



# ENERGY MARKETS & NET WHOLESALE REVENUE

Seattle City Light Review Panel

Michael Jones / Wayne Morter | June 30, 2015





# AGENDA

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- Utility Portfolio
- Power Marketing
- Wholesale Markets
- Net Wholesale Revenue and Financial Policies
- Regional Issues



# UTILITY PORTFOLIO





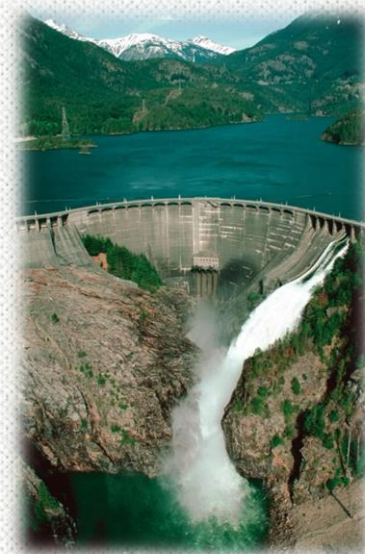
## UTILITY PORTFOLIO

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- Utility owned generation
- Utility long term contracts
- Customer owned generation
- Retail Load

## UTILITY OWNED ASSETS

- SKAGIT Hydro Project (Ross, Diablo, Gorge and Newhalem) (804 MW)
  - FERC license expires in April 2025
- Boundary Hydro Project (1022 MW)
  - FERC license expires in 2055
- Energy conservation (189 aMW)
  - Least cost, least environmental impact, least risk
    - 10%+ of City Light's retail load



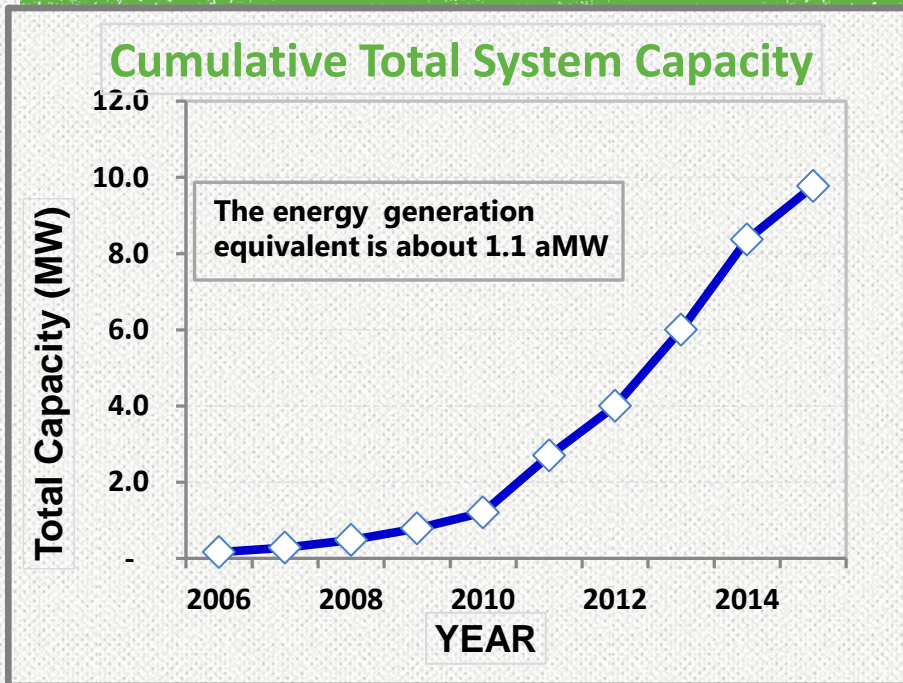


## SIGNIFICANT LONG-TERM CONTRACTS

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- Bonneville Power Administration (BPA) Block and Slice Contracts (534 aMW - 35% of portfolio)
- Priest Rapids Contract (6-42 MW)
  - Long-term contract majority resold at MidC
- Northern California Power Agency (46/60 MW)
  - Seasonal exchange - buy winter/sell summer
- Stateline Wind Contract (175 MW)
- Lucky Peak Contract (113 MW)
  - Irrigation project resold in Idaho

# DISTRIBUTED ROOFTOP SOLAR INSTALLATIONS

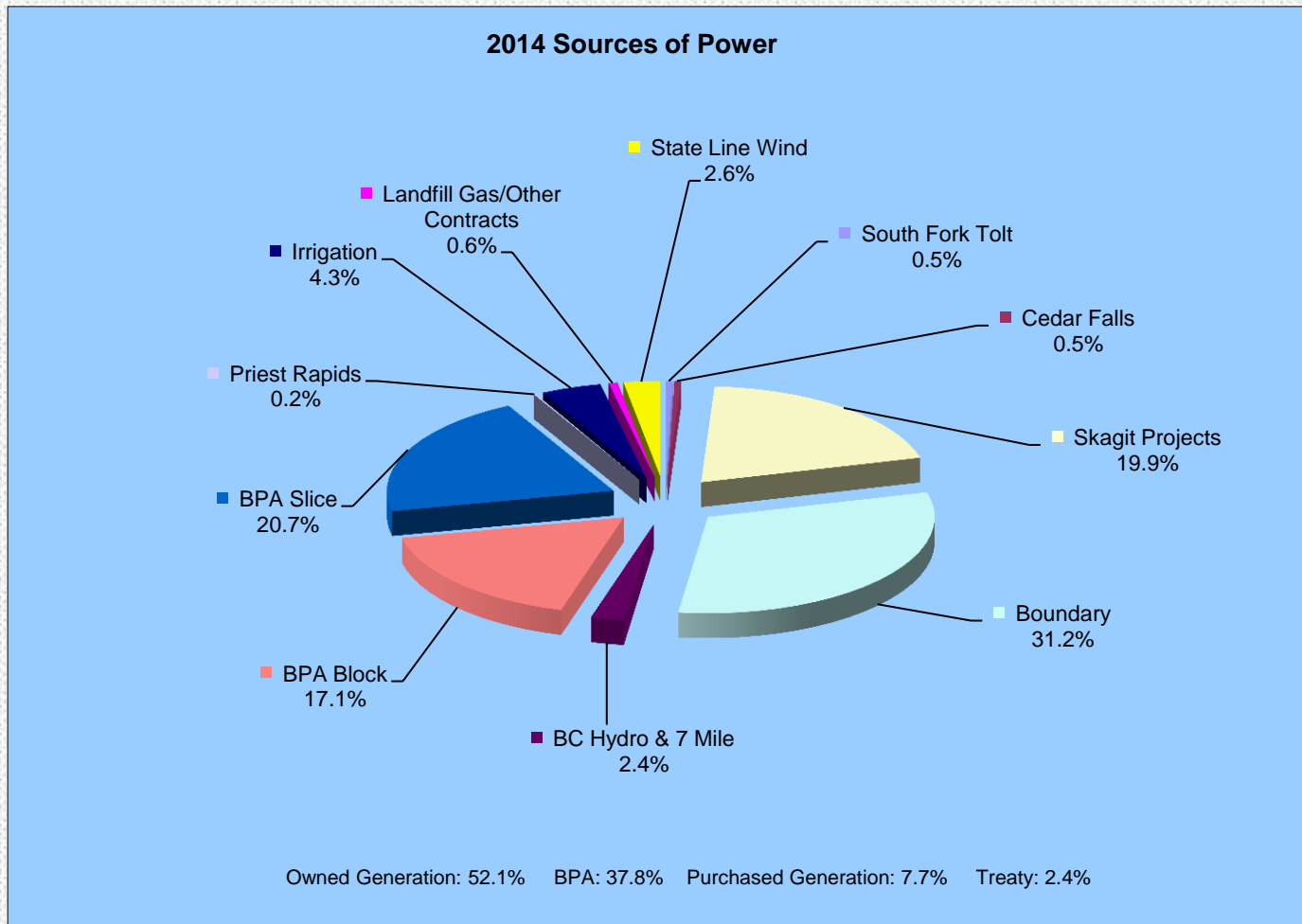


- Installations total approximately 0.08% of retail load



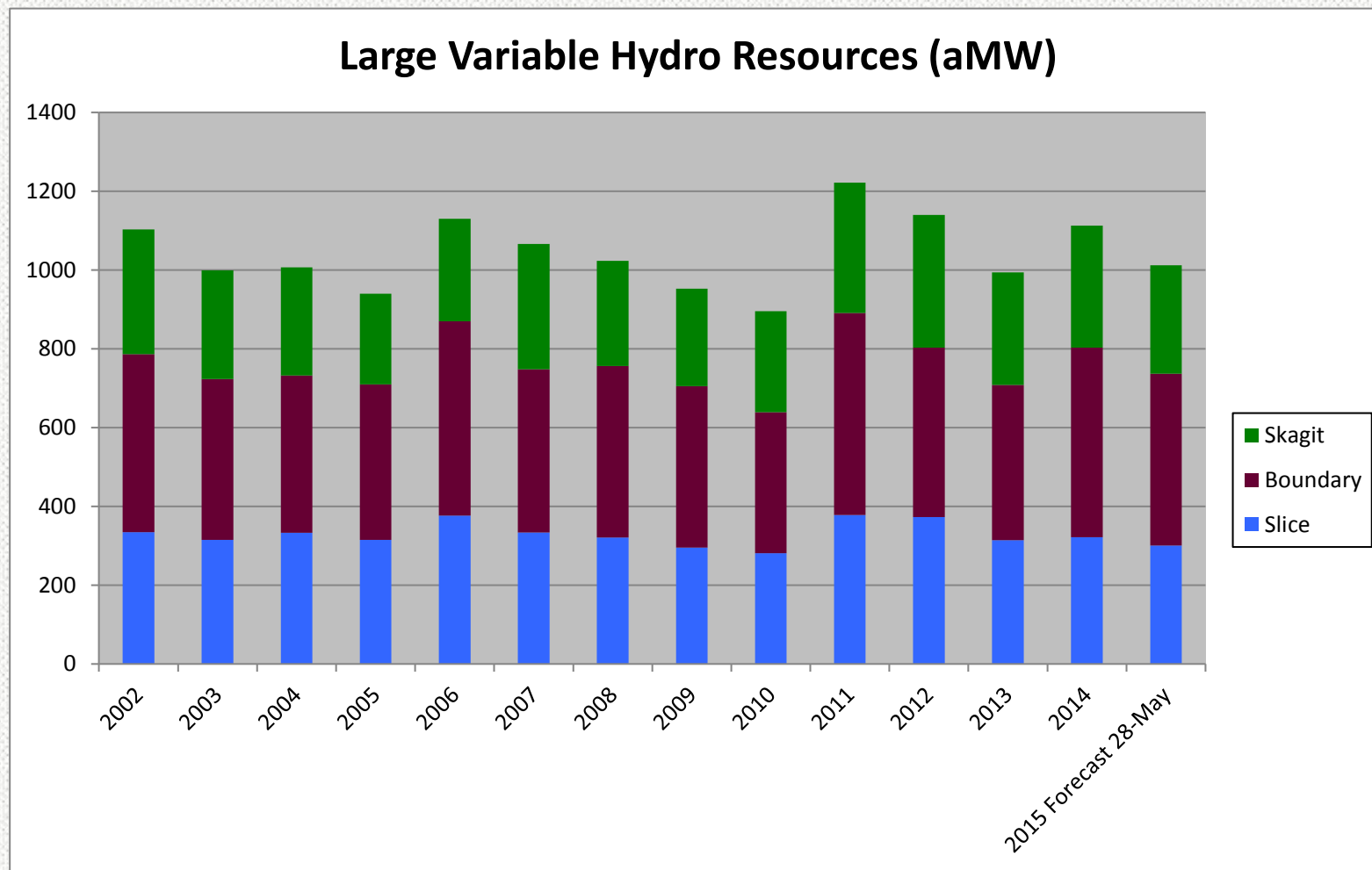


# LONG TERM RESOURCES PORTFOLIO

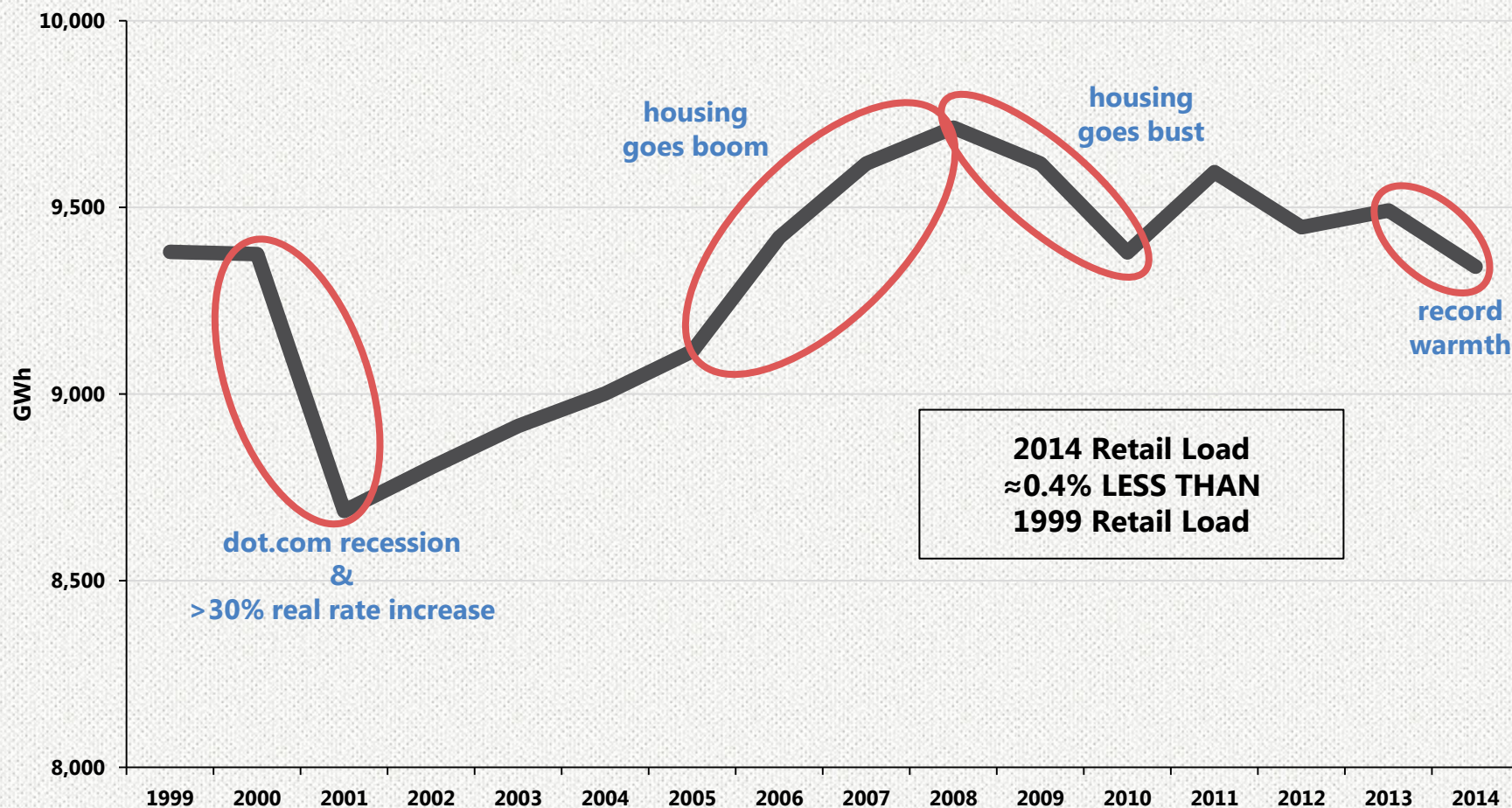




# MAJOR HYDRO RESOURCES

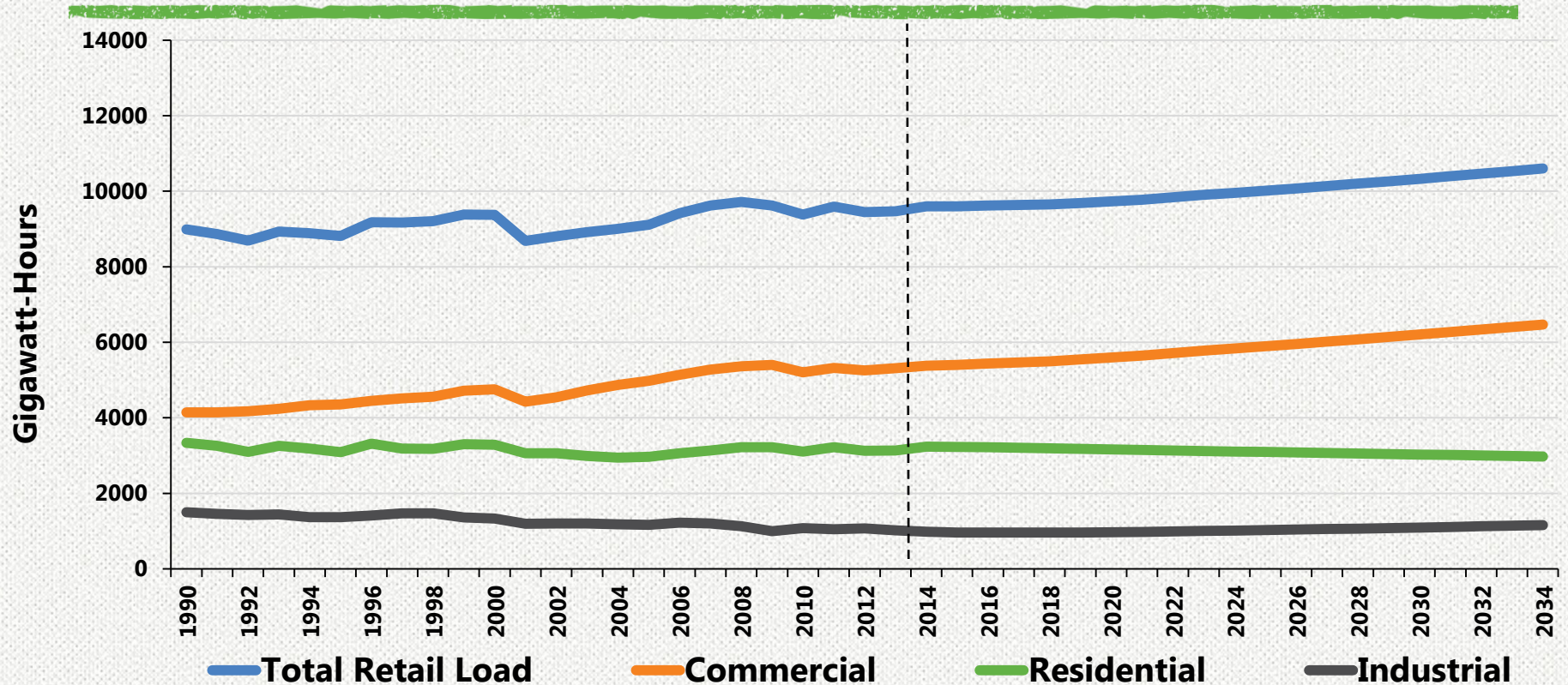


# SEATTLE CITY LIGHT RETAIL LOAD HISTORY





# LOAD HISTORY & FORECAST BY CUSTOMER CLASS



## Forecasted 20-year Average Growth Rates

Total Retail: 0.5%    Commercial: 0.9%

Residential: -0.2%    Industrial: 0.6%

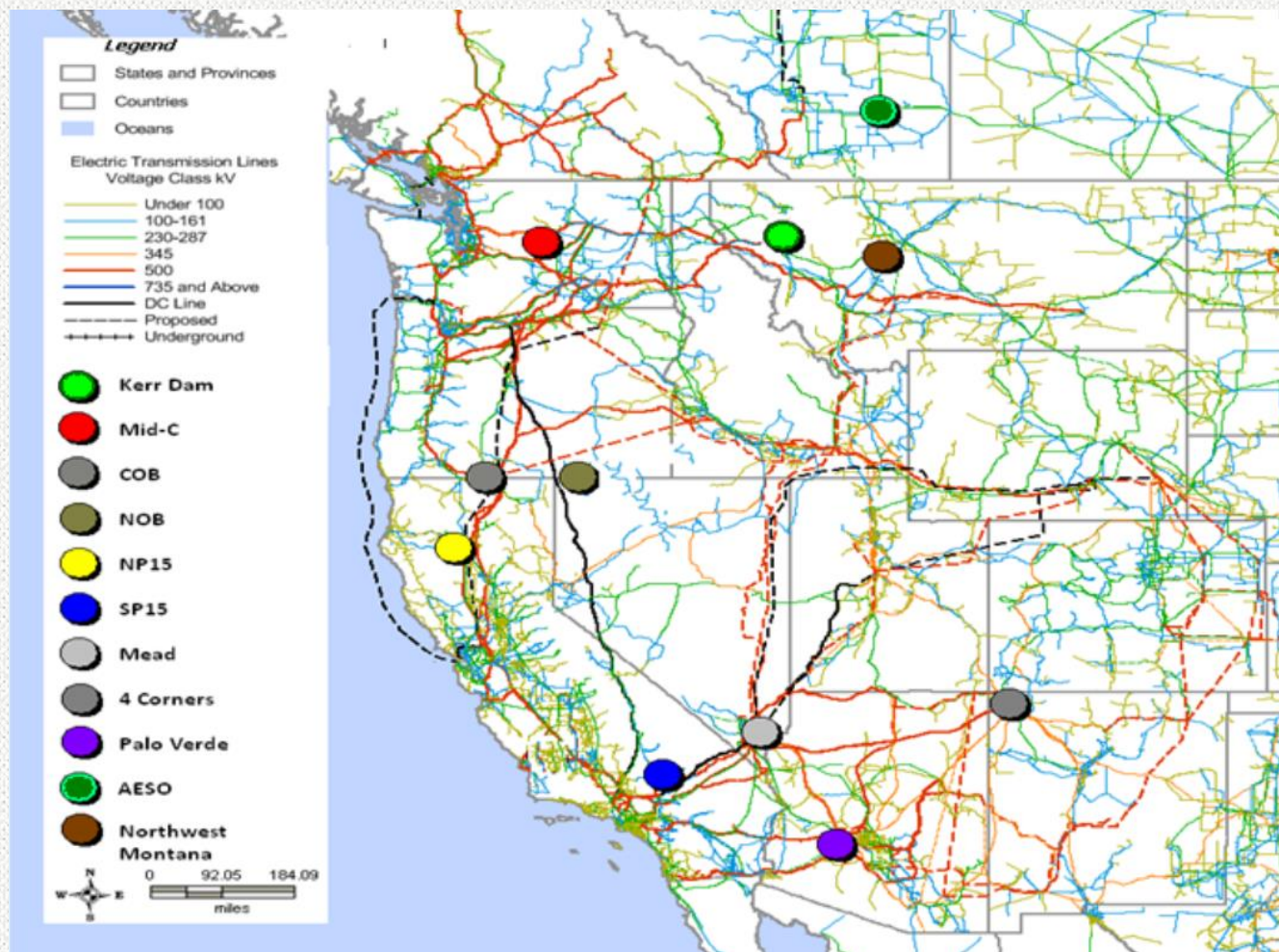


# WHOLESALE MARKETS

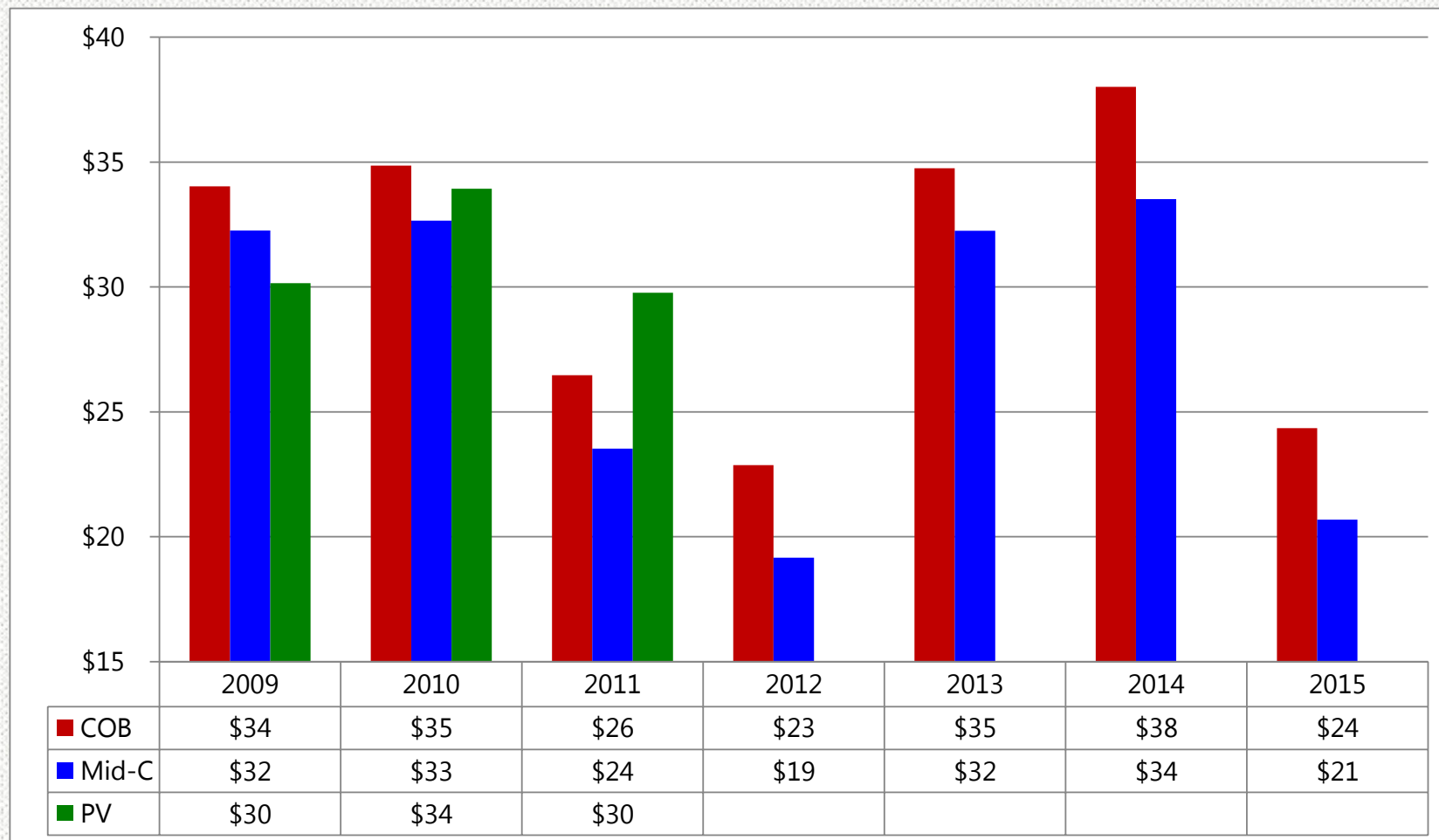




# TRANSMISSION AND TRADING HUBS

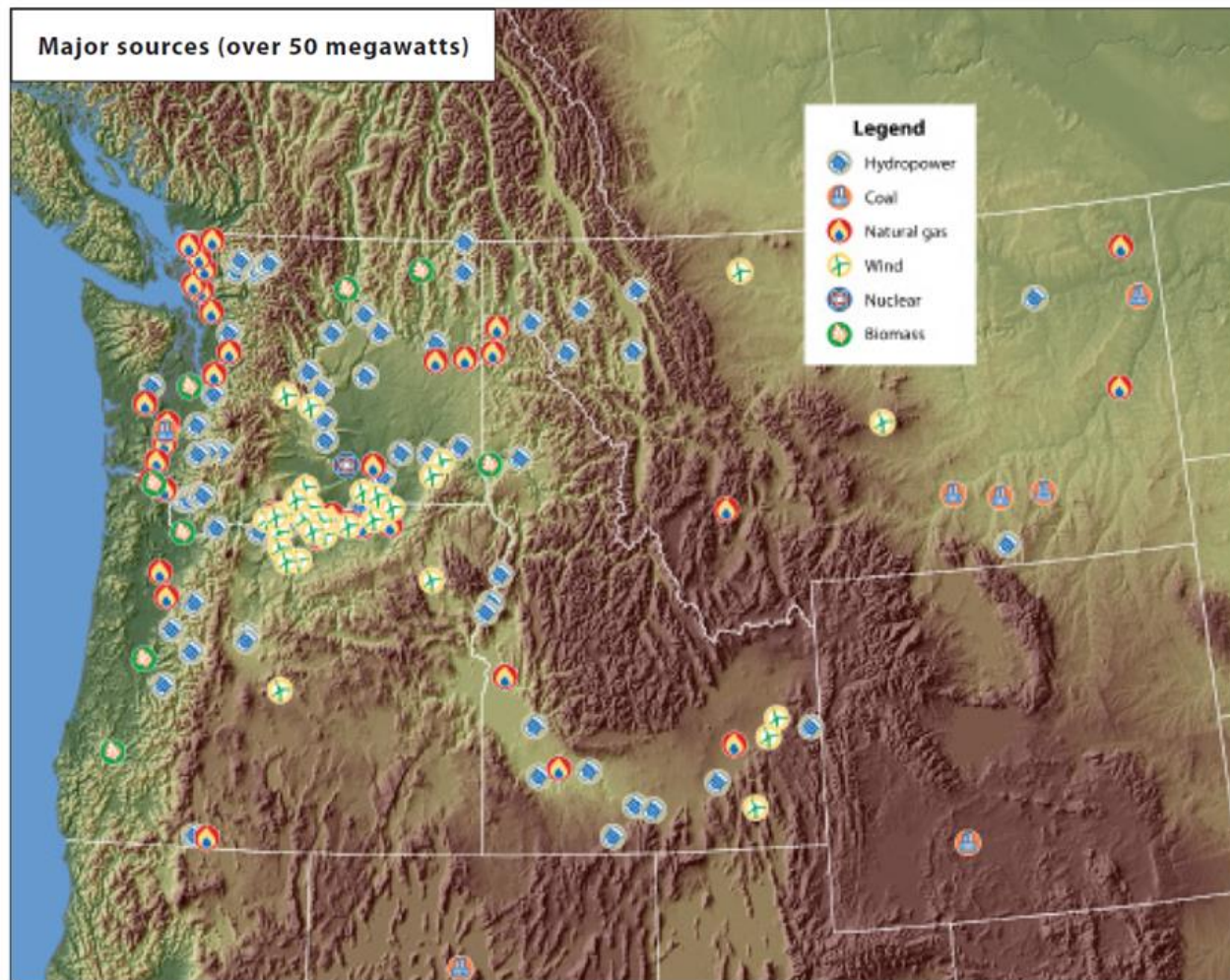


# SPOT PRICE INDICES AT TRADING HUBS

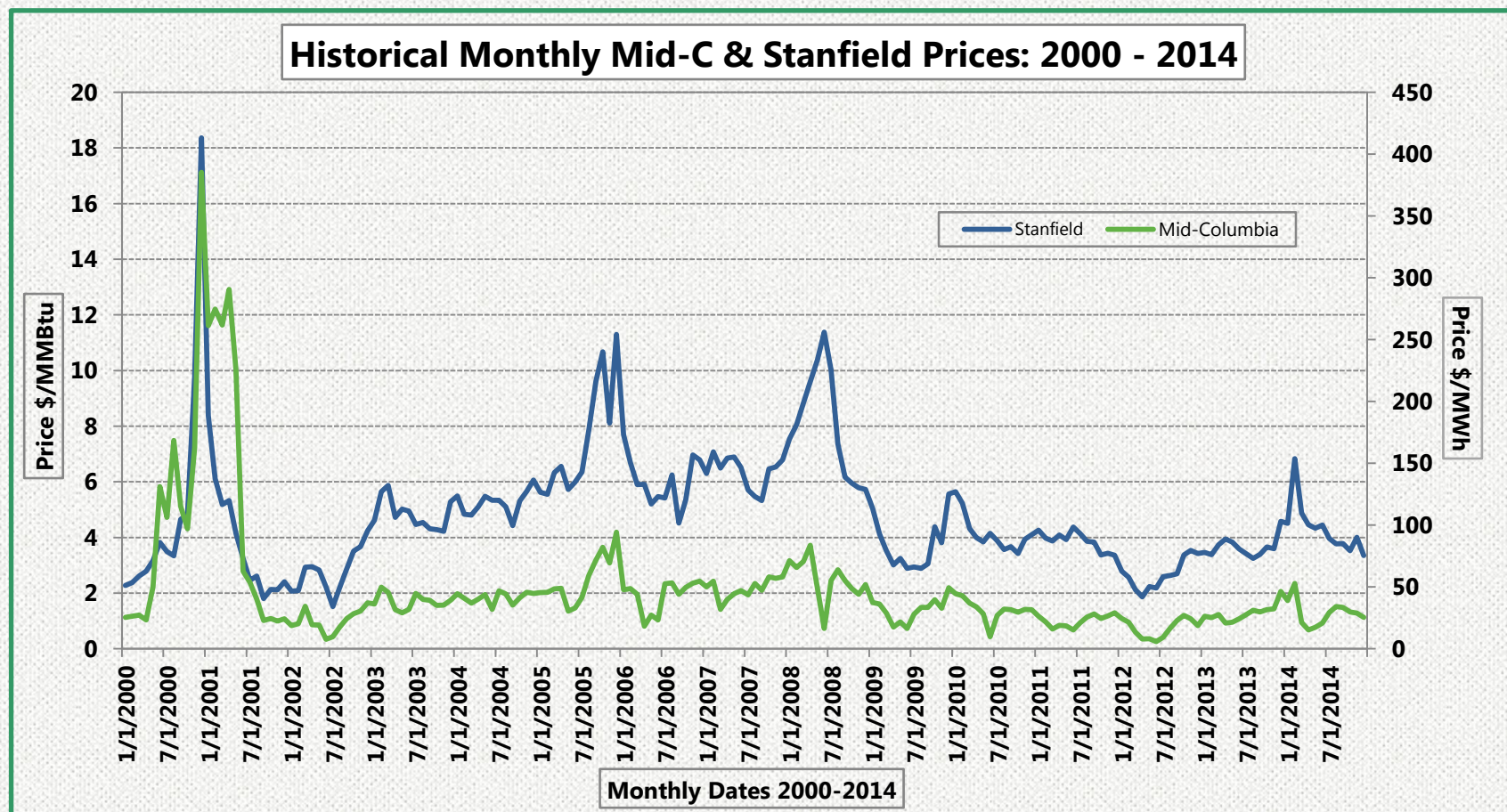




# NORTHWEST RESOURCES

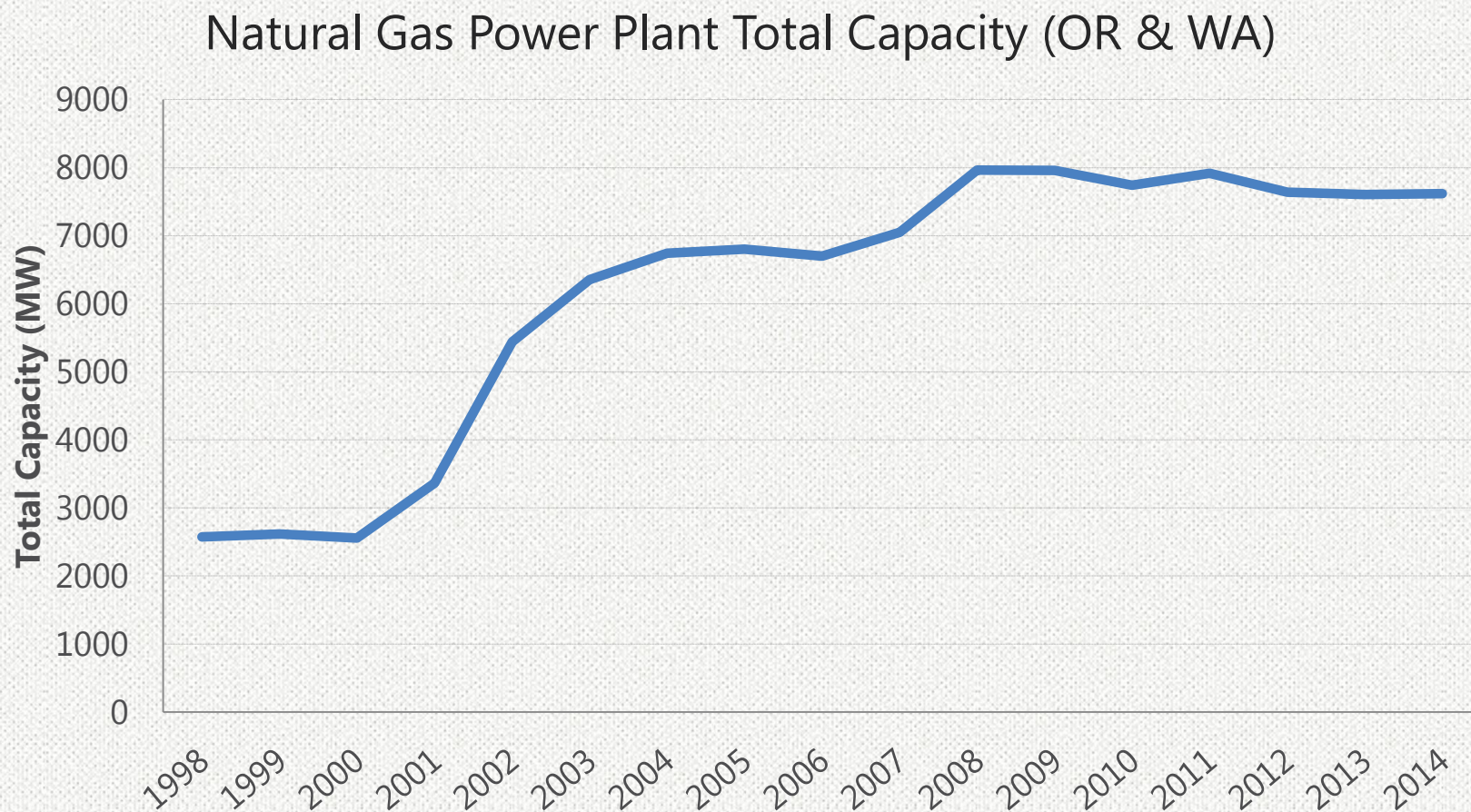


# MONTHLY NATURAL GAS AND POWER PRICES

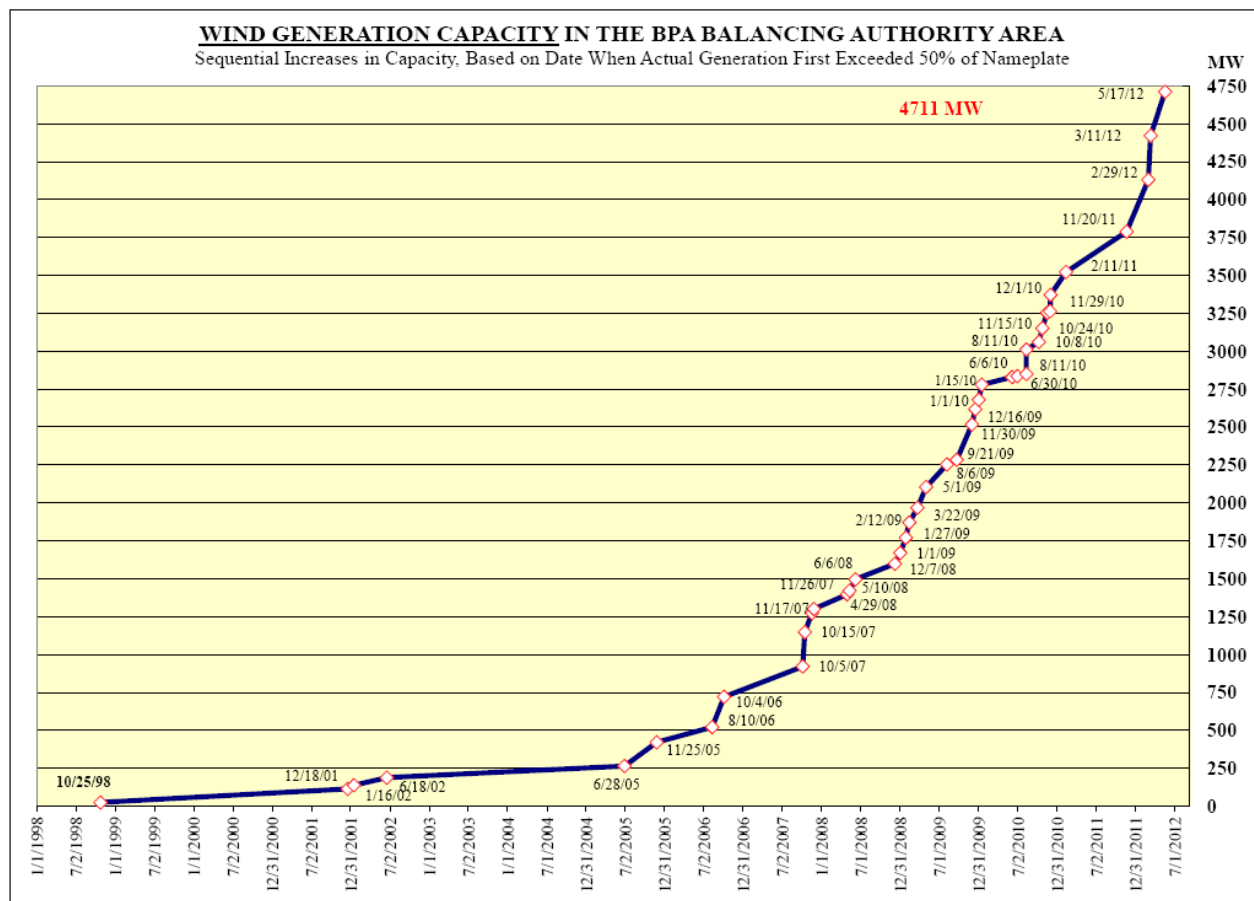




# NATURAL GAS CAPACITY 1998-2014



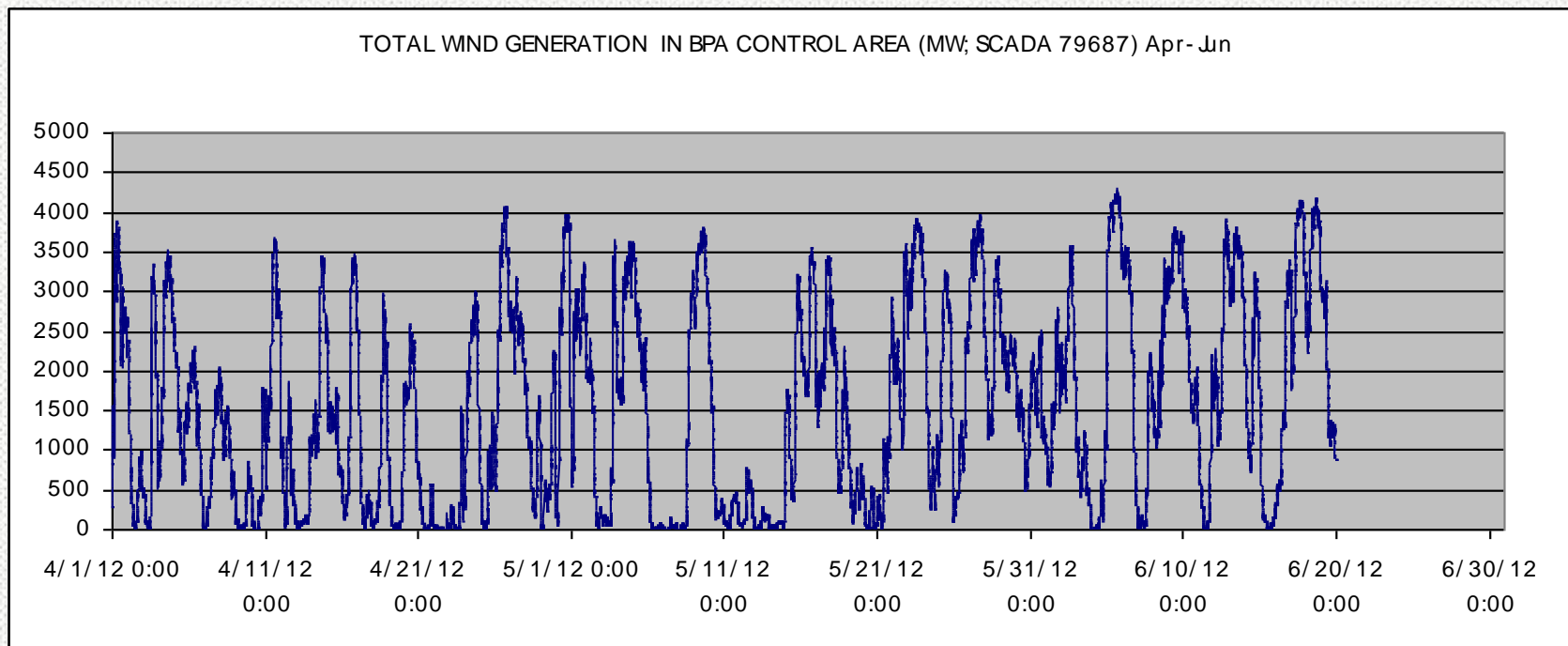
# INCREASE IN WIND GENERATION



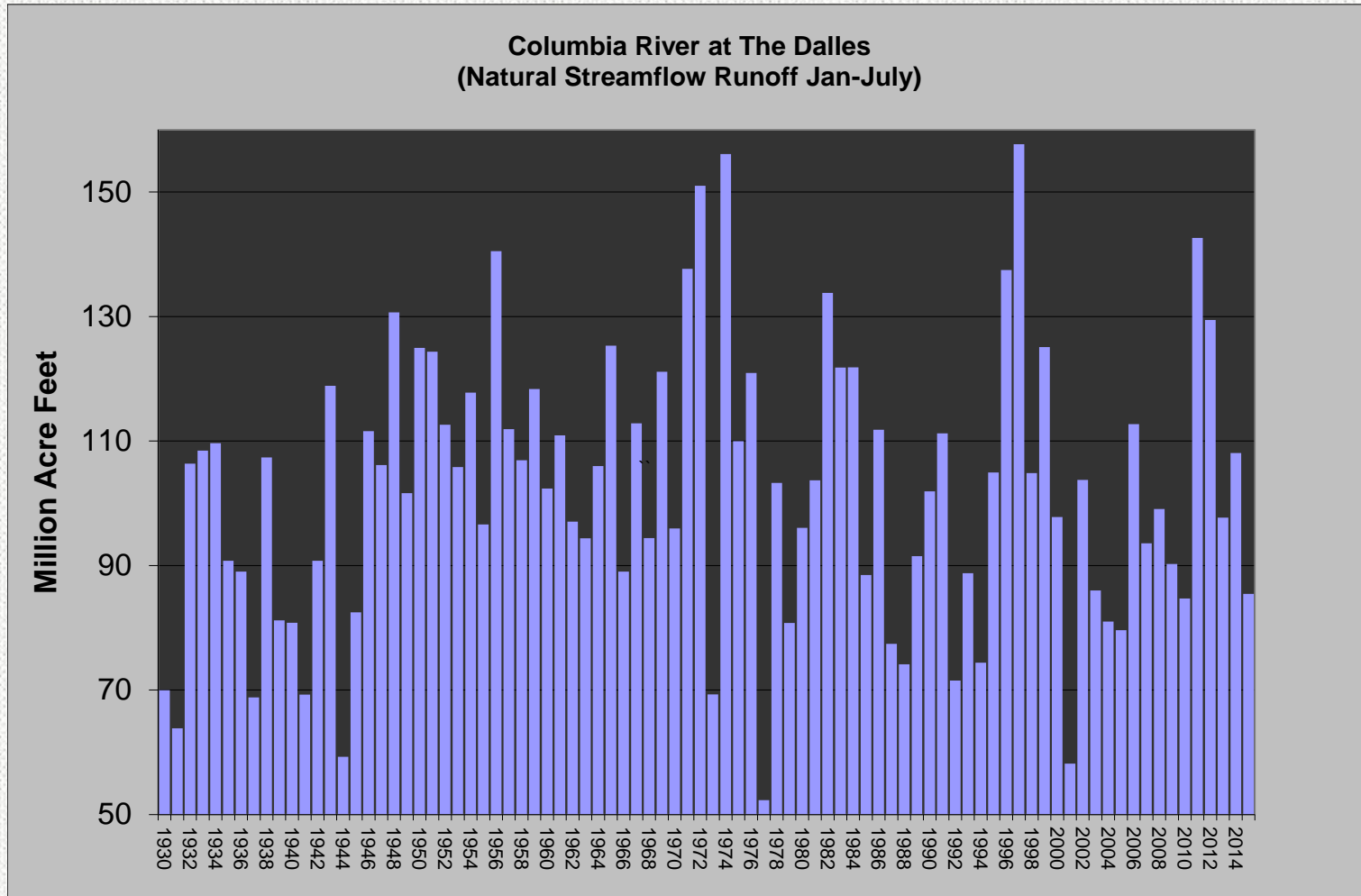
WIND\_InstalledCapacity\_current.xls 5/18/2012



# DAILY VARIABILITY OF WIND GENERATION

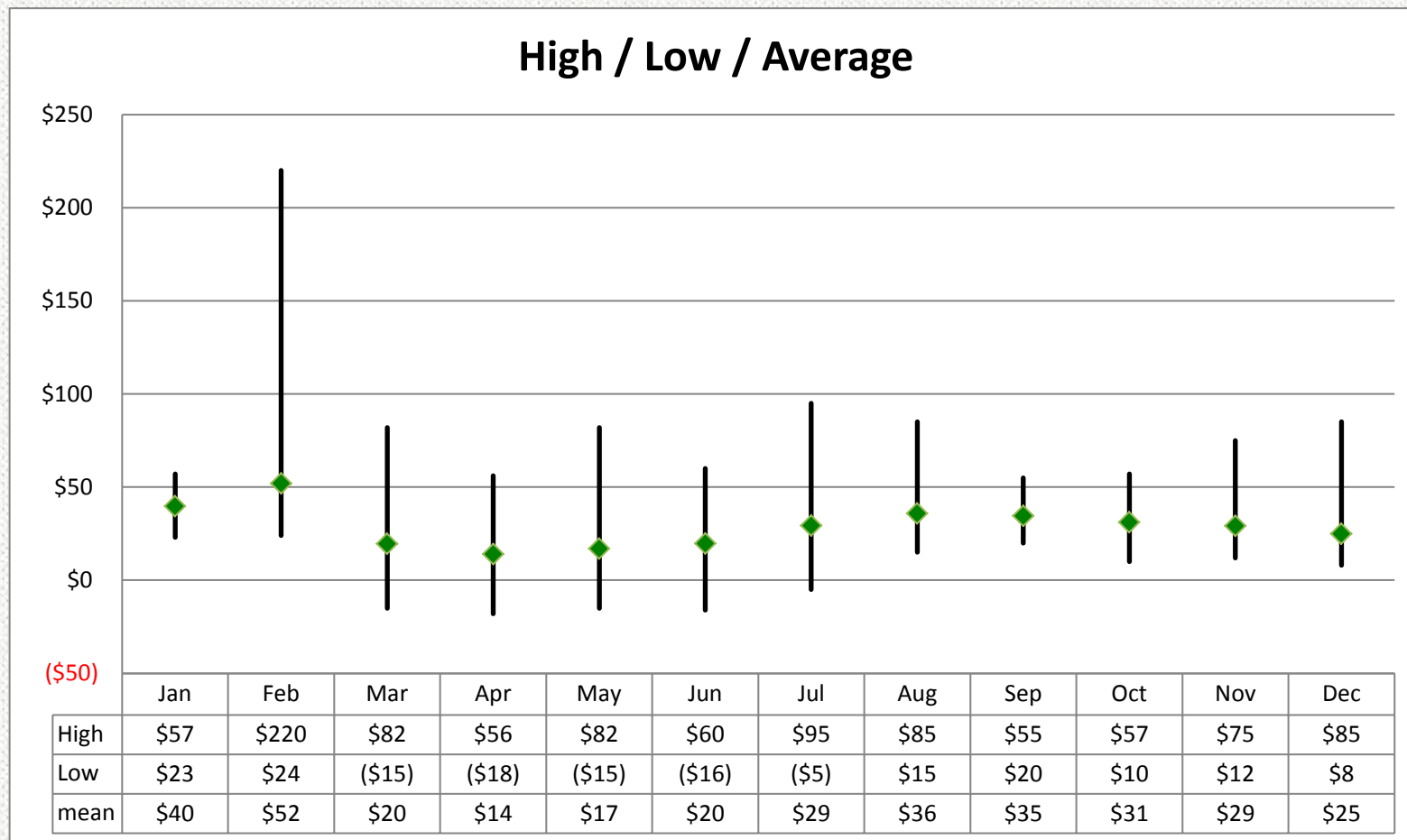


# VARIABILITY OF NW HYDRO ELECTRIC SUPPLY





# HOURLY PRICE VOLATILITY 2014





# POWER MARKETING





## POWER MARKETING

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- The division of Seattle City Light that delivers the following services
  - Portfolio Management
  - Wholesale Trading
  - Marketing and Regional Affairs

# PORTFOLIO MANAGEMENT

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- Portfolio Management is the process of ensuring that the resource portfolio (generation, contracts, etc.) is always sufficient to meet retail load needs
- Portfolio Management identifies net surplus or deficit energy and capacity positions and the underlying costs, that must then be managed by Wholesale Trading
- Portfolio Management activities span from the very long term (integrated resource plan) to hour by hour balancing of the portfolio in real-time markets



# PORTFOLIO MANAGEMENT

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- Portfolio Management Activities
  - Integrated resource planning,
  - Contract management,
  - Water, wind and load forecasting,
  - Reservoir and river management, and
  - Greenhouse gas offsets and renewable energy credit monitoring

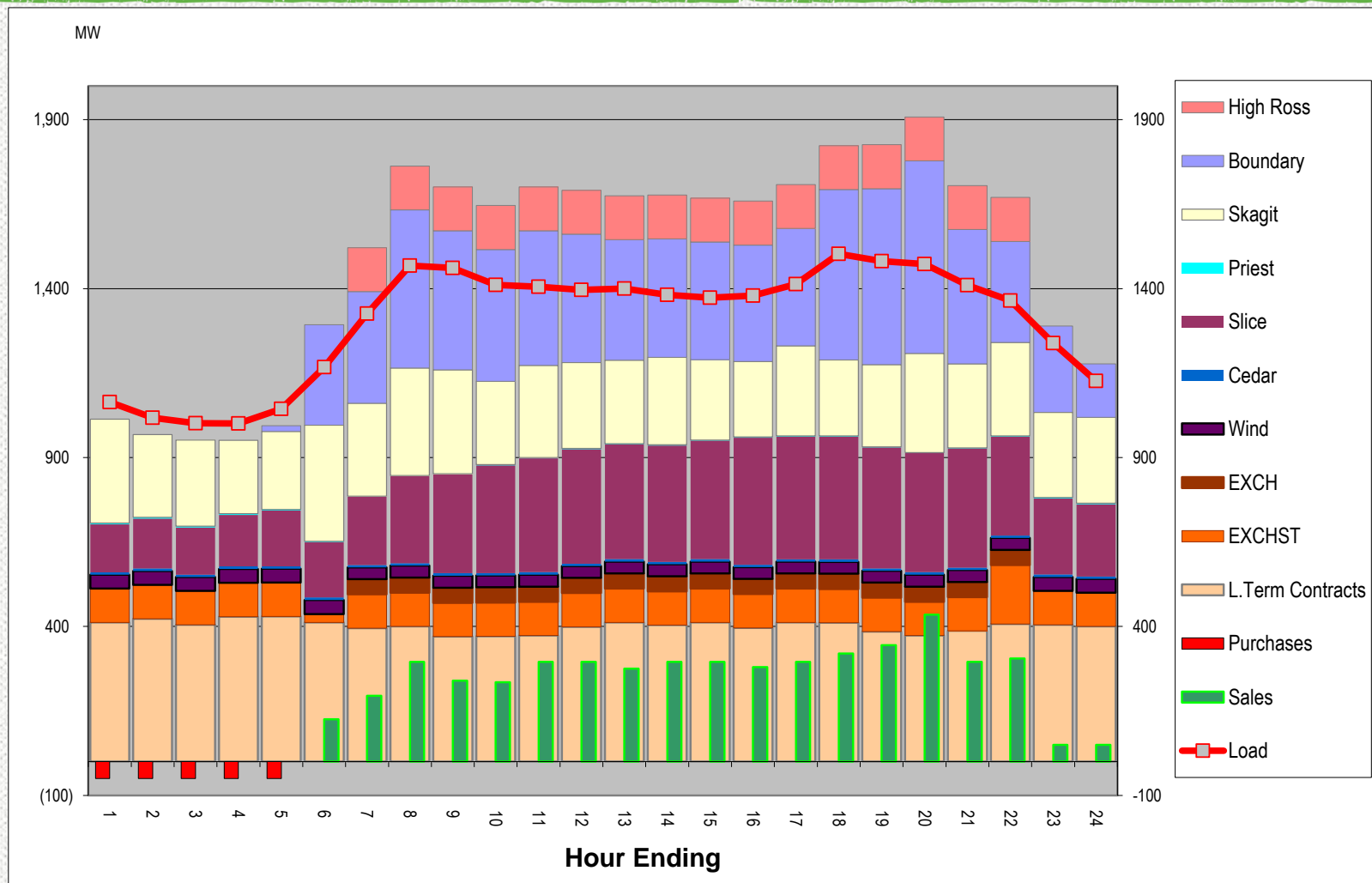
# PORTFOLIO MANAGEMENT

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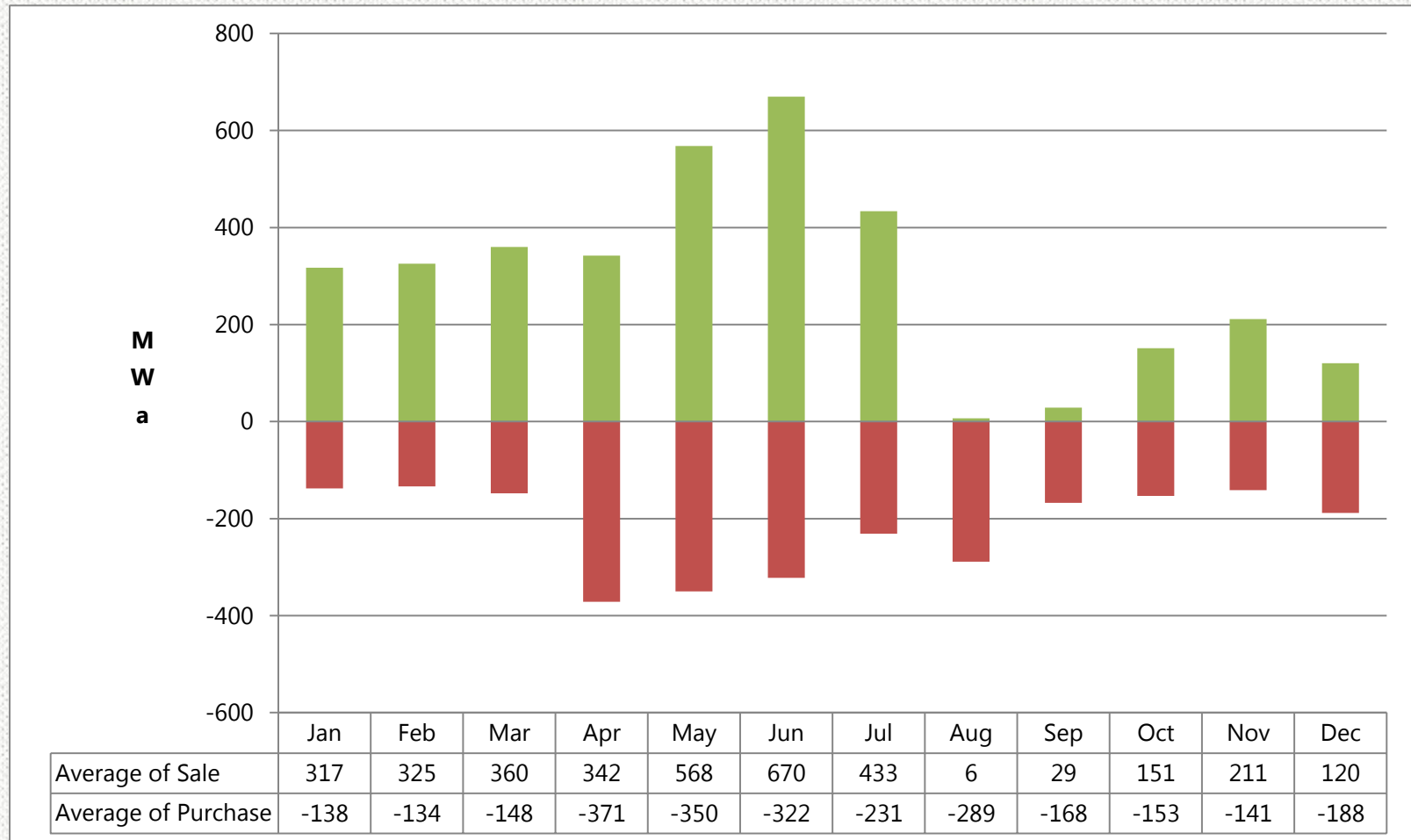
- Energy production is not the first priority of hydro-electric dams. Many other priorities must be met before electricity is generated.
  - Water utilization in order of priority
    - Flood protection
    - Reliability
    - Fish and habitat protection
    - Spill prevention
    - Recreation
    - Economics (energy generation)



# TYPICAL DAY- ILLUSTRATIVE



# PURCHASE AND SALE ACTIVITY BY MONTH AVERAGE OVER PERIOD 2005 - 2014





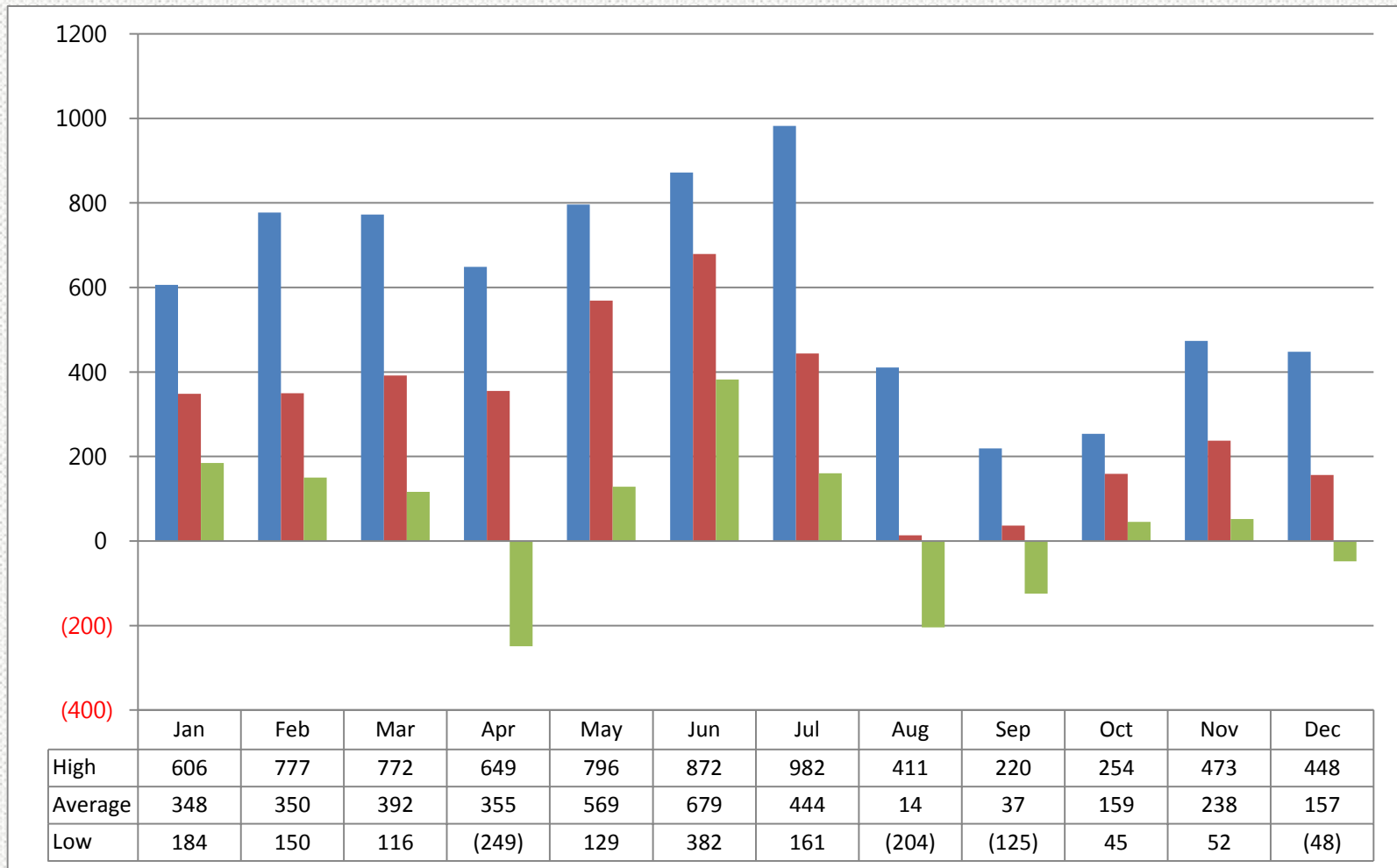
# WHOLESALE SURPLUS ENERGY

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- Wholesale Surplus Energy
  - The net of all portfolio positions (generation, contracts, purchases, sales, and retail load)
  - Across any given time period
  - After accounting for filling or drafting storage
- A positive surplus leads to selling, while a negative surplus leads to purchasing.

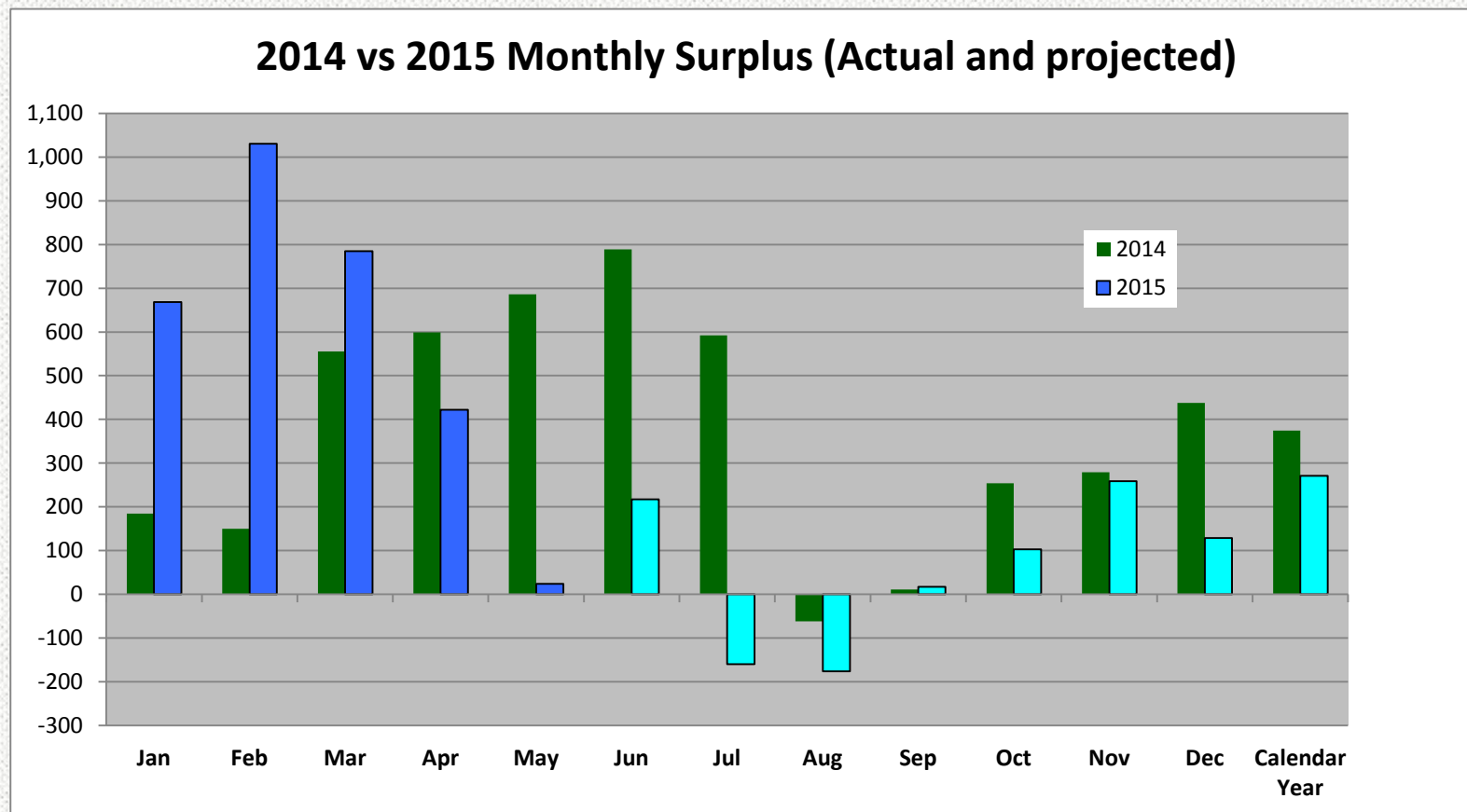
# PURCHASE AND SALE ACTIVITY BY MONTH

## HIGH / LOW / AVERAGE 2005 - 2014

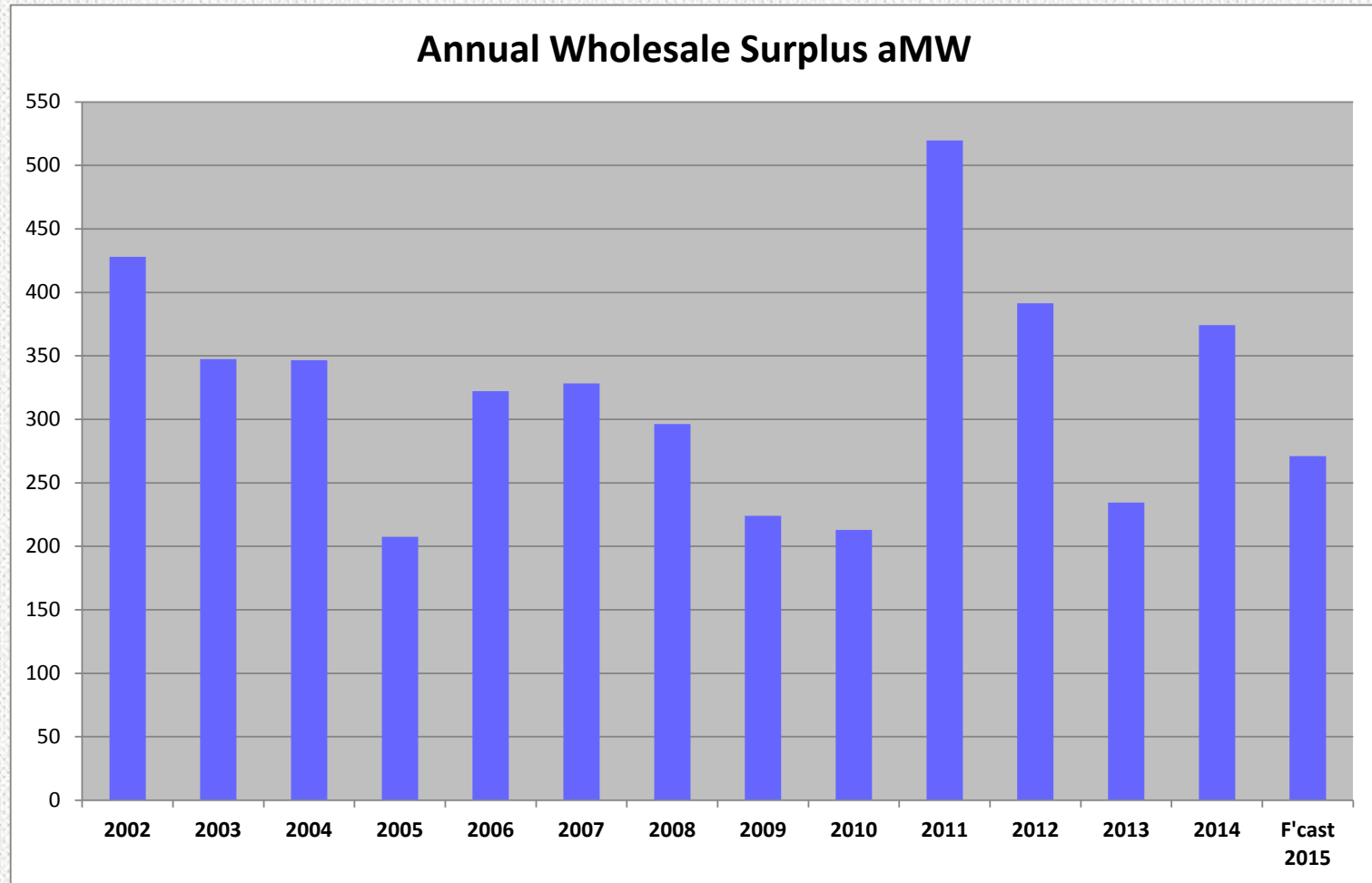




# DIFFERENCE IN SURPLUS –2014 VS. 2015



# ANNUAL CITY LIGHT WHOLESAL SURPLUS





# WHOLESALE TRADING

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- Wholesale Trading is the process of buying and selling of electricity products.
  - Transactional in nature
  - Focused on efficient interaction with markets
  - Based on portfolio needs and risk control policies
- Reasons for trading
  - Resource contracting – Meet portfolio needs
  - Hedging transactions – Financial protection
  - Arbitrage transactions – Low risk revenue

# WHOLESALE TRADING

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- Products Traded
  - Energy
    - Basic commodity of electricity
  - Capacity
    - Ability to generate energy
  - Ancillaries
    - Flexibility products like reserves, load following, balancing, etc.
  - Transmission
    - Contractual right to geographically deliver power



# WHOLESALE TRADING

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- Products Traded
  - Renewable Energy Credits – State Targets
    - Environmental attributes associated with renewable energy generation
  - Greenhouse Gas Offsets – Local Targets
    - Environmental attributes associated with projects that avoid carbon releases or remove carbon from the atmosphere

## POWER MARKETING

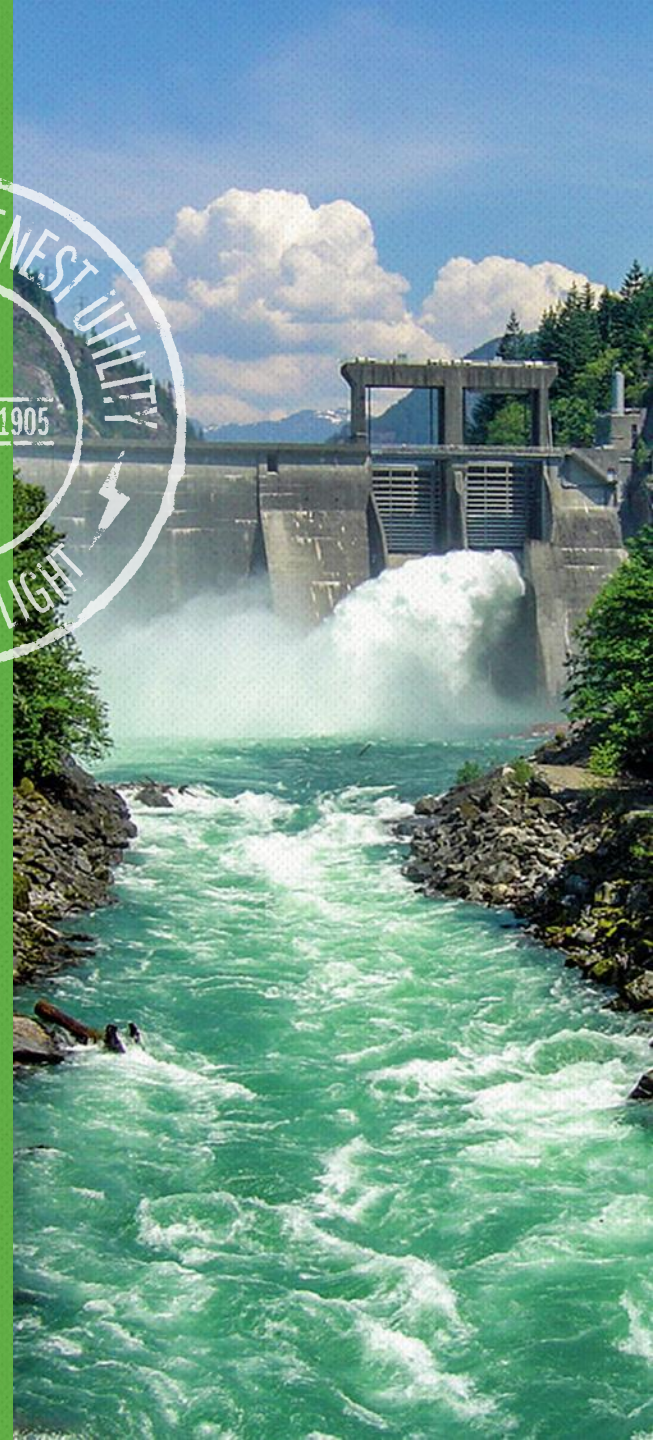
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- Marketing and Regional Affairs encompass the activities involved in establishing and maintaining relationships with other utilities, trading counterparties, and regional organizations that facilitate the
  - Development and maintenance of markets,
  - Sharing of information and best practices, and
  - Management of multi-party contract structures like the BPA slice, block and load following agreements





# NET WHOLESALE REVENUE & FINANCIAL POLICIES



# THE RATE STABILIZATION ACCOUNT (RSA)

- The RSA is a cash reserve for buffering net wholesale revenue (NWR).
  - Originally funded with a combination of reserves, debt savings, and surcharge revenue.
- Began operation January 1, 2011.
- Rules to maintain RSA at/near \$100 million target:

RSA Balance	Action
> \$125M	Council determines actions to reduce below \$125M
<= \$90M and >\$80M	Automatic 1.5% surcharge
<= \$80M and >\$70M	Automatic 3.0% surcharge
<= \$70M and >\$60M	Automatic 4.5% surcharge
<= \$50M	Council determines actions to replenish RSA to \$100M



# NET WHOLESALE REVENUE

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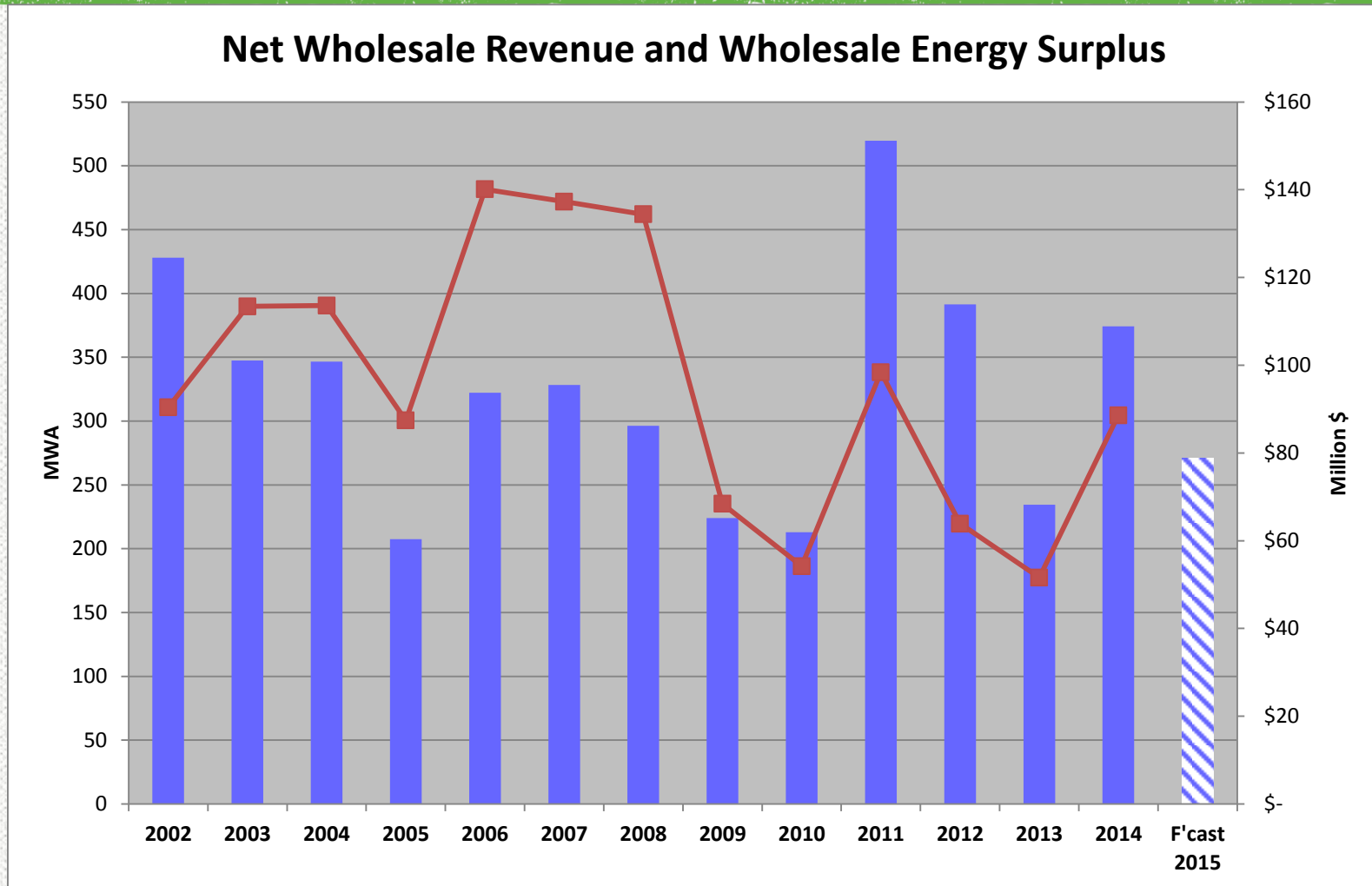
- Net Wholesale Revenue
  - The sum of revenue from the sale of surplus energy netted against the sum of expense from the purchase of deficit energy across all trading periods
  - Does not include purchase/sales of capacity, ancillaries, transmission, etc. It is energy only.

# UNCERTAINTY / RISK IN PORTFOLIO

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- Uncertainty in Our Portfolio
  - Water and fish flow for hydro plants
  - Availability of generators and transmission
  - Weather and behavioral effects on load
- Uncertainty in the markets around us
  - Regional hydro conditions
  - Wind and its effects of generation and markets
  - Natural gas prices
  - Cross commodity correlations

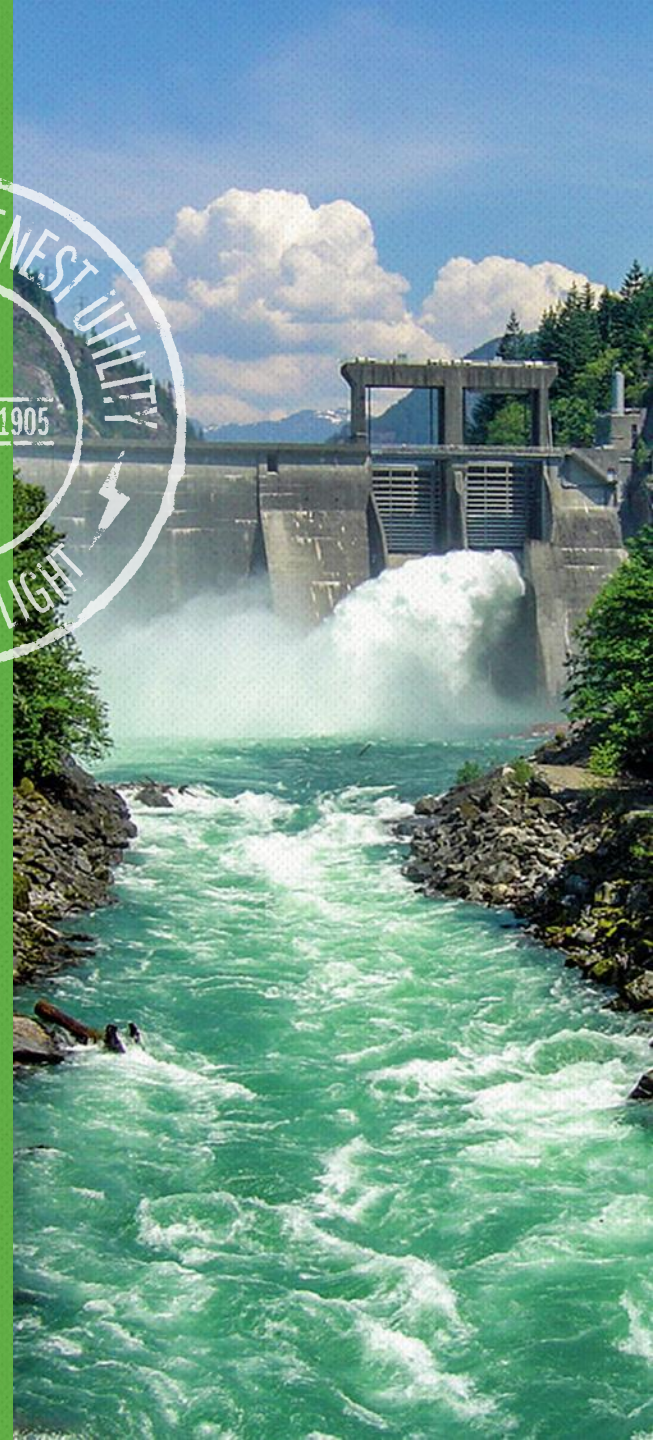
# VARIABILITY OF SURPLUS ENERGY AND NET WHOLESALE REVENUE







# CURRENT REGIONAL ISSUES



## CURRENT REGIONAL ISSUES

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- Expansion of the California Independent System Operator (CAISO) footprint
- Market development activities in the Pacific Northwest



## CURRENT REGIONAL ISSUES

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- Trends in power marketing
  - Shorter time steps
  - Increased transparency
  - Organized markets vs. bilateral
  - More FERC oversight
  - More analytical, less relational





# CITY LIGHT

## OUR VISION

To set the standard—to deliver the best customer service experience of any utility in the nation.

## OUR MISSION

Seattle City Light is dedicated to exceeding our customers' expectations in producing and delivering environmentally responsible, safe, low-cost and reliable power.

## OUR VALUES

Excellence, Accountability, Trust and Stewardship.

