

Errata to
2004 Pacific Northwest Loads and Resources Study (2004 White Book)
Summary Document DOE/BP-3617

(for printed copies or electronic copies downloaded before November 14, 2005)

Note: All updates originally posted November 4, 2005, with the exception of Figure 10, Monthly Federal Capacity Surplus/Deficit Projections, page 30, which was revised November 14, 2005.

This update is due to a correction in the monthly capacity *NGP Slice Sale* and *GPU Slice Sale* amounts in the published document.

Pages 18, 29, 30: Replace these three pages in the Summary document with the following pages which have updated figures due to revised capacity data:

- **Figure 3**, Monthly Federal Firm Peak Load Obligations, page 18;
- **Figure 9**, OY 2006 Monthly Federal Capacity Loads and Resources, page 29; and
- **Figure 10**, Monthly Federal Capacity Surplus/Deficit Projections, page 30.

Pages 67 - 69: Replace these three pages in the Summary document with the following updated monthly capacity exhibit pages:

- **Exhibit 5**, Loads and Resources-Federal System, OY 2006, Monthly Capacity; page 67;
- **Exhibit 6**, Loads and Resources-Federal System, OY 2010, Monthly Capacity, page 68; and
- **Exhibit 7**, Loads and Resources-Federal System, OY 2015, Monthly Capacity, page 69.

Note: This change is due to a correction in the *NGP Slice Sale* and *GPU Slice Sale* amounts. This revises the monthly capacity values in the following line items in the Loads and Resources-Federal System, Monthly Capacity, **Exhibit 5**, **Exhibit 6**, and **Exhibit 7**.

- *NGP Slice Sale*
- *GPU Slice Sale*

The capacity Slice Sale correction results in changes to the following line item totals in **Exhibit 5**, **Exhibit 6**, and **Exhibit 7**.

- *Total Transfers Out*
- *Total Firm Obligations*
- *Total Firm Surplus/Deficit*

The magnitude of this change in any given month to the above line items in **Exhibit 5**, **Exhibit 6**, and **Exhibit 7** is up to peak 1,250 MW, resulting in effects on the forecast of PNW Federal system capacity surplus/deficits.

The capacity Slice Sale correction and subsequent changes are reflected in the electronic versions of the following documents on BPA's website at www.bpa.gov/power/whitebook2004 (as of November 14, 2005):

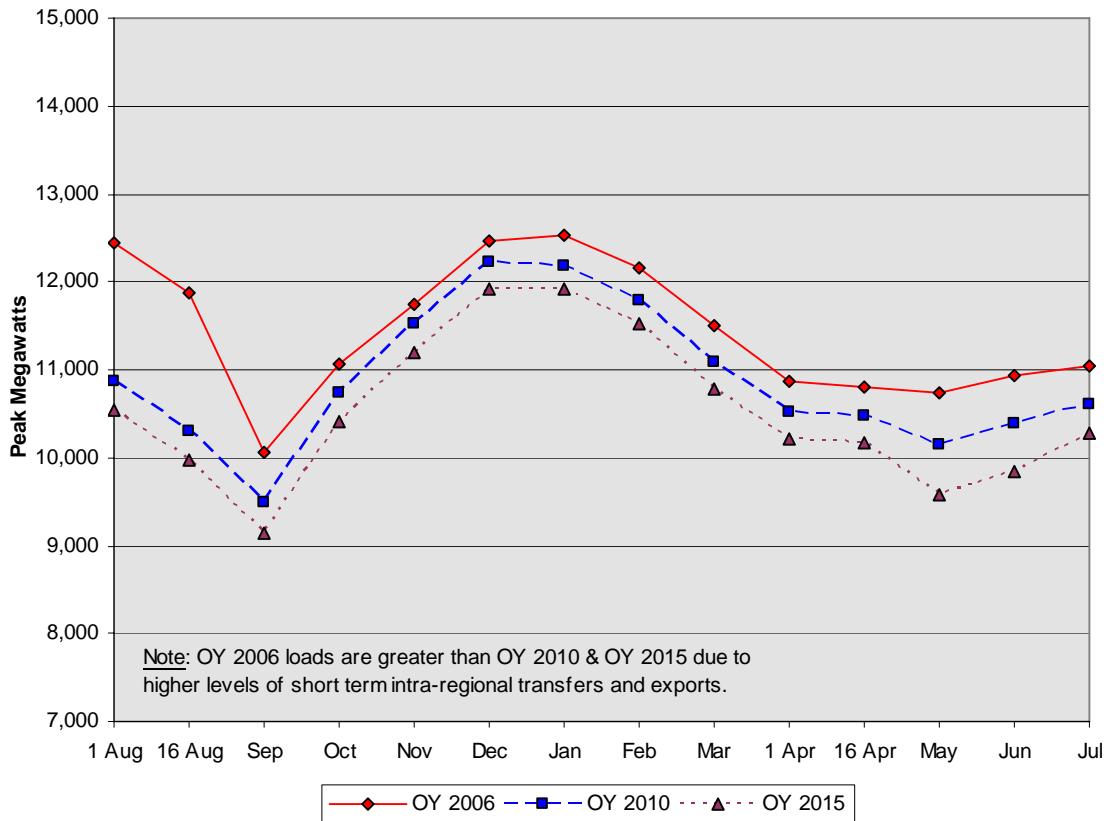
- 2004 Pacific Northwest Loads and Resources Study, Summary Document, DOE/BP-3617

The 2004 Pacific Northwest Loads and Resources Study, Technical Appendix, Volumes 1 & 2 have the capacity Slice Sale correction and are not effected by this errata

Please direct questions or comments to Tim Misley (503) 230-3942.

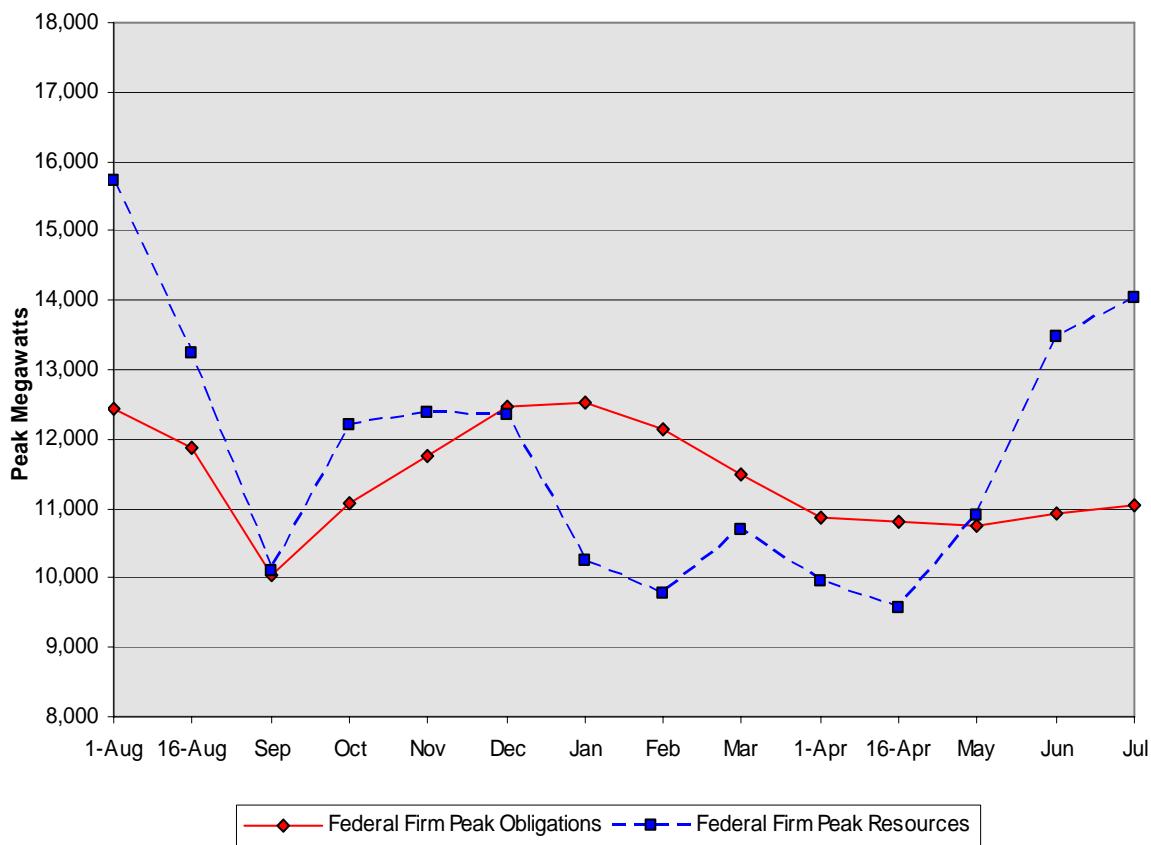
the USBR purchase capacity from BPA under their PSCs to meet regional peak loads not served by their own resources with the exception of the Slice product customers. Federal peak load obligations include BPA's exports and intra-regional contract sales. The peak load obligations assume normal weather conditions with a 50-percent probability that the actual peak load obligations could be exceeded. The peak load projections are reduced by a diversity component to address the fact that all electrical peak demands do not occur simultaneously throughout the region.

Figure 3
Monthly Federal Firm Peak Load Obligations
For OY 2006, 2010, and 2015



Federal peak load obligations decline in OY 2010 and OY 2015 due to lower levels of load and the expiration of export and intra-regional contract sales. The monthly Federal firm peak loads are presented in Exhibits 5 through 7, pages 67 through 69.

Figure 9
OY 2006 Monthly Federal Capacity Loads and Resources
Under 1937-Water Conditions



BPA's surplus firm capacity values take into account the following Federal system hydrologic constraints:

- An operational peaking adjustment that reduced the maximum Federal hydro capacity estimate to meet the 1-hour expected peak load in any given month;
- Limitations on moving water between projects, including upstream storage;
- Pondage limitations due to hydraulic imbalance from reservoir to reservoir;
- Fish and Biological Opinion requirements from the (NOAA Fisheries) Biological Opinion dated December 2000, and the 2000 FCRPS BiOps for the Snake River and Columbia River projects; and
- Navigation and recreation constraints, including restrictions on the rate of rise or fall of tailwater and forebay elevations.

This analysis, however, does not take into account potential nighttime return problems from new capacity sales. Nighttime return problems can occur when replacement energy from capacity sales combined with minimum Federal hydro generation, thermal resources, and other Federal contract returns are greater than

BPA's nighttime load. The following factors may contribute to nighttime return problems:

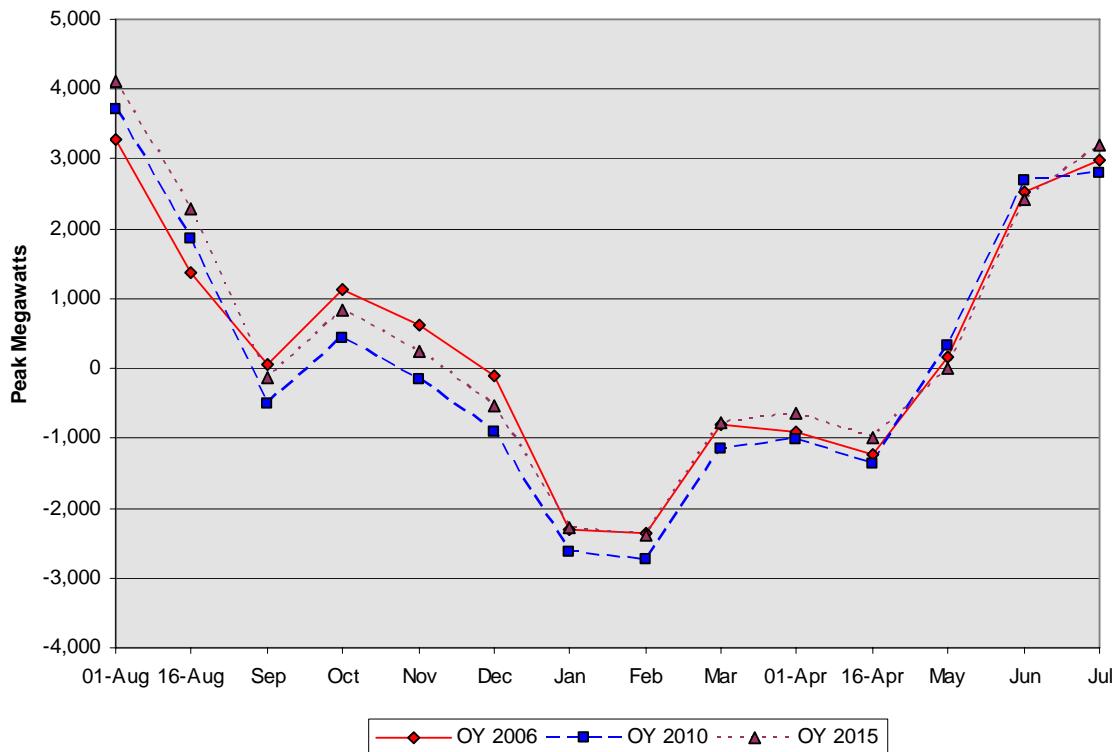
- Low nighttime Federal system load obligations;
- Minimum nighttime contract levels from contract purchases, peaking replacement, and exchange energy;
- The inability of Federal non-hydro resources—especially ENW's Columbia Generating Station—to cycle to fit differing day to night load requirements; and
- Additional nonpower hydro requirements that dictate minimum streamflows.

As changes develop in fish requirements and BPA's contracts, which restrict the Federal hydro system's ability to operate, updates to the Federal operational peaking adjustment would be incorporated into future studies.

Figure 10, below, illustrates the Federal firm capacity surplus/deficit projections for OY 2006, 2010, and 2015.

Figure 10

**Monthly Federal Capacity Surplus/Deficit Projections
Under 1937-Water Conditions
For OY 2006, 2010, and 2015**



Federal capacity surplus/deficit projections, assuming normal weather conditions and 1937-water conditions for OY 2006, 2010, and 2015, are shown in Exhibits 5 through 7, pages 67 through 69.

Exhibit 5: OY 2006 Monthly Capacity

Loads and Resources - Federal System
 PNW Loads and Resource Study
 2005 - 2006 Operating Year
 1937 Water Year
 [27] 2004 White Book

10/31/2005

Capacity in Megawatts	Aug1	Aug16	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr1	Apr16	May	Jun	Jul
Non-Utility Obligations														
Federal Agencies 2002 PSC Sale	229	229	179	205	212	203	224	212	202	189	189	185	198	193
USBR 2002 PSC Sale	281	247	157	139	0.2	0.2	0.2	0.2	37	266	329	260	272	290
DSI 2002 PSC Sale	265	265	265	272	272	272	272	272	272	272	272	272	272	272
Total Firm Non-Utility Obligations	774	740	600	616	485	475	496	485	511	727	790	717	742	755
Transfers Out														
NGP 2002 PSC Sale	3504	3504	3327	3838	4035	4255	4560	4375	3991	3772	3772	3591	3532	3644
GPU 2002 PSC Sale	1926	1926	2051	2304	2625	2904	3100	3027	2825	2390	2380	2412	2010	1965
NGP Slice Sale	1096	889	627	805	826	823	675	640	717	656	617	747	963	985
GPU Slice Sale	1826	1481	1045	1340	1376	1370	1124	1066	1194	1092	1028	1244	1603	1640
IOU 2002 PSC Sale	382	382	382	382	382	382	382	382	382	382	382	382	382	382
Exports	1970	1970	1964	1821	1746	1762	1759	1758	1748	1753	1753	1843	1844	1773
Intra-Regional Transfers (Out)	1743	1743	797	739	964	1018	992	948	830	753	753	581	633	697
Federal Diversity	-772	-768	-743	-778	-687	-515	-552	-533	-705	-662	-667	-774	-782	-792
Total Transfers Out	11674	11126	9450	10451	11267	11998	12040	11664	10981	10136	10018	10026	10186	10296
Total Firm Obligations	12449	11867	10050	11067	11752	12473	12536	12148	11492	10863	10808	10743	10928	11050
Hydro Resources														
Regulated Hydro	20409	20228	20436	20534	20759	20518	20667	20749	20411	19639	19335	19766	20362	20520
Independent Hydro	748	760	742	747	711	673	644	760	820	845	848	887	889	765
Operational Peaking Adjustment	-2840	-5808	-9346	-7261	-7363	-7986	-10403	-10554	-9256	-8920	-9304	-8246	-6226	-4814
Non-Fed CER (Canada)	245	245	245	245	246	247	246	246	245	234	234	234	234	234
Total Hydro Resources	18562	15425	12078	14265	14353	13452	11154	11201	12219	11798	11113	12641	15259	16705
Other Resources														
Small Thermal & Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Combustion Turbines	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewables	27	27	27	28	29	31	32	31	31	30	30	27	27	27
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports	139	139	168	204	257	311	285	241	213	216	216	76	94	160
Intra-Regional Transfers (In)	1238	1238	1261	1226	1226	1203	838	838	838	588	588	588	588	838
Large Thermal	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150
Non-Utility Generation	34	34	17	32	41	32	32	32	32	32	32	49	32	29
Augmentation Purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Augmentation Resources	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Resources	2588	2588	2624	2640	2703	2727	2337	2292	2264	2016	2016	1890	1892	2204
Total Resources	21150	18013	14702	16905	17056	16180	13491	13493	14483	13814	13129	14531	17150	18909
Reserves & Maintenance														
Hydro Reserves	-1058	-1049	-1059	-1064	-1073	-1060	-1066	-1075	-1062	-1024	-1009	-1033	-1063	-1064
Small Thermal & Misc. Reserves	-3	-3	-2.2	-3	-3.5	-3.2	-3.2	-3.2	-3.2	-3.1	-3.1	-3.8	-3.0	-2.8
Contract Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large Thermal Reserves	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172
Federal Hydro Maintenance	-3263	-2761	-2770	-2752	-2705	-1866	-1408	-1883	-1915	-2061	-1805	-1756	-1635	-2785
Spinning Reserves	-386	-320	-235	-291	-294	-293	-247	-236	-261	-248	-237	-276	-344	-351
Federal Transmission Losses	-545	-459	-351	-423	-429	-428	-355	-339	-371	-345	-332	-378	-467	-487
Total Reserves, Maintenance & Losses	-5427	-4765	-4589	-4705	-4678	-3823	-3250	-3709	-3784	-3854	-3559	-3620	-3684	-4862
Total Net Resources	15723	13248	10112	12200	12378	12357	10240	9784	10700	9960	9570	10911	13466	14047
Total Firm Surplus/Deficit	3274	1381	62	1133	626	-116	-2296	-2365	-793	-903	-1238	168	2538	2997

Exhibit 6: OY 2010 Monthly Capacity

Loads and Resources - Federal System
 PNW Loads and Resource Study
 2009 - 2010 Operating Year
 1937 Water Year
 [27] 2004 White Book

10/31/2005

Capacity in Megawatts	Aug1	Aug16	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr1	Apr16	May	Jun	Jul
Non-Utility Obligations														
Federal Agencies 2002 PSC Sale	305	305	220	260	272	253	288	271	255	235	235	224	252	244
USBR 2002 PSC Sale	281	247	157	139	0.2	0.2	0.2	0.2	37	266	329	260	272	290
DSI 2002 PSC Sale	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Firm Non-Utility Obligations	586	552	376	399	272	253	289	271	292	502	565	484	525	534
Transfers Out														
NGP 2002 PSC Sale	3791	3791	3588	4110	4321	4515	4846	4642	4252	3982	3982	3813	3793	3921
GPU 2002 PSC Sale	2250	2250	2476	2681	3055	3344	3383	3335	3122	2738	2738	2503	2139	2142
NGP Slice Sale	1097	894	628	811	834	827	680	642	716	660	622	749	970	993
GPU Slice Sale	1826	1489	1045	1351	1389	1378	1133	1070	1192	1099	1035	1248	1616	1654
IOU 2002 PSC Sale	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports	1599	1599	1595	1555	1504	1513	1510	1511	1505	1520	1520	1587	1564	1571
Intra-Regional Transfers (Out)	588	588	617	683	907	961	935	891	774	747	747	575	628	642
Federal Diversity	-861	-857	-837	-863	-765	-568	-596	-577	-767	-722	-728	-816	-839	-858
Total Transfers Out	10289	9753	9111	10328	11245	11970	11891	11513	10794	10022	9915	9660	9870	10066
Total Firm Obligations	10875	10305	9487	10727	11517	12224	12179	11784	11086	10524	10479	10144	10394	10600
Hydro Resources														
Regulated Hydro	20409	20228	20436	20534	20759	20518	20667	20749	20411	19639	19335	19766	20362	20520
Independent Hydro	748	760	742	747	711	673	644	760	820	845	848	887	889	765
Operational Peaking Adjustment	-2738	-5651	-9244	-7083	-7165	-7826	-10240	-10423	-9169	-8790	-9171	-8136	-6055	-4632
Non-Fed CER (Canada)	236	236	236	236	236	236	236	236	236	244	244	244	244	244
Total Hydro Resources	18656	15573	12170	14433	14541	13601	11307	11322	12298	11938	11256	12762	15440	16897
Other Resources														
Small Thermal & Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Combustion Turbines	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewables	27	27	27	28	29	31	32	31	31	30	30	27	27	27
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports	89	89	118	154	207	261	235	191	163	166	166	76	94	110
Intra-Regional Transfers (In)	0	0	23	23	23	0	0	0	0	0	0	0	0	0
Large Thermal	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150
Non-Utility Generation	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Augmentation Purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Augmentation Resources	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Resources	1319	1319	1371	1408	1462	1495	1470	1425	1397	1399	1399	1306	1324	1340
Total Resources	19974	16892	13542	15841	16002	15096	12777	12747	13695	13337	12655	14068	16764	18237
Reserves & Maintenance														
Hydro Reserves	-1058	-1049	-1059	-1064	-1073	-1060	-1066	-1075	-1062	-1024	-1009	-1033	-1063	-1064
Small Thermal & Misc. Reserves	-4.0	-4.0	-4.0	-4	-4.1	-4.2	-4.2	-4.2	-4.2	-4.1	-4.1	-4.0	-4.0	-4.0
Contract Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large Thermal Reserves	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172
Federal Hydro Maintenance	-3263	-2761	-2770	-2752	-2705	-1866	-1408	-1883	-1915	-2061	-1805	-1756	-1635	-2785
Spinning Reserves	-389	-324	-239	-296	-299	-297	-251	-239	-263	-251	-241	-279	-349	-356
Federal Transmission Losses	-505	-421	-311	-387	-394	-392	-331	-314	-344	-329	-316	-363	-454	-464
Total Reserves, Maintenance & Losses	-5392	-4732	-4555	-4675	-4648	-3792	-3232	-3689	-3761	-3843	-3547	-3607	-3676	-4846
Total Net Resources	14583	12160	8986	11166	11354	11304	9545	9058	9934	9494	9107	10460	13088	13391
Total Firm Surplus/Deficit	3708	1855	-500	439	-163	-920	-2634	-2726	-1152	-1030	-1372	316	2693	2791

Exhibit 7: OY 2015 Monthly Capacity

Loads and Resources - Federal System
 PNW Loads and Resource Study
 2014 - 2015 Operating Year
 1937 Water Year
 [27] 2004 White Book

10/31/2005

Capacity in Megawatts	Aug1	Aug16	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr1	Apr16	May	Jun	Jul
Non-Utility Obligations														
Federal Agencies 2002 PSC Sale	314	314	228	268	280	262	299	281	265	244	244	233	261	254
USBR 2002 PSC Sale	281	247	157	139	0.2	0.2	0.2	0.2	37	266	329	260	272	290
DSI 2002 PSC Sale	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Firm Non-Utility Obligations	595	561	385	407	280	262	299	282	302	511	574	493	533	544
Transfers Out														
NGP 2002 PSC Sale	3986	3986	3780	4304	4519	4719	5083	4852	4450	4173	4173	3988	3973	4121
GPU 2002 PSC Sale	2403	2403	2631	2855	3215	3501	3561	3538	3290	2901	2901	2665	2301	2329
NGP Slice Sale	1102	902	632	819	843	834	688	648	721	666	627	677	899	1001
GPU Slice Sale	1835	1502	1053	1364	1404	1390	1145	1080	1200	1109	1044	1127	1498	1667
IOU 2002 PSC Sale	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports	1510	1510	1509	1464	1417	1418	1416	1417	1417	1446	1446	1493	1493	1494
Intra-Regional Transfers (Out)	13	13	42	108	325	379	353	309	199	172	172	0.1	18	34
Federal Diversity	-908	-903	-884	-908	-801	-594	-626	-607	-804	-759	-765	-858	-885	-909
Total Transfers Out	9940	9412	8764	10006	10922	11647	11620	11237	10472	9708	9598	9092	9298	9736
Total Firm Obligations	10535	9973	9149	10413	11203	11909	11919	11519	10774	10218	10171	9585	9831	10280
Hydro Resources														
Regulated Hydro	20409	20228	20436	20534	20759	20518	20667	20749	20411	19639	19335	19766	20362	20520
Independent Hydro	748	760	742	747	711	673	644	760	820	845	848	887	889	765
Operational Peaking Adjustment	-2676	-5551	-9182	-6982	-7049	-7736	-10145	-10346	-9110	-8703	-9094	-8067	-5961	-4522
Non-Fed CER (Canada)	233	233	233	233	233	233	233	233	231	231	231	231	231	231
Total Hydro Resources	18714	15670	12229	14531	14653	13688	11399	11395	12354	12012	11320	12818	15521	16994
Other Resources														
Small Thermal & Misc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Combustion Turbines	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Renewables	27	27	27	28	29	31	32	31	31	30	30	27	27	27
Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Imports	89	89	118	154	207	261	235	191	163	166	166	76	94	110
Intra-Regional Transfers (In)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large Thermal	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	0	0	1150
Non-Utility Generation	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Augmentation Purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Augmentation Resources	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Other Resources	1319	1319	1348	1385	1439	1495	1470	1425	1397	1399	1399	156	174	1340
Total Resources	20033	16988	13577	15916	16092	15183	12869	12820	13751	13411	12719	12974	15695	18334
Reserves & Maintenance														
Hydro Reserves	-1058	-1049	-1059	-1064	-1073	-1060	-1066	-1075	-1062	-1024	-1009	-1033	-1063	-1064
Small Thermal & Misc. Reserves	-4.0	-4.0	-4.0	-4	-4.1	-4.2	-4.2	-4.2	-4.2	-4.1	-4.1	-4.0	-4.0	-4.0
Contract Reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Large Thermal Reserves	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	-172	0	0	-172
Federal Hydro Maintenance	-3263	-2761	-2770	-2752	-2705	-1866	-1408	-1883	-1915	-2061	-1805	-1756	-1635	-2785
Spinning Reserves	-390	-327	-240	-298	-302	-299	-254	-241	-265	-254	-243	-247	-317	-359
Federal Transmission Losses	-507	-425	-313	-389	-396	-395	-334	-316	-346	-331	-318	-333	-425	-467
Total Reserves, Maintenance & Losses	-5395	-4738	-4558	-4680	-4654	-3797	-3237	-3693	-3764	-3847	-3551	-3373	-3443	-4852
Total Net Resources	14638	12251	9019	11237	11438	11386	9632	9127	9987	9564	9167	9601	12252	13482
Total Firm Surplus/Deficit	4103	2278	-130	824	235	-523	-2287	-2392	-788	-654	-1004	16	2420	3202