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## **Appendix E. Rate Impact and Stranded Cost/Benefit Analysis Details**

### ***E.1 Rate Unbundling Details***

The following tables detail the rate unbundling analyses. The data are based on 1998 electricity rates, and all dollar values are in 1998 dollars.

### E.1.1 Unbundling Results: Wisconsin Electric Power

Category	Total	Components			
		Generation	Transmission	Distribution	Customer
<b>Costs (thousand \$)</b>					
<b>O&amp;M Expenses:</b>					
O&M Minus Fuel & A&G	\$548,297	\$395,841	\$15,863	\$64,031	\$72,562
Fuel	\$305,173	\$305,173			
Subtotal	\$853,470	\$701,014	\$15,863	\$64,031	\$72,562
A&G	\$57,526	\$41,531	\$1,664	\$6,718	\$7,613
Pensions/Office Supplies	\$89,160	\$59,732	\$2,538	\$16,136	\$10,755
Uncollectibles	\$9,723	\$6,563	\$388	\$2,205	\$567
<b>Total</b>	<b>\$1,009,879</b>	<b>\$808,839</b>	<b>\$20,453</b>	<b>\$89,090</b>	<b>\$91,497</b>
<b>Plant Related Costs:</b>					
Depreciation and Amort.	\$215,668	\$112,786	\$16,464	\$86,418	\$0
Net Interest	\$98,901	\$39,627	\$7,409	\$51,865	\$0
Net Income	\$152,682	\$61,176	\$11,438	\$80,069	\$0
Income Taxes <sup>1</sup>	\$95,488	\$38,260	\$7,153	\$50,075	\$0
Other Taxes	\$71,695	\$41,589	\$3,731	\$23,642	\$2,733
Other Op Expenses	(\$2,911)	(\$1,166)	(\$218)	(\$1,527)	\$0
<b>Total</b>	<b>\$631,524</b>	<b>\$292,271</b>	<b>\$45,977</b>	<b>\$290,542</b>	<b>\$2,733</b>
<b>Total Operating Revenues</b>	<b>\$1,641,403</b>	<b>\$1,101,110</b>	<b>\$66,430</b>	<b>\$379,631</b>	<b>\$94,230</b>
<b>less Wholesale Revenues</b>	<b>(\$117,805)</b>	<b>(\$111,102)</b>	<b>(\$6,703)</b>	<b>\$0</b>	<b>\$0</b>
<b>Total Retail Revenues</b>	<b>\$1,523,598</b>	<b>\$990,009</b>	<b>\$59,728</b>	<b>\$379,631</b>	<b>\$94,230</b>
<b>less State Sales Taxes</b>	<b>(\$47,611)</b>	<b>(\$31,939)</b>	<b>(\$1,927)</b>	<b>(\$11,012)</b>	<b>(\$2,733)</b>
<b>Adjusted Retail Revenues</b>	<b>\$1,475,987</b>	<b>\$958,070</b>	<b>\$57,801</b>	<b>\$368,620</b>	<b>\$91,497</b>
<b>Total Retail Sales (MWH)</b>	<b>26,504,601</b>				
<b>Average unit net retail revenue (cents/kWh)</b>					
System wide 2	<b>5.57</b>	<b>3.61</b>	<b>0.22</b>	<b>1.39</b>	<b>0.35</b>
residential 3,4	<b>7.43</b>	<b>3.61</b>	<b>3.81</b>		
commercial 3,4	<b>6.10</b>	<b>3.61</b>	<b>2.48</b>		
industrial 3,4	<b>3.76</b>	<b>3.61</b>	<b>0.15</b>		

**Footnotes:**

- 1 Income Taxes include Federal Income Taxes, Other Incomes Taxes, Provision for Deferred Income Taxes (incl. credits).
- 2 Adjusted retail revenues divided by total retail sales
- 3 average unit net retail revenue by class equals annual retail revenues by class divided by annual sales
- 4 unit transmission, distribution and customer component by class equals average unit net retail revenue by class minus system average unit generation revenue component

## E.1.2 Unbundling Results: Wisconsin Public Service

Category	Total	Components			
		Generation	Transmissio n	Distribution	Customer
<b>Costs (thousand \$)</b>					
<b>O&amp;M Expenses:</b>					
O&M Minus Fuel & A&G	\$255,687	\$202,931	\$19,828	\$19,119	\$13,808
Fuel	\$11,355	\$11,355			
Subtotal	\$267,042	\$214,286	\$19,828	\$19,119	\$13,808
A&G	\$8,587	\$	\$	\$	\$
		6,815	666	642	464
Pensions/Office Supplies	\$10,090	\$3,258	\$779	\$3,774	\$2,279
Uncollectibles	\$1,225	\$817	\$148	\$207	\$53
<b>Total</b>	<b>\$286,944</b>	<b>\$225,176</b>	<b>\$21,421</b>	<b>\$23,742</b>	<b>\$16,604</b>
<b>Plant Related Costs:</b>					
Depreciation and Amort.	\$33,377	\$11,749	\$8,050	\$13,578	\$0
Net Interest	\$15,972	\$4,907	\$4,215	\$6,851	\$0
Net Income	\$29,828	\$9,164	\$7,870	\$12,793	\$0
Income Taxes <sup>1</sup>	\$19,946	\$6,128	\$5,263	\$8,555	\$0
Other Taxes	\$12,943	\$7,255	\$2,112	\$3,183	\$393
Other Op Expenses	(\$799)	(\$245)	(\$211)	(\$343)	\$0
<b>Total</b>	<b>\$111,267</b>	<b>\$38,958</b>	<b>\$27,299</b>	<b>\$44,617</b>	<b>\$393</b>
<b>Total Operating Revenues less Wholesale Revenues</b>	<b>\$398,211</b>	<b>\$264,134</b>	<b>\$48,720</b>	<b>\$68,359</b>	<b>\$16,997</b>
	<b>(\$92,897)</b>	<b>(\$78,430)</b>	<b>(\$14,467)</b>	<b>\$0</b>	<b>\$0</b>
<b>Total Retail Revenues</b>	<b>\$305,314</b>	<b>\$185,703</b>	<b>\$34,253</b>	<b>\$68,359</b>	<b>\$16,997</b>
<b>less State Sales Taxes</b>	<b>(\$9,207)</b>	<b>(\$6,107)</b>	<b>(\$1,126)</b>	<b>(\$1,580)</b>	<b>(\$393)</b>
<b>Adjusted Retail Revenues</b>	<b>\$296,107</b>	<b>\$179,597</b>	<b>\$33,127</b>	<b>\$66,779</b>	<b>\$16,604</b>
<b>Total Retail Sales (MWH)</b>	<b>5,380,329</b>				
<b>Average unit net retail revenue (cents/kWh)</b>					
System wide <sup>2</sup>	<b>5.50</b>	<b>3.34</b>	<b>0.62</b>	<b>1.24</b>	<b>0.31</b>
residential <sup>3,4</sup>	<b>6.76</b>	<b>3.34</b>	<b>3.42</b>		
commercial <sup>3,4</sup>	<b>6.30</b>	<b>3.34</b>	<b>2.97</b>		
industrial <sup>3,4</sup>	<b>4.48</b>	<b>3.34</b>	<b>1.14</b>		

**Footnotes:**

- <sup>1</sup> Income Taxes include Federal Income Taxes, Other Incomes Taxes, Provision for Deferred Income Taxes (incl. credits).
- <sup>2</sup> Adjusted retail revenues divided by total retail sales
- <sup>3</sup> average unit net retail revenue by class equals annual retail revenues by class divided by annual sales
- <sup>4</sup> unit transmission, distribution and customer component by class equals average unit net retail revenue by class minus system average unit generation revenue component

### E.1.3 Unbundling Results: Wisconsin Power & Light

Category	Total	Components			
		Generation	Transmission	Distribution	Customer
<b>Costs (thousand \$)</b>					
<b>O&amp;M Expenses:</b>					
O&M Minus Fuel & A&G	\$227,759	\$164,488	\$24,568	\$21,048	\$17,654
Fuel	\$113,461	\$113,461			
Subtotal	\$341,220	\$277,949	\$24,568	\$21,048	\$17,654
A&G	\$26,490	\$19,131	\$2,857	\$2,448	\$2,053
Pensions/Office Supplies	\$24,084	\$13,048	\$1,197	\$5,773	\$4,066
Uncollectibles	\$1,530	\$993	\$160	\$315	\$62
Total	\$393,324	\$311,121	\$28,783	\$29,583	\$23,835
<b>Plant Related Costs:</b>					
Depreciation and Amort.	\$104,456	\$47,897	\$15,923	\$40,635	\$0
Net Interest	\$31,889	\$8,079	\$5,979	\$17,831	\$0
Net Income	\$35,324	\$8,950	\$6,623	\$19,751	\$0
Income Taxes <sup>1</sup>	\$25,485	\$6,457	\$4,778	\$14,250	\$0
Other Taxes	\$24,234	\$11,382	\$3,449	\$8,866	\$536
Other Op Expenses	(\$1,800)	(\$456)	(\$337)	(\$1,006)	\$0
Total	\$219,586	\$82,309	\$36,415	\$100,326	\$536
Total Operating Revenues	\$612,910	\$393,430	\$65,198	\$129,909	\$24,371
less Wholesale Revenues	(\$147,772)	(\$126,765)	(\$21,007)	\$0	\$0
Total Retail Revenues	\$465,138	\$266,665	\$44,191	\$129,909	\$24,371
less State Sales Taxes	(\$13,492)	(\$8,661)	(\$1,435)	(\$2,860)	(\$536)
Adjusted Retail Revenues	\$451,646	\$258,004	\$42,756	\$127,050	\$23,835
Total Retail Sales (MWH)	9,200,680				
<b>Average unit net retail revenue (cents/kWh)</b>					
System wide <sup>2</sup>	4.91	2.80	0.46	1.38	0.26
residential <sup>3,4</sup>	6.40	2.80	3.60		
commercial <sup>3,4</sup>	5.46	2.80	2.66		
industrial <sup>3,4</sup>	3.45	2.80	0.65		

**Footnotes:**

<sup>1</sup> Income Taxes include Federal Income Taxes, Other Incomes Taxes, Provision for Deferred Income Taxes (incl. credits).

<sup>2</sup> Adjusted retail revenues divided by total retail sales

<sup>3</sup> average unit net retail revenue by class equals annual retail revenues by class divided by annual sales

<sup>4</sup> unit transmission, distribution and customer component by class equals average unit net retail revenue by class minus system average unit generation revenue component

### E.1.4 Unbundling Results: Northern States Power (WI)

Category	Total	Components			
		Generation	Transmission	Distribution	Customer
<b>Costs (thousand \$)</b>					
<b>O&amp;M Expenses:</b>					
O&M Minus Fuel & A&G	\$255,687	\$202,931	\$19,828	\$19,119	\$13,808
Fuel	\$11,355	\$11,355			
Subtotal	\$267,042	\$214,286	\$19,828	\$19,119	\$13,808
A&G	\$8,587	\$	\$	\$	\$
Pensions/Office Supplies	\$10,090	6,815	666	642	464
Uncollectibles	\$1,225	\$817	\$148	\$207	\$53
<b>Total</b>	<b>\$286,944</b>	<b>\$225,176</b>	<b>\$21,421</b>	<b>\$23,742</b>	<b>\$16,604</b>
<b>Plant Related Costs:</b>					
Depreciation and Amort.	\$33,377	\$11,749	\$8,050	\$13,578	\$0
Net Interest	\$15,972	\$4,907	\$4,215	\$6,851	\$0
Net Income	\$29,828	\$9,164	\$7,870	\$12,793	\$0
Income Taxes <sup>1</sup>	\$19,946	\$6,128	\$5,263	\$8,555	\$0
Other Taxes	\$12,943	\$7,255	\$2,112	\$3,183	\$393
Other Op Expenses	(\$799)	(\$245)	(\$211)	(\$343)	\$0
<b>Total</b>	<b>\$111,267</b>	<b>\$38,958</b>	<b>\$27,299</b>	<b>\$44,617</b>	<b>\$393</b>
<b>Total Operating Revenues</b>	<b>\$398,211</b>	<b>\$264,134</b>	<b>\$48,720</b>	<b>\$68,359</b>	<b>\$16,997</b>
<b>less Wholesale Revenues</b>	<b>(\$92,897)</b>	<b>(\$78,430)</b>	<b>(\$14,467)</b>	<b>\$0</b>	<b>\$0</b>
<b>Total Retail Revenues</b>	<b>\$305,314</b>	<b>\$185,703</b>	<b>\$34,253</b>	<b>\$68,359</b>	<b>\$16,997</b>
<b>less State Sales Taxes</b>	<b>(\$9,207)</b>	<b>(\$6,107)</b>	<b>(\$1,126)</b>	<b>(\$1,580)</b>	<b>(\$393)</b>
<b>Adjusted Retail Revenues</b>	<b>\$296,107</b>	<b>\$179,597</b>	<b>\$33,127</b>	<b>\$66,779</b>	<b>\$16,604</b>
<b>Total Retail Sales (MWH)</b>	<b>5,380,329</b>				
<b>Average unit net retail revenue (cents/kWh)</b>					
System wide 2	<b>5.50</b>	<b>3.34</b>	<b>0.62</b>	<b>1.24</b>	<b>0.31</b>
residential 3,4	<b>6.76</b>	<b>3.34</b>	<b>3.42</b>		
commercial 3,4	<b>6.30</b>	<b>3.34</b>	<b>2.97</b>		
industrial 3,4	<b>4.48</b>	<b>3.34</b>	<b>1.14</b>		

**Footnotes:**

<sup>1</sup> Income Taxes include Federal Income Taxes, Other Incomes Taxes, Provision for Deferred Income Taxes (incl. credits).

<sup>2</sup> Adjusted retail revenues divided by total retail sales

<sup>3</sup> average unit net retail revenue by class equals annual retail revenues by class divided by annual sales

<sup>4</sup> unit transmission, distribution and customer component by class equals average unit net retail revenue by class minus system average unit generation revenue component

## E.2 Net Book Value of Generating Plants of Wisconsin Utilities

### E.2.1 Net Book Value of Wisconsin Electric Power Plants

Unit	Gross Plant Value	Accumulated Depreciation	Net Plant Value	Deferred Tax Balance	Net Plant Values Incl. Deferred Tax
Ash Disposal Sites	16,311,964	761,511	15,550,453		15,550,453
Commerce St.		(1,237,105)	1,237,105		1,237,105
Concord	107,522,170	18,955,641	88,566,529		88,566,529
Edgewater 5	74,100,636	29,968,841	44,131,795		44,131,795
Germantown	35,626,200	36,914,312	(1,288,112)		(1,288,112)
Menasha			-		-
Milwaukee County	773,719	155,630	618,089		618,089
Paris	107,220,435	13,796,180	93,424,255		93,424,255
Pleasant Prairie	728,759,688	326,496,172	402,263,516		402,263,516
P4 Unit Train	43,712,592	34,712,993	8,999,599		8,999,599
Presque Isle	276,615,494	93,994,073	182,621,421		182,621,421
	1,064,534,47				
Point Beach	1	811,262,697	253,271,774	10,539,951	263,811,725
Point Beach CT	1,718,479	1,907,272	(188,793)		(188,793)
Port Washington	120,740,013	85,228,421	35,511,592		35,511,592
Port Washington CT	2,005,414	2,323,195	(317,781)		(317,781)
South Oak Creek	385,964,574	206,942,669	179,021,905		179,021,905
South Oak Creek CT	2,229,115	2,181,896	47,219		47,219
South Oak Creek Unit					
Train	31,044,274	7,396,438	23,647,836		23,647,836
Valley	94,647,938	41,425,114	53,222,824		53,222,824
Wind Turbines - Eastern WI	1,588,917	75,123	1,513,794		1,513,794
Whitewater - Cogentrix Plant			127,326,667		127,326,667
Total Steam Deferred Taxes				(214,979,643)	(214,979,643)
Total Other Production Def. Tax				(9,781,712)	(9,781,712)
<b>Total:</b>					<b>1,294,960,283</b>

### E.2.2 Net Book Value of Madison Gas and Electric Plants

Unit	Gross Plant Value	Accumulated Depreciation	Net Plant Value	Deferred Tax Balance	Net Plant Values Incl. Deferred Tax
Columbia	80,189,023	49,528,204	30,660,819	(11,307,882)	19,352,937
Nine Springs	1,595,386	1,684,229	(88,843)	(1,297)	(90,140)
Blount	53,044,538	38,765,268	14,279,270	(3,018,402)	11,260,868
Fitchburg	345,536	243,583	101,953	(9,986)	91,967
Kewaunee	120,941,507	108,979,606	11,961,901	4,416,385	16,378,286
Sycamore	1,938,054	1,848,441	89,613	(62,218)	27,395
MGE Diesels	4,688,141	62,155	4,625,986	(68,113)	4,557,873
Wisconsin Wind	13,386,074	151,233	13,234,841	(924,547)	12,310,294
Miscellaneous Other Generation	14,907	1,585	13,322	(2,413)	10,909
<b>Total:</b>					<b>63,900,389</b>

### E.2.3 Net Book Value of Wisconsin Power & Light Plants

Unit	Gross Plant Value	Accumulated Depreciation	Net Plant Value	Deferred Tax Balance	Net Plant Values Incl. Deferred Tax
Blackhawk	10,862,560	11,441,470	(578,910)	464,230	(114,680)
Columbia	163,197,434	97,780,867	65,416,567	20,699,897	44,716,670
Edgewater	301,606,480	139,206,291	162,400,189	59,443,301	102,956,888
Nelson Dewey	55,453,804	40,606,431	14,847,373	(1,734,436)	13,112,937
Kewaunee	296,715,447	264,712,974	32,002,473	6,376,584	38,379,057
South Fond Du Lac	1,677,380	8,952,283	(7,274,903)	(5,759,830)	(13,034,733)
Rock River	49,080,063	35,938,825	13,141,238	(343,104)	12,798,134
Rock River CT	14,004,389	14,153,629	(149,240)	154,446	5,206
Sheepskin	3,533,408	3,691,350	(157,942)	72,893	(85,049)
Portable Generator	421,164	212,600	208,564	14,084	222,648
Excess & Unfunded Steam Accum Def Tax				(3,206,766)	(3,206,766)
Excess & Unfunded Other Accum Def Tax				(869,673)	(869,673)
<b>Total:</b>					<b>194,880,639</b>

## E.2.4 Net Book Value of Wisconsin Public Service Plants

Unit	Gross Plant Value	Accumulated Depreciation	Net Plant Value	Deferred Tax Balance	Net Plant Values Incl. Deferred Tax
Columbia			41,711,514	16,638,004)	25,073,510
DePere			72,507,191	621,899	73,129,090
Eagle River			35,866	364	36,230
Edgewater			8,563,451	(1,591,464)	6,971,987
Kewaunee			27,029,471	6,868,815	33,898,286
Oneida Diesel			978,215	(53,748)	924,467
Pulliam			69,819,421	14,219,230)	55,600,191
West Marinette			13,126,392	(1,409,284)	11,717,108
Weston			118,217,165	43,765,968)	74,451,197
Wind			9,980,881	(742,515)	9,238,366
<b>Total:</b>					<b>291,040,432</b>



### E.3 Market Value of Generating Plants of Wisconsin Utilities under Perfect Competition

The following tables detail the market valuation of generating plants owned by Wisconsin utilities. All monetary values are in 1999 dollars unless otherwise noted.

#### E.3.1 Market Value of Wisconsin Electric Power Plants

Unit Name	% Ownership	Installation Date	Type	Capacity	Market Value (\$Millions)	Market Value (\$/Kw)
South Oak Creek 9	100%	12/1/1968	GTgo	18	3	150
Concord 3	100%	6/1/1994	GTgo	83	12	150
Concord 4	100%	6/1/1994	GTgo	83	12	150
Paris 3	100%	6/1/1995	GTgo	83	12	150
Paris 4	100%	6/1/1995	GTgo	83	12	150
Concord 1	100%	7/1/1993	GTgo	94	14	150
Concord 2	100%	7/1/1993	GTgo	94	14	150
Paris 1	100%	6/1/1995	GTgo	94	14	150
Paris 2	100%	6/1/1995	GTgo	94	14	150
Point Beach 5	100%	6/1/1969	GTo	16	2	150
Port Washington	100%	6/1/1969	GTo	18	3	150
Valley - Diesel	100%	1/1/1969	ICo	3	0	150
Point Beach 1	100%	12/1/1970	NU	505	121	239
Point Beach 2	100%	4/1/1973	NU	507	129	254
Menasha 2	100%	1/1/1964	STc	9	0	41
Menasha 1	100%	1/1/1964	STc	15	2	115
Port Washington 1	100%	1/1/1935	STc	80	23	287
Port Washington 2	100%	1/1/1943	STc	80	23	287
Port Washington 3	100%	1/1/1948	STc	83	24	287
Port Washington 4	100%	1/1/1949	STc	83	24	287
Valley 2	100%	3/1/1969	STc	127	25	198
Valley 1	100%	1/1/1968	STc	140	32	228
South Oak Creek 5	100%	1/1/1960	STc	261	242	928
South Oak Creek 6	100%	1/1/1961	STc	264	231	875
South Oak Creek 7	100%	1/1/1965	STc	298	257	862
South Oak Creek 8	100%	1/1/1967	STc	312	263	842
Edgewater 5	25%	3/1/1985	STc	402	78	781
Pleasant Prairie 1	100%	6/1/1980	STc	600	629	1,048
Pleasant Prairie 2	100%	7/1/1985	STc	600	628	1,047
Milwaukee County	100%	1/1/1996	STo	11	2	150
<b>Total:</b>					<b>2,847</b>	

### E.3.2 Market Value of Madison Gas & Electric Plants

Unit Name	% Ownership	Installation Date	Type	Capacity	Market Value (\$Millions)	Market Value (\$/Kw)
Nine Springs	100%	1/1/1964	GTgk	13	2	150
Sycamore 1	100%	12/1/1967	GTgo	14	2	150
Fitchburg 2	100%	5/1/1973	GTgo	20	3	150
Fitchburg 1	100%	5/1/1973	GTgo	21	3	150
Sycamore 2	100%	6/1/1971	GTgo	21	3	150
MGE Diesels	100%	1/1/1999	ICo	13	2	150
Kewaunee	18%	6/1/1974	NU	498	21	242
Columbia 1	22%	5/1/1975	STc	525	82	712
Columbia 2	22%	4/1/1978	STc	525	82	711
Blount Street 1	100%	1/1/1925	STcg	6	2	395
Blount Street 4	100%	1/1/1938	STcg	22	9	395
Blount Street 5	100%	1/1/1948	STcg	28	11	395
Blount Street 3	100%	1/1/1953	STcg	40	16	388
Blount Street 6	100%	1/1/1957	STcg	50	19	388
Blount Street 7	100%	1/1/1961	STcg	50	19	388
Wisconsin Wind	100%	1/1/1999	WND	9	-	-
<b>Total:</b>						277

### E.3.3 Market Value of Wisconsin Power & Light Plants

Unit Name	% Ownership	Installation Date	Type	Capacity	Market Value (\$Millions)	Market Value (\$/Kw)
Rock River 4	100%	12/1/1968	GTgo	16	2	150
Rock River 3	100%	8/1/1967	GTgo	26	4	150
Sheepskin 1	100%	6/1/1971	GTgo	37	6	150
Rock River 5	100%	6/1/1973	GTgo	53	8	150
Rock River 6	100%	6/1/1973	GTgo	53	8	150
South Fond Du Lac 3	100%	5/1/1994	GTgo	83	12	150
South Fond Du Lac 1	100%	5/1/1993	GTgo	84	13	150
South Fond Du Lac 2	100%	5/1/1994	GTgo	85	13	150
South Fond Du Lac 4	100%	5/1/1996	GTgo	87	13	150
Kewaunee	41%	6/1/1974	NU	498	49	242
Stoneman 1	100%	1/1/1959	STc	15	8	526
Stoneman 2	100%	1/1/1959	STc	33	17	526
Edgewater 3	100%	1/1/1951	STc	76	43	561
Nelson Dewey 1	100%	1/1/1959	STc	113	55	484
Nelson Dewey 2	100%	1/1/1962	STc	113	58	516
Edgewater 4	68%	12/1/1969	STc	342	174	747
Edgewater 5	75%	3/1/1985	STc	402	235	781
Columbia 1	46%	5/1/1975	STc	525	173	712
Columbia 2	46%	4/1/1978	STc	525	172	711
Blackhawk 3	100%	1/1/1947	STg	29	-	-
Blackhawk 4	100%	1/1/1949	STg	29	-	-
Rock River 1	100%	1/1/1954	STg	82	4	44
Rock River 2	100%	1/1/1955	STg	82	2	24
<b>Total:</b>						1,069

### E.3.4 Market Value of Wisconsin Public Service Plants

Unit Name	% Ownership	Installation Date	Type	Capacity	Market Value (\$Millions)	Market Value (\$/Kw)
Weston 31	100%	3/1/1969	GTgo	20	3	150
West Marinette 32	100%	4/1/1973	GTgo	40	6	150
West Marinette 31	100%	6/1/1971	GTgo	41	6	150
Weston 32	100%	6/1/1973	GTgo	49	7	150
West Marinette 33	100%	5/1/1993	GTgo	77	12	150
WPS Diesels	100%	1/1/1964	ICo	8	1	150
Kewaunee	41%	6/1/1974	NU	498	50	242
Edgewater 4	32%	12/1/1969	STc	342	81	747
Columbia 1	32%	5/1/1975	STc	525	119	712
Columbia 2	32%	4/1/1978	STc	525	119	711
Pulliam 4	100%	1/1/1947	STcg	26	6	218
Pulliam 3	100%	1/1/1943	STcg	28	6	218
Pulliam 5	100%	1/1/1949	STcg	50	11	218
Weston 1	100%	1/1/1954	STcg	58	14	246
Pulliam 6	100%	1/1/1951	STcg	71	23	324
Pulliam 7	100%	1/1/1958	STcg	86	46	531
Weston 2	100%	1/1/1960	STcg	88	45	514
Pulliam 8	100%	1/1/1964	STcg	137	91	664
Weston 3	100%	4/1/1982	STcg	333	228	686
<b>Total:</b>					<u>874</u>	

## Appendix F. Glossary of Terms

**Available Economic Capacity Test (AEC Test).** The market concentration test performed in accordance with the FERC Screen. The AEC test assumes that market participants are required to withhold a portion of their least-cost capacity from the wholesale market to satisfy their native load obligations, and other long-term wholesale contracts. Only the remaining capacity is counted in the computation of structural indices. The AEC test can be interpreted as representing the short-term capacity market.

**Bertrand-Nash Equilibrium.** Economic equilibrium achieved by strategic suppliers competing on price but not attempting to withhold output. Usually results in the perfectly competitive market outcome. Hardly achievable in electricity markets because electricity cannot be stored in large quantities.

**Capacity Withholding.** Capacity withholding involves firms removing some of their capacity from the bidding process or from the market for a certain period of time, in an effort to cause more expensive units in the system to set the market clearing price. As is the case with strategic bidding, capacity withholding strives to increase the market-clearing price. Unlike strategic bidding, capacity withholding changes the merit order in which units are dispatched.

**COMPEL.** A computer model for simulating strategic behavior of generation owners in deregulated power markets developed by Tabors Caramanis & Associates under the grant from the National Science Foundation.

**Competitive Fringe.** Electricity supplies from the outside of the market areas and/or representing competitive price-taking suppliers.

**Cournot-Nash Equilibrium.** Economic equilibrium achieved by strategic suppliers attempting to maximize profits through withholding output and thus influencing market clearing prices. Results in very high equilibrium prices in markets with low price elasticity of demand.

**Economic Capacity Test (EC Test).** The market concentration test performed in accordance with the FERC Screen. The EC test presumes that there is no native load obligation in the destination market or in surrounding markets, such that all market participants are allowed to sell any portion of their power on the wholesale market. The EC test can be interpreted as representing the long-term capacity market.

**GE MAPS.** GE-MAPS is a powerful production cost model developed by General Electric. It simulates the physical operation of the transmission system as well as the operation of individual generating units. The ability of GE MAPS to model the detailed operation of the generation and transmission systems distinguishes it from other production cost models.

**Herfindahl-Hirschmann Index (HHI).** A specific indicator of market concentration calculated according to the Department of Justice/Federal Trade Commission Merger Guidelines. The HHI is the sum of the squared market shares (percentages) of each of the market participants.

**Market Power.** The ability of a seller to maintain prices above competitive levels for a significant period of time.

**Market Concentration.** An indicator measuring the effective number of competitors of equal size operating in a market (see also HHI).

**Nash Equilibrium.** A game theoretical concept widely used in the economic theory of market competition. Nash equilibrium represents a set of strategies such that if any market participant deviates from the equilibrium strategy while all other participants adhere to their respective equilibrium strategies, the pay-off (e.g. profit) of the deviating market participant may only decrease. (See also *Bertrand-Nash Equilibrium*, *Cournot-Nash Equilibrium* and *SFE*)

**Price Cost Margin Index (PCMI).** A measure of the degree to which the actual price of a product in a market differs from the estimated price of that product in a "perfectly competitive" market.

**Standard Offer Service.** Retail service offered by the local distribution company to those electric customers who are not willing to switch to third party suppliers. Standard Offer Services could be used to protect consumers from the potential market power abuse. If properly designed, Standard Offer Service could help to mitigate market power.

**Stranded Costs (Benefits).** Costs or benefits that could result from deregulation of utility assets and selling-off those assets at market price. Market price below the book value of the asset results in stranded costs. Market price above the book value of the asset results in stranded benefits.

**Strategic Behavior.** General term referring to operations of market participants attempting to influence market prices to their advantage.

**Strategic Bidding.** Strategic bidding involves generating firms bidding prices above the variable production costs of their units, with the intent of forcing the market clearing price above competitive levels. Generating companies may be able to bid their units into the market at prices significantly above the variable production costs, while maintaining the merit order and often at no risk of being undercut by competitors.

**Strategic Supplier.** Generation owner or supplier engaged in *Strategic Behavior*.

**Supply Function Equilibrium.** An innovative *Nash Equilibrium* concept originally developed by Klemperer and Meyer (1989) as a way of modeling how competitors could achieve profit-maximizing equilibria in the marketplace under conditions of uncertain demand. The SFE approach was then adopted by Green and Newbery (1992) as a model for strategic bidding in a competitive spot market for electricity.