Andy Shadrack
Box 484
Kaslo, B.C., V0G 1M0

Friday, September 23rd, 2016

British Columbia Utilities Commission
Sixth Floor, 900 Howe Street, Box 250
Vancouver, B.C. V6Z 2N3

Attention: Ms. Laurel Ross, Acting Commission Secretary and Director

By Electronic Filing

Dear Ms. Ross:

Re: FortisBC Inc. Project No. 3698875: Net Metering Project Tariff Update Application
Andy Shadrack: Final Argument

Introduction

1. I am a FortisBC customer with a photovoltaic generation system, am currently enrolled in FortisBC's Net Metering Program ("the Program"), and am a registered intervenor in this application.

Issues

2. This is an application by FortisBC to "Update" its Net Metering (NM) Project Tariff. FortisBC contends that a number of changes are required to ensure that the Program is better understood by customers, better reflects the intent of the Program as originally approved, and that its financial administration is clear, consistent and has no negative effects on non-participants. In pursuit thereof, FortisBC's application requests that the Commission:
   a. approve a change in the language of the Net Metering Rate Schedule 95 to more clearly reflect the "original intent" (as interpreted by FortisBC) of the Program as approved by the Commission in 2009;
   b. change the accounting for net excess generation ("NEG") to incorporate a kWh "bank" with an annual year-end settlement for annual remaining unused NEG;
   c. change the rate of compensation to customers for that remaining unused NEG to "a rate more reflective of FortisBC's avoided cost", which FortisBC suggests is represented by the BC Hydro RS 308 Tranche Rate 1, currently 4.303 cents/kWh + a 5% rate rider; and
   d. that the Commission confirm the Company's approach to billing calculation methodology to "remove the potential for misunderstanding about the application of the Net Metering Tariff schedule".
   (Exh. B-1, FortisBC Net Metering Update Application, pp. 1 & 15)

Intervenor's Position on the Application

3. I respectfully oppose FortisBC's proposed amendments to Net Metering Tariff Schedule 95.

4. Unless FortisBC's proposed kWh "bank" for net excess generation with year-end settlement of any remaining surplus can be structured in such a manner as to allow surpluses to be credited against the customer's Basic Charge, GST and other non-consumptive charges, I must also respectfully oppose FortisBC's proposal for a kWh bank as well as its related request for endorsement of its preferred billing method.

5. I further respectfully oppose the net excess generation rate change which FortisBC proposes, to reduce payment to 4.303 cents per kWh from the existing retail rates, which, for my household, are 9.845 cents and 15.198 cents per kWh (RS01 Tier 1 and Tier 2).

Original Intent of the Program

6. FortisBC seeks to change the language in the Net Metering Tariff 95 to clarify what it claims to be the Program's "original intent".

7. In its original Net Metering Tariff Application in 2009, FortisBC included the following in its "Program Objectives":

> *"A successful Net Metering Program will promote distributed renewable generation and allow customers to take responsibility for their own power generation, and to reduce their environmental impact.*
>
> . . .
>
> *From the perspective of the customer who seeks to enroll, the Net Metering Program should: . . . not contain undue barriers to interconnection with FortisBC; and provide financial compensation for generation.*
>
> . . .
>
> *It is the overriding intent of the program that customers gain the ability to offset their own consumption with a clean and renewable resource. It is not the intent of the program to provide a means for larger scale Independent Power Producers ("IPP") to bring their output to market."*
>
> (FortisBC Inc 2009 Net Metering Tariff Application, Exh. B-1, p. 5)

8. In its proposed Schedule 95 submitted with its application as Appendix "B", FortisBC included the following wording under the "Eligibility" heading which was subsequently approved by the Commission:

> *"To be eligible to participate in the Net Metering Program, customers must generate a portion or all of their own retail electricity requirements using a renewable energy source. The generation equipment must be located on the customer's premises, service only the customer's premises and must be intended to offset a portion or all of the customer's requirements for electricity."*
>
> (FortisBC Inc 2009 Net Metering Tariff Application, Exh. B-1, App. "B")

9. The "original intent" which FortisBC is referring to is, presumably, its corporate intent in 2009, and not that of its net metering customers, the provincial government, or the Commission.

10. The Concise Oxford defines "intent" as "intention or purpose" and "intention" as "aim or plan".

11. With over 50 mentions of "intent" in its application and argument, FortisBC's application is firmly based on its "original intent" for the Program in 2009; FortisBC arguing, in effect, that:
    a. FortisBC's original intent in 2009 was substantively more restrictive than the present wording indicates (being that a customer's annual generation under the Program was intended to be strictly limited to the amount of that customer's annual consumption);
    b. as a result, the present wording does not reflect what FortisBC originally intended at all;
    c. what FortisBC did in its 2009 application was, in effect, mistaken; and
    d. accordingly, the current wording of Schedule 95 must now be changed.

12. However, in its March, 2011 "2010 Monitoring and Evaluation Report on the Net Metering Program", FortisBC proposed changes to clarify the treatment of "intentional generation above a customer's own use" which are rather contrary to those contemplated in its current application, yet which it also considered, at that time, completely in accord with the Program's "original intent":

> *"The Company is of the opinion that the original intention of the program (to offset all or some of the customers' own consumption) is still valid, but that there is no reason to prevent additional generation if it falls within the 50 kW cap. The principles in place for compensation for generation under the program remain essentially the same. That is, offset consumption is automatically valued at the retail rate, and a reasonable amount of generation that exceeds personal consumption will also attract that retail rate."*
> (Exhibit A-2-1, 2010 Monitoring and Evaluation Report, p. 12)

13. In its final argument, at p. 4, paras. 14-15, FortisBC selectively quotes one of my questions: *"Despite the primary stated intent of the program being to allow customers to offset their own consumption, is it accurate to say that both FortisBC and its net-metering customers have at all times been fully aware that the Program imposed no limitation on the amount of customer generated power as long as the system met the 50 kW design capacity limit?"* (Shadrack IR 1.5) to which it had replied that, as far as it relates to FortisBC, the statement was inaccurate.

14. The above quote from Exhibit A-2-1, p. 12, however, clearly suggests otherwise, and, in fact, it has been the experience of my own household, and the six other customer households I am locally aware of which are enrolled in the Program, that none of these households were informed by FortisBC of any limits or any concerns whatsoever over system size other than the 50 kWh design capacity limit, nor, in five out of six cases, the exception being a small hydro system, of any concerns over production.

15. Typical is the experience of Phil Trotter and Michelle Poulin as recounted in their Letter of Comment of Sept. 9, 2016 (E-4-1):

> *". . .when we signed up to FortisBC's net metering program the only discussion about size that the Company had with us was about our system size not exceeding*

50 kW. They never told us that we were only to size our system to produce enough power to offset the electricity we purchased from them."

16. Of the seven customer households who signed the May 18th Kaslo customers' letter of comment (Exhibit E-2), ours was the only one that actually had a visit by FortisBC representatives, which was not actually held for that purpose, but for settlement of a compromise over the installation of a smart meter, but during which the subject of the Program arose.

17. During the conversation, in which the size of system was never discussed at all, I enquired as to the value of transferred kWh and was told that the value credited to and paid in the case of our household would be the retail Residential RS01 Tier 1 and Tier 2 rates, which was also the experience of the other six households, in that those who spoke to individual FortisBC employees prior to enrolment were left with the impression that size did not matter and that the Company was comfortable with paying retail rates for all power transferred.

18. Obviously, if FortisBC was aware, as it claimed in response to Shadrack IR 1.5 supra, that the Program imposed limits on customer-generated power other than the 50 kW design capacity, it appears to have very successfully withheld that information from both its employees and customers for the past seven years.

19. For reasons which, to this intervenor, are unclear, FortisBC has felt the need to mold an intent out of the less than clear language of its 2009 application - an intent which, if it ever did exist, FortisBC made no discernible attempt to implement during the past seven years.

20. As a result, FortisBC's customers, who had been led to believe by FortisBC's employees that the offered purchase structure was secure, and upon such representations made substantial long term investments in their systems (in the case of my own household, over $22,500 to install a photovoltaic system), are now stuck in a monopoly situation where there is no other available market for their net excess generation.

21. Although FortisBC has based this application almost entirely on what it has now perceived as its "original intent", as far as practical implementation, obvious questions and problems arise, such as difficulty in reliably calculating fluctuating consumption levels, for which FortisBC has supplied no clear answers.

22. I respectfully submit that FortisBC's "Update" application has little or nothing to do with "clarifying" "original intent", but is an application to make substantive changes to the Net Metering Tariff, and should be treated accordingly, with all options fully considered.

Proposed Change in Net Excess Generation Accounting from "DollarBank" to "kWh Bank"

23. FortisBC is proposing to switch from a bi-monthly cash transfer for NEG at retail rates, to an annual kWh bank with a proposed annual payout on any "excess" energy transferred.

24. As a net metering customer, I have no objection to FortisBC switching to a kWh "bank" provided that the definitions and criteria for billing from such a "bank" accord with the

definitions of "rate" and "service" found within the *Utilities Commission Act* (UCA), such that the annual electrical requirement billed for includes the Basic Charge, GST, and any other non-consumptive charges.

25. Over the last eleven years and eight months I calculate that my household has consumed 29.783 fewer MWh of grid power from FortisBC as a result of adopting energy efficient measures and installing a PV solar system (Appendix C). In fact, when comparing the last six billing periods with the same six billing periods in 2006, I calculate our annual savings at 4.963 MWh, of which 1.471 MWh, or 29.6%, represents MWh transfers to FortisBC through their net metering program (Appendices B and C).

26. However, the average cost of power for this household over the last eleven years and eight months has risen from 8.7 cents in 2006, including the Basic Charge, to, currently, 27.8 cents per kWh in 2016 (Appendix C). Without the Basic Charge, the average cost of electricity so far in 2016 averages 9.8 cents per kWh. The Basic Charge alone currently represents 64.8% of all charges, before taxes, from the Company. So, in 2016, while the amount of power purchased from FortisBC has declined by 79.8%, the cost of purchasing each kWh has increased by 319.5% since 2006.

27. Under the current Net Metering RS 95 tariff, once this household has generated and transferred to FortisBC an amount equal to the kWhs purchased per billing period, it takes a further 317 kWh of Residential RS01 Tier 1 transfers, approximately 1.9 MWh annually, to cover the cost of the Basic Charge.

28. If the Commission accepts FortisBC's proposed changes to the structure of the net metering program, so that a customer only receives 4.303 cents per kWh at the point he or she transfers 1 kWh more than purchased, it will take 4.355 MWh of annual transfers just to cover the cost of the Basic Charge. That is nearly 300% more electrical power than this household transferred to FortisBC in the last six billing periods.

29. I am also opposed to the preferred billing calculation methodology described in Section 6 of the Application unless such methodology includes the Basic Charge, GST and any other non-consumptive charges in a particular billing period and as part of the annual settlement calculation of what constitutes the point when a NEG payment should be made.

30. Beyond a change from retail rates to a designated wholesale purchase price for NEG, the company is additionally proposing to shift the goal posts from total cost of electrical service to only allowing a very narrow definition of NEG that starts at the point a customer generates just 1 kWh more than it purchases from the Company in any twelve month period.

31. Contrary to what the Company stated to the Commission in its original 2009 application, under its current proposal it will no longer allow a net metering customer to offset the cost of the Basic Charge, any other non-consumptive charges, or the GST as a part of what FortisBC considers a customer's "annual service requirements".

32. In this regard I refer the Commission to the *Utilities Commission Act* s. 1 definition of what constitutes "service" and what constitutes a "rate". On that basis I submit that

FortisBC cannot arbitrarily sever the annual cost of kWhs purchased from the Company from the annual cost of the Basic Charge and other non-consumptive charges, as all, along with the GST, form part of the "annual service requirements" that a customer must pay for, in order to receive "service" from FortisBC, since no customer can be hooked up to the FortisBC grid unless they pay the Basic Charge, GST and other billed non-consumptive charges.

33. Thus far FortisBC has retained the right to charge each customer, within their rate class, the same Basic Charge for delivery of purchased electricity regardless of how much power they actually consume. As a consequence, while this household has reduced overall consumption of FortisBC grid electricity by 79.8%, the net cost in electrical power purchase has only declined by 43.1%, from $538.27 in 2006 to $306.11 in the last six billing periods in 2015 and 2016 (Appendices B and C).

34. Although a 79.8% decrease in consumption in grid electricity should be an achievement to celebrate, my spouse and I feel as if the changes now proposed by FortisBC are specifically designed to punish Program enrollees for purchasing fewer kWh from the Company, and as such will actively discourage participation in the Program.

35. In fact Basic Charge costs for FortisBC grid power have increased from $126.55 to $184.59 for our household - a 45.9% increase over the same comparable time period. In contrast, the actual cost of electricity is much more in line with the decline in kWh purchased, at 70.5% less, as compared to 79.8% fewer kWh being purchased: $411.72 to $121.52. FortisBC in fact acknowledges that the average cost of Residential RS01 electricity (Tier 1, Tier 2 and Basic Charge costs combined) is 13.48 cents per kWh, whereas this household's cost, so far in the first four billing periods in 2016, are 27.8 cents per kWh (Shadrack IR 1.20.a and Appendix C).

36. At 6,216 kWh annual consumption in 2006, this household was already 37.8% below the 9,999 kWh annual consumption level reported for 53.4% of residential customers in 2014 (Shadrack 1.41.b and Appendix C). In 2016 this household will come very close to that consumed by the lowest 5% of residential customers. In effect, as a net metering customer, this household is now paying 56.8% of the original cost for purchasing 95% fewer kWh than the average FortisBC residential customer.

37. Yet FortisBC continues to argue, and the Commission has thus far agreed, that every customer should pay the same Basic Charge for service regardless of how much electrical power they actually consume. In this regard it is noted that all other DSM FortisBC customers, in 2015, received a 32% subsidy for their participatory costs, whereas this household pays, and all NM customers pay, 100% of the costs to participate in the NM program (Shadrack IR 1.23). In light of this, it does not seem unreasonable to submit that the retail kWh cutoff for net metering customers should occur after a customer has covered the cost of his or her household's Basic Charge, GST and other non-consumptive charges.

38. What is the point of ostensibly encouraging customers to reduce personal and premise electrical energy consumption, including having the company providing subsidies for energy reduction, only to turn around and, contrary to stated government policy and legislation, charge these same customers the same price for service, as customers who have not reduced their consumption and may in fact actually be increasing the volume of electrical energy they consume.

39. At minimum FortisBC should be required to provide calculations showing the projected dollar value of allowing current and future NM customers to have the ability to offset the cost of the Basic Charge, GST and other non-consumptive charges at the current retail kWh exchange rate, and if any overall costs were incurred by FortisBC these costs should be compared with those expended on the other DSM programs. Further, each program should then be compared to see which one is most efficient and cost-effective in ensuring that a customer is actually reducing their electrical consumption.

Change in Rate of Compensation for Unused NEG

40. As a Net Metering customer, I am opposed to FortisBC being granted an order to change the NM customer rate for their Net Energy (Excess) Generation (NEG) from the existing retail rates, which, for my household, are 9.845 cents and 15.198 cents per kWh (RS01 Tier 1 and Tier 2) to the BC Hydro Tranche 1 3808 tariff schedule rate (currently 4.303 cents per kWh).

41. I am unaware of clearly stated statistical or economical goals for FortisBC's Net Metering Program. With respect to B.C. Hydro's Net Metering Program, the Commission stated:

> *"The Net Metering program was originally established in response to Policy Action No. 20 of the 2002 Energy Plan, which articulated a goal for electricity distributors to acquire 50 percent of new electricity supply from clean energy, supported by policies such as Net Metering. Since that time, there has been an update to the 2002 Energy Plan (the 2007 Energy Plan), in addition to the CEA, which was passed in 2010. Both have reinforced and extended the mandate for BC Hydro to take steps to reduce demand and increase the amount of clean energy that it sources. In particular, the 2007 Energy Plan appears to the Panel to support the development of an innovative electricity industry and to encourage a diverse mix of electrical generation resources that represent a variety of technologies. In the absence of evidence of clear goals for the Net Metering program and strategies to reach those goals, the Panel will consider these policies as guiding factors. As such, we consider the Net Metering program as an important component in an innovative electricity industry."*

(Order G-57-12, B.C. Hydro 2012 Application to Amend Rate Schedule 1289, p 20).

42. This intervener submits that such an interpretation of the *Clean Energy Act* applies equally to FortisBC's Net Metering Program.

43. *"It is the Panel's view that the capacity of a Net Metering installation should be driven by considerations of economically available clean energy and not by the theoretical*

maximum capacity a homeowner may require. Further, given the emphasis placed on electrical self sufficiency and clean electricity generation by BC energy policy and legislation, the Panel is of the opinion that encouraging participation by lowering barriers should be of primary importance." (Order G-57-12, B.C. Hydro 2012 Application to Amend Rate Schedule 1289, Appendix A, pp. 43 - 44).

44. *"Implementing new generation capacity is an expensive endeavour, either for BC Hydro when it is building dams and powerhouses, or for a residential consumer installing distributed generation equipment...in the case of the distributed generation equipment typical in the Net Metering program, none of the capital costs are borne by BC Hydro or its ratepayers. As can be seen in Zdenek Los' case, by allowing for a larger capacity limit, the Net Metering program could possibly be made more attractive and more accessible to potential customers, which would benefit BC Hydro and its ratepayers."* (Order G-57-12, B.C. Hydro 2012 Application to Amend Rate Schedule 1289, Appendix A, p. 43)

45. While FortisBC seeks to reduce the value paid for NEG, B.C. Hydro has repeatedly sought increases in their NEG rates, from, initially, 5.4 cents to, I believe, currently 9.99 cents per kWh. B.C. Hydro has a separate tariff for net metering developed in response to provincial energy policies; FortisBC seeks to use B.C. Hydro's devalued Tranch 1 rate.

46. This intervenor respectfully submits that FortisBC should, instead of using B.C. Hydro's Tranche 1 rate, use Rate Schedule 1289, specifically created to meet B.C. Hydro's net metering program requirements, or that FortisBC should develop its own comparable net metering tariff based on FortisBC's long run marginal cost (LRMC) of acquiring electricity generated from clean or renewable resources of 11.112 cents per kWh as calculated in FortisBC's Long Term Resource Plan (2012)

Conclusion

47. The changes which FortisBC proposes have the effect of creating, when compared with B.C. Hydro's Program, the effect of establishing two distinctly different net metering regimes in British Columbia, each with substantially different criteria and moving in opposite directions, one fundamentally in accord with provincial policy and statute, and the other most emphatically not.

48. This intervenor respectfully opposes FortisBC's proposed amendments to the Net Metering tariff.

All of which is respectfully submitted,

Andy Shadrack

ELECTRICITY

FORTIS BC™

Customer Service
Telephone: 1-866-436-7847
7 am - 7 pm Mon - Fri
fortisbc.com

Account Name: ANDY SHADRACK
Billing Date: JUN-21-2016
Billing Period: APR-19-2016 to JUN-16-2016

Previous statement	55.98	
Payment received Apr-26-2016 — Thank you	55.98CR	
Balance outstanding		**0.00**

Current Electric Charges
314 D AVE (Meter 6000539)

Net Metering
Delivered 325 kWh
Received 395 kWh

	0.00	

Other Charges and Adjustments

Basic Customer Charge	31.23	
Received Block 1 - 395 kWh @ 0.09845	38.89CR	
Delivered Block 1 - 325 kWh @ 0.09845	32.00	
	24.34	

Taxes

GST (5% on 63.23)	3.16	
	3.16	
Total New Charges		**27.50**
Amount to be Withdrawn		**$27.50**

Thank you — Your payment will be made by pre-authorized direct debit from your financial institution.

Account Number
[redacted]
Due Date
JUN-27-2016
Amount to be Withdrawn
$27.50

Meter Reading Information
Meter Number: 6000539

Jun 16 2016	001743	REC
Apr 19 2016	001348	REC
58 days	**395**	**REC**
Jun 16 2016	003164	DEL
Apr 19 2016	002839	DEL
58 days	**325**	**DEL**

Average current kWh/Day	7
Average previous year kWh/Day	4

Next reading on or about Aug 16 2016

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It's a fast, easy and environmentally-friendly way to receive your electricity bill. Visit fortisbc.com or call 1-866-436-7847 to sign up.

ELECTRICITY

Payment return slip
Payable at most financial institutions
Please write your account number on your cheque or money order payable to FortisBC - Electricity.

FORTIS BC™

R3858.18803725040_3925.pdf 0001

ANDY SHADRACK
PO BOX 484
KASLO BC V0G 1M0

Account Number
[redacted]
Due Date
JUN-27-2016
Amount to be Withdrawn
$27.50
Amount Paid

18803725040_3925.pdf.0001.0001

[redacted] 0000002750

Appendix B, Electricity Use 2005-2016
Shadrack/Bauman Household

2005	**February**	**April**	**June**	**August**	**October**	**December**
Kwh Daily	1,194 19	1,182 19.1	1,094 18.9	828 13.1	1,048 18.7	1,074 17
Cost - Taxes	$93.73	$94.6	$89.05	$72.07	$85.9	$87.53
Cost +Taxes	$100.29	$101.22	$90.28	$73.86	$91.91	$93.66
2006	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	1,378 20	1,085 18.7	1,023 16.5	950 15.3	934 16.1	846 13.6
Cost - Taxes	$110.81	$93.42	$89.31	$84.44	$83.38	$77.52
Cost + Taxes	$117.91	$99.96	$95.96	$89.51	$88.38	$82.17
2007	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	1,063 17.1	829 13.4	681 11.5	678 10.9	572 9.4	662 11.2
Cost - Taxes	$92.63	$77.56	$68.74	$68.53	$61.24	$67.43
Cost + Taxes	$98.19	$82.21	$72.86	$72.64	$65.06	$71.75
2008	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	710 11.5	630 10.3	551 8.9	403 6.7 Fridge Broken	399 6.5 Fridge Broken	698
Cost - Taxes	$71.98	$67.11	$61.84	$51.45	$51.17	$72.50
Cost + Taxes	$75.87	$70.74	$65.18	$54.23	$53.93	$76.42
2009	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	604 10.1	678 10.9	581 10	580 8.1	430 7.4	687 11.1
Cost - Taxes	$70.67	$74.34	$67.10	$67.03	$56.64	$76.66
Cost +Taxes	$74.48	$78.36	$70.73	$70.65	$59.70	$80.80
2010	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	661 10.5	691 11.2	540 9.2	570 9.3	513 8.3	605 10.3
Cost - Taxes	$77.59	$81.59	$69.39	$71.80	$68.52	$76.79
Cost + Taxes	$81.78	$86.00	$73.13	$75.49	$71.94	$80.62
2011	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	596 9.6	584 9.6	487 7.9	622 10.4	413 6.9	638 10.3

Cost +Taxes	$79.37	$80.01	$72.90	$86.67	$67.40	$88.14
Cost - Taxes	$83.33	$84.01	$76.55	$91.00	$70.77	$92.55
2012	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	596 9.9	559 9	283 4.6 Away May	554 9.4	491 7.9	612 10
Cost - Taxes	$86.60	$84.12	$57.66	$77.91	$70.20	$80.19
Cost + Taxes	$90.93	$88.32	$60.54	$81.81	$73.71	$84.20
2013	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	576 9.1	587 9.5	480 9.4 Estimate	563 9.4 Estimate	459 7.9 Estimate	622 9.9 Estimate
Cost - Taxes	$79.88	$82.00	$72.58	$79.89	$70.74	$85.08
Cost + Taxes	$83.88	$86.10	$76.21	$83.88	$74.28	$89.33
2014	**February**	**April**	**June**	**August**	**October**	**December**
Kw/h Daily	665 10.4 Adjustment after strike	513 8.4	617 10	483 8.2	445 7.3	537 9.3
Cost - Taxes	$90.23	$76.98	$86.43	$74.25	$70.79	$79.16
Cost + Taxes	$94.74	$80.83	$90.75	$77.96	$74.33	$83.12
2015	**February**	**April**	**June**	**August**	**October**	**December**
Grid use Solar transfers Net grid use Daily grid use Daily solar Daily Use kWh	673 - 673 10 - 10	398 - 398 9 .25 9.25	504 285 219 2.8 1.5 4.3	351 341 10 .2 3.3 3.5	446 284 162 2.7 2.3 5	509 106 403 6.6 1.2 7.8
Cost - Taxes	$93.05	$59.7	$50.94	$31.28	$45.82	$68.86
Cost + Taxes	$97.70	$62.69	$53.49	$32.85	$48.11	$72.81
2016	**February**	**April**	**June**	**August**	**October**	**December**
Grid use Solar transfers Net grid use Daily grid use Daily solar Daily Use kWh	538 52 486 7.8 .8 8.6	491 280 211 3.3 2.2 5.5	325 395 -(70) -(1.2) 2.1 .9	415 354 61 1 2.6 3.6	263 (425) 214 (346) 49 1.3 2.5 3.7	
Cost - Taxes	$77.85	$52	$24.34	$37.24	Sept 23rd/39	
Cost + Taxes	$82.00	$55.98	$27.5	$40.86	-77%	

Appendix C

Energy Efficiency Investment

Capital invested in Washing Machine $1,355.98, Stove $1,067.14, Fridge $902.87, Freezer $394.37 = $3,720.36, +$22,655.04 Solar PV system and ancillary installations = $26,375.4

Gross investment per billing period since December 1, 2005 = $**412.12** @ 89 cents per saved kWh

Net investment per billing period less $ value of energy savings = $**372** @ 80 cents per kWh saved

Actual FBC electrical energy cost December 1, 2005 to August 16th, 2016 $**4,630.63** @ 12.6 cents kWh

Potential cost without kWh savings $7,198.22 @ 10.8 cents kWh

Potential FBC grid power consumed without adopting energy savings & installing PV solar system 66.596 MWh

Actual amount of FBC grid power consumed since December 1st 2005 36.813 MWh

FBC grid power not consumed 29.783 MWh, .465 MWh per billing period since December 1st, 2005

Value of Saved energy at a cost of $2,567.59/$40.12 average payback per billing period @ 8.6 cents kWh.

2.791 average MWh saved per year, 44.7% reduction in grid electricity use since December 1st, 2005.

2015/16 4.963 MWh of grid electricity saved of which 1.471 (29.6%) MWh will be transferred from our solar PV system. This averages.827 MWh per billing period of which .245 MWh is being transferred from our solar PV system. A 79.8% reduction in grid electricity use.

Original investment balance $1,152.77 (-69%/-6.5% per year) – 13 years payback time, based on projected 2015/16 savings
Total investment balance $23,807.81 (-9.7%/-.9% per year) - 58.9 years payback time, based on projected 2015/16 savings

Power useage 2006 6,216 kWh - 17.03 kWh per day/8.7 cents kWh
Power useage 2007 4,485 kWh - 12.3 kWh per day/9.7 cents kWh/-27.8%
Power useage 2008 3,391 kWh - 9.3 kWh per day/11.1 cents kWh/-24.4%/45.4%
Power useage 2009 3,600 kWh - 9.8 kWh per day/11.5 cents kWh/+6.2%/-42.1%
Power useage 2010 3,580 kWh - 9.8 kWh per day/12.4 cents kWh/-.6%/-42.4%
Power useage 2011 3,340 kWh - 9.1 kWh per day/14.2 cents kWh/-7.1%/-46.5%
Power useage 2012 3,111 kWh - 8.5 kWh per day/14.7 cents kWh/-6.9%/-<50%
Power useage 2013 3,277 kWh - 8.98 kWh per day/14.4 cents kWh/+5.3%/-47.2%

Power useage 2014 3,260 kWh - 8.93 kWh per day/14.7 cents kWh/-.5%/-47.6%
Power useage 2015 1,865 kWh - 5.05 kWh per day/18.7 cents kWh/-43.4/-70%
Power useage 2016 688 kWh - 2.8 kWh per day/27.8 cents kWh/-47.1%/-84.5%

Basic Charge 2006 $126.55/23.5%($538.88/$411.72)
Basic Charge 2007 $130.32/29.9%($436.13/-19%/$305.81-25.7%)
Basic Charge 2008 $135.44/36%($376.05/-13.8%/-30.1%/$240.61-41.6%)
Basic Charge 2009 $142.75/34.6%($412.44/+9.6%/-23.4%/$277-32.7%)
Basic Charge 2010 $154.72/34.7%($445.67/+8%/-17.2%/$290.95-29.3%)
Basic Charge 2011 $172.82/36.4%($474.46/+6.5%/-11.9%/$310.64-26.7%)
Basic Charge 2012 $178.92/39.1% ($458/-3.5%/-14.9%/$279.08-32.2%)
Basic Charge 2013 $181.77/38.7% ($470.17/+2.7%/-12.7%/$288.4-30%)
Basic Charge 2014 $181.89/38.1% ($477.84/+1.6%/-11.2%/295.95-28.1%)
Basic Charge 2015 $173.89/49.7% ($349.65/-26.8%/-35%/369/$175.76-57.3%)
Basic Charge 2016 $124.02/64.8% ($191.43/244/$67.41)

To April 19th FBC purchase 491/7.8 kWh
To April 19th solar production 419.6/6.7 kWh
To April 19th sales 280/4.4 kWh
To April 19th solar use 139.6/2.2 kWh
To April 19th total use 350.6/5.6 kWh – 63 days

To June 16th solar production 518.3/8.9 kWh
To June 16th sales 395/6.8 kWh
To June 16th FBC purchase 325/5.6 kWh
To June 16th solar use 123.3/2.1 kWh
To June 16th total use 53.3/.9 kWh – 58 days

To Aug 16th solar production 514.6/8.4 kWh (3,241)
To Aug 16th FBC purchase 415/6.8 kWh (3,579)
To Aug 16th sales 354/5.8 kWh (2,097)
To Aug 16th solar use 160.6/2.6 kWh
To Aug 16th total use 221.6/3.6 kWh – 61 days,12.36 PM

Sept 23rd solar production 310.4/8 kWh (3,551.4)
Sept 23rd FBC purchase 263/6.7 kWh (3,842)
Sept 23rd sales 214/5.5 kWh (2,311)
Sept 23rd solar use 96.4/2.5 kWh
Sept 23rd total use 145.4/3.7 kWh – Day 39, 6.00 PM