

Buying Power In The Northwest: A Buyer's Perspective



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Buying Power In The Northwest

Introduction
Market Overview
Load/Resource Balance
Price Forecasts
Major Players
Transmission
New Alternatives
Risk and Hedging
Contract Issues





Introduction

How did we get here?What happens next?Who should we blame?



Roosevelt's Legacy

The Pacific

 Northwest
 reorganizes on a 20
 year cycle

 Our newest

 transformation hits
 October 1, 2001





The Robber Barons





Samuel Insull



The Old System



J.D. Ross Master Plan





Fundamental Products Energy And Capacity

✓ Capacity is the right to take energy at specific rate any time within a defined period of time

Energy is the amount of commodity taken over a period of time

 Electric power is unique in the degree of its tight relationship with time - fractions of seconds matter

Facts About Products

All products are effectively firm
One day prescheduled energy dominates the market
This is roughly equivalent to a standard commodity since its location and delivery can be relied upon
Real time energy balances the system
Real time transactions offset weather excursions and plant outages
Non-firm energy is not a marketable commodity, but poorly briefed market experts (usually Harvard professors) have continued to discuss it as if it were

Who sets the prices?

- There is no formal market on the West Coast outside California
- Two regions -- Alberta and California have formal centralized markets mandated by regulators
- Market prices are set up between schedulers, dispatchers and traders over the telephone
- Results of trades are sampled daily by survey firms
- The market leader -- if there is one -- is BPA



Recent Developments And Current Environment

National Initiatives - Legislation And FERC Action
Western Events
Price Spikes In Summer, 1998
Worries About Capacity



National Initiatives

✓ Gas Restructuring In 1980s As Prelude
✓ EPAct Of 1992
✓ FERC's "Giga-NOPR" And Order 888/889
✓ FERC Hints At ISO Initiatives



Western Events

✓ RTAs
✓ California Restructuring
✓ Alberta's Pool
✓ Failure Of INDEGO Formation



California Restructuring Is Following A Contorted Path

✓ Structure ✓ Price Artifacts



BPA's Eras

BPA goes through its own cycles of boom and bust
Low cost hydro put's BPA in the driver's seat between disasters
BPA has just started a new acquisition cycle



Future Focus





Basic Geography Northwest Delivery Points



Today's Offer



BPA'S OFFER FOR WEDNESDAY, JUNE 23, 1999

Daily Surplus Firm	Hour Ending	NW Delivered	COB/NOB Delivered
200 MW Limit	1-6,23&24	*AVG CAL PX MCP - \$0.25	*AVG CAL PX MCP
200 MW Limit	7-9, 22	*AVG CAL PX MCP - \$0.25	*AVG CAL PX MCP



New Resource Choices

All market participants plan on new generation in the early to middle users of the next decade
The resource choice is natural gas fired combined cycle generation
Estimated "all in" prices are 25 mills



Market Overview

 The WSCC is a regional market with increasing barriers to entry
 Two locations: California and Alberta have fallen victims to social engineering with higher costs and difficult to understand barriers





Load/Resource

Why is the ne Balkay Cegood?

- Traditional planning was highly conservative
- ✓ Thermal plant operations are still conservative and inefficient
- Many resources remain forgotten and undispatched -- even during high load periods

✓ Have you considered cogen today?



WSCC Load/Resource Balance















Interregional Markets



Packaging

While load/resource balance figures are reassuring -- they obscure how difficult true optimization actually is
 The single largest resource is regional diversity
 Interregional packaging is likely to be the source of major new supplies







Past as Prelude

• Significant Landmarks

- Markets "open" mid-1995
- NYMEX begins trading futures Summer 1996
- PX begins end of March, 1998
- Midwest price excursions of June, 1998
- High volatility periods since Summer, 1998
- Load Evolution
- Supply Evolution (or 'devolution')



Why Were 1998 Summer

The simple Partie CS the Serewigh major problems in the last year 1998 hydro was a little worse than normal, this spring has been a little better

There were no major plant outages

There were no significant transmission outages Loads were higher, but not markedly so California's PX has had an enormous impact in two ways:

Terms of trade have turned towards the Pacific Northwest as the theorists in California have attempted to offset market power by California's big three utilities


Northwest Price

- Slow start in mid-1995.
 Increased activity complete days th NY AB V futures trading
- PX onset coincident with high and volatile prices
- Confounding effects
- weather (1998 hot Summer)
- resource (less-than-normal hydro)
- NW Prices still apparently higher and more volatile post PX















Flows Across COB

- COB is a "balance point" between mid-C and California
- Generally prices "flow" north or south consistently through COB
- Overall, PX seems to "drive" COB and mid-C
- But mid-C prices seem to be "working" the PX
- This is consistent with "terms of trade" change









Updating forecasts for the California PX has added our current results indicate that the California PX has added about 2.5 mills to on-peak prices and about 2 mills to off-peak prices Close examination indicates that the impacts are very dependent on problems within the PX itself As a working hypothesis, we expect that PX excursions will only

Aoccur during high load months in California November through January were not affected by PX problems

Futures Behavior Changes from PX Initiation

Generally more volatile behavior after April 1, 1998 Summer disproportionally affected Summer 1999 will be interesting





What's new?

- Basically the only change from previous years is the arrival of California's "deregulated" power market
- California has deregulated by implementing a \$300 million dollar computer program to schedule power for the customers of investo owned utilities in the state
- The program is a triumph of complexity and sophistication like loans to Russia the problem is so large that everyone in California is forced to take it seriously
- Few, if any, understand the program and its relationship to regional power markets
- A Prediction Company opportunity? (Packard & Farmer)

Northwest Projections

- Average water in 1999-2000
- Continued high prices and volatility in Summer-Fall Winter events less likely California influence









Bonneville Power Administration

Established in 1937, now has a "service territory" over 300,000 square miles

More than 80% of the power sold in the Northwest comes from BPA.

Controls over 75% of the high voltage transmission grid. The 800 lb. gorilla -- or not.



BPA is facing significant risks as it "Powemoves into a less "Escalating fish and wildlife costs "Transhesgusaseeddily order desire for a RTO/Transco. "Subscription "Should there be a transmission rate case? "Transmission terms and conditions.



Power Sales

Subscription (Who gets What and Why an Ever-changing Situation.)
 Eligibility Requirements
 DSI "entitlement."



Power Rate Case

Rates to be "below market."
Timing
Fish recovery and CRAC
Slice of the System
Products available



Slice of the System

First discussions took place in 1993 and were driven by generating utilities.

Initially seen by some as a way to better coordinate individual hydro operations with BPA's hydro system



Advantages of the Ability the hydrogen by the hydrogen of the

Potential to game the system.
Not for the unwary.
Effect of the DSI claim on out of region sales.



Fish Issues

How much should be spent Who pays -

- Gorton amendment
- ✓ Divergence in the region



Publicly Owned

✓Invest in BPA or ditestilities ✓IOU attacks on traditional Public service ✓Split in Public Ranks on eligibility issues



Mid-Columbia Utilities

Effect of Relicensing RulingWhat does access mean anyway?When will we know?





Background

- Initial License in 1955
- Due for renewal in 2005
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- Complaints by various NW interests who wanted a share (bigger)
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FERC Decision

- Whatever entity gets the new license must make "... available in a fair, equitable and non-discriminatory manner pursuant to market-based principles and procedures, 30 percent of the firm power and 30 percent of the non-firm power from the project... "
- Applies to a defined but fairly large group consisting of three subgroups
 - Idaho Cooperatives
 - Snake River Association
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Implications

- Same principles should apply to all mid-Columbia PUD projects
- From Priest Rapids/Wanapum, 243 aMW firm power will be sold to the "three groups"
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- Some of this power will be resold in bulk at retail
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Investor Owned Utilities

Looking For Love in All the Wrong Places?
Scottish Power/PPL Merger
City of Portland/Enron arrangement
Enron/Western Oregon Coop arrangement.
Stranded Costs



Canadians

✓ B.C. Hydro and the Canadian Entitlement
✓ TransAlta
✓ Edmonton Power
✓ Cominco Metals



Canadian Entitlement

- Power generated by U.S. projects on the Columbia River
- Some power deemed by Treaty to be a result of construction and operation of large Canadian projects and storage reservoirs
- Power belongs to Canada
- Marketed by Powerex (BC Hydro)
- Future amounts and quality are ongoing topics of international conversation
 Prospective purchasers should talk to Powerex

Cominco

Cominco seeks a purchaser for its surplus power

- Primary metals producer in Trail, BC
- Owns 230 kV transmission line that crosses the border to BPA's Boundary substation
- Holds export license
- Owns Waneta hydro plant
 - By separate agreement Cominco owns a contractually defined part of the output from a set of coordinated Canadian hydro projects, of
- which Waneta is a member
- Rights are surplus to Cominco's needs
- Some significant and valuable flexibility


Powerex/BC Hydro

- Large very reliable entity with experienced and expert marketing affiliate
- Massive hydro resources
- Significant transmission ownership and control
 To BPA's Northern Intertie
 To Alberta
 - Canadian Entitlement Transmission constraints



Power Marketers

✓FERC mandates for Reporting
✓How Profitable is it?
✓ The Shifting Scene



Industrials

The Pacific Northwest has hundreds (some say thousands of megawatts) of idled fossil fuel generation
 Most primary industry sites have massive cogeneration projects high centered at 3 mills less than a new Frame 7



Pacific Northwest Markets

Non-generators
Public Generators
DSIs
BPA
Industrials
IOUs





Non-Generators

BPA (and others) serve over one hundred publics ranging from medium size (50 to 100 megawatts) to miniscule
Sophistication varies from none to medium
There is little correlation between size and sophistication



Stampede?

Most
non-generators
have naively taken
BPA's word
concerning the
shortage





Actually ...

Actual
 subscription
 meetings are far
 less exciting







Public Generators

The Slice"
 BPA's public generators are trying to purchase a cut of the pie in partial defense of future BPA policy changes
 The product is elusive and difficult to understand



DSIs

Twelve primary metals smelters using 3000 megawatts annually
 Eleven of the twelve are elderly and due for replacement
 Although some smelters are wedded to the market, most appear to believe that the market will not be able to serve them



DSIs Are Currently Active In A Ponderous Political Ambush of BPA

The aluminums sponsored a "surprise" meeting with Secretary Richardson
 The fallout included a reorganization at the Department of Energy and a complex negotiation that seems to be trading a promise to stop visiting DC for energy



Current Score

Energy at 23 mills
Approximately 50% service
Aluminum variable rate
BPA will offer "spot insurance" of some sort



BPA

Vast
Rich
Profoundly confused without a clear mission
Surprisingly successful with its current initiative



Resource Acquisitions

 BPA has one of the worst histories of resource acquisition in the industry
 BPA's history includes contract defaults, massive unfinished projects, ineffective project management, and political agendas
 BPA initiates a new cycle approximately ever decade -- starting now



Is BPA Really A Customer?

Yes, but
BPA is currently entering the market as a buyer
BPA's decisions are profoundly tactical --- policies are often changed without notice or forethought



On the other hand . . .

BPA has always paid higher than market prices
 BPA decisions are fortuitous -- sometimes political, sometimes tactical -- but always surprising



Industrials

 A vast body of Pacific Northwest industrials enjoy varying levels of open access
 McCullough Research has 500 megawatts to buy over the next few years, for example





IOUs

Investor Owned Utilities are in a state of extreme indecision
 PGE announced divestiture and is now reconsidering
 Puget, BPA's worst enemy, has launched a massive PR campaign to be allowed into the fold





Canada

Canadian entitlement puts British
 Columbia Hydro in a power position
 There is some (as yet untested) belief that they may have a superior transmission position to other parties
 Alberta is forecasted to go positive in 2001



Mid-Columbias

FERC has adopted an equitable use standard in hydro relicensing
This means that the non-Federal dams are "for sale"
What does this mean? FERC isn't clear and much confusion is evident



Customers

An unusual breadth of customers are created by BPA's contract cycles



Transmission

Perils of FERC leadership
BPA's ratemaking methodology
Bad examples from North and South



Perils of FERC leadership

FERC's Rulemakings and NOPRs strongly indicate the necessity of a regional transmission entity
 On the factual side, "pancaking" is a rare Pacific Northwest problem



BPA's ratemaking methodology

 BPA has a built in inflationary mechanism in its ratemaking
 The Cost Control Committee has recommended that costs get redirected to transmission customers





Bad examples from North and South

 Transmission has become both expensive and unreliable in both the Alberta and California experiments
 A case study: 17% losses in off-peak exports from central Alberta to the British Columbia border







System Constraints • System is usually amazingly unconstrained • Constraints generally stability, not thermal • "Core" constraints Northern Intertie East vs West and capacity constriants "West of Hatway" constraints General "cross Cascades" problems Southern interties/loop flo





Future Changes

- Operation, ownership, control
- Fish John Day drawdown effects
- New generation siting could relieve many existing constraints
 Fish
 - West side voltage stability Distributed generation?
 - New transmission
 - Really necessary?



Alberta

- New Tariff administered by ESBI
- Designed to "hold" power in Alberta
- Export rates \$3.82/MWh plus 15% to 17% losses
- Fortress Alberta
 - For now, and several years, all imports and exports must be sold to or purchased from the non-profit Alberta Power Pool Some minor provision for utilities in Alberta to "carmark" imported power
 - Some minor provision for utilities in Alberta to "earmark" imported power for their customers but all transactions must be at the Pool price
 Within some number of years bilateral transactions *may* be allowed between Alberta IPPs and external entities but no such provision seen for utilities



New Alternatives

- Annexation
- Municipalization
- r BPA
- Jistributed Generation
- ✓ Deregulation



Identify Goals

Get away from current supplier Cheaper rates Future opportunities Timing



Staying with the Current Supplier May make sense depending upon characteristics of load, ability to change suppliers in the future. "Downside risk of changing may include significant cost including litigation costs "To large measure depends upon the relationship with the current supplier


"Why I wouldn't stay with that SOB outfit even if they gave me the power for free!"

Other alternatives perceived as freedom from an unbearable oppression.
 Rates may be similar but contract allows more freedom
 Access to alternatives possible



Annexations and

Municipalizations

Requires council or Board approval and election Facilities are obtained through condemnation or by contract Geographical Location of load

- ✓ PPL/Hermiston
- ✓ PPL/Emerald PUD
- ✓ Enron/Western Oregon Coop/Columbia River PUD



Large Customer

Can be lengthy processing serving utility critical Arrangements with serving utility critical Savings can be Significant



Bonneville Power Administration



Cogeneration and Distributed Too much trouble and cost to fight - try building Siting and permitting issues New generation by Calefford paber of the past due to lower costs, need for west side resources, and utility refusal to build.

PURPA arrangements with steam host.

BPA sponsoring \$3.5 million investment in home size generation



Special Contracts

Several Watch "fors" Based upon bypass potential or economic development
May require special metering or new facilities



"What fors"

Allocation of Distribution charges, transmission, and ancillary services costs.
Services actually provided
Ability to get Commission approval, especially if supplier is not a willing seller.
PUDs may have new incentive to work with customers
IOUs hanging on until Deregulation happens or is killed.
State Commissions will need help understanding the benefits



Deregulation

Will it happen?
Will it benefit you?
Will it prevent new arrangements from occurring?
What about these stranded costs and social benefit charges?



Bottom Line

There are deals to be made
Requires persistence and a willingness to go to the mat
Measuring benefits can be tricky
Don't assume anything.
Benefits can be significant especially if deregulation doesn't occur soon or if BPA changes.





Hedging Options

✓Numerous hedging options exist

- The most formal is the NYMEX futures contract
- NYMEX only hedges on-peak sales
- a simple hedge can easily be constructed by buying power flat over the next year and reselling into the spot market
- Most utilities will provide hedges without much trouble
- All brokers and financial houses will provide hedges -- but require a long sales talk first







PX/ISO Operations





NYMEX tends To Be Naive

- NYMEX has yet to include water years
 Surprises tend to show up across the entire NYMEX futures series without reference to the cause
 NYMEX futures are likely to be lower after
- price decreases in the spring



Updating forecasts for the California PX

- ✓ Our current results indicate that the California PX has added 9.26 mills to on-peak prices and 4.82 mills to off-peak prices
- ✓ Close examination indicates that the impacts are very dependent on problems within the PX itself

As a working hypothesis, we expect that PX excursions will only occur during high load months in California

This should mean that November through

Outlook

 Climate/Water Conditions Suggest Crisis Will Not Occur - At Least Not Soon
 History Of Prices Near Level On Average
 Future Most Likely Same Or Better
 Something Always Seems To Move Prices Toward Levels Of The Last Fifteen Years
 Volatility And Uncertainty Will Increase



NYMEX Hedging Strategy





Truncated Graph - Cinergy NYMEX-Style Peak - Summer Estimated Density Functions 0.08 0.07 0.06 0.05 1998 0.04 1997 1996 0.03 0.02 ոսւրո Л տ 0.01 0 -20 . 40 60 80 . 120 100 0 \$/MWh

Midwest Examples

Cinergy NYMEX-Style Peak - Summer Estimated Density Functions 0.08 0.07 0.06 0.05 - 1998 1997 0.04 1996 0.03 0.02 0.01 0 1500 2000 500 1000 2500 0 \$/MWh

Midwest Examples 2

Long and Short Positions

Long positions benefit from rising prices
Short positions benefit from falling prices
Consumers hold an innate short position
Generally, "hedging" is the artful combining of long and short positions to decrease the variability in the net outcome experienced by the holder of the positions - just insurance Like any insurance, there is always a premium
If you want to buy insurance, comparison shopping is a good idea



NW Prices Have Been Incresingly Volatile



But Long Term Variability is Much Less



NYMEX Futures Are Overpriced For Innate Long Term Short Consumers

- But the possibility remains that a utility or large power marketer or trader may be able to offer an arrangement that satisfies some need to hedge
 - Not all large consumers have flat or off peak loads



Background

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- Due for renewal in 2005
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Energy and Capacity Revisited

- ✓ New entrants to the market assume that capacity will simply disappear
- The market evidence doesn't support this view
- We can expect "iron" to be a central portion of markets as we reach load/resource balance over the next decade
 Evidence from Illinois already supports this conclusion

Fish

- ✓ Fish are generally the best advertised risk in history
- BPA announces yearly that it has spent hundreds of millions on fish programs
 In reality, amazingly few real impacts have occurred. BPA's estimates are high, energy production is not strongly affected, but BPA's flexibility has been



Contract Issues

Transmission Risk
Pricing Arrangements
Tie-ins
Most Favored Nations' Clauses
Restructuring Risk
BTU Deals
Financing Offers



Transmission Risk

Don't take it
 If in doubt, follow the first rule
 BPA's rumored increase plus the continuing threat of cost averaging under some regional transmission authority makes accepting transmission risk a very bad idea



Pricing Arrangements

✓Indexing has been a mixed blessing

- ✓ Dow Jones indices have been mildly erratic
- Utilities (particularly Puget) have not administered the indices smoothly
- ✓ BPA has done better than the average
- ✓ PGE has also done well

✓ Unforeseen surprises (PX/ISO) have truly changed the customer preferences



Tie-ins

An amazing amount of creativity has gone into tie-ins of a variety of kinds

- ✓ DSM/conservation
- ✓ Product enhancements
- ✓ Puget's "transportation"

As a general rule, true synergies have been

rare



Most Favored Nations' Clauses

- Pacific Northwest history with most favored nation clauses has been very mixed
 Pacific has interpreted these with considerable latitude
- As a general rule -- enumeration has fared better than bland assurances



Restructuring Risk

As in California the threat of restructuring regulation colors many decisions
Defensive contract language is a must
As a general rule restructuring legislation is always a downside risk


BTU Deals

A number of players are offering gas/electric combinations
While picturesque, these arrangements often pose more problems than they solve
Creative approaches do exist, but creativity requires that either the buyer or the seller have the possibility of "tolling"



Financing Offers

Financing offers now abound
 These offers are surprisingly saleable -even though the customer often seemingly
makes a very bad choice in choosing to go
ahead
 Credit risk is a real issue



Transmission

 BPA's transmission rates are under attack by groups proposing to increase them to cover social policy agendas
 BPA's rates are forecasted to increase from 125% to 200% at the next rate case



Transmission (Continued)

FERC relief is unlikely

- ✓ BPA uses unique accounting methods
- These methods are poorly understood both inside and outside of the agency

✓BPA's monopoly position makes success very likely



That's All, Folks!

After twenty years our electric market is seasoned and rational
 Neighboring experiments are likely to provide more uncertainty than market fundamentals
 Long term prospects continue to be good



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