NOS 2010
Commercial Infrastructure Financial Analysis

March 23, 2011

Agenda

- Background of process
- Overview and Assumptions
- Review Commercial Infrastructure Financing Analysis (CIFA)

CIFA Overview

- CIFA conducts an analysis to compare the projected revenues associated with NOS TSRs (not including NT service or Redirects) with direct capital costs for any projects resulting from the NOS cluster study.
- CIFA delivers its results as a Net Present Value (NPV) and informs expected rate pressure:
  - Negative NPV means that there is insufficient revenue to fund the capital project without creating upward rate pressure
  - Positive NPV means that there is sufficient revenue to fund the capital project without creating upward rate pressure

NOS 2010 Overview

- NOS 2010 includes a total of 3,759 MW of requests.
- There are 53 MW of demand that can be offered (authorized) without a capital project.
- The cluster study identified 1,522 MW require only NOS 2008 builds.
- The cluster study identifies new builds needed for 2,184 MW:
  - Colstrip Upgrade Project - West (CUP) Reinforcement would allow 480 MW of offers.
  - Garrison Ashe (GASH) would allow 14 MW to be offered if constructed alone; the cluster study identified an additional 530 MW if Central Ferry-Lomo is constructed.
  - The CUP West and GASH projects create capacity in the same region. If the CUP West does not move forward it is estimated that the GASH could allow all 1,074 MW of offers total of the demand from the two cluster groups if Central Ferry-Lomo is also constructed. When analyzing a scenario where only GASH was constructed, these additional MW were reflected.

NOS 2010 Overview (cont.)

- The cluster study identified four projects on the Northern Intertie (NI) that would allow BPA to offer a total of 1,100 MW:
  - NI (East): North-South would allow 100 MW of offers if I-5, WOMR, and Central Ferry-Lomo are also constructed.
  - NI (West): North-South would allow 825 MW of offers with I-5 and WOMR builds.
  - NI (East): South-North would allow 50 MW of offers that also require the CUP West build.
  - NI (West): South-North would allow 50 MW of offers if WOMR is also constructed.
- Other Network Reinforcements were identified in the NOS 2010 Cluster Study. These were deemed to be reliability projects and were not included in the CIFA:
  - Redmond 230/115kV Transformer
  - Ponderosa 500/230-kV Transformer
  - Monroe 500-kV Shunt Caps
  - McNary 230-kV Shunt Caps
- Other Reinforcements that were identified in the NOS Cluster Study that were on other utilities Network were not included in the CIFA.

NOS 2010 TSR Demands by Related Cluster

New 2010 Project (s)	NOS 2008 Projects Required	Demand MW from 2010 NOS		
		Original PTP	NT or Redirect	Total
Authorized		20	33	**53**
TSRs that require only NOS 2008 Projects		1,483	39	**1,522**
CUP (West)	CF LOMO	480	-	**480**
GASH	CF LOMO	530	-	**530**
GASH		14	-	**14**
NI (East): North -South	I-5, WOMR, CF LOMO	100	-	**100**
NI (East): North -South & CUP (West)	I-5, WOMR, CF LOMO	-	75	**75**
NI (West): North - South	I-5, WOMR, CF LOMO	700	125	**825**
NI (East) South - North & CUP (West)		50	-	**50**
NI (West): South - North	WOMR	50	-	**50**
Redmond and Ponderosa Transformers		60	-	**60**
Total Not Requiring NOS 2010 Projects		1,503	72	1,575
Total Requiring NOS 2010 Projects		1,984	200	2,184
Total MWs Submitted in NOS 2010		**3,487**	**272**	**3,759**

Direct Capital Costs for 2010 Proposed Projects

(as of 2/1/2011)

PROJECT	Energization Date	Energization Fiscal Year	Reliability Benefit	2011	2012	2013	2014	2015	2016	2017	2018	Total Direct Cost ($M)
NOS 2010 Proposed Projects												
CUP (West)	10-2015	2016	$0.000	$0.000	$17.320	$17.320	$40.412	$40.412	$0.000	$0.000	$0.000	$115.464
GASH	10-2018	2019	$0.000	$0.000	$18.870	$28.304	$94.348	$235.869	$235.869	$188.695	$141.521	$943.477
NI (East): North-South	10-2015	2016	$0.000	$0.000	$0.250	$0.250	$0.450	$0.675	$0.000	$0.000	$0.000	$1.625
NI (East): South-North	10-2013	2014	$0.000	$0.000	$0.250	$0.250	$0.000	$0.000	$0.000	$0.000	$0.000	$0.500
NI (West): North-South	10-2014	2015	$0.000	$0.000	$7.661	$12.592	$4.904	$0.000	$0.000	$0.000	$0.000	$25.156
NI (West): South-North	10-2013	2014	$0.000	$0.000	$0.250	$0.250	$0.000	$0.000	$0.000	$0.000	$0.000	$0.500

- Each of the Northern Intertie estimates includes about $0.5M for Eastside scheduling. If multiple NI projects are completed then there is still only a $0.5M cost for the Eastside scheduling component. Adjustments have been made when analyzing groups containing multiple Northern Intertie projects to prevent double counting of this $0.5M.
- Possible costs of capital improvements required on other utilities' systems were not included.
- Revenues resulting from TSRs requiring capital improvement on other utilities' systems were included in the analysis.

Direct Capital Costs for 2008 Proposed Projects

(as of 2/1/2011)

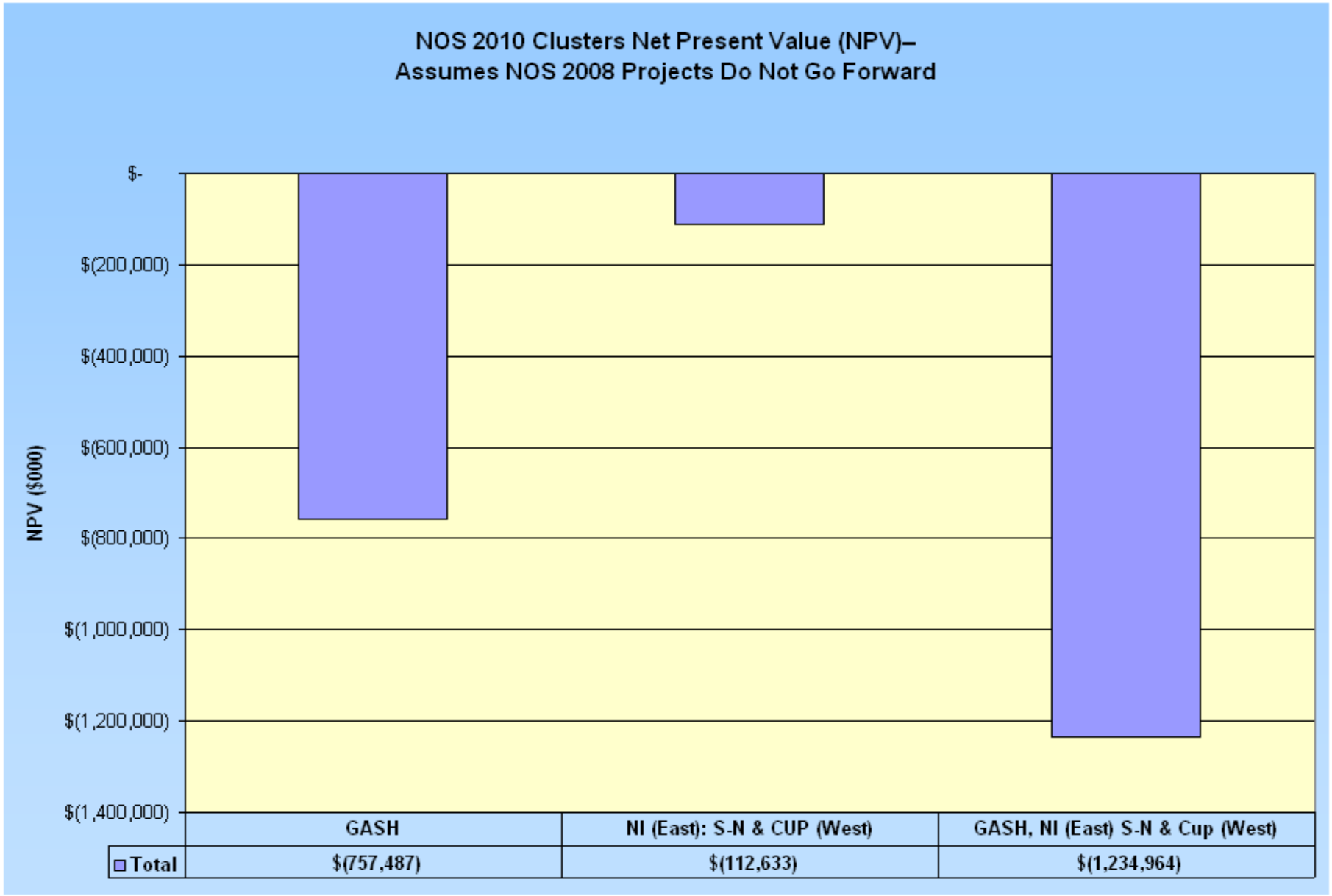
PROJECT	Energization Date	Energization Fiscal Year	Reliability Benefit	2009	2010	2011	2012	2013	2014	2015	Direct Cost ($M)
NOS 2008 Projects											
McNary-JohnDay	02-2012	2012	$20.000	$26.307	$62.228	$61.597	$19.868	$0.000	$0.000	$0.000	$170.000
BigEddy-Knight	02-2013	2013		$2.430	$3.627	$19.839	$82.515	$7.247	$0.000	$0.000	$115.658
I-5 Corridor Reinforcement	10-2015	2016	$10.000	$1.853	$11.827	$6.840	$85.499	$85.499	$75.239	$75.239	$341.996
Central Ferry - Lomo	09-2013	2013	$0.000	$0.601	$3.429	$3.747	$48.332	$43.326	$0.000	$0.000	$99.435

- Some identified NOS 2010 projects required builds identified in NOS 2008 in order to offer service for requests. The NOS 2010 CIFA provides three views of project impacts for these projects:
  1. Scenario 1: Assumes NOS 2008 NOS does not go forward and BPA is unable to offer service to project groups requiring these builds. Only analyzes projects that do not require NOS 2008 builds.
  2. Scenario 2: Assume that NOS 2008 projects are going forward and that related capital costs are sunk. Only NOS 2010 Project capital costs are analyzed.
  3. Scenario 3: Include NOS 2008 project capital costs and allocate (based on dollars per MW) to the direct capital costs for the 2010 NOS Capital Costs (see pg. appendix).

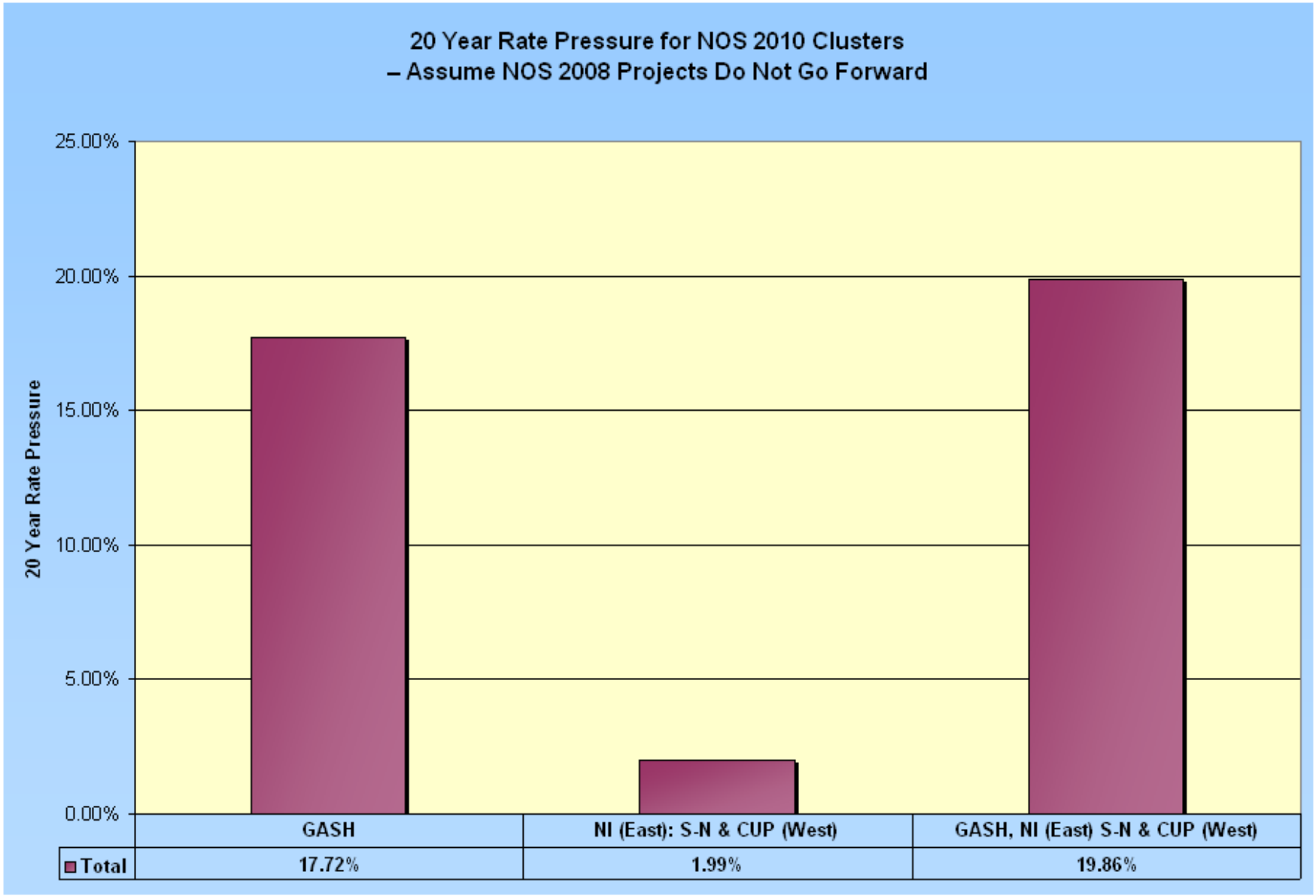
Scenario 1: Do Not Require NOS 2008 Builds

- There are two project groups in the cluster study that would not require any of the NOS 2008 builds to enable requests – GASH and NI (East) S-N & CUP (West). Both have negative Net Present Values (NPV) and do not pass the CIFA.
  - GASH (14 MW of requests)
    - **Rate Impact:** 17.7% Direct Cost: $943.5M NPV: -$757.5M
  - NI (East): S-N & CUP (West) (50 MW of requests)
    - **Rate Impact:** 2.0% Direct Cost: $116.0M NPV: -$112.6M
  - GASH, NI (East): S-N & CUP (West) (64 MW of requests)
    - **Rate Impact:** 19.9% Direct Cost: $1,059.5M NPV: -$1,235M

➢ All other projects require completion of at least one proposed NOS 2008 build in order to enable requests.



- *No deferrals assumed.*
- *Costs of capital improvements required on other utilities' systems are not included.*



Note:

- *No deferrals assumed.*
- *Costs of capital improvements required on other utilities' systems are not included.*

Scenario 2: Assumes No Allocated Costs for NOS 2008 Builds

- When only new capital costs from the NOS 2010 proposed projects are considered, four proposed Northern Intertie (NI) project groups have a positive NPV and pass CIFA:
  - GASH w/ CF Lomo assuming CUP is not completed (1,074 MW of requests)
    - **Rate Impact:** 14.7% Direct Cost: $943.5M NPV: -$653.2M
  - NI (East): N-S w/ I-5, WOMR & CF Lomo (100 MW of requests)
    - **Rate Impact:** -0.3% Direct Cost: $1.6M NPV: -$4.2M
  - NI (East): N-S & CUP (West) w/ I-5, WOMR & CF Lomo (175 MW of requests)
    - **Rate Impact:** -1.7% Direct Cost: $117.1M NPV: $72.3M
  - NI (West): N-S w/ I-5 & WOMR (825 MW of requests)
    - **Rate Impact:** -1.6% Direct Cost: $25.2M NPV: $62.4M
  - NI (West): S-N w/ WOMR (50 MW of requests)
    - **Rate Impact:** -.1% Direct Cost: $0.5M NPV: $3.4M
  - CUP (West) w/ CF Lomo (480 MW of requests)
    - **Rate Impact:** 0.7% Direct Cost: $115.5M NPV: -$47.4M

• Direct costs for NOS 2010 projects include an allocation of direct cost from NOS 2008 projects.

Scenario 2: Assumes No Allocated Costs for NOS 2008 Builds

- Analysis is also performed to test for benefits from constructing multiple projects. The rate pressure of 2010 plan-of-service over 20 years for:
  - All NOS 2010 projects (2,224 MW of requests)
    - **Rate Impact:** 14.7% Direct Cost: $1,085.2M NPV: -$717.1M
  - All NOS 2010 Northern Intertie & Cup (1,680 MW of requests)
    - **Rate Impact:** -1.5% Direct Cost: $141.7M NPV: $15.9M
  - All NOS 2010 Northern Intertie* (975 MW of requests)
    - **Rate Impact:** -2.1% Direct Cost: $26.3M NPV: $72M

•Direct costs for NOS 2010 projects include an allocation of direct cost from NOS 2008 projects.
•Scenarios not including CUP also do not include NI (East) S-N since all requests associated with the build also require CUP
•NPV Does not include Authorized MWs

Scenario 3: Assumes Allocated Costs for NOS 2008 Builds

- When allocated costs from the NOS 2008 builds are considered, all projects have negative NPVs and do not pass CIFA:
  - GASH w/ CF Lomo assuming CUP is not completed (1,074MW of requests)
    - **Rate Impact:** 15.6% Direct Cost: $989.6M NPV: -$726.4M
  - NI (East): N-S w/ I-5, WOMR & CF Lomo (100 MW of requests)
    - **Rate Impact:** 0.6% Direct Cost: $45.2M NPV: -$49.4M
  - NI (East): N-S & CUP (West) w/ I-5, WOMR & CF Lomo (175 MW of requests)
    - **Rate Impact:** 1.3% Direct Cost: $160.7M NPV: -$106.4M
  - NI (West): N-S w/ I-5 & WOMR (825 MW of requests)
    - **Rate Impact:** 1.5% Direct Cost: $188.6M NPV: -$118.8M
  - NI (West): S-N w/ WOMR (50 MW of requests)
    - **Rate Impact:** -.1% Direct Cost: $1.7M NPV: -$5.5M
  - CUP (West) w/ CF Lomo (480 MW of requests)
    - **Rate Impact:** 1.4% Direct Cost: $151.4M NPV: -$99.7M

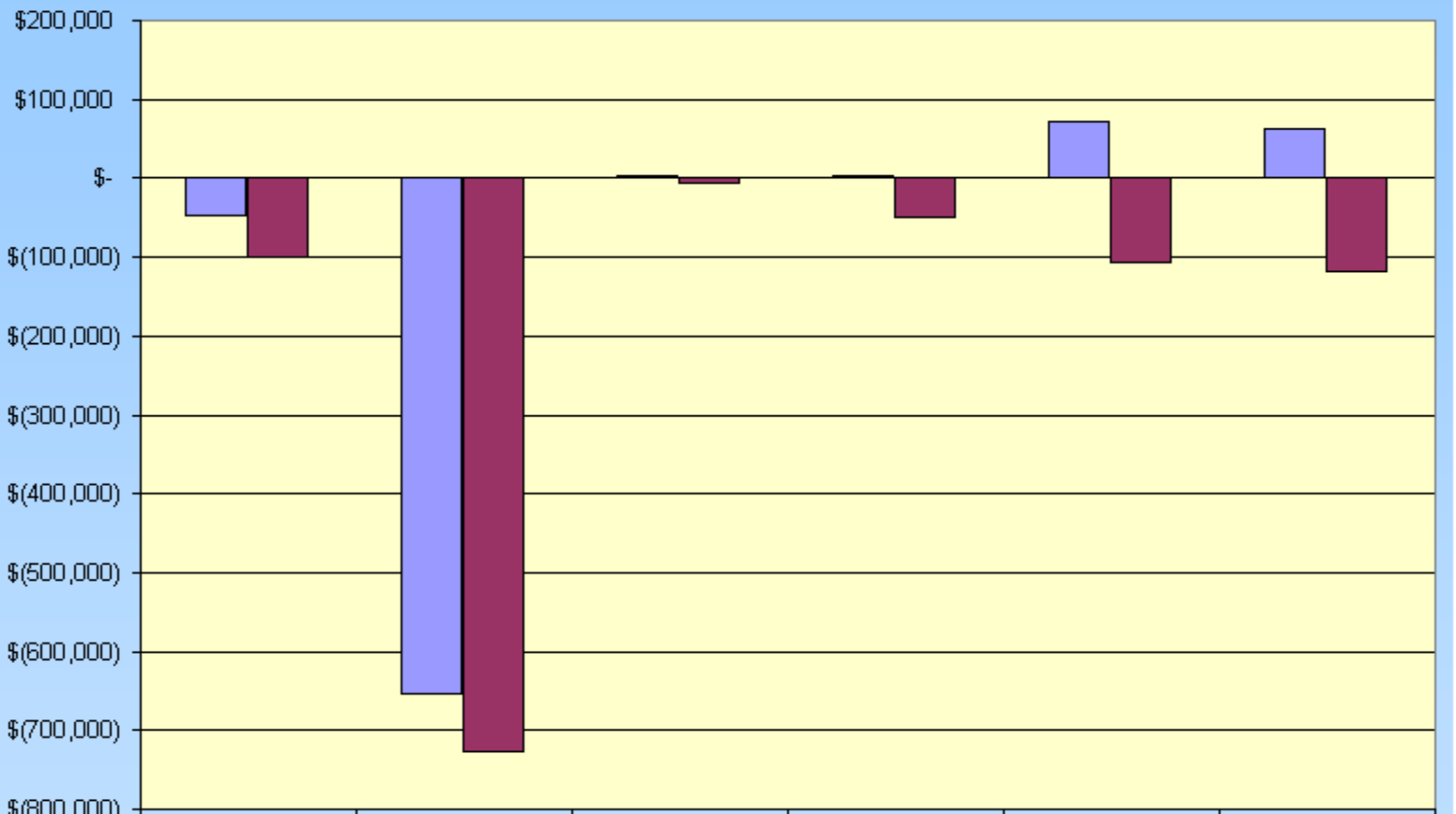
• Direct costs for NOS 2010 projects include an allocation of direct cost from NOS 2008 projects.

Scenario 3: Assumes Allocated Costs for NOS 2008 Builds

- Analysis is also performed to test for benefits from constructing multiple projects. The rate pressure of 2010 plan-of-service over 20 years for:
  - All NOS 2010 projects (2,224 MW of requests)
    - **Rate Impact:** 19.5% Direct Cost: $1,319.0M NPV: -$1,033.2M
  - All NOS 2010 Northern Intertie & Cup (1,680 MW of requests)
    - **Rate Impact:** 2.7% Direct Cost: $359.5M NPV: -$259.2M
  - All NOS 2010 Northern Intertie* (975 MW of requests)
    - **Rate Impact:** 1.5% Direct Cost: $214.2M NPV: -$142.1M

•Direct costs for NOS 2010 projects include an allocation of direct cost from NOS 2008 projects.
•Scenarios not including CUP also do not include NI (East) S-N since all requests associated with the build also require CUP
•NPV Does not include Authorized MWs

Net Present Value (NPV) of NOS 2010 Proposed Projects

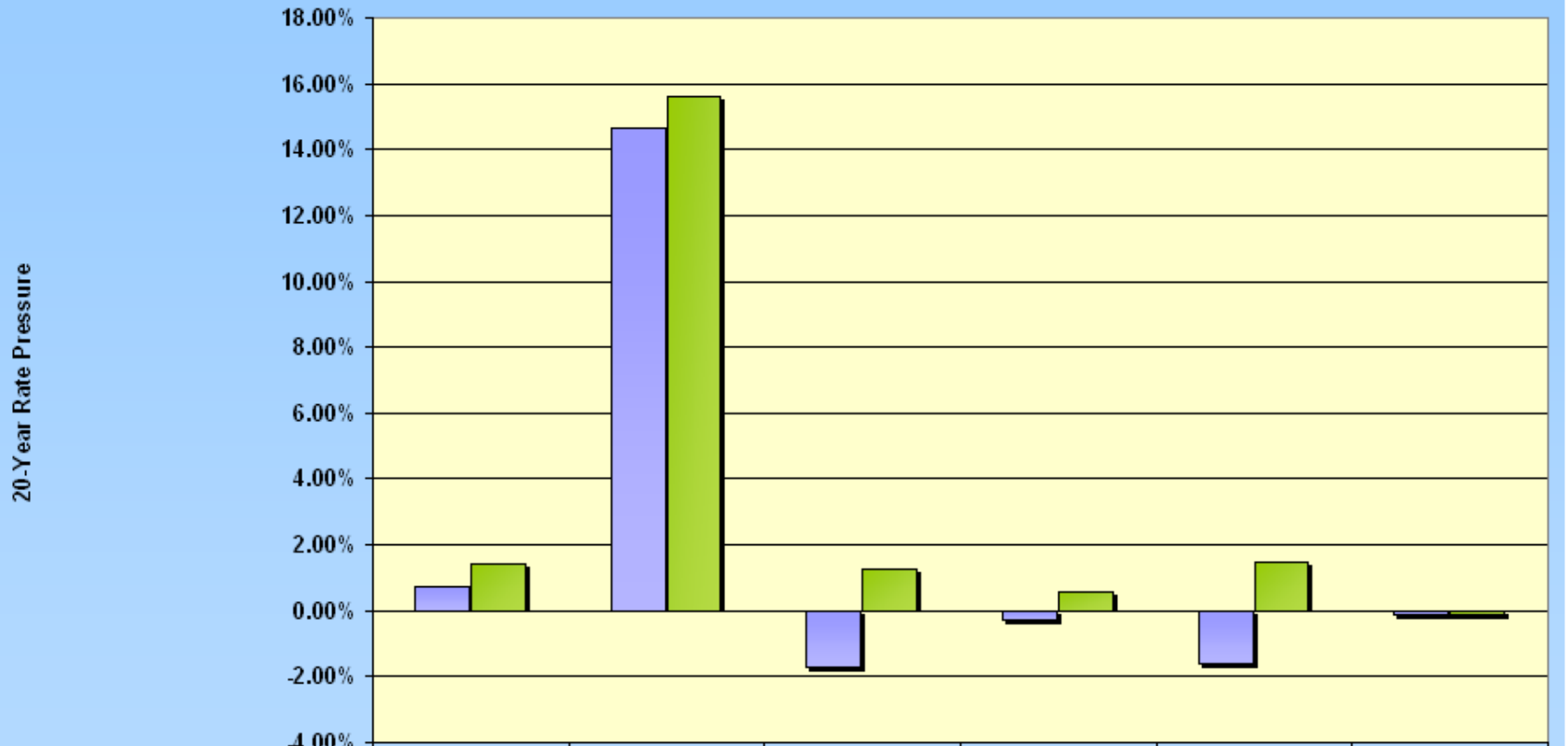


	CUP (West) w/ CF Lomo	GASH w/ CF Lomo	NI (West) S-N: WOMR	NI (East): N-S w/ I-5, WOMR, CF Lomo	NI (East): N-S & CUP w/ I-5, WOMR, CF Lomo	NI (West) N-S w/ I-5, WOMR
2010 Project Costs Only	$(47,416)	$(653,245)	$3,381	$4,226	$72,251	$62,401
W/ Allocated 2008 Project Costs	$(99,673)	$(726,443)	$(5,478)	$(49,425)	$(106,352)	$(118,779)

Note:

- *No deferrals assumed.*
- *Costs of capital improvements required on other utilities' systems are not included.*

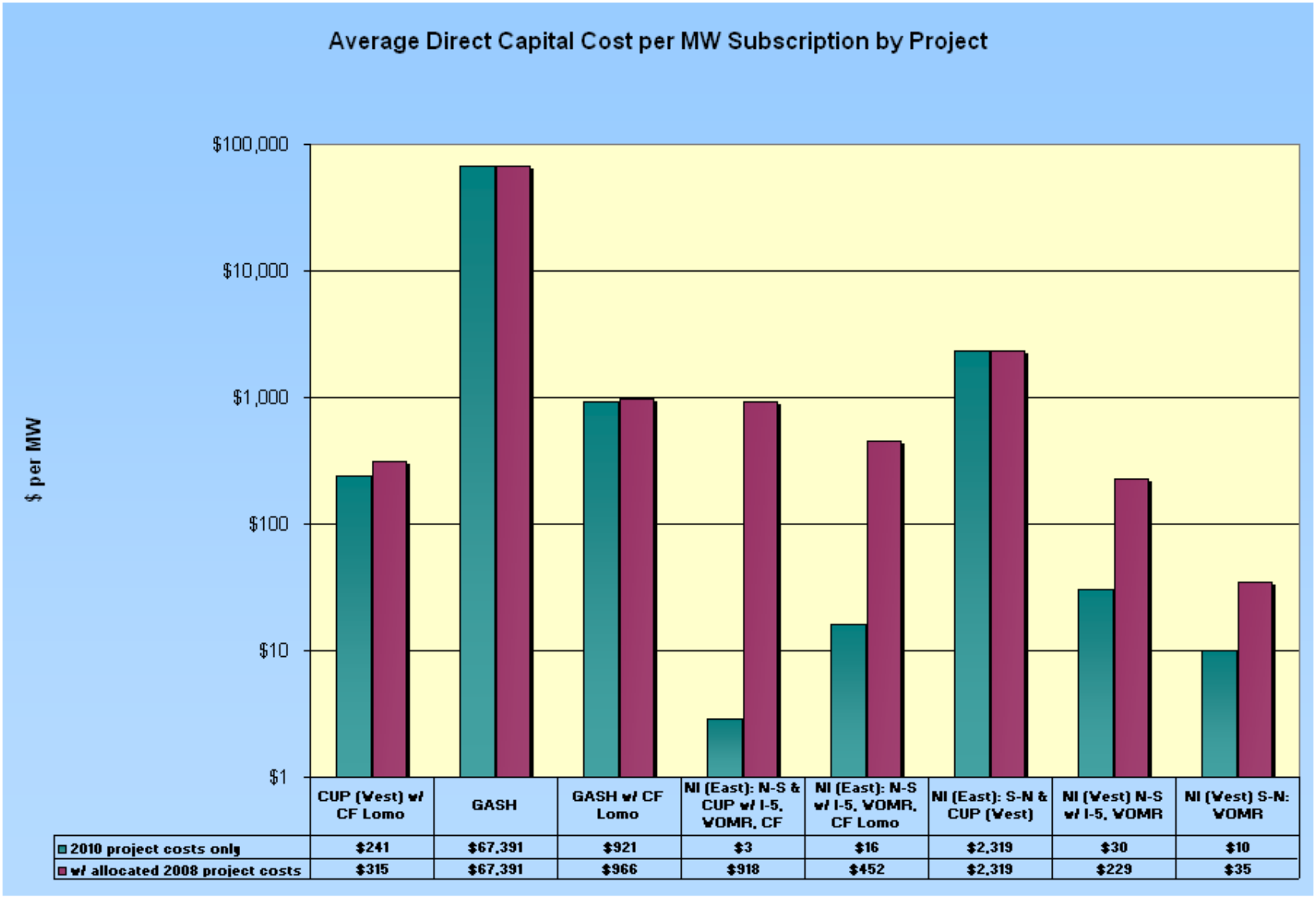
20-Year Rate Pressure 2010 Project Scenario for Clusters Requiring NOS 2008 Projects



	CUP (West) w/ CF Lomo	GASH w/ CF Lomo	III (East): N-S & CUP w/ I-5, WOMR, CF Lomo	III (East): N-S w/ I-5, WOMR, CF Lomo	III (West) N-S w/ I-5, WOMR	III (West) S-N: WOMR
2010 project costs only	0.70%	14.66%	-1.69%	-0.26%	-1.61%	-0.13%
w/ allocated 2008 project costs	1.40%	15.63%	1.29%	0.57%	1.48%	-0.10%

Note:

- *No deferrals assumed.*
- *Costs of capital improvements required on other utilities' systems are not included.*



	CUP (West) w/ CF Lomo	GASH	GASH w/ CF Lomo	NI (East): N-S & CUP w/ I-5, VOMR, CF	NI (East): N-S w/ I-5, VOMR, CF Lomo	NI (East): S-N & CUP (West)	NI (West) N-S w/ I-5, VOMR	NI (West) S-N: VOMR
2010 project costs only	$241	$67,391	$921	$3	$16	$2,319	$30	$10
w/ allocated 2008 project costs	$315	$67,391	$966	$918	$452	$2,319	$229	$35

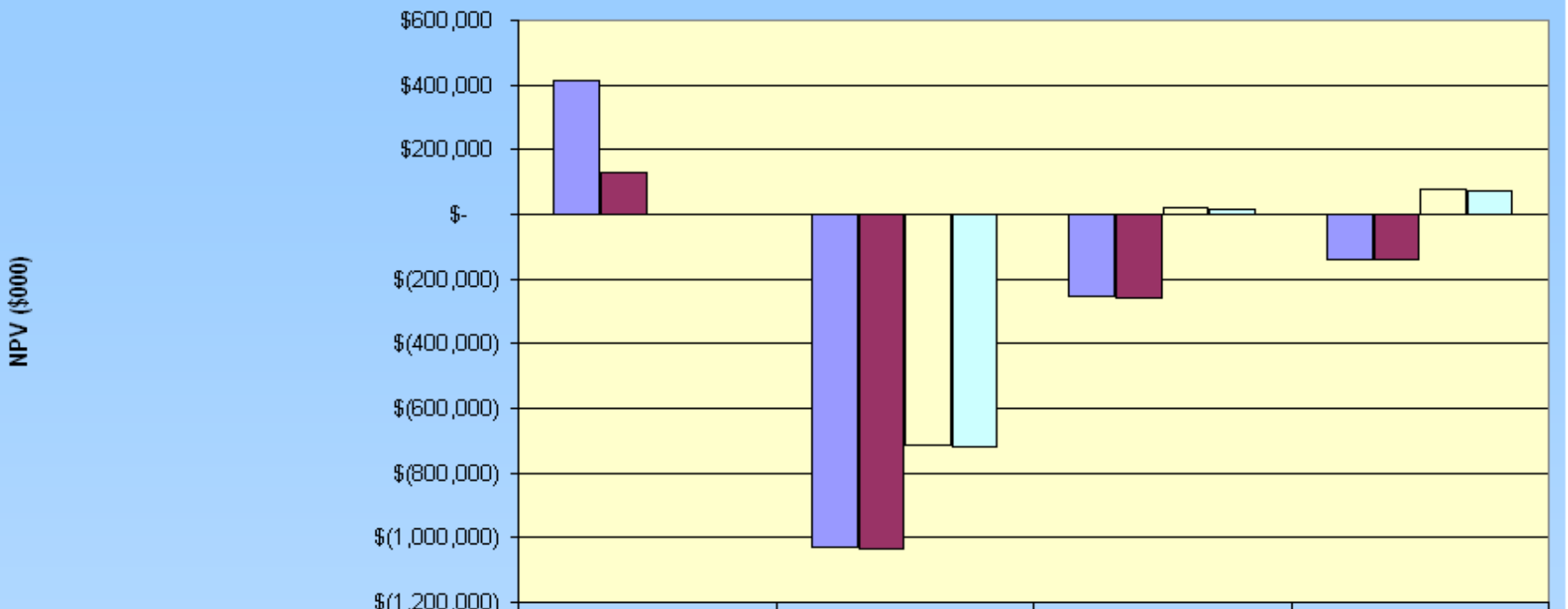
Note:

- *$ per MW has logarithmic scale.*
- *Includes NT and Redirect Requests.*
- *Authorized TSRs not included.*
- *Costs of capital improvements required on other utilities' systems are not included.*

NOS 2010 CIFA Results and NOS 2008 Projects

- NI is the only 2010 project that shows a positive NPV. All others have a negative NPV.
- Analysis of NOS 2008 projects shows an improved NPV from CIFA 2008.
  - In the 2008 CIFA these projects had a negative NPV with and without the TSRs that did not require a build.
  - Additional requests submitted for NOS 2008 projects in subsequent Network Open Seasons have increased the NPV to be positive.
  - This analysis includes TSRs from NOS 2008, 2009, and 2010.

Net Present Value (NPV) of Clusters Requiring NOS 2008 Projects



	All NOS 2008 Projects	All NOS 2010 Projects	All NOS 2010 NI Projects & CUP	All NOS 2010 NI Projects
W/ Allocated 2008 Project Costs - W/ Authorized	$415,900	$(1,028,931)	$(255,245)	$(138,124)
W/ Allocated 2008 Project Costs - W/Out Authorized	$130,891	$(1,033,227)	$(259,218)	$(142,097)
2010 Project Costs Only - W/ Authorized	$-	$(712,760)	$19,911	$76,084
2010 Project Costs Only - W/Out Authorized	$-	$(717,056)	$15,938	$72,112

Note:

- *No deferrals assumed*
- *Costs of capital improvements required on other utilities' systems are not included.*

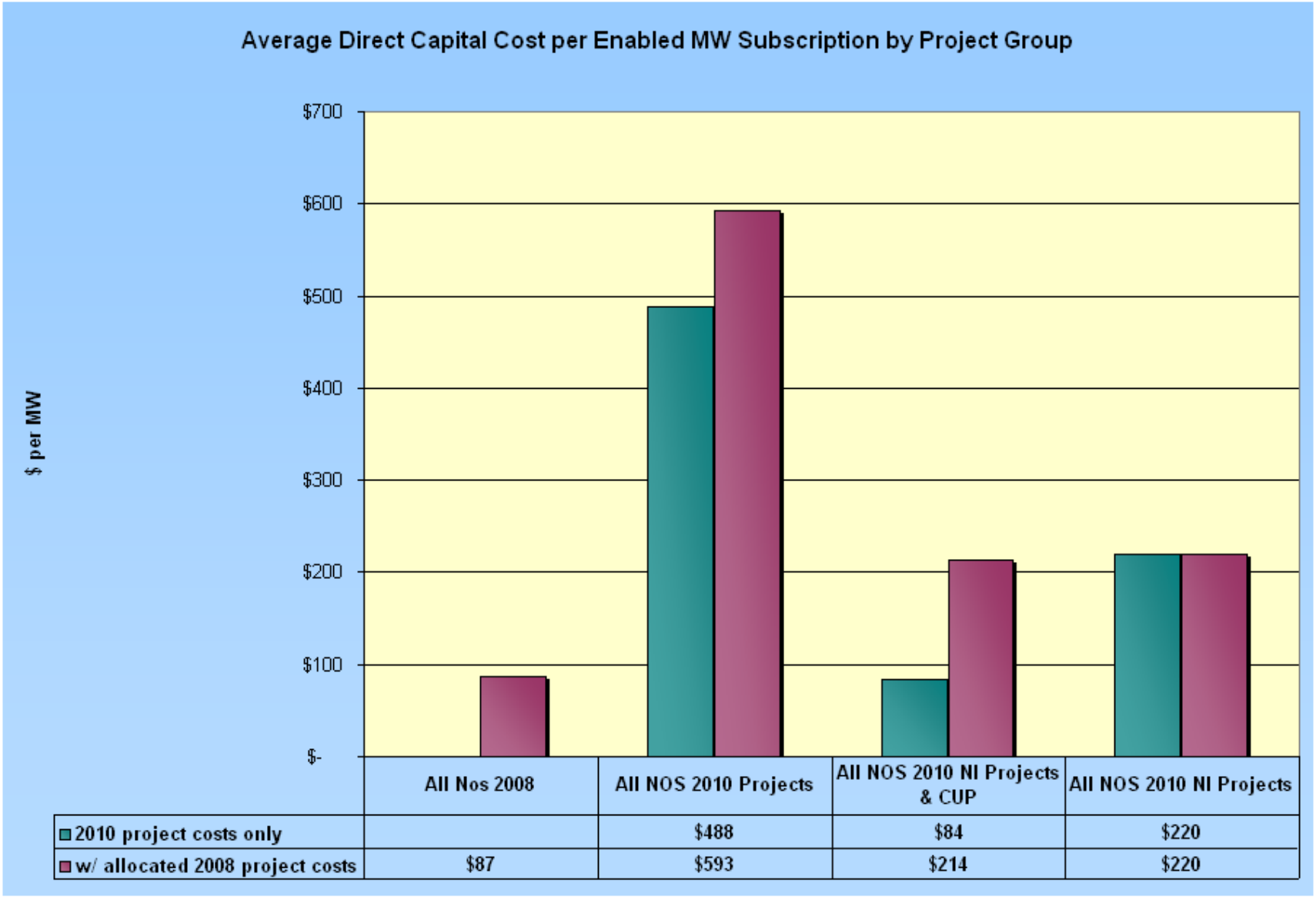
*Scenarios not including CUP also do not include NI (East) S-N since all requests associated with the build also require CUP

	All Nos 2008	All NOS 2010 Projects	All NOS 2010 NI Projects & CUP	All NOS 2010 NI Projects
2010 project costs only		14.67%	-1.48%	-2.05%
w/ allocated 2008 project costs	-8.37%	19.47%	2.66%	1.49%

Note:

- *Groups of multiple projects include Authorized TSRs*
- *Includes TSRs from NOS 2008, 2009, and 2010*
- *No deferrals assumed*
- *Costs of capital improvements required on other utilities' systems are not included.*

*Scenarios not including CUP also do not include NI (East) S-N since all requests associated with the build also require CUP



Note:

- *Includes NT and Redirect Requests.*
- *Authorized TSRs not included.*
- *Costs of capital improvements required on other utilities' systems are not included.*

*Scenarios not including CUP also do not include NI (East) S-N since all requests associated with the build also require CUP

Average Rate Pressure per Rate Period for All NOS 2010 Projects Except GASH

	RC 16-17	RC 18-19	RC 20-21	RC 22-23	RC 24-25	RC 26-27	RC 28-29	RC 30-31	RC 32-33	RC 34-35	RC 36-37	RC 38-39	RC 40-41	RC 42-43	RC 44-45	RC 46-47	RC 48-49
With 2008 Project Cost Allocations	4.37%	4.00%	3.62%	3.24%	2.86%	2.47%	2.09%	1.71%	1.32%	0.93%	0.54%	0.15%	-0.24%	-0.63%	-1.03%	-1.43%	-1.82%
Only 2010 Project Costs	-0.59%	-0.78%	-0.98%	-1.17%	-1.37%	-1.57%	-1.77%	-1.97%	-2.18%	-2.38%	-2.59%	-2.80%	-3.01%	-3.22%	-3.43%	-3.65%	-3.86%

Rate pressure is shown as an increase from current rates. The rate pressure is not additive.

Risk Assessment Purpose

- Assess the risk range of rate pressures for proposed 2010 NOS projects due to potential variability coming from:
  - Tariff rights (TSR deferral and rollover)
  - Default (customer credit)
  - Capital costs
  - Non-completion of NOS 2008 Projects (Big Eddy-Knight, Central Ferry-Lomo, and I-5)

Risk Assumptions

- Monte Carlo simulation output (5,000 games) using Palisade Corporation @Risk 5.5 Professional generates the distribution of rate pressure from NOS for each cluster group.
- Simulation output provides:
  - Risk mean
  - Upper range (75th percentile of distribution)
  - Lower range (25th percentile of distribution)
- Model risk assumptions:
  - Tariff Rights risk: Deferral and rollover probabilities are based on a historical sample of the Transmission Service Requests.
  - Default risk: Standard & Poor's credit ratings
  - Capital risk: Capital dollar uncertainty based on confidence level of estimate.
  - Risk that proposed NOS 2008 builds will not be completed: John Day-McNary is the only build from NOS 2008 for which the agency has filed a ROD to build. This risk estimate provides estimated rate impact of proposed NOS 2010 projects if the remaining NOS 2008 builds are not completed. It assumed fixed subscriptions and capital costs. Needs Update for CF-LoMo

Risk Findings

- Risks modeled generally present an upward direction on the rate pressures due to consideration of deferral, rollover assumptions, customer credit, and capital cost estimates that have higher probability to be above current estimate.
- Risk magnitude varies by project group:
  - A larger number of TSRs and MWs amount increases risk from tariff rights.
  - Projects with less quality estimate face greater risk from capital cost shifts. Projects with large capital outlay are subject to greater risk.
  - Default risk is impact by both the number of customers requesting TSRs requiring the project, and the financial standings of those customers.
  - For most clusters requiring NOS 2008 projects, the risk of the projects not being completed was the greatest risk to the rate pressure.

20 Year Rate Pressure Risk
Assumes cost allocations for clusters requiring NOS 2008 builds

- We considered risks associated with each of the NOS 2010 project groups. We also considered risk of customer defaults, risk of capital cost uncertainty, and risk around assumptions of tariff rights (i.e., risk around the assumptions regarding deferrals and rollover rights), and the risk that NOS 2008 builds are not completed.
- These risks impact the rate pressure associated with each of the projects.
- When risk was considered, the rate impact of the All NOS 2010 projects group ranged from 19.5% to 25.1%.
- When risk was considered, the rate impact of the All NOS 2010 NI Projects & CUP ranged from 2.7% to 6.6%.
- When risk was considered, the rate impact of the All NOS 2010 NI Projects ranged from 1.5% to 2.8%
- CUP West – the greatest risk to rate pressure is the risk of customer default because this project is dominated by requests from one customer with higher credit risk. The rate pressure of the CUP West ranged from 1.4% to 2.1%.
- GASH – the greatest risk is capital cost uncertainty. The range of rate pressure is 17.7% to 21.9%.

20 Year Rate Pressure Risk
Assumes cost allocations for clusters requiring NOS 2008 builds

- GASH with CFLomo – the greatest risk is capital cost uncertainty. The rate pressure of this grouping ranges from 15.6% to 18.7%.
- NI (East) N-S & CUP with I5, WOMR & CFLomo – the greatest risk for this cluster is due to potential customer default because of a large number of requests from a customer with higher credit risk. The rate pressure for this grouping ranges from 1.3% to 3.0%.
- NI (East) N-S with I5, WOMR & CFLomo – The greatest risk comes from tariff rights risks (deferrals and rollover) because capital cost estimates are fairly certain and the TSRs are from a customer with good credit. The range of rate pressure is 0.6% to 0.9%.
- NI (West) N-S with I5 & WOMR – The greatest risk is tariff rights because capital cost estimates are fairly certain and the TSRs are from a customer with good credit. The range of rate pressure is 1.5% to 3.6%.

20 Year Rate Pressure (Assumes cost allocations for clusters requiring NOS 2008 projects)

- NI (East) S-N & CUP – The greatest risk is capital cost uncertainty. The range of rate pressure is 2.0% to 2.2%.
- NI (West) S-N with WOMR – The greatest risk is tariff rights because capital cost estimates are fairly certain and the TSRs are from a customer with good credit. The range of rate pressure is -0.1% to 0.04%.

Summary of Messages

- NOS 2008 capital builds show a rate impact decreased due to subscriptions (NOS 2008, NOS 2009 and NOS 2010) higher than amortization, O & M costs and assuming that there are no defaults, deferrals or change in capital costs.
- If all the NI plans of service were built as identified in the cluster study, the NI plans of service could yield a -2% rate impact (assuming 2008 NOS costs are sunk). The total capital costs for those builds would be about $26.3 million (direct costs) including NEPA. The NEPA was estimated at $200k to $2 million.
- If the CUP was built, it could yield a .7% rate impact (assuming 2008 NOS costs are sunk). The total capital costs for the CUP would be around $115.4 million (direct costs) including NEPA. The NEPA was estimated to be $4 million to $6 million.
- If the NI and the CUP were built, it could yield a -1.5% rate impact (assuming 2008 NOS costs are sunk). The total capital costs for the NI and the CUP would be around $141.7 million (direct costs) including NEPA. The NEPA was estimated to be $6.2 million to $8.2 million.
- No plans of service resulting from the NOS 2010 Cluster Study had a positive NPV assuming that 2008 NOS builds do not go forward and therefore did not pass the CIFP.
- If we assume that the 2008 NOS projects go forward, and allocate a portion of their costs to the 2010 NOS plans of service, none of the 2010 NOS plans have a positive NPV.
- If we only look at the 2010 NOS costs, NI and CUP combination has a positive NPV and did pass the CIFP. The major driver of the positive NPV is the NI.
- CIFA results will be considered as part of the BPA recommendation for NOS 2010.