
BAKER RIVER PROJECT RELICENSE

Economics/Operations Working Group

August 13, 2003

9:00 AM – 11:00 PM

PSE Office
Mt. Vernon, WA

FINAL MEETING NOTES

The Economics Working Group Mission Statement:

“To ensure that alternative project proposals, operations and emergency plans for the Baker River Project and its components provide for: (1) Public health and safety; and (2) Thorough analysis and evaluation of the economic costs and benefits (including non-market and economic impacts.)”

Team Leader: Lloyd Pernela (PSE), 425-462-3507; lloyd.pernela@pse.com

Note: Please let the team leader know if you are unable to attend a meeting. If something comes up at the last minute, please call Lyn prior to the meeting. Lyn's cell phone is 425-890-3613.

PRESENT

Joel Molander by phone, Lloyd Pernela and Paul Wetherbee (PSE), Steve Hocking and Keith Brooks (FERC) by phone, Bob Helton (interested citizen), Jerry Louthain (EES for City of Anacortes, Skagit County PUD, and Town Concrete), Dave Brookings (Skagit County Public Works), Thomas J. Sheahan (Skagit County Emergency Management), Jon Vanderheyden (USFS), Ken Brettmann and Bruce Sexauer (Corps), Phil Hilgert (R2), Gary Sprague by phone (WDFW), Ruth Mathews (Nature Conservancy), Mary Jean Bullock, note-taker, and Lyn Wiltse, facilitator (PDSA Consulting Inc.)

DATES OF FUTURE MEETINGS

September 10, October 8, November 12, December 10, 2003 at PSE Office, 1700 East College Way, Mt. Vernon. A different meeting location is being investigated.

AGENDA

August 13, 2003 at PSE Office, Mt. Vernon, WA

9:00 to 11:00 PM

9:00 - 9:05 Introductions
9:05 – 9:10 Review/revise minutes and agenda
9:10 – 9:15 Review Action Items
9:15 – 10:00 HYDROPS and TST update (including status of R2 model)
10:00 – 10:45 Review of Least Cost Plan
10:45 – 11:00 B R E A K
11:00 – 11:15 FERC Call
11:15 – 12:00 PME 5.06: Flood Control (COE proposal and current article 321)
Update on Corps/Skagit County flood coordination and possible integration into this process
Status of Skagit County Flood Control Study Request
12:00 – 12:20 L U N C H
12:20 – 12:30 Review Other Study Requests:
▪ R-01 –Low Flow Augmentation from Baker Project – Continuing discussion
▪ R-03 –Examination of Spawning and Incubation Flows in the Skagit River below the Baker Confluence during Brood year 2000
12:30 – 12:45 Status of ER03: Spawning and Incubation Flows Study Request
12:45 – 12:50 Set September 10, 2003 agenda (at PSE Office in Mt. Vernon)
12:50 – 1:00 Evaluate Meeting
▪ What's Hot?
▪ Studies Report for Baker Solution Team
1:00 – 2:00 HYDROPS Demo.

NEW ACTION ITEMS

- Lloyd: Set up presentation on how PSE operates including trading in September or October time frame
- Lloyd: Send folks (or post on Website) Charlie Black's presentation on the PSE Lease Cost Plan filed with WUTC
- Consider inviting Jim Smith of Corps to present his economic model for the Lower Skagit.
- Lloyd confirm all received Draft Proposed Actions for PDEA and the June 23rd revision.

INTRODUCTIONS

We welcomed back Tom Sheahan of the Skagit County Department of Emergency Management. We also welcomed Bruce Sexauer of the Corps.

REPORT ON OLD ACTION ITEMS

- ☑ Lloyd: Set up a presentation on PSE Least cost Plan with planner(s).
- ☑ Lloyd: Saw that phone participants got copies of meeting handouts.
- ☑ Joel: Convened meeting of flood control teamlet to review study scope(s) and timelines. Keep Econ/Ops members informed along the way. Joel reported at that meeting PSE hosted a dam tour for the County and the Corps. At that meeting, item to be discussed how PSE and County are working toward their respective analyses.
- ☑ Lloyd: Distributed list of consultants PSE would consider for flood control studies to team members for review.

-
-
- ☑ Lloyd: Sent out revised Draft Proposed Actions for PDE document to Working Group members ASAP. Lloyd reported that a later revision limited proposed action to current Corps operations.
 - ☑ Lyn: Buttoned up with Team Leaders re: how the Economic Working Group relates with the role of the Solution Team.

HYDROPS AND TECHNICAL SCENARIO TEAMLET REPORT

Paul reported they have been meeting approximately every two weeks.

Software modifications to HYDROPS are basically complete (99%). Forest Service review is pending finalization of a non-disclosure agreement between the Powel group, the USFS, Stetson and PSE.

Phil reported that the hourly R2 models are complete. The daily habitat models will be done by the end of September.

The TST is also finalizing input and output formats for model runs. For output, they currently are offering 4 levels of analysis.

The initial analyses are around recent conditions and draft actions (as will appear in the PDEA). Paul will be attending Working Group meetings this month to review with Working Groups members how to make model run requests.

Paul also reported that they have set up an e-room to allow members to view results of the initial runs.

PME 5.06: FLOOD CONTROL (COE Proposal and Current Article 32)

PSE

Lloyd reported that the flood control teamlet met July 29th and discussed the consultant's work scope of the feasibility study that PSE is currently undertaking to support the re-licensing process. This study is the WG's first phase response to the County's "optimal" flood control study. The teamlet's goal in this study is to meet both FERC and Corps standards of review for economic feasibility, that if that benefit cost ratio (without environmental analysis) is significant, the WG would then decide on how to proceed. Lloyd distributed final meeting notes from this meeting and pointed out the County's 'silence' on scoping and schedule review.

Lloyd reiterated that PSE's interests in this process are not only economic, but that PSE is also very committed to collaborating with stakeholders to come up with a mutually agreeable (balanced) settlement to submit along with the license application by April 30, 2004.

Skagit County – formal notes – approved by group at meeting. Note: Skagit County rewrote this section. It is attached at the end of notes. This follows solution team directive March 28, 2001 with respect to notes of clarification.

Dave reported that Skagit County has had a flood control study request with this working Group since December 2002. Since that time, they have been working hard to meet the aggressive re-licensing schedule. When, on June 11, PSE reported that they would help sponsor this study, the county was disappointed to learn that PSE was not considering using Pacific International Engineering (PIE). The Process Document requires that all participants get the chance to approve all contractors working on studies. This didn't happen with PIE. At that point the county determined to continue with their own

study using PIE since they had already engaged them to perform this study. They are doing this as part of a cost sharing relationship with the Corps for this study.

Dave then distributed a copy of an email progress report from Albert Liou of PIE. He also reported that Skagit County and PSE are currently drafting an MOA around information sharing. Bruce reported that the Corps may not be able to participate in the MOA. Lloyd commented that the MOA was not limited to information but could address scope and work reviews, schedules and coordination of the two studies.

Corps

Bruce explained that the Corps need is to understand the maximum feasible flood control that is possible in the Baker System to come up with an appropriate flood damage control program for Skagit Valley. Bruce explained that the Corps is looking forward to data from both studies (PSE's and Skagit County's). He also explained that it will be at least 2008 before the Corps finishes its Basin-wide analysis which would necessarily precede them recommending to Congress any alternate arrangement re: flood control. If in 2008, the Corp's own comprehensive study, including EA, indicates that a change in Baker's existing flood control levels fits into the comprehensive flood control program, they would work with the non-federal sponsor to implement for any additional mitigation measures and compensation that might be called for.

PDEA

Lloyd reported that existing levels of flood control (current operations) are called out in the Draft Proposed Actions for the PDEA. Since current operations are baseline no further EA analysis is required. This is a departure from current license article 32 that has an upper bound of 100,000 acre-feet. Bruce explained that the upper bound of flood control storage would be determined by looking at capacity at the Upper Baker dam. Corps hopes this analysis will be complete by April of 2004. The recommendation by the Corps at that time would be to maintain the status quo around flood control until they have analyzed Baker's role in context of overall Skagit Flood Control plan which includes an EA. Throughout the process, the Corps has consistently maintained that for the re-license the Corps will recommend the current flood control level of 74K acre-feet.

Timing of Studies

There was a question about the timing of initial study results. Joel reported that PSE's initial economic feasibility analysis (the downstream portion anyway) would be complete by the September-October timeframe. He also pointed out that the scope of PSE's study aligns with what Skagit County and the Corps originally outlined. The decision to perform an additional environmental analysis would follow. Dave reported that the County is looking at a December timeframe for the conclusion of their economic feasibility analysis.

Participant Concerns

Concerns were expressed about having two competing studies on flood control. How likely are we to get radically different results from these two similarly-scoped studies? Which would we adopt if we were forced to choose? How will all this funnel into the relicensing process? How can we factor in alternatives and mitigate for flood control effects on the environment when putting together the settlement agreement? Gary also wanted assurances that Corps mitigation measures identified are actually implemented.

FERC and other members of the working group stressed the need to try to collaborate in these two studies and try to avoid the time and expense of having separate consultants to come up with their own conclusions from the same base of data. Can we find a way to coordinate the study efforts to ensure we meet common interests?

Jon reported that the USFS may not support the use of ALP resources and time on “dueling studies” any more than it would support the concept of “dueling models”. We found a way to collaborate through HYDROPS. Can’t Skagit County and PSE, both working with the Corps, to do likewise?

Also, the Corps would consider changing Baker flood control as part of their 2008 masterplan. Why are we concerned with this in the License now? Asked of FERC, why the Corps with County could not submit to FERC a request for license amendment latter, e.g. in 2008. At that time the Corps would have completed their EA and consultation which FERC would review per FPA. The answer was positive.

REVIEW STUDY REQUESTS

R-01 – Low Flow Augmentation from Baker Project

Jerry Louthain reported that this is at least partially being addressed outside of the re-licensing process. He will keep us informed. He is intentionally leaving it also in this process just in case external efforts break down.

R-02 – Evaluation of Optimal Flood Control Storage in Baker Project

Previous WG meeting, the WG decided to address this in phases. A Baker Flood Control teamlet was formed to address economic feasibility without EA and mitigations, and report back to WG.

R-03 – Examination of Spawning and Incubation Flows in the Skagit River below the Baker Confluence during Brood year 2000

This is currently being addressed through the TST.

HANDOUTS (bolded handouts will be posted on the website)

- Final Minutes from June 11, 2003 Economics Operations Working Group meeting
- Final Minutes from July 29, 2003 Flood Control Teamlet meeting notes
- Skagit County Progress Report- Baker River Dams Storage Evaluation
- Draft Proposed Actions PDEA Draft for Baker River Project

PARKING LOT

- Consider who will be the number cruncher for this team: PSE? Other?
- Presentations: Flood Plain Values 101, Fisheries/Hydraulics 102, Economic Model
- How will we define and share economic analysis (methods, assumptions re: unit costs, etc.) across Working Groups?

EVALUATION OF THE MEETING

Well Done

- Good candor
- Welcome to Bruce and nice to see Tom again!

Change for Next Time

-
-
- Needed more time. Therefore, the Sept. 10 meeting will go from 9:00 to 11:30.
 - Need better phone (technology)
 - More coffee
 - Fewer sweet rolls

What's Hot?

- Flood control!

Study Report for Solution Team

- Flood Control: We have competing studies for this. Need to work to collaborate/improve trust
- Low Flow Augmentation: Currently being worked offline (stay tuned)

TENTATIVE AGENDA FOR NEXT MEETING

September 10, 2003 at PSE Office, Mt. Vernon, WA

9:00 to 11:30 AM

- 9:00 - 9:05 Introductions
9:05 - 9:10 Review/revise minutes and agenda
9:10 - 9:15 Review Action Items
9:15 - 9:30 HYDROPS and TST update (including status of R2 model)
9:30 FERC Calls In
9:30 - 11:00 PME 5.1 and R-02: Baker Flood Control Status Report
11:00 - 11:20 Review Other Study Requests:
 - R-01 -Low Flow Augmentation from Baker Project - Continuing discussion
 - R-03 -Examination of Spawning and Incubation Flows in the Skagit River below the Baker Confluence during Brood year 200011:20 - 11:25 Set October 8, 2003 agenda (at PSE Office in Mt. Vernon)
11:25 - 11:30 Evaluate Meeting
 - What's Hot?
 - Studies Report for Baker Solution Team

ATTACHMENT

The following was submitted by Skagit County to clarify their statements in the above Skagit County section with respect to Flood Control. This was added after the meeting..

Skagit County

Dave reported that Skagit County has had a flood control study request with this working Group since December 2002 and requested that the issue of optimizing flood control storage and a review of flood control operations be analyzed as a component of the relicensing process. Since that time, PSE had delayed taking the necessary action on this study request and communicated to the County directly that information would need to be developed quickly in order for it to be considered within the aggressive relicensing schedule. Skagit County used this information when making its decision to partner with the Corps and expand the scope of existing Skagit River Feasibility Study to include the required study of upper and lower Baker reservoirs as part of the existing cooperative agreement with the Army Corps of Engineers. It was only after this course of action that on June 11th, PSE reported that they would help sponsor this study. During the June 11th meeting Dave reported that the County had already made a

significant investment by hiring Pacific International Engineering (PIE) and had requested that PIE be considered as one of the consultants performing the work. A PSE representative stated that they would be considered on the initial shortlist of consultants. The county was disappointed to learn that PSE did not honor its agreement and did not consider PIE in the consultant selection process.. The Process Document requires that all participants get the chance to approve all contractors working on studies. This didn't happen with PIE. At that point the county determined that it would be in the best interest of its citizens to continue with their partnership with the Army Corps with this study by using PIE since they had already engaged them to perform this study. They are doing this as part of a cost sharing relationship with the Corps for this study and the scope of work has been developed and approved by the Army Corps.

Dave then distributed a copy of an email progress report from Albert Liou of PIE. He also reported that it had been suggested that Skagit County and PSE are begin drafting an MOA around information sharing. Dave reported that Skagit County and PIE has made numerous requests for information required to perform the studies that have gone unanswered by PSE. The County has agreed to have its consultant sign any required non disclosure agreements in an effort to obtain this information. Dave reiterated that Skagit County's interest is to simply obtain timely and accurate information on one of the most significant public safety issues facing the lower valley so all of us can make informed decisions as part of this relicensing process. He concurred with Lloyds assessment that prior to launching into the environmental studies associated with flood control we really need to conclude if there is anything there worth proceeding forward. The conclusions of these two study efforts should help in confirming that answer. Bruce reported that the Corps may not be able to participate in the MOA. Lloyd commented that the MOA was not limited to information but would have to address scope and work reviews, schedules and coordination of the two studies.



**PUGET
SOUND
ENERGY**

Electric and Gas Least Cost Plan

**Charlie Black, Resource
Planning**

August 13, 2003

Introduction

- PSE issued its electric and natural gas Least Cost Plan on April 30, 2003
- A substantial amount of effort was dedicated to preparing a Least Cost Plan (LCP) that:
 - reflects PSE's public service obligations as a WUTC-regulated, vertically integrated utility
 - addresses "Sea Changes" in the energy industry
 - incorporates extensive public involvement
 - provides an analytical framework for
 - ongoing LCP enhancements and updates
 - specific resource acquisition decisions to meet identified needs

Key Conclusions - Electric

- **PSE has a need for new electric resources**
 - part of the need is due to anticipated load growth
 - a larger share of the need is due to expiration of existing resources
- **No single resource technology can be relied upon exclusively to meet the entire need; each has risks, limitations**
- **PSE has adopted a balanced portfolio strategy**
 - adequate resources to meet customer needs in all months under normal hydro conditions
 - diversified mix of new resource technologies

Diversified mix of resources to meet the recommended portfolio planning standard

Plant Additions on aMW Basis



Renewable Resources

- Goal to meet 10 percent of annual customer energy needs by 2013
- Recent contract to acquire 68,000 MWh of wind power
- Renewable Policy Statement
 - encourage use of renewable resources by PSE, its employees and its customers
 - acquire cost-effective renewable resources

TOPICS

- Overview
- Resource Strategy
- Load-Resource Outlook
- Load-Resource Analysis
- Least Cost Plan Action Plan
- Resource Acquisition Activities

Key Issues - Electric

- PSE has an obligation to provide firm, low-cost resources to serve its customers' needs
- The Western Energy Crisis underscored the dangers of relying too heavily on short-term market purchases
 - resource adequacy
 - price volatility
- PSE has a need for new resources
 - some of the need is due to forecasted growth in retail customer loads
 - but, a bigger share of the need is due to expiration of existing resources in PSE's portfolio

Planning Approach - Electric

- **Key elements of the analysis**
 - modeled PSE's resource portfolio from an integrated perspective
 - analyzed key risk factors (market prices for power and gas, hydro generation)
 - evaluated tradeoffs between cost and risks
 - tested various levels of resource adequacy

PSE Approach to Least Cost Planning

- WAC 480-100-238
- Integrated analysis of alternatives on a consistent basis
 - criterion: least cost at acceptable risk
 - focus is on generic resource types
 - public involvement
 - explicit consideration of major uncertainties
 - result: long-term resource *strategy*
- Least Cost plan does not commit or constrain specific resource acquisitions

The recently updated Washington State Energy Strategy provides the following guidance*

Guiding Principle	Detailed Annotation
#1 Encourage all load-serving entities to adopt and implement resource plans to ensure they have adequate resources to meet their obligation to serve their customers' projected long term energy and capacity needs	<p>"...underscore the continuing obligation that the state's utilities have to serve their customers' load requirements and to acquire the resources necessary to do so."</p> <p>"...Recognize that current and future electricity markets are likely to experience greater price volatility, and supply risk than has historically occurred prior to 2000."</p>
#2 Encourage the development of a balanced, cost-effective and environmentally sound resource portfolio that includes conservation, renewables (e.g. wind, geo, hydro, biomass, and solar) and least-cost conventional resources	
#4 Preserve and promote Washington's cost-based energy system to benefit the end use consumer by providing reliable power and reduce the consumers' vulnerability to supply shortage and price volatility . At the same time, the state should promote policies that harness market forces in the wholesale energy market to reduce customer costs and increase reliability while protecting the environment	<p>"...Washington continues to be extremely cautious about increasing its reliance on market forces to provide for its electric supply.....the main question for Washington is the extent to which our load-serving utilities rely on market purchases or their own resources to serve their loads."</p>

* Comments reflect selected excerpts from 3 of the 13 Guiding Principles

PSE

PUGET
SOUND
ENERGY

PSE Load-Resource Balance

Pacific Northwest Region

		<i>Regional resources:</i>		
		Less than loads	Equal loads	Exceed loads
PSE resources:	Less than loads	BUY \$\$\$	BUY \$\$ 	BUY \$
	Equal loads	BALANCED (Short market)	PERFECT WORLD	BALANCED (Long market)
	Exceed loads	SELL \$\$\$	SELL \$\$	SELL \$

PSE's Resource Strategy

- **Maintain a balanced portfolio of firm resources to meet retail customer needs**
 - **Energy:**
 - Resources adequate to serve each month's energy load under average hydro conditions
 - Shape energy resources to fill winter deficit without creating excessive summer surpluses
 - **Capacity:**
 - Resources adequate to meet winter peaks at 16° F
 - Shape capacity resources to fill winter deficit without creating summer surpluses

PSE's Resource Strategy

- **Conservation**

- 150 aMW over ten years
- Conservation amount to be updated this August

- **Renewable Resources**

- Analysis focused on wind; but other renewable resources will also be pursued
- Analysis of cost and risk supports meeting five percent of customer energy loads (133 aMW) by 2013
- PSE has set higher target of ten percent (266 aMW) by 2013; requires developing effective solutions to integrate wind into PSE's resource portfolio

Draft Resource Strategy

- **Combined-Cycle Gas-Fired Generation**
 - Included in near-term mix
 - Shaped to meet monthly energy needs
- **Coal-Fired Generation**
 - Not included in near-term mix
 - Attractive in terms of cost and market risk
 - Environmental impacts and costs are important considerations
 - Will monitor development and acquisition opportunities

Draft Resource Strategy

- **Winter Peaking Resources**
 - Resources need to be shaped to meet winter peaking needs
 - Generating technologies: single-cycle CTs; duct-firing for combined-cycle CTs
 - Will also seek lower-cost alternatives (evaluating potential demand response as part of August 31 Update)

Load-Resource Outlook:

Load Forecast

- **Annual energy (net of conservation)**
 - 2004: 2,377 aMW
 - 2013: 2,660 aMW (283 aMW; 1.2%/ year)
 - 2023: 3,140 aMW (763 aMW; 1.4%/year)
- **Expected winter peak (23° F)**
 - 2004: 4,819 MW
 - 2013: 5,514 MW (695 MW; 1.35%/year)
 - 2023: 6,490 MW (1,671 MW; 1.5%/year)

Load-Resource Outlook: Loss of Existing Resources

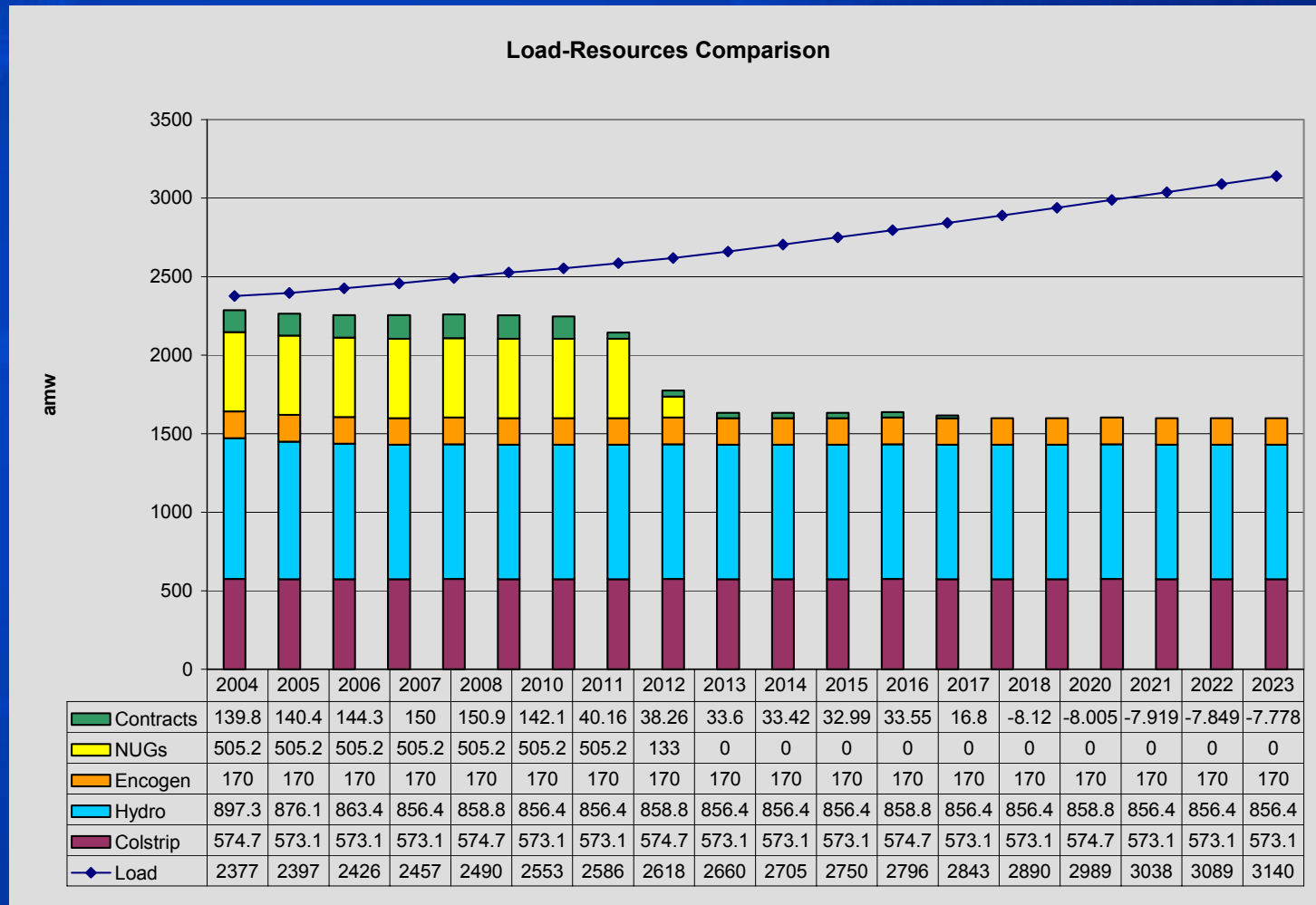
Power Supply Contract Expirations Through 2010

Counterparty	Energy (aMW)	Capacity (MW)	Expiration Date
Avista	75	100	12/31/02
PacifiCorp	120	200	10/31/03
PG&E Seasonal Exchange	0	300	12/31/06
Montana Power (Colstrip)	84	97	12/29/10
Other	35	58	various
Total	314	755	

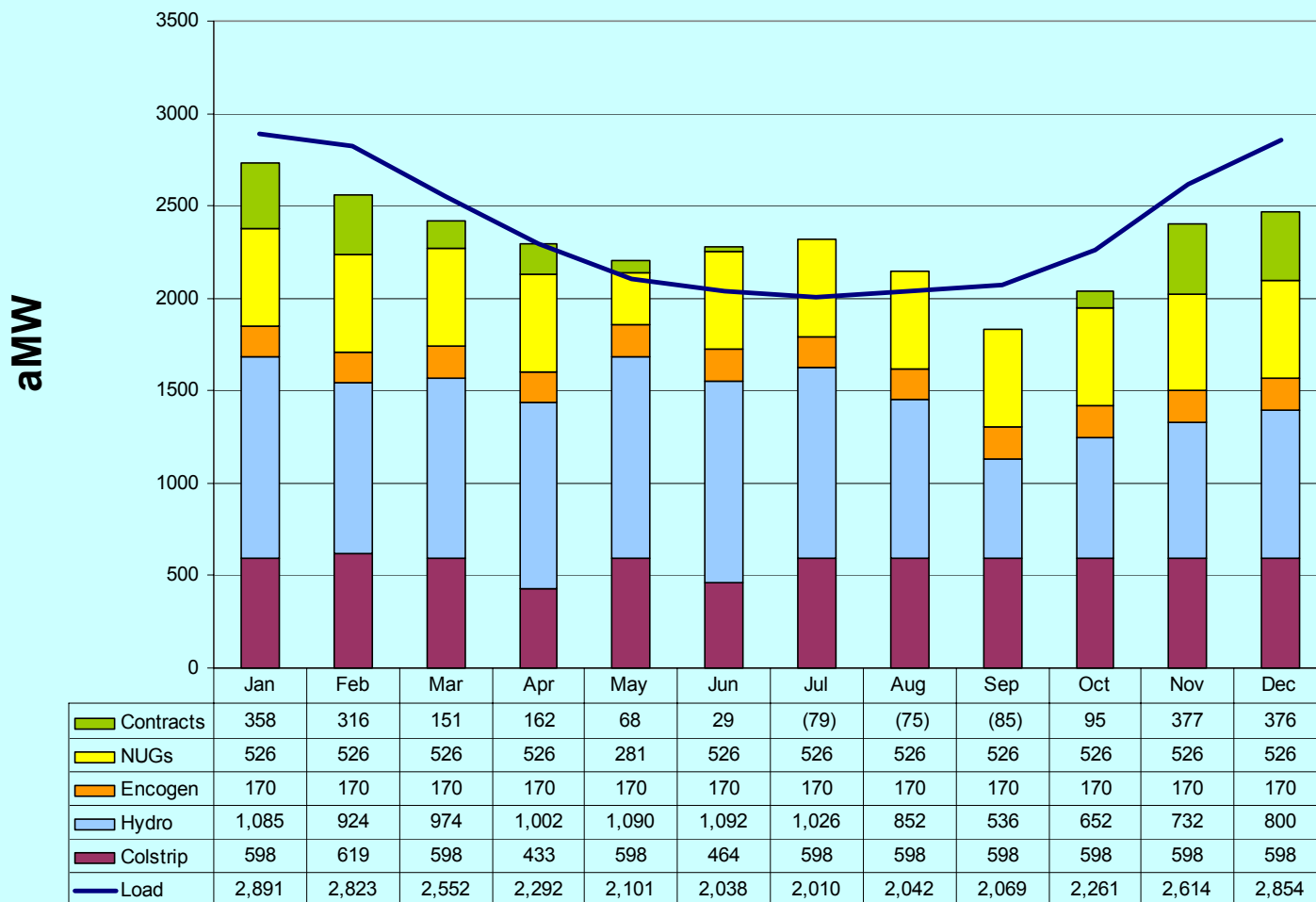
Load-Resource Outlook: Expiration of Existing Resources

- **Additional Reductions/Loss of Existing Resources:**
 - Chelan County PUD (Rock Island 2): 48 aMW (2006)
 - Grant County PUD (Priest Rapids and Wanapum): 54 aMW (2012)
 - Whitehorn 2&3: 134 MW (December 2009)
 - Cogeneration Contracts:
 - March Point: 148 MW (December 2011)
 - Tenaska: 245 MW (December 2011)
 - Sumas: 130 MW (December 2012)

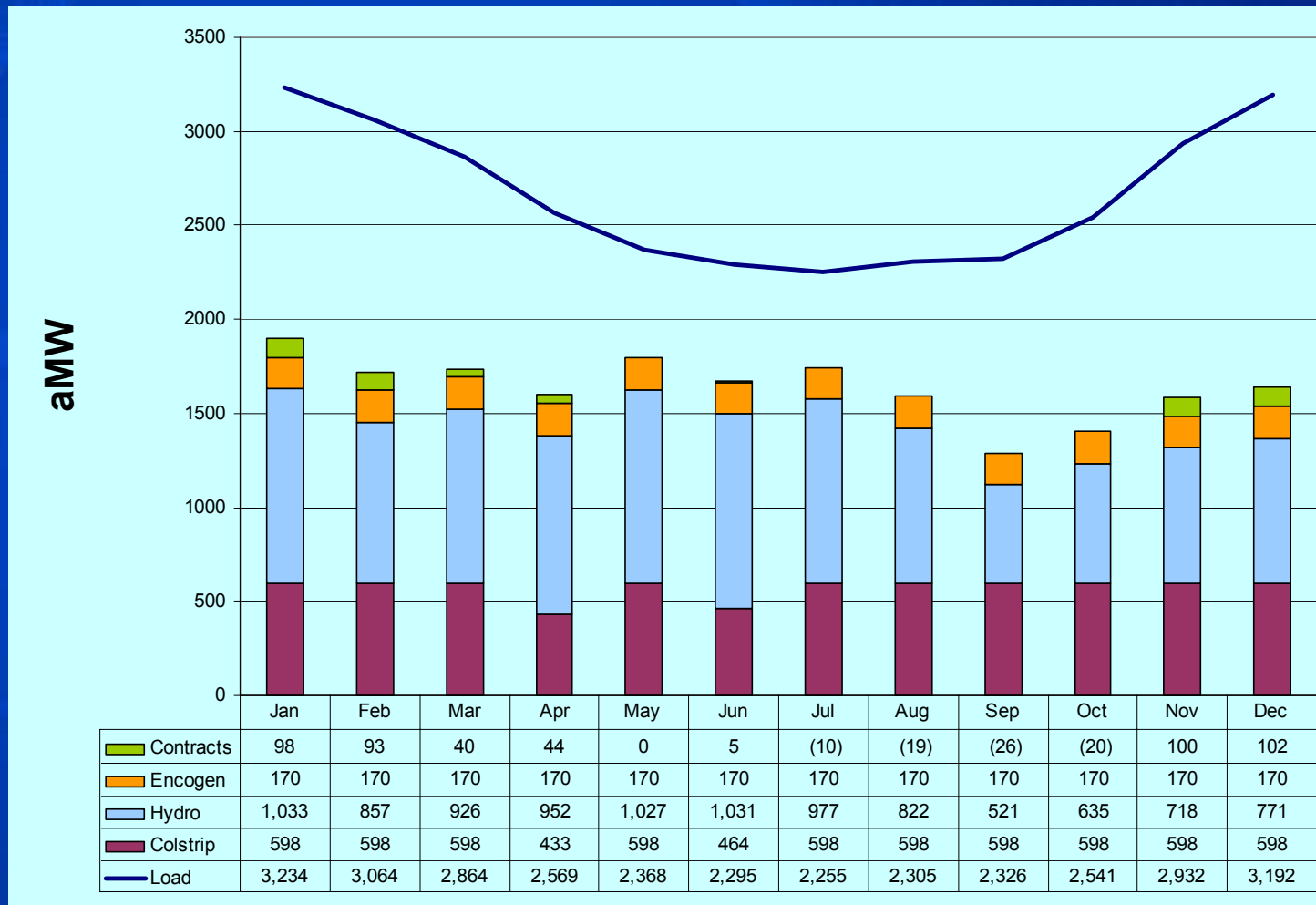
Annual Energy Loads and Resources 2004-2023



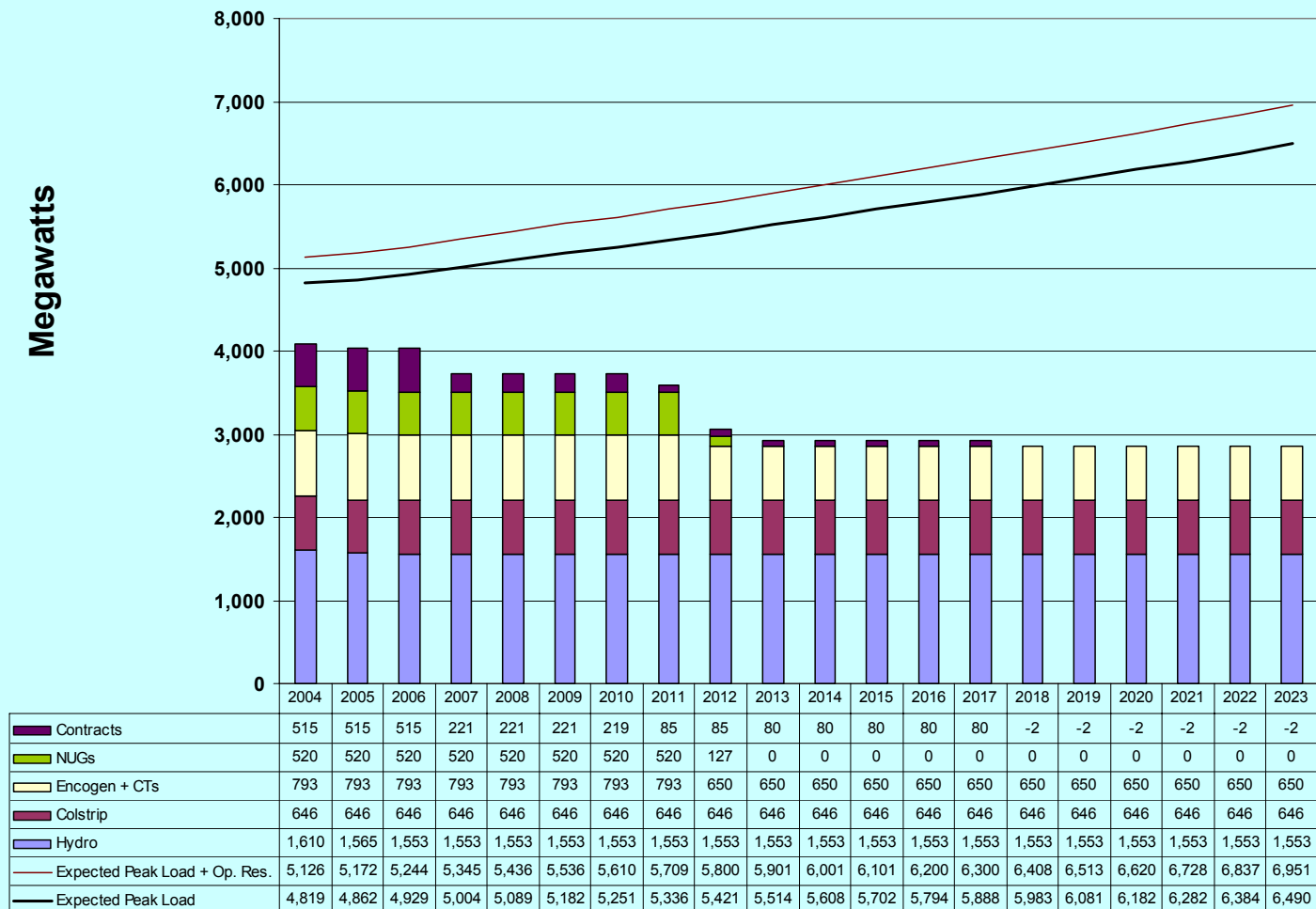
Monthly Energy Loads and Resources 2004



Monthly Energy Loads and Resources 2013



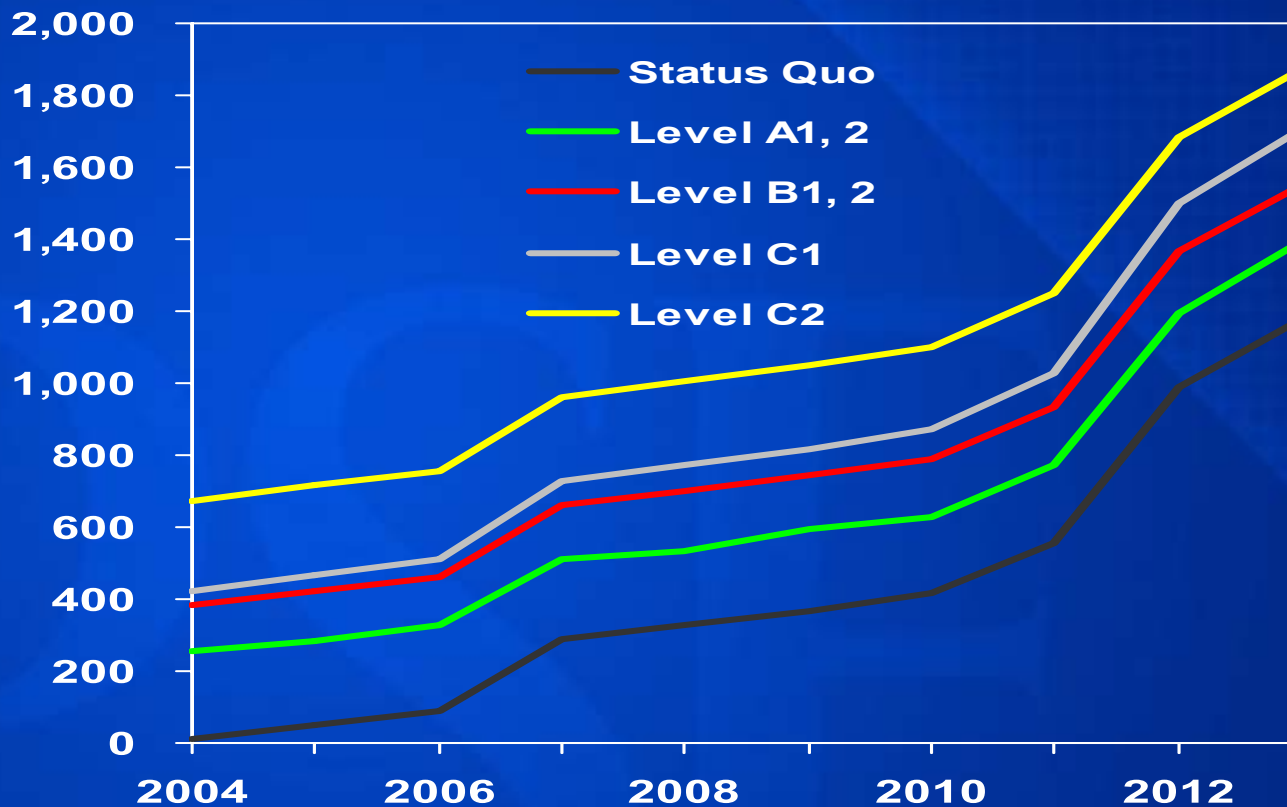
Winter Peak Loads and Resources 2004-2023



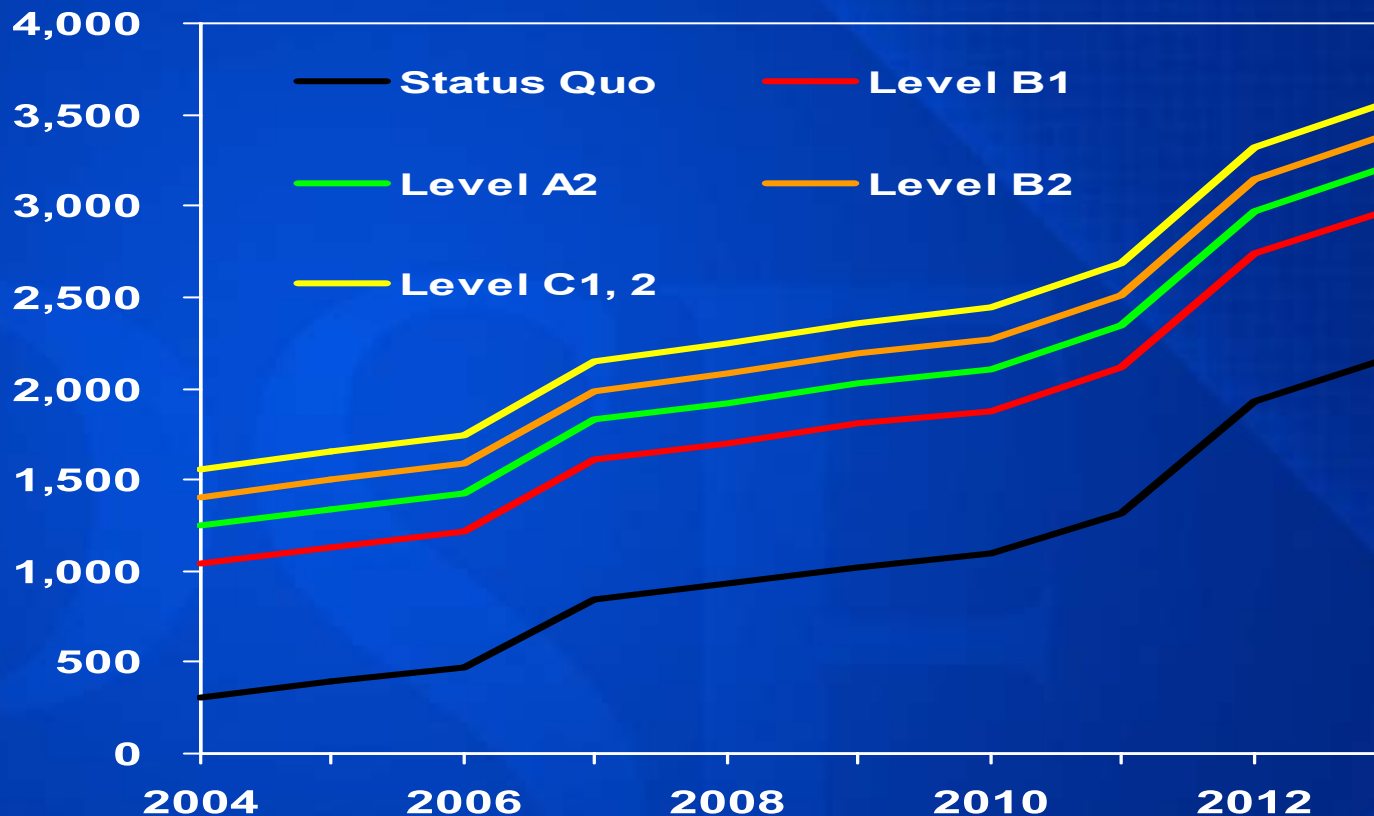
Portfolio Planning Levels Considered

Planning Standard	Energy	Capacity
Do Nothing	Current deficit grows with demand	Current deficit grows with demand
Status Quo	2003 deficit level maintained	Deficit is maintained at 2003 level
Level A1	Meets Nov-Feb customer needs	Deficit is maintained at 2003 level
Level A2	Meets Nov-Feb customer needs	Meets 19 Degree F hour at SEA-TAC
Level B1	Meets highest deficit month needs	Meets 23 Degree F hour at SEA-TAC
Level B2	Meets highest deficit month needs	Meets 16 Degree F hour at SEA-TAC
Level C1	Meets 110% of highest deficit month needs	Meets 13 Degree F hour at SEA-TAC
Level C2	Meets 110% of highest deficit month needs	Meets 13 Degree F hour at SEA-TAC

PSE Need for New Resources - Energy



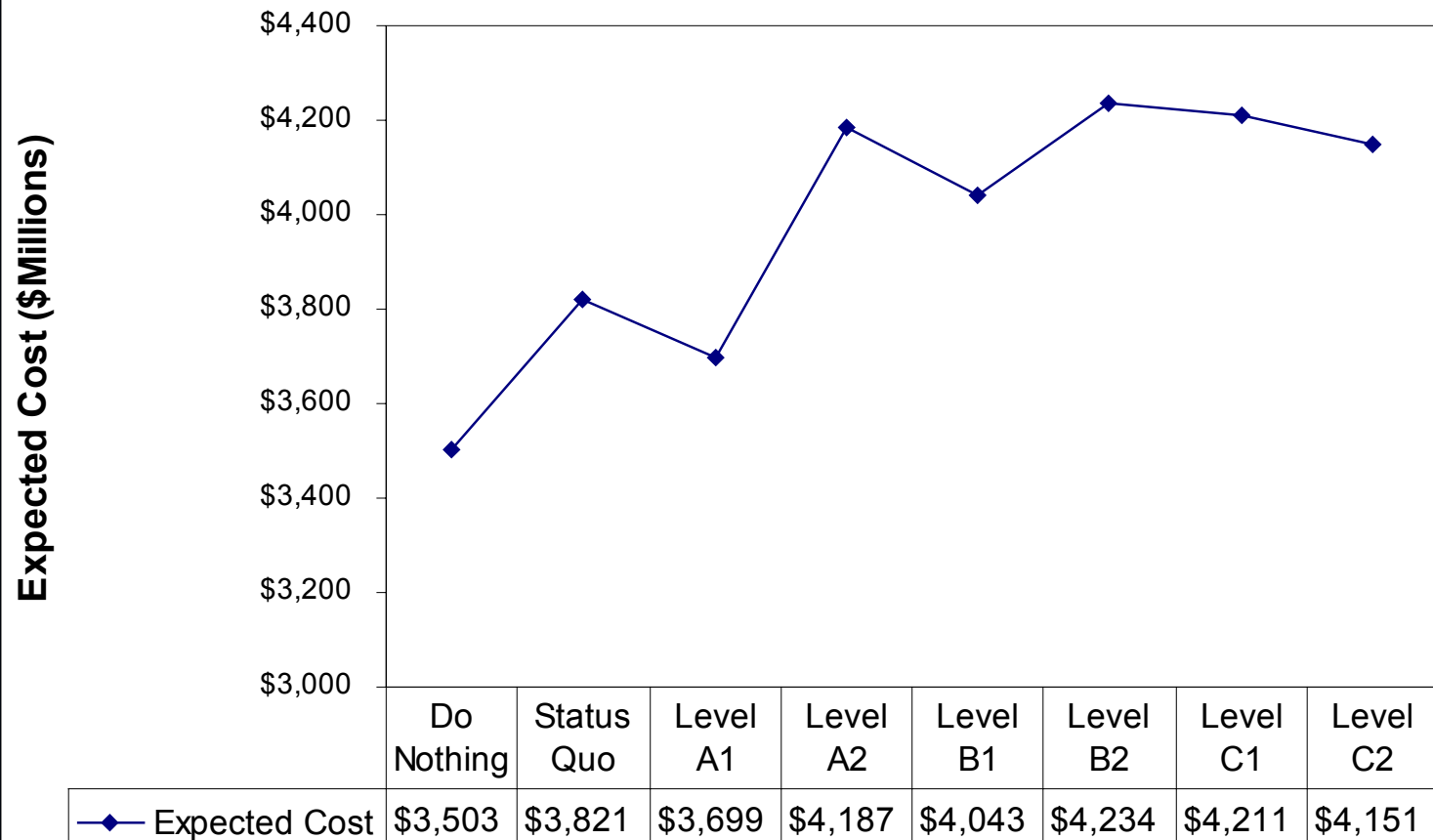
PSE Need for New Resources - Capacity



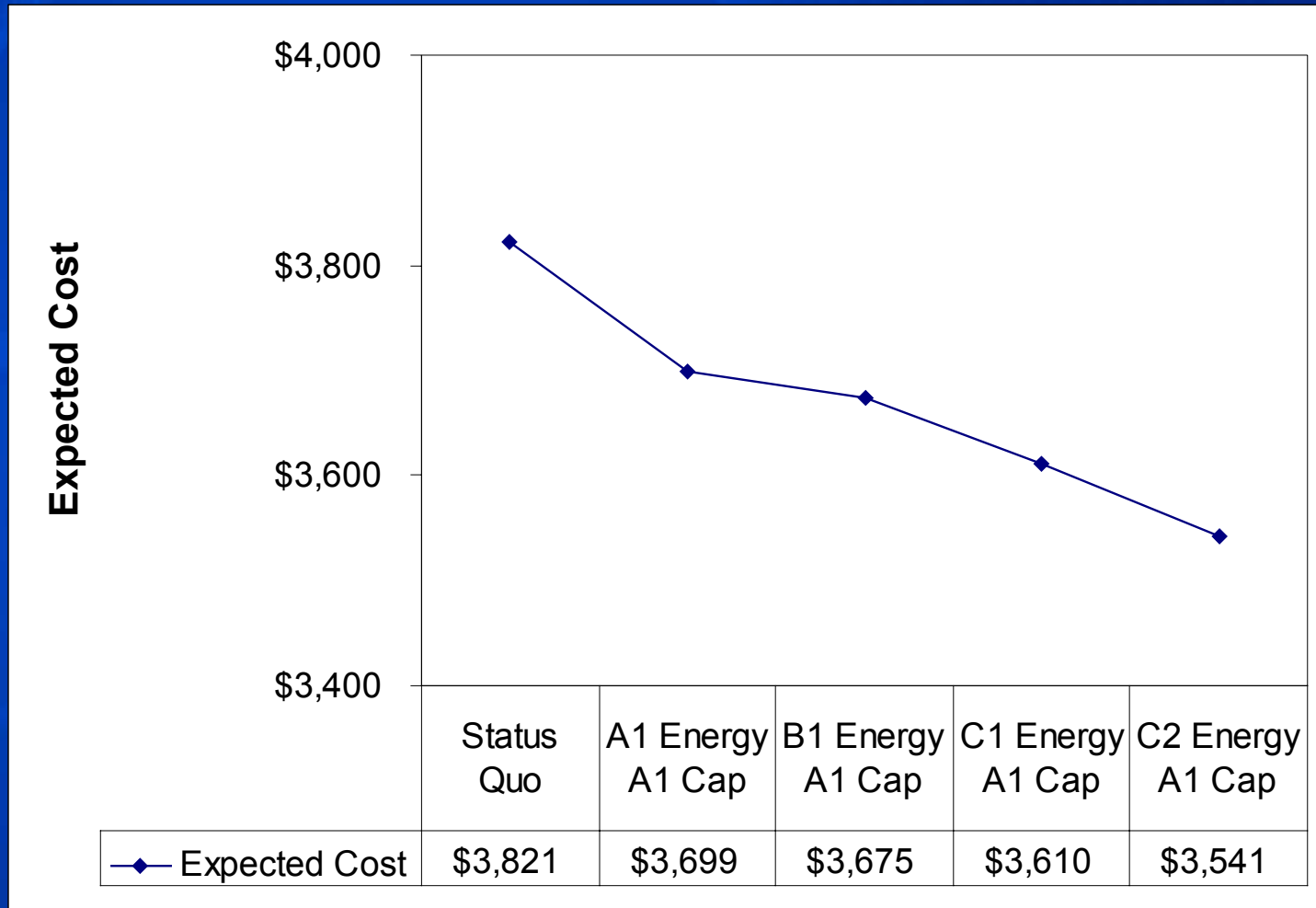
Resource Technology Mixes

- All Gas
- All Coal
- All Wind
- Gas & Coal Mix
- 5% Wind, Gas & Coal Mix
- 2%, 5%, & 10% Wind & Gas

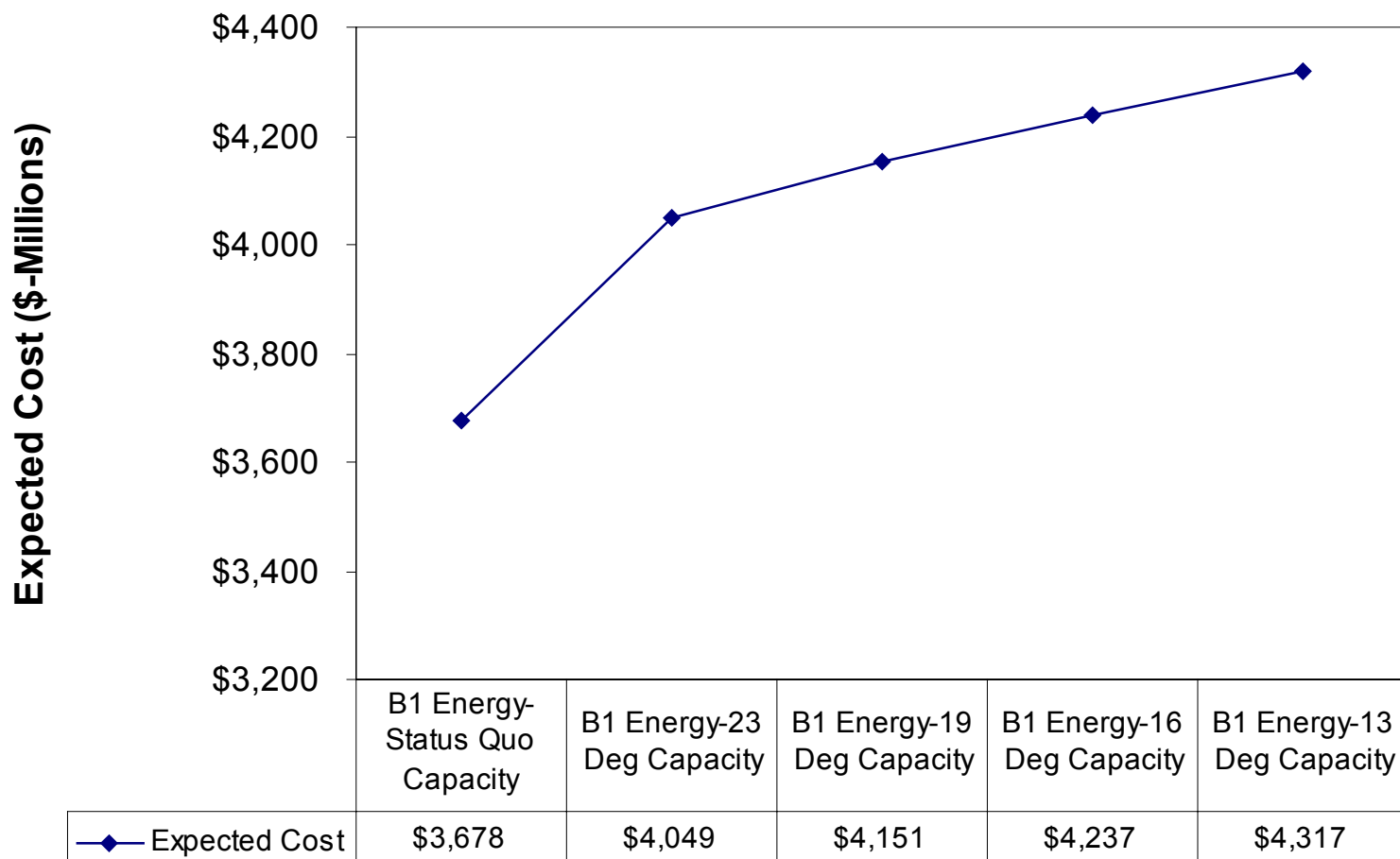
Expected Cost to Customer (For Combined Planning Levels)



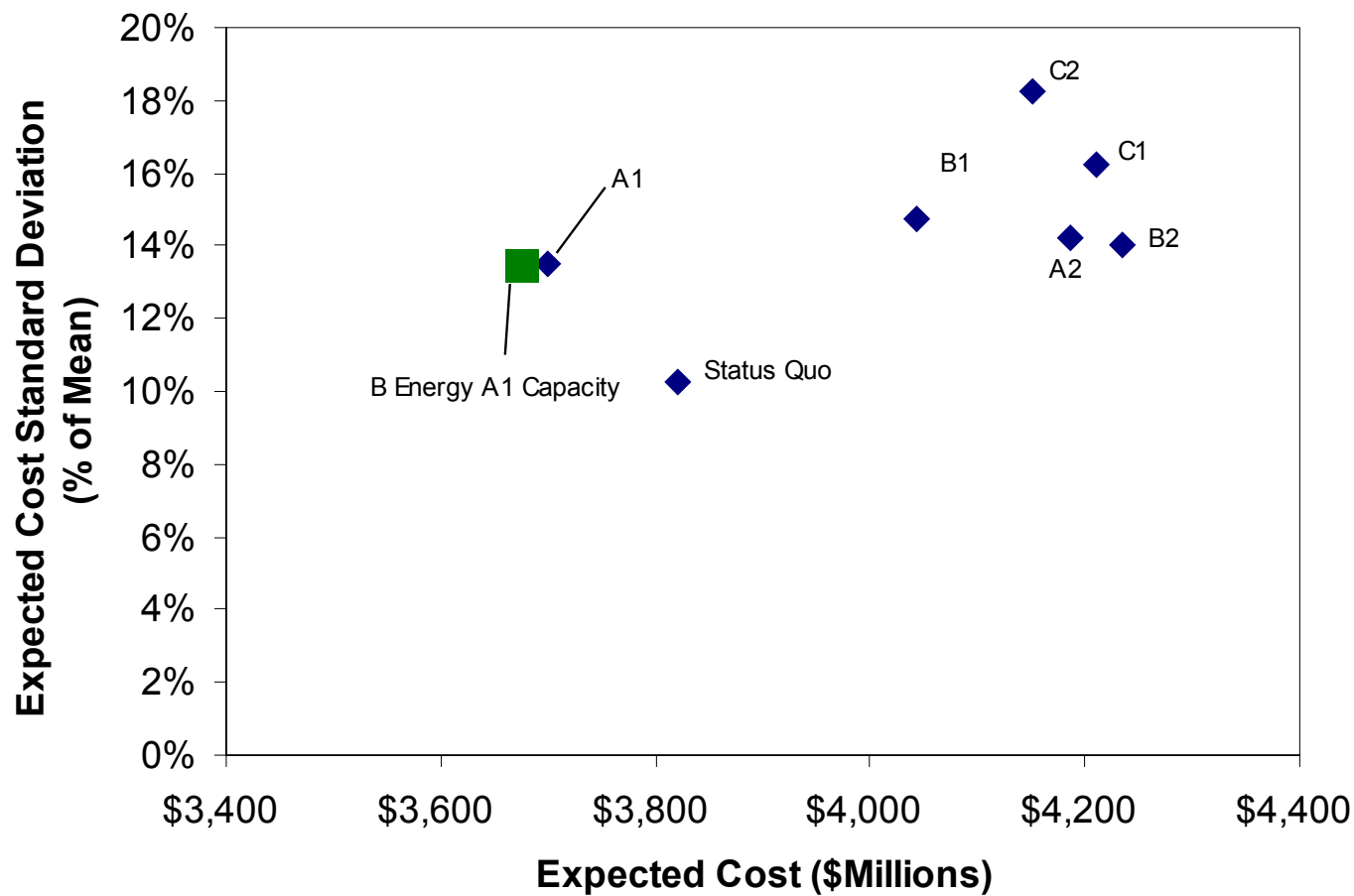
Expected Cost to Customer (By Energy Planning Level)



Expected Cost to Customer (By Capacity Planning Level)

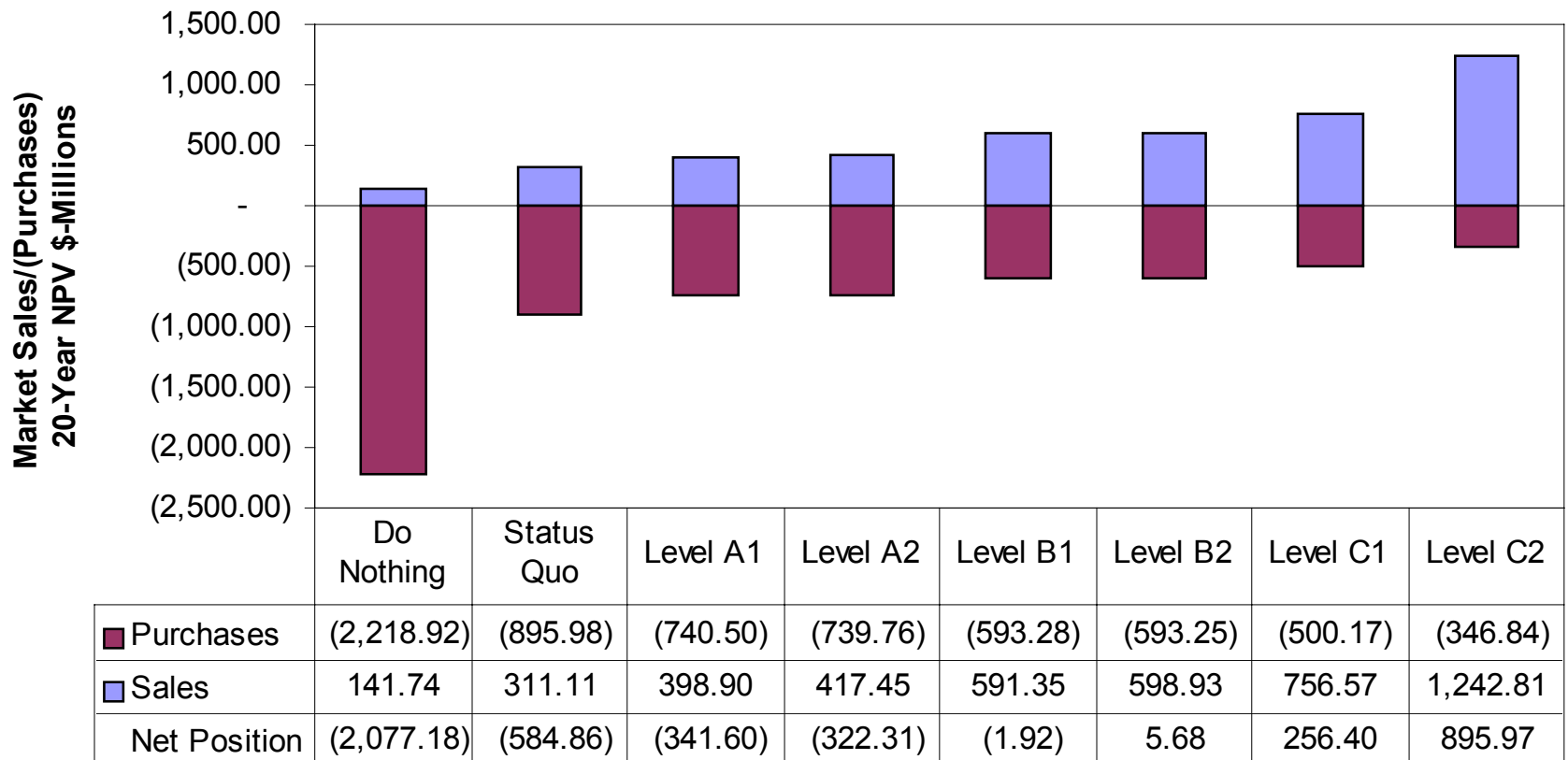


Expected Cost versus Risk



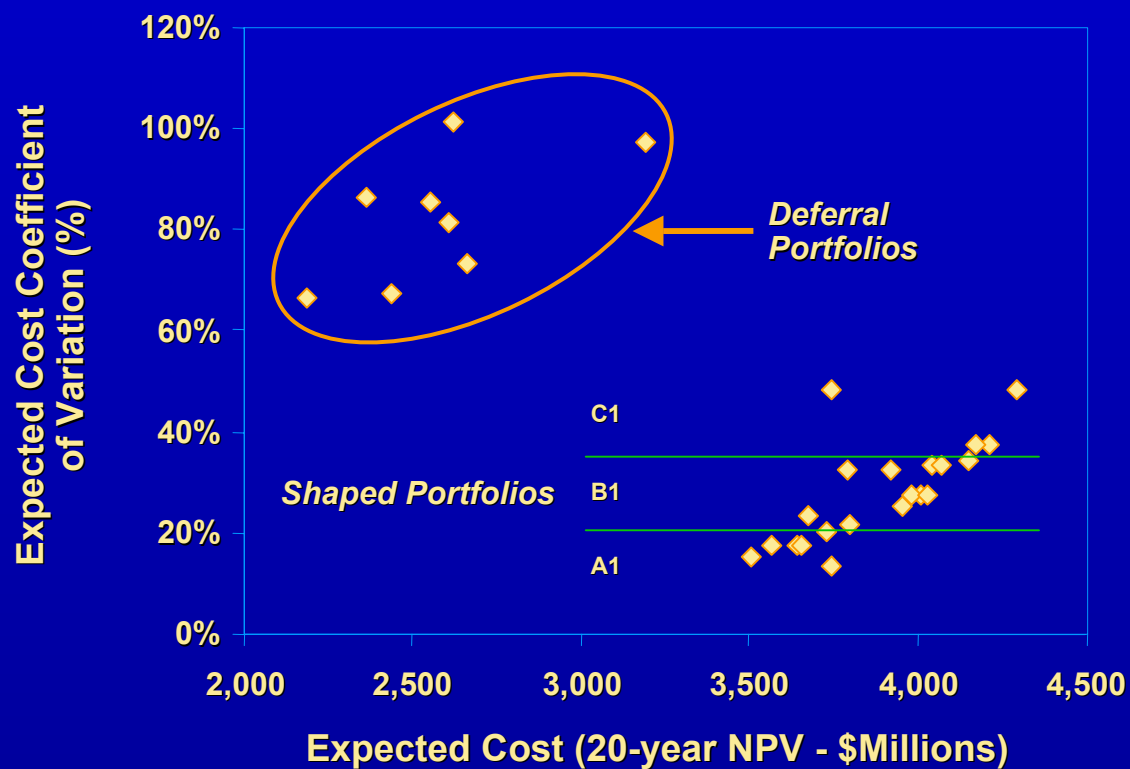
Net Market (Purchase and Sale) Risk Exposure

Net Market Positions by Planning Level



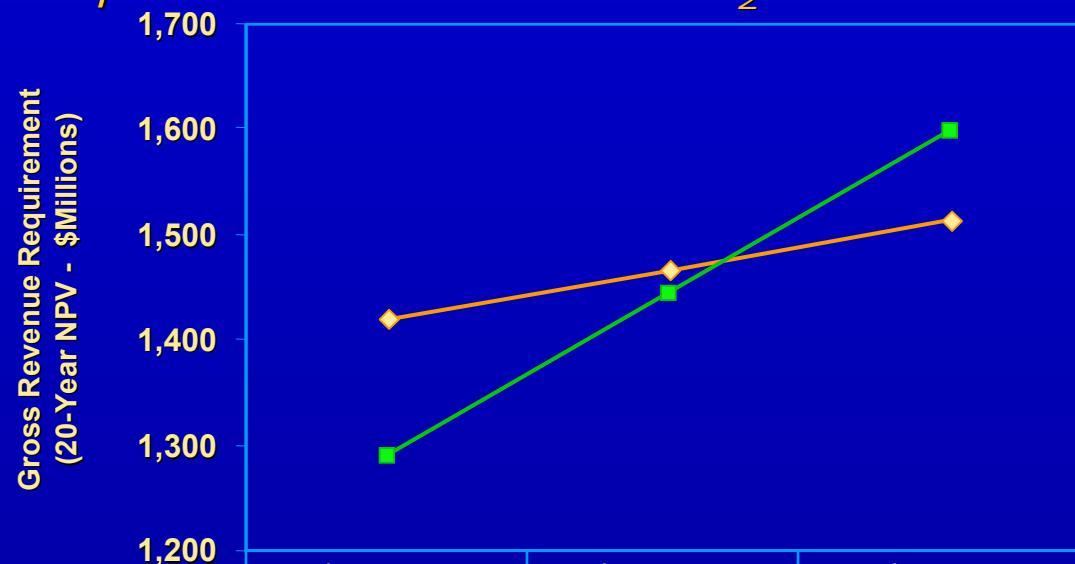
Deferral Case

Expected Cost vs. Risk



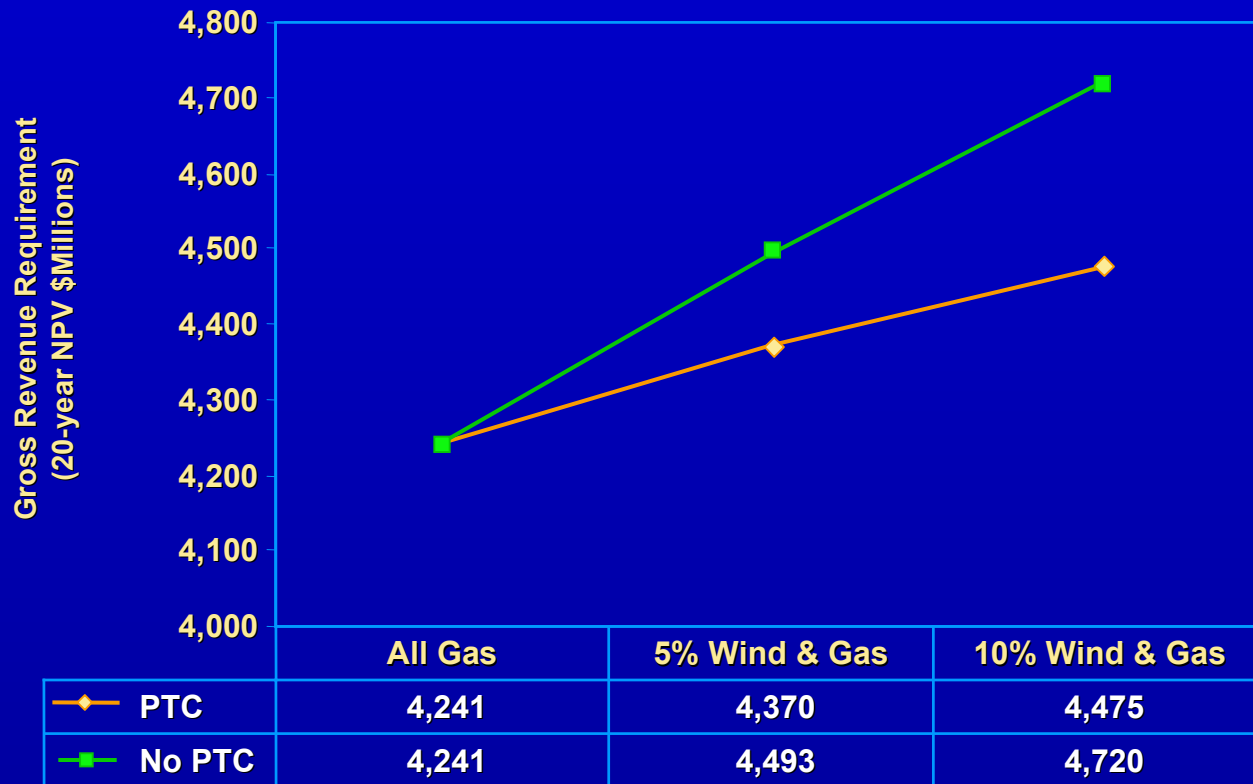
CO2 Sensitivity

Coal and CCGT Gross Revenue Requirement vs. 2008 CO₂ Tax



	0 \$/Ton CO ₂ Expense	5 \$/Ton CO ₂ Expense	10 \$/Ton CO ₂ Expense
—◆— CCGT @ \$645/kW	1,418	1,466	1,514
—■— Coal @ \$1,500/kW	1,291	1,445	1,598

Wind Production Tax Credit



Least Cost Plan Action Plan

- **Conservation Update August 31**
- **Wind Integration**
- **Peaking Capacity**
- **Post-LCP RFP**

Resource Acquisition Activities

- **Solicitations for new resources:**
 - **generating assets (September 2002)**
 - **power purchase agreements (November 2002)**
- **Shaping transactions**
- **Due diligence**
- **Post-LCP RFP(s)**