Stein Monast S.E.N.C.R.L. AVOCATS

70, rue Dalhousie
Bureau 300
Québec (Québec) G1K 4B2
CANADA

Téléphone : 418.529.6531
Télécopieur : 418.523.5391

www.steinmonast.ca

Québec, le 25 avril 2008

Me Véronique Dubois
Secrétaire
RÉGIE DE L'ÉNERGIE
Tour de la Bourse, C.P. 001
800, Place Victoria, 2e étage, bureau 255
Montréal (Québec) H4Z 1A2

OBJET: Demande d'approbation du Plan d'approvisionnement 2008-2017 du Distributeur
Votre référence : R-3648-2007 phase 1
Notre dossier No : 1038998

Chère Consoeur,

Suite à la vôtre du 24 avril 2008, nous joignons en huit exemplaires le rapport de notre expert Robert D. Knecht concernant la phase 1 de ce dossier.

Nos témoins seront : Robert D. Knecht, expert
Pierre Vézina, CIFQ
Luc Boulanger, AQCIE;

Temps de présentation : 15 minutes;

Contre-interrogatoire du Distributeur : N/A.

Veuillez agréer, chère consœur, l'expression de nos sentiments les meilleurs.

Stein Monast, S.E.N.C.R.L.
Procureurs de L'AQCIE ET DU CIFQ

PP/ lm
c.c. par courriel seulement :
Hydro-Québec –Me Yves Fréchette
Les intervenants

BEFORE THE RÉGIE DE L'ÉNERGIE

IEc

IN THE MATTER OF:

HYDRO QUÉBEC DISTRIBUTION

Demande d'approbation du Plan d'approvisionnement 2008-2017 du Distributeur

DOSSIER R-3648-2007

26 April 2008

prepared on behalf of:

l'Association québécoise des consommateurs industriels d'électricité (AQCIE)

Conseil de l'industrie forestière du Québec (CIFQ)

prepared evidence of:

Robert D. Knecht

Industrial Economics, Incorporated

2067 Massachusetts Avenue

Cambridge, MA 02140

INTRODUCTION

My name is Robert D. Knecht. I am a Principal and the Treasurer of Industrial Economics, Incorporated ("IEc"), a consulting firm located at 2067 Massachusetts Avenue, Cambridge, MA 02140. As part of my consulting practice, I prepare analyses and expert testimony in the field of regulatory economics. In Canada, I have submitted expert evidence in regulatory proceedings in Québec, Ontario, Alberta, New Brunswick, Nova Scotia, Manitoba, and Prince Edward Island. In matters regarding Hydro Québec Distribution ("HQD"), I have submitted evidence before the Régie on a number of occasions between 2001 and the present.

I obtained a B.S. degree in Economics from the Massachusetts Institute of Technology in 1978, and a M.S. degree in Management from the Sloan School of Management at M.I.T. in 1982, with concentrations in applied economics and finance. My *curriculum vitae* and a schedule of my expert evidence presented to regulatory tribunals are attached as Exhibit RDK-1.

I was retained by l'Association québécoise des consommateurs industriels d'électricité ("AQCIE") and the Conseil de l'industrie forestière du Québec ("CIFQ") to evaluate HQD's proposed modifications to its contracts with Hydro Québec Production for base and cyclable electricity supply.

At this writing, I believe that the conclusions in this evidence are final, although my analysis and review of information requests is continuing. If this ongoing analysis requires me to modify my primary conclusions and recommendations or to modify the substance of my analysis, I will notify the Régie and the other parties promptly.

CONTEXT

Hydro Québec Distribution ("HQD") is appearing (once again) before the Régie having contracted for electric generation supplies in excess of its post-patrimonial load in the near term, now forecasted as the 2008 to 2011 period. HQD explains that the reduction in its forecast for domestic load results from three factors. First is the unanticipated weakness in the industrial sector, particularly in the pulp and paper industry. Second is the increases in energy efficiency targets, and third is a technical adjustment to "normal temperature" assumptions.

Unfortunately, my clients at AQCIE and CIFQ can confirm the problems faced by the pulp and paper industry, as well as other industrial sectors. Despite strong worldwide commodity prices, the Québec forest products industry is faced by a number of significant competitive problems, including economic access to fiber and the strength of the Canadian dollar. While electricity rates are far from the only problem facing Québec industry, the unfavorable regulatory climate for industrial electricity supply is contributing to this weakness. As I have observed in previous evidence, high and rising costs associated with the cross-subsidization of other rate classes by the industrial class, and the extremely unfavorable cost assignment methods adopted for post-patrimonial loads, are not policies that are conducive to corporate decisions in favor of modernization

investment in industrial facilities. That problem, however, is a matter for another proceeding. The aim of this proceeding is to make the best of this bad situation.

To address the near-term over-supply, HQD offers modifications to its two supply contracts with Hydro Québec Production ("HQP").[1] In summary, both of the proposed modifications would allow HQD to defer delivery of the supplies under these contracts from the 2008 to 2011 period to the 2012 to 2020 timeframe.

HQD justifies its proposal with an economic analysis that compares the impact of the proposed contract modifications with (what I assume to be) its next best scenario, namely a resale of the near-term excess supplies on spot markets. (See HQD-1, Document 5, Table 2 page 12 of 21.) In this evidence, I review HQD's economic methodology and its key assumptions for reasonableness. I also discuss other economic considerations that impact on this decision.

ECONOMIC ANALYSIS OF HQD'S PROPOSAL

From my perspective, the options that HQD has to address its oversupply problem are the following three generic approaches:

1. ***Reduce:*** First, HQD could simply not take the excess supplies. To follow this strategy, HQD would simply reduce its purchases of the highest variable cost supplies in its post-patrimonial supply portfolio. Of course, HQD would remain obligated to make any fixed or demand payments that are contractually required associated with those supplies.

2. ***Resell:*** Second, HQD could take all of its contracted supplies, and re-sell those supplies to third parties in the export markets. This approach will be economically more attractive than the first option only if the net sale price for the supplies is greater than the variable cost of purchasing those supplies.

3. ***Renegotiate:*** Third, HQD could attempt to renegotiate contracts with its suppliers. This approach may be viable, particularly if HQD's suppliers perceive greater value in not selling to HQD if the contract renegotiation precludes HQD from becoming another competitor in the export markets.

In its presentation, HQD does not directly address the first option. However, as the TCE supplies are already constrained, I am not aware of any other post-patrimonial supplies that HQD could draw down. Moreover, because the variable costs of the HQP supplies are likely to be lower than the market prices that HQD could achieve by resale, I conclude that analysis of the "Reduce" option is not necessary.

---

[1] The proposed modifications to the 350 MW firm baseload supply contract are reported in Exhibit HQD-1, Document 3, and the modifications to the 250 MW "cyclable" supply contract are reported in HQD-1, Document 4.

What HQD does analyze is a comparison of the "Resell" and the "Renegotiate" options.[2] Under the Resell option, HQD assesses the net gain that it could achieve by reselling some 9.0 TWh of excess electricity supplies between 2008 and 2011. The net price that HQD assumes that it could achieve from reselling the energy is based on the forward market prices for NYISO Zone A energy supplies, adjusted for historical locational differentials between Zone M and Zone A, transmission losses, a $5 per MWh market adjustment and transactions charges.[3] The net resell price calculated by HQD works out to between $57 and $60 per MWh. Thus, the resale price s slightly higher than the full contract cost of the HQP supplies, which HQD evaluates at $50 and $53 per MWh in 2008 for the base and cyclable contracts respectively.

In effect, the Resell scenario will result in slightly lower rates for all ratepayers in the 2008 to 2011 period than what the rates would be if HQD had not contracted with HQP for this supply, because HQD makes a modest profit by reselling that power.

As the alternative to "Resell," HQD offers a "Renegotiate" option. Needless to say, there are a wide variety of possible ways that the contracts with HQP might be renegotiated, and I do not know what the options were that HQD and HQP considered, nor why they were rejected. However, the economic considerations of the option that HQD has put on the table are as follows.

Under the modified contracts, HQD is able to avoid the full contract costs of an estimated 9.0 TWh of HQP supplies in the 2008 to 2011 period. The contract modifications also allow HQD to take these supplies at a later date at the contract price, adjusted upward by a contractually-specified 2.0 percent annual adjustment. In effect, these deferred supplies are expected to displace HQD's need for additional post-patrimonial supplies in the 2013 to 2020 period, assuming that HQD's forecast load growth re-materializes.

In its economic analysis, HQD determines the avoided cost of these supplies based on the fully loaded cost of its wind contracts, which is the value that HQD uses for long-run avoided cost in other calculations. HQD assesses that value at a 2008 dollar price of about $85 per MWh. In effect, HQD's analysis assumes that it will be able to use $50 per hour power as a substitute for $85 per hour power, as measured in 2008 constant dollars. Thus, rather than resell the $50 per MWh power in 2008 to 2011 at about $57 per MWh, HQD argues that the contract modifications allow it to use that power as a substitute for $85 per MWh power in 2013 to 2017.

Finally, HQD must determine how to compare the benefits of near term resale with the benefits of longer-term avoided costs. HQD's analysis makes that comparison on a total

---

[2] HQD's analysis is reported in HQD-1, Document 5, Table 2.

[3] HQD's analysis is shown in HQD-1, Document 5, Table 1A. The basis for the $5 per MWh adjustment is not explicitly stated. However, based on my review of Docket No. R-3649-2007 HQD-1, Document 1, it is my understanding that this adjustment is based on HQD's actual experience with tenders for export, reflecting limits on interconnection capacity and the depressing impact that additional exports have on locational prices.

"current dollar" basis and on a net present value basis. The results of HQD's analysis are shown in the table below (which is the same as HQD's Table 4 in HQD-1, Document 5.)

TABLE IEC-1
SUMMARY OF HQD ECONOMIC ANALYSIS
($ MILLIONS)

	Resell Scenario (No Deferral)	Renegotiate Scenario (Deferral)	Difference
Total Current Dollars	$1,469	$1,171	$298
Net Present Value	$1,110	$934	$176
Source: HQD-1, Document 5, Tables 2 and 4			

Not surprisingly, HQD's analysis shows that the benefits of $85 per MWh avoided costs are higher than the benefits of $57 resale power, even on a net present value basis. In particular, HQD's analysis shows that, on a net present value basis, the Renegotiate scenario is some $176 million more attractive than the Resell scenario.

However, in evaluating HQD's analysis, the questions that should be asked are:

- Are the excess supply volumes reasonably accurate? What are the implications of variations in the amount of deferred load and the recovery period?
- Are the net prices earned from resale reasonable, or has HQD been unduly conservative?
- Is the avoided cost assumption reasonable? Is wind power the relevant measure of avoided cost, or would conventional power supplies be a more reasonable approach?
- Is a nominal dollar comparison useful? Is the discount rate used for the net present value analysis reasonable?

Regarding these questions, I reviewed the assumptions that underpin HQD's analysis, and I simulated a simple version of HQD's table to test the sensitivity of that analysis to alternative questions. My sensitivity analysis, however, is not a traditional sensitivity analysis in which I consider different assumptions both above and below the values used by HQD. In my analysis, I simply modify the parameter in a way that would make HQD's "Renegotiate" scenario less attractive. In effect, my analysis shows how likely HQD would be to reach a different decision based on a modification of some specific assumptions.

I have the following observations about that sensitivity analysis.

First, the volume deferred is not a significant factor in the relative advantage of the two scenarios. Higher deferred volumes generally improve the advantage of the

"Renegotiate" scenario, because more volumes can offset the higher avoided costs. Lower deferred volumes would reduce the dollar value of the savings from the Renegotiate scenario, but the large price differential between the resale price and the avoided cost maintains the economic attractiveness of the Renegotiate scenario. Pushing back the timing of the re-supply of deferred volumes to later in the 2012 to 2020 period has an impact on the net present value analysis, but the impact is small.

Second, in light of HQD's recent experience with resale, I expect that HQD should have a sound basis for what it can net from a resale of energy into neighboring markets. I also note that the actual average LMP for the NYISO HQ zone for the past year was about $61 per MWh, which is at least $5 per MWh lower than HQD's zone M assumption for 2008. In effect, the actual LMP is similar to HQD's assumption net of the $5 per MWh price adjustment.

To test the sensitivity of HQD's analysis to this price assumption, I re-simulated the HQD model increasing the net value by $10 per MWh. I note that this is an extraordinarily optimistic assumption. In fact, if electricity prices were that much higher in the 2008 to 2011 period, it would likely be due to an increases in fuel prices. However, such higher fuel prices would also likely manifest themselves in higher avoided costs in the 2013 to 2017 period, thereby increasing the relative attractiveness of the Renegotiate scenario.

Third, HQD's use of the cost of new wind power could be questioned as whether it is a reasonable assumption for the avoided cost of new supplies in the 2013 to 2017 period. Wind power costs may reflect values associated with renewable energy credits ("RECs") that implicitly overstate the cost of conventional power supplies. However, I generally agree with HQD that there are benefits for HQD to be consistent in all of its analyses (notably the PGEÉ program) when evaluating the long run avoided cost of new capacity options. Moreover, based on current natural gas prices and 2007 US DOE/EIA estimates of the cost of new generating capacity, I believe that it is unlikely that new gas-fired capacity could be placed in service at a cost of less than $80 or $85 per MWh (in 2008 dollars). Other traditional supply sources such as coal and nuclear face significant construction lead times, construction cost uncertainties and major regulatory hurdles. As such, I deem that HQD's assumption of a firm power price of $85 per MWh (2008$) is not unreasonable. If anything, an economic case can probably be made that new power supplies would be more costly than $85 per MWh in the latter part of the next decade. However, to test the sensitivity of HQD's analysis, I constructed a scenario based on $75 per MWh avoided cost.

Fourth, I note that HQD makes a comparison both on a total nominal dollar basis and on a net present value basis. From my perspective, the nominal dollar comparison is not meaningful. The effect of deferring the HQP load is to increase near-term rates above what they would be if HQD were to simply resell that power. This relative increase may manifest itself in other rate increase considerations, such as how long certain other costs incurred by HQD should be deferred, particularly those that are subject to interest charges. For example, the lower prices associated with resale of power may allow HQD to accelerate recovery of deferred transmission costs, thereby reducing accumulated

interest charges on those costs. Thus, it is important to recognize the "time value of money" in this analysis. Moreover, the appropriate cost of capital to use should be that used by HQD as a carrying cost on its deferred costs. HQD's analysis appears to use a discount rate of approximately 6.4 percent. It is my understanding that this level is approximately equal to the carrying charge on HQD's deferred costs. As such, I consider it to be a reasonable value to use for this analysis. However, increasing that rate has the effect of reducing the relative attractiveness of the Renegotiate scenario, because the value of the avoided costs is reduced. It may be argued that the cost of capital for ratepayers is higher than 6.4 percent, and that therefore a higher discount rate is appropriate. Therefore, as a sensitivity test, I applied a discount rate of 8 percent.

Finally, in what is probably an excess of caution, I constructed a "worst case" scenario, which consists of a combination of all of the sensitivity analyses described above. As noted earlier, I consider it extremely unlikely that near-term resale prices would be higher than HQD expects *and* longer-term avoided costs would be lower. Nevertheless, for demonstration purposes, both of those assumptions are factored into the "worst case" scenario.

The table below reports the net present value analysis of all of these scenarios:

TABLE IEC-2
SENSITIVITY ANALYSIS OF HQD SCENARIO
2008 NET PRESENT VALUES ($MM)

	Resell Scenario (No Deferral)	Renegotiate Scenario (Deferral)	Difference
HQD Analysis	$1,110	$934	$176
Higher Resale Prices: $10 per MWh over HQD	$1,028	$934	$ 95
Lower Avoided Cost: $10 per MWh below HQD	$1,045	$934	$112
Higher Discount Rate: 8.0% versus HQD 6.4%	$1.045	$890	$156
"Worst Case"	$906	$890	$ 17
Source: HQD-1, Document 5, Tables 2 and 4; Exhibit IEc-2			

Thus, even in the extremely unlikely "worst case" scenario, the Renegotiate proposal is economically superior to a Resale option.

Obviously, alternative scenarios can be envisioned in which the economic benefit of the Renegotiate option is even greater than that calculated by HQD. In particular, HQD could easily experience lower resale prices or higher avoided costs. However, I have not analyzed these as they would simply confirm that the Renegotiate strategy is superior.

Thus, this sensitivity analysis demonstrates that HQD's analysis is quite robust in that the conclusion is the same under a wide variety of different assumptions.

OTHER CONSIDERATIONS

Flexibility

In my view, the contract modifications provide HQD with good flexibility in allowing it to adjust supplies to meet its actual loads, both in terms of the deferral of loads and in terms of the re-supply of the deferred loads. With respect to the former, HQD is permitted to make adjustments on a 50 MW block basis, rather than on entire contracted amounts. Moreover, HQD is permitted to make adjustments to the load that it needs on either a calendar quarter basis or a half-year basis (for the summer months) with very short notice. The notice period is only one month for most periods, with a 2.5 month notice requirement for winter supplies. Also, it is important to recognize that HQD can retain the ability to acquire supplies under these contracts during the peak winter season, without necessarily needing to take the supplies during the off-peak seasons. This flexibility may allow HQD to avoid the near-term need to contract for peaking supplies. (In light of the value of this peaking capability, it is somewhat surprising that the contract does not contain a significant demand charge, however.)

In addition, with respect to the re-supply period, HQD retains significant flexibility in determining in which year it will need that power. This makes the re-supply contract significantly more attractive to HQD than a baseload supply contract, because HQD need only invoke the re-supply when, and to the extent, it needs the power to meet demand. Moreover, while the contract modifications require that HQD take the load on a "flat" basis over the year, this is likely to be more attractive to HQD than the load pattern for the deferred power. For example, HQD indicates that it expects that it will not defer power during the peak winter months, but will defer during off-peak months. (See Régie IR 5.1.) Because that power will be re-supplied on a flat basis, HQD will have effectively been able to translate some off-peak season power to on-peak season power.

Speculation

The modifications to the contracts with HQP specifically preclude HQD from using HQP supplies for speculative resale. I do not see a particular disadvantage to this restriction. HQD is not in the business of selling power, and it likely does not have the internal capabilities to do so effectively in modern, complex electricity markets. Moreover, it is reasonable for HQP to want to better manage the competitive environment by keeping an affiliated competitor (who might depress prices) out of the market, thereby maximizing the value of Hydro Québec's generation resources for all Québec citizens. As long as HQD retains the ability to balance its hourly and daily requirements through spot sales, there is no significant value in it retaining the ability to speculate in external markets.

Risk Mitigation

Because the replacement power is supplied at a fixed price (adjusted only for 2 percent inflation), the risks of variation in other replacement cost options are reduced. Under the

"Resell" scenario, domestic ratepayers are subject to the risks associated with market price fluctuations both on the sale price and on the future avoided costs. Moreover, were HQD to enter into a contract now with a different supplier for energy in the 2013 to 2017 timeframe, particularly with the delivery flexibility afforded by the modifications to the contract, such a supplier would likely charge a risk premium above forward market prices for that fixed price guarantee over the whole period. Thus, the Renegotiate scenario exposes domestic ratepayers to lower risk, as well as to lower costs.

End Game

In the event that HQD's load growth is insufficient to need the deferred HQP volumes any time between 2013 and 2020, the end game is not as clear as I might prefer. Paragraph 2.2.8 of the modification agreements specifies that HQP has the option to buy back any unused deferred energy at 94.8 percent of the NYISO Zone M price net of costs. It is not clear at this writing what will happen if HQP does not exercise that option, and HQD is unable to use the deferred energy for domestic supply. HQD indicates only that it will address this problem in the future if it becomes necessary. (See Régie IR 4.1.)

CONCLUSION

Based on this analysis, I recommend that the Régie accept HQD's proposed modifications to its supply contracts with HQP. This approach is superior to a Resale strategy in that it:

- Is expected to produce lower rates over the longer-term for HQD ratepayers;
- Provides significant supply flexibility to HQD for meeting the needs of load growth in the 2013 to 2020 time period;
- Reduces risk, in that it relies more on fixed prices and less on varying market prices;
- Allows HQD to concentrate on its primary function, providing service to domestic ratepayers, and limits its involvement in areas where it has little expertise.

IEc

EXHIBIT IEc-1

CURRICULUM VITAE AND

EXPERT TESTIMONY SCHEDULE

OF

ROBERT D. KNECHT

IEc

ROBERT D. KNECHT

INDUSTRIAL ECONOMICS, INCORPORATED EXPERT TESTIMONY SUBMITTED IN REGULATORY PROCEEDINGS -- PAST 5 YEARS

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-2008-2012502	Pennsylvania Public Utility Commission	National Fuel Gas Distribution Company	March 2008	Pennsylvania Office of Small Business Advocate	Transportation and sales customer rate design, design day forecasts.
R-2008-2013026	Pennsylvania Public Utility Commission	T.W. Phillips Gas and Oil Company	March 2008	Pennsylvania Office of Small Business Advocate	Rate design treatment of capacity release revenues
P-00072342	Pennsylvania Public Utility Commission	West Penn Power d/b/a Allegheny Power	February 2008	Pennsylvania Office of Small Business Advocate	Default service electricity procurement, rate design, reconciliation.
2007-004	New Brunswick Board of Commissioners of Public Utilities	New Brunswick Power Distribution and Customer Service Corporation	November 2007	New Brunswick Public Intervenor	Cost allocation, revenue allocation, rate design.
R-3644-2007	Régie de l'Énergie, Québec	Hydro Québec Distribution	October 2007	AQCIE/CIFQ	Cost allocation, revenue allocation, rate design.
P-00072305	Pennsylvania Public Utility Commission	Pennsylvania Power Corporation	July 2007	Pennsylvania Office of Small Business Advocate	Default electric service procurement.
R-00072334	Pennsylvania Public Utility Commission	UGI Penn Natural Gas, Inc.	July 2007	Pennsylvania Office of Small Business Advocate	Asset management arrangement, gas procurement.
R-00072333	Pennsylvania Public Utility Commission	PPL Gas Utilities Corporation	July 2007	Pennsylvania Office of Small Business Advocate	Design day forecasting, gas procurement.
R-00072155	Pennsylvania Public Utility Commission	PPL Electric Utilities Corporation	July 2007	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design, energy efficiency.
R-00049255 (Remand)	Pennsylvania Public Utility Commission	PPL Electric Utilities Corporation	May 2007	Pennsylvania Office of Small Business Advocate	Revenue allocation
R-00072175	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania, Inc.	May 2007	Pennsylvania Office of Small Business Advocate	Gas procurement.
R-00072110	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2007	Pennsylvania Office of Small Business Advocate	Gas procurement, margin sharing mechanisms.

EXPERT TESTIMONY SUBMITTED IN REGULATORY PROCEEDINGS -- PAST 5 YEARS

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-00061931	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2007	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, retail gas competition
P-00072245	Pennsylvania Public Utility Commission	Pike County Light & Power Company	March 2007	Pennsylvania Office of Small Business Advocate	Default service procurement, rate design
R-00072043	Pennsylvania Public Utility Commission	National Fuel Gas Distribution Company	March 2007	Pennsylvania Office of Small Business Advocate	Design day requirements
C-20065942	Pennsylvania Public Utility Commission	Pike County Light & Power Company	November 2006	Pennsylvania Office of Small Business Advocate	Wholesale power procurement by provider of last resort
R-3610-2006	Régie de l'Énergie, Québec	Hydro Québec Distribution	November 2006	AQCIE/CIFQ	Post-patrimonial generation cost allocation; cross-subsidization; rate design
P-00052188	Pennsylvania Public Utility Commission	Pennsylvania Power Company	September 2006	Pennsylvania Office of Small Business Advocate	Affidavit: POLR rates, wholesale to retail.
R-00061493	Pennsylvania Public Utility Commission	National Fuel Gas Distribution Corporation	September 2006	Pennsylvania Office of Small Business Advocate	Rate of return, load forecasting, cost allocation, revenue allocation, rate design, revenue decoupling.
R-00061398	Pennsylvania Public Utility Commission	PPL Gas Utilities Corporation	August 2006	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design
R-00061365	Pennsylvania Public Utility Commission	PG Energy/Southern Union Company	July 2006	Pennsylvania Office of Small Business Advocate	Merger savings, cost allocation, revenue allocation, rate design.
R-00061519	Pennsylvania Public Utility Commission	PPL Gas Utilities Corporation	July 2006	Pennsylvania Office of Small Business Advocate	Design day weather and throughput forecasts; gas supply hedging.
R-00061518	Pennsylvania Public Utility Commission	PG Energy/Southern Union Company	July 2006	Pennsylvania Office of Small Business Advocate	Design day weather and throughput forecasts; gas supply hedging.
A-125146	Pennsylvania Public Utility Commission	UGI Utilities, Inc., Southern Union Company	June 2006	Pennsylvania Office of Small Business Advocate	Public benefits of proposed sale of PG Energy to UGI; asset management agreement.
R-00061355	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2006	Pennsylvania Office of Small Business Advocate	Gas supply and hedging plan; procedural issues
R-00061296	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2006	Pennsylvania Office of Small Business Advocate	Gas procurement and procedural issues.

IEc

ROBERT D. KNECHT

Robert D. Knecht specializes in the practical application of economics, finance and management theory to issues facing public and private sector clients. Mr. Knecht has more than twenty years of consulting experience, focusing primarily on the energy, metals, and mining industries. He has consulted to industry, law firms, and government clients, both in the U.S. and internationally. He has participated in strategic and business planning studies, project evaluations, litigation and regulatory proceedings and policy analyses. His practice currently focuses primarily on utility regulation, and he has provided analysis and expert testimony in numerous U.S. and Canadian jurisdictions. In addition, as Treasurer of IEc since 1995, Mr. Knecht is responsible for the firm's accounting, finance and tax planning, as well as administration of the firm's retirement plans. Mr. Knecht's consulting assignments include the following projects:

- For the Pennsylvania Office of Small Business Advocate, Mr. Knecht provides analysis and expert testimony in industry restructuring, base rates and purchased energy cost proceedings involving electric, steam and natural gas distribution utilities. Mr. Knecht has analyzed the economics and financial issues of electric industry restructuring, stranded cost determination, fair rate of return, claimed utility expenses, cost allocation methods and rate design issues.

- For independent power producers and industrial customers in Alberta, Mr. Knecht has provided analysis and expert testimony in a variety of electric industry proceedings, including industry restructuring, cost unbundling, stranded cost recovery, transmission rate design, cost allocation and rate design.

- For industrial customers in Québec, Mr. Knecht has prepared economic analysis and expert testimony in regulatory proceedings regarding cost allocation, compliance with legislative requirements for cross-subsidization, and rate design.

- As part of international teams of experts, Mr. Knecht has prepared the economic and financial analysis for industry restructuring studies involving the steel and iron ore industries in Venezuela, Poland, and Nigeria.

- For the U.S. Department of Justice and for several private sector clients, Mr. Knecht has prepared analyses of economic damages in a variety of litigation matters, including ERISA discrimination, breach of contract, fraudulent conveyance, natural resource damages and anti-trust cases.

- Mr. Knecht participates in numerous projects with colleagues at IEc preparing economic and environmental analyses associated with energy and utility industries for the U.S. Environmental Protection Agency.

Mr. Knecht holds a M.S. in Management from the Sloan School of Management at M.I.T., with concentrations in applied economics and finance. He also holds a B.S. in Economics from M.I.T. Prior to joining Industrial Economics as a principal in 1989, Mr. Knecht worked for seven years as an economic and management consultant at Marshall Bartlett, Incorporated. He also worked for two years as an economist in the Energy Group of Data Resources, Incorporated.

Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140 USA
617.354.0074 | 617.354.0463 fax

August, 2006
www.indecon.com

EXPERT TESTIMONY SUBMITTED IN REGULATORY PROCEEDINGS -- PAST 5 YEARS

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-00061246	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	March 2006	Pennsylvania Office of Small Business Advocate	Gas procurement; unaccounted for gas retention rates
2005-002 Refiling	New Brunswick Board of Commissioners of Public Utilities	New Brunswick Power Distribution and Customer Service Company	February 2006	New Brunswick Public Intervenor	Cost allocation, rate design
P-00052188	Pennsylvania Public Utility Commission	Pennsylvania Power Company	December 2005	Pennsylvania Office of Small Business Advocate	Cost allocation and rate design for POLR supplies.
R-3579-2005	Régie de l'Énergie, Québec	Hydro Québec Distribution	November 2005	AQCIE/CIFQ	Generation cost allocation; cross-subsidization; revenue allocation
2005-002	New Brunswick Board of Commissioners of Public Utilities	New Brunswick Power Distribution and Customer Service Company	August 2005	New Brunswick Public Intervenor	Cost allocation, rate design
R-00050538	Pennsylvania Public Utility Commission	PG Energy	July 2005	Pennsylvania Office of Small Business Advocate	Gas procurement diversification
R-00050540	Pennsylvania Public Utility Commission	PPL Gas Utilities Corporation	July 2005	Pennsylvania Office of Small Business Advocate	Gas procurement, hedging, retention rates, sharing mechanism
R-00050340	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2005	Pennsylvania Office of Small Business Advocate	Gas procurement, hedging and diversification.
R-3563-2005	Régie de l'Énergie, Québec	Hydro Québec Distribution	April 2005	AQCIE/CIFQ	Generation cost allocation; industrial demand response
R-00050264	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2005	Pennsylvania Office of Small Business Advocate	Gas procurement, risk hedging, financing costs in the gas cost rate.
R-00050216	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	March 2005	Pennsylvania Office of Small Business Advocate	Gas supply procurement and forward pricing policies.
EB-2004-0542	Ontario Energy Board	Union Gas Limited	March 2005	Tribute Resources Inc.	Cost allocation and rate design for service to embedded storage pools.
R-00049884	Pennsylvania Public Utility Commission	Pike County Light and Power (Gas Service)	January 2005	Pennsylvania Office of Small Business Advocate	Fair rate of return, cost allocation, class revenue assignment.
R-00049656	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	December 2004	Pennsylvania Office of Small Business Advocate	Fair rate of return, uncollectibles costs, automatic rate adjustments, cost allocation, rate design.
R-3541-2004	Régie de l'Énergie, Québec	Hydro Québec Distribution	November 2004	AQCIE, CIFQ	Allocation of post-patrimonial generation costs.

EXPERT TESTIMONY SUBMITTED IN REGULATORY PROCEEDINGS -- PAST 5 YEARS

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
C-20031302	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	July 2004	Pennsylvania Office of Small Business Advocate	Customer assistance program funding and cost allocation.
R-049255	Pennsylvania Public Utility Commission	PPL Electric Utilities Corporation	June 2004	Pennsylvania Office of Small Business Advocate	Transmission and distribution cost allocation, rate design, automatic distribution increases.
P-042090 et al.	Pennsylvania Public Utility Commission	Philadelphia Gas Works	June 2004	Pennsylvania Office of Small Business Advocate	Collections and universal service cost issues.
RP-2003-0203	Ontario Energy Board	Enbridge Gas Distribution	May 2004	Vulnerable Energy Consumers Coalition et al.	Cost allocation, rate design for pipeline and storage costs
R-049157 P-042090	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2004	Pennsylvania Office of Small Business Advocate	Cash receipts reconciliation clause
R-049108	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	March 2004	Pennsylvania Office of Small Business Advocate	Uncollectible cost responsibility for standby charges
Application 1306819	Alberta Energy and Utilities Board	ENMAX Power Corporation	January 2004	Calgary Industrial Group Calgary Building Owners	T&D cost allocation, rate design, ratepayer equity funding
R-3492-2002 Phase 2	Régie de l'Énergie, Québec	Hydro Québec Distribution	November 2003	AQCIE, CIFQ	Rate policy, cross-subsidization
R-038168	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	July 2003	Pennsylvania Office of Small Business Advocate	Cost allocation, deficiency assignment, rate design, pension cost reconciliation, rate of return
R-3492-2002 Phase 1	Régie de l'Énergie, Québec	Hydro Québec Distribution	January 2003	AQCIE, AIFQ	Cost allocation; maintenance of historical cross-subsidization

Industrial Economics, Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140 USA
617.354.0074 | 617.354.0463 fax
www.indecon.com

IEc

EXHIBIT IEc-2

SENSITIVITY ANALYSIS

OF

HQD ECONOMIC ANALYSIS

AQCIE/CIFQ ECONOMIC ANALYSIS OF CONTRACT MODIFICATIONS											
SCENARIO: Replication of HQD-1, Document 5, Table 2											
		2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Scenario With Load Deferral											
HQP Contract TWh		5.3	5.3	5.3	5.3						
Base TWh		3.1	3.1	3.1	3.1						
Cycle TWh		2.2	2.2	2.2	2.2						
Total TWh Deferred		2.7	0.6	2.9	2.8	-	-	-	-	-	-
Base TWh Deferred		2.0	0.6	2.9	2.8	-	-	-	-	-	-
Cycle TWh Deferred		0.8	-	-	-	-	-	-	-	-	-
TWh Supplied		-	-	-	-	-	1.2	1.7	2.4	3.6	0.2
Cumulative TWh		2.7	3.3	6.2	9.0	9.0	7.9	6.2	3.8	0.2	0.0
HQP Base Price	2.0%	$ 50.04	$ 51.04	$ 52.06	$ 53.10	$ 54.16	$ 55.25	$ 56.35	$ 57.48	$ 58.63	$ 59.80
HQD Cycle Price	2.0%	$ 53.83	$ 54.91	$ 56.00	$ 57.12	$ 58.27	$ 59.43	$ 60.62	$ 61.83	$ 63.07	$ 64.33
Net HQP Base TWh		1.1	2.5	0.1	0.3	-	0.4	1.7	2.4	3.6	0.2
HQD Cycle TWh		1.4	2.2	2.2	2.2		0.8				
Cost HQP Supplies	**1,171**	**132**	**247**	**130**	**140**	**-**	**68**	**95**	**138**	**210**	**9**
Cumulative Cost		**132**	**379**	**509**	**649**	**649**	**717**	**813**	**951**	**1,161**	**1,171**
Cumulative NPV		**132**	**364**	**479**	**595**	**595**	**645**	**710**	**800**	**927**	**933**
2008 NPV	**933**	**6.44%**									
Scenario Without Load Deferral											
HQP Base Supplies		3.1	3.1	3.1	3.1						
HQP Cycle Supplies		2.2	2.2	2.2	2.2						
HQP Supplies		5.3	5.3	5.3	5.3						
HQP Cost		***272***	***277***	***282***	***288***						
Resold TWh		2.7	0.6	2.9	2.8						
Resale Price		$ 57.27	$ 59.97	$ 59.15	$ 58.65						
Resale Revenue		***(157)***	***(35)***	***(173)***	***(164)***						
Long Term Supplies							1.2	1.7	2.4	3.6	0.2
L-T Supply Price	2.0%						$ 93.47	$ 95.34	$ 97.25	$ 99.19	$ 101.17
L-T Cost							***110.0***	***161.0***	***234.0***	***356.0***	***16.0***
Total Cost	**1,468**	**115**	**242**	**110**	**124**	**-**	**110**	**161**	**234**	**356**	**16**
Cumulative Cost		**115**	**357**	**467**	**591**	**591**	**701**	**862**	**1,096**	**1,452**	**1,468**
Cumulative NPV		**115**	**342**	**439**	**542**	**542**	**623**	**733**	**885**	**1,101**	**1,110**
2008 NPV	**1,110**	**6.44%**									
Cost Difference	**297**	**(16.8)**	**(5.2)**	**(20.7)**	**(15.5)**	**-**	**41.7**	**65.8**	**95.7**	**145.6**	**6.5**
Cum. NPV Difference	**177**	**(16.8)**	**(21.7)**	**(40.0)**	**(52.8)**	**(52.8)**	**(22.2)**	**23.0**	**84.8**	**173.2**	**176.9**

AQCIE/CIFQ ECONOMIC ANALYSIS OF CONTRACT MODIFICATIONS											
SCENARIO: Higher Resale Price											
		2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Scenario With Load Deferral											
HQP Contract TWh		5.3	5.3	5.3	5.3						
Base TWh		3.1	3.1	3.1	3.1						
Cycle TWh		2.2	2.2	2.2	2.2						
Total TWh Deferred		2.7	0.6	2.9	2.8	-	-	-	-	-	-
Base TWh Deferred		2.0	0.6	2.9	2.8	-	-	-	-	-	-
Cycle TWh Deferred		0.8	-	-	-	-	-	-	-	-	-
TWh Supplied		-	-	-	-	-	1.2	1.7	2.4	3.6	0.2
Cumulative TWh		2.7	3.3	6.2	9.0	9.0	7.9	6.2	3.8	0.2	0.0
HQP Base Price	2.0%	$ 50.04	$ 51.04	$ 52.06	$ 53.10	$ 54.16	$ 55.25	$ 56.35	$ 57.48	$ 58.63	$ 59.80
HQD Cycle Price	2.0%	$ 53.83	$ 54.91	$ 56.00	$ 57.12	$ 58.27	$ 59.43	$ 60.62	$ 61.83	$ 63.07	$ 64.33
Net HQP Base TWh		1.1	2.5	0.1	0.3	-	0.4	1.7	2.4	3.6	0.2
HQD Cycle TWh		1.4	2.2	2.2	2.2		0.8				
Cost HQP Supplies	**1,171**	**132**	**247**	**130**	**140**	**-**	**68**	**95**	**138**	**210**	**9**
Cumulative Cost		**132**	**379**	**509**	**649**	**649**	**717**	**813**	**951**	**1,161**	**1,171**
Cumulative NPV		**132**	**364**	**479**	**595**	**595**	**645**	**710**	**800**	**927**	**933**
2008 NPV	**933**	**6.44%**									
Scenario Without Load Deferral											
HQP Base Supplies		3.1	3.1	3.1	3.1						
HQP Cycle Supplies		2.2	2.2	2.2	2.2						
HQP Supplies		5.3	5.3	5.3	5.3						
HQP Cost		***272***	***277***	***282***	***288***						
Resold TWh		2.7	0.6	2.9	2.8						
Resale Price		$ 67.27	$ 69.97	$ 69.15	$ 68.65						
Resale Revenue		***(184)***	***(41)***	***(202)***	***(191)***						
Long Term Supplies							1.2	1.7	2.4	3.6	0.2
L-T Supply Price							$ 93.47	$ 95.34	$ 97.25	$ 99.19	$ 101.17
L-T Cost							***110.0***	***161.0***	***234.0***	***356.0***	***16.0***
Total Cost	**1,378**	**88**	**236**	**81**	**97**	**-**	**110**	**161**	**234**	**356**	**16**
Cumulative Cost		**88**	**324**	**404**	**501**	**501**	**611**	**772**	**1,006**	**1,362**	**1,378**
Cumulative NPV		**88**	**309**	**380**	**460**	**460**	**541**	**652**	**803**	**1,019**	**1,028**
2008 NPV	**1,028**	**6.44%**									
Cost Difference	**207**	**(44.2)**	**(11.0)**	**(49.8)**	**(43.3)**	**-**	**41.7**	**65.8**	**95.7**	**145.6**	**6.5**
Cum. NPV Difference	**95**	**(44.2)**	**(54.6)**	**(98.6)**	**(134.5)**	**(134.5)**	**(104.0)**	**(58.7)**	**3.1**	**91.5**	**95.2**

AQCIE/CIFQ ECONOMIC ANALYSIS OF CONTRACT MODIFICATIONS											
SCENARIO: Lower Avoided Cost											
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Scenario With Load Deferral											
HQP Contract TWh		5.3	5.3	5.3	5.3						
Base TWh		3.1	3.1	3.1	3.1						
Cycle TWh		2.2	2.2	2.2	2.2						
Total TWh Deferred		2.7	0.6	2.9	2.8	-	-	-	-	-	-
Base TWh Deferred		2.0	0.6	2.9	2.8	-	-	-	-	-	-
Cycle TWh Deferred		0.8	-	-	-	-	-	-	-	-	-
TWh Supplied		-	-	-	-	-	1.2	1.7	2.4	3.6	0.2
Cumulative TWh		2.7	3.3	6.2	9.0	9.0	7.9	6.2	3.8	0.2	0.0
HQP Base Price	2.0%	$ 50.04	$ 51.04	$ 52.06	$ 53.10	$ 54.16	$ 55.25	$ 56.35	$ 57.48	$ 58.63	$ 59.80
HQD Cycle Price	2.0%	$ 53.83	$ 54.91	$ 56.00	$ 57.12	$ 58.27	$ 59.43	$ 60.62	$ 61.83	$ 63.07	$ 64.33
Net HQP Base TWh		1.1	2.5	0.1	0.3	-	0.4	1.7	2.4	3.6	0.2
HQD Cycle TWh		1.4	2.2	2.2	2.2		0.8				
Cost HQP Supplies	**1,171**	**132**	**247**	**130**	**140**	**-**	**68**	**95**	**138**	**210**	**9**
Cumulative Cost		**132**	**379**	**509**	**649**	**649**	**717**	**813**	**951**	**1,161**	**1,171**
Cumulative NPV		**132**	**364**	**479**	**595**	**595**	**645**	**710**	**800**	**927**	**933**
2008 NPV	**933**	**6.44%**									
Scenario Without Load Deferral											
HQP Base Supplies		3.1	3.1	3.1	3.1						
HQP Cycle Supplies		2.2	2.2	2.2	2.2						
HQP Supplies		5.3	5.3	5.3	5.3						
HQP Cost		***272***	***277***	***282***	***288***						
Resold TWh		2.7	0.6	2.9	2.8						
Resale Price		$ 57.27	$ 59.97	$ 59.15	$ 58.65						
Resale Revenue		***(157)***	***(35)***	***(173)***	***(164)***						
Long Term Supplies							1.2	1.7	2.4	3.6	0.2
L-T Supply Price	$ 75.00						$ 82.81	$ 84.46	$ 86.15	$ 87.87	$ 89.63
L-T Cost							***97.5***	***142.6***	***207.3***	***315.4***	***14.2***
Total Cost	**1,368**	**115**	**242**	**110**	**124**	**-**	**97**	**143**	**207**	**315**	**14**
Cumulative Cost		**115**	**357**	**467**	**591**	**591**	**688**	**831**	**1,038**	**1,354**	**1,368**
Cumulative NPV		**115**	**342**	**439**	**542**	**542**	**614**	**712**	**846**	**1,037**	**1,045**
2008 NPV	**1,045**	**6.44%**									
Cost Difference	**197**	**(16.8)**	**(5.2)**	**(20.7)**	**(15.5)**	**-**	**29.2**	**47.5**	**69.0**	**105.0**	**4.7**
Cum. NPV Difference	**112**	**(16.8)**	**(21.7)**	**(40.0)**	**(52.8)**	**(52.8)**	**(31.4)**	**1.2**	**45.8**	**109.5**	**112.2**

AQCIE/CIFQ ECONOMIC ANALYSIS OF CONTRACT MODIFICATIONS SCENARIO: Higher Discount Rate											
		2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Scenario With Load Deferral											
HQP Contract TWh		5.3	5.3	5.3	5.3						
Base TWh		3.1	3.1	3.1	3.1						
Cycle TWh		2.2	2.2	2.2	2.2						
Total TWh Deferred		2.7	0.6	2.9	2.8	-	-	-	-	-	-
Base TWh Deferred		2.0	0.6	2.9	2.8	-	-	-	-	-	-
Cycle TWh Deferred		0.8	-	-	-	-	-	-	-	-	-
TWh Supplied		-	-	-	-	-	1.2	1.7	2.4	3.6	0.2
Cumulative TWh		2.7	3.3	6.2	9.0	9.0	7.9	6.2	3.8	0.2	0.0
HQP Base Price	2.0%	$ 50.04	$ 51.04	$ 52.06	$ 53.10	$ 54.16	$ 55.25	$ 56.35	$ 57.48	$ 58.63	$ 59.80
HQD Cycle Price	2.0%	$ 53.83	$ 54.91	$ 56.00	$ 57.12	$ 58.27	$ 59.43	$ 60.62	$ 61.83	$ 63.07	$ 64.33
Net HQP Base TWh		1.1	2.5	0.1	0.3	-	0.4	1.7	2.4	3.6	0.2
HQD Cycle TWh		1.4	2.2	2.2	2.2		0.8				
Cost HQP Supplies	**1,171**	**132**	**247**	**130**	**140**	**-**	**68**	**95**	**138**	**210**	**9**
Cumulative Cost		**132**	**379**	**509**	**649**	**649**	**717**	**813**	**951**	**1,161**	**1,171**
Cumulative NPV		**132**	**361**	**472**	**583**	**583**	**630**	**690**	**771**	**884**	**889**
2008 NPV	**889**	**8.00%**									
Scenario Without Load Deferral											
HQP Base Supplies		3.1	3.1	3.1	3.1						
HQP Cycle Supplies		2.2	2.2	2.2	2.2						
HQP Supplies		5.3	5.3	5.3	5.3						
HQP Cost		***272***	***277***	***282***	***288***						
Resold TWh		2.7	0.6	2.9	2.8						
Resale Price		$ 57.27	$ 59.97	$ 59.15	$ 58.65						
Resale Revenue		***(157)***	***(35)***	***(173)***	***(164)***						
Long Term Supplies							1.2	1.7	2.4	3.6	0.2
L-T Supply Price							$ 93.47	$ 95.34	$ 97.25	$ 99.19	$ 101.17
L-T Cost							***110.0***	***161.0***	***234.0***	***356.0***	***16.0***
Total Cost	**1,468**	**115**	**242**	**110**	**124**	**-**	**110**	**161**	**234**	**356**	**16**
Cumulative Cost		**115**	**357**	**467**	**591**	**591**	**701**	**862**	**1,096**	**1,452**	**1,468**
Cumulative NPV		**115**	**339**	**433**	**532**	**532**	**607**	**708**	**845**	**1,037**	**1,045**
2008 NPV	**1,045**	**8.00%**									
Cost Difference	**297**	**(16.8)**	**(5.2)**	**(20.7)**	**(15.5)**	**-**	**41.7**	**65.8**	**95.7**	**145.6**	**6.5**
Cum. NPV Difference	**156**	**(16.8)**	**(21.6)**	**(39.4)**	**(51.6)**	**(51.6)**	**(23.2)**	**18.2**	**74.1**	**152.7**	**156.0**

AQCIE/CIFQ ECONOMIC ANALYSIS OF CONTRACT MODIFICATIONS											
SCENARIO: Worst Case											
		2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Scenario With Load Deferral											
HQP Contract TWh		5.3	5.3	5.3	5.3						
Base TWh		3.1	3.1	3.1	3.1						
Cycle TWh		2.2	2.2	2.2	2.2						
Total TWh Deferred		2.7	0.6	2.9	2.8	-	-	-	-	-	-
Base TWh Deferred		2.0	0.6	2.9	2.8	-	-	-	-	-	-
Cycle TWh Deferred		0.8	-	-	-	-	-	-	-	-	-
TWh Supplied		-	-	-	-	-	1.2	1.7	2.4	3.6	0.2
Cumulative TWh		2.7	3.3	6.2	9.0	9.0	7.9	6.2	3.8	0.2	0.0
HQP Base Price	2.0%	$ 50.04	$ 51.04	$ 52.06	$ 53.10	$ 54.16	$ 55.25	$ 56.35	$ 57.48	$ 58.63	$ 59.80
HQD Cycle Price	2.0%	$ 53.83	$ 54.91	$ 56.00	$ 57.12	$ 58.27	$ 59.43	$ 60.62	$ 61.83	$ 63.07	$ 64.33
Net HQP Base TWh		1.1	2.5	0.1	0.3	-	0.4	1.7	2.4	3.6	0.2
HQD Cycle TWh		1.4	2.2	2.2	2.2		0.8				
Cost HQP Supplies	**1,171**	**132**	**247**	**130**	**140**	**-**	**68**	**95**	**138**	**210**	**9**
Cumulative Cost		**132**	**379**	**509**	**649**	**649**	**717**	**813**	**951**	**1,161**	**1,171**
Cumulative NPV		**132**	**361**	**472**	**583**	**583**	**630**	**690**	**771**	**884**	**889**
2008 NPV	**889**	**8.00%**									
Scenario Without Load Deferral											
HQP Base Supplies		3.1	3.1	3.1	3.1						
HQP Cycle Supplies		2.2	2.2	2.2	2.2						
HQP Supplies		5.3	5.3	5.3	5.3						
HQP Cost		***272***	***277***	***282***	***288***						
Resold TWh		2.7	0.6	2.9	2.8						
Resale Price		$ 67.27	$ 69.97	$ 69.15	$ 68.65						
Resale Revenue		***(184)***	***(41)***	***(202)***	***(191)***						
Long Term Supplies							1.2	1.7	2.4	3.6	0.2
L-T Supply Price	$ 75.00						$ 82.81	$ 84.46	$ 86.15	$ 87.87	$ 89.63
L-T Cost							***97.5***	***142.6***	***207.3***	***315.4***	***14.2***
Total Cost	**1,278**	**88**	**236**	**81**	**97**	**-**	**97**	**143**	**207**	**315**	**14**
Cumulative Cost		**88**	**324**	**404**	**501**	**501**	**598**	**741**	**948**	**1,263**	**1,278**
Cumulative NPV		**88**	**306**	**375**	**452**	**452**	**518**	**608**	**729**	**899**	**906**
2008 NPV	**906**	**8.00%**									
Cost Difference	**107**	**(44.2)**	**(11.0)**	**(49.8)**	**(43.3)**	**-**	**29.2**	**47.5**	**69.0**	**105.0**	**4.7**
Cum. NPV Difference	**17**	**(44.2)**	**(54.5)**	**(97.2)**	**(131.6)**	**(131.6)**	**(111.7)**	**(81.8)**	**(41.6)**	**15.1**	**17.5**