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Washington

April 2, 2013

MEMORANDUM

TO: Power Committee

FROM: Massoud Jourabchi

SUBJECT: Clarification on Financial Assumptions for the Seventh Power Plan

During our March 12th presentation on Financial Assumptions, a few questions were raised regarding:

- Inflation rate assumption of 1.64%
- Using CPI or GDP deflator for inflation rate
- IOU cost of Equity assumption of 11%

Council Member Yost asked for clarification as to why staff is recommending the inflation rate of 1.64%, whereas the average inflation rate by utilities, based on survey of Demand Forecast Advisory Committee members, showed average inflation rate of about 2.3%.

Staff contacted the utilities that had responded to our inquiry regarding the inflation rate. The results of our inquiry indicate that for most part vintage of data explains why a utility's average rate of inflation is higher than Council's. Most IOUs used more recent forecast data, 2012 and 2013 vintage, for these IOUs average inflation rate was 1.9%. The other utilities that were showing a larger inflation rates were using older forecasts 2006-2011. Council's use of most recent forecast for 2015-2035 seems reasonable.

In addition to survey of utilities shown during the presentation, two new data points on inflation became available. Both of these recent additions show lower expected inflation rate.

1. The D.O.E's Annual Energy Outlook 2013 (early release) report assumes inflation rate of 1.75% for 2015-2035 period.
2. Bonneville Power Administration also use long-term inflation rate of 1.6% approximately. BPA uses IHS Global Insight's forecast for the source of their assumption for inflation.

Regarding the second question, on choice of using CPI or GDP deflator, we asked the utilities who had responded to our original inquiry. We found some utilities use CPI, some use GDP deflator and some used average of CPI and GDP deflator. Staff recommendation is to stay with GDP deflator. Table below shows the results of re-contacting the utilities and inquiring about vintage and use of CPI or GDP deflator.

Entity	Long-term Inflation	Notes on Inflation Type and Vintage
PGE	1.84%	GDP Deflator, 2012, GI
Avista WA	2.00%	2012 Fed Anchor rate
Avista ID	2.00%	2012 Fed Anchor rate
Idaho Power	1.75%	Average of CPI and GDP deflator, 2012
PacifiCorp	1.90%	Average of CPI and GDP deflator 2013 IRP
Puget Sound Energy	2.50%	CPI, 2011 rate case
PNGC	2.50%	Not used often, Treasury 20 year
Grant	3.00%	2011, blended number, notional
Tacoma	2.50%	CPI (2006)
EWEB	2.50%	CPI historic
Snohomish PUD	2.50%	CPI, recent
Seattle City Light	2.35%	GDP deflator, 2012
EIA AEO 2013	1.75%	GDP deflator EIA AEO 2013
BPA	1.64%	GDP deflator, 2013 GI

The third question asked was regarding IOU's Cost of Equity. Council Member Tom Karier asked about the cost of equity assumption of 11% being used in development of cost of capital for IOUs. It was suggested that staff contact WUTC to obtain more recent information. After contacting WUTC, staff received information on recent rate cases. The following table reflects the cost of equity of these cases. The average cost of equity is 9.8%.

State	Company	Service	Date	Return on Equity (%)
Oregon	Idaho Power	Electric	23-Feb-12	9.90
Washington	Puget Sound Energy	Electric	7-May-12	9.80
Washington	Puget Sound Energy	Natural Gas	7-May-12	9.80
Oregon	Northwest Natural Gas	Natural Gas	26-Oct-12	9.50
Oregon	PacifiCorp	Electric	20-Dec-12	9.80
Washington	Avista Corp.	Electric	26-Dec-12	9.80
Washington	Avista Corp.	Natural Gas	26-Dec-12	9.80

In summary: Staff recommends that for the 7th Power Plan, average inflation rate of 1.64%, based GDP deflator and cost of equity of 10% to be used.

**Financial Assumptions
For the 7th Plan
Follow-up to Part 1**

**Massoud Jourabchi
Ken Corum**



In the last meeting

We discussed

- **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**



Discussion in the meeting delved into

- Average inflation rate recommendation of 1.64%,
- Using CPI or GDP deflator for inflation rate
- IOU's Cost of Equity assumption of 11%
- Cost of financing for CO-OPs.
- Impact of these assumptions on Cost of Capital



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A little about IHS Global Insight

- **Global Insight** is the world's largest economic forecasting organization, serving over 3,800 clients in industry, finance and government worldwide employing more than 600 economists and other staff in 23 offices in 13 countries. It is a division of **Information Handling Services, Inc. (IHS)** which serves international clients in five major areas: energy, product lifecycle, environment, security and Electronics and Media. IHS brands include Cambridge Energy Research Associated (CERA)
- Global Insight provides comprehensive economic and financial information on countries, regions and industries, using a unique combination of expertise, macroeconomic models, and data
- GI's Energy team consist of more than 45 full-time energy consultants and analysts who monitor over 260 companies in 120 countries.
- Their client include: regional entities such as BPA, State of Idaho, PacifiCorp, PGE, as well as national entities such as DOE.
- Council uses GI's Business Demographic Projections as well as national and state level projections on employment, income and industrial output.



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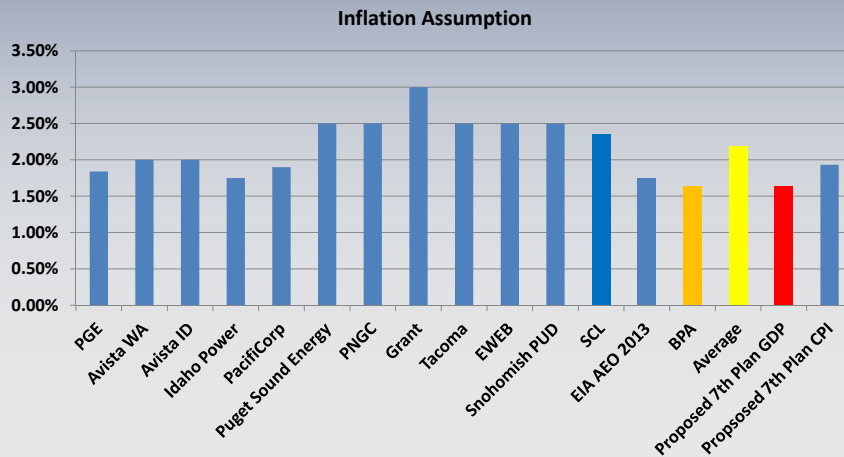
Which inflation rate is appropriate when

Examples of cases where CPI or GDP deflator is more appropriate.

Consumer Price Index	GDP Deflator/Producer Price Index
Consumption/income related questions	Investment/business related questions
Consumer electric rate	Thermal/renewable Power Plant investments
Consumer Retail Price of Natural gas	Wholesale Price of Electricity
Consumer retail price of oil	Wholesale price of natural gas
Consumers share of conservation Costs	Utility share of conservation Costs



Review of Inflation Rate Assumptions



Additional Information on Inflation

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EIA AEO 2013	1.75%	GDP deflator EIA AEO 2013
BPA	1.64%	GDP deflator, 2013 GI
Average	2.20%	
IOU, BPA, EIA	1.95%	
Publics	2.56%	
Additional Cases		
California Energy Commission	1.50%	2013 Cost of generation analysis
Idaho DPM- state economic forecast	1.60%	2012 Q4- GI (CPI and GDP Def)
7th Plan GDP Deflator *	1.64%	Q2- 2013 GI
7th Plan CPI *	1.93%	Q2- 2013 GI
* Analysis uses annual numbers rather than average shown		



Financial Assumptions are interdependent

- We compiled some of the financial assumptions from three different scenarios
- Compared to the Reference case
 - Optimistic case, inflation is lower, risk is low, financial costs are lower.
 - Pessimistic case, inflation is higher, financial costs are higher.

	Reference Action plan period 2015-2019	Pessimistic Action plan period 2015-2019	Optimistic Action plan period 2015-2019
Global Insight Forecast Q4-2012			
CPI	1.93	3.10	1.64
GDP Deflator	1.64	2.89	1.30
Yield On 30-Year Treasury Bonds	5.20	7.06	4.77
Rate On Aaa-Rated Municipal Bonds	5.24	7.13	4.93
Rate On Aa-Rated Public Utility Bonds	6.71	9.34	5.76
Yield On Aaa-Rated Corporate Bonds	6.09	8.65	5.28
Yield On Baa-Rated Corporate Bonds	7.28	10.24	6.21



Scenario naming is from Global Insight.

Discussion Regarding Cost of Equity

State	Company	Service	Date	Return on Equity (%)	Common Equity /Total Cap (%)
Oregon	Idaho Power Co.	Electric	23-Feb-12	9.90	49.90
Washington	Puget Sound	Electric	7-May-12	9.80	48.00
Washington	Puget Sound	Natural Gas	7-May-12	9.80	48.00
Oregon	Northwest Natural	Natural Gas	26-Oct-12	9.50	50.00
Oregon	PacifiCorp	Electric	20-Dec-12	9.80	50.00
Washington	Avista Corp.	Electric	26-Dec-12	9.80	47.00
Washington	Avista Corp.	Natural Gas	26-Dec-12	9.80	47.00
			Average	9.77	48.82
			Electric only	9.83	48.73

- Cost of equity reflects risk profile of the company.
- Staff had used an 11% cost of equity and a 50% equity to debt ratio.
- More recent rate cases suggests cost of equity of 9.8% and equity to debt ratio of 49%.



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What is the impact of various options?

- To reflect some of the uncertainty about future cost of resource, we can look into a range of inputs.
- We tested cost of capital under three alternative scenarios:
 - Inflation rate from 1.3% to 3.0%
 - Used corresponding financial rates (treasury bonds, municipal bonds,...)
 - Varied Cost of Equity from 9% to 12%
 - Varied debt to equity ratio 47% to 55%



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Range of IOUs Cost of Capital

	Reference	holding Debt/equity ratio constant	
		Optimistic	Pessimistic
Inflation (GDP deflator)	1.6%	1.3%	2.9%
Risk Premium	4.6%	4.6%	4.6%
30 year Treasury Bond	5.2%	4.8%	7.1%
Cost of Equity	9.8%	9.4%	11.7%
Tax adjusted Cost of Debt	4.3%	3.7%	6.1%
Debt/Equity ratio	50%	50%	50%
Nominal WACC	7.1%	6.6%	8.9%
Real WACC	5.3%	5.2%	5.8%

Risk Premium was back calculated as the Cost of equity minus cost of Treasury bond.
Reference, Optimistic and pessimistic names are HIS- Global Insight labels.



Varying Debt/Equity Ratio

Real WACC for IOUs under various Debt/Equity Ratios			
Range of Debt/Equity Ratio	Reference	Optimistic	Pessimistic
55%	5.10%	4.90%	5.60%
50%	5.30%	5.20%	5.80%
45%	5.60%	5.50%	6.10%
Percent change in Debt/Equity Ratio			
	Reference	Optimistic	Pessimistic
10.0%	-3.8%	-5.8%	-3.4%
-10.0%	5.7%	5.8%	5.2%



Cost of Financing for Co-ops

- We are reviewing our financial assumptions for Co-ops.
- Co-ops can be treated as IOUs rather than Munis, however there is no single method for Co-op financing.
- Conversation with PNGC indicated debt financing as the main vehicle they use.

Coops WACC Calculations	
Equity cost	10%
Cost of Debt (30 year Treasury +100)	4.5%
Debt ratio	50%
WACC	7.24%
Real WACC	5.52%
Earlier method (full debt financing)	4.48%



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Revised Cost of Capital

- Based on Change in Cost of Equity for IOUs
- If changing financing methodology for CO-OPs.
- The revised cost of capital is as follows:

Resource Purchaser	Funding Source	Real Cost of Capital
Muni	AAA Municipal Bonds	3.54%
Co-op	Coop WACC	5.52%
IOU	IOU WACC	5.45%
BPA	30 yr Treasury. + 90 Basis	4.39%
Residential Customers	Various	3.02%
Business Customers	Various	7.71%



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Summary

- Inflation rate and other financial and economic assumptions are not independent of each other.
- Range of inflation is between 1.3% and 3% depending on the scenario.

For Reference case staff recommendation is to use average GDP deflator of 1.64%, which is consistent with CPI of 1.97%

- IOU Cost of Equity will vary based on future economic scenario, but overall range of 9.4%-11.7% seem reasonable.
 - Staff recommendation 10% for the Reference case.