

UWIG Meeting Seattle, WA

October 23, 2003

“Value of Wind Power”: As Part of a NW Utility’s Resource Stack

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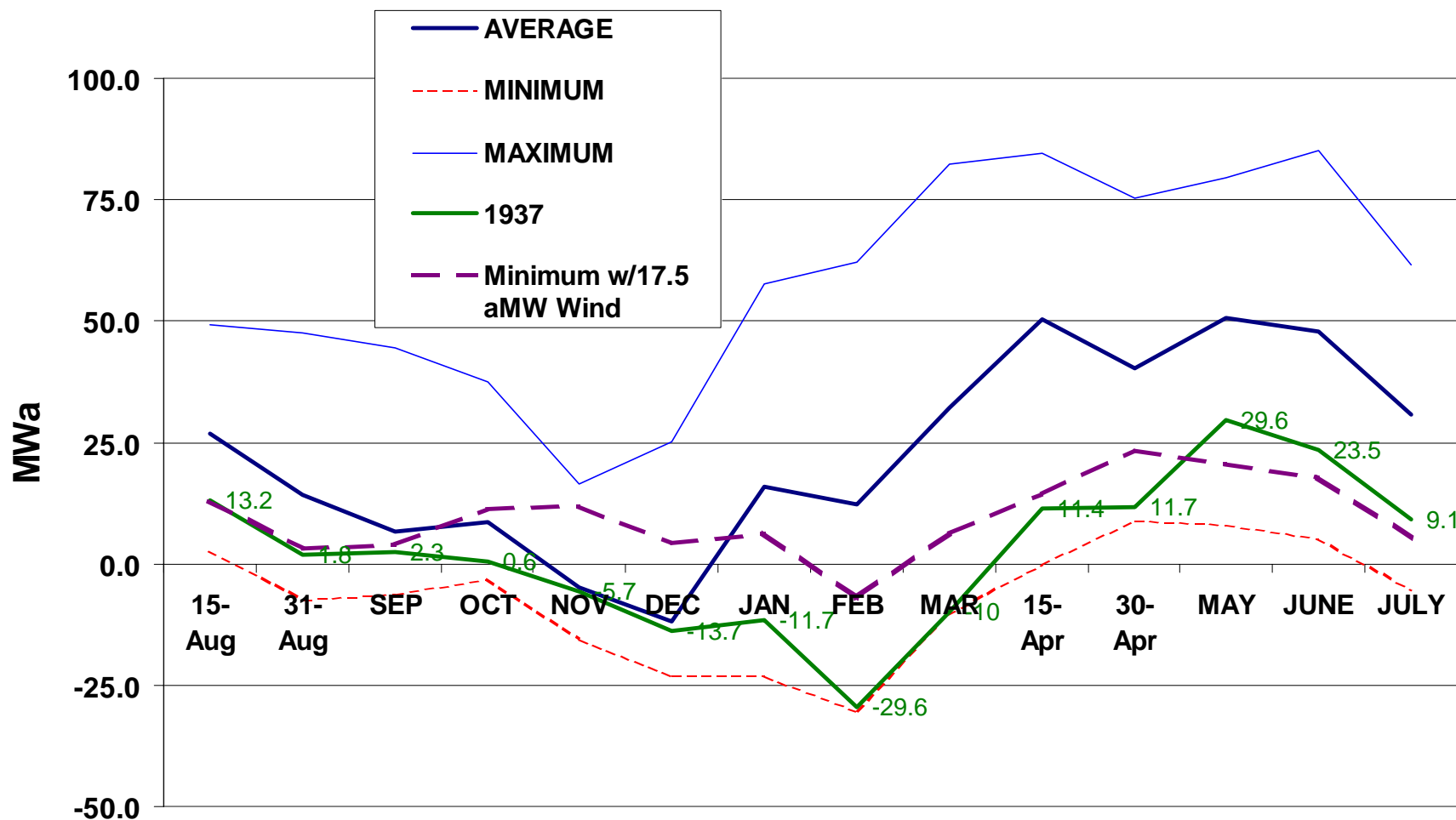
“Value of Wind Power”

- Why we think this is the right time for investing in some power resource diversification.
- Non-hydro renewable resources can be done in a way that makes sense for utilities and customers.
- First, “Power Manager's” perspective on incorporating non-hydro renewable resources into utility's power portfolio after having confronted issues related to:
 - Resource Policy
 - Cost vs. Other Resources
 - Integration (we rely on Douglas PUD)

Okanogan PUD Considerations

- Resource Policy - In Oct-01, OkPUD became a Slice/Block Customer of BPA. As such, OkPUD had to plan how it would basically fill in Winter deficits during drought years and dispose of periodic energy surplus'.
- The plan was to acquire additional resources over time to fill in Winter deficits. The resource of choice was wind because it tended to have more energy in the Winter.
- OkPUD purchased 12 MW's of Nine Canyon Wind Farm: equivalent ~33,000 MWh/year, or 5.5% of PUD's load.
- Periodic energy surplus' are disposed of by Douglas PUD as OkPUD's Scheduling Agent.

OKPUD - Estimated 2002 Load/Resource Balance Under BPA Slice Contract with Different Water Year Scenarios

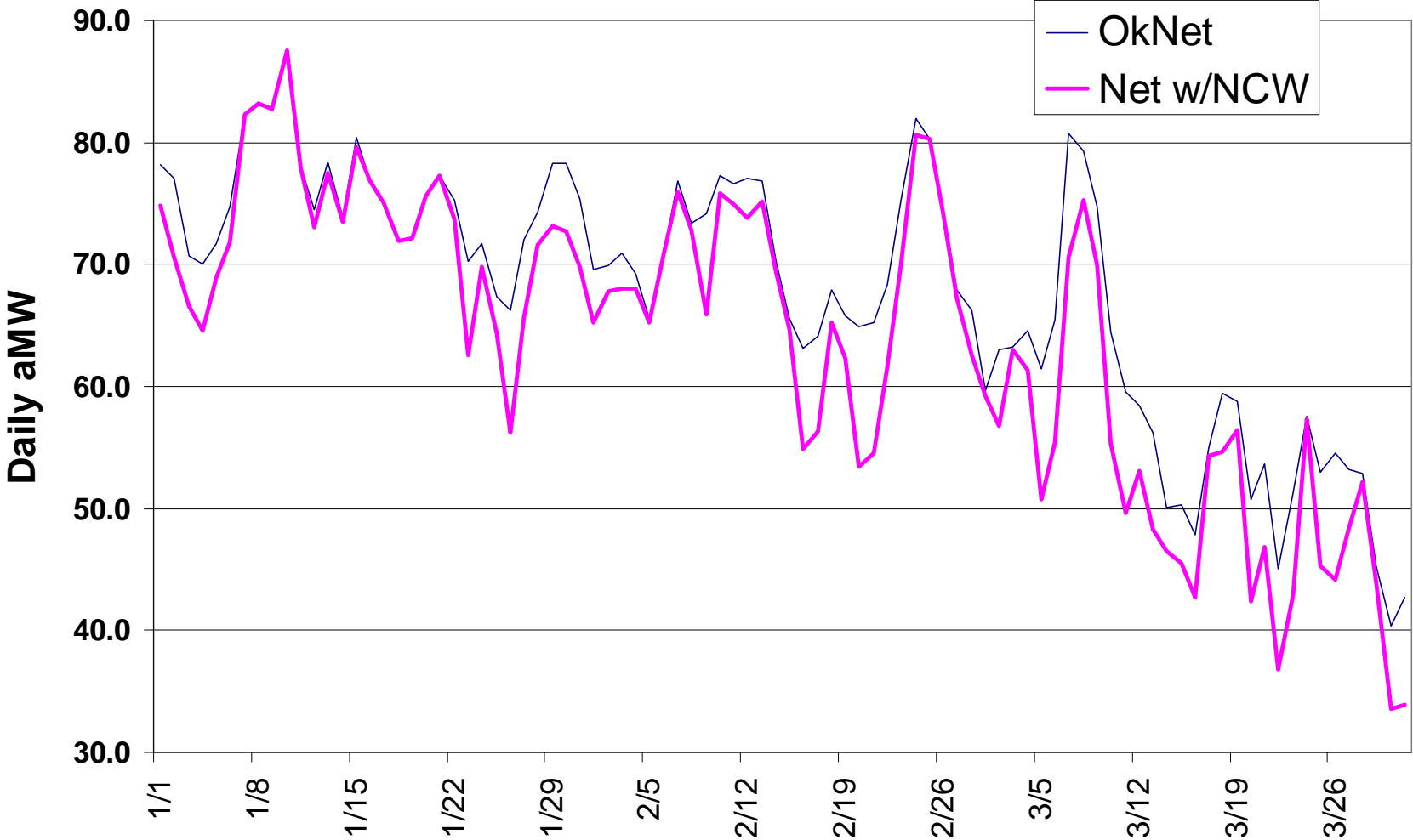


12/19/00 OKPUD Load/Resource Projection as if BPA Slice Customer.

OkPUD Considerations Cont.

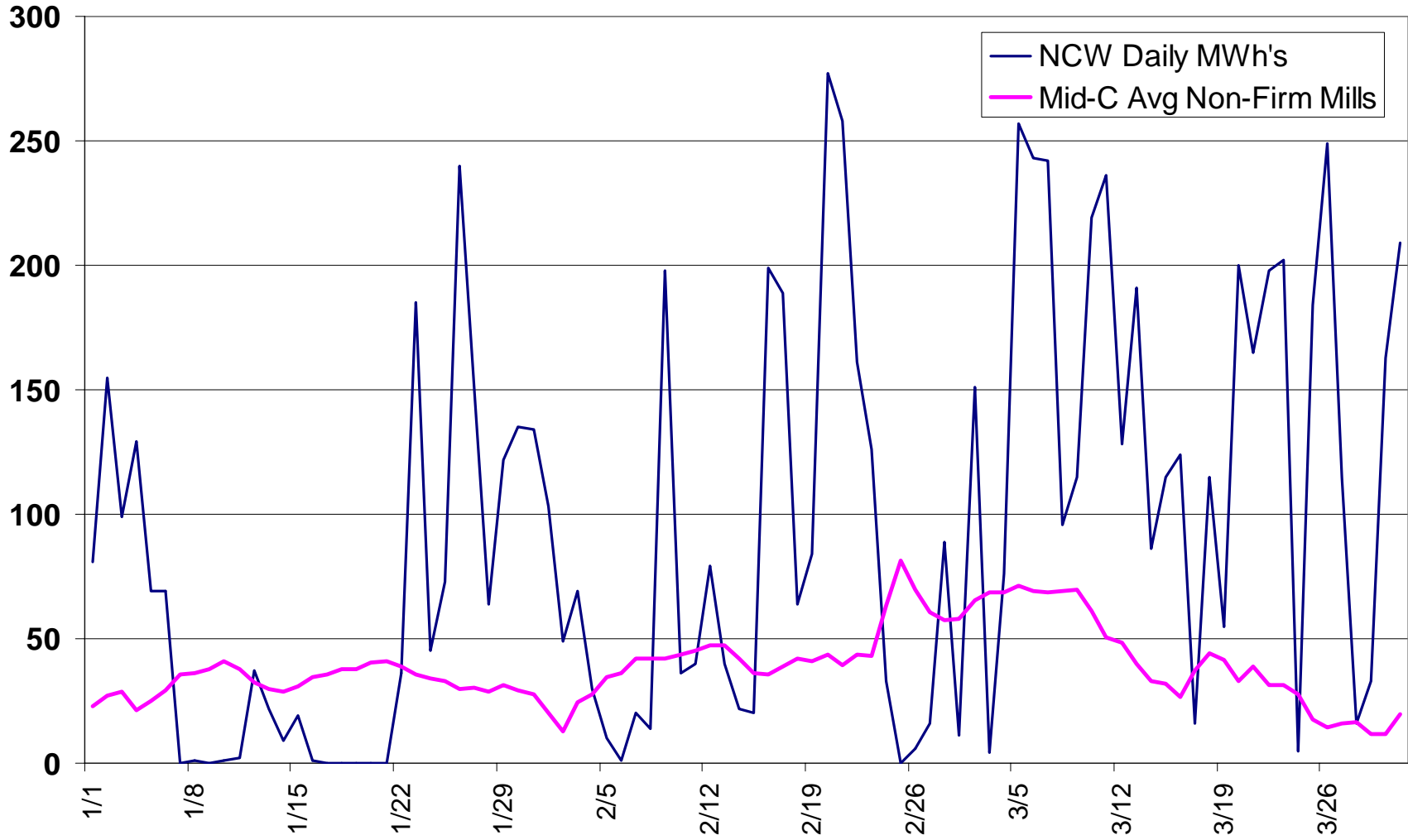
- **Integration Issues:** Douglas PUD handles the integration of Nine Canyon Wind energy into OkPUD's resource portfolio through a "Service Agreement". OkPUD uses 12 MW's of it's BPA Point-to-Point Transmission Agreement for its share of Nine Canyon.
- **Cost Issues:** OkPUD net delivered cost with 5 Mill transmission cost is ~40 Mills/KWh, including REPI. This compared favorably with the average Mid-C Non-Firm Q1-2003 equivalent value of ~40 Mills w/o transmission. OkPUD believes it's wind resource provides the additional Winter energy needed in conjunction with the BPA Slice Contract at comparable price to the market.

**CY 2003 - Q1 - OkPUD Net Load
With and w/o Nine Canyon Windpower**

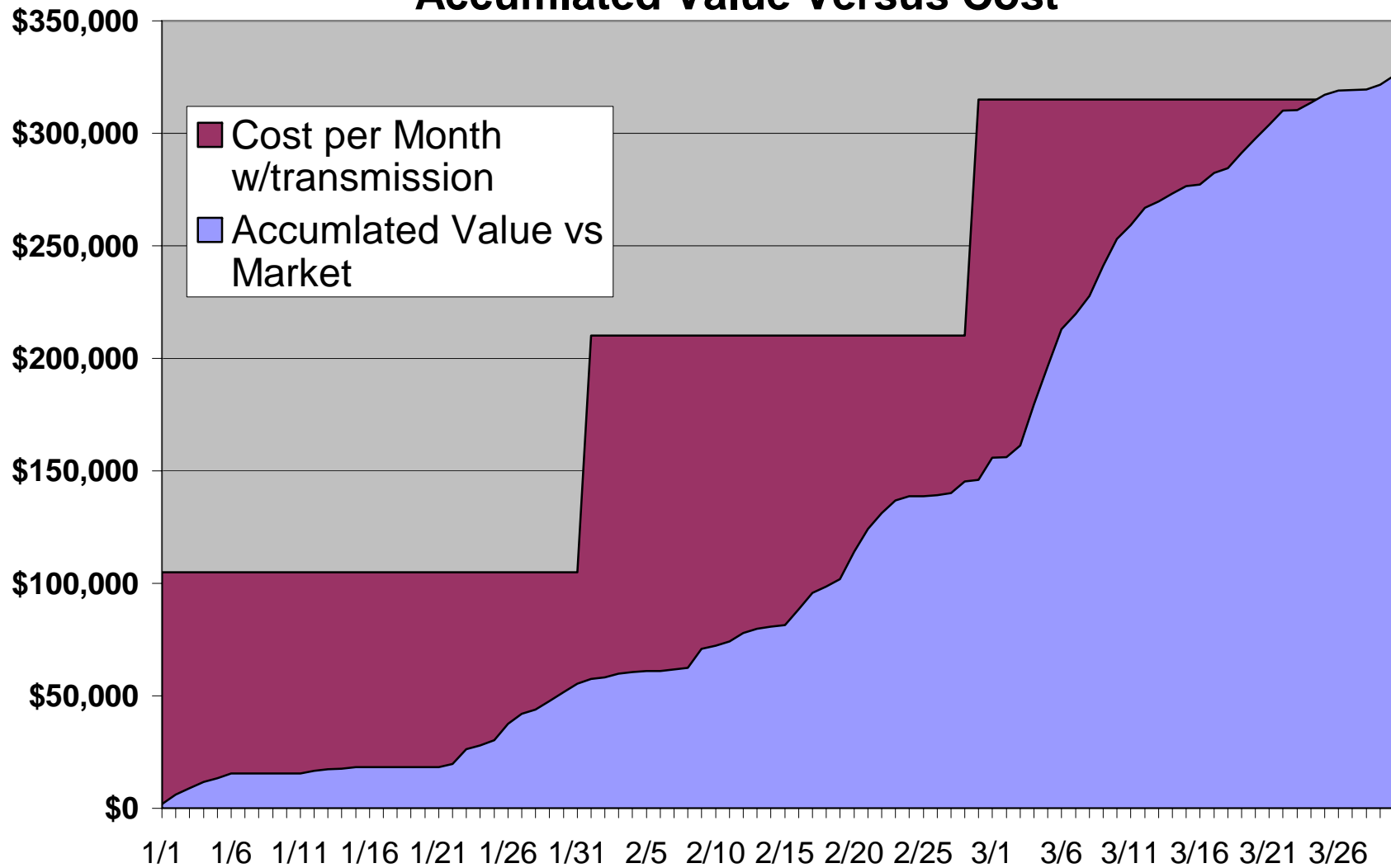


OkPUD - CY 2003 - Q1

NCW Daily MWh Output vs Market Price



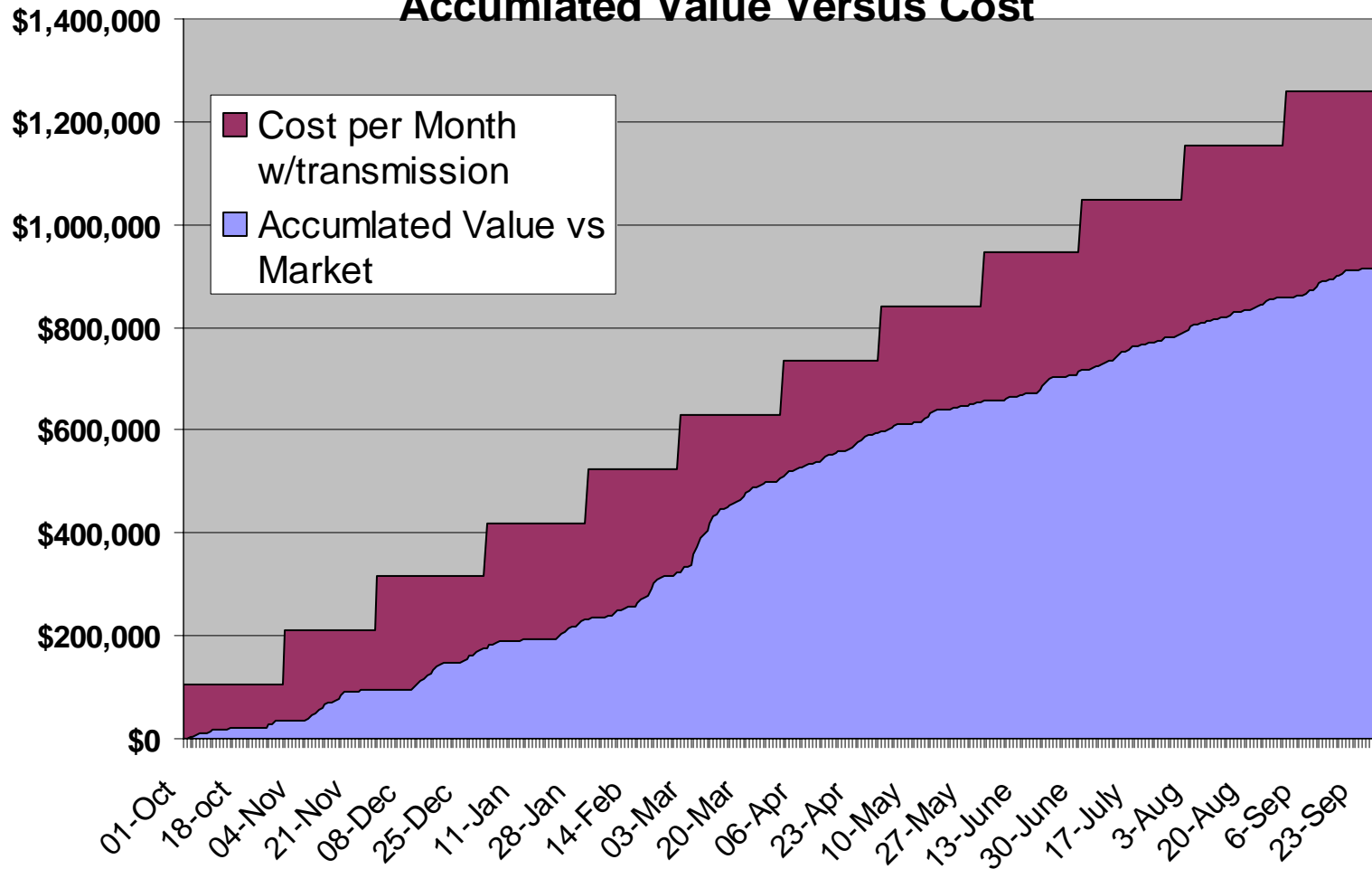
OkPUD's NCW - 2003 Q1 Accumulated Value Versus Cost



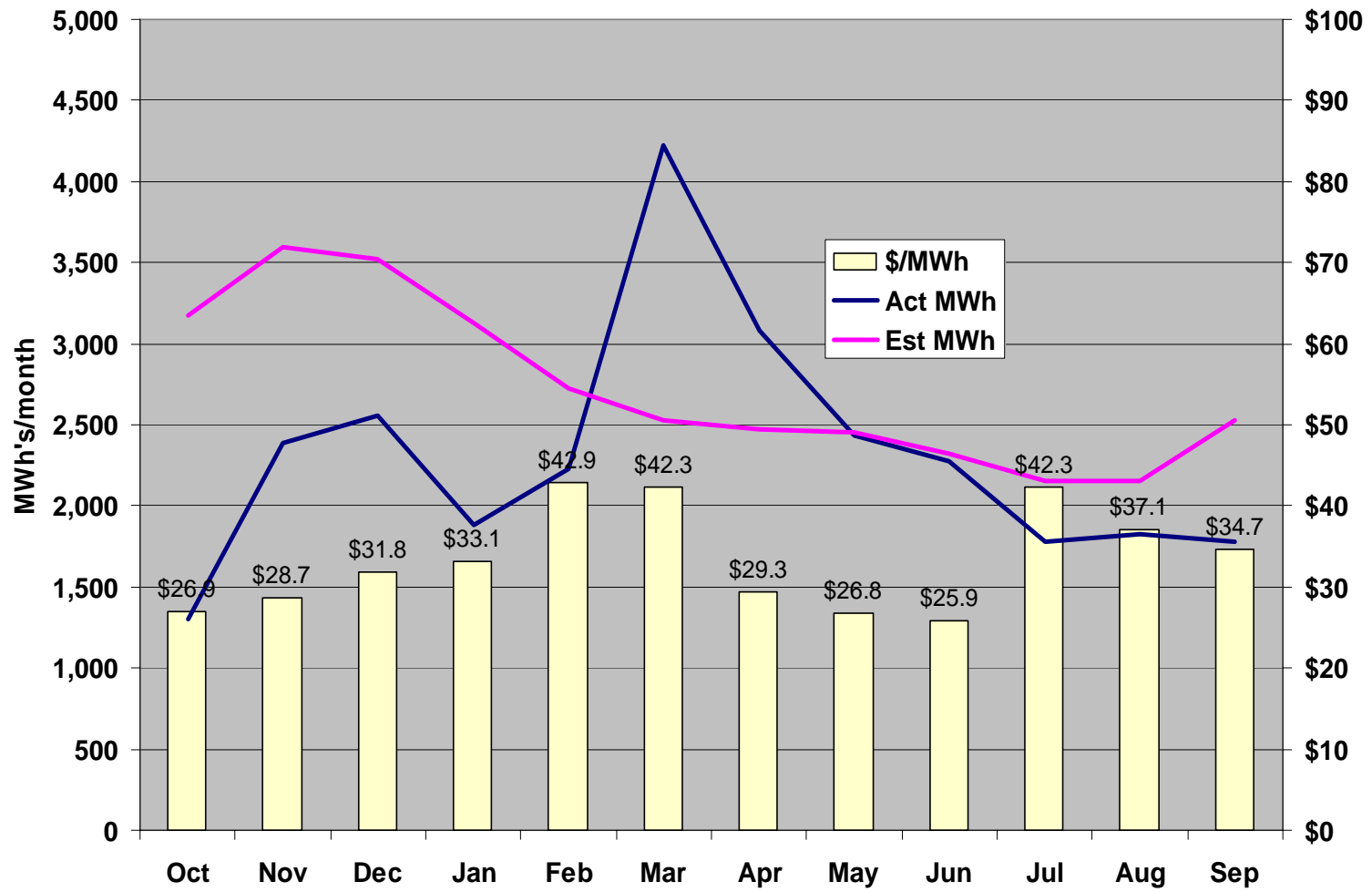
Over One Year?

- So the previous slides showed that for Q1-2003, OkPUD's NCW energy helped fill our Winter deficit with value = Market \$.
- What about for the first year of Operation?
- For FY Oct-02 thru Sep-03, OkPUD lost \$ vs Market purchases with NCW energy, due in part to lower than expected winds.

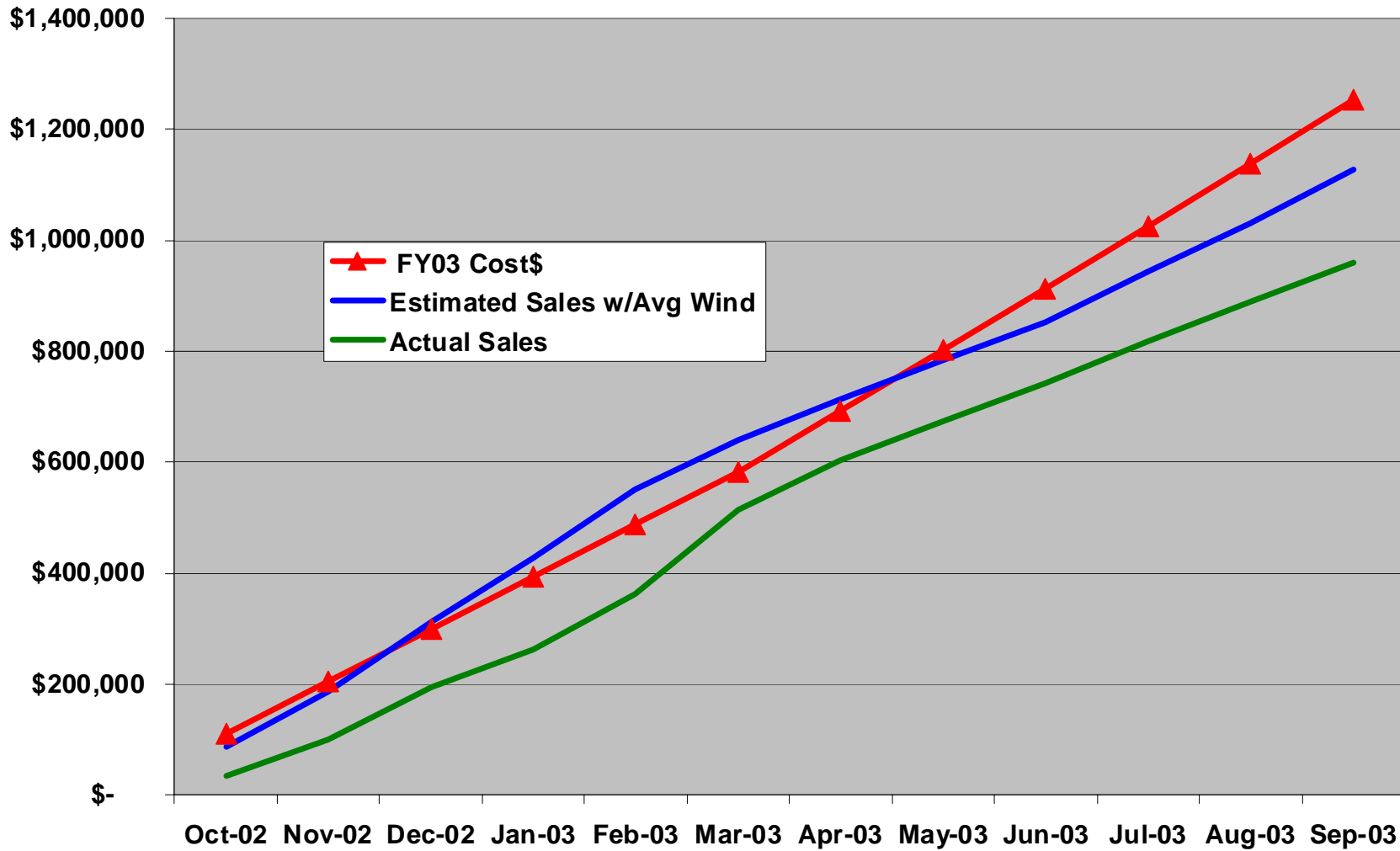
OkPUD's NCW - FY 2003 Accumulated Value Versus Cost



**OkPUD's FY 2003 NCW -
Monthly Power Actuals vs Forecast
& Market Prices**



OkPUD's Share of NCW - FY 2003
Accumulated Value with Actual vs. Average Wind

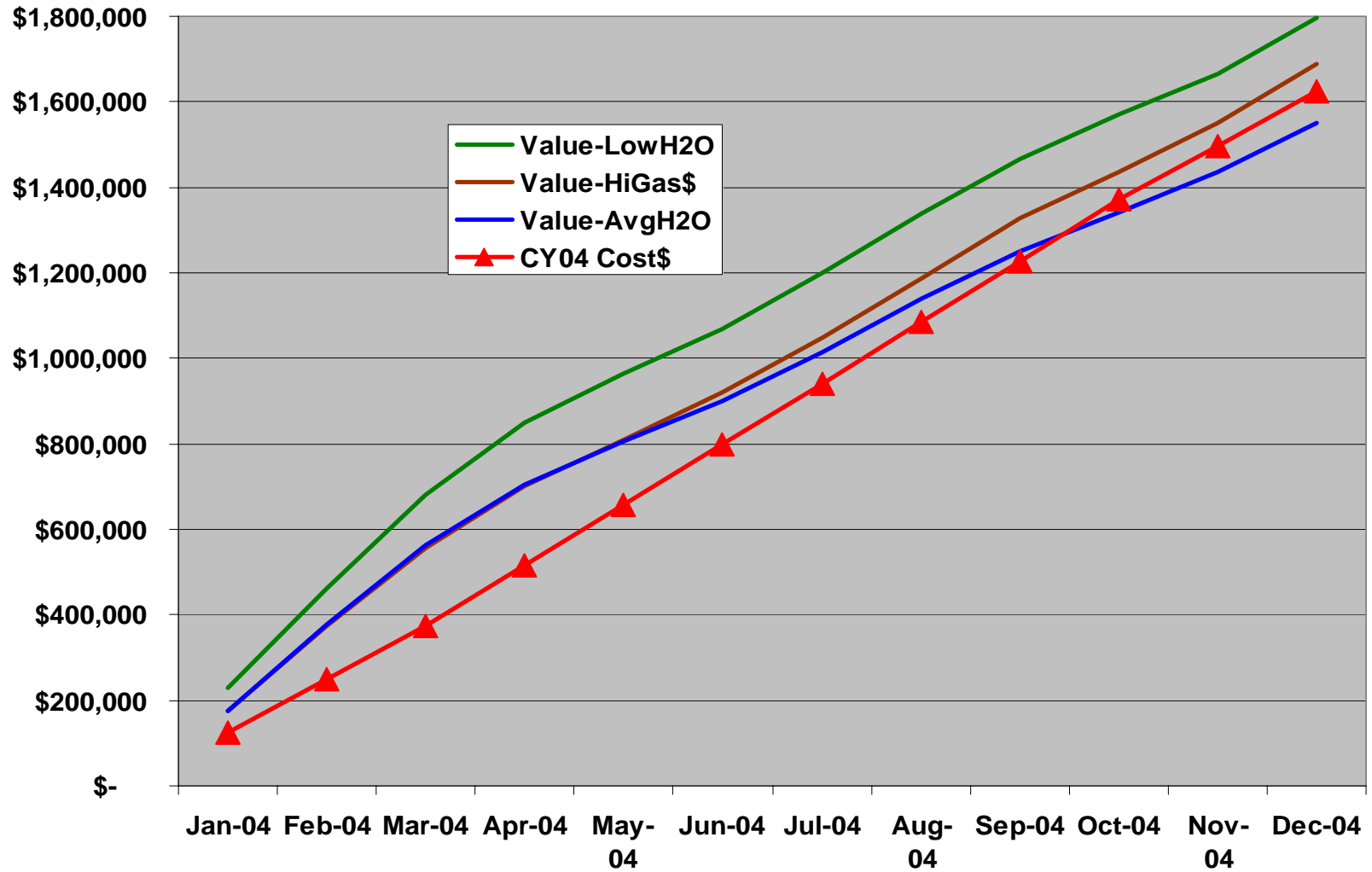


10/23/03

FY 2003 Conclusions

- Even though the Market was about 25% less expensive than NCW energy, this resource still helped fill OkPUD's Winter deficit at competitive prices.
- The year was somewhat of an anomaly because of lower than normal winds and an extremely mild winter & lower Market prices. We expect improvement in CY04 with NCW Phase 2.
- Wind is still an excellent hedge. Why??

OkPUD's Wind Power for CY04
Est. Cost vs Value with NCW Phase 2



Okanogan PUD Views

- **Why “right” time to invest in diversification:** With the Slice Contract, it was either rely on market purchases in dry winters, or acquire additional resources to fill in its “Winter gap”. Wind power fills a portion of this gap at a reasonable cost versus other options.
- **Diversification makes sense for utilities and their customers:** Green power has subjective value as well as dollar value. Wind power for example can be added within one year, with little risk and at a fixed price. Such diversification can add resources quickly to serve load growth to complement traditional resources.
- **Okanogan PUD participated in Nine Canyon Phase 2 expansion** (from 12 to ~ 16 MW of capacity, and from 5.5% to ~7.3% of OkPUD’s energy load = 5 aMW’s. We are firm believers in this non-firm resource.
- **Wind power is the “new hydropower” for the NW.**

Questions??

- Call Larry at 509-422-8483 or email at larry@okpud.org