

BOYCE HYDRO POWER LLC

A W.D. Boyce Trusts Legacy Enterprise

Lee W. Mueller & Stephen B. Hultberg, Co-Member Managers
6000 S. M-30 (PO Box 15)
Edenville, MI 48620
Tel: (989) 689-3161 Fax: (989) 689-3155

August 1, 2016

The Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, D.C. 20426

Re: Sanford Project No. 2785
Request for Certification of Incremental Hydropower Generation

Dear Secretary:

Boyce Hydro Power, LLC, (Boyce) licensee for the Sanford Hydroelectric Project No. 2785 hereby applies to the Federal Energy Regulatory Commission (FERC) for an order certifying incremental power generation under the Internal Revenue Code Section 45, production tax credit, pursuant to Section 1301 of the Energy Policy Act of 2005, as amended.

The Sanford Project is located on the Tittabawassee River in the Village of Sanford Michigan. The license was amended by FERC on September 9, 2013 to allow for an increase in capacity from 3300 KW to 3600 KW by the installation of a new turbine-generator set to replace an existing unit. Work on the installation of this new unit began in April 2015 and is expected to have an in service date of August 30, 2016.

The current license which the Sanford Project is operating under was issued in 1998, and contained the required water release of 210 cfs or more at all times. The bypass requirement was initiated shortly thereafter so the first full year of operation under this condition was 1999. To develop the base year of existing production, an annual flow average was developed for the years 1999 through 2014. Exhibit 1 summarizes the anticipated increase in production with the new unit in service at 23.5%. Exhibit 2 explains the methodology used in preparing the projected increase in production of the new turbine-generator set for the average water year. Exhibit 3 is the detailed analysis of the increased production.

Boyce respectfully requests the Commission to review the enclosed information and issue an appropriate order certifying the increased power generation for the purpose of Internal Revenue Code Section 45.

Sincerely,
Boyce Hydro Power, LLC



Frank O. Christie, P.E.
General Manager

EXHIBIT 1
BOYCE HYDRO POWER, LLC
SUMMARY OF BASELINE AND INCREASED PRODUCTION FROM THE
INSTALLATION OF A NEW AND MORE EFFICIENT TURBINE
AT THE SANFORD PROJECT 2785

	<u>Existing Baseline</u>	<u>New Output</u>	<u>Net Gain</u>	<u>Percent Improvement</u>
On-peak, kWh	5,748,206	6,300,236	552,030	9.60%
Off-peak, kWh	2,446,075	3,819,820	1,373,745	56.16%
Total, kWh	8,194,281	10,120,056	1,925,775	23.50%

EXHIBIT 2

SANFORD NEW POWER GENERATION CALCULATIONS – METHODOLOGY

The average river flow at Sanford for the years 1999 through 2014 was used to establish a base year for this analysis. In 1998 a license was issued for the Sanford Project, part of which required a minimum discharge of 210 cfs at all times into the river downstream, except for 650 cfs from March 1 to April 30. This altered the operating procedure for the plant, so only the years after 1998 were considered. The average annual headwater and tailwater elevations were developed on a monthly basis and used to calculate operating head. The project draws the reservoir down to an average level of 2.7 feet below normal pool for winter operation. The drawdown takes place in December and the full drawdown carries through January and February. The reservoir level returns to full pond during the months of March and April.

There are three dams upstream of the Sanford Reservoir and are operated in unison with Sanford to control the river flow. The Edenville Dam immediately upstream of the Sanford reservoir is operated as a limited store and release facility and so is not discharging water on weekends or holidays unless high river flows require its operation. However, since Sanford is required to discharge water 24 hours a day 7 days a week, the discharge from Sanford must be adjusted to account for the minimum flow requirements. This is done by allocating part of the daily flow (usually Monday or Friday) to meet the weekend minimum flow of 210 cfs (column 3). Historically the minimum March/April flow of 650 cfs has always been met by the high spring runoff conditions without any manipulation. Further, there are times in the dry months (July through October) when there is not enough flow in the river to maintain 210 cfs through the dry period. This occurs in the model the first 6 days of October. When faced with this situation we consult with Michigan DNR and FERC to determine a procedure. Given the option of flows less than 210 cfs versus drawing the reservoir elevation down below its authorized minimum elevation, the decision has always been to go with discharges below 210 cfs.

Our sales Contract with the local utility dictates that we generate as much power as possible during on-peak times (7 am to 10 pm weekdays). Therefore our operating scheme always tries to meet this dictate by maximizing on-peak generation on a daily basis. Because our operating procedures are structured in this manner, we have calculated the average annual production on a daily basis using the average annual discharges (columns 10-24). This display is how we would normally operate the project. The resulting generation is quite close to the average annual production for years 1999-2014. In all calculations we have allocated 210 cfs minimum flow when there are no turbines running.

The new turbine will be the primary or lead turbine at all times. The new turbine satisfies two goals, replacing the spill gates for minimum flow, and providing a more efficient unit as the lead turbine. All minimum flow requirements and as much on-peak production as possible will be met by the new turbine (columns 27-34). Following that, the two old turbines will produce as much on-peak energy as possible (columns 35-44). Any water

EXHIBIT 2

left after these steps will be utilized in off-peak production by the two old turbines
(columns 45-49)

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

		SANFORD NEW POWER GENERATION										August 1, 2016										Efficiency = turbine Eff. X 90% for total plant efficiency.					
		Average, Years 1999 to 2014																				First 7 hours and the last 2 hours of the day, plus weekends, are Off Peak generation. Use 9 hours for Off peak calculation.					
																						From 7 AM to 10 PM (15 hours) during week days are On Peak generation.					
		Average Annual Flow at Sanford																				By pass flow is first priority. All calculations provide 210 or 650 cfs 24 hours per day.					
		Bypass = 210cfs when not running																									
		= 18,144,000 cf/day																									
		Average Headwater			Average Tailwater and Head							Existing Off Peak Generation					Existing On Peak Generation					OUTPUT = Head(ft.) x Run Hours x Flow(cfs) x Eff(%) / 11.8					
		1	2	3 (1)	4	5	6	7	8	9	10 (2)	11 (2)	12	13	14	15	16	17	18	19	20	21	22	23	24	25 (3)	
		Sanford	Sanford	Sanford Avail.	Diff. from	Hdwater	Spill Gate	Tailrace	Gross	Net	Number	Total Unit	Total Unit	Unit	Total Unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Remaining	
		Discharge	Available	Adjusted	Normal	Elev.	Open	Elev.	Head	Head	of Units	Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	
		Ac-ft./day	cf/day	cf/day	Pool El.	feet	feet	feet	feet	feet	Running	hours	cfs	% @ cfs	kWh	cf after Off-	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	
					630.8	630.80 - (4)			(5) - (7)	(8)x98%	Off Peak	Off Peak	Off Peak	x 90%	Off Peak	peak & bypass	On peak	On Peak	x 90%	On Peak	On Peak	On Peak	x 90%	On Peak	On Peak		
Date																											
Jan.	1	hol.	86.53	3,769,089	18,144,000	-2.7	628.1	0	601.2	26.9	26.4	0	0.00	0	0.000	0											
	2		1362.74	59,360,898	44,985,987	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	38,181,987	15	600	0.774	13,711	5,781,987	600	2.7	0.774	2,447	0
	3		1356.48	59,088,456	59,088,456	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	52,284,456	15	600	0.774	13,711	19,884,456	600	9.2	0.774	8,415	0
	4		1438.59	62,664,941	48,198,013	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	41,394,013	15	600	0.774	13,711	8,994,013	600	4.2	0.774	3,806	0
	5	sat	84.41	3,677,072	18,144,000	-2.7	628.1	0	601.2	26.9	26.4	0	0.00	0	0.000	0											
	6	sun	86.60	3,772,247	18,144,000	-2.7	628.1	0	601.2	26.9	26.4	0	0.00	0	0.000	0											
	7		1732.67	75,475,152	61,103,399	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	54,299,399	15	600	0.774	13,711	21,899,399	600	10.1	0.774	9,268	0
	8		2293.69	99,913,338	99,913,338	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	93,109,338	15	600	0.774	13,711	60,709,338	1200	14.1	0.774	25,691	0
	9		3404.78	148,312,033	148,312,033	-2.7	628.1	0	604.4	23.7	23.2	2	9.00	600	0.774	16,453	109,432,033	15	700	0.720	14,880	71,632,033	1400	14.2	0.720	28,199	0
	10		2836.04	123,537,805	123,537,805	-2.7	628.1	0	604.4	23.7	23.2	1	9.00	600	0.774	8,227	104,097,805	15	600	0.774	13,711	71,697,805	1400	14.2	0.720	28,225	0
	11		2664.26	116,055,107	116,055,107	-2.7	628.1	0	604.4	23.7	23.2	1	9.00	600	0.774	8,227	96,615,107	15	600	0.774	13,711	64,215,107	1400	12.7	0.720	25,279	0
	12	sat	2030.46	88,446,845	88,446,845	-2.7	628.1	0	602.8	25.3	24.8	1	40.95	600	0.774	39,956	0										
	13	sun	1199.46	52,248,524	52,248,524	-2.7	628.1	0	602.8	25.3	24.8	1	24.19	600	0.774	23,604	0										
	14		1387.29	60,430,370	60,430,370	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	53,626,370	15	600	0.774	13,711	21,226,370	600	9.8	0.774	8,983	0
	15		1767.53	76,993,433	76,993,433	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	70,189,433	15	600	0.774	13,711	37,789,433	1200	8.7	0.774	15,992	0
	16		2275.54	99,122,623	99,122,623	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	92,318,623	15	600	0.774	13,711	59,918,623	1200	13.9	0.774	25,357	0
	17		2292.18	99,847,483	99,847,483	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	93,043,483	15	600	0.774	13,711	60,643,483	1200	14.0	0.774	25,663	0
	18		2300.53	100,211,040	100,211,040	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	93,407,040	15	600	0.774	13,711	61,007,040	1200	14.1	0.774	25,817	0
	19	sat	2277.34	99,201,108	99,201,108	-2.7	628.1	0	602.8	25.3	24.8	1	45.93	600	0.774	44,815	0										
	20	sun	1968.28	85,738,207	85,738,207	-2.7	628.1	0	602.8	25.3	24.8	1	39.69	600	0.774	38,733	0										
	21		1324.83	57,709,554	57,709,554	-2.7	628.1	0	602.8	25.3	24.8	0	0.00	0	0.000	0	50,905,554	15	600	0.774	14,637	18,505,554	600	8.6	0.774	8,360	0
	22		1323.23	57,640,090	57,640,090	-2.7	628.1	0	602.8	25.3	24.8	0	0.00	0	0.000	0	50,836,090	15	600	0.774	14,637	18,436,090	600	8.5	0.774	8,329	0
	23		1321.86	57,580,098	57,580,098	-2.7	628.1	0	602.8	25.3	24.8	0	0.00	0	0.000	0	50,776,098	15	600	0.774	14,637	18,376,098	600	8.5	0.774	8,301	0
	24		1318.84	57,448,839	57,448,839	-2.7	628.1	0	602.8	25.3	24.8	0	0.00	0	0.000	0	50,644,839	15	600	0.774	14,637	18,244,839	600	8.4	0.774	8,242	0
	25		1312.92	57,190,830	42,332,830	-2.7	628.1	0	602.8	25.3	24.8	0	0.00	0	0.000	0	35,528,830	15	600	0.774	14,637	3,128,830	600	1.4	0.774	1,413	0
	26	sat	75.44	3,286,000	18,144,000	-2.7	628.1	0	601.2	26.9	26.4	0	0.00	0	0.000	0											
	27	sun	78.08	3,401,021	18,144,000	-2.7	628.1	0	601.2	26.9	26.4	0	0.00	0	0.000	0											
	28		793.28	34,555,096	19,812,117	-2.7	628.1	0	601.2	26.9	26.4	0	0.00	0	0.000	0	13,008,117	1.2	600	0.774	1,233	0					
	29		1420.66	61,884,149	61,884,149	-2.7	628.1	0	602.8	25.3	24.8	0	0.00	0	0.000	0	55,080,149	15	600	0.774	14,637	22,680,149	600	10.5	0.774	10,246	0
	30		1729.39	75,332,165	75,332,165	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	68,528,165	15	600	0.774	13,711	36,128,165	1200	8.4	0.774	15,289	0
	31		2271.42	98,943,100	98,943,100	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	92,139,100	15	600	0.774	13,711	59,739,100	1200	13.8	0.774	25,281	0
Feb.	1		2260.49	98,466,776	98,466,776	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	91,662,776	15	600	0.774	13,711	59,262,776	1200	13.7	0.774	25,079	0
	2	sat	1983.27	86,391,347	86,391,347	-2.7	628.1	0	602.8	25.3	24.8	1	40.00	600	0.774	39,028	0										
	3	sun	1717.27	74,804,421	74,804,421	-2.7	628.1	0	602.8	25.3	24.8	1	34.63	600	0.774	33,793	0										
	4		2245.20	97,801,006	97,801,006	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	90,997,006	15	600	0.774	13,711	58,597,006	1200	13.6	0.774	24,797	0
	5		2234.69	97,343,177	97,343,177	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	90,539,177	15	600	0.774	13,711	58,139,177	1200	13.5	0.774	24,604	0
	6		2222.44	96,809,568	96,809,568	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	90,005,568	15	600	0.774	13,711	57,605,568	1200	13.3	0.774	24,378	0
	7		2212.52	96,377,449	96,377,449	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	89,573,449	15	600	0.774	13,711	57,173,449	1200	13.2	0.774	24,195	0
	8		2198.63	95,772,121	95,772,121	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	88,968,121	15	600	0.774	13,711	56,568,121	120				

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

		New Kaplan Turbine										Remaining Two Existing Turbines																	
		26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Day	Date	New unit	New unit	New unit	New unit	Remaining	New unit	New unit	New unit	New unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2	Unit 2	Unit 2	Unit 2	Remaining	Both Old	Both Old	Both Old	Both Old	Remaining	ON PEAK	OFF PEAK	TOTAL
		Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	total	total	OUTPUT
2014		hours	cfs	% @ cfs	kWh	Volume, cf	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	OUTPUT	OUTPUT	OUTPUT
		Off Peak	Off Peak	x 90%	Off Peak		On peak	On Peak	x 90%	On Peak		On Peak	On Peak	x 90%	On Peak		On Peak	On Peak	x 90%	On Peak		Off Peak	Off Peak	x 90%	Off Peak		kWh	kWh	
hol.	Jan. 1	24	210	0.728	8,198	0																					0	8,198	8,198
	2	9	210	0.728	2,709	38,181,987	15	707	0.815	17,004	0																17,004	2,709	19,712
	3	9	210	0.728	2,709	52,284,456	15	720	0.814	17,295	13,404,456	600	6.2	0.774	5,673	0											22,968	2,709	25,676
	4	9	210	0.728	2,709	41,394,013	15	720	0.814	17,295	2,514,013	600	1.2	0.774	1,064	0											18,359	2,709	21,068
sat	5	24	210	0.728	8,198	0																					0	8,198	8,198
sun	6	24	210	0.728	8,198	0																					0	8,198	8,198
	7	9	210	0.728	2,709	54,299,399	15	720	0.814	17,295	15,419,399	600	7.1	0.774	6,525	0											23,821	2,709	26,529
	8	9	210	0.728	2,709	93,109,338	15	720	0.814	17,295	54,229,338	600	15.0	0.774	13,711	21,829,338	600	10.1	0.774	9,238	0						40,244	2,709	42,953
	9	9	720	0.814	10,377	124,984,033	15	720	0.814	17,295	86,104,033	700	15.0	0.720	14,880	48,304,033	700	15.0	0.720	14,880	10,504,033	600	4.9	0.774	4,445	0	47,056	14,822	61,878
	10	9	720	0.814	10,377	100,209,805	15	720	0.814	17,295	61,329,805	600	15.0	0.774	13,711	28,929,805	600	13.4	0.774	12,243	0						43,249	10,377	53,626
	11	9	720	0.814	10,377	92,727,107	15	720	0.814	17,295	53,847,107	600	15.0	0.774	13,711	21,447,107	600	9.9	0.774	9,076	0						40,083	10,377	50,460
sat	12	24	720	0.814	29,541	26,238,845																600	12.1	0.774	11,854	0	0	41,394	41,394
sun	13	24	605	0.819	24,976	0																					0	24,976	24,976
	14	9	210	0.728	2,709	53,626,370	15	720	0.814	17,295	14,746,370	600	6.8	0.774	6,240	0											23,536	2,709	26,244
	15	9	210	0.728	2,709	70,189,433	15	720	0.814	17,295	31,309,433	600	14.5	0.774	13,250	0											30,545	2,709	33,254
	16	9	210	0.728	2,709	92,318,623	15	720	0.814	17,295	53,438,623	600	15.0	0.774	13,711	21,038,623	600	9.7	0.774	8,903	0						39,910	2,709	42,618
	17	9	220	0.734	2,862	92,719,483	15	720	0.814	17,295	53,839,483	600	15.0	0.774	13,711	21,439,483	600	9.9	0.774	9,073	0						40,079	2,862	42,941
	18	9	235	0.754	3,140	92,597,040	15	720	0.814	17,295	53,717,040	600	15.0	0.774	13,711	21,317,040	600	9.9	0.774	9,021	0						40,028	3,140	43,167
sat	19	24	720	0.814	29,541	36,993,108																600	17.1	0.774	16,712	0	0	46,252	46,252
sun	20	24	720	0.814	29,541	23,530,207																600	10.9	0.774	10,630	0	0	40,170	40,170
	21	9	210	0.728	2,891	50,905,554	15	720	0.814	18,463	12,025,554	600	5.6	0.774	5,433	0											23,895	2,891	26,787
	22	9	210	0.728	2,891	50,836,090	15	720	0.814	18,463	11,956,090	600	5.5	0.774	5,401	0											23,864	2,891	26,756
	23	9	210	0.728	2,891	50,776,098	15	720	0.814	18,463	11,896,098	600	5.5	0.774	5,374	0											23,837	2,891	26,728
	24	9	210	0.728	2,891	50,644,839	15	720	0.814	18,463	11,764,839	600	5.4	0.774	5,315	0											23,778	2,891	26,669
	25	9	210	0.728	2,891	35,528,830	15	658	0.818	16,965	0																16,965	2,891	19,856
sat	26	24	210	0.728	8,198	0																					0	8,198	8,198
sun	27	24	210	0.728	8,198	0																					0	8,198	8,198
	28	9	210	0.728	3,074	13,008,117	15	241	0.798	6,442	0																6,442	3,074	9,516
	29	9	210	0.728	2,891	55,080,149	15	720	0.814	18,463	16,200,149	600	7.5	0.774	7,318	0											25,781	2,891	28,673
	30	9	210	0.728	2,709	68,528,165	15	720	0.814	17,295	29,648,165	600	13.7	0.774	12,547	0											29,842	2,709	32,551
	31	9	210	0.728	2,709	92,139,100	15	720	0.814	17,295	53,259,100	600	15.0	0.774	13,711	20,859,100	600	9.7	0.774	8,827	0						39,834	2,709	42,542
	Feb. 1	9	210	0.728	2,709	91,662,776	15	720	0.814	17,295	52,782,776	600	15.0	0.774	13,711	20,382,776	600	9.4	0.774	8,626	0						39,632	2,709	42,341
sat	2	24	720	0.814	29,541	24,183,347																600	11.2	0.774	10,925	0	0	40,466	40,466
sun	3	24	720	0.814	29,541	12,596,421																600	5.8	0.774	5,690	0	0	35,231	35,231
	4	9	210	0.728	2,709	90,997,006	15	720	0.814	17,295	52,117,006	600	15.0	0.774	13,711	19,717,006	600	9.1	0.774	8,344	0						39,350	2,709	42,059
	5	9	210	0.728	2,709	90,539,177	15	720	0.814	17,295	51,659,177	600	15.0	0.774	13,711	19,259,177	600	8.9	0.774	8,150	0						39,157	2,709	41,865
	6	9	210	0.728	2,709	90,005,568	15	720	0.814	17,295	51,125,568	600	15.0	0.774	13,711	18,725,568	600	8.7	0.774	7,924	0						38,931	2,709	41,639
	7	9	210	0.728	2,709	89,573,449	15	720	0.814	17,295	50,693,449	600	15.0	0.774	13,711	18,293,449	600	8.5	0.774	7,742	0						38,748	2,709	41,457
	8	9	210	0.728	2,709	88,968,121	15	720	0.814	17,295	50,088,121	600	15.0	0.774	13,711	17,688,121	600	8.2	0.774	7,485	0						38,492	2,709	41,200
sat	9	24	709	0.815	29,136	0																					0	29,136	29,136
sun	10	24	210	0.728	8,198	0																					0	8,198	8,198
	11	9	210	0.728	2,891	40,132,797	15	720	0.814	18,463	1,252,797	600	0.6	0.774	566	0											19,029	2,891	21,920
	12	9	210	0.728	2,891	41,080,482	15	720	0.814	18,463	2,200,482	600	1.0	0.774	994	0											19,457	2,891	22,348
	13	9	210	0.728	2,891	41,140,022	15	720	0.814	18,463	2,260,022	600	1.0	0.774	1,021	0											19,484	2,891	22,375
	14	9	210	0.728	2,891	41,233,393	15	720	0.814	18,463	2,353,393	600	1.1	0.774	1,063	0											19,526	2,891	22,417
	15	9	210	0.728	2,891	41,282,107	15	720	0.814	18,463	2,402,107	600	1.1	0.774	1,085	0											19,548	2,891	22,439
sat	16	24	389	0.819	17,072	0																					0	17,072	17,072
sun	17	24	210	0.728	8,198	0																					0	8,198	8,198
	18	9	720	0.814	10,377	101,210,264	15	720	0.814	17,295	62,330,264	600	15.0	0.774	13,711	29,930,264	600	13.9	0.774	12,666	0						43,673	10,377	54,050
	19	9	645	0.818	9,348	90,168,793	15	720	0.814	17,295	51,288,793	700	15.0	0.720															

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

		SANFORD NEW POWER GENERATION										August 1, 2016										Efficiency = turbine Eff. X 90% for total plant efficiency.				
		Average, Years 1999 to 2014																				First 7 hours and the last 2 hours of the day, plus weekends, are Off Peak generation. Use 9 hours for Off peak calculation.				
																						From 7 AM to 10 PM (15 hours) during week days are On Peak generation.				
		Average Annual Flow at Sanford																				By pass flow is first priority. All calculations provide 210 or 650 cfs 24 hours per day.				
		Bypass = 210cfs when not running																								
		= 18,144,000 cf/day																								
		Average Headwater			Average Tailwater and Head							Existing Off Peak Generation					Existing On Peak Generation					OUTPUT = Head(ft.) x Run Hours x Flow(cfs) x Eff(%))/11.8				
		1	2	3 (1)	4	5	6	7	8	9	10 (2)	11 (2)	12	13	14	15	16	17	18	19	20	21	22	23	24	25 (3)
		Sanford	Sanford	Sanford Avail.	Diff. from	Hdwater	Spill Gate	Tailrace	Gross	Net	Number	Total Unit	Total Unit	Unit	Total Unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Remaining
		Discharge	Available	Adjusted	Normal	Elev.	Open	Elev.	Head	Head	of Units	Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available
		Ac-ft./day	cf/day	cf/day	Pool El.	feet	feet	feet	feet	feet	Running	hours	cfs	% @ cfs	kWh	cf after Off-	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs
					630.8	630.80 - (4)			(5) - (7)	(8)x98%	Off Peak	Off Peak	Off Peak	x 90%	Off Peak	peak & bypass	On peak	On Peak	x 90%	On Peak		On Peak	On Peak	x 90%	On Peak	
23	sat	2250.63	98,037,364	98,037,364	-2.7	628.1	0	602.8	25.3	24.8	1	45.39	600	0.774	44,289	0										
24	sun	2234.57	97,337,764	97,337,764	-2.7	628.1	0	602.8	25.3	24.8	1	45.06	600	0.774	43,973	0										
25		2214.62	96,469,015	96,469,015	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	89,665,015	15	600	0.774	13,711	57,265,015	1200	13.3	0.774	24,234	0
26		1927.68	83,969,586	83,969,586	-2.7	628.1	0	604.4	23.7	23.2	0	0.00	0	0.000	0	77,165,586	15	600	0.774	13,711	44,765,586	1200	10.4	0.774	18,944	0
27		1395.92	60,806,107	60,806,107	-2.7	628.1	0	602.8	25.3	24.8	0	0.00	0	0.000	0	54,002,107	15	600	0.774	14,637	21,602,107	600	10.0	0.774	9,759	0
28		1219.24	53,110,056	53,110,056	-2.7	628.1	0	602.8	25.3	24.8	0	0.00	0	0.000	0	46,306,056	15	600	0.774	14,637	13,906,056	600	6.4	0.774	6,282	0
Mar. 1	sat	1130.06	49,225,495	34,338,626	-2.0	628.8	0	601.2	27.6	27.0	1	11.5	600	0.774	12,279	0										
2	sun	74.77	3,257,132	18,144,000	-2.0	628.8	0	601.2	27.6	27.0	0	0.00	0	0.000	0	0										
3		1321.32	57,556,643	57,556,643	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	50,752,643	15	600	0.774	15,042	18,352,643	600	8.5	0.774	8,520	0
4		1322.22	57,595,886	57,595,886	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	50,791,886	15	600	0.774	15,042	18,391,886	600	8.5	0.774	8,539	0
5		1320.86	57,536,796	57,536,796	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	50,732,796	15	600	0.774	15,042	18,332,796	600	8.5	0.774	8,511	0
6		1322.81	57,621,596	57,621,596	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	50,817,596	15	600	0.774	15,042	18,417,596	600	8.5	0.774	8,550	0
7		1498.28	65,264,872	65,264,872	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	58,460,872	15	600	0.774	15,042	26,060,872	600	12.1	0.774	12,099	0
8	sat	1582.14	68,918,038	68,918,038	-2.0	628.8	0	602.8	26.0	25.5	1	31.91	600	0.774	31,995	0										
9	sun	691.00	30,099,938	30,099,938	-2.0	628.8	0	601.2	27.6	27.0	1	8.5	600	0.774	9,065	0										
10		1399.77	60,973,902	60,973,902	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	54,169,902	15	600	0.774	15,042	21,769,902	600	10.1	0.774	10,107	0
11		956.51	41,665,665	41,665,665	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	34,861,665	15	600	0.774	15,042	2,461,665	600	1.1	0.774	1,143	0
12		1044.51	45,498,806	45,498,806	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	38,694,806	15	600	0.774	15,042	6,294,806	600	2.9	0.774	2,922	0
13		1044.44	45,495,648	45,495,648	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	38,691,648	15	600	0.774	15,042	6,291,648	600	2.9	0.774	2,921	0
14		1045.66	45,548,874	45,548,874	-2.0	628.8	0	602.8	26.0	25.5	0	0.00	0	0.000	0	38,744,874	15	600	0.774	15,042	6,344,874	600	2.9	0.774	2,946	0
15	sat	1406.37	61,261,681	61,261,681	-2.0	628.8	0	602.8	26.0	25.5	1	24.31	700	0.720	26,457	0										
16	sun	1684.80	73,389,885	73,389,885	-2.0	628.8	0	602.8	26.0	25.5	1	29.12	700	0.720	31,694	0										
17		2216.43	96,547,500	96,547,500	-2.0	628.8	0	604.4	24.4	23.9	1	9.00	700	0.720	9,192	73,867,500	15	700	0.720	15,320	36,067,500	1200	8.3	0.774	15,714	0
18		2220.59	96,728,828	96,728,828	-2.0	628.8	0	604.4	24.4	23.9	1	9.00	700	0.720	9,192	74,048,828	15	700	0.720	15,320	36,248,828	1200	8.4	0.774	15,793	0
19		2218.98	96,658,913	96,658,913	-2.0	628.8	0	604.4	24.4	23.9	1	9.00	700	0.720	9,192	73,978,913	15	700	0.720	15,320	36,178,913	1200	8.4	0.774	15,763	0
20		2233.82	97,305,287	97,305,287	-2.0	628.8	0	604.4	24.4	23.9	1	9.00	700	0.720	9,192	74,625,287	15	700	0.720	15,320	36,825,287	1200	8.5	0.774	16,044	0
21		2391.37	104,168,223	104,168,223	-2.0	628.8	0	604.4	24.4	23.9	1	9.00	700	0.720	9,192	81,488,223	15	700	0.720	15,320	43,688,223	1200	10.1	0.774	19,034	0
22	sat	2267.72	98,782,070	98,782,070	-2.0	628.8	0	602.8	26.0	25.5	1	39.20	700	0.720	42,660	0										
23	sun	2263.79	98,610,666	98,610,666	-2.0	628.8	0	602.8	26.0	25.5	1	39.13	700	0.720	42,586	0										
24		2740.89	119,392,979	119,392,979	-2.0	628.8	0	604.4	24.4	23.9	1	9.00	700	0.720	9,192	96,712,979	15	700	0.720	15,320	58,912,979	1200	13.6	0.774	25,667	0
25		2357.83	102,707,227	102,707,227	-2.0	628.8	0	604.4	24.4	23.9	1	9.00	700	0.720	9,192	80,027,227	15	700	0.720	15,320	42,227,227	1200	9.8	0.774	18,398	0
26		3202.20	139,487,872	139,487,872	-2.0	628.8	0	604.4	24.4	23.9	2	9.00	600	0.774	16,939	100,607,872	15	700	0.720	15,320	62,807,872	1200	14.5	0.774	27,364	0
27		3521.48	153,395,522	153,395,522	-2.0	628.8	0	604.4	24.4	23.9	2	9.00	700	0.720	18,384	108,035,522	15	700	0.720	15,320	70,235,522	1400	13.9	0.720	28,466	0
28		3511.50	152,961,147	152,961,147	-2.0	628.8	0	604.4	24.4	23.9	2	9.00	700	0.720	18,384	107,601,147	15	700	0.720	15,320	69,801,147	1400	13.8	0.720	28,290	0
29	sat	3458.95	150,671,999	150,671,999	-2.0	628.8	0	604.4	24.4	23.9	1	59.79	700	0.720	61,066	0										
30	sun	2855.45	124,383,549	124,383,549	-2.0	628.8	0	604.4	24.4	23.9	1	49.36	700	0.720	50,411	0										
31		3071.36	133,788,229	133,788,229	-2.0	628.8	0	604.4	24.4	23.9	1	9.00	700	0.720	9,192	111,108,229	15	700	0.720	15,320	73,308,229	1400	14.5	0.720	29,711	0
Apr. 1		5636.43	245,523,048	245,523,048	-1.0	629.8	2.19	606.0	23.8	23.3	3	9.00	700	0.720	26,898	177,483,048	15	700	0.720	14,943	139,683,048	1400	15.0	0.720	29,886	64,083,048
2		6895.58	300,371,504	300,371,504	-1.0	629.8	4.07	607.8	22.0	21.6	3	9.00	700	0.720	24,863	232,331,504	15	700	0.720	13,813	194,531,504	1400	15.0	0.720	27,626	118,931,504
3		4646.43	202,398,642	202,398,642	-1.0	629.8	0.72	605.3	24.5	24.0	3	9.00	700	0.720	27,689	134,358,642	15	700	0.720	15,383	96,558,642	1400	15.0	0.720	30,765	20,958,642
4		2758.76	120,171,515	120,171,515	-1.0	629.8	0	604.4	25.4	24.9	1	9.00	700	0.720	9,569	97,491,515	15	700	0.720	15,948	59,691,515	1200	13.8	0.774	27,073	0
5	sat	4158.93	181,163,009	181,163,009	-1.0	629.8	0	604.4	25.4	24.9	1	71.89	700	0.720	76,432	0										
6	sun	3727.13	162,353,649	162,353,649	-1.0	629.8	0	604.4	25.4	24.9	1	64.43	700	0.720	68,497	0										
7		3597.98	156,727,981	156,727,981	-1.0	629.8	0	604.4	25.4	24.9	3	9.00	600	0.774	26,450	98,407,981	15	700	0.720	15,948	60,607,981	1200	14.0	0.774	27,488	0
8		3443.92	150,017,054	150,017,054																						

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

SANFORD NEW POWER GENERATION																											
August 1, 2016																											
Efficiency = turbine Eff. X 90% for total plant efficiency.																											
First 7 hours and the last 2 hours of the day, plus weekends, are Off Peak generation. Use 9 hours for Off peak calculation.																											
From 7 AM to 10 PM (15 hours) during week days are On Peak generation.																											
By pass flow is first priority. All calculations provide 210 or 650 cfs 24 hours per day.																											
Average Annual Flow at Sanford			Average Headwater		Average Tailwater and Head					Existing Off Peak Generation					Existing On Peak Generation					OUTPUT = Head(ft.) x Run Hours x Flow(cfs) x Eff(%))/11.8							
Bypass = 210cfs when not running			= 18,144,000 cf/day		4	5	6	7	8	9	10 (2)	11 (2)	12	13	14	15	16	17	18	19	20	21	22	23	24	25 (3)	
1	2	3 (1)	4	5	6	7	8	9	10 (2)	11 (2)	12	13	14	15	16	17	18	19	20	21	22	23	24	25 (3)			
Sanford	Sanford	Sanford Avail.	Diff. from	Hdwater	Spill Gate	Tailrace	Gross	Net	Number	Total Unit	Total Unit	Unit	Total Unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Remaining			
Discharge	Available	Adjusted	Normal	Elev.	Open	Elev.	Head	Head	of Units	Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available			
Ac-ft./day	cf/day	For Bypass	Pool El.	feet	feet	feet	feet	feet	Running	hours	cfs	% @ cfs	kWh	cf after Off-	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs			
630.8	630.80 - (4)		630.8	630.80 - (4)			(5) - (7)	(8)x98%	Off Peak	Off Peak	Off Peak	x 90%	Off Peak	peak & bypass	On peak	On Peak	x 90%	On Peak	On Peak	On Peak	On Peak	x 90%	On Peak	On Peak			
18	2327.27	101,375,687	101,375,687	-1.0	629.8	0	604.4	25.4	24.9	1	9.00	700	0.720	9,569	78,695,687	15	700	0.720	15,948	40,895,687	1200	9.5	0.774	18,548	0		
19 sat	2322.30	101,159,176	101,159,176	-1.0	629.8	0	602.8	27.0	26.5	1	40.14	700	0.720	45,367	0												
20 sun	2035.79	88,679,143	88,679,143	-1.0	629.8	0	602.8	27.0	26.5	1	35.19	700	0.720	39,770	0												
21	1482.87	64,593,689	64,593,689	-1.0	629.8	0	602.8	27.0	26.5	1	9.00	700	0.720	10,171	41,913,689	15	700	0.720	16,952	4,113,689	600	1.9	0.774	1,983	0		
22	2041.42	88,924,071	88,924,071	-1.0	629.8	0	604.4	25.4	24.9	1	9.00	700	0.720	9,569	66,244,071	15	700	0.720	15,948	28,444,071	600	13.2	0.774	12,901	0		
23	1485.74	64,718,634	64,718,634	-1.0	629.8	0	602.8	27.0	26.5	1	9.00	700	0.720	10,171	42,038,634	15	700	0.720	16,952	4,238,634	600	2.0	0.774	2,043	0		
24	1484.26	64,654,583	64,654,583	-1.0	629.8	0	602.8	27.0	26.5	1	9.00	700	0.720	10,171	41,974,583	15	700	0.720	16,952	4,174,583	600	1.9	0.774	2,013	0		
25	1484.92	64,683,000	64,683,000	-1.0	629.8	0	602.8	27.0	26.5	1	9.00	700	0.720	10,171	42,003,000	15	700	0.720	16,952	4,203,000	600	1.9	0.774	2,026	0		
26 sat	1487.97	64,816,064	64,816,064	-1.0	629.8	0	602.8	27.0	26.5	1	25.72	700	0.720	29,068	0												
27 sun	1958.77	85,324,131	85,324,131	-1.0	629.8	0	602.8	27.0	26.5	1	33.86	700	0.720	38,266	0												
28	2042.03	88,950,683	88,950,683	-1.0	629.8	0	604.4	25.4	24.9	1	9.00	650	0.747	9,218	67,890,683	15	700	0.720	15,948	30,090,683	600	13.9	0.774	13,647	0		
29	1348.39	58,735,724	58,735,724	-1.0	629.8	0	602.8	27.0	26.5	1	9.00	650	0.747	9,799	37,675,724	15	650	0.747	16,332	2,575,724							
30	1485.96	64,728,557	64,728,557	-1.0	629.8	0	602.8	27.0	26.5	1	9.00	650	0.747	9,799	43,668,557	15	650	0.747	16,332	8,568,557	600	4.0	0.774	4,131	0		
May 1	1441.20	62,778,609	62,778,609	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	55,974,609	15	600	0.774	16,199	23,574,609	600	10.9	0.774	11,787	0		
2	1480.19	64,476,864	64,476,864	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	57,672,864	15	600	0.774	16,199	25,272,864	600	11.7	0.774	12,636	0		
3 sat	1482.17	64,563,468	64,563,468	0	630.8	0	602.8	28.0	27.4	1	29.89	600	0.774	32,280	0												
4 sun	1853.83	80,753,050	80,753,050	0	630.8	0	602.8	28.0	27.4	1	37.39	600	0.774	40,374	0												
5	2325.87	101,314,793	101,314,793	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	94,510,793	15	600	0.774	15,273	62,110,793	1200	14.4	0.774	29,279	0		
6	1941.68	84,579,424	84,579,424	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	77,775,424	15	600	0.774	15,273	45,375,424	1200	10.5	0.774	21,390	0		
7	1200.57	52,296,788	52,296,788	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	45,492,788	15	600	0.774	16,199	13,092,788	600	6.1	0.774	6,546	0		
8	1390.19	60,556,668	60,556,668	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	53,752,668	15	600	0.774	16,199	21,352,668	600	9.9	0.774	10,676	0		
9	1393.25	60,690,183	60,690,183	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	53,886,183	15	600	0.774	16,199	21,486,183	600	9.9	0.774	10,742	0		
10 sat	1484.34	64,657,740	64,657,740	0	630.8	0	602.8	28.0	27.4	1	29.93	600	0.774	32,327	0												
11 sun	833.89	36,324,168	36,324,168	0	630.8	0	601.2	29.6	29.0	1	12.9	600	0.774	14,783	0												
12	1392.18	60,643,273	60,643,273	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	53,839,273	15	600	0.774	16,199	21,439,273	600	9.9	0.774	10,719	0		
13	1160.69	50,559,741	50,559,741	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	43,755,741	15	600	0.774	16,199	11,355,741	600	5.3	0.774	5,677	0		
14	1081.97	47,130,754	47,130,754	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	40,326,754	15	600	0.774	16,199	7,926,754	600	3.7	0.774	3,963	0		
15	1208.58	52,645,911	52,645,911	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	45,841,911	15	600	0.774	16,199	13,441,911	600	6.2	0.774	6,721	0		
16	1441.18	62,777,706	62,777,706	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	55,973,706	15	600	0.774	16,199	23,573,706	600	10.9	0.774	11,786	0		
17 sat	1348.10	58,723,094	58,723,094	0	630.8	0	601.2	29.6	29.0	1	18.8	600	0.774	21,516	0												
18 sun	92.41	4,025,293	4,025,293	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0												
19	1204.19	52,454,660	52,454,660	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	45,650,660	15	600	0.774	16,199	13,250,660	600	6.1	0.774	6,625	0		
20	1201.45	52,335,128	52,335,128	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	45,531,128	15	600	0.774	16,199	13,131,128	600	6.1	0.774	6,565	0		
21	887.38	38,654,363	38,654,363	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	31,850,363	14.6	600	0.774	15,776	0							
22	734.70	32,003,428	32,003,428	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	25,199,428	9.9	600	0.774	10,660	0							
23	808.33	35,210,942	35,210,942	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,406,942	12.2	600	0.774	13,128	0							
24 sat	808.15	35,202,823	35,202,823	0	630.8	0	601.2	29.6	29.0	1	2.1	600	0.774	2,384	0												
25 sun	92.23	4,017,625	4,017,625	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0												
26 hol	93.54	4,074,459	4,074,459	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0												
27	816.21	35,554,202	35,554,202	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0	0	14,680,661	2.4	600	0.774	2,716	0							
28	1264.39	55,076,694	55,076,694	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0	0	48,272,694	15	600	0.774	16,199	15,872,694	600	7.3	0.774	7,936	0		
29	988.96	43,079,299	43,079,299	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0	0	36,275,299	15	600	0.774	16,199	3,875,299	600	1.8	0.774	1,938	0		
30	466.86	20,336,211	20,336,211	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0	0	13,532,211	1.6	600	0.774	1,783	0							
31 sat	93.41	4,069,047	4,069,047	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0												
June 1 sun	839.22	36,556,466	36,556,466	0	630.8	0	601.2	29.6	29.0	1	3.1	600	0.774	3,527	0												
2	839.22	36,556,466	36,556,466	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0	0	29,752,466	13.1	600	0.774	14,162	0							
3	964.10	41,996,295	41,996,295	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0	0	35,192,295	15	600	0.774	16,199	2,792,295	600	1					

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

		New Kaplan Turbine										Remaining Two Existing Turbines																				
		26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53			
Day	Date	New unit	New unit	New unit	New unit	Remaining	New unit	New unit	New unit	New unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2	Unit 2	Unit 2	Unit 2	Remaining	Both Old	Both Old	Both Old	Both Old	Remaining	ON PEAK	OFF PEAK	TOTAL			
		Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	total	total	OUTPUT			
2014		hours	cfs	% @ cfs	kWh	Volume, cf	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	OUTPUT	OUTPUT	OUTPUT			
		Off Peak	Off Peak	x 90%	Off Peak	On peak	On Peak	x 90%	On Peak	On Peak	On Peak	On Peak	On Peak	x 90%	On Peak	On Peak	On Peak	x 90%	On Peak	On Peak	On Peak	Off Peak	Off Peak	x 90%	Off Peak	Volume cfs	kWh	kWh	kWh			
	18	9	650	0.819	10,107	80,315,687	15	720	0.814	18,536	41,435,687	600	15.0	0.774	14,695	9,035,687	600	4.2	0.774	4,098	0						37,329	10,107	47,436			
sat	19	24	720	0.814	31,526	38,951,176																600	18.0	0.774	18,779	0	0	50,304	50,304			
sun	20	24	720	0.814	31,526	26,471,143																600	12.3	0.774	12,762	0	0	44,288	44,288			
	21	9	650	0.819	10,744	43,533,689	15	720	0.814	19,703	4,653,689	600	2.2	0.774	2,244	0											21,947	10,744	32,691			
	22	9	650	0.819	10,107	67,864,071	15	720	0.814	18,536	28,984,071	600	13.4	0.774	13,145	0												31,681	10,107	41,788		
	23	9	650	0.819	10,744	43,658,634	15	720	0.814	19,703	4,778,634	600	2.2	0.774	2,304	0												22,007	10,744	32,751		
	24	9	650	0.819	10,744	43,594,583	15	720	0.814	19,703	4,714,583	600	2.2	0.774	2,273	0												21,976	10,744	32,720		
	25	9	650	0.819	10,744	43,623,000	15	720	0.814	19,703	4,743,000	600	2.2	0.774	2,287	0												21,990	10,744	32,734		
sat	26	24	720	0.814	31,526	2,608,064																600	1.2	0.774	1,257	0	0	32,783	32,783			
sun	27	24	720	0.814	31,526	23,116,131																600	10.7	0.774	11,145	0	0	42,670	42,670			
	28	9	650	0.819	10,107	67,890,683	15	720	0.814	18,536	29,010,683	600	13.4	0.774	13,158	0												31,693	10,107	41,800		
	29	9	650	0.819	10,744	37,675,724	15	698	0.815	19,114	0																		19,114	10,744	29,858	
	30	9	650	0.819	10,744	43,668,557	15	720	0.814	19,703	4,788,557	600	2.2	0.774	2,309	0												22,012	10,744	32,756		
	May 1	9	210	0.728	3,200	55,974,609	15	720	0.814	20,433	17,094,609	600	7.9	0.774	8,547	0													28,980	3,200	32,180	
	2	9	210	0.728	3,200	57,672,864	15	720	0.814	20,433	18,792,864	600	8.7	0.774	9,396	0													29,829	3,200	33,029	
sat	3	24	720	0.814	32,693	2,355,468																600	1.1	0.774	1,178	0	0	33,871	33,871			
sun	4	24	720	0.814	32,693	18,545,050																600	8.6	0.774	9,272	0	0	41,965	41,965			
	5	9	280	0.777	4,291	92,242,793	15	720	0.814	19,266	53,362,793	600	15.0	0.774	15,273	20,962,793	600	9.7	0.774	9,882	0							44,421	4,291	48,712		
	6	9	210	0.728	3,017	77,775,424	15	720	0.814	19,266	38,895,424	600	15.0	0.774	15,273	6,495,424	600	3.0	0.774	3,062	0							37,601	3,017	40,618		
	7	9	210	0.728	3,200	45,492,788	15	720	0.814	20,433	6,612,788	600	3.1	0.774	3,306	0												23,739	3,200	26,939		
	8	9	210	0.728	3,200	53,752,668	15	720	0.814	20,433	14,872,668	600	6.9	0.774	7,436	0													27,869	3,200	31,069	
	9	9	210	0.728	3,200	53,886,183	15	720	0.814	20,433	15,006,183	600	6.9	0.774	7,503	0													27,936	3,200	31,136	
sat	10	24	720	0.814	32,693	2,449,740																600	1.1	0.774	1,225	0	0	33,918	33,918			
sun	11	24	420	0.819	20,315	0																							20,315	20,315		
	12	9	210	0.728	3,200	53,839,273	15	720	0.814	20,433	14,959,273	600	6.9	0.774	7,479	0													27,912	3,200	31,112	
	13	9	210	0.728	3,200	43,755,741	15	720	0.814	20,433	4,875,741	600	2.3	0.774	2,438	0													22,871	3,200	26,071	
	14	9	210	0.728	3,200	40,326,754	15	720	0.814	20,433	1,446,754	600	0.7	0.774	723	0													21,157	3,200	24,357	
	15	9	210	0.728	3,200	45,841,911	15	720	0.814	20,433	6,961,911	600	3.2	0.774	3,481	0													23,914	3,200	27,114	
	16	9	210	0.728	3,200	55,973,706	15	720	0.814	20,433	17,093,706	600	7.9	0.774	8,546	0													28,979	3,200	32,180	
sat	17	24	516	0.818	24,918	0																							24,918	24,918		
sun	18	24	210	0.728	9,021	0																							9,021	9,021		
	19	9	210	0.728	3,200	45,650,660	15	720	0.814	20,433	6,770,660	600	3.1	0.774	3,385	0													23,818	3,200	27,018	
	20	9	210	0.728	3,200	45,531,128	15	720	0.814	20,433	6,651,128	600	3.1	0.774	3,325	0													23,759	3,200	26,959	
	21	9	210	0.728	3,200	31,850,363	15	590	0.820	16,868	0																		16,868	3,200	20,068	
	22	9	210	0.728	3,200	25,199,428	15	467	0.815	13,273	0																		13,273	3,200	16,473	
	23	9	210	0.728	3,200	28,406,942	15	526	0.819	15,028	0																		15,028	3,200	18,228	
sat	24	24	244	0.801	11,528	0																							11,528	11,528		
sun	25	24	210	0.728	9,021	0																							9,021	9,021		
hol	26	24	210	0.728	9,021	0																							9,021	9,021		
	27	9	210	0.728	3,383	14,680,661	15	272	0.774	7,759	0																		7,759	3,383	11,142	
	28	9	210	0.728	3,200	48,272,694	15	720	0.814	20,433	9,392,694	600	4.3	0.774	4,696	0													25,129	3,200	28,329	
	29	9	210	0.728	3,200	36,275,299	15	672	0.817	19,149	0																			19,149	3,200	22,349
	30	9	210	0.728	3,383	13,532,211	15	251	0.761	7,028	0																		7,028	3,383	10,410	
sat	31	24	210	0.728	9,021	0																							9,021	9,021		
sun	June 1	24	260	0.810	12,435	0																							12,435	12,435		
	2	9	210	0.728	3,200	29,752,466	15	551	0.819	15,740	0																		15,740	3,200	18,940	
	3	9	210	0.728	3,200	35,192,295	15	652	0.820	18,638	0																			18,638	3,200	21,838
	4	9	210	0.728	3,200	29,635,640	15	549	0.819	15,678	0																			15,678	3,200	18,878
	5	9	210	0.728	3,200	58,038,226	15	600	0.820	17,160	25,638,226	600	11.9	0.774	12,818	0													29,978	3,200	33,178	
	6	9	210	0.728	3,200	57,889,826	15	600	0.820	17,160	25,489,826	600	11.8	0.774	12,744	0													29,904	3,200	33,104	
sat	7	24	720	0.814	32,693	2,359,979																600	1.1	0.774	1,180	0	0	33,873	33,873			
sun	8																															

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

SANFORD NEW POWER GENERATION																									
August 1, 2016										Efficiency = turbine Eff. X 90% for total plant efficiency.															
Average, Years 1999 to 2014										First 7 hours and the last 2 hours of the day, plus weekends, are Off Peak generation. Use 9 hours for Off peak calculation.															
										From 7 AM to 10 PM (15 hours) during week days are On Peak generation.															
										By pass flow is first priority. All calculations provide 210 or 650 cfs 24 hours per day.															
Average Annual Flow at Sanford				Average Headwater				Average Tailwater and Head				Existing Off Peak Generation					Existing On Peak Generation					OUTPUT = Head(ft.) x Run Hours x Flow(cfs) x Eff(%)/11.8			
Bypass = 210cfs when not running				= 18,144,000 cf/day																					
1	2	3 (1)	4	5	6	7	8	9	10 (2)	11 (2)	12	13	14	15	16	17	18	19	20	21	22	23	24	25 (3)	
Sanford	Sanford	Sanford Avail.	Diff. from	Hdwater	Spill Gate	Tailrace	Gross	Net	Number	Total Unit	Total Unit	Unit	Total Unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Remaining	
Discharge	Available	Adjusted	Normal	Elev.	Open	Elev.	Head	Head	of Units	Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	
Ac-ft./day	cf/day	For Bypass	Pool El.	feet	feet	feet	feet	feet	Running	hours	cfs	% @ cfs	kWh	cf after Off-	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	
		cf/day	630.8	630.80 - (4)			(5) - (7)	(8)x98%	Off Peak	Off Peak	Off Peak	x 90%	Off Peak	peak & bypass	On peak	On Peak	x 90%	On Peak	Volume cfs	On Peak	On Peak	x 90%	On Peak	Volume cfs	
11	3598.45	156,748,279	156,748,279	0	630.8	0.15	604.5	26.3	25.8	2	9.00	600	0.774	18,286	117,868,279	15	700	0.720	16,538	80,068,279	1400	15.0	0.720	33,076	4,468,279
12	2318.75	101,004,912	101,004,912	0	630.8	0	604.4	26.4	25.9	1	1.00	600	0.774	1,018	92,796,912	15	600	0.774	15,273	60,396,912	1200	14.0	0.774	28,471	0
13	2126.26	92,620,088	92,620,088	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	85,816,088	15	600	0.774	15,273	53,416,088	1200	12.4	0.774	25,180	0
14 sat	1484.09	64,646,915	64,646,915	0	630.8	0	602.8	28.0	27.4	1	29.93	600	0.774	32,321	0										
15 sun	1489.13	64,866,583	64,866,583	0	630.8	0	602.8	28.0	27.4	1	30.03	600	0.774	32,431	0										
16	1771.07	77,147,697	77,147,697	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	70,343,697	15	600	0.774	15,273	37,943,697	1200	8.8	0.774	17,887	0
17	2039.98	88,861,373	88,861,373	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	82,057,373	15	600	0.774	15,273	49,657,373	1200	11.5	0.774	23,408	0
18	1670.58	72,770,574	72,770,574	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	65,966,574	15	600	0.774	15,273	33,566,574	1200	7.8	0.774	15,823	0
19	1733.56	75,513,944	75,513,944	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	68,709,944	15	600	0.774	15,273	36,309,944	1200	8.4	0.774	17,116	0
20	1383.76	60,276,558	60,276,558	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	53,472,558	15	600	0.774	16,199	21,072,558	600	9.8	0.774	10,536	0
21 sat	576.31	25,103,956	25,103,956	0	630.8	0	601.2	29.6	29.0	1	5.0	600	0.774	5,659	0										
22 sun	93.67	4,080,323	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
23	1789.85	77,965,927	63,902,250	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	57,098,250	15	600	0.774	15,273	24,698,250	600	11.4	0.774	11,643	0
24	1956.89	85,242,037	85,242,037	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	78,438,037	15	600	0.774	15,273	46,038,037	1200	10.7	0.774	21,702	0
25	1844.24	80,334,914	80,334,914	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	73,530,914	15	600	0.774	15,273	41,130,914	1200	9.5	0.774	19,389	0
26	774.86	33,753,104	33,753,104	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	26,949,104	11.1	600	0.774	12,006	0					
27	808.52	35,219,062	35,219,062	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,415,062	12.2	600	0.774	13,134	0					
28 sat	1707.73	74,388,540	74,388,540	0	630.8	0	602.8	28.0	27.4	1	34.44	600	0.774	37,192	0										
29 sun	1184.82	51,610,720	51,610,720	0	630.8	0	601.2	29.6	29.0	1	23.89	600	0.774	27,278	0										
30	1392.22	60,645,077	60,645,077	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	53,841,077	15	600	0.774	16,199	21,441,077	600	9.9	0.774	10,720	0
July 1	1352.82	58,928,779	58,928,779	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	52,124,779	15	600	0.774	16,199	19,724,779	600	9.1	0.774	9,862	0
2	1258.43	54,817,333	54,817,333	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	48,013,333	15	600	0.774	16,199	15,613,333	600	7.2	0.774	7,806	0
3	1347.03	58,676,634	58,676,634	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	51,872,634	15	600	0.774	16,199	19,472,634	600	9.0	0.774	9,736	0
4 hol	719.03	31,320,968	31,320,968	0	630.8	0	601.2	29.6	29.0	1	9.4	600	0.774	10,715	0										
5 sat	809.63	35,267,325	21,163,053	0	630.8	0	601.2	29.6	29.0	1	2.2	600	0.774	2,455	0										
6 sun	92.74	4,039,727	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
7	1352.39	58,910,285	58,910,285	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	52,106,285	15	600	0.774	16,199	19,706,285	600	9.1	0.774	9,852	0
8	1077.45	46,933,639	46,933,639	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	40,129,639	15	600	0.774	16,199	7,729,639	600	3.6	0.774	3,865	0
9	718.03	31,277,215	26,973,288	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	20,169,288	6.3	600	0.774	6,791	0					
10	466.75	20,331,701	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
11	592.06	25,790,024	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
12 sat	91.97	4,006,349	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
13 sun	92.96	4,049,200	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
14	812.96	35,412,568	21,317,768	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	14,513,768	2.3	600	0.774	2,581	0					
15	810.62	35,310,627	35,310,627	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,506,627	12.2	600	0.774	13,204	0					
16	751.12	32,718,815	32,718,815	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	25,914,815	10.4	600	0.774	11,211	0					
17	808.90	35,235,751	35,235,751	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,431,751	12.2	600	0.774	13,147	0					
18	1124.57	48,986,431	34,860,958	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,056,958	11.9	600	0.774	12,858	0					
19 sat	92.25	4,018,527	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
20 sun	93.92	4,091,149	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
21	1631.98	71,089,008	57,036,157	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	50,232,157	15	600	0.774	15,273	17,832,157	600	8.3	0.774	8,406	0
22	2261.85	98,526,317	98,526,317	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	91,722,317	15	600	0.774	15,273	59,322,317	1200	13.7	0.774	27,964	0
23	5002.78	217,921,101	217,921,101	0	630.8	1.25	604.9	25.9	25.4	3	9.00	700	0.720	29,271	149,881,101	15	700	0.720	16,262	112,081,101	1400	15.0	0.720	32,523	36,481,101
24	2821.43	122,901,354	122,901,354	0	630.8	0	604.4	26.4	25.9	1	9.00	600	0.774	9,164	103,461,354	15	600	0.774	15,273	71,061,354	1400	14.1	0.720	31,161	0
25	1983.16	86,386,386	86,386,386	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	79,582,386	15	600	0.774	15,273	47,182,386	1200	10.9	0.774	22,242	0
26 sat	1441.95	62,811,536	54,676,642	0	630.8	0	602.8	28.0	27.4	1	25.31	600	0.774	27,336	0										
27 sun	229.78	10,009,106	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0										
28	812.48	35,391,819	35,391,819	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,587,819	12.3	600	0.774	13,267	0					
29	1170.63	50,992,763	50,992,763	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	44										

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

SANFORD NEW POWER GENERATION																								August 1, 2016				
Average, Years 1999 to 2014																												
												Efficiency = turbine Eff. X 90% for total plant efficiency.																
												First 7 hours and the last 2 hours of the day, plus weekends, are Off Peak generation. Use 9 hours for Off peak calculation.																
												From 7 AM to 10 PM (15 hours) during week days are On Peak generation.																
												By pass flow is first priority. All calculations provide 210 or 650 cfs 24 hours per day.																
Average Annual Flow at Sanford			Average Headwater			Average Tailwater and Head					Existing Off Peak Generation					Existing On Peak Generation					OUTPUT = Head(ft.) x Run Hours x Flow(cfs) x Eff(%)/11.8							
Bypass = 210cfs when not running			= 18,144,000 cf/day																									
1	2	3 (1)	4	5	6	7	8	9	10 (2)	11 (2)	12	13	14	15	16	17	18	19	20	21	22	23	24	25 (3)				
Sanford	Sanford	Sanford Avail.	Diff. from	Hdwater	Spill Gate	Tailrace	Gross	Net	Number	Total Unit	Total Unit	Unit	Total Unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Remaining				
Discharge	Available	Adjusted	Normal	Elev.	Open	Elev.	Head	Head	of Units	Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available				
Ac-ft./day	cf/day	For Bypass	Pool El.	feet	feet	feet	feet	feet	Running	hours	cfs	% @ cfs	kWh	cf after Off-	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs				
			630.8	630.80 - (4)			(5) - (7)	(8)x98%	Off Peak	Off Peak	Off Peak	x 90%	Off Peak	peak & bypass	On peak	On Peak	x 90%	On Peak	Volume cfs	On Peak	On Peak	x 90%	On Peak	Volume cfs				
4	722.38	31,466,662	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0	0	0	0	0					0				
5	676.78	29,480,628	28,703,979	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	21,899,979	7.5	600	0.774	8,123	0								
6	631.86	27,523,913	27,523,913	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	20,719,913	6.7	600	0.774	7,215	0								
7	540.18	23,530,194	18,623,605	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	11,819,605	0.3	600	0.774	390	0								
8	628.52	27,378,219	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
9 sat	91.90	4,003,191	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
10 sun	92.75	4,040,178	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
11	811.72	35,358,440	21,254,619	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	14,450,619	2.2	600	0.774	2,529	0								
12	809.67	35,269,130	35,269,130	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,465,130	12.2	600	0.774	13,172	0								
13	592.85	25,824,756	25,824,756	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	19,020,756	5.5	600	0.774	5,908	0								
14	592.34	25,802,203	19,289,375	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	12,485,375	0.8	600	0.774	881	0								
15	591.86	25,781,454	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
16 sat	91.68	3,993,719	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
17 sun	92.36	4,023,038	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
18	594.20	25,883,394	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
19	594.02	25,875,726	19,494,158	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	12,690,158	1.0	600	0.774	1,098	0								
20	593.35	25,846,407	24,320,131	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	17,516,131	4.4	600	0.774	5,022	0								
21	592.66	25,816,186	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
22	529.61	23,069,658	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
23 sat	92.28	4,019,881	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
24 sun	93.60	4,077,166	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
25	836.89	36,454,976	22,388,142	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	15,584,142	3.0	600	0.774	3,451	0								
26	813.32	35,428,355	35,428,355	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,624,355	12.3	600	0.774	13,295	0								
27	655.55	28,555,947	28,555,947	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	21,751,947	7.4	600	0.774	8,009	0								
28	632.39	27,546,917	27,546,917	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	20,742,917	6.7	600	0.774	7,233	0								
29	1259.49	54,863,341	37,463,187	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	30,659,187	13.8	600	0.774	14,860	0								
30 sat	341.88	14,892,322	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
31 sun	91.72	3,995,523	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
Sept. 1 hol	92.47	4,028,000	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
2	594.16	25,881,590	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
3	593.71	25,862,194	19,483,784	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	12,679,784	1.0	600	0.774	1,089	0								
4	593.32	25,845,054	25,845,054	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	19,041,054	5.5	600	0.774	5,923	0								
5	1443.92	62,897,238	62,897,238	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	56,093,238	15	600	0.774	15,273	23,693,238	600	11.0	0.774	11,169	0			
6 sat	1723.61	75,080,472	75,080,472	0	630.8	0	602.8	28.0	27.4	1	34.76	600	0.774	37,538	0													
7 sun	1717.07	74,795,399	74,795,399	0	630.8	0	602.8	28.0	27.4	1	34.63	600	0.774	37,395	0													
8	813.89	35,453,164	35,453,164	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,649,164	12.3	600	0.774	13,314	0								
9	814.60	35,483,836	35,483,836	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,679,836	12.4	600	0.774	13,337	0								
10	1351.86	58,886,830	58,886,830	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	52,082,830	15	600	0.774	15,273	19,682,830	600	9.1	0.774	9,278	0			
11	811.82	35,362,951	35,362,951	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,558,951	12.3	600	0.774	13,244	0								
12	543.44	23,672,279	23,672,279	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	16,868,279	3.9	600	0.774	4,495	0								
13 sat	92.24	4,018,076	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
14 sun	723.10	31,498,236	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
15	2529.96	110,205,261	109,433,573	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	102,629,573	15	600	0.774	15,273	70,229,573	1400	13.9	0.720	30,796	0			
16	2717.98	118,395,226	118,395,226	0	630.8	0	604.4	26.4	25.9	1	9.00	600	0.774	9,164	98,955,226	15	600	0.774	15,273	66,555,226	1400	13.2	0.720	29,185	0			
17	1978.09	86,165,816	86,165,816	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	79,361,816	15	600	0.774	15,273	46,961,816	1200	10.9	0.774	22,138	0			
18	1437.81	62,631,111	62,631,111	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	55,827,111	15	600	0.774	16,199	23,427,111	600	10.8	0.774	11,713	0			
19	807.82	35,188,840	21,061,112	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	14,257,112	2.1	600	0.774	2,372	0								
20 sat	92.20	4,016,272	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
21 sun	93.43	4,069,949	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0													
22	725.48	31,601,981	18,144,000	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	0													
23	1355.12	59,028,915	58,412,845	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	51,608,845	15	600	0.774	16,199	19,208,845	600	8.9	0.774	9,604	0			
24	1173.17	51,103,273	51,103,273	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	44,299,273	15	600	0.774	16,199	11,899,273	600	5.5	0.774	5,949	0			
25	808.33	35,210,942	25,357,987																									

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

		New Kaplan Turbine										Remaining Two Existing Turbines										OUTPUT = Head(ft.) x Run Hours x Flow(cfs) x Eff(%))/11.8							
		26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Day	Date	New unit	New unit	New unit	New unit	Remaining	New unit	New unit	New unit	New unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2	Unit 2	Unit 2	Unit 2	Remaining	Both Old	Both Old	Both Old	Both Old	Remaining	ON PEAK	OFF PEAK	TOTAL
	2014	Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available	total	total	OUTPUT
		hours	cfs	% @ cfs	kWh	Volume, cf	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs	OUTPUT	OUTPUT	OUTPUT
		Off Peak	Off Peak	x 90%	Off Peak		On peak	On Peak	x 90%	On Peak		On Peak	On Peak	x 90%	On Peak		On Peak	On Peak	x 90%	On Peak		Off Peak	Off Peak	x 90%	Off Peak		kWh	kWh	
	4	9	210	0.728	3,383	11,340,000	15	210	0.728	5,638	0																5,638	3,383	9,021
	5	9	210	0.728	3,200	21,899,979	15	406	0.810	11,459	0																11,459	3,200	14,659
	6	9	210	0.728	3,200	20,719,913	15	384	0.808	10,817	0																10,817	3,200	14,017
	7	9	210	0.728	3,383	11,819,605	15	219	0.734	5,920	0																5,920	3,383	9,303
	8	9	210	0.728	3,383	11,340,000	15	210	0.728	5,638	0																5,638	3,383	9,021
sat	9	24	210	0.728	9,021	0																					0	9,021	9,021
sun	10	24	210	0.728	9,021	0																					0	9,021	9,021
	11	9	210	0.728	3,383	14,450,619	15	268	0.770	7,602	0																7,602	3,383	10,985
	12	9	210	0.728	3,200	28,465,130	15	527	0.819	15,059	0																15,059	3,200	18,259
	13	9	210	0.728	3,200	19,020,756	15	352	0.803	9,864	0																9,864	3,200	13,064
	14	9	210	0.728	3,200	12,485,375	15	231	0.747	6,025	0																6,025	3,200	9,225
	15	9	210	0.728	3,383	11,340,000	15	210	0.728	5,638	0																5,638	3,383	9,021
sat	16	24	210	0.728	9,021	0																					0	9,021	9,021
sun	17	24	210	0.728	9,021	0																					0	9,021	9,021
	18	9	210	0.728	3,383	11,340,000	15	210	0.728	5,638	0																5,638	3,383	9,021
	19	9	210	0.728	3,383	12,690,158	15	235	0.747	6,473	0																6,473	3,383	9,856
	20	9	210	0.728	3,383	17,516,131	15	324	0.794	9,495	0																9,495	3,383	12,878
	21	9	210	0.728	3,383	11,340,000	15	210	0.728	5,638	0																5,638	3,383	9,021
	22	9	210	0.728	3,383	11,340,000	15	210	0.728	5,638	0																5,638	3,383	9,021
sat	23	24	210	0.728	9,021	0																					0	9,021	9,021
sun	24	24	210	0.728	9,021	0																					0	9,021	9,021
	25	9	210	0.728	3,383	15,584,142	15	289	0.783	8,333	0																8,333	3,383	11,715
	26	9	210	0.728	3,200	28,624,355	15	530	0.819	15,143	0																15,143	3,200	18,343
	27	9	210	0.728	3,200	21,751,947	15	403	0.810	11,381	0																11,381	3,200	14,581
	28	9	210	0.728	3,200	20,742,917	15	384	0.808	10,829	0																10,829	3,200	14,029
	29	9	210	0.728	3,200	30,659,187	15	568	0.820	16,238	0																16,238	3,200	19,438
sat	30	24	210	0.728	9,021	0																					0	9,021	9,021
sun	31	24	210	0.728	9,021	0																					0	9,021	9,021
hol	Sept 1	24	210	0.728	9,021	0																					0	9,021	9,021
	2	9	210	0.728	3,383	11,340,000	15	210	0.728	5,638	0																5,638	3,383	9,021
	3	9	210	0.728	3,383	12,679,784	15	235	0.747	6,468	0																6,468	3,383	9,851
	4	9	210	0.728	3,200	19,041,054	15	353	0.802	9,863	0																9,863	3,200	13,063
	5	9	210	0.728	3,017	56,093,238	15	720	0.814	19,266	17,213,238	600	8.0	0.774	8,114	0											27,380	3,017	30,397
sat	6	24	720	0.814	32,693	12,872,472																600	6.0	0.774	6,436	0	0	39,129	39,129
sun	7	24	720	0.814	32,693	12,587,399																600	5.8	0.774	6,293	0	0	38,986	38,986
	8	9	210	0.728	3,200	28,649,164	15	531	0.819	15,156	0																15,156	3,200	18,356
	9	9	210	0.728	3,200	28,679,836	15	531	0.819	15,173	0																15,173	3,200	18,373
	10	9	210	0.728	3,017	52,082,830	15	720	0.814	19,266	13,202,830	600	6.1	0.774	6,224	0											25,489	3,017	28,507
	11	9	210	0.728	3,200	28,558,951	15	529	0.819	15,109	0																15,109	3,200	18,309
	12	9	210	0.728	3,383	16,868,279	15	312	0.792	9,123	0																9,123	3,383	12,506
sat	13	24	210	0.728	9,021	0																					0	9,021	9,021
sun	14	24	210	0.728	9,021	0																					0	9,021	9,021
	15	9	210	0.728	3,017	102,629,573	15	720	0.814	19,266	63,749,573	600	15.0	0.774	15,273	31,349,573	600	14.5	0.774	14,778	0					49,317	3,017	52,334	
	16	9	210	0.728	3,017	111,591,226	15	720	0.814	19,266	72,711,226	700	15.0	0.720	16,576	34,911,226	700	13.9	0.720	15,309	0					51,150	3,017	54,167	
	17	9	210	0.728	3,017	79,361,816	15	720	0.814	19,266	40,481,816	700	15.0	0.720	16,576	2,681,816	600	1.2	0.774	1,264	0					37,105	3,017	40,123	
	18	9	210	0.728	3,200	55,827,111	15	720	0.814	20,433	16,947,111	600	7.8	0.774	8,473	0											28,906	3,200	32,106
	19	9	210	0.728	3,383	14,257,112	15	264	0.770	7,500	0																7,500	3,383	10,883
sat	20	24	210	0.728	9,021	0																					0	9,021	9,021
sun	21	24	210	0.728	9,021	0																					0	9,021	9,021
	22	24	210	0.728	8,533	0	15	0	0.845	0	0																0	8,533	8,533
	23	9	210	0.728	3,200	51,608,845	15	720	0.814	20,433	12,728,845	600	5.9	0.774	6,364	0											26,797	3,200	29,997
	24	9	210	0.728	3,200	44,299,273	15	720	0.814	20,433	5,419,273	600	2.5	0.774	2,709	0											23,143	3,200	26,343
	25	9	210	0.728	3,200	18,553,987	15	344	0.801	9,600	0																9,600	3,200	12,800
	26	9	210	0.728	3,383	11,340,000	15	210	0.728	5,638	0																5,638	3,383	9,021

Boyce Hydro LLC.
Sanford New Power Generation
Exhibit No. 3

SANFORD NEW POWER GENERATION																													
Average, Years 1999 to 2014											August 1, 2016																		
Efficiency = turbine Eff. X 90% for total plant efficiency.																													
First 7 hours and the last 2 hours of the day, plus weekends, are Off Peak generation. Use 9 hours for Off peak calculation.																													
From 7 AM to 10 PM (15 hours) during week days are On Peak generation.																													
By pass flow is first priority. All calculations provide 210 or 650 cfs 24 hours per day.																													
Average Annual Flow at Sanford					Average Headwater					Average Tailwater and Head					Existing Off Peak Generation					Existing On Peak Generation					OUTPUT = Head(ft.) x Run Hours x Flow(cfs) x Eff(%))/11.8				
Bypass = 210cfs when not running																													
= 18,144,000 cf/day																													
1	2	3 (1)	4	5	6	7	8	9	10 (2)	11 (2)	12	13	14	15	16	17	18	19	20	21	22	23	24	25 (3)					
Sanford	Sanford	Sanford Avail.	Diff. from	Hdwater	Spill Gate	Tailrace	Gross	Net	Number	Total Unit	Total Unit	Unit	Total Unit	Remaining	Unit 1	Unit 1	Unit 1	Unit 1	Remaining	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Unit 2 & 3	Remaining					
Discharge	Available	Adjusted	Normal	Elev.	Open	Elev.	Head	Head	of Units	Run Time	Flow	Efficiency	OUTPUT	Available	Run Time	Flow	Efficiency	OUTPUT	Available	Flow	Run Time	Efficiency	OUTPUT	Available					
Ac-ft./day	cf/day	cf/day	Pool El.	feet	feet	feet	feet	feet	Running	hours	cfs	% @ cfs	kWh	cf after Off-	hours	cfs	% @ cfs	kWh	Volume cfs	cfs	hours	% @ cfs	kWh	Volume cfs					
			630.8	630.80 - (4)			(5) - (7)	(8)x98%	Off Peak	Off Peak	Off Peak	x 90%	Off Peak	peak & bypass	On peak	On Peak	x 90%	On Peak	Volume cfs	On Peak	On Peak	x 90%	On Peak	Volume cfs					
20	718.60	31,302,023	31,302,023	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	24,498,023	9.4	600	0.774	10,121	0									
21	807.98	35,195,606	35,195,606	0	630.8	0	602.8	28.0	27.4	0	0.00	0	0.000	0	28,391,606	12.1	600	0.774	13,116	0									
22 sat	539.58	23,504,032	23,504,032	0	630.8	0	601.2	29.6	29.0	1	3.8	600	0.774	4,358	0														
23 sun	92.47	4,028,000	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0														
24	812.57	35,395,427	21,279,427	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	14,475,427	2.2	600	0.774	2,550	0									
25	1351.90	58,888,634	58,888,634	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	52,084,634	15	600	0.774	15,273	19,684,634	600	9.1	0.774	9,279	0				
26	810.08	35,287,172	21,180,193	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	14,376,193	2.2	600	0.774	2,469	0									
27 hol	92.68	4,037,021	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0														
28	1442.36	62,829,128	62,829,128	0	630.8	0	604.4	26.4	25.9	0	0.00	0	0.000	0	56,025,128	15	700	0.720	16,576	18,225,128	600	8.4	0.774	8,591	0				
29 sat	810.96	35,325,513	21,257,325	0	630.8	0	601.2	29.6	29.0	1	2.2	600	0.774	2,532	0														
30 sun	93.57	4,075,812	18,144,000	0	630.8	0	601.2	29.6	29.0	0	0.00	0	0.000	0	0														
Dec. 1	1358.16	59,161,528	59,161,528	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	52,357,528	15	600	0.774	14,463	19,957,528	600	9.2	0.774	8,909	0				
2	1353.05	58,938,702	58,938,702	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	52,134,702	15	600	0.774	14,463	19,734,702	600	9.1	0.774	8,810	0				
3	1347.60	58,701,443	58,701,443	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	51,897,443	15	600	0.774	14,463	19,497,443	600	9.0	0.774	8,704	0				
4	807.38	35,169,444	35,169,444	-1.4	629.4	0	602.8	26.6	26.1	0	0.00	0	0.000	0	28,365,444	12.1	600	0.774	12,441	0									
5	718.02	31,276,764	31,276,764	-1.4	629.4	0	602.8	26.6	26.1	0	0.00	0	0.000	0	24,472,764	9.4	600	0.774	9,596	0									
6 sat	807.94	35,193,802	21,060,661	-1.4	629.4	0	601.2	28.2	27.6	1	2.1	600	0.774	2,259	0														
7 sun	92.08	4,010,859	18,144,000	-1.4	629.4	0	601.2	28.2	27.6	0	0.00	0	0.000	0	0														
8	810.54	35,307,019	35,307,019	-1.4	629.4	0	602.8	26.6	26.1	0	0.00	0	0.000	0	28,503,019	12.2	600	0.774	12,541	0									
9	811.83	35,363,402	35,363,402	-1.4	629.4	0	602.8	26.6	26.1	0	0.00	0	0.000	0	28,559,402	12.3	600	0.774	12,583	0									
10	1439.16	62,689,749	62,689,749	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	55,885,749	15	600	0.774	14,463	23,485,749	600	10.9	0.774	10,484	0				
11	1434.89	62,503,911	62,503,911	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	55,699,911	15	600	0.774	14,463	23,299,911	600	10.8	0.774	10,401	0				
12	1431.38	62,351,000	48,165,536	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	41,361,536	15	600	0.774	14,463	8,961,536	600	4.1	0.774	4,000	0				
13 sat	90.88	3,958,536	18,144,000	-1.4	629.4	0	601.2	28.2	27.6	0	0.00	0	0.000	0	0														
14 sun	92.66	4,036,119	18,144,000	-1.4	629.4	0	601.2	28.2	27.6	0	0.00	0	0.000	0	0														
15	1445.54	62,967,604	48,859,723	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	42,055,723	15	600	0.774	14,463	9,655,723	600	4.5	0.774	4,310	0				
16	1719.42	74,897,791	74,897,791	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	68,093,791	15	600	0.774	14,463	35,693,791	1200	8.3	0.774	15,934	0				
17	2253.46	98,160,504	98,160,504	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	91,356,504	15	600	0.774	14,463	58,956,504	1200	13.6	0.774	26,318	0				
18	2242.54	97,685,083	97,685,083	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	90,881,083	15	600	0.774	14,463	58,481,083	1200	13.5	0.774	26,106	0				
19	2230.84	97,175,381	97,175,381	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	90,371,381	15	600	0.774	14,463	57,971,381	1200	13.4	0.774	25,878	0				
20 sat	1947.63	84,838,786	84,838,786	-1.4	629.4	0	602.8	26.6	26.1	1	39.28	600	0.774	40,296	0														
21 sun	704.41	30,684,066	30,684,066	-1.4	629.4	0	601.2	28.2	27.6	1	8.9	600	0.774	9,714	0														
22	1280.86	55,794,337	55,794,337	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	48,990,337	15	600	0.774	14,463	16,590,337	600	7.7	0.774	7,406	0				
23	1321.86	57,580,098	57,580,098	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	50,776,098	15	600	0.774	14,463	18,376,098	600	8.5	0.774	8,203	0				
24	1145.66	49,904,797	35,600,703	-1.4	629.4	0	604.4	25.0	24.5	0	0.00	0	0.000	0	28,796,703	12.4	600	0.774	11,989	0									
25 hol	88.15	3,839,906	18,144,000	-1.4	629.4	0	600.0	29.4	28.8	0	0.00	0	0.000	0	0														
26	1604.49	69,891,434	69,891,434	-1.4	629.4	0	602.8	26.6	26.1	0	0.00	0	0.000	0	63,087,434	15	600	0.774	15,389	30,687,434	600	14.2	0.774	14,576	0				
27 sat	2220.34	96,718,002	96,718,002	-1.4	629.4	0	602.8	26.6	26.1	1	44.78	600	0.774	45,938	0														
28 sun	4363.12	190,057,536	190,057,536	-1.4	629.4	0.29	604.5	24.9	24.4	1	72.00	700	0.720	74,994	8,617,536									8,617,536					
29	6701.13	291,901,428	291,901,428	-1.4	629.4	3.78	605.9	23.5	23.0	3	9	700	0.720	26,545	223,861,428	15	700	0.720	14,747	186,061,428	1400	15.0	0.720	29,495	110,461,428				
30	5306.84	231,166,138	231,166,138	-1.4	629.4	1.70	605.1	24.3	23.8	3	9	700	0.720	27,485	163,126,138	15	700	0.720	15,270	125,326,138	1400	15.0	0.720	30,539	49,726,138				
31	2638.57	114,936,018	114,936,018	-1.4	629.4	0	604.4	25.0	24.5	1	9	600	0.774	8,678	95,496,018	15	600	0.774	14,463	63,096,018	1200	14.6	0.774	28,166	0				
														2,446,075					3,169,164					2,579,042					
																					Total kWh			8,194,281					

(1) On the weekends the inflows to the reservoir are usually below what is needed for minimum bypass flow. Therefore the water used by the turbines must be reduced on Fridays to accumulate volume in the reservoir for weekend bypass flow. Likewise the reservoir will be low by Monday morning and flow must be stored to bring the level back up for the remainder of the week. The amount of storage needed on Friday and Monday is determined every weekend by staff and the output adjusted accordingly. The same approach was used in this analysis by taking water from Friday and Monday to accommodate the weekend bypass flow.

(2) Off peak usage during the week (9 hrs max.) is shown as 1, 2 or 3 units running for 9 hours at various flow rates. Off peak usage during the weekends is shown as one unit running at fixed flow for up to 72 hours (3 units at 24 hrs). For example, a weekend hourly entry of 43.5 hours means 1 unit for 24 hrs plus 1 unit for 19.5 hours, both at the same flow rate.

(3) Volumes left in this column mean spill gates were opened that day to pass the excess flow, thus causing higher tailwater. See sheet two for the gate opening calculations.

