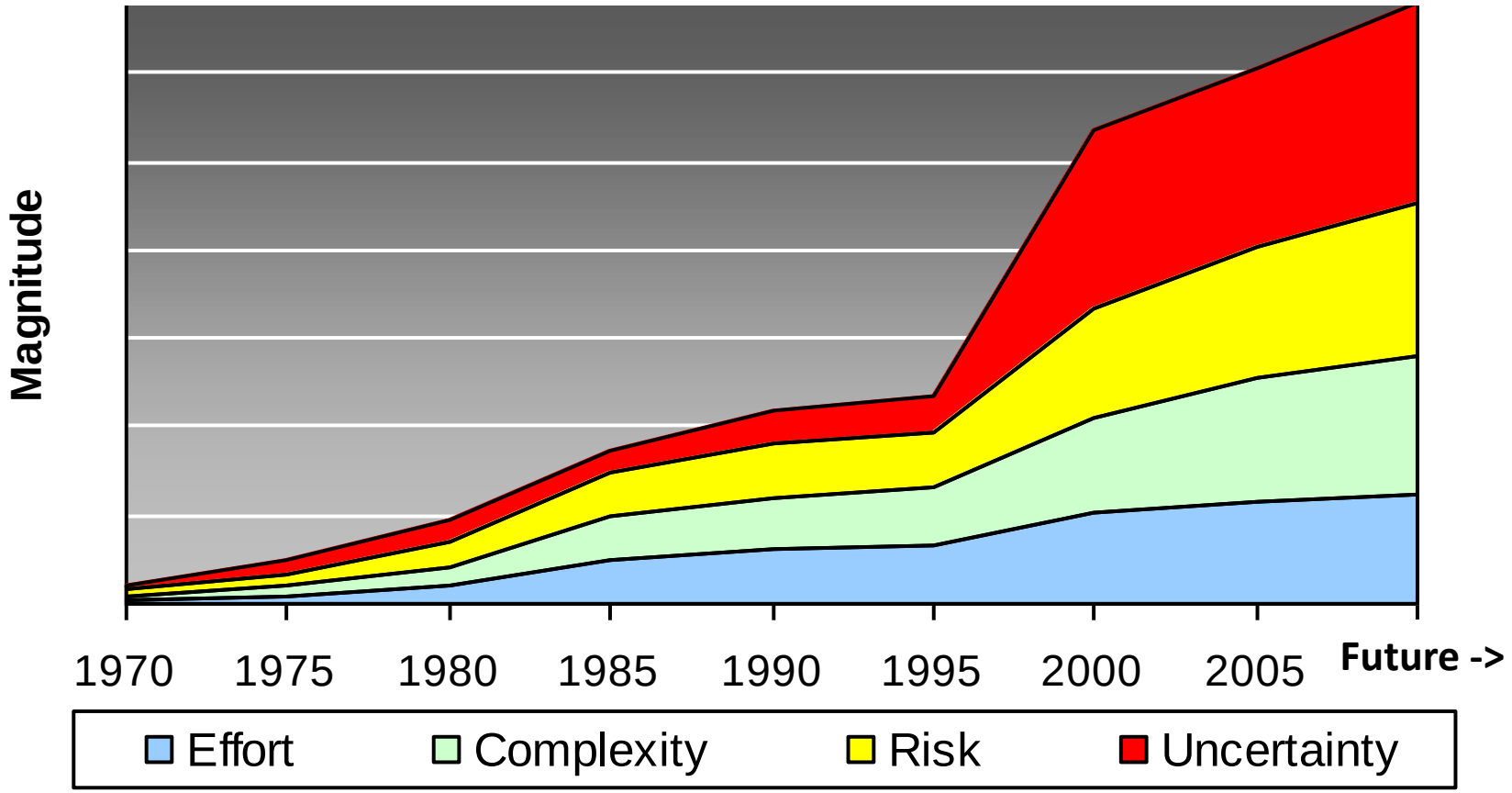


100 Years of Electricity

- 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…..

INCREASING POWER INDUSTRY COMPLEXITY

Brave New Power World



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%

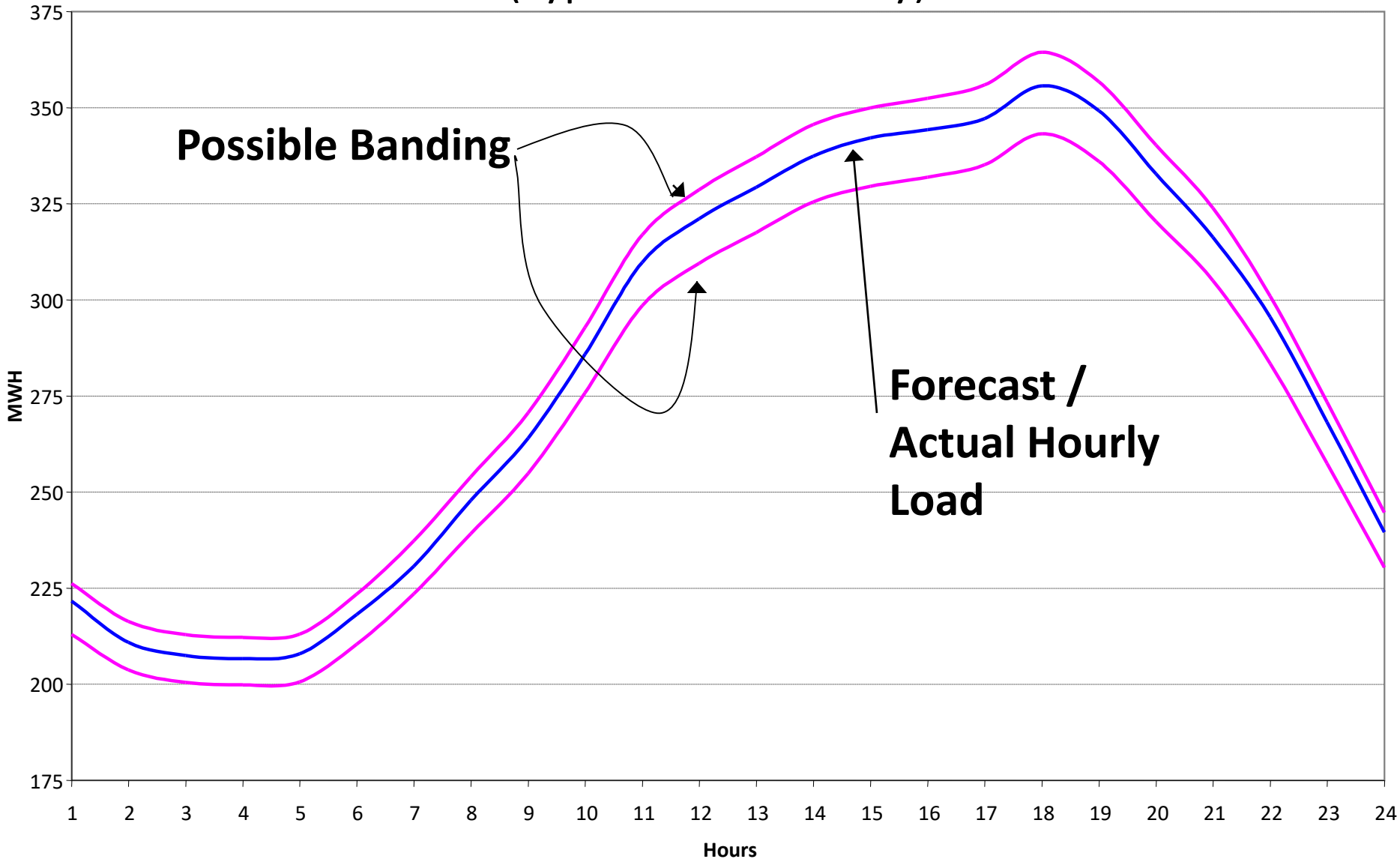
- Business Ops / Staff / Consultants / Office / Outreach / Leg & Reg / Legal ~5%

- Building Reserves ~5%

- Rate Savings ~ 5%

Objective: Meet Daily Load Curve

(Typical Summer Day)

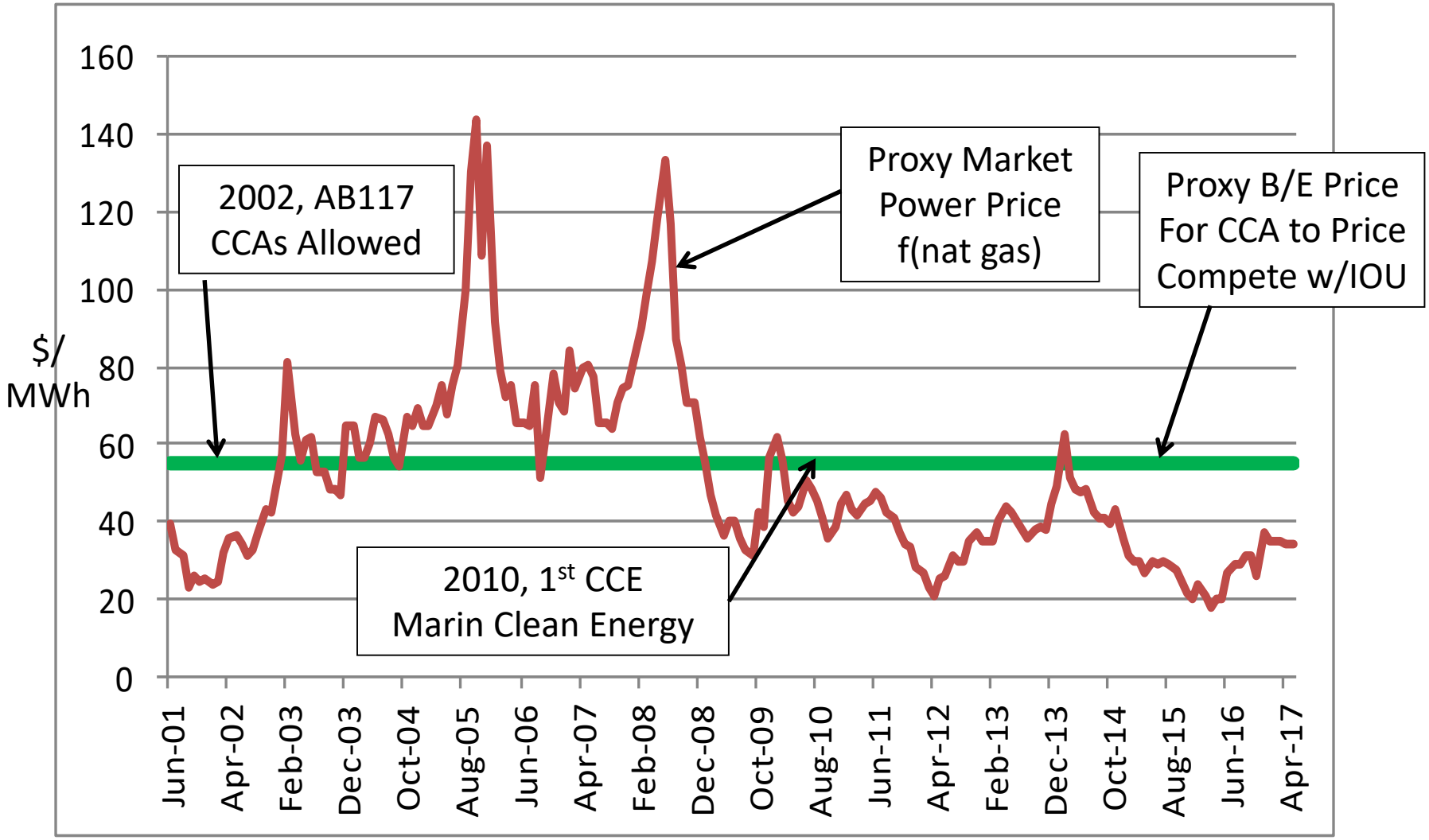


Powers Supply Costs

- 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

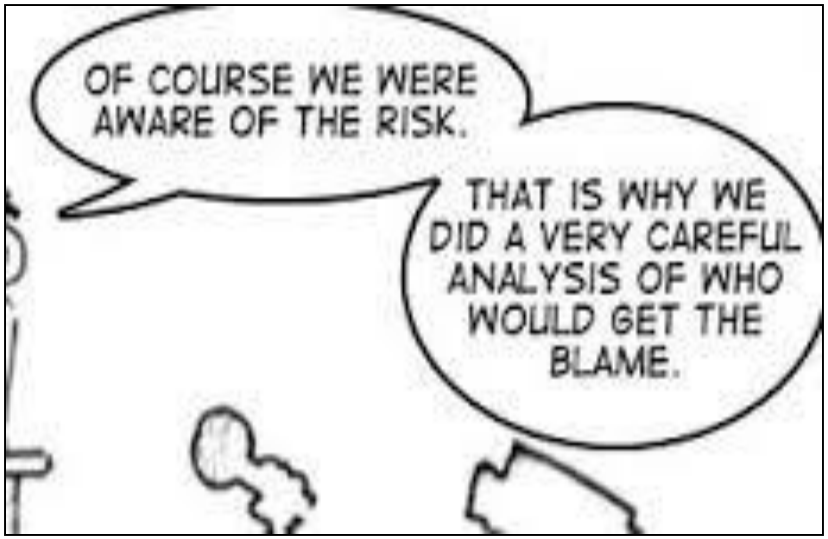
CCAs most viable when “red line” below “green line”



~80-90% of CCA annual budget dedicated to wholesale power supply.

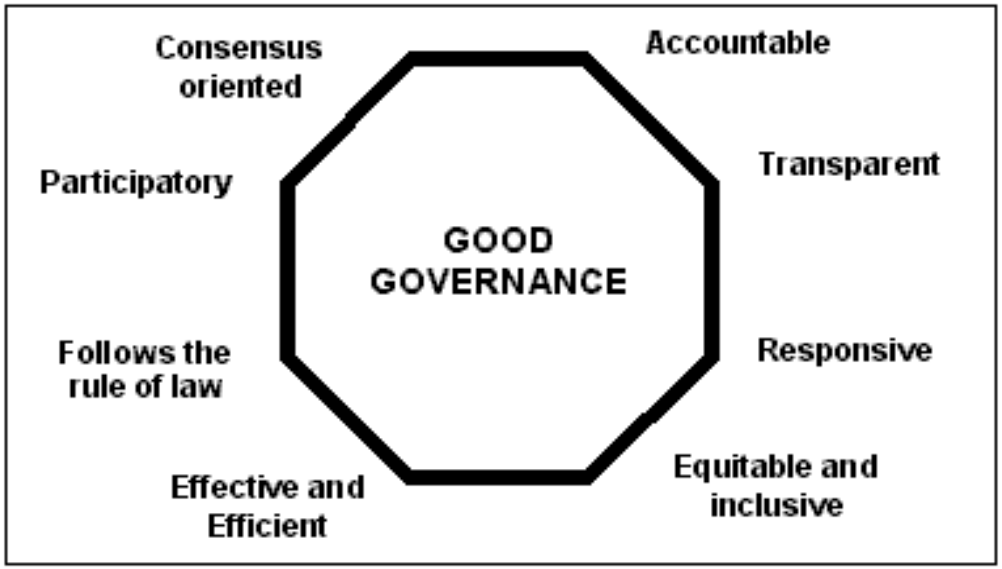
Footnote on Business Risk

- 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.)
  - **<u>Regular reporting to Board</u>**



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!