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March 5, 2013

MEMORANDUM

TO: Power Committee

FROM: Massoud Jourabchi, Ken Corum

SUBJECT: Financial Assumptions for the Seventh Power Plan, Part 1

In order to compare the costs of different power resources in the Seventh Power Plan, fundamental financial assumptions are required.

The first of these assumptions is the projected rate of inflation. The Council, like other power planning organizations, conducts its analysis using dollars with constant purchasing power – that is, ‘real’ dollars, excluding the effects of inflation.

For example, interest rates are commonly expressed in ‘nominal’ (not inflation-adjusted) terms. In order to conduct the analysis using real dollar amounts, it is necessary to convert nominal interest rates into real interest rates. An assumed rate of inflation is needed in order to make this conversion.

The second fundamental financial assumption is the expected cost of capital to finance the development of new power resources. Power resources are typically financed using bonds and equity funding. Consequently, the cost of capital is a significant component of the total costs for new resources.

At the Power Committee meeting on March 12, staff will explain the concepts, use, and bases for assumptions about inflation and the cost of capital.

Financial Assumptions For the 7th Plan Part 1

Massoud Jourabchi
Ken Corum



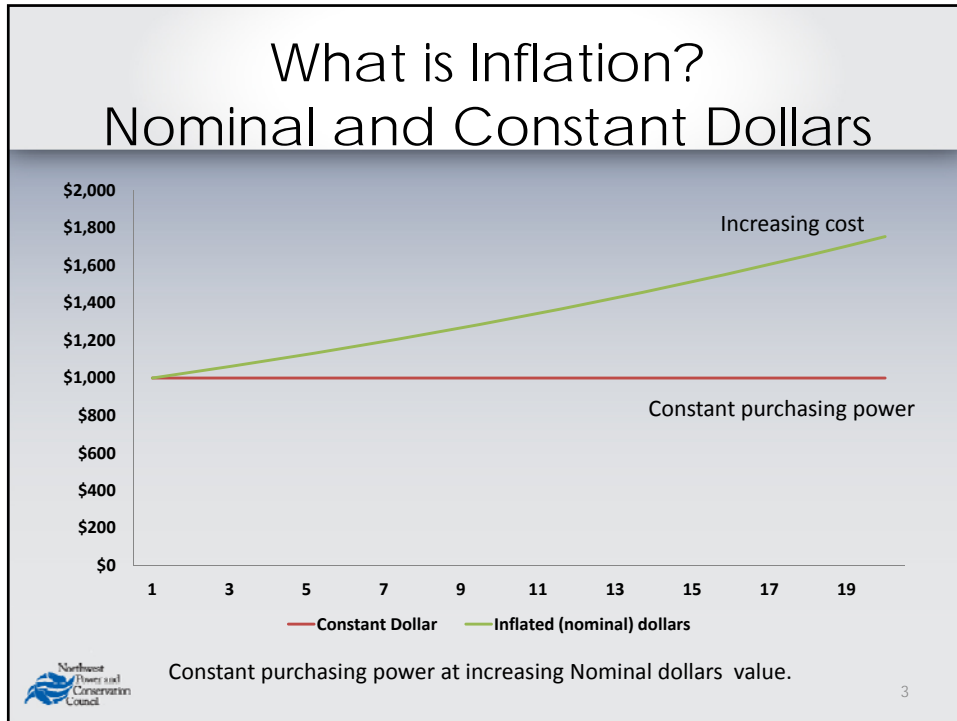
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Key Financial Assumptions and Concepts

- **What are the key financial input assumptions**
 - Inflation
 - Cost of financing
- **How are these assumptions used in Council's analytics**
- **What are other utilities' assumptions**




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Inflation:

Why do we need to adjust for inflation

- We take inflation out so that cost impact of Plan's resource options is not mixed up with the impact of general inflation.
- Our analytics works is in Real dollars instead of Nominal dollars.
- Think of real dollars as dollars with constant purchasing power.
- Nominal dollars decline in purchasing power over time.


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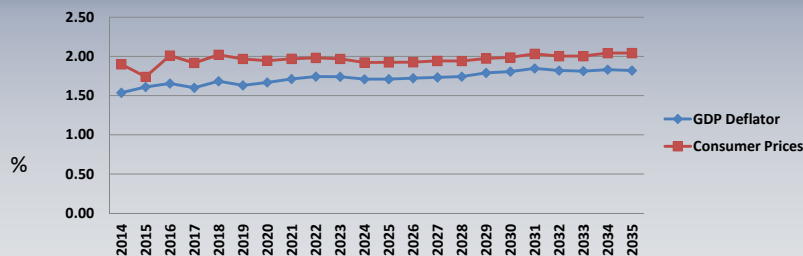
How we adjust for inflation

- In the 6th plan we used purchasing power of a dollar in 2006 as the basis for comparing costs in the past or future .
- For the 7th plan we use 2012.
- We use the historic inflation rate and bring past prices to 2012 prices.
- We use forecasts of inflation, from Global Insight, and bring future prices to the 2012 base year.



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7th plan Forecast of Inflation rate : GDP deflator and CPI



Average	Historic 2000-2012	7 th Action Plan period 2015-2019	2015-2035
GDP Deflator	2.3	1.6	1.7
Consumer Price Index	2.5	1.9	2.0

Range of GDP deflator during Action Plan Period is 1.4%-2.3%

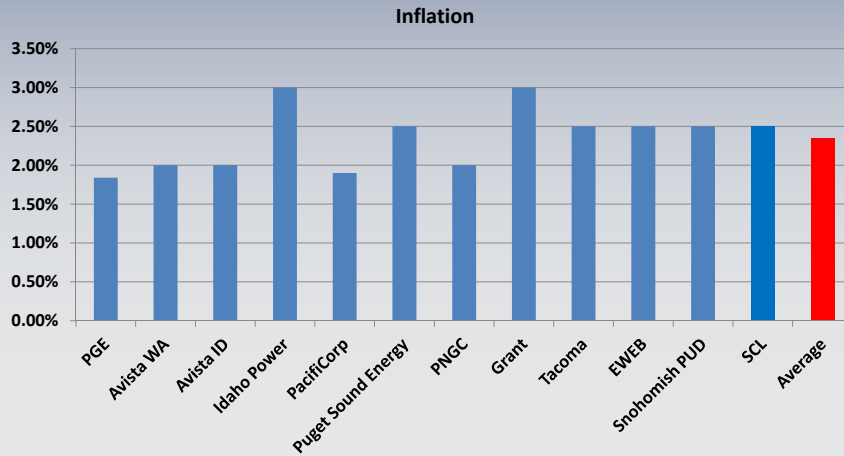
In the 6th plan we used 2.0%

Council analytics uses range of annual and averaged values.



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Inflation Rate Assumptions used by Utilities in NW



Source : Survey of Demand Forecast Advisory Committee Members-
Feb 2013

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Financing Cost of Future Resources

- **Future resources will be financed by**
 - Investor Owned Utilities and IPPs
 - Public utilities including Munis, PUDs and Coops
 - Residential and Business consumers also partially fund conservation, through their direct out-of-pocket expenses.



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How Financing Costs are Used

Financing costs are used in

- MicroFin: Generation resource assessment
 - ProCost: Conservation resource assessment
 - RPM: Resource selection
- How financing cost are used in each model will be presented in future presentation.



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Financing Cost Calculation for IOUs

■ For Investor Owned Utilities

- Cost of debt (AAA/Baa corporate bonds)
- Cost of equity
- Debt/equity ratio, tax deduction

Action Plan period (2015-2019)	Nominal	After 35% tax deduction	Adjustment for Inflation	Real after tax
Long Term AAA/Baa Corporate Bond	6.69%	4.35%	1.64%	2.7%
Cost of equity	11.00%	11.00%	1.64%	9.21%
Cost of Capital (WACC) assuming 50/50 Debt /Equity				5.94%



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Financing Cost Calculations for Publics

- Cost of debt

- BPA: Treasury Bill +Premium (90 points)
- Muni/PUDs : AAA Municipal bonds
- Coops: Treasury Bill +Premium (100 points)

	Source of funds	Nominal	Adjustment for Cost of Financing	Nominal Cost of Financing	Adjustment for Inflation	Real Cost of Financing
BPA	30-year Treasury	5.20%	0.90%	6.10%	1.64%	4.39%
Munis /PUDs	AAA Muni Bond	5.24%	0%	5.24%	1.64%	3.54%
Coops	30-year Treasury	5.20%	1.00%	6.10%	1.64%	4.49%



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Financing Cost for Residential consumers

- We used a recent DOE study on life cycle cost and payback period for federal standards to calculate residential customers cost of financing.
- Study looked at range of assets and borrowing sources available to individual consumer.
- The borrowing sources were weighted by their historic use.
- Borrowing source weights were developed by Federal Reserve Board's Survey of Consumer Finances over the past 15 years.
- We calculate after tax, real cost of financing for residential consumers of about **3%**.



http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/ff_prelim_ch_08_lcc_2012_06_21.pdf

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Cost of Financing for Business consumers

- Estimating Cost of financing for business customers uses a similar approach to IOU financing.
- DOE study used business consumers survey for estimating cost of debt and equity
- Using Global Insights forecast for inflation, cost of treasury notes, we re-estimated business customers cost of financing at around **7.7%**



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Summary of Financing Costs (After tax and Adjusted for inflation)

Resource Purchaser	Funding Source	Real Cost of Capital
Muni	AAA Municipal Bonds	3.54%
Co-op	30 yr Treasury. + 100 Basis	4.49%
IOU	IOU WACC	5.94%
BPA	30 yr Treasury. + 90 Basis	4.39%
Residential Customers	Various	3.02%
Business Customers	Various	7.71%

Source for Treasury and municipal bonds is : Global Insight Forecast Q4-2012.
Source for residential and business customers is DOE national studies.



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Summary

- Base year: 2012
- Council uses constant 2012 dollars for the 7th plan.
- 7th plan study period is 2015-2035
- Inflation rate: long-term averages about 1.6-1.9%
- Financing costs for different entities are explicitly calculated.

- In the April meeting we will discuss discount rates and application of discount rates.



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End of Presentation 1



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