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April 30, 2009

MEMORANDUM

TO: Power Committee

FROM: Terry Morlan

SUBJECT: Accounting for Costs and Rate Effects of Resource Additions

A question was raised at the April Council meeting about how the costs of conservation are treated with respect to levelized costs as evaluated in the Resource Portfolio Model and whether the likely effects on rates are captured adequately by that process. Cost accounting procedures for the power plan have been established and reviewed for many years; they reflect basic economic analysis of time varying costs.

Translation of those costs into rates has been less well reviewed in recent plans. The Council's previous Demand Forecasting System was designed to estimate utility rates based on the cost of utility generating and conservation cash flows. That system has been replaced with a new system that is driven by wholesale market prices and historical differences between market prices and utility rates (which roughly captures cost recovery of the existing transmission and distribution systems and other overhead). Future retail prices are driven by changes in market prices adjusted for conservation costs and the above market costs of RPS resources.

In either case, the estimate of rates is only approximate because rates are set on an individual utility basis and determined by investor-owned utility regulatory commissions or boards of directors for customer-owned utilities. The Council's estimates of retail rates should be viewed as an estimated trend in prices over time, not a precise year by year change in rates. The expected changes would not apply to individual utilities that are in different resource conditions and have different growth rates.

Staff will describe our approach estimating costs and rates and attempt to answer questions. However, Council should not expect the plan's forecasts of cost and rates to replace utility specific rate estimates, although they will give a reasonable indication of rates changes over time and how those will be affected by different resource choices.

Costs and Rates in the Sixth Power Plan



Wally Gibson
Power Committee
Walla Walla, Washington
May 12, 2009

Overview – Questions

- How are conservation (and other resources) characterized in the analysis?
 - Real levelized costs
 - Put all resources on a comparable basis
- Is this the way conservation's cost shows up in utility rates?
 - No, nominal values, capitalized or expensed at utility/PUC discretion
 - Not all conservation cost is paid by utilities
- What is the difference between the real and nominal costs?
 - Real levelized costs are lower than nominal costs used in rates
- How are rate effects calculated in the Council's analysis?
 - Approximate calculation, much simpler than used in rate setting
 - Used to assess feedback effects on demand and fuel choice

Plan Focuses on Costs, not Rates

- What the Act calls for: costs of resources, not rate impacts
- Long-established Council practice looks at total costs of conservation programs, however:
 - Rate impact of conservation is variable
 - Total cost split between utility programs, market development programs and direct consumer cost is variable over time and by program
 - Goal is to get conservation measures to be market norm so consumers will chose them without utility incentives

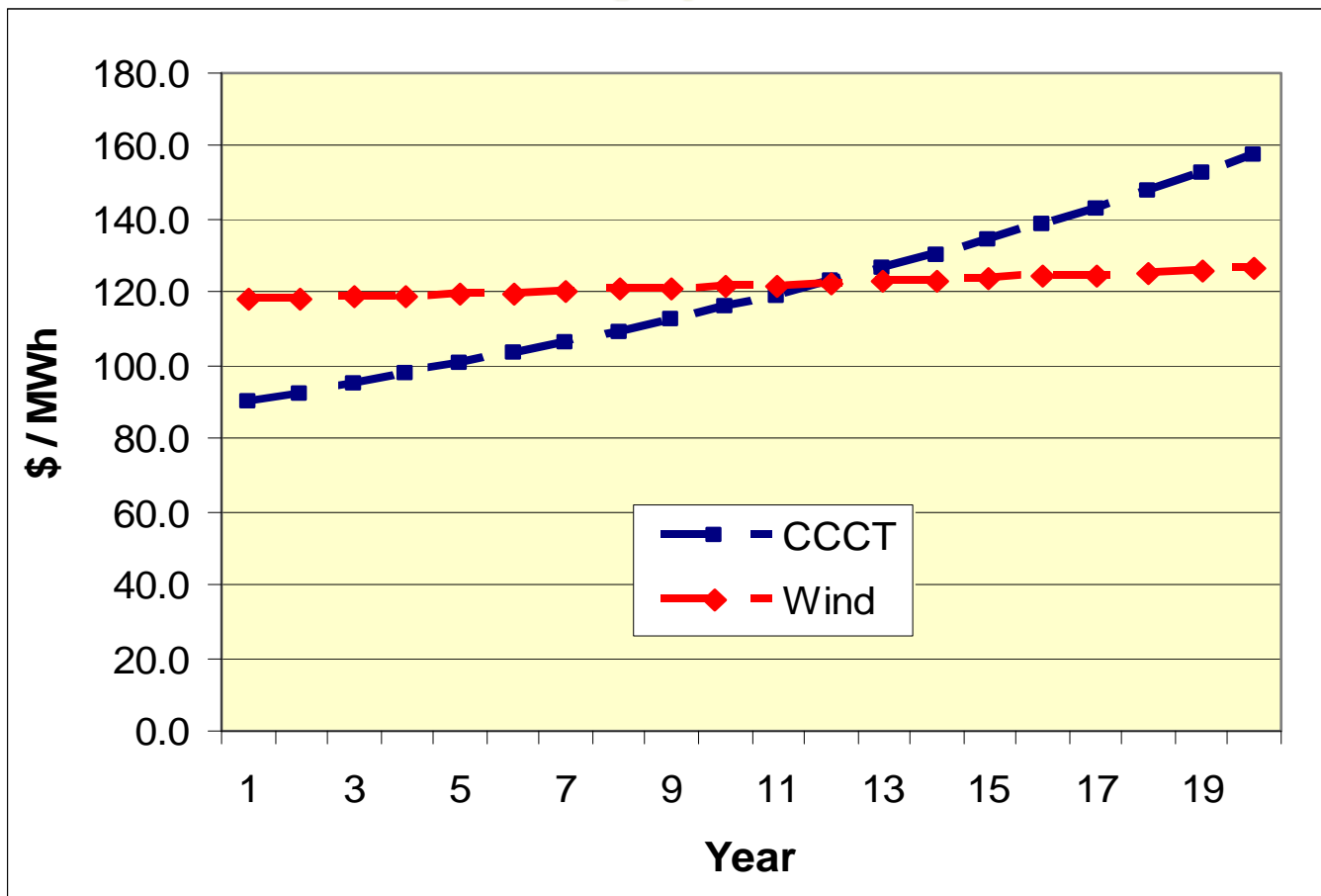
Council's Approximation of Rate Impacts

- Council does an approximation of rate impacts, not a detailed rate analysis
 - Used to get sense of rate trends
 - Used to calculate feedback effects on demand levels and fuel choice for appliances
 - Done in real terms not nominal terms
 - Not a forecast of any specific utility rates
- Conservation rate effects depend on implementation choices
 - Utility portion of cost
 - Consumer portion of cost
 - Aim to shift from first to second over time

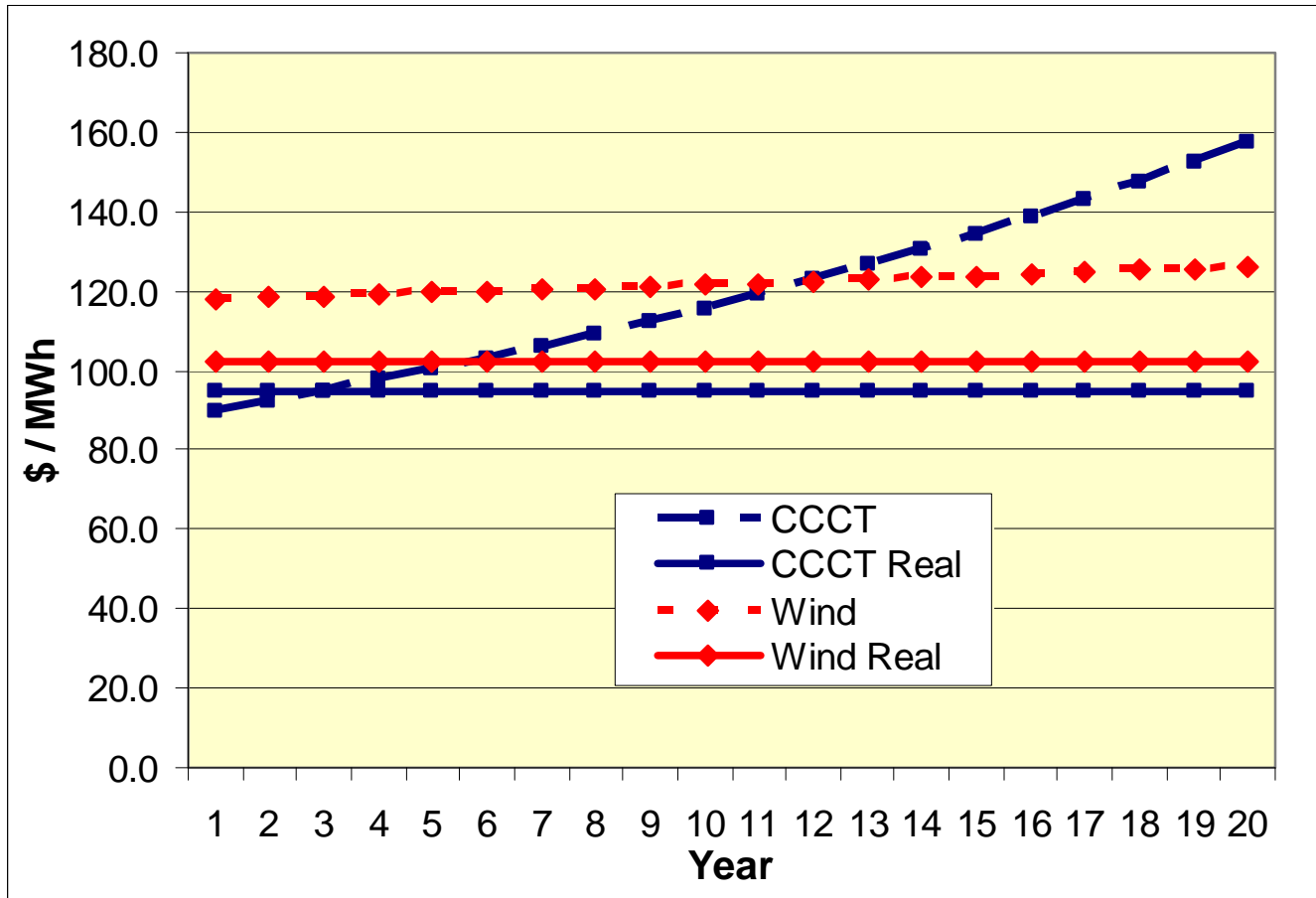
Real Levelized Costs for Economic Analysis

- Levelization creates an equal stream of payments or costs financially equivalent to the present value at the discount rate
 - A fixed rate mortgage payment is most common example of a (nominal) levelized stream – financially equivalent to amount borrowed (the present value)
- Real dollar costs have all future general inflation removed
 - Require a reference year
- Real levelized costs are present values levelized using a real interest rate (inflation component removed)
 - Index value – allows comparison of costs that occur in different times and with different patterns

Wind vs. CCCT Example – Nominal



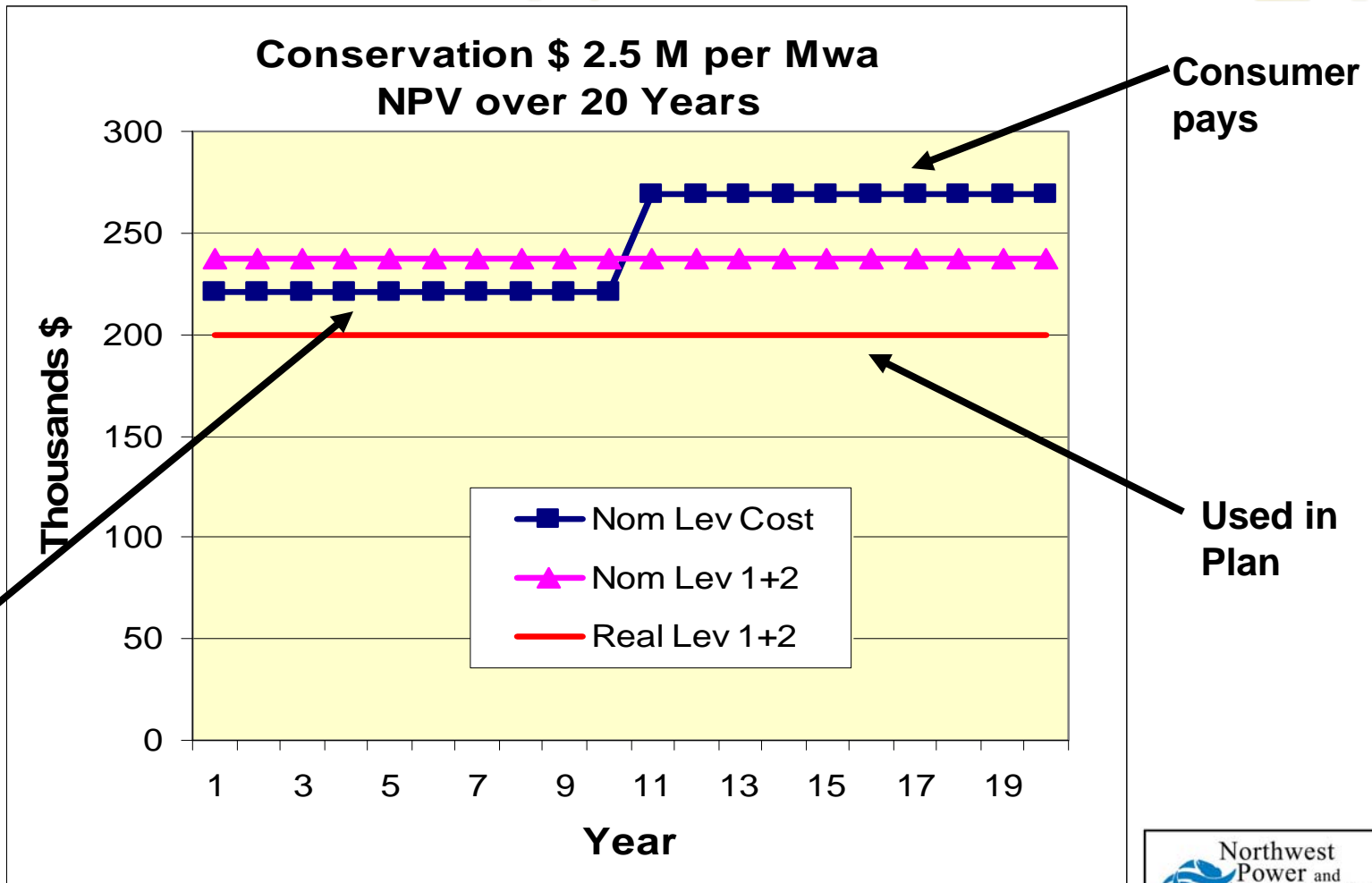
Wind vs. CCCT Example – Real Levelized



Real Levelized Different from Nominal Values

- Real levelized values of a given cost are lower than nominal values
 - No inflation in annual numbers
 - No inflation in interest rate used to discount and levelize
 - Nominal costs – costs that actually occur in any given year
 - Include any general inflation
- Example uses \$2.5 M per MWa
 - Net present value of two ten-year conservation programs
 - Nominal rate 7%, real rate 5%, inflation 2%
 - Shows total resource cost, utility plus consumer portion

Conservation Example



Utility
pays

Consumer
pays

Used in
Plan

Nominal Costs of Conservation to Calculate Actual Rates

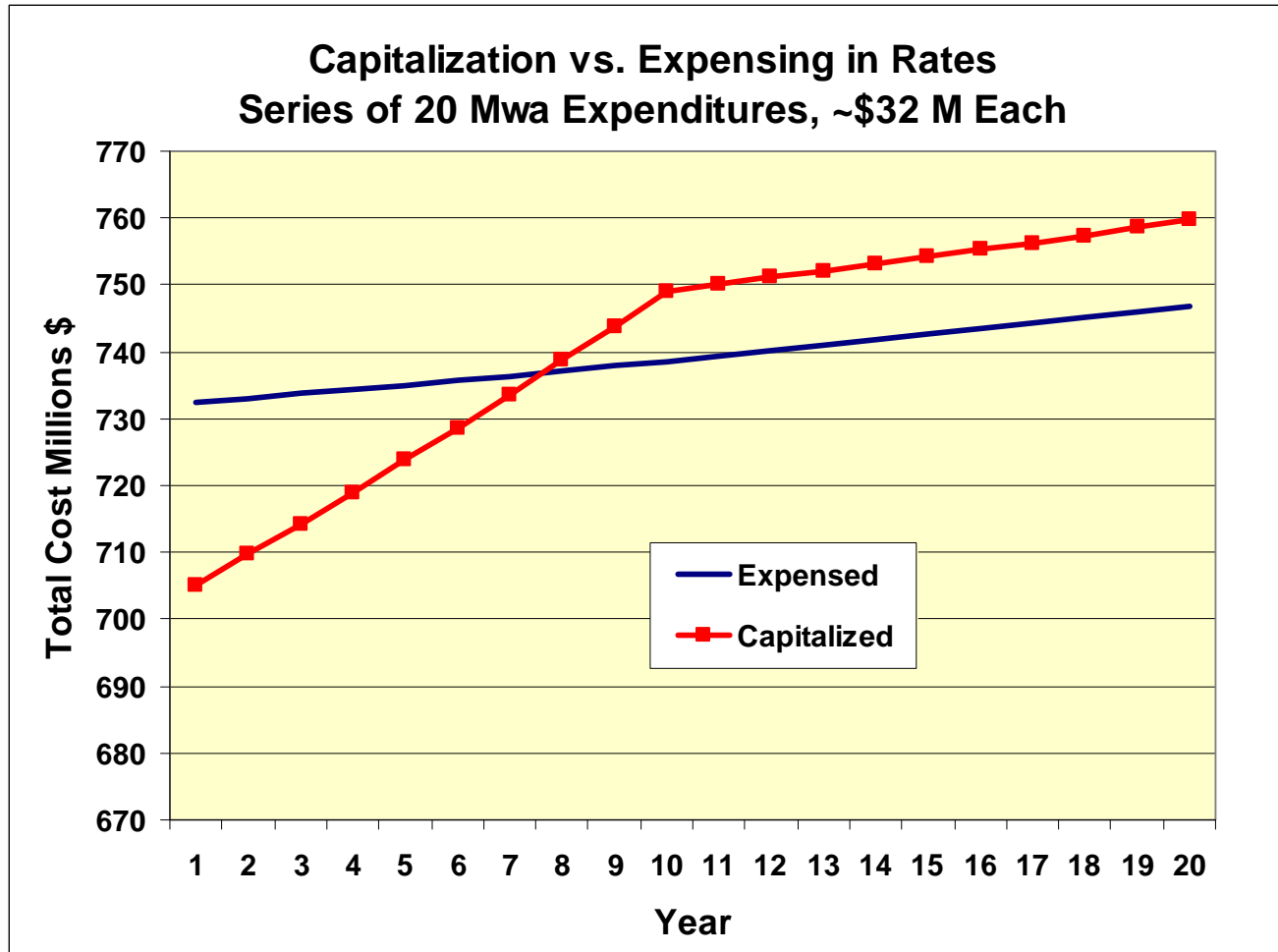
- Rate setting by utilities and PUCs uses nominal costs for all resources, including conservation
- Conservation can be capitalized or expensed for inclusion in rates
 - Capitalization: expenditure converted into series of annual payments, including return on the unrecovered capital
 - Expensing: entire expenditure each year without interest
 - Choice at discretion of utility or regulator
- Example: same \$2.5 M per MWa
 - Net present value of two ten-year conservation programs
 - Utility portion of total conservation cost only
 - Rate goes up because sales base is unchanged

Partial Data for Following Graphs – Expensing vs. Capitalizing

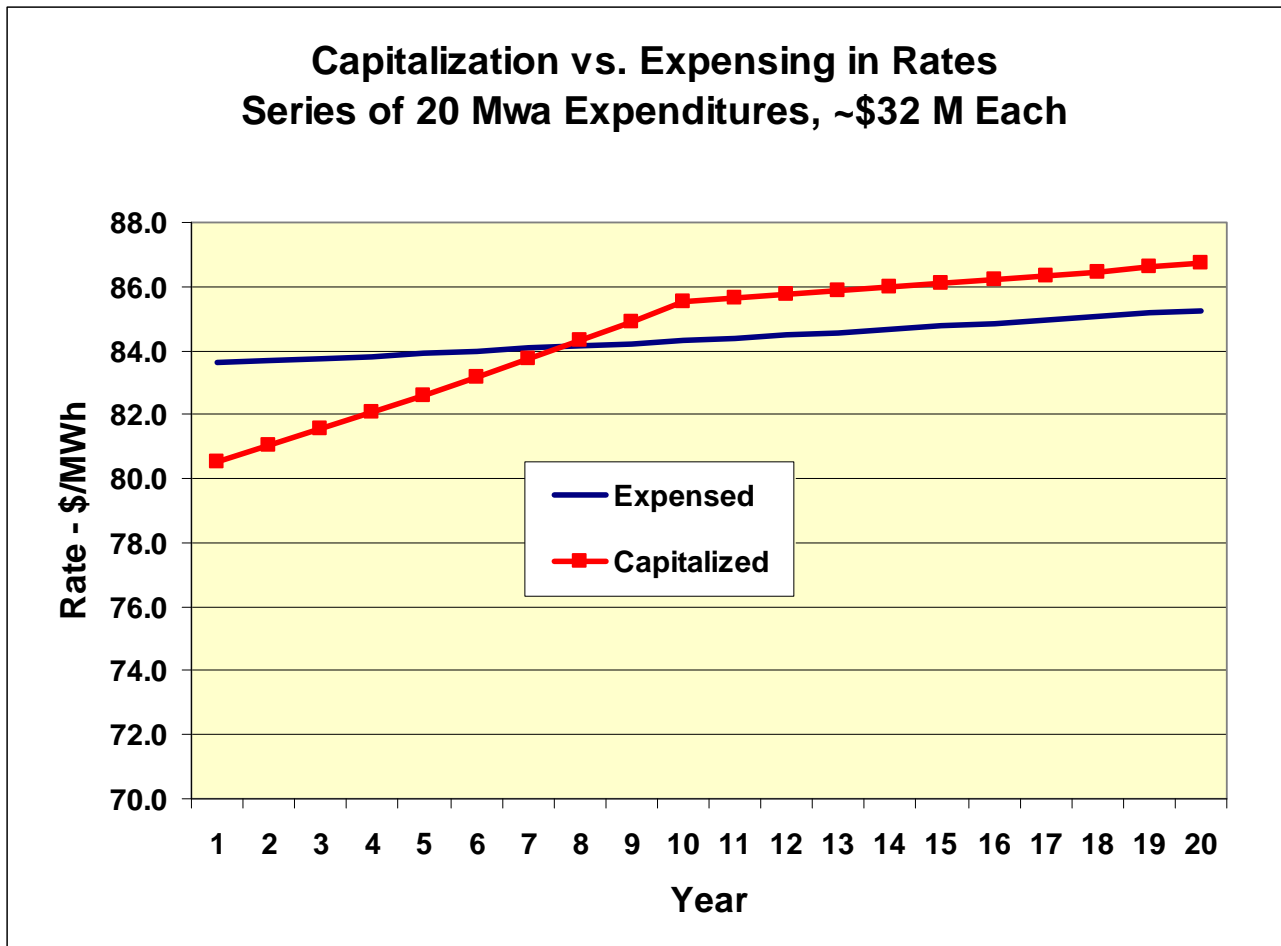
Year (Expensing):	0	1	2	3	4	10	11
Load	1000	1020	1040	1060	1080	1200	1220
Exist sys cost K\$	\$700,800	\$700,800	\$700,800	\$700,800	\$700,800	\$700,800	\$700,800
Load growth expensed K\$		\$31,620	\$32,252	\$32,897	\$33,555	\$37,789	\$38,545

Year (Capitalizing):	0	1	2	3	4	10	11
Load	1000	1020	1040	1060	1080	1200	1220
Exist sys cost K\$	\$700,800	\$700,800	\$700,800	\$700,800	\$700,800	\$700,800	\$700,800
Load growth capitalized K\$		4,414	4,414	4,414	4,414	4,414	4,414
			4,502	4,502	4,502	4,502	4,502
				4,592	4,592	4,592	4,592
					4,684	4,684	4,684
						4,778	4,778
						4,873	4,873
						4,971	4,971
						5,070	5,070
						5,171	5,171
						5,275	5,275
							5,380

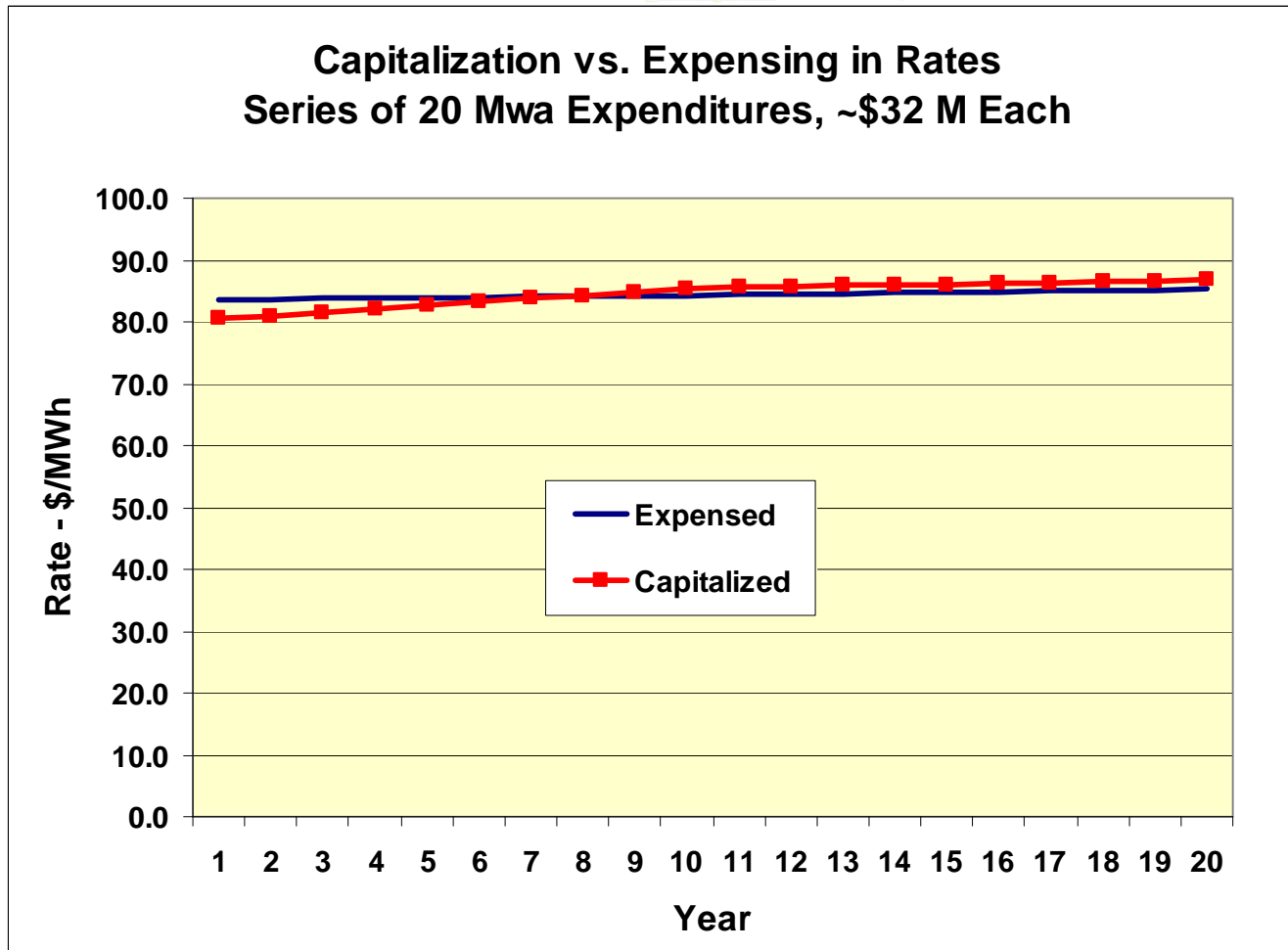
Capitalizing vs. Expensing – Utility Cost Impacts



Capitalizing vs. Expensing – Rate Impacts – 1



Capitalizing vs. Expensing – Rate Impacts – 2



Extra Slides – Backup data



Data for Conservation Example

– Real vs. Nominal

Derivation of program conservation cost per Mwa - K\$

	Yr 1	Yr 11
Outlay nominal terms	1550	1889
Present value	1550	960
NPV both parts	2510	
Ann cost, real lev 20 yrs	199.8	
Real lev \$/MWh, 20 yrs	22.8	
Nom annual cost invest 1	220.7	
Nom annual cost invest 2		269.0
Nom annual cost invest 1+2	237.0	