BEFORE THE RÉGIE DE L'ÉNERGIE

IEc

IN THE M ATTER OF :

HYDRO QUÉB EC DISTRIBUTION

Deman d e du Distributeu r relative à l' étab lis semen t des tarifs d'électricité pour l'année tari faire 2012- 2013

DOSSIER R-3776- 2011

14 November 2011

prepared on behalf of:

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

Conseil de l'industrie forestière du Québec (CIFQ)

prepared evidence of:

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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 or reports before the Régie in various dockets since 2001.

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 during the past five years are attached as Exhibit IEc-1.

WHAT IS THE SUBJECT OF THIS EVIDENCE

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 changes to the Rate M tariff charges, and the implications of those changes for the Rate M/Rate L tariff interface.

PLEASE DESCRIBE THE CHANGES THAT HQD PROPOSES FOR RATE M IN THIS PROCEEDING IN THE LONGER-TERM CONTEXT.

Table IEc-1 below shows the changes to the Rate M tariff since 2005, inclusive of the proposed change in this proceeding. For demonstration purposes, I included an estimate of the trend result of continuing to apply zero demand charge increases and leveling the energy block charges over the next three years.[1]

HQD's tariff design trend for Rate M reflects two conceptual changes. The first is that HQD is increasing the energy charge relative to the demand charge, a change which began in 2006. The second is that HQD is increasing the tail block energy charge relative to the first block energy charge, a change which began (in earnest) in 2009.

For 2012, HQD proposes to continue and accelerate these trends, by proposing a 0.7 percent increase in the demand and first block energy charges, and a 7.8 percent increase in the tail block energy charge.

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[1] This analysis assumes no change in the estimated Rate M billing determinants and an average class increase of 2.0 percent per year.

TABLE IEC-1 RATE M TARIFF CHARGE TRENDS SINCE 2005						
	Tariff Charges			**Cumulative Percent Increase**		
		Energy Charges			Energy Charges	
	Demand ($/kW-Mo)	First Block (cts/kWh)	Tail Block (cts/kWh)	Demand	First Block	Tail Block
2005	12.60	3.94	2.56	--	--	--
2006	13.08	4.20	2.74	3.8%	6.6%	7.0%
2007	13.23	4.31	2.81	5.0%	9.4%	9.8%
2008	13.44	4.48	2.93	6.7%	13.7%	14.5%
2009	13.44	4.51	3.12	6.7%	14.5%	21.9%
2010	13.44	4.51	3.19	6.7%	14.5%	24.6%
2011	13.44	4.46	3.19	6.7%	13.2%	24.6%
2012	13.53	4.49	3.44	7.4%	14.0%	34.4%
"Trend"	13.53	4.56	4.56	7.4%	15.7%	78.1%

Sources: "Grille des tarifs d'électricité," various dockets, IEc calculations.

WHAT ARE THE IMPLICATIONS OF THIS TREND FOR RATE M RATEPAYERS?

In general, these trends will disproportionately increase rates for larger customers within the class relative to smaller customers, and will disproportionately increase rates for high load factor customers relative to low load factor customers.[2] Because larger customers within Rate M have higher load factors than the smaller customers, both of these tariff changes result in higher increases for larger customers. Table IEc-2 below compares the trend bill increases for two Rate M customers: a 200 kW, 40% load factor customer and a 4,000 kW, 80% load factor customer.

As shown, with the proposed rates in 2012, the cumulative increase for the larger customer (20.9 percent) is nearly double that for the smaller customer (10.5 percent). If HQD continues its pattern and levels the energy charge, the impact on the larger customer will be nearly four times that of the impact on the smaller customer.

[2] Load factor (facteur d'utilisation or "FU") is the ratio of average demand to peak demand, and ranges from 0 to 1.0 (or 0 to 100 percent). The higher the load factor, the more level the load. Weather sensitive customers tend to be relatively low load factor customers, where process industries running continuously throughout the day and year tend to be the highest load factor customers.

TABLE IEC-2 IMPACTS OF RATE M TARIFF CHARGE TRENDS SINCE 2005				
	Annual Percent Increases		Cumulative Percentage Increases	
	Small Customer	Large Customer	Small Customer	Large Customer
2006	5.1%	5.6%	5.1%	5.6%
2007	1.9%	1.9%	7.1%	7.6%
2008	2.7%	3.1%	10.0%	10.9%
2009	0.3%	3.3%	10.4%	14.6%
2010	0.0%	1.1%	10.4%	15.9%
2011	-0.5%	-0.1%	9.8%	15.8%
2012	0.7%	4.4%	10.5%	20.9%
"Trend"	0.8%	17.5%	11.4%	42.0%

Note: Small customer bill is based on 200 kW demand, 40% load factor; Large customer bill is based on 4,000 kW demand, 80% load factor.

Sources: "Grille des tarifs d'électricité," various dockets, IEc calculations.

WHAT IS HQD'S RATIONALE FOR THIS APPROACH?

HQD indicates that this approach would better align the tail block energy charge with the long-run avoided cost of energy and it would apply the rate increase to the more demand-elastic component of its pricing structure in order to establish a more economically efficient price signal for conservation.

DO YOU AGREE WITH THE PRACTICE OF USING LONG-RUN AVOIDED COSTS TO ESTABLISH DEMAND AND ENERGY CHARGES WITHIN THE TARIFFS FOR A PARTICULAR CLASS?

As a general rule, the most economically efficient price signals are based on short-run marginal costs. However, short-run marginal cost pricing is rare for regulated electric utility rates, due to the high volatility of marginal generation costs and a host of other factors.

Setting rates based on long-run marginal or long-run avoided cost may theoretically be more efficient than setting rates based on average embedded cost, but such an approach presents a plethora of problems and inconsistencies that must be carefully considered.

First, long-run marginal costs in the energy business are not particularly stable. While not as volatile as short-run marginal costs, the longer-term expectations for electricity prices must still reflect longer-term expectations for underlying fuel prices. In today's economic environment, that fuel is natural gas. The sharp drop in both current and futures prices for natural gas over the past few years shows just how unstable such prices can be. For example, just two years ago (Docket No. R-3708-2009), the long-run avoided generation costs for Rate M was 8.20 cents per kWh. In the current filing, Rate M avoided generation cost is 4.69 cents per kWh, a drop of 42.8 percent.

Second, use of long-run marginal costs to set rates creates inconsistencies with the revenue requirement. Thus, prices must be adjusted in some manner away from long-run avoided costs in order to balance revenues with the revenue requirement.

Third, there is considerable uncertainty regarding the nature of long-run incremental or avoided costs. Under current economic conditions and expectations, the lowest cost long-term supply option (including capital costs) is likely to be natural gas fired generation. However, changes in the relative fuel prices can affect not only the magnitude of the long-run costs but also the nature of the supply mix.

Fourth, for utilities such as HQD which rely on cost allocation studies which are based on embedded cost, setting rates based on marginal costs can create unintended and inappropriate results. For example, increasing energy charges and reducing demand charges may encourage short-run energy conservation, but it will also discourage customers from reducing peak consumption and maintaining a more balanced load. This incentive to reduce load factor will then translate both into more capacity costs for the utility, and in more capacity costs being assigned to the rate class with the distorted rates. In effect, customers would be punished for reacting to the price signals they are given.[3]

Therefore, while I agree that long-run avoided cost can be a reasonable consideration for rate design, it is not the most economically efficient approach, and it must be weighed against a variety of other rate design factors.

DO YOU AGREE THAT INCREASES IN THE ENERGY CHARGE WILL HAVE A LARGER IMPACT ON ENERGY CONSUMPTION THAN INCREASES IN THE DEMAND CHARGE?

I agree that, in the short run, electricity consumption is likely to be more responsive to changes in energy charges than to demand charges. In the short run, both residences and businesses react to price increases by simply reducing energy consumption, by adjusting thermostats (in both winter and summer) and by simply reducing economic activity. Without capital investment, however, it is more difficult to reduce peak demands for electricity than to reduce overall consumption.

In the longer term, however, electricity consumers react to price increases by substituting capital for energy, such as adding insulation or installing more efficient equipment. Also in the longer term, businesses react to price increases by closing down and possibly relocating production to other areas. Conversely, in the face of price reductions, businesses may make fewer capital investments in energy efficiency, but may choose to expand production or locate facilities where energy is less expensive.

[3] This concern only arises if the regulator relies on the cost allocation study to establish class revenue targets. I recognize that, to date, neither HQD nor the Régie have relied on the cost allocation study for setting rates.

For these kinds of investments, however, businesses will necessarily consider the overall price of electricity, including both demand and energy charges, because these types of investments and disinvestments will affect both demand and energy charges. For example, a manufacturer who is contemplating a capacity expansion or a new facility will consider increases in both demand and energy charges. Similarly, a diversified corporation that is evaluating a plant closure will consider all energy costs, and not merely those on margin.

It is therefore unlikely that, in the long-run, consumption elasticity with respect to the energy charge is materially higher than consumption elasticity with respect to the demand charge.

Because HQD follows a policy of basing its rates on longer-term price signals, I do not see a particularly strong conservation benefit related to applying larger increases to energy charges than to demand charges.

DOES THE HIGHER ELASTICITY OF DEMAND ARGUMENT JUSTIFY DISPROPORTIONATE INCREASES TO THE TAIL BLOCK CHARGE RATHER THAN THE FIRST BLOCK CHARGE FOR HQD?

No. First, as I explained, many long-term business decisions are based on overall energy prices and not the marginal rate. For long-term capital investment and facility siting decisions, differentiating rate increases among tariff charges will make little difference. Such differentiation will only discourage consumption by larger high load factor Rate M customers and encourage consumption by smaller, lower load factor Rate M customers.

Second, however, even for those decisions which are based on marginal energy rates, HQD's approach is not justified.

In theory, if all customers' marginal energy consumption was in the tail block, HQD's approach would target its rate increase at the more elastic demand. However, some 74 percent of Rate M customers never have consumption in the tail block, while only 15 percent of Rate M customers consistently exhibit consumption in the tail block. Thus, by imposing only minimal rate increases to the tail block charge, the HQD proposal does not increase the marginal incentive to reduce energy consumption for more than three-quarters of Rate M customers.

WHAT DO YOU MEAN BY THE TARIFF INTERFACE BETWEEN TWO RATE CLASSES?

Ideally, utilities define rate classes with an eye toward reasonably homogeneous groups of customers in terms of the cost of serving those customers. In practice, rate class eligibility rules are typically based on end-use (e.g., residential customers), service voltage, or size of customer (billing demand or energy consumption). Where rate classes are distinguished based on the size of the customer, there will always be customers that are near the "break-point" between two particular classes.

In order to avoid creating incentives for such customers to switch between rate classes, utilities generally attempt to design rates such that the rates for the largest customers in one rate class are similar to the rates for the smallest customers in the next rate class up in the size hierarchy.

In general, the easiest way to maintain a smooth transition is to (a) set the target revenue for each class at or near allocated costs, and (b) set individual tariff charges that are consistent with cost classification in the utility's cost allocation study. That is, set energy charges equal to allocated per-unit energy costs, demand charges equal to allocated per-unit demand costs, and customer charges equal to customer costs.

IS THERE AN AVOIDED COST JUSTIFICATION FOR RATE M DECLINING BLOCK ENERGY CHARGES?

In the context of this proceeding, there is. In its avoided cost analysis, HQD sensibly segregates avoided energy costs into on-peak and off-peak periods, at least partially reflecting the substantial differences in wholesale energy prices across seasons and the time of day. For off-peak periods, HQD reports Rate M avoided supply costs of 3.23 cents per kWh for 2012, increasing at approximately 2 percent per year. For 2012, HQD proposes a tail block charge of 3.44 cents per kWh, materially above the near-term off-peak avoided cost. Moreover, if HQD were to eliminate the energy charge differentials, the tail block energy charge would far exceed both near term and long-term avoided costs.

It is likely that, for some Rate M customers, the tail block energy consumption coincides with off-peak manufacturing or other business operations. That is, businesses run a second or third shift, and those operations cause the business to consume tail block energy. These operations typically involve higher labor costs, in the form of shift differentials, but also impose lower per-unit energy costs on utilities. For such businesses, HQD's proposed tariff strategy would inefficiently discourage a business from adding an off-peak shift to its operations, by imposing a rate that exceeds HQD's avoided costs.[4]

IS HQD'S POLICY CONSISTENT WITH THE APPROVED COST ALLOCATION METHODOLOGY?

No, it is not.

First, HQD does not maintain the information necessary to distinguish costs by customer size within Rate M.[5]

Second, the Rate M tariff is already substantially "tilted" toward energy charges over demand charges. I estimate that, in the cost allocation study, demand and customer costs represent more than 60 percent of allocated cost, while the demand charge is responsible for less than half of Rate M revenues. The cost allocation study would therefore dictate disproportionate increases in the demand charge.

Third, the cost allocation study indicates that a modest but not insignificant share of the Rate M allocated cost are customer costs (roughly 6% of total costs, 14% of distribution costs). Because Rate M does not contain a customer charge, these costs

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[4] This problem would, of course, be better resolved by adopting time-of-use rates. However, such an option goes beyond the approved scope of this proceeding.

[5] Exhibit HQD-14, Document 4, pages 22-23.

are necessarily recovered in demand and energy charges. Because smaller customers impose a much higher per-kWh customer cost than larger customers, these smaller customers would be receiving a cross-subsidy from larger customers under a flat per-kW or flat per-kWh tariff. Without a customer charge, a declining block energy (or declining block demand) tariff structure is more consistent with the cost allocation study.

Fourth, for the 2012 test year, HQD reports disproportionate increases in costs allocated to Rate M.[6] Much of this increase appears to be related to the growth in the number of Rate M customers and a general decrease in the class load factor. Both of these trends cause disproportionate increases in the per-kWh costs allocated to Rate M. These changes appear to be related to a significant shift in smaller and lower load factor customers out of Rate G and into Rate M.[7] Thus, the increasing costs assigned to Rate M appear to be related to smaller customers. HQD's proposal to impose disproportionately large increases on larger customers is therefore exactly opposite of the cost trends.

DOES HQD'S RATE DESIGN POLICY HAVE IMPLICATIONS FOR THE RATE M / RATE L TARIFF INTERFACE.

Yes. As a result of several factors, rates for the largest customers in Rate M are substantially higher than the rates for smaller customers in Rate L. Over time, it is becoming increasingly attractive for larger Rate M customers to consider increasing their contract demands and switching to Rate L. In effect, HQD's tariff design can allow a particular type of customer to *increase* its peak demand and thereby actually *reduce* its rates.

WHAT FACTORS ARE CAUSING THE TRENDING INCREASE IN THE TARIFF MISMATCH BETWEEN LARGE RATE M CUSTOMERS AND SMALLER RATE L CUSTOMERS?

This trend results from a number of inter-related policy decisions.

First, larger Rate M customers have faced rate increases that are disproportionate to other Rate M customers as well as to smaller Rate L customers, as discussed above.

Second, Rate M customers are responsible for a higher cross-subsidy requirement. The revenue-cost ratio for Rate M will be 131.2 percent, compared to the Rate L

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[6] This conclusion is based on the fact that the rate increase necessary to maintain Rate M cross-subsidies at the 2011 level is well above the system average increase, implying that unit costs have risen faster for Rate M than for other customer classes. See Exhibit HQD-12, Document 2, Annexe B.

[7] AQCIE/CIFQ requested an explanation for the increase in customers, the increase in non-coincident peak demand and decrease in load factor exhibited by the Rate M class relative to last year's cost allocation study. As HQD did not provide an explanation, my surmise regarding the causes for this cost increase is not yet confirmed. To the extent information is adduced at the hearings which contradicts this surmise, I will modify my evidence accordingly.

revenue-cost ratio of 115.5 percent. All other factors being equal, a Rate M customer can reduce its cross-subsidy obligation by trading up. If dollar value cross-subsidies were held constant over time, this issue would be gradually declining in importance. However, with the exception of the 2012 test year, cross-subsidies from Rate M have generally increased more than cross-subsidies from Rate L.[8]

Third, HQD has also been imposing disproportionate increases to the Rate L energy charge, relative to the demand charges. Compared to 2005, the energy charge increase has been 18.8 percent, compared to a demand charge increase of 6.5 percent.[9] By restricting the increase in Rate L demand charges, this policy reduces the "penalty" imposed on a Rate M customer who trades up to Rate L and absorbs higher contract demand charges.

IS THIS A SIGNIFICANT ISSUE AT PRESENT?

From a conceptual standpoint it is. To show the trend effects of these policies, I compared the basic service tariff rates in effect as of April 2005 with those proposed for 2012.

Over that period, as shown above, a 4,000 kW Rate M customer with an 80 percent load factor will have experienced a 20.9 percent increase, Had that customer been taking service under Rate L (5,000 kW demand with a 64 percent load factor), it would have faced a 12.7 percent increase over that same period.

Also, in April 2005, a 4,000 kW Rate M customer with an 80 percent load factor would have paid 3.8 percent more if it chose to increase its contract demand to the Rate L minimum (5,000 kW) and switch to Rate L. Under the rates proposed by HQD in this proceeding, that same customer would now see a 3.2 percent *reduction* in its bill. That is, the customer can increase its contract demand by 25 percent and get a substantial rate decrease.

Under the proposed rates for 2012, a Rate M customer with a load as low as 3,600 kW can reduce its monthly bill by increasing its contract demand to 5,000 kW (a 39% increase) and paying the Rate L tariff charges.

HAS THIS WIDENING GAP BETWEEN THE TWO RATE CLASSES CAUSED A SUBSTANTIAL MIGRATION FROM RATE M TO RATE L?

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[8] A reasonable justification for a lower tail block energy charge for Rate M would be to mitigate this problem, by implicitly requiring a somewhat lower cross-subsidy from larger Rate M customers, in order to smooth the rate transition between the two rate classes.

[9] My experience is that this policy is also motivated by energy conservation concerns, and I have demonstrated on a number of occasions that this policy is not consistent with HQD's cost allocation study.

Not yet. HQD reports that only three Rate M customers have migrated to Rate L, representing approximately 0.2 percent of Rate M load.[10] This fact may suggest that HQD and the Régie need not be concerned about the trend.

While that may be the case, I note that HQD proposes to materially expand the Rate L advantage in this and, presumably, future proceedings, thereby increasing the potential for migration. Moreover, if substantial migration does occur, it will be too late to stop it and very difficult to reverse.

WHAT ARE THE IMPLICATIONS OF THIS TREND?

The most obvious implication of HQD's Rate M policy is that some Rate M customers, who are already providing very substantial cross-subsidies to residential customers, are facing rate increases that are well in excess of system average. Unless there is clear evidence from the cost allocation study or other cost analysis that the costs for these larger, high load factor Rate M customers are increasing faster than the costs for the other Rate M customers, this trend in inequitable. As no intra-class cost evidence is available, it is difficult to explain to these customers why such an approach is reasonable.[11]

Second, it is possible that allowing large Rate M customers to trade up to Rate L will lower the overall load factor of the Rate L class. In last year's proceeding, I understood that HQD had informally reported that the customers who may have an incentive to trade up were high load factor customers, and there would be no negative impact on the Rate L class as a whole from such a shift. In this proceeding, HQD now reports that one customer with a 60% load factor has migrated to Rate L, substantially below the Rate L average.

Moreover, even if HQD's argument were correct for most migrating customers, it must be recognized that the argument is based on static, rather than dynamic, assumptions. That is, it assumes that customer behavior will not change as a result of the class transition. In practice, however, this assumption is likely not justified. Consider a 4,000 kW customer who shifts to Rate L and is paying a demand charge based on 5,000 kW. That customer essentially has 1,000 kW of free capacity. That customer will have no incentive not to increase demand up to that amount whenever it wants, with no economic penalty. As such, there is a very real possibility that Rate M customers who shift to Rate L will (a) use the system less efficiently than they currently do, and (b) they will inequitably attract more costs to the Rate L class in HQD's cost allocation study as a result of their lower average load factors.

IS THE INCENTIVE TO MIGRATE LIKELY TO INCREASE FOR OTHER REASONS IN THE FUTURE?

Yes. Under the provisions of Bill 100 amending the enabling legislation for the Régie, the cost and rate gap between Rate M and Rate L will widen further in 2014,

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[10] Estimated from Exhibit HQD-14, Document 4, pages 13 and 21.

[11] Exhibit HQD-14, Document 4, pages 22-23.

when patrimonial generation cost increases will affect the Rate M tariff but not the Rate L tariff.[12]

WILL MIGRATION OF LARGER RATE M CUSTOMERS TO RATE L HAVE AN IMPACT ON OTHER CUSTOMERS?

It will, for at least two reasons. First, customers who migrate from Rate M to Rate L will implicitly be making smaller cross-subsidy contributions, due to the extremely high cross-subsidy burden imposed on Rate M. This reduction in cross-subsidy contributions will necessarily be met by rate increases for other classes of customers.

Second, my understanding of Bill 100 is that the average rate paid for heritage pool electricity will increase from 2.79 cents per kWh at present to 3.79 cents per kWh in 2018, in increments of 0.20 cents per year beginning in 2014. Bill 100 also specifies that this increase will not affect the cost determined for Rate L or the Special Contract classes, and that the Régie shall ensure that the tariff charges for Rate L reflect the evolution of heritage pool costs.

Therefore, in order to achieve an average increase in any year of 0.2 cents per kWh from all customers, the zero increase for Rate L and Special Contracts customers must be offset by higher increases from other customers. Moreover, if customers shift from Rate M to Rate L, the zero increase will apply to a larger load, and therefore the offsetting increase on the other customers will necessarily be higher.

DO YOU HAVE ANY RATE DESIGN RECOMMENDATIONS REGARDING THESE ISSUES?

In the longer term, HQD has various options that can be considered for mitigating both the maltreatment of larger Rate M customers and the discontinuity between Rate M and Rate L rates. These options include (but are probably not limited to):

- Rolling back the increases in the cross-subsidies provided by Rate M that have accumulated over the past six years;
- Eliminating the "tilt" in the Rate M tariff by applying larger increases to the demand charge;
- Adopting a declining block demand charge to better recognize customer-related costs in the tariff, or implementing a customer charge for Rate M.
- Establishing declining block demand and/or energy charges for Rate L, to reduce the discontinuity between Rate M and Rate L;
- Implementing time-of-use rates which better match differences between on-peak and off-peak avoided costs;

[12] As I understand the provisions of Bill 100, only "industrial" Rate M customers will be permitted to migrate to the Rate L class which will not be subject to the patrimonial generation cost increases.

- Developing the Rate LG tariff mandated by Bill 100 consistent with costs allocated to that class, to mitigate potential migration of non-industrial Rate M customers.

All of these considerations, however, should take place in the context of a coordinated rate design strategy to accommodate the legislated changes to patrimonial generation costs. While I doubt not that HQD is already busily working on its strategy for addressing this problem, I understand that neither HQD nor the Régie is prepared to address that issue in this proceeding.

Therefore, for the current proceeding, I recommend the “First, do no harm” strategy. Specifically, this approach would involve applying the same percentage rate increase to each of the Rate M tariff charges. For the reasons detailed above, I believe that this approach is much more consistent with the approved cost allocation study, it will not impose further unjustified relative increases on larger Rate M customers, it will improve the incentives for conservation for more than 75 percent of Rate M customers, it will much better align the tail block charge with off-peak avoided energy costs, and it should not have any serious longer-term deleterious effect on conservation efforts by larger customers. Moreover, to the extent that Bill 100 will require very substantial changes to the Rate M tariff, this approach will at least not make those changes any more difficult to implement.

DOES THIS CONCLUDE YOUR PRE-FILED EVIDENCE?

Yes, it does.

EXHIBIT IEc-1

CURRICULUM VITAE AND

EXPERT TESTIMONY SCHEDULE OF

ROBERT D. KNECHT

IEc

INDUSTRIAL ECONOMICS, INCORPORATED

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 thirty 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. Mr. Knecht also served as Treasurer of IEc from 1996 through 2010, and was responsible for the firm's accounting, finance and tax planning, as well as administration of the firm's retirement plans, during that period. 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 a participant on various 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.

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EXPERT TESTIMONY SUBMITTED IN REGULATORY PROCEEDINGS: 2006 TO 2011

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-2010-2161694 on Remand	Pennsylvania Public Utility Commission	PPL Electric Utilities	August 2011	Pennsylvania Office of Small Business Advocate	Cost allocation, rate design, purchase of receivables
R-2011-2238943, R-2011-2238943, R-2011-2238949,	Pennsylvania Public Utility Commission	UGI Utilities (Gas Division), UGI Central Penn Gas UGI Penn Natural Gas	July 2011	Pennsylvania Office of Small Business Advocate	Design day demand, mandatory capacity assignment, sharing mechanisms
C-2011-2245906, M-2011-2243137	Pennsylvania Public Utility Commission	PPL Electric Utilities	July 2011	Pennsylvania Office of Small Business Advocate	Reconciliation of default service costs and revenues
P-2011-2218683, P-2011-2224781	Pennsylvania Public Utility Commission	West Penn Power Company	April, May 2011	Pennsylvania Office of Small Business Advocate	Critical peak pricing, time-of-use pricing
R-2010-2215623, R-2010-2201974	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	April 2011	Pennsylvania Office of Small Business Advocate	Cost of equity capital, cost allocation, revenue allocation, BTU adjustment mechanism, rate design, DSIC
NBEUB 2010-017	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	April 2011	New Brunswick Public Intervenor	Cost- and market-based ratemaking, transition mechanism
A-2010-2213893, et al.	Pennsylvania Public Utility Commission	UGI Penn Natural Gas	February 2011	Pennsylvania Office of Small Business Advocate	Asset valuation, reasonableness of proposed affiliate transaction
M-2009-2123944	Pennsylvania Public Utility Commission	PECO	January 2011	Pennsylvania Office of Small Business Advocate	Dynamic pricing cost allocation and rate design
NBEUB 2010-007	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	December 2010	New Brunswick Public Intervenor	Allowable costs, O&M capitalization policy, expansion cost effectiveness, incentive mechanisms
R-3740-2010	Régie de l'énergie, Québec	Hydro Québec Distribution	December 2010	AQCIE/CIFQ	Pension cost reconciliation, cross- subsidies, rate design
P-2010-2158084	Pennsylvania Public Utility Commission	West Penn Power Company	November 2010	Pennsylvania Office of Small Business Advocate	Transmission service charge, reconciliation timing
P-2010-2194652	Pennsylvania Public Utility Commission	Pike County Light & Power	November 2010	Pennsylvania Office of Small Business Advocate	Electric default service procurement, customer education

ROBERT D. KNECHT

EXPERT TESTIMONY SUBMITTED IN REGULATORY PROCEEDINGS: 2006 TO 2011

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
A-2010-2176520, A-2010-2176732	Pennsylvania Public Utility Commission	Allegheny Power/FirstEnergy Corporation	September 2010	Pennsylvania Office of Small Business Advocate	Implications of proposed merger for default service
App. No. 1605961, Proceeding ID 530	Alberta Utilities Commission	Alberta Electric System Operator	August 2010	BC Hydro	Transmission rate design
R-2010-2167797	Pennsylvania Public Utility Commission	T.W. Phillips Gas & Oil Company	July 2010	Pennsylvania Office of Small Business Advocate	Cost allocation, rate design, purchase of receivables, rate of return
R-2010-2172933, R-2010-2172922, R-2010-2172928	Pennsylvania Public Utility Commission	UGI Utilities (Gas Division), UGI Central Penn Gas UGI Penn Natural Gas	July 2010	Pennsylvania Office of Small Business Advocate	Purchased gas costs, unaccounted-for gas, retainage
NBEUB 2010-002	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	June 2010	New Brunswick Public Intervenor	Cost allocation, rate design, deferral costs
R-2010-2161694	Pennsylvania Public Utility Commission	PPL Electric Utilities	June 2010	Pennsylvania Office of Small Business Advocate	Cost allocation, rate design, purchase of receivables
R-2010-2161920	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	June 2010	Pennsylvania Office of Small Business Advocate	Purchased gas costs, retainage rates, gas price forecasting
R-2009-2149262	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2010	Pennsylvania Office of Small Business Advocate	Cost allocation, rate design, rate of return
P-2009-2145498	Pennsylvania Public Utility Commission	UGI Utilities (Gas Division)	April 2010	Pennsylvania Office of Small Business Advocate	Merchant function charge, purchase of receivables
R-2010-2157062	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2010	Pennsylvania Office of Small Business Advocate	Purchased gas costs
NBEUB 2009-017	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	March 2010	New Brunswick Public Intervenor	Cost allocation, deferral costs
R-2009-2139884	Pennsylvania Public Utility Commission	Philadelphia Gas Works	March 2010	Pennsylvania Office of Small Business Advocate	Revenue requirement, cost allocation, rate design, DSM program

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R-2010-2150861	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	March 2010	Pennsylvania Office of Small Business Advocate	Purchased gas costs
R-2009-2145441	Pennsylvania Public Utility Commission	T.W. Phillips Gas & Oil Company	March 2010	Pennsylvania Office of Small Business Advocate	Purchased gas costs, unaccounted-for gas, retainage
P-2010-2099333	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	February 2010	Pennsylvania Office of Small Business Advocate	Purchase of receivables
R-3708-2009	Régie de l'énergie, Québec	Hydro Québec Distribution	November 2009	AQCIE/CIFQ	Post-patrimonial generation cost allocation, revenue allocation
M-2009-2123944, 2123948, 2123950, 2123951	Pennsylvania Public Utility Commission	PECO, Duquesne Light, Metropolitan Edison, Pennsylvania Electric, Penn Power, West Penn Power	October, November 2009	Pennsylvania Office of Small Business Advocate	Smart Meter Cost Allocation and Rate Design
NBEUB 2009-006	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	September 2009	New Brunswick Public Intervenor	Development Period Criteria
M-2009-2092222, 2121952, 2112956, 2093218, 2093217, 2093215	Pennsylvania Public Utility Commission	Metropolitan Edison, Pennsylvania Electric, Penn Power, West Penn Power, Duquesne Light, PPL Electric	August 2009	Pennsylvania Office of Small Business Advocate	Energy efficiency and conservation programs, cost allocation, rate design
1604944; ID# 184	Alberta Utilities Commission	ATCO Gas	July 2009	Rate 13 Group	Cost allocation, rate design
R-2009-2105904, 909, 911	Pennsylvania Public Utility Commission	UGI Penn Natural Gas, UGI Central Penn Gas, UGI Utilities Inc. Gas Division	July 2009	Pennsylvania Office of Small Business Advocate	Gas supply procurement hedging, unaccounted-for gas, revenue sharing mechanisms
R-2009-2093219	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2009	Pennsylvania Office of Small Business Advocate	Revenue sharing mechanisms, retainage rate, gas procurement
R-2008-2079660	Pennsylvania Public Utility Commission	UGI Penn Natural Gas	May 2009	Pennsylvania Office of Small Business Advocate	Equity cost of capital, cost allocation, rate design

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R-2008-2079675	Pennsylvania Public Utility Commission	UGI Central Penn Gas	May 2009	Pennsylvania Office of Small Business Advocate	Equity cost of capital, cost allocation, rate design
R-2008-2075250	Pennsylvania Public Utility Commission	T.W. Phillips Gas & Oil	April 2009	Pennsylvania Office of Small Business Advocate	Retainage rates
R-2009-2088076	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2009	Pennsylvania Office of Small Business Advocate	Gas procurement
R-2009-2083181	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	March 2009	Pennsylvania Office of Small Business Advocate	Retainage rates, gas procurement
P-2008-2060309	Pennsylvania Public Utility Commission	PPL Electric Utilities	December 2008	Pennsylvania Office of Small Business Advocate	Default electric supply procurement
R-2008-2073938	Pennsylvania Public Utility Commission	Philadelphia Gas Works	December 2008	Pennsylvania Office of Small Business Advocate	Revenue requirement, financial cash flows, cost allocation, rate design
P-2008-2044561	Pennsylvania Public Utility Commission	Pike County Light & Power	October 2008	Pennsylvania Office of Small Business Advocate	Electric default service procurement
R-3673-2008	Régie de l'énergie, Québec	Hydro Québec Distribution	August 2008	AQCIE/CIFQ	Electric supply contract modifications.
1550487	Alberta Utilities Commission	ENMAX Power Corporation	July 2008	D410 Group	Formula-based (performance-based) ratemaking; ratepayer-supplied equity contributions.
R-2008-2039417 et al.	Pennsylvania Public Utility Commission	UGI Utilities (Gas Division)	July 2008	Pennsylvania Office of Small Business Advocate	Design day demand forecast.
R-2008-2039284	Pennsylvania Public Utility Commission	UGI Penn Natural Gas	July 2008	Pennsylvania Office of Small Business Advocate	Revenue sharing, gas supply costs.
R-2008-2039634	Pennsylvania Public Utility Commission	PPL Gas Utilities	July 2008	Pennsylvania Office of Small Business Advocate	Lost and unaccounted-for gas, gas supply costs.
A-2008-2034045	Pennsylvania Public Utility Commission	UGI Utilities, PPL Gas Utilities	June 2008	Pennsylvania Office of Small Business Advocate	Public benefits of proposed sale.

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R-2008-2011621	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2008	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design.
R-2008-2028039	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2008	Pennsylvania Office of Small Business Advocate	Gas supply cost functionalization; cost reconciliation method, sharing mechanisms.
R-3648-2007	Régie de l'énergie, Québec	Hydro Québec Distribution	April 2008	AQCIE/CIFQ	Electric supply contract modifications.
R-2008-2021348	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2008	Pennsylvania Office of Small Business Advocate	Sharing mechanisms, gas supply contracts.
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.

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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.
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.

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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.
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.