

ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*, S.O. 1998, c.15, Schedule B;

AND IN THE MATTER OF an Application by Hydro One Networks Inc. pursuant to section 92 of the Act, for an Order or Orders granting leave to construct a transmission reinforcement project between the Bruce Power Facility and Milton Switching Station, all in the Province of Ontario.

SUPPLEMENTARY EVIDENCE OF THE INTERVENOR THE SAUGEEN OJIBWAY NATIONS

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Saugeen Ojibway Nations

IN THE MATTER OF the *Ontario Energy Board Act*, 1998, S.O. 1998, C.15 (Sched. B);

IN THE MATTER OF an Application by Hydro One Networks Inc. pursuant to section 92 of the Act, for an Order or Orders granting leave to construct a transmission reinforcement project between the Bruce Power Facility and Milton Switching Station, all in the Province of Ontario.

SUPPLEMENTARY AFFIDAVIT

of

WHITFIELD A. RUSSELL

on behalf of

THE SAUGEEN OJIBWAY NATIONS

1. My name is Whitfield A. Russell. I am a public utility consultant and principal in Whitfield Russell Associates. I have previously sworn an affidavit on behalf of the Saugeen Ojibway Nations in this matter, dated April 18, 2008.
2. Based on information provided by Hydro One in this hearing, on May 6 and May 9, 2008, relating to the OPA's Financial Evaluation Model (the "Model"), I have arranged for the production of 2 different sets of runs using the Model represented in 4 separate graphs attached hereto as "Appendix A".
3. The first run represents the case that Bruce B is refurbished, and shows three scenarios:
 - the series capacitor scenario using a 7176 MW upper limit,
 - another using a 7476 MW upper limit, and
 - the proposed Bruce-Milton line.

4. This run is represented in two graphs, one excluding the costs of necessary voltage support (“Bruce B Refurbishment – No Voltage Costs – 2007\$” at page 1 of Appendix “A”) and the other with those costs included (“Bruce B Refurbishment – Voltage Costs Included – 2007\$”, at page 2 of Appendix “A”).
5. The second run of the model represents the case that Bruce B is retired, and again shows the same three scenarios:
 - the series capacitor scenario using a 7176 MW upper limit,
 - another using a 7476 MW upper limit, and
 - the proposed Bruce-Milton line.
6. Again this run is represented in two graphs, one excluding the costs of necessary voltage support (“Bruce B Retired – No Voltage Costs – 2007\$” at page 3 of Appendix “A”) and the other with those costs included (“Bruce B Retired –Voltage Costs Included – 2007\$” at page 4 of Appendix “A”).
7. All graphs include a scenario based on a new series capacitor alternative with increased transfer capability of 7476 MW. This new alternative is based on the response to S.O.N. #10, as described in my direct evidence, and on the confirmation of this response by Hydro One witnesses during the hearing.
8. Based on testimony by Hydro One witnesses, a series capacitor alternative with increased transfer capability of 7476 MW will require additional voltage support. The two graphs which include the costs of this voltage support, assume costs of \$70 million occurring in 2011.
9. At this time, the cost of the voltage support suggested by Hydro One is not definitive and could be lower than the \$70 million assumed in our runs. Based upon the ABB Study and other material, a lower-cost option, such as one involving some combination of an SVC and static capacitors or another involving conversion to

synchronous condensers of the coal generators at Nanticoke, might be technically feasible. In this latter case, the two graphs which exclude the costs of additional voltage support may be more representative of the cost comparisons of the examined alternatives.

10. For runs modeling the case of Bruce B retiring, I have assumed the retirement to start in 2019. This is approximately 35 years after the in-service date of the first Bruce B unit in 1984. In each of three years following 2019, another Bruce B unit is removed, until only Bruce A units remain. Because the model as provided constrains the data in the In-Service Profile to no less than 6 units, I was required to change the maximum continuous rating, or MCR, of the Bruce B units (which equal 850 MW, even though the model calls these Bruce A units in the later years). This change is shown in the Input Data material.
11. Also attached in Appendix "A" are the various input data files and profiles of the expected number of Bruce units generating in any month. The cost profile data shows the output of the run, but Scenario #3, the series capacitor alternative with the 7476 MW upper limit, has been adjusted by adding in \$70 million in 2011 for voltage support. The table on the first page, with the Chart, shows the results prior to the adjustment for \$70 million in voltage support costs.
12. This concludes my affidavit.

IN THE MATTER OF the *Ontario Energy Board Act*, 1998, S.O. 1998, C.15 (Sched. B);

IN THE MATTER OF an Application by Hydro One Networks Inc. pursuant to section 92 of the Act, for an Order or Orders granting leave to construct a transmission reinforcement project between the Bruce Power Facility and Milton Switching Station, all in the Province of Ontario.

SUPPLEMENTARY AFFIDAVIT

of

WHITFIELD A. RUSSELL

on behalf of

THE SAUGEEN OJIBWAY NATIONS

I, Whitfield A. Russell, certify that the attached Affidavit and Appendix on behalf of the Saugeen Ojibway Nations, which bears my name, were produced by me or under my direct supervision and are true and accurate to the best of my knowledge and belief formed after a reasonable inquiry.

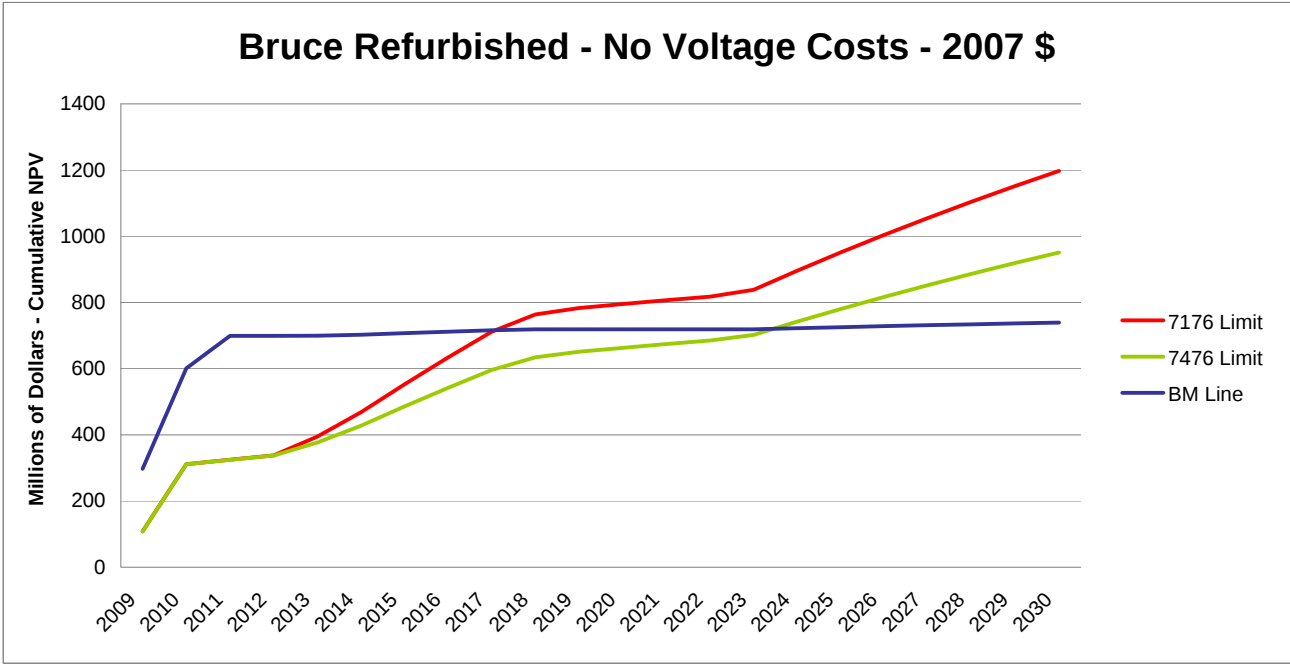
SWORN BEFORE ME at the
City of Toronto, in the
Province of Ontario
this 14 day of May, 2008

Commissioner for Taking Affidavits (or as may be)
Alexander R. Monem, a Commissioner, etc.
City of Toronto, Province of Ontario
Barrister and Solicitor
LSUC# 40580W

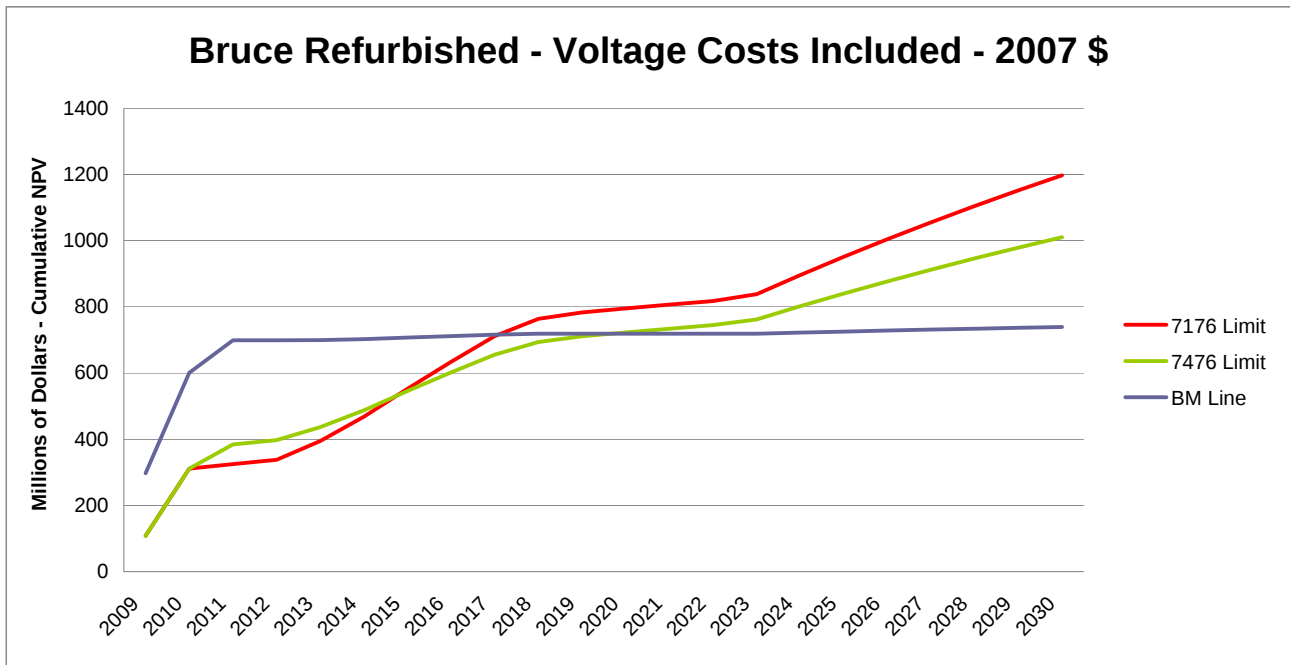


WHITFIELD A. RUSSELL

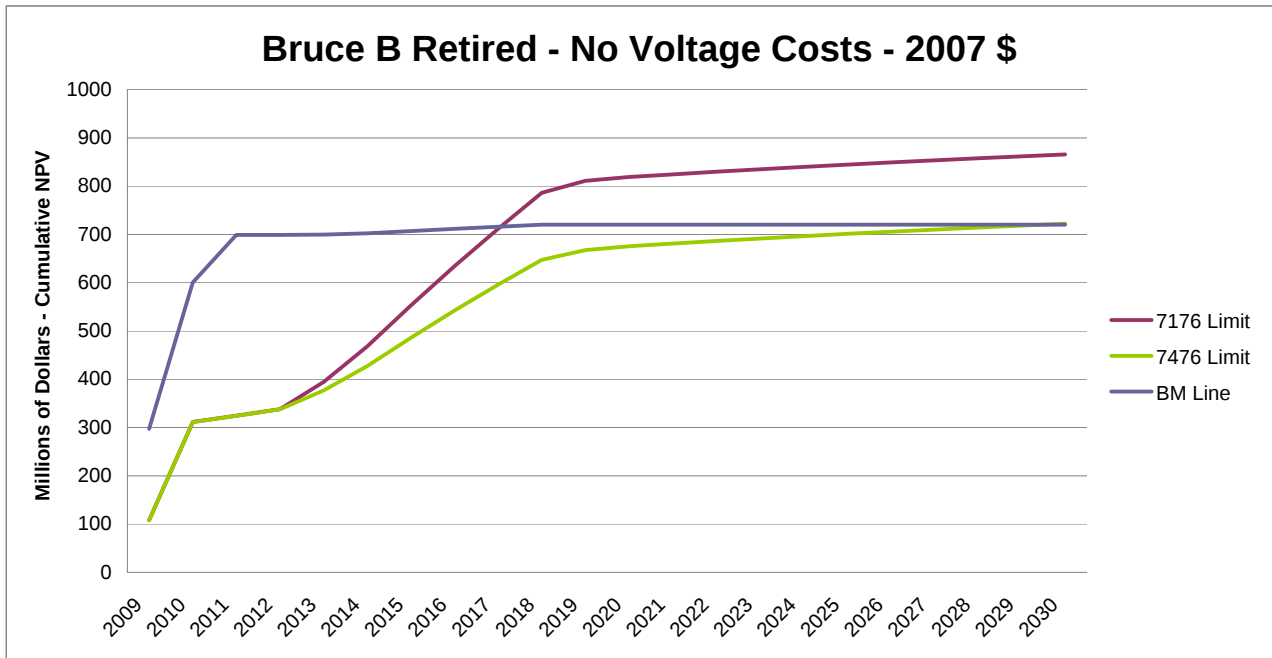
APPENDIX “A”



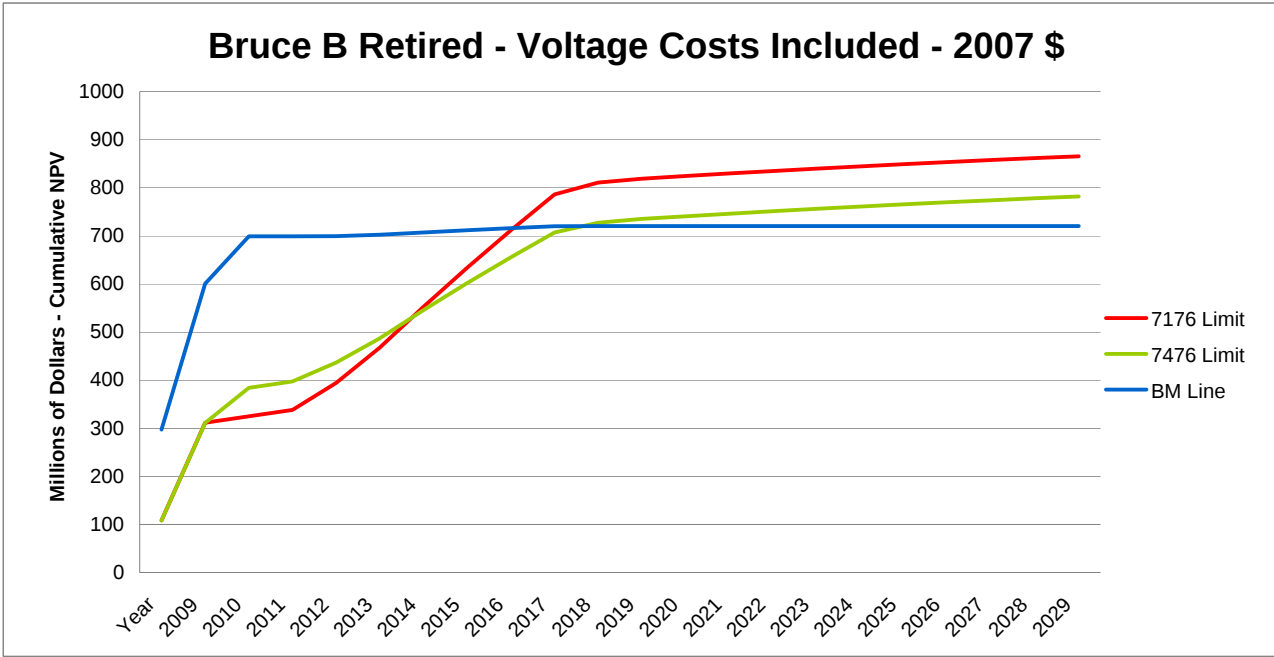
Year	7176 Limit	7476 Limit	BM Line
2009	108	108	297
2010	312	311	601
2011	325	324	699
2012	338	338	699
2013	394	377	700
2014	468	427	702
2015	553	486	707
2016	634	542	712
2017	712	596	716
2018	764	634	719
2019	783	651	719
2020	795	663	719
2021	807	674	719
2022	818	685	719
2023	838	702	719
2024	896	742	722
2025	951	780	725
2026	1004	817	728
2027	1055	852	731
2028	1105	887	734
2029	1152	919	737
2030	1197	951	739



Year	7176 Limit	7476 Limit	BM Line
2009	108	108	297
2010	312	311	601
2011	325	384	699
2012	338	397	699
2013	394	437	700
2014	468	487	702
2015	553	546	707
2016	634	602	712
2017	712	656	716
2018	764	694	719
2019	783	711	719
2020	795	723	719
2021	807	734	719
2022	818	745	719
2023	838	762	719
2024	896	802	722
2025	951	840	725
2026	1004	877	728
2027	1055	912	731
2028	1105	946	734
2029	1152	979	737
2030	1197	1011	739



Year	7176 Limit	7476 Limit	BM Line
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2011	325	324	699
2012	338	338	699
2013	394	377	700
2014	468	427	702
2015	553	486	707
2016	634	542	712
2017	712	596	716
2018	786	647	720
2019	811	668	720
2020	819	675	720
2021	824	681	720
2022	830	686	720
2023	835	692	720
2024	840	696	720
2025	845	701	720
2026	849	706	720
2027	854	710	720
2028	858	714	720
2029	862	718	720
2030	866	722	720



Year	7176 Limit	7476 Limit	BM Line
2009	108	108	297
2010	312	311	601
2011	325	384	699
2012	338	397	699
2013	394	437	700
2014	468	487	702
2015	553	546	707
2016	634	602	712
2017	712	656	716
2018	786	707	720
2019	811	727	720
2020	819	735	720
2021	824	741	720
2022	830	746	720
2023	835	751	720
2024	840	756	720
2025	845	761	720
2026	849	766	720
2027	854	770	720
2028	858	774	720
2029	862	778	720
2030	866	782	720

Bruce Refurbishment Run

Profile 1 Each Scenario (\$M)

Scenario 1

Cost in 2007 Dollars (M\$)						Discounted Cost in 2007 Dollars (M\$)	
Year	LIE	Capital	Losses	Peaker	Sum	NPV	Cumulative NPV
2009	1.714057	66.3	14.571	3.995568	86.58062	80.04865	80.04865384
2010	2.778226	157.3	14.70825	3.995568	178.782	158.9366	238.9852391
2011	0.003802	0	12.1572	2.849451	15.01045	12.831	251.8162345
2012	0.011855	0	12.65965	3.210252	15.88176	13.05365	264.8698818
2013	99.69899	0	20.01067	3.602551	123.3122	97.45543	362.3253129
2014	137.572	0	19.73462	2.635655	159.9423	121.543	483.8683254
2015	164.4793	0	20.461	2.635655	187.5759	137.0599	620.928227
2016	163.743	0	20.34484	2.635655	186.7235	131.1894	752.1176674
2017	163.1053	0	20.24547	2.635655	185.9864	125.6458	877.763446
2018	100.788	0	20.0069	2.635655	123.4305	80.17811	957.9415517
2019	19.48268	0	17.55895	5.332832	42.37446	26.46696	984.4085144
2020	1.868652	0	15.06738	3.995568	20.9316	12.57098	996.9794936
2021	1.866815	0	15.04931	3.995568	20.91169	12.07598	1009.055473
2022	1.864009	0	15.03001	3.995568	20.88959	11.59925	1020.654722
2023	30.91096	0	20.07099	5.332832	56.31479	30.06692	1050.721646
2024	158.997	0	19.74424	2.635655	181.3769	93.11405	1143.835699
2025	158.3122	0	19.6827	2.635655	180.6306	89.16433	1233.000032
2026	158.3122	0	19.6827	2.635655	180.6306	85.73494	1318.734969
2027	158.3122	0	19.6827	2.635655	180.6306	82.43744	1401.172407
2028	158.3122	0	19.6827	2.635655	180.6306	79.26677	1480.439175
2029	158.3122	0	19.6827	2.635655	180.6306	76.21805	1556.657221
2030	158.3122	0	19.6827	2.635655	180.6306	73.28658	1629.943804

Scenario 2

Cost in 2007 Dollars (M\$)						Discounted Cost in 2007 Dollars (M\$)	
Year	LIE	Capital	Losses	Peaker	Sum	NPV	Cumulative NPV
2009	0.149748	97.712	15.05004	4.025356	116.9371	108.115	108.1149592
2010	0.352711	209.2	15.22625	4.025356	228.8043	203.4062	311.5211646
2011	0	0	12.52516	2.837167	15.36232	13.13178	324.6529427
2012	0	0	13.04209	3.207678	16.24977	13.35613	338.0090694
2013	42.06732	0	24.28057	5.068284	71.41618	56.44124	394.4503133
2014	67.83086	0	24.81245	4.101388	96.7447	73.51802	467.9683311
2015	85.81032	0	26.15131	4.101388	116.063	84.80612	552.7744466
2016	85.46066	0	26.00729	4.101388	115.5693	81.19748	633.971929
2017	85.1637	0	25.88348	4.101388	115.1486	77.79025	711.7621795
2018	52.03765	0	23.6747	4.101388	79.81373	51.84548	763.6076574
2019	7.180855	0	18.78996	5.443517	31.41433	19.6213	783.2289546
2020	0.296931	0	15.59007	4.025356	19.91235	11.95884	795.1877976
2021	0.296714	0	15.57119	4.025356	19.89326	11.48786	806.6756591
2022	0.296319	0	15.55103	4.025356	19.87271	11.03461	817.7102681
2023	11.01455	0	21.7792	5.443517	38.23727	20.41519	838.1254591
2024	83.13116	0	25.2344	4.101388	112.4669	57.73752	895.8629806
2025	82.77164	0	25.14986	4.101388	112.0229	55.29765	951.1606264
2026	82.77164	0	25.14986	4.101388	112.0229	53.17081	1004.33144
2027	82.77164	0	25.14986	4.101388	112.0229	51.12578	1055.457222
2028	82.77164	0	25.14986	4.101388	112.0229	49.15941	1104.616627
2029	82.77164	0	25.14986	4.101388	112.0229	47.26866	1151.885287
2030	82.77164	0	25.14986	4.101388	112.0229	45.45063	1197.335921

Bruce Refurbishment Run

Scenario 3

Cost in 2007 Dollars (M\$)						Discounted Cost in 2007 Dollars (M\$)	
Year	LIE	Capital	Losses	Peaker	Sum	NPV	Cumulative NPV
2009	0.002537	97.712	15.06151	4.025356	116.8014	107.9895	107.9894654
2010	0.016513	209.2	15.24929	4.025356	228.4912	203.1278	311.1172724
2011	0	70	12.52516	2.837167	85.36232	72.96807	384.0853439
2012	0	0	13.04209	3.207678	16.24977	13.35613	397.4414706
2013	17.05829	0	26.00182	6.51672	49.57683	39.18129	436.6227599
2014	33.78525	0	27.22783	5.549825	66.5629	50.58234	487.2050967
2015	45.64698	0	29.01449	5.549825	80.2113	58.60961	545.814705
2016	45.4793	0	28.85806	5.549825	79.88719	56.12768	601.9423831
2017	45.34059	0	28.72357	5.549825	79.61398	53.78435	655.7267343
2018	27.87626	0	25.41478	5.549825	58.84087	38.22191	693.9486404
2019	2.580128	0	19.12769	5.443517	27.15133	16.95864	710.9072825
2020	0.025228	0	15.61157	4.025356	19.66215	11.80858	722.7158624
2021	0.025221	0	15.59267	4.025356	19.64325	11.34349	734.0593483
2022	0.025197	0	15.57248	4.025356	19.62303	10.89597	744.9553216
2023	3.847439	0	22.29287	5.443517	31.58382	16.86286	761.8181827
2024	44.32146	0	28.00447	5.549825	77.87576	39.97933	801.7975135
2025	44.12973	0	27.90807	5.549825	77.58763	38.29943	840.0969481
2026	44.12973	0	27.90807	5.549825	77.58763	36.82638	876.9233275
2027	44.12973	0	27.90807	5.549825	77.58763	35.40998	912.3333076
2028	44.12973	0	27.90807	5.549825	77.58763	34.04806	946.3813655
2029	44.12973	0	27.90807	5.549825	77.58763	32.73852	979.1198826
2030	44.12973	0	27.90807	5.549825	77.58763	31.47934	1010.599226

Scenario 4

Cost in 2007 Dollars (M\$)						Discounted Cost in 2007 Dollars (M\$)	
Year	LIE	Capital	Losses	Peaker	Sum	NPV	Cumulative NPV
2009	0	321.5944	0	0	321.5944	297.3321	297.3321006
2010	0	341.3	0	0	341.3	303.4145	600.7465578
2011	0	115	0	0	115	98.30248	699.0490398
2012	0	0	0	0	0	0	699.0490398
2013	0.754223	0	0	0	0.754223	0.596073	699.6451128
2014	3.579216	0	0	0	3.579216	2.71991	702.365023
2015	6.50959	0	0	0	6.50959	4.756493	707.1215164
2016	6.493086	0	0	0	6.493086	4.561956	711.6834726
2017	6.481169	0	0	0	6.481169	4.378446	716.0619183
2018	4.216554	0	0	0	4.216554	2.738993	718.8009112
2019	0.077583	0	0	0	0.077583	0.048458	718.8493696
2020	0	0	0	0	0	0	718.8493696
2021	0	0	0	0	0	0	718.8493696
2022	0	0	0	0	0	0	718.8493696
2023	0.102877	0	0	0	0.102877	0.054927	718.9042967
2024	6.36286	0	0	0	6.36286	3.266522	722.170819
2025	6.3359	0	0	0	6.3359	3.127578	725.2983974
2026	6.3359	0	0	0	6.3359	3.007287	728.3056843
2027	6.3359	0	0	0	6.3359	2.891622	731.1973063
2028	6.3359	0	0	0	6.3359	2.780406	733.9777121
2029	6.3359	0	0	0	6.3359	2.673467	736.6511792
2030	6.3359	0	0	0	6.3359	2.570641	739.2218207

Bruce Refurbishment Run

Study Parameters

Start Year	2009
End Year	2030
Current Year	2007

Run

# of Input Sheets	4
Randomize Model?	No
# of Unit I/S Profiles	1

Samples	
Wind Samples	20
Nuclear Samples	20
Output Data	400
Limit Samples	20
LIC Data	8000

Sample Types	(ave, max, min)
Wind	ave
Nuclear	ave
Limit	ave

Wind Generation

Capacity Factors Already Sampled

Year	Committed&Existing	Planned	Total
2009	700	0	700
2010	700	0	700
2011	700	0	700
2012	700	0	700
2013	700	315	1015
2014	700	785	1485
2015	700	1000	1700
2016	700	1000	1700
2017	700	1000	1700
2018	700	1000	1700
2019	700	1000	1700
2020	700	1000	1700
2021	700	1000	1700
2022	700	1000	1700
2023	700	1000	1700
2024	700	1000	1700
2025	700	1000	1700
2026	700	1000	1700
2027	700	1000	1700
2028	700	1000	1700
2029	700	1000	1700
2030	700	1000	1700
2031			0

Nuclear Generation

EFOR	8%
Days of PO per Unit-Year	22.5

Year	MCR	Bruce 1	Bruce 2	Bruce 3	Bruce 4	Bruce 5	Bruce 6	Bruce 7	Bruce 8
2009	750	750	750	750	750	829.95	829.95	829.95	829.95
2010	750	750	750	750	750	829.25	829.25	829.25	829.25
2011	750	750	750	750	750	837.55	837.55	837.55	837.55
2012	750	750	750	750	750	845.85	845.85	845.85	845.85
2013	750	750	750	750	750	850	850	850	850
2014	750	750	750	750	750	850	850	850	850
2015	750	750	750	750	750	850	850	850	850
2016	850	850	850	850	850	750	750	750	750
2017	850	850	850	850	850	750	750	750	750
2018	850	850	850	850	850	750	750	750	750
2019	850	850	850	850	850	750	750	750	750
2020	850	850	850	850	850	750	750	750	750
2021	850	850	850	850	850	750	750	750	750
2022	850	850	850	850	850	750	750	750	750
2023	850	850	850	850	850	750	750	750	750
2024	850	850	850	850	850	750	750	750	750
2025	850	850	850	850	850	750	750	750	750
2026	850	850	850	850	850	750	750	750	750
2027	850	850	850	850	850	750	750	750	750
2028	850	850	850	850	850	750	750	750	750
2029	850	850	850	850	850	750	750	750	750
2030	850	850	850	850	850	750	750	750	750
2031									

Limit Cases	
# of Limits	4
Number of Penalty Data	26280

Nominal Limits	Limit A	Limit B	Limit C	Limit D	Limit E	Limit F
w/ Penalty	6821	7176	7476	8160		
w/out Penalty	5976	6776	6776	8160		

Costs	
Real Discount Rate	4%

Peaker Cost (\$/kW-year)	66.9
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Cost Scenarios									
# of Scenarios	4								
Year	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	
2009	Limit A	Limit B	Limit C	Limit D					
2010	Limit A	Limit B	Limit C	Limit D					
2011	Limit A	Limit B	Limit C	Limit D					
2012	Limit A	Limit B	Limit C	Limit D					
2013	Limit A	Limit B	Limit C	Limit D					
2014	Limit A	Limit B	Limit C	Limit D					
2015	Limit A	Limit B	Limit C	Limit D					
2016	Limit A	Limit B	Limit C	Limit D					
2017	Limit A	Limit B	Limit C	Limit D					
2018	Limit A	Limit B	Limit C	Limit D					
2019	Limit A	Limit B	Limit C	Limit D					
2020	Limit A	Limit B	Limit C	Limit D					
2021	Limit A	Limit B	Limit C	Limit D					
2022	Limit A	Limit B	Limit C	Limit D					
2023	Limit A	Limit B	Limit C	Limit D					
2024	Limit A	Limit B	Limit C	Limit D					
2025	Limit A	Limit B	Limit C	Limit D					
2026	Limit A	Limit B	Limit C	Limit D					
2027	Limit A	Limit B	Limit C	Limit D					
2028	Limit A	Limit B	Limit C	Limit D					
2029	Limit A	Limit B	Limit C	Limit D					
2030	Limit A	Limit B	Limit C	Limit D					
2031									

Bruce Refurbishment Run

Capital Costs (\$M)								
Year	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8
2009	66.3	97.712	97.712	321.5944				
2010	157.3	209.2	209.2	341.3				
2011	0			115				
2012								
2013								
2014								
2015								
2016								
2017								
2018								
2019								
2020								
2021								
2022								
2023								
2024								
2025								
2026								
2027								
2028								
2029								
2030								
2031								
Energy Costs (\$/MWh)								
Year	WinPeak	WinMid	WinOff	SumPeak	SumMid	SumOff	ShoMid	ShoOff
2009	91.4	64.7	41.7	86.6	67.9	40.8	68.1	37.5
2010	90.4	63.3	43.5	86.5	67.1	40.3	64.7	36.6
2011	85.6	61.8	42.8	81.3	66.1	39.6	63.7	35.4
2012	85.2	61.5	42.3	87	67.1	40.8	65.3	38.3
2013	92.6	65.7	46.4	87.7	70.6	42	66.6	40.7
2014	90.7	68.6	47.4	93.7	73.1	43	69.4	41.6
2015	89.7	68.5	51.3	108.3	78.6	46.2	70.4	44.7
2016	90.4	68.7	50.9	106.3	77.7	46.1	69.8	44.6
2017	91.1	68.9	50.6	104.3	76.8	46	69.3	44.6
2018	91.7	69	50.2	102.4	75.8	45.9	68.7	44.5
2019	92.2	69.1	49.8	100.5	74.9	45.7	68.1	44.4
2020	92.6	69.1	49.4	98.7	74	45.5	67.5	44.3
2021	92.5	68.9	49.5	96.7	74	45.6	67.7	44.4
2022	92.3	68.6	49.6	94.9	74	45.7	67.9	44.5
2023	92	68.3	49.6	93	74	45.7	68.1	44.6
2024	91.7	69	49.7	91.2	73.9	45.7	68.2	44.6
2025	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2026	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2027	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2028	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2029	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2030	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2031								
Losses (MW)								
m Gen Output Levels for Loss Cal								
Average Load Losses	17							
Real Flow Buckets (MW)	Limit A	Limit B	Limit C	Limit D	Limit E	Limit F		
3500	519.20	518.54	518.54	504.28				
3750	521.89	521.87	521.87	505.00				
4000	526.04	526.53	526.53	506.69				
4250	531.63	532.52	532.52	509.36				
4500	538.68	539.86	539.86	513.00				
4750	547.19	548.53	548.53	517.61				
5000	557.15	558.54	558.54	523.19				
5250	568.56	569.89	569.89	529.74				
5500	581.43	582.58	582.58	537.27				
5750	595.75	596.61	596.61	545.77				
6000	611.52	611.97	611.97	555.24				
6250	628.75	628.67	628.67	565.68				
6500	647.43	646.71	646.71	577.10				
6750	667.57	666.09	666.09	589.49				
7000	689.16	686.80	686.80	602.95				
7250	712.20	708.86	708.86	617.18				
7500	736.70	732.25	732.25	632.49				
Peak Load Losses								
Real Flow Buckets (MW)	Limit A	Limit B	Limit C	Limit D	Limit E	Limit F		
3500	996.95	997.55	997.55	983.22				
3750	999.36	999.66	999.66	982.46				
4000	1003.10	1003.16	1003.16	982.72				
4250	1008.18	1008.06	1008.06	983.99				
4500	1014.59	1014.36	1014.36	986.27				
4750	1022.33	1022.05	1022.05	989.57				
5000	1031.40	1031.14	1031.14	993.88				
5250	1041.80	1041.62	1041.62	999.21				
5500	1053.54	1053.50	1053.50	1005.55				
5750	1066.60	1066.77	1066.77	1012.90				
6000	1081.00	1081.44	1081.44	1021.27				
6250	1096.73	1097.51	1097.51	1030.66				
6500	1113.79	1114.97	1114.97	1041.05				
6750	1132.18	1133.83	1133.83	1052.46				
7000	1151.90	1154.09	1154.09	1064.89				
7250	1172.95	1175.74	1175.74	1078.33				
7500	1195.34	1198.78	1198.78	1092.78				

Bruce Refurbishment Run

Comment:	User IS Profile #1	User IS Profile #2	User IS Profile #3	User IS Profile #4	User IS Profile #5
Date	# Units I/S	# Units I/S	# Units I/S	# Units I/S	# Units I/S
Jan-09	6				
Feb-09	6				
Mar-09	6				
Apr-09	6				
May-09	6				
Jun-09	6				
Jul-09	7				
Aug-09	7				
Sep-09	7				
Oct-09	7				
Nov-09	7				
Dec-09	7				
Jan-10	7				
Feb-10	7				
Mar-10	7				
Apr-10	7				
May-10	7				
Jun-10	7				
Jul-10	6				
Aug-10	6				
Sep-10	6				
Oct-10	6				
Nov-10	6				
Dec-10	6				
Jan-11	6				
Feb-11	6				
Mar-11	6				
Apr-11	6				
May-11	6				
Jun-11	6				
Jul-11	6				
Aug-11	6				
Sep-11	6				
Oct-11	6				
Nov-11	6				
Dec-11	6				
Jan-12	6				
Feb-12	6				
Mar-12	6				
Apr-12	6				
May-12	6				
Jun-12	6				
Jul-12	6				
Aug-12	6				
Sep-12	6				
Oct-12	6				
Nov-12	6				
Dec-12	6				
Jan-13	8				
Feb-13	8				
Mar-13	8				
Apr-13	8				
May-13	8				
Jun-13	8				
Jul-13	8				

Bruce Refurbishment Run

Aug-13	8
Sep-13	8
Oct-13	8
Nov-13	8
Dec-13	8
Jan-14	8
Feb-14	8
Mar-14	8
Apr-14	8
May-14	8
Jun-14	8
Jul-14	8
Aug-14	8
Sep-14	8
Oct-14	8
Nov-14	8
Dec-14	8
Jan-15	8
Feb-15	8
Mar-15	8
Apr-15	8
May-15	8
Jun-15	8
Jul-15	8
Aug-15	8
Sep-15	8
Oct-15	8
Nov-15	8
Dec-15	8
Jan-16	8
Feb-16	8
Mar-16	8
Apr-16	8
May-16	8
Jun-16	8
Jul-16	8
Aug-16	8
Sep-16	8
Oct-16	8
Nov-16	8
Dec-16	8
Jan-17	8
Feb-17	8
Mar-17	8
Apr-17	8
May-17	8
Jun-17	8
Jul-17	8
Aug-17	8
Sep-17	8
Oct-17	8
Nov-17	8
Dec-17	8
Jan-18	8
Feb-18	8
Mar-18	8
Apr-18	8

Bruce Refurbishment Run

May-18	8
Jun-18	8
Jul-18	7
Aug-18	7
Sep-18	7
Oct-18	7
Nov-18	7
Dec-18	7
Jan-19	7
Feb-19	7
Mar-19	7
Apr-19	7
May-19	7
Jun-19	7
Jul-19	6
Aug-19	6
Sep-19	6
Oct-19	6
Nov-19	6
Dec-19	6
Jan-20	6
Feb-20	6
Mar-20	6
Apr-20	6
May-20	6
Jun-20	6
Jul-20	6
Aug-20	6
Sep-20	6
Oct-20	6
Nov-20	6
Dec-20	6
Jan-21	6
Feb-21	6
Mar-21	6
Apr-21	6
May-21	6
Jun-21	6
Jul-21	6
Aug-21	6
Sep-21	6
Oct-21	6
Nov-21	6
Dec-21	6
Jan-22	6
Feb-22	6
Mar-22	6
Apr-22	6
May-22	6
Jun-22	6
Jul-22	6
Aug-22	6
Sep-22	6
Oct-22	6
Nov-22	6
Dec-22	6
Jan-23	7

Bruce Refurbishment Run

Feb-23	7
Mar-23	7
Apr-23	7
May-23	7
Jun-23	7
Jul-23	7
Aug-23	7
Sep-23	7
Oct-23	7
Nov-23	7
Dec-23	7
Jan-24	8
Feb-24	8
Mar-24	8
Apr-24	8
May-24	8
Jun-24	8
Jul-24	8
Aug-24	8
Sep-24	8
Oct-24	8
Nov-24	8
Dec-24	8
Jan-25	8
Feb-25	8
Mar-25	8
Apr-25	8
May-25	8
Jun-25	8
Jul-25	8
Aug-25	8
Sep-25	8
Oct-25	8
Nov-25	8
Dec-25	8
Jan-26	8
Feb-26	8
Mar-26	8
Apr-26	8
May-26	8
Jun-26	8
Jul-26	8
Aug-26	8
Sep-26	8
Oct-26	8
Nov-26	8
Dec-26	8
Jan-27	8
Feb-27	8
Mar-27	8
Apr-27	8
May-27	8
Jun-27	8
Jul-27	8
Aug-27	8
Sep-27	8
Oct-27	8

Bruce Refurbishment Run

Nov-27	8
Dec-27	8
Jan-28	8
Feb-28	8
Mar-28	8
Apr-28	8
May-28	8
Jun-28	8
Jul-28	8
Aug-28	8
Sep-28	8
Oct-28	8
Nov-28	8
Dec-28	8
Jan-29	8
Feb-29	8
Mar-29	8
Apr-29	8
May-29	8
Jun-29	8
Jul-29	8
Aug-29	8
Sep-29	8
Oct-29	8
Nov-29	8
Dec-29	8
Jan-30	8
Feb-30	8
Mar-30	8
Apr-30	8
May-30	8
Jun-30	8
Jul-30	8
Aug-30	8
Sep-30	8
Oct-30	8
Nov-30	8
Dec-30	8
Jan-31	8
Feb-31	8
Mar-31	8
Apr-31	8
May-31	8
Jun-31	8
Jul-31	8
Aug-31	8
Sep-31	8
Oct-31	8
Nov-31	8
Dec-31	8

Bruce Refurbishment Run

Profile 1 Each Scenario (\$M)

Scenario 1

Cost in 2007 Dollars (M\$)						Discounted Cost in 2007 Dollars (M\$)	
Year	LIE	Capital	Losses	Peaker	Sum	NPV	Cumulative NPV
2009	1.714057	66.3	14.571	3.995568	86.58062	80.04865	80.04865384
2010	2.778226	157.3	14.70825	3.995568	178.782	158.9366	238.9852391
2011	0.003802	0	12.1572	2.849451	15.01045	12.831	251.8162345
2012	0.011855	0	12.65965	3.210252	15.88176	13.05365	264.8698818
2013	99.69899	0	20.01067	3.602551	123.3122	97.45543	362.3253129
2014	137.572	0	19.73462	2.635655	159.9423	121.543	483.8683254
2015	164.4793	0	20.461	2.635655	187.5759	137.0599	620.928227
2016	163.743	0	20.34484	2.635655	186.7235	131.1894	752.1176674
2017	163.1053	0	20.24547	2.635655	185.9864	125.6458	877.763446
2018	162.2972	0	20.12378	2.635655	185.0566	120.2092	997.9726871
2019	33.7879	0	20.23813	5.332832	59.35887	37.07537	1035.04806
2020	0	0	10.55747	2.509889	13.06736	7.847916	1042.895975
2021	0	0	8.27767	1.618636	9.896305	5.71487	1048.610845
2022	0	0	8.269351	1.618636	9.887987	5.490448	1054.101293
2023	0	0	8.254106	1.618636	9.872742	5.271138	1059.372431
2024	0	0	8.236599	1.618636	9.855235	5.059414	1064.431845
2025	0	0	8.210973	1.618636	9.829608	4.852171	1069.284016
2026	0	0	8.210973	1.618636	9.829608	4.665549	1073.949565
2027	0	0	8.210973	1.618636	9.829608	4.486105	1078.435669
2028	0	0	8.210973	1.618636	9.829608	4.313562	1082.749232
2029	0	0	8.210973	1.618636	9.829608	4.147656	1086.896888
2030	0	0	8.210973	1.618636	9.829608	3.988131	1090.885019

Scenario 2

Cost in 2007 Dollars (M\$)						Discounted Cost in 2007 Dollars (M\$)	
Year	LIE	Capital	Losses	Peaker	Sum	NPV	Cumulative NPV
2009	0.149748	97.712	15.05004	4.025356	116.9371	108.115	108.1149592
2010	0.352711	209.2	15.22625	4.025356	228.8043	203.4062	311.5211646
2011	0	0	12.52516	2.837167	15.36232	13.13178	324.6529427
2012	0	0	13.04209	3.207678	16.24977	13.35613	338.0090694
2013	42.06732	0	24.28057	5.068284	71.41618	56.44124	394.4503133
2014	67.83086	0	24.81245	4.101388	96.7447	73.51802	467.9683311
2015	85.81032	0	26.15131	4.101388	116.063	84.80612	552.7744466
2016	85.46066	0	26.00729	4.101388	115.5693	81.19748	633.971929
2017	85.1637	0	25.88348	4.101388	115.1486	77.79025	711.7621795
2018	84.77378	0	25.73167	4.101388	114.6068	74.44642	786.2085989
2019	12.20541	0	22.04147	5.443517	39.69039	24.7905	810.9991003
2020	0	0	10.68671	2.492209	13.17892	7.91492	818.9140199
2021	0	0	8.031159	1.61065	9.641809	5.567904	824.4819242
2022	0	0	8.023062	1.61065	9.633712	5.349258	829.8311825
2023	0	0	8.008227	1.61065	9.618877	5.135597	834.9667795
2024	0	0	7.991253	1.61065	9.601903	4.92936	839.8961397
2025	0	0	7.966332	1.61065	9.576982	4.727468	844.6236074
2026	0	0	7.966332	1.61065	9.576982	4.545642	849.1692494
2027	0	0	7.966332	1.61065	9.576982	4.37081	853.540059
2028	0	0	7.966332	1.61065	9.576982	4.202702	857.7427606
2029	0	0	7.966332	1.61065	9.576982	4.041059	861.7838197
2030	0	0	7.966332	1.61065	9.576982	3.885634	865.6694536

Bruce Refurbishment Run

Scenario 3

Cost in 2007 Dollars (M\$)						Discounted Cost in 2007 Dollars (M\$)	
Year	LIE	Capital	Losses	Peaker	Sum	NPV	Cumulative NPV
2009	0.002537	97.712	15.06151	4.025356	116.8014	107.9895	107.9894654
2010	0.016513	209.2	15.24929	4.025356	228.4912	203.1278	311.1172724
2011	0	70	12.52516	2.837167	85.36232	72.96807	384.0853439
2012	0	0	13.04209	3.207678	16.24977	13.35613	397.4414706
2013	17.05829	0	26.00182	6.51672	49.57683	39.18129	436.6227599
2014	33.78525	0	27.22783	5.549825	66.5629	50.58234	487.2050967
2015	45.64698	0	29.01449	5.549825	80.2113	58.60961	545.814705
2016	45.4793	0	28.85806	5.549825	79.88719	56.12768	601.9423831
2017	45.34059	0	28.72357	5.549825	79.61398	53.78435	655.7267343
2018	45.15005	0	28.55808	5.549825	79.25795	51.48445	707.2111877
2019	4.305507	0	22.60361	5.443517	32.35264	20.20736	727.4185486
2020	0	0	10.68671	2.492209	13.17892	7.91492	735.3334682
2021	0	0	8.031159	1.61065	9.641809	5.567904	740.9013725
2022	0	0	8.023062	1.61065	9.633712	5.349258	746.2506308
2023	0	0	8.008227	1.61065	9.618877	5.135597	751.3862278
2024	0	0	7.991253	1.61065	9.601903	4.92936	756.315588
2025	0	0	7.966332	1.61065	9.576982	4.727468	761.0430557
2026	0	0	7.966332	1.61065	9.576982	4.545642	765.5886977
2027	0	0	7.966332	1.61065	9.576982	4.37081	769.9595073
2028	0	0	7.966332	1.61065	9.576982	4.202702	774.1622089
2029	0	0	7.966332	1.61065	9.576982	4.041059	778.203268
2030	0	0	7.966332	1.61065	9.576982	3.885634	782.0889019

Scenario 4

Cost in 2007 Dollars (M\$)						Discounted Cost in 2007 Dollars (M\$)	
Year	LIE	Capital	Losses	Peaker	Sum	NPV	Cumulative NPV
2009	0	321.5944	0	0	321.5944	297.3321	297.3321006
2010	0	341.3	0	0	341.3	303.4145	600.7465578
2011	0	115	0	0	115	98.30248	699.0490398
2012	0	0	0	0	0	0	699.0490398
2013	0.754223	0	0	0	0.754223	0.596073	699.6451128
2014	3.579216	0	0	0	3.579216	2.71991	702.365023
2015	6.50959	0	0	0	6.50959	4.756493	707.1215164
2016	6.493086	0	0	0	6.493086	4.561956	711.6834726
2017	6.481169	0	0	0	6.481169	4.378446	716.0619183
2018	6.460872	0	0	0	6.460872	4.196859	720.2587773
2019	0.117698	0	0	0	0.117698	0.073514	720.3322915
2020	0	0	0	0	0	0	720.3322915
2021	0	0	0	0	0	0	720.3322915
2022	0	0	0	0	0	0	720.3322915
2023	0	0	0	0	0	0	720.3322915
2024	0	0	0	0	0	0	720.3322915
2025	0	0	0	0	0	0	720.3322915
2026	0	0	0	0	0	0	720.3322915
2027	0	0	0	0	0	0	720.3322915
2028	0	0	0	0	0	0	720.3322915
2029	0	0	0	0	0	0	720.3322915
2030	0	0	0	0	0	0	720.3322915

Bruce Refurbishment Run

Study Parameters

Start Year	2009
End Year	2030
Current Year	2007
# of Input Sheets	4
Randomize Model?	No
# of Unit I/S Profiles	1
Samples	
Wind Samples	20
Nuclear Samples	20
Output Data	400
Limit Samples	20
LIC Data	8000
Sample Types	(ave, max, min)
Wind	ave
Nuclear	ave
Limit	ave

Run

Wind Generation

Capacity Factors Already Sampled

Year	Committed&Existing	Planned	Total
2009	700	0	700
2010	700	0	700
2011	700	0	700
2012	700	0	700
2013	700	315	1015
2014	700	785	1485
2015	700	1000	1700
2016	700	1000	1700
2017	700	1000	1700
2018	700	1000	1700
2019	700	1000	1700
2020	700	1000	1700
2021	700	1000	1700
2022	700	1000	1700
2023	700	1000	1700
2024	700	1000	1700
2025	700	1000	1700
2026	700	1000	1700
2027	700	1000	1700
2028	700	1000	1700
2029	700	1000	1700
2030	700	1000	1700
2031			0

Nuclear Generation

EFOR
Days of PO per Unit-Year

8%
22.5

Year	MCR	Bruce 1	Bruce 2	Bruce 3	Bruce 4	Bruce 5	Bruce 6	Bruce 7	Bruce 8
2009	750	750	750	750	820.95	820.95	820.95	820.95	820.95
2010	750	750	750	750	829.25	829.25	829.25	829.25	829.25
2011	750	750	750	750	837.55	837.55	837.55	837.55	837.55
2012	750	750	750	750	845.85	845.85	845.85	845.85	845.85
2013	750	750	750	750	850	850	850	850	850
2014	750	750	750	750	850	850	850	850	850
2015	750	750	750	750	850	850	850	850	850
2016	850	850	850	850	750	750	750	750	750
2017	850	850	850	850	750	750	750	750	750
2018	850	850	850	850	750	750	750	750	750
2019	0	850	850	850	750	750	750	750	750
2020	0	0	0	850	750	750	750	750	750
2021	0	0	0	0	750	750	750	750	750
2022	0	0	0	0	750	750	750	750	750
2023	0	0	0	0	750	750	750	750	750
2024	0	0	0	0	750	750	750	750	750
2025	0	0	0	0	750	750	750	750	750
2026	0	0	0	0	750	750	750	750	750
2027	0	0	0	0	750	750	750	750	750
2028	0	0	0	0	750	750	750	750	750
2029	0	0	0	0	750	750	750	750	750
2030	0	0	0	0	750	750	750	750	750
2031									

Limit Cases

of Limits
Number of Penalty Data

4
26280

Nominal Limits

w/ Penalty
w/out Penalty

Limit A	Limit B	Limit C	Limit D	Limit E	Limit F
6821	7176	7476	8160		
5976	6776	6776	8160		

Costs

Real Discount Rate

4%

Peaker Cost (\$/kW-year)

66.9

Cost Scenarios

of Scenarios

4

Year	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8
2009	Limit A	Limit B	Limit C	Limit D				
2010	Limit A	Limit B	Limit C	Limit D				
2011	Limit A	Limit B	Limit C	Limit D				
2012	Limit A	Limit B	Limit C	Limit D				
2013	Limit A	Limit B	Limit C	Limit D				
2014	Limit A	Limit B	Limit C	Limit D				
2015	Limit A	Limit B	Limit C	Limit D				
2016	Limit A	Limit B	Limit C	Limit D				
2017	Limit A	Limit B	Limit C	Limit D				
2018	Limit A	Limit B	Limit C	Limit D				
2019	Limit A	Limit B	Limit C	Limit D				
2020	Limit A	Limit B	Limit C	Limit D				
2021	Limit A	Limit B	Limit C	Limit D				
2022	Limit A	Limit B	Limit C	Limit D				
2023	Limit A	Limit B	Limit C	Limit D				
2024	Limit A	Limit B	Limit C	Limit D				
2025	Limit A	Limit B	Limit C	Limit D				
2026	Limit A	Limit B	Limit C	Limit D				
2027	Limit A	Limit B	Limit C	Limit D				
2028	Limit A	Limit B	Limit C	Limit D				
2029	Limit A	Limit B	Limit C	Limit D				
2030	Limit A	Limit B	Limit C	Limit D				
2031								

Bruce Refurbishment Run

Capital Costs (\$M)								
Year	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8
2009	66.3	97.712	97.712	321.5944				
2010	157.3	209.2	209.2	341.3				
2011	0			115				
2012								
2013								
2014								
2015								
2016								
2017								
2018								
2019								
2020								
2021								
2022								
2023								
2024								
2025								
2026								
2027								
2028								
2029								
2030								
2031								
Energy Costs (\$/MWh)								
Year	WinPeak	WinMid	WinOff	SumPeak	SumMid	SumOff	ShoMid	ShoOff
2009	91.4	64.7	41.7	86.6	67.9	40.8	68.1	37.5
2010	90.4	63.3	43.5	86.5	67.1	40.3	64.7	36.6
2011	85.6	61.8	42.8	81.3	66.1	39.6	63.7	35.4
2012	85.2	61.5	42.3	87	67.1	40.8	65.3	38.3
2013	92.6	65.7	46.4	87.7	70.6	42	66.6	40.7
2014	90.7	68.6	47.4	93.7	73.1	43	69.4	41.6
2015	89.7	68.5	51.3	108.3	78.6	46.2	70.4	44.7
2016	90.4	68.7	50.9	106.3	77.7	46.1	69.8	44.6
2017	91.1	68.9	50.6	104.3	76.8	46	69.3	44.6
2018	91.7	69	50.2	102.4	75.8	45.9	68.7	44.5
2019	92.2	69.1	49.8	100.5	74.9	45.7	68.1	44.4
2020	92.6	69.1	49.4	98.7	74	45.5	67.5	44.3
2021	92.5	68.9	49.5	96.7	74	45.6	67.7	44.4
2022	92.3	68.6	49.6	94.9	74	45.7	67.9	44.5
2023	92	68.3	49.6	93	74	45.7	68.1	44.6
2024	91.7	68	49.7	91.2	73.9	45.7	68.2	44.6
2025	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2026	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2027	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2028	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2029	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2030	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
2031	91.3	67.6	49.6	89.4	73.7	45.7	68.2	44.7
Losses (MW)								
m Gen Output Levels for Loss Cal								
Average Load Losses	17							
Real Flow Buckets (MW)	Limit A	Limit B	Limit C	Limit D	Limit E	Limit F		
3500	519.20	518.54	518.54	504.28				
3750	521.69	521.87	521.87	505.00				
4000	526.04	526.53	526.53	506.69				
4250	531.63	532.52	532.52	509.36				
4500	538.68	539.86	539.86	513.00				
4750	547.19	548.53	548.53	517.61				
5000	557.15	558.54	558.54	523.19				
5250	568.56	569.89	569.89	529.74				
5500	581.43	582.58	582.58	537.27				
5750	595.75	596.61	596.61	545.77				
6000	611.52	611.97	611.97	555.24				
6250	628.75	628.67	628.67	565.68				
6500	647.43	646.71	646.71	577.10				
6750	667.57	666.09	666.09	589.49				
7000	689.16	686.90	686.90	602.85				
7250	712.20	708.86	708.86	617.18				
7500	736.70	732.25	732.25	632.49				
Peak Load Losses								
Real Flow Buckets (MW)	Limit A	Limit B	Limit C	Limit D	Limit E	Limit F		
3500	996.95	997.55	997.55	983.22				
3750	999.36	999.66	999.66	982.46				
4000	1003.10	1003.16	1003.16	982.72				
4250	1008.18	1008.06	1008.06	983.99				
4500	1014.59	1014.36	1014.36	986.27				
4750	1022.33	1022.05	1022.05	989.57				
5000	1031.40	1031.14	1031.14	993.88				
5250	1041.80	1041.62	1041.62	999.21				
5500	1053.54	1053.50	1053.50	1005.55				
5750	1066.60	1066.77	1066.77	1012.90				
6000	1081.00	1081.44	1081.44	1021.27				
6250	1096.73	1097.51	1097.51	1030.66				
6500	1113.79	1114.97	1114.97	1041.05				
6750	1132.18	1133.83	1133.83	1052.46				
7000	1151.90	1154.09	1154.09	1064.89				
7250	1172.95	1175.74	1175.74	1078.33				
7500	1195.34	1198.78	1198.78	1092.78				

Bruce Refurbishment Run

Comment:	User IS Profile #1	User IS Profile #2	User IS Profile #3	User IS Profile #4	User IS Profile #5
Date	# Units I/S	# Units I/S	# Units I/S	# Units I/S	# Units I/S
Jan-09	6				
Feb-09	6				
Mar-09	6				
Apr-09	6				
May-09	6				
Jun-09	6				
Jul-09	7				
Aug-09	7				
Sep-09	7				
Oct-09	7				
Nov-09	7				
Dec-09	7				
Jan-10	7				
Feb-10	7				
Mar-10	7				
Apr-10	7				
May-10	7				
Jun-10	7				
Jul-10	6				
Aug-10	6				
Sep-10	6				
Oct-10	6				
Nov-10	6				
Dec-10	6				
Jan-11	6				
Feb-11	6				
Mar-11	6				
Apr-11	6				
May-11	6				
Jun-11	6				
Jul-11	6				
Aug-11	6				
Sep-11	6				
Oct-11	6				
Nov-11	6				
Dec-11	6				
Jan-12	6				
Feb-12	6				
Mar-12	6				
Apr-12	6				
May-12	6				
Jun-12	6				
Jul-12	6				
Aug-12	6				
Sep-12	6				
Oct-12	6				
Nov-12	6				
Dec-12	6				
Jan-13	8				
Feb-13	8				
Mar-13	8				
Apr-13	8				
May-13	8				
Jun-13	8				
Jul-13	8				

Bruce Refurbishment Run

Aug-13	8
Sep-13	8
Oct-13	8
Nov-13	8
Dec-13	8
Jan-14	8
Feb-14	8
Mar-14	8
Apr-14	8
May-14	8
Jun-14	8
Jul-14	8
Aug-14	8
Sep-14	8
Oct-14	8
Nov-14	8
Dec-14	8
Jan-15	8
Feb-15	8
Mar-15	8
Apr-15	8
May-15	8
Jun-15	8
Jul-15	8
Aug-15	8
Sep-15	8
Oct-15	8
Nov-15	8
Dec-15	8
Jan-16	8
Feb-16	8
Mar-16	8
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May-16	8
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Jul-16	8
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Oct-17	8
Nov-17	8
Dec-17	8
Jan-18	8
Feb-18	8
Mar-18	8
Apr-18	8

Bruce Refurbishment Run

May-18	8
Jun-18	8
Jul-18	8
Aug-18	8
Sep-18	8
Oct-18	8
Nov-18	8
Dec-18	8
Jan-19	8
Feb-19	8
Mar-19	8
Apr-19	8
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Nov-22	8
Dec-22	8
Jan-23	8

Bruce Refurbishment Run

Feb-23	8
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Sep-27	8
Oct-27	8

Bruce Refurbishment Run

Nov-27	8
Dec-27	8
Jan-28	8
Feb-28	8
Mar-28	8
Apr-28	8
May-28	8
Jun-28	8
Jul-28	8
Aug-28	8
Sep-28	8
Oct-28	8
Nov-28	8
Dec-28	8
Jan-29	8
Feb-29	8
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Apr-29	8
May-29	8
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Jul-29	8
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Jan-30	8
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May-30	8
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Aug-30	8
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Nov-30	8
Dec-30	8
Jan-31	8
Feb-31	8
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Aug-31	8
Sep-31	8
Oct-31	8
Nov-31	8
Dec-31	8