





# Succeeding In Aggregation

New Mexico Retail Association




# Succeeding In Power Aggregation

- Regulation, Legislation, and Devastation
- Fundamentals, fundamentals, fundamentals
- What Does The System Look Like?
- Looking Backwards
- Facing Forwards



# Regulation, Legislation, and Devastation

- Regulatory practice in most states tends to ignore the commercial sector
- Residential customers 
- Industrial customers from the service territory unless their demands are made
- Commercial customers tend to pay and pay
- Most legislative reforms have failed miserably
- Both California and Massachusetts have simply failed to provide benefits for most customers



# Illinois

- The major exception is Illinois
- The Illinois retailers established an alliance with the large utilities and received a 15% immediate discount as a reward
- Other allies have received comparable benefits



# Fundamentals, Fundamentals, Fundamentals

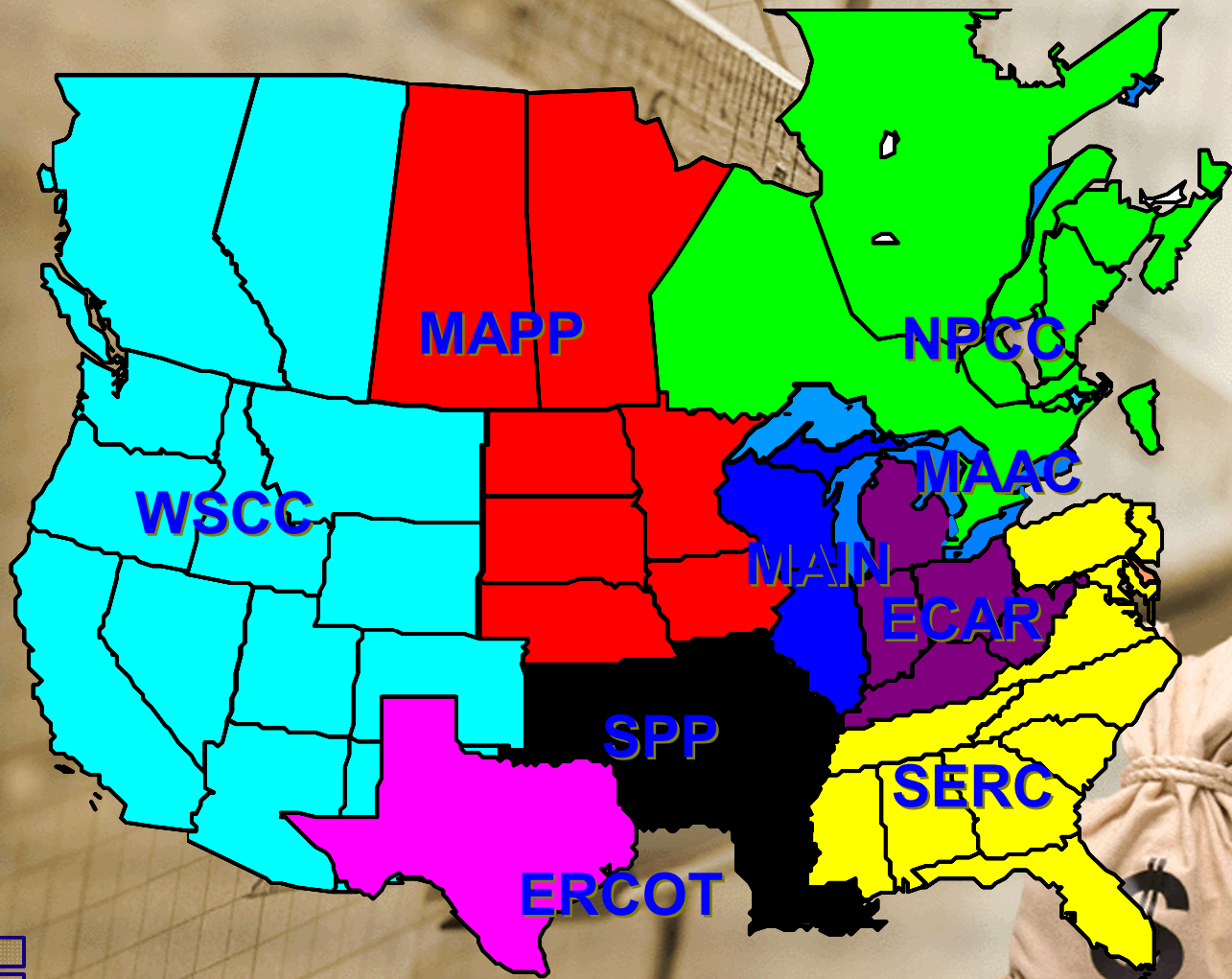
- In less prestigious times I have been known to say "IIJPS"
- This stands for "It is just pork bellies, stupid"
- Falling prices have welcomed the opportunists:
  - It is good to be smart and lucky
  - Lucky works all right too



# A Tour Of The WSCC

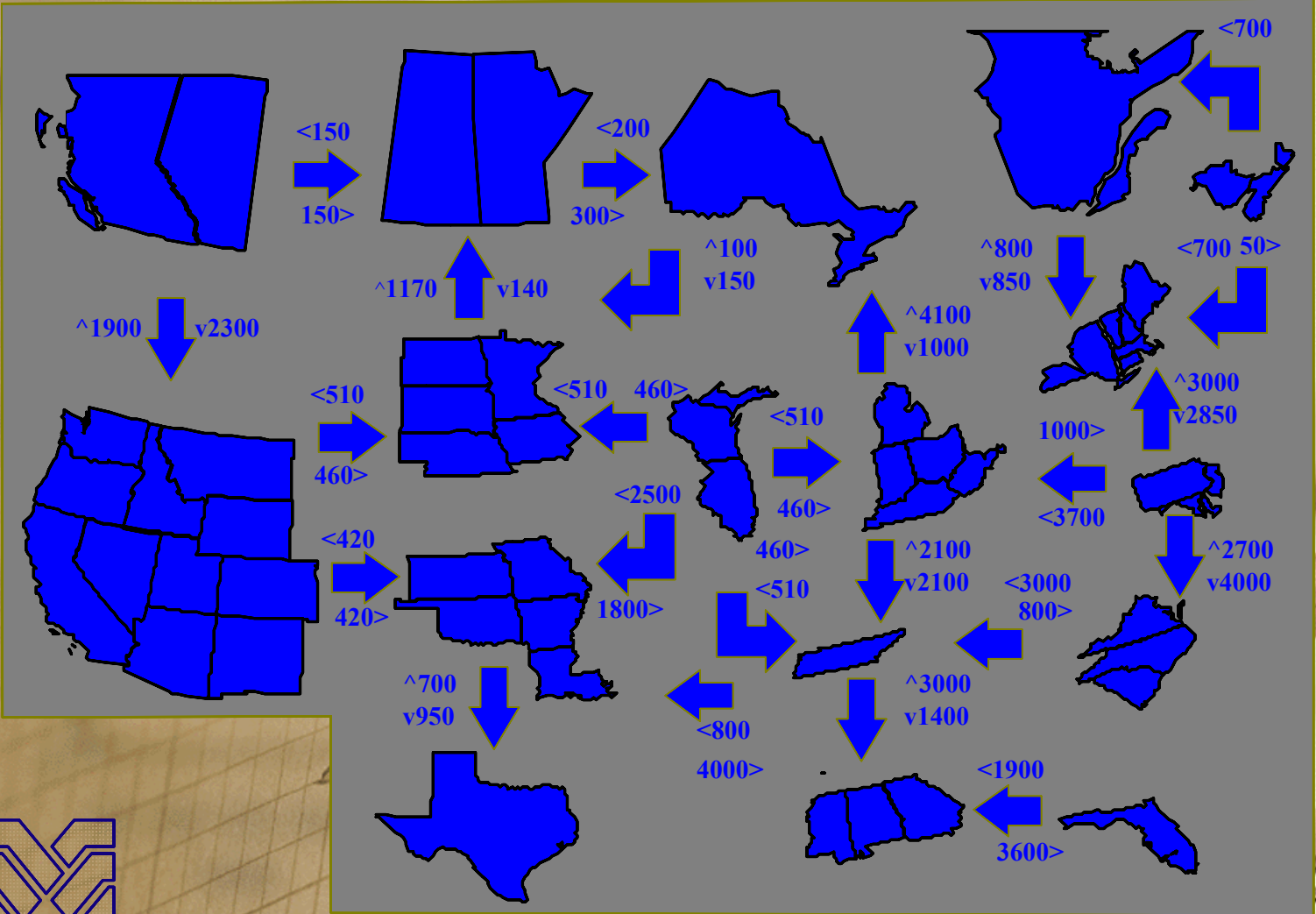
- **Canada**
  - Big place
  - Low prices
  - Bureaucratic gatekeeper
- **Pacific Northwest**
  - Medium sized place
  - Low prices
  - Bureaucratic market maker
- **California**
  - Smaller place
  - Very bureaucratic institutions
  - Home of the only truly socialistic power market on the continent (if it failed everywhere else, lets try it here!)
- **Desert southwest**
  - Medium prices
  - A far far nlace



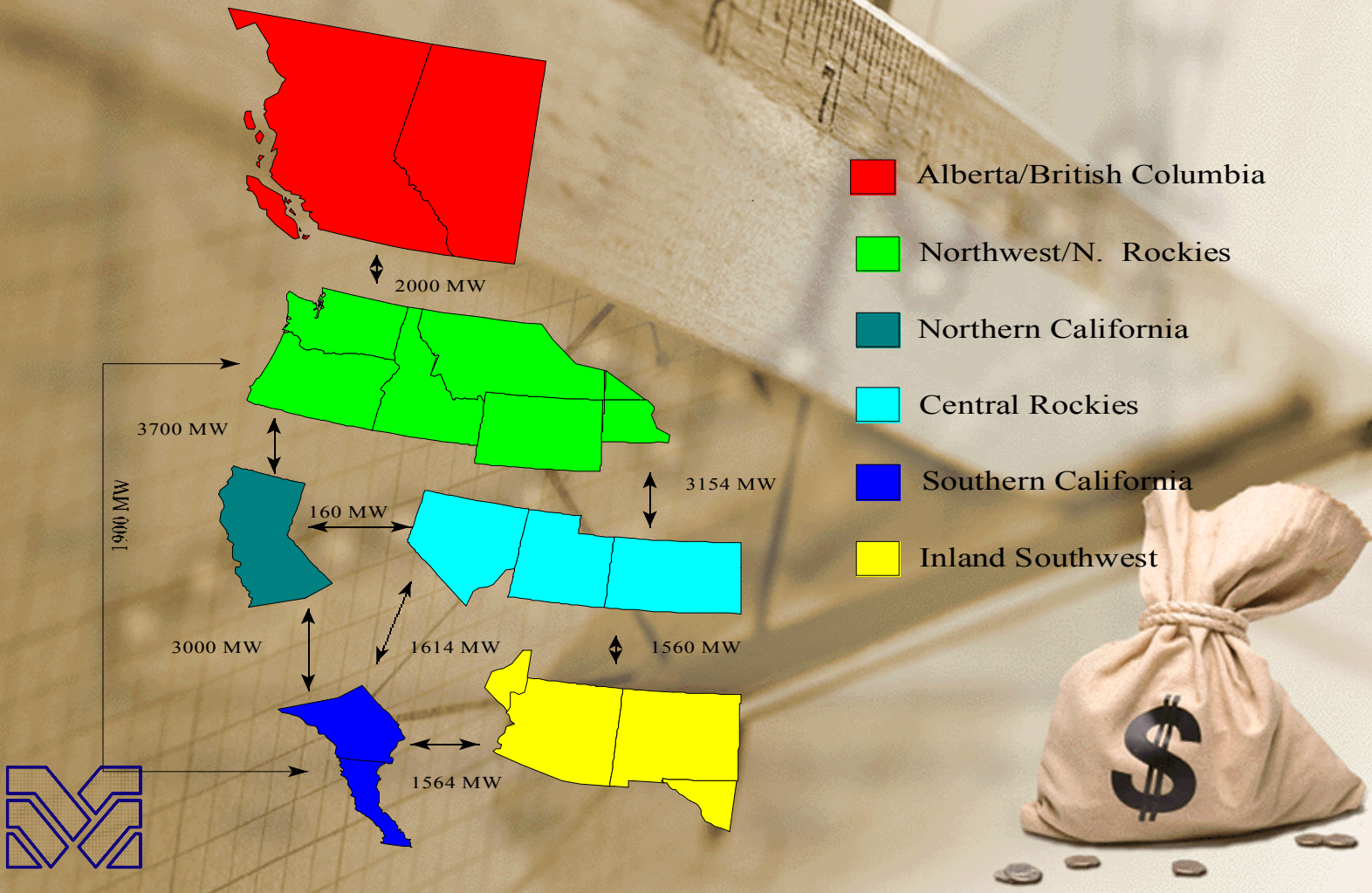




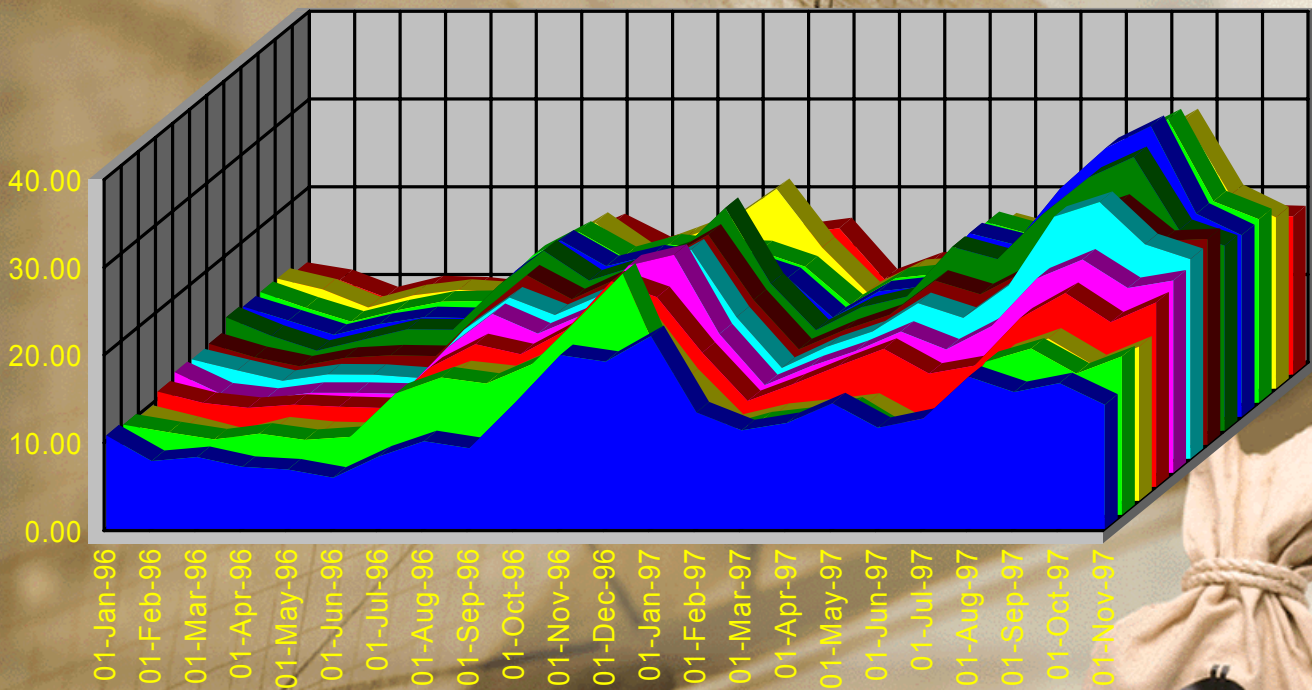
# U.S. Interregional Transfer Capability



# West Coast Transfer Capability



# Geography And Prices



- |                |                   |                |              |                 |
|----------------|-------------------|----------------|--------------|-----------------|
| ■ Alberta      | ■ NW/N Rockies    | ■ Mid-Columbia | ■ COB        | ■ N. California |
| ■ Midway       | ■ S. California   | ■ Mead         | ■ Palo Verde | ■ Inland SW     |
| ■ Four Corners | ■ Central Rockies |                |              |                 |

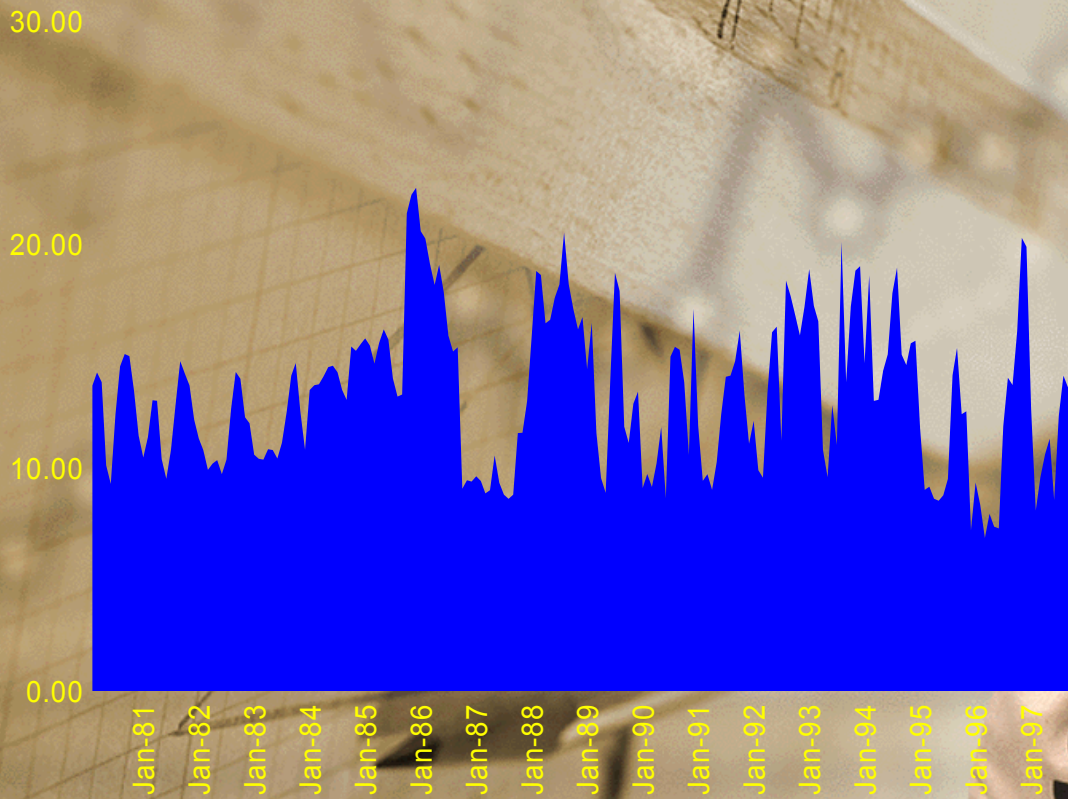


# The Primacy of Spot Power

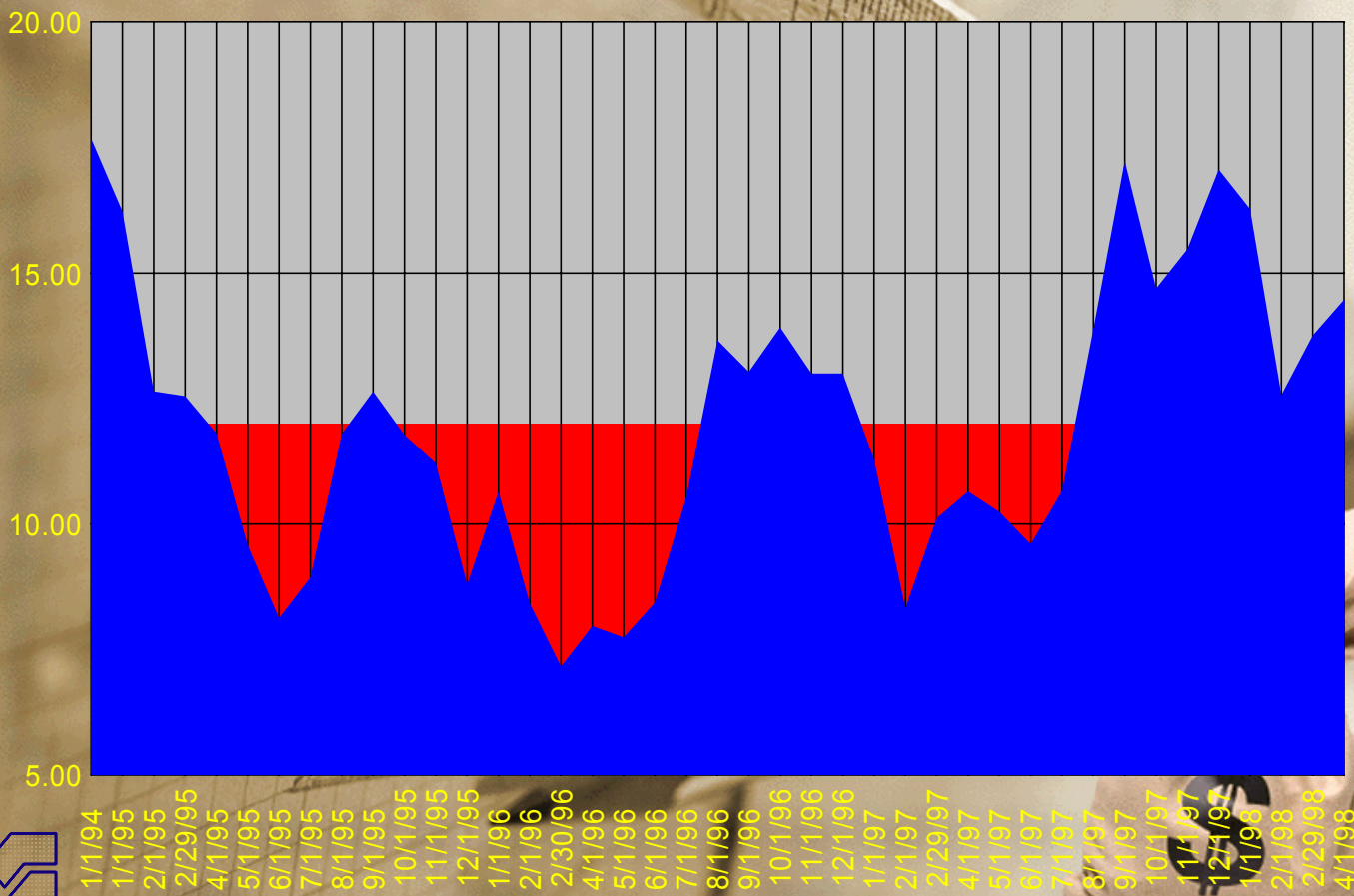
- Reliability standards tend to maintain a long term spot market with prices pegged at variable costs -- not fixed costs
- This implies that our historical experience in spot markets will continue
- We can expect a continuing differential between spot and firm markets



# Seventeen Years Of Spot



# New Mexico Prices

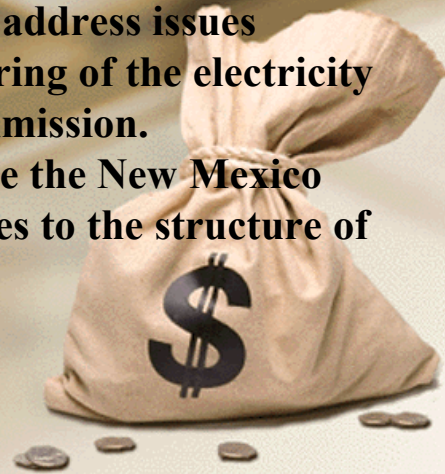


	Average Residential Rate	Number of Residential Customers	Percentage
Central NM	\$0.12	12,541	2.04%
Central Va	\$0.07	4,053	0.66%
Columbus	\$0.13	2,857	0.46%
Continental	\$0.09	17,227	2.80%
Farmers'	\$0.09	8,204	1.33%
Jemez	\$0.10	23,215	3.77%
Kit	\$0.11	18,569	3.02%
Lea	\$0.07	5,765	0.94%
Mora-SanM	\$0.12	7,267	1.18%
Northern R	\$0.13	3,046	0.50%
Otero Cou	\$0.13	11,328	1.84%
Roosevelt	\$0.07	2,358	0.38%
Sierra	\$0.14	2,915	0.47%
Socorro	\$0.11	8,432	1.37%
Southwest	\$0.12	1,163	0.19%
Springer	\$0.13	2,214	0.36%
El Paso El	\$0.11	56,181	9.13%
PNM	\$0.09	304,900	49.55%
SPS	\$0.06	84,963	13.81%
TNP	\$0.09	38,121	6.20%
NM		615,319	100%



# January Commission Order

- 1. It is in the public interest for the State of New Mexico, the Commission, the regulated electric utilities of the state and their customers to advance changes in the structure and regulation of the electric utility industry, such that the public interest is not adversely affected by such changes.**
- 2. Restructuring of the electric utility industry to allow for competitive markets is in the public interest and will benefit the State of New Mexico and its citizens.**
- 3. The Commission has jurisdiction over the subject matter of this Inquiry.**
- 4. The Report to the Legislature by the Commission, attached to this Final Order, concludes the Commission's inquiry into restructuring the utility industry in this case and this docket therefore should be closed.**
- 5. The Commission should continue to develop policies and address issues relating to ongoing changes to the regulation and restructuring of the electricity utility industry as they arise in proceedings before the Commission.**
- 6. Restructuring issues should continue to be brought before the New Mexico Legislature for consideration and implementation of changes to the structure of regulation of the electricity industry.**





# An Introduction To Buying Power In A Competitive Environment

- A basic introduction to the power system -- Power 101
- A power system glossary
- The basic map of the deal

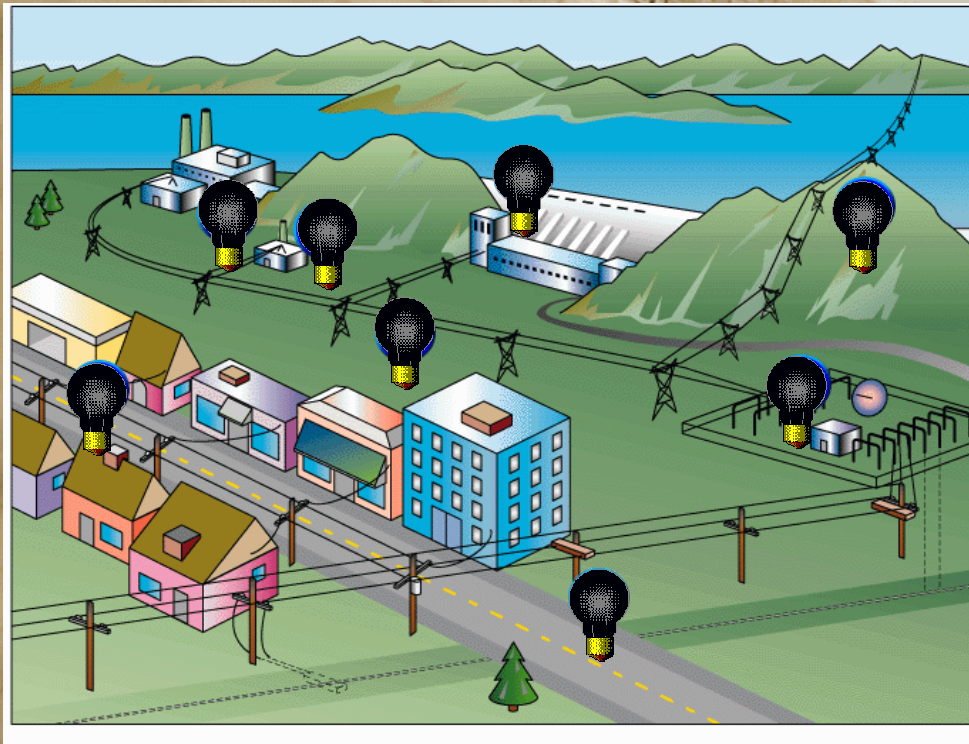


# Power Supply 101

- A brief overview of actual operations
  - Dispatching
  - Scheduling
- Power Supply Components
- An Actual Power Supply Portfolio



# The System



# Thermal

- Thermal plants are the backbone of most electric systems
- Thermal efficiency is increasing dramatically
- We expect that most older plants will disappear under competition producing a marked reduction in spot energy prices
- The capital cost of thermal is usually the implied cost of capacity



# Qualified Facilities

- Qualified Facilities (QFs) are an artifact of the PURPA law
- QFs often have inefficient "must run" operations and out-of-market power contracts
- Many QFs are now being phased out or renegotiated -- a factor that will also tend to lower spot prices over time



# Hydro

- Hydro-electric facilities dominate in Western and Eastern Canada and the Pacific Northwest
- Hydro facilities usually can provide capacity for very little additional cost -- therefore capacity is inexpensive in these areas
- Hydro also produces substantial amounts of non-firm power -- power that is not dependable on a year to year basis



# Inter-Regional Transmission

- Inter-regional transmission can be constrained
- Major regions in the U.S. and Canada are connected with between 2,000 and 10,000 megawatts of transmission
- Price differentials develop (and persevere) along these boundaries



# Transmission

- Transmission usually contributes from three to six mills to total cost
- Transmission constraints are often described, but turn out to be unusual in everyday practice
- Under 888, all eligible (i.e. wholesale) entities have access
- Losses at transmission voltages are low 1% to 2%





# Substation

- Major points of interconnection occur at substations
- Conceptually, substations constitute the points of delivery between suppliers and customers
- Ownership of a substation is likely to be the final test for non-"sham" transactions under FERC's 888 rules



# Sub-transmission

- Most endusers are served at levels below 67 kV
- This level of service is generally regarded at the sub-transmission level
- Losses increase significantly at lower voltages -- 4% and higher are not unusual



# Distribution

- Distribution is the end of the line
- Distribution losses are high (in some cases climbing to 10%)



# Where Are The Moving Parts?

- In the absence of moving parts, administering an electric supply has many similarities to managing your garden -- you can give all the orders you want, but the plants tend to follow their own lead
- The only "system" functions are run by the system dispatcher and the schedulers



# What is this man doing?



# The Power Supply Dispatcher

- The dispatcher usually fulfills three functions:
  - Overview of transmission and distribution functions
  - Short term ("real time") transactions
  - Management of electric frequency by adjusting plant operations
- These three functions establish a "control area" -- an area under the control of a dispatch center
- As a general rule, these are simple operations without significant interest in our context since most power supply decisions are significantly divorced from these functions



# Actual Power Purchase Mechanics

- The power supply is actually a series of contracts that provide specific solutions to operating problems
  - Base load power is rarely dispatched -- it represents blocks of "take or pay" resources
  - Peak load power operates at low load factor -- it must be dispatched to meet system peaks
  - Spinning reserve (and a variety of similar requirements under similar names) meets the reserve requirements that your load puts on the system
- Actual operational requirements are often clearly summarized under the serving utility's FERC comparability tariff



# Actual Example

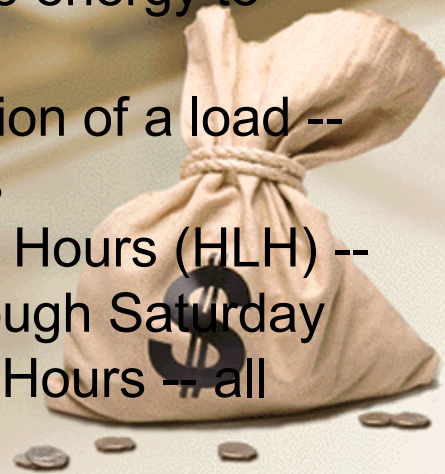
- In this example hourly differences from the weekly and daily schedules are met by the net requirements service
- The thin bar above the base load block also provides some coverage for hourly excursions
- Special purchases are layered in above the base load block and below the net requirements



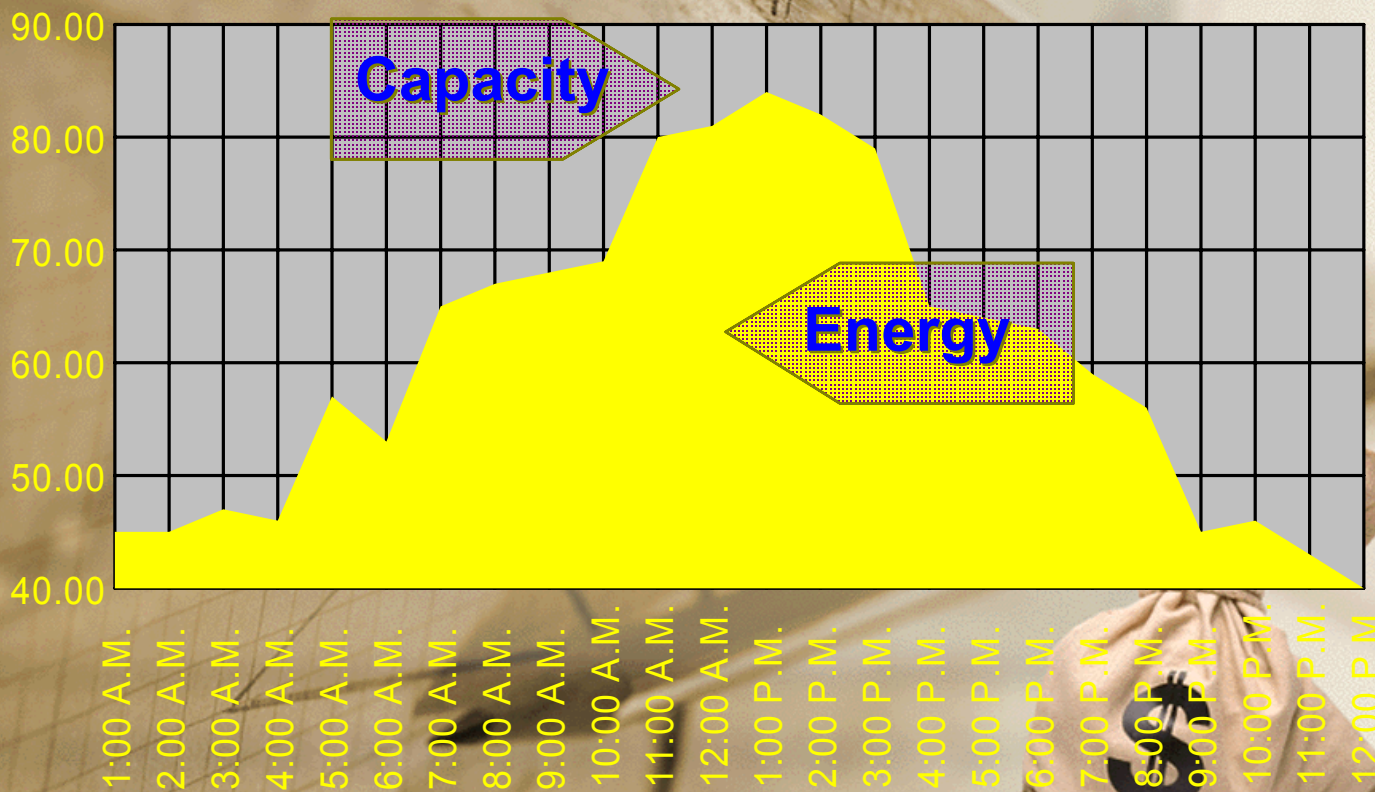


# A Power System Glossary:

- Energy: Pure energy completely unscheduled -- like monthly bus pass in a slow and unreliable bus system
- Capacity: Pure capacity is the ability to schedule the bus
- Mills: One tenth of a cent
- Megawatt: Two large stores, 500 homes, one one hundredth of a steel mill
- Capacity Factor: the ratio of average energy to capacity
- Load Profile: A simple characterization of a load -- usually on a weekly or monthly basis
- On-Peak: Also known as High Load Hours (HLH) -- usually the 16 hours on Monday through Saturday
- Off-Peak: Also known as Low Load Hours -- all other hours including holidays



# Energy and Capacity



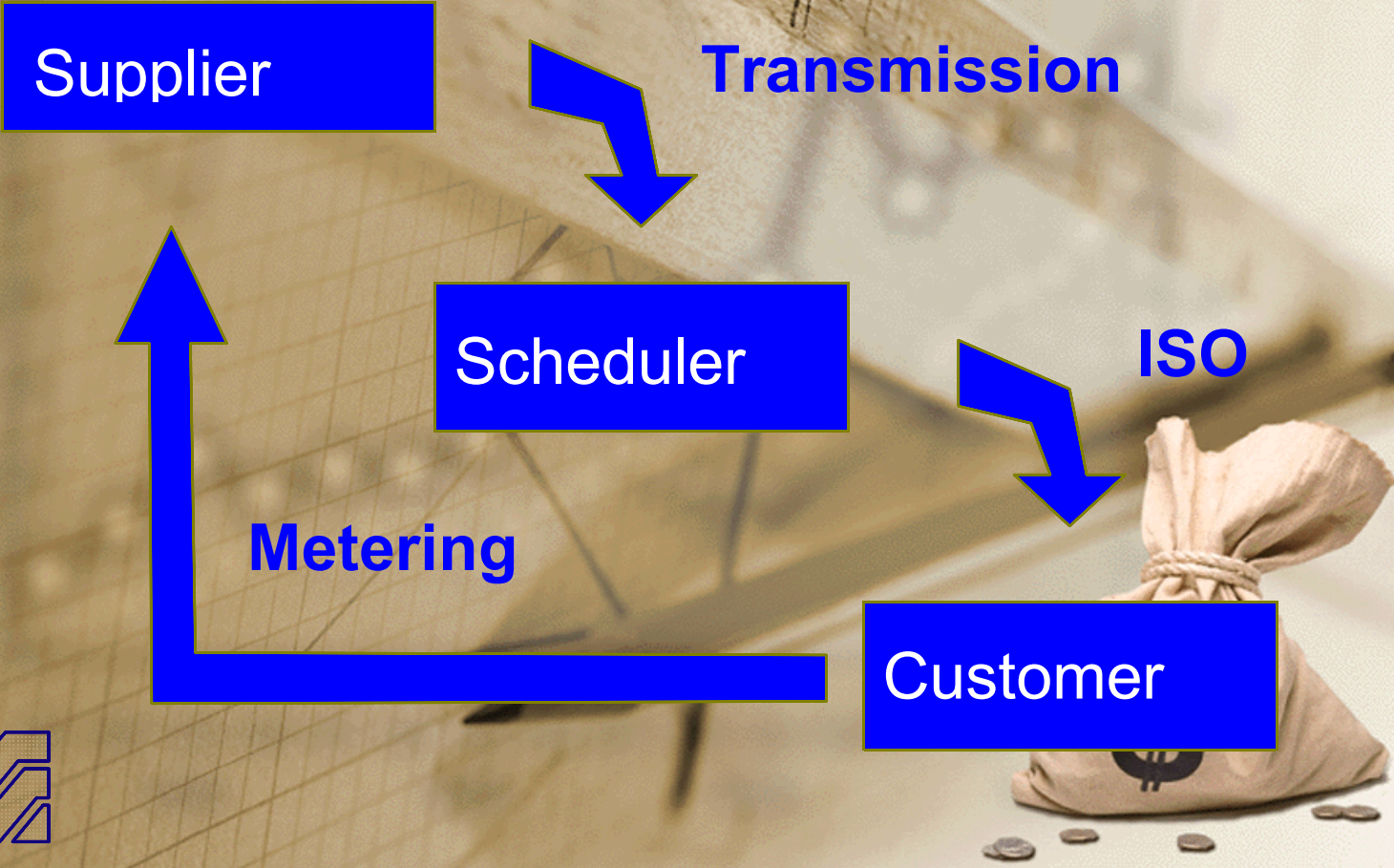
# **Non-firm power, interruptible power, and utility service**

**Do any of these gradations actually exist?**

- **Non-firm power may simply not exist**
- **Interruptible power is seldom defined operationally**
- **Financial firm may be the only grade of power we have ever purchased**
- **Utility grade service would seem to be an aftereffect of regulatory incentives for overbuilding rather than a fundamental commitment to serve**



# Mapping The Deal:



# Looking Backwards

- Ninety years of cost-plus regulation have traumatized the industry to always expect the worst
- Recent worries have shaken the Pacific Northwest that falling prices may raise prices in the area
  - Does this mean that Californians are going to buy all of the "cheap stuff?"
- Is guilt the answer, or are we at the beginning of the "long boom?"



# Ninety Years of Bad News

- Sam Insull started over a third of U.S. utilities
- J.P. Morgan started another third
- They hated each other and spent years bankrupting each other's companies
- Sam ended up as the model for the tycoon on the Monopoly set
- He also spent several years as a guest of Cook County Jail (Chicago)
- J.P. Morgan just faded away
- We then spent the next sixty years building the wrong plants
- This is the sort of family history most of us would rather forget



# Does this mean that Californians are going to buy all of the "cheap stuff?"

- Does this also apply to airplanes?
- When will we learn that isolationism is not the answer?
- Do we really believe that retail access will change California loads?
- Can we build a wall around the "cheap stuff?"
- The answer to the above is no, apparently a long time, no, and no



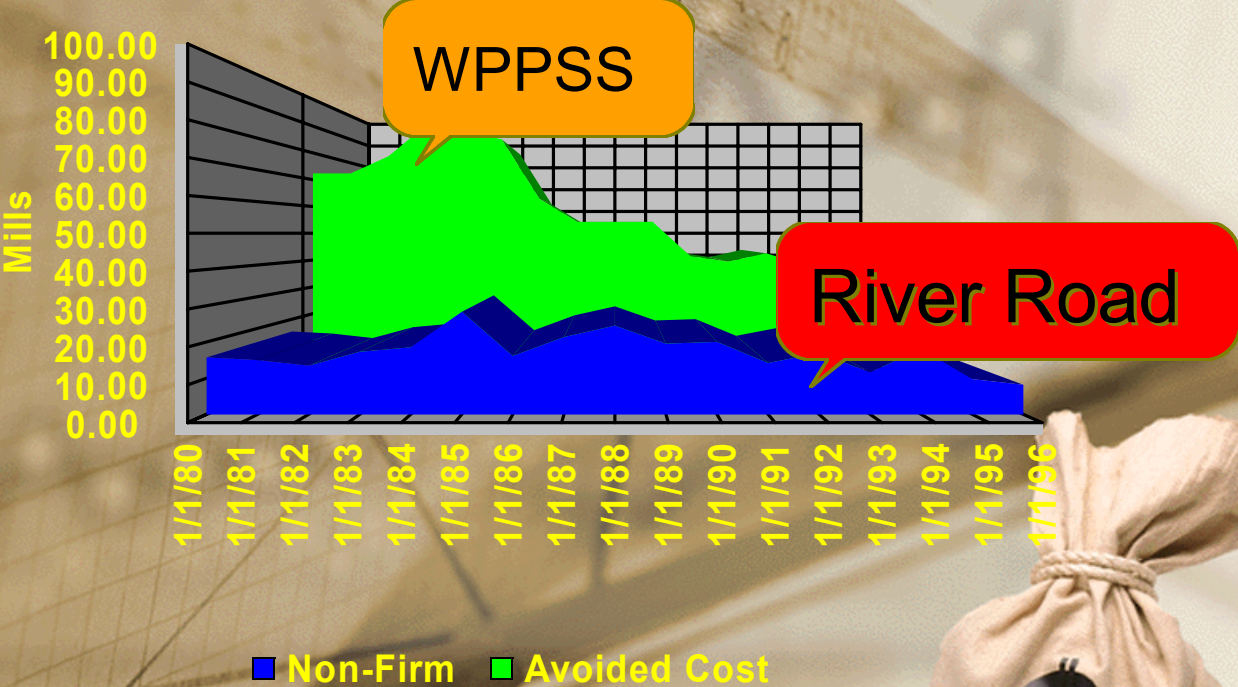
# Is guilt the answer, or are we at the beginning of the "long boom?"

- Forecasts indicate continued efficiency improvements of 1% to 2% per annum
- Availability rates continue to climb (Gosh, do incentives really work?)
- Resources continue to tumble out of the woodwork (Is Trail in the WSCC tabulations?)



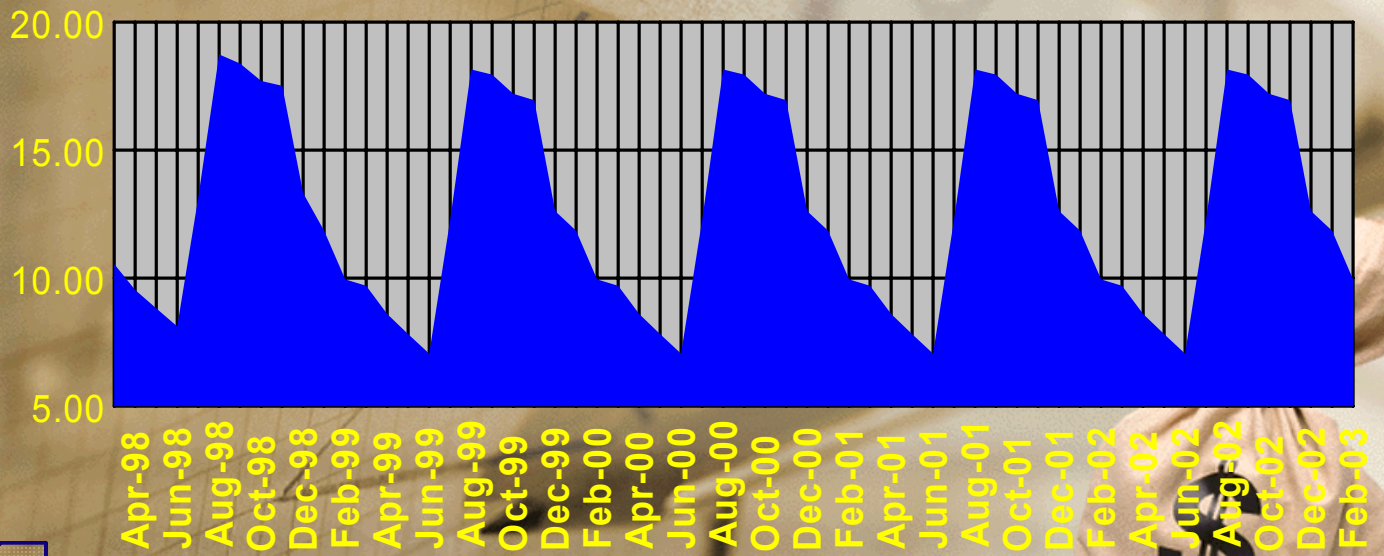


# Firm And Non-Firm



# What's Next

McCullough Research spot forecasts:



# Simply Stated:

- Hew to the bottom line
- Buy low
- Avoid entanglements
- Remember: 6,000 bureaucrats are always wrong
- Intervene early in the political process -- don't assume results will be for the best



**McCullough Research**  
**Robert@Mresearch.com**  
**503-771-5090**



# Facing Forwards

- Overall Prices
- Deal Structure
- Evading Regulation and Legislation

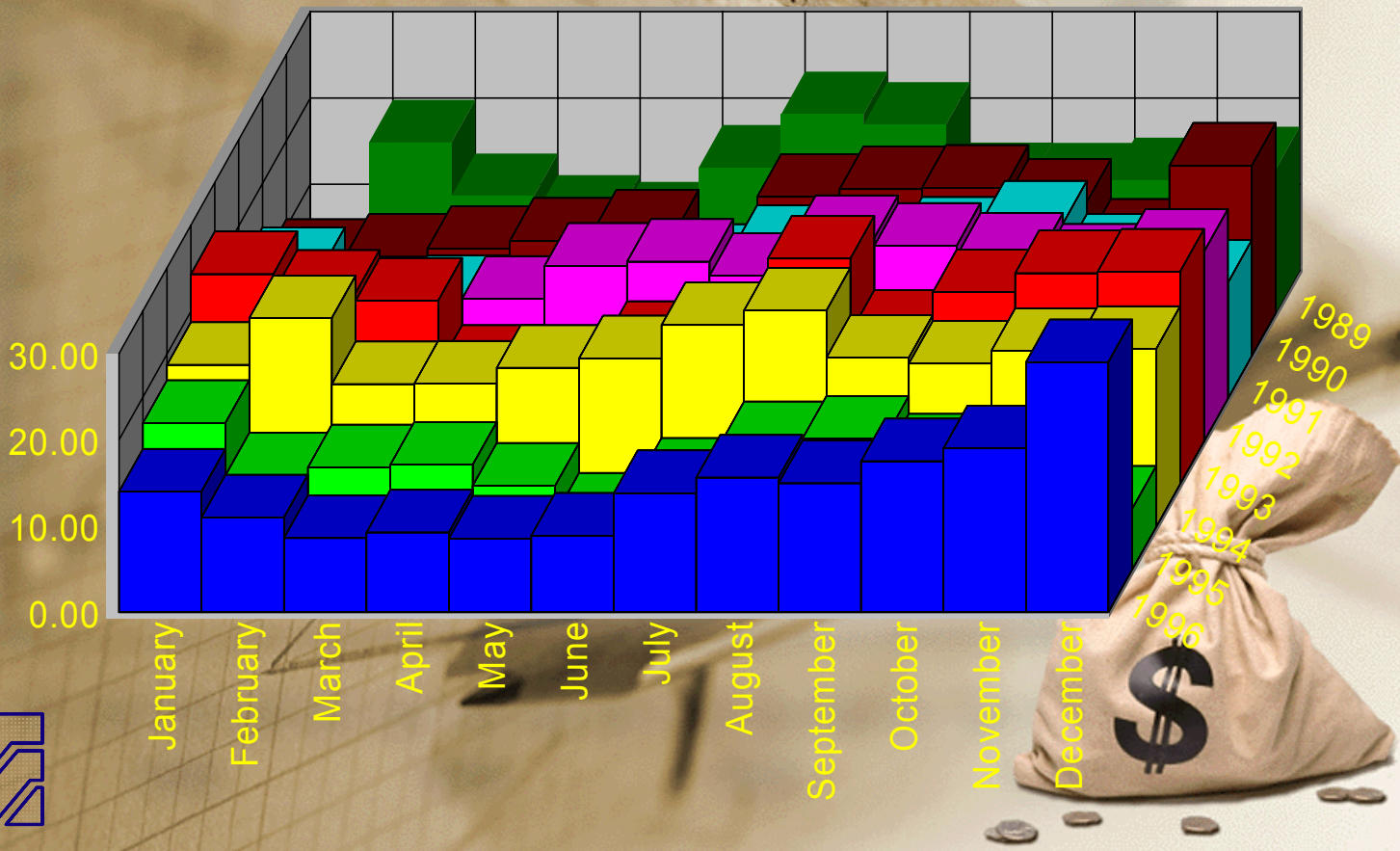


## Overall Prices

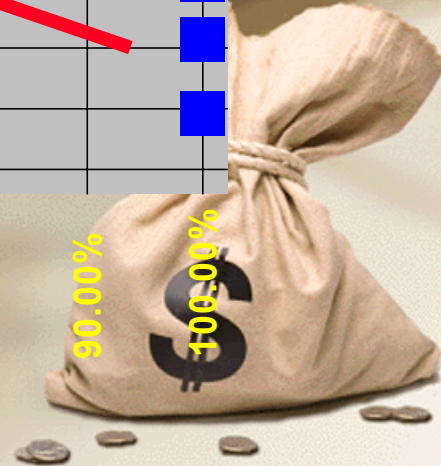
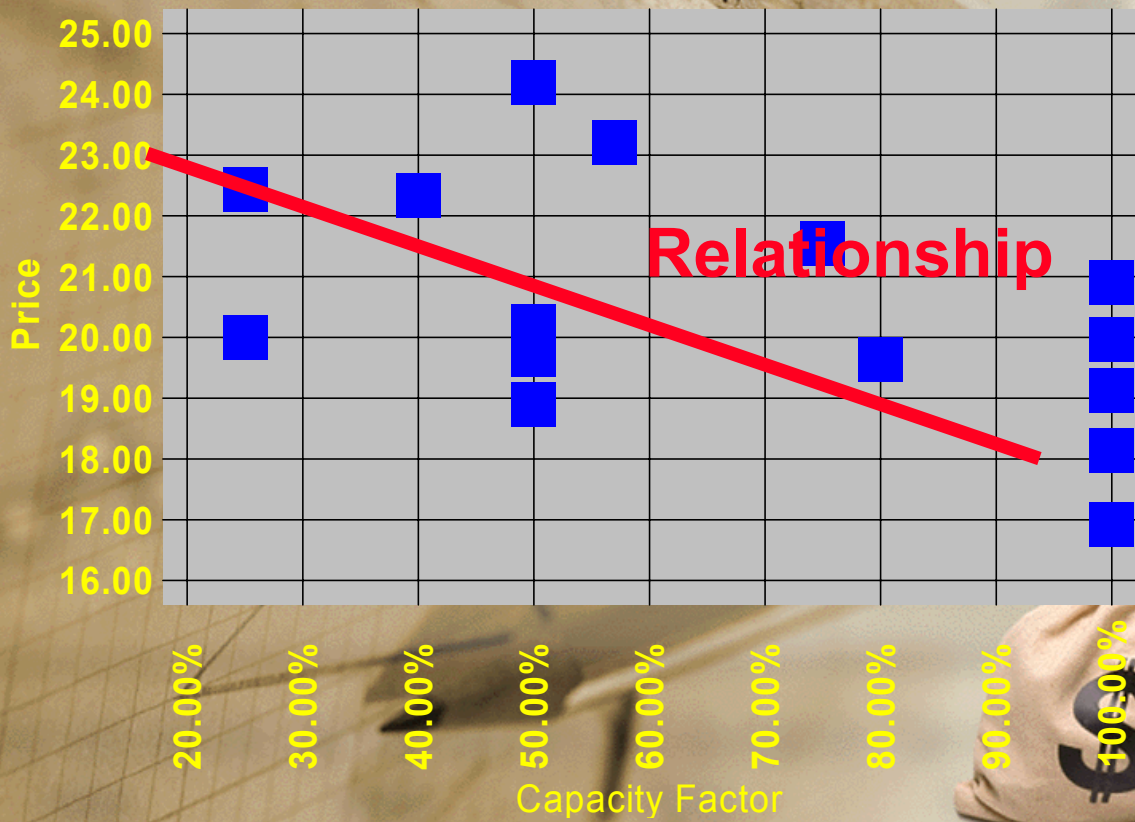
- For the past two year long term flat prices have stayed in the sixteen mill range
- Capacity prices are very low -- \$1.00 to \$2.00 per kilowatt month



# Mid-Columbia Spot Prices By Month



# Current Bay Area Bids





# Recent Northwest Tariffs

Type	Tariff	Price
Spot Index	Puget Schedule 48	32.32 /kwh
	Puget Special Tariffs	24.77 /kwh
	PGE Schedule 67	30.94 /kwh
	PP&L Low	17.70 /kwh
	PP&L High Pricing	24.70 /kwh
	BPA Special Tariff	17.00 /kwh
	Seattle City Light	32.72 /kwh
Market	Tacoma Utilities	21.00 /kwh
Access	WWP Schedule 26	33.58 /kwh
Fixed	PP&L Special	27.00 /kwh
	BPA DSI Contract	22.60 /kwh



# Delivery Points

- Almost every discussion we have had for California customers has specified delivery points at Palo Verde or COB
- The delivery points minimize financial risk since numerous suppliers are present and NYMEX contracts provide hedging options



# Firmness

- With the exception of Pacific Northwest utilities, full utility commitments are unusual
- Most commitments are financially firm -- simply a guarantee to provide supply by purchase
- Clearly, financially firm commitments are sufficient for the immediate future

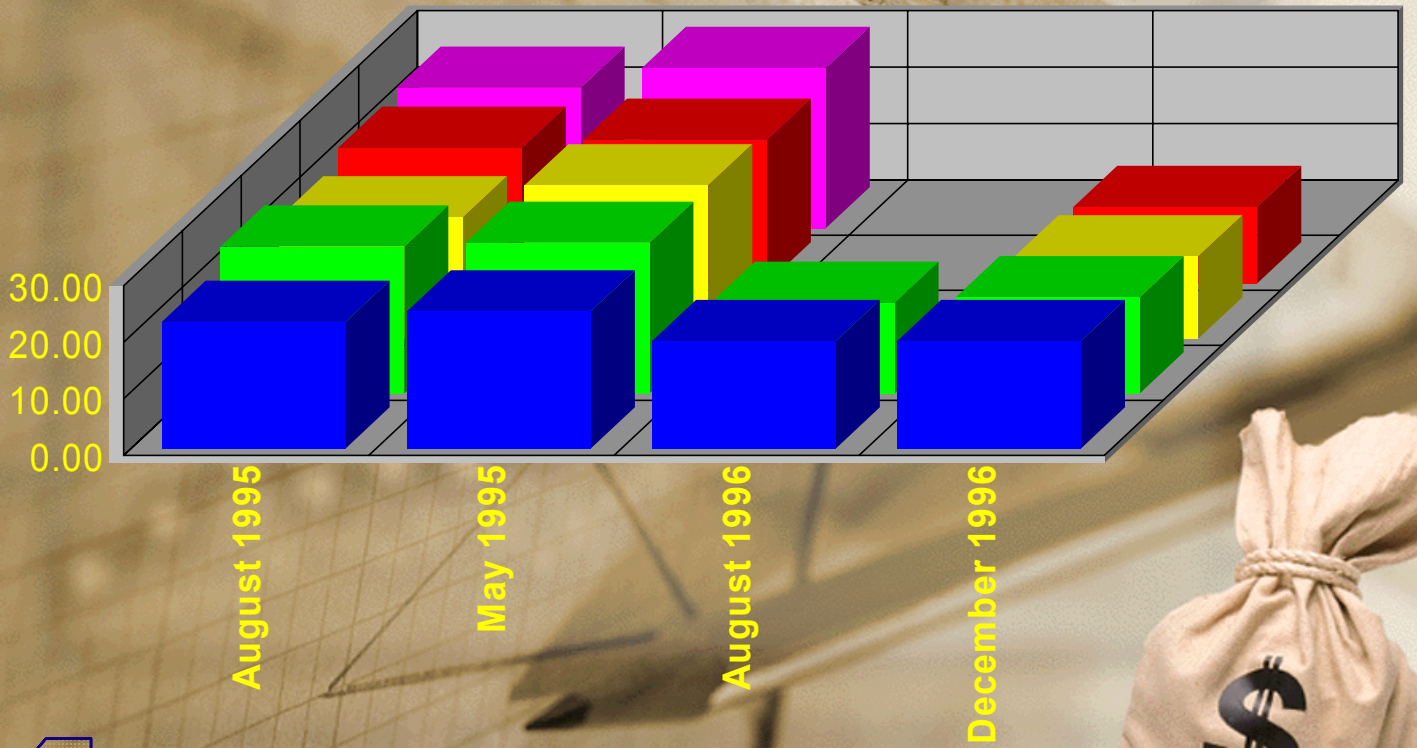


## Duration

- The magic "five years" has characterized the market for several years
- Few of the suppliers -- even Laurel and Hardy -- know how to bridge the load/resource date
- Some of our clients are considering building Frame 7Fs to bridge this date for industrial development



# Recent West Coast Prices



# Market Truths

- **Capacity has become very, very cheap**
- **Energy indices are simple**
- **If they aren't simple, they aren't useful**
- **Industrial and bulk power markets have converged**
- **Prices are low and going lower**



# Evading Regulation and Legislation

- The simple rule is: *The more complex the rules, the simpler the offers*
- Successful deals in California and Illinois are simply a percentage off the tariff

