

CHAPTER 4 – UTILITIES, COMMUNITY FACILITIES AND ENERGY



As required by Wisconsin Statutes Sec 66.1001(2)(d), this element of the comprehensive plan will catalog objectives, policies, goals, maps and programs to guide the future development of utilities and community facilities in the local governmental unit such as sanitary sewer service, storm water management, water supply, solid waste disposal, on-site wastewater treatment technologies, recycling facilities, parks, telecommunications facilities, power-generating plants and transmission lines, cemeteries, health care facilities, child care facilities and other public facilities, such as police, fire and rescue facilities, libraries, schools and other governmental facilities. This element will describe the location, use and capacity of existing public utilities and community facilities that serve communities in the MRRPC Region, and will examine the projected needs for such utilities and community facilities. This element will include an approximate timetable that forecasts the need in the Region to expand or rehabilitate existing utilities and facilities or to create new utilities and facilities.

MUNICIPAL WASTEWATER SYSTEMS LOCATION, USE AND CAPACITY

Wastewater Plants

Table 4.1 provides location, use and capacity information on the wastewater treatment facilities located in the MRRPC Region. As Table 4.1 illustrates the region's wastewater treatment facilities are operating at only 45% of capacity. The excess capacity available (26,431,963 gallons per day) in the region's wastewater treatment facilities will allow for future industrial, commercial and residential growth projected for the region over the planning period.

Wastewater Treatment plants in Wisconsin are monitored by the WIDNR through Wisconsin Administrative Code NR 208 requires that facility owners submit a Compliance Maintenance Annual Report (CMAR), a self-evaluation-reporting requirement for publicly and privately owned domestic wastewater treatment works. The CMAR is due June 30th each year. The purpose of the CMAR is to evaluate the wastewater treatment system for problems or deficiencies. The CMAR describes wastewater management activities, physical conditions and performance of the treatment works during the previous calendar year and provides an objective analysis to determine whether a more detailed evaluation of the treatment works should be conducted. The CMAR can be used to identify needs for future planning actions. In conjunction with a grading system, the CMAR establishes when treatment works owners are required to initiate actions to prevent violations of WPDES permit effluent limits and conditions. Table 4.1 provides the CMAR Grade Point Average (GPA). The Grade Point Average (GPA) is an overall rating based on CMAR section weighting factors of 1-10, letter grades, and grade points.

Score	Grade	Grade Points	Grade Meaning	Response Range
91-100	A	4	Good	Voluntary
81-90	B	3	Satisfactory	Voluntary
71-80	C	2	Marginal	Recommendation
61-70	D	1	Poor	Action
<61	F	0	Fail	Action

In the region there are sixty-five wastewater treatment plants and only three have a failing CMAR grade meaning action is necessary upgrade the wastewater treatment facility. The overall CMAR grade point average for the regions systems is 3.79 which demonstrates the good condition and capacity of the wastewater treatment plants in the region.

Table 4.1 Municipal Sanitary Sewer Treatment Plants

Wastewater Treatment Plant	2012 Population	2012 Actual Annual Average Design Flow in Gallons Per Day	Maximum Monthly Design Flow in Gallons Per Day	Excess Flow Capacity in Gallons Per Day	2012 Gallons Per Capita Use	2012 Compliance and Maintenance Annual Report Grade Point Average
Buffalo County						
Alma	816	51,078	149,000	97,922	63	4
Cochrane	448	32,898	82,000	49,102	73	4
Fountain City	884	133,914	215,000	81,086	151	4
Mondovi	2,773	175,401	385,000	209,599	63	4
Nelson	373	35,080	42,000	6,920	94	3.55
Waumandee	N/A	3,876	125,000	121,124	N/A	4

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Wastewater Treatment Plant	2012 Population	2012 Actual Annual Average Design Flow in Gallons Per Day	Maximum Monthly Design Flow in Gallons Per Day	Excess Flow Capacity in Gallons Per Day	2012 Gallons Per Capita Use	2012 Compliance and Maintenance Annual Report Grade Point Average
Crawford County						
Eastman	427	12,220	50,000	37,780	29	4
Ferryville	178	9,429	48,000	38,571	53	0
Gays Mills	493	46,427	87,000	40,573	94	4
Prairie du Chien	5,901	806,968	2,500,000	1,693,032	137	3.41
Soldiers Grove	587	40,349	114,000	73,651	69	4
Valley Ridge	N/A	29,016	71,000	41,984	N/A	4
Wauzeka	703	46,163	80,000	33,837	66	4
Jackson County						
Alma Center	505	29,127	90,000	60,873	58	4
Black River Falls	3,609	520,799	1,038,000	517,201	144	4
Hatfield	N/A	15,552	85,000	69,448	N/A	4
Hixton	430	29,226	42,000	12,774	68	4
Melrose	498	21,570	54,000	32,430	43	3.44
Merrillan	539	54,884	77,000	22,116	102	3.22
North Bend	N/A	4,366	10,000	5,634	N/A	4
Taylor	477	41,406	113,000	71,594	87	3.58
Wazee Area	N/A	160,187	265,000	104,813	N/A	4
La Crosse County						
Bangor	1,470	101,676	156,000	54,324	69	3.66
Holmen	9,171	487,203	810,000	322,797	53	3.92
La Crosse	51,590	9,468,362	20,000,000	10,531,638	184	3.72
Mindoro	N/A	36,586	80,000	43,414	N/A	2.56
Rockland	610	27,071	75,000	47,929	44	4
St. Joseph	N/A	32,058	78,000	45,942	N/A	4
West Salem	4,827	313,731	638,000	324,269	65	3.81
Monroe County						
Cashton	1,103	83,549	290,000	206,451	76	3.82
Fort McCoy	N/A	221,349	1,850,000	1,628,651	N/A	3.91
Ho Chunk Nation Blue Wing	N/A	6,713	20,000	13,288	N/A	4
Kendall	473	56,106	70,000	13,894	119	3.83
Norwalk	636	24,903	138,000	113,097	39	4
Oakdale	294	26,560	85,000	58,440	90	4
Sparta	9,636	1,066,977	2,750,000	1,683,023	111	4
Tomah	9,174	1,044,743	3,300,000	2,255,257	114	4
Warrens	359	47,266	240,000	192,734	132	4
Wilton	503	67,244	89,000	21,756	134	2.22
Wyeville (Wyeville has a land treatment system and doesn't have monthly discharge data.)	147		170,000	170,000	0	4
Pepin County						
Arkansas	N/A	9,638	33,000	23,362	N/A	4
Durand	1,926	468,228	860,000	391,772	243	3.88
Pepin	828	60,915	150,000	89,085	74	3.55

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Wastewater Treatment Plant	2012 Population	2012 Actual Annual Average Design Flow in Gallons Per Day	Maximum Monthly Design Flow in Gallons Per Day	Excess Flow Capacity in Gallons Per Day	2012 Gallons Per Capita Use	2012 Compliance and Maintenance Annual Report Grade Point Average
Pierce County						
Bay City	499	38,050	73,000	34,950	76	4
Ellsworth	3,272	NA	575,000	575,000	NA	1.73
Elmwood	815	47,272	93,000	45,728	58	0
Maiden Rock	119	6,048	23,000	16,952	51	3.68
Plum City	602	37,976	60,000	22,024	63	4
Prescott	4,258	385,029	509,000	123,971	90	3.72
River Falls	15,040	1,232,655	1,824,000	591,345	82	4
Spring Valley	1,366	117,116	189,000	71,884	86	4
Trempealeau County						
Arcadia	2,916	1,227,049	2,118,000	890,951	421	3.38
Dodge Sanitary	N/A	9,389	19,000	9,611	N/A	
Eleva	675	33,180	70,000	36,820	49	4
Ettrick	522	20,290	63,000	42,710	39	3.48
Galesville	1,489	138,165	334,000	195,835	93	3.49
Independence	1,339	103,043	165,000	61,957	77	4
Osseo	1,699	166,625	200,000	33,375	98	3.75
Pigeon Falls	415	23,062	46,000	22,938	56	3.74
Strum	1,120	53,128	100,000	46,872	47	2.62
Trempealeau	1,576	92,069	235,000	142,931	58	4
Whitehall	1,573	620,588	1,200,000	579,412	395	2.41
Vernon County						
Chaseburg	286	52,332	72,000	19,668	183	4
Coon Valley	769	50,995	181,000	130,005	66	3.61
De Soto	290	13,085	65,000	51,915	45	3.66
Genoa	252	24,202	43,000	18,798	96	3.69
Hillsboro	1,415	86,161	215,000	128,839	61	3.76
La Farge	699	87,205	172,000	84,795	125	4
Ontario	553	34,705	86,000	51,295	63	4
Readstown	421	51,333	187,000	135,667	122	4
Stoddard	777	45,995	78,000	32,005	59	3.39
Viola	700	45,005	100,000	54,995	64	3.33
Viroqua	4,339	315,329	600,000	284,671	73	3.91
Westby	2,229	126,143	367,000	240,857	57	4
MRRPC REGION	164,413	21,234,037	47,666,000	26,431,963	5,792	3.79

Note: 2012 Populations served were not available for the following facilities: Waumandee, Valley Ridge, Hatfield, North Bend, Wazee area, Mindoro, St. Joseph, Fort McCoy, Ho Chunk Nation Blue Wing, Arkansas, and Dodge Sanitary. No Facility information is shown for Barron Island, Bostwick Valley, Brookview Mobile Home Park, and Maple Grove Estates facilities (La Crosse County).

WATER SUPPLY SERVICES: LOCATION, USE AND CAPACITY

Water Supply Services

The largest water utility in the MRRPC Region, by total annual pumpage, well yield, well pumping capacity, maximum daily demand, and pumping reserve capacity, all measured in gallons per day (GPD), is the La Crosse Water Utility (see Table 4.2). This is not surprising, since the utility serves by far the largest population in the Region, 51,790. The La Crosse Water Utility sees a per-capita usage rate of 207 GPD, which is among the highest in the Region. The highest per-capita rate is that of the Arcadia Electric and Water Utility, 423 GPD, followed by the Blair Municipal Water Utility, with 278 GPD, and Warrens Municipal Water Utility, with 218 GPD. Number of residential and commercial users can increase water usage, obviously, but some industrial

operations, such as manufacturing and food-processing, can increase that rate much more. Such operations in smaller communities would increase the total amount of water used, which would result in a large per-capita usage rate when divided by the lower population numbers in a smaller community. Arcadia is home to both of these industrial operations: Ashley Furniture is a major furniture manufacturer; and Gold 'n Plump is an important poultry processor in the Region. Furthermore, Warrens is in the heart of cranberry country. Since cranberries are grown in bogs, and since Wisconsin produces more cranberries than any other state, it is not surprising that per-capita water usage in the Warrens area would be so high.

Table 4.2 Public Water Supply Systems (2012)

County	# of Wells	Total Annual Pumpage GPD	Well(s) Yield GPD	Well(s) Pumping Capacity GPD	Maxim Daily Demand GPD	Pumping Reserve Capacity GPD	Pumping Reserve Capacity %	Population Served	Water Use per Capita GPD
Buffalo County									
Alma Municipal Water Utility	2	57,022	860,000	928,800	320,000	608,800	66	815	70
Cochrane Municipal Water Utility	1	37,090	62,823	460,800	128,000	332,800	72	417	89
Fountain City Water Utility	1	40,890	133,000	180,000	103,000	77,000	43	500	82
Mondovi Municipal Water Utility	3	253,016	2,015,000	1,738,080	623,000	1,115,080	64	2,764	92
Nelson Water And Sewer Dept	1	54,838	187,000	360,000	162,000	198,000	55	373	147
Crawford County									
Eastman Water Utility	1	36,992	144,000	216,000	71,000	145,000	67	434	85
Gays Mills Municipal Water Utility	1	50,874	100,000	936,000	177,000	759,000	81	493	103
Mount Sterling Municipal Water Utility	1	13,529	15,000	316,800	25,000	291,800	92	92	147
Prairie du Chien Municipal Water Utility	4	1,411,233	8,160,000	8,035,200	2,200,000	5,835,200	73	7,518	188
Sanitary District No. 1 Town of Seneca	1	21,595	173,000	172,800	67,000	105,800	61	878	25
Soldiers Grove Municipal Water Utility	2	38,849	12,000	973,440	102,000	871,440	90	587	66
Wauzeka Municipal Water Utility	2	74,485	54,100	504,000	122,000	382,000	76	711	105
Jackson County									
Alma Center Water Utility	1	42,096	50,500	360,000	114,000	246,000	68	448	94
Black River Falls Municipal Elec. & Water Utility	4	410,373	2,073,600	2,160,000	745,000	1,415,000	66	3,620	113
Brockway Sanitary District # 1	2	259,364	1,224,000	1,166,400	402,000	764,400	66	2,111	123
Hixton Municipal Water Utility	2	39,392	417,600	417,600	116,000	301,600	72	430	92
Ho Chunk Nation Water Utility (Black River Falls)									
Melrose Municipal Water Utility	2	32,200	360,000	720,000	200,000	520,000	72	848	38
Merrillan Municipal Electric And Water Utility	2	31,696	355,000	360,000	66,000	294,000	82	500	63
Taylor - Water Utility	2	34,877	50	720,000	134,000	586,000	81	477	73
La Crosse County									
Bangor Municipal Utility	2	104,395	964,000	547,200	144,000	403,200	74	1,485	70
Holmen Municipal Water Utility	4	950,121	939,797	6,580,800	2,641,000	3,939,800	60	9,171	104
La Crosse Water Utility	13	10,741,619	44,712,000	40,671,360	21,327,000	19,344,360	48	51,790	207
Mindoro Sanitary District No. 1		36,005	419	604,800	80,000	524,800	87	300	120
Onalaska Municipal Water Utility	4	2,435,318	13,982,400	13,982,400	6,410,000	7,572,400	54	18,046	135
Rockland Municipal Water & Sewer Utility	2	48,118	266,400	612,000	527,000	85,000	14	610	79
St. Joseph Sanitary District No. 1	2	40,904	390,000	360,000	57,000	303,000	84	400	102
Town of Shelby Sanitary District No. 2	4	105,762	85,000	1,101,600	315,000	786,600	71	4,707	22
West Salem Municipal Jnt Water & Sewer Utility	3	547,225	2,340,000	2,224,800	939,000	1,285,800	58	4,827	113
Monroe County									
Cashton Municipal Electric And Water Utility	2	80,112	864,000	864,000	269,000	595,000	69	1,217	66
Kendall Municipal Water Utility	2	36,707	945,000	849,600	82,000	767,600	90	472	78
Ho Chunk Nation Water Utility (Tomah)									
Melvina Water Utility	0	3,222	0	0	0	0	NA	104	31
Norwalk Municipal Water Utility	2	34,641	691,200	820,800	135,000	685,800	84	638	54
Oakdale Water Utility	1	47,868	900,000	900,000	618,000	282,000	31	292	164
Sparta Municipal Water Department	6	1,155,274	5,551,000	7,250,400	1,999,000	5,251,400	72	9,537	121
Tomah Water Utility	5	1,014,288	5,386,000	5,328,000	1,838,000	3,490,000	66	9,256	110
Warrens Municipal Water Utility	2	78,419	1,382,400	1,411,200	362,000	1,049,200	74	360	218
Wilton Municipal Water & Sewer Utility	2	36,247	633,600	576,000	312,000	264,000	46	503	72

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County	# of Wells	Total Annual Pumpage GPD	Well(s) Yield GPD	Well(s) Pumping Capacity GPD	Maxim Daily Demand GPD	Pumping Reserve Capacity GPD	Pumping Reserve Capacity %	Population Served	Water Use per Capita GPD
Pepin County									
Durand Municipal Water Supply	2	227,808	2,016,000	2,448,000	553,000	1,895,000	77	1,931	118
Pepin Municipal Water Utility	2	95,304	751,680	751,680	220,000	531,680	71	1,520	63
Pierce County									
Bay City Water Utility	1	28,205	31,000	368,640	98,000	270,640	73	500	56
Ellsworth Municipal Water Utility	3	232,975	1,728,000	1,728,000	576,000	1,152,000	67	3,175	73
Elmwood Municipal Water Utility	3	57,290	423,200	2,059,200	1,142,000	917,200	45	817	70
Maiden Rock Municipal Water Utility	1	6,449	300,000	504,000	49,000	455,000	90	122	53
Prescott Municipal Water Utility	3	497,153	651,699	3,600,000	1,207,000	2,393,000	66	4,256	117
River Falls Municipal Utility	5	1,285,184	8,409,600	8,409,600	2,559,000	5,850,600	70	15,000	86
Spring Valley Waterworks	2	89,038	58,320	705,600	161,000	544,600	77	1,276	70
Trempealeau County									
Arcadia Electric And Water Utility	4	1,266,110	5,328,000	5,328,000	2,110,000	3,218,000	60	2,995	423
Blair Municipal Water Utility	2	381,096	306,000	1,497,600	500,000	997,600	67	1,370	278
Dodge Sanitary District No. 1	1	8,356	288,000	360,000	60,000	300,000	83	250	33
Eleva Municipal Water Utility	1	38,567	45,000	316,800	133,000	183,800	58	675	57
Ettrick Municipal Water Utility	2	28,641	439,200	432,000	161,000	271,000	63	522	55
Galesville Municipal Water Utility	2	166,140	892,000	648,000	402,000	246,000	38	1,417	117
Independence Water Utility	2	115,841	1,152,000	1,152,000	239,000	913,000	79	1,339	87
Osseo Municipal Water Utility	2	196,942	225,000	957,600	419,000	538,600	56	1,703	116
Pigeon Falls Municipal Water Utility	1	28,252	360,000	360,000	58,000	302,000	84	415	68
Strum Municipal Utilities	2	64,342	432,000	432,000	156,000	276,000	64	1,114	58
Trempealeau Municipal Elec. & Water Utility	2	128,438	1,872,000	1,872,000	456,000	1,416,000	76	1,576	81
Whitehall Municipal Water Utility	2	211,786	1,296,000	1,152,000	569,000	583,000	51	1,558	136
Vernon County									
Chaseburg Water Utility	1	45,718	360,000	329,760	84,000	245,760	75	286	160
Coon Valley Municipal Water Utility	2	50,586	719,800	792,000	230,000	562,000	71	770	66
Genoa Municipal Water And Sewer Utility	1	18,625	28,000	1,440	67,000	-65,560	-4553	252	74
Hillsboro Municipal Water Utility	2	114,090	984,000	1,209,600	468,000	741,600	61	1,346	85
Lafarge Municipal Water & Sewer Utility	2	51,315	885,600	972,000	136,000	836,000	86	746	69
Ontario Municipal Water Utility	1	24,170	216,000	201,600	100,000	101,600	50	554	44
Readstown Municipal Water Utility	1	21,055	331,200	316,800	99,000	217,800	69	421	50
Stoddard Municipal Water Utility	2	52,726	700	1,008,000	275,000	733,000	73	774	68
Viola Municipal Water & Elec. Utilities	2	43,901	1,008,000	1,008,000	110,000	898,000	89	916	48
Viroqua Municipal Water Utility	3	358,019	423,000	1,728,000	545,000	1,183,000	68	4,660	77
Westby Municipal Elec. & Water Utility	2	288,334	1,000,000	1,116,000	349,000	767,000	69	1,800	160
MRRPC REGION	145	26,187,129	127,230,469	145,411,200	57,242,000	88,169,200	61	185,141	6,350

Source: Wisconsin Public Service Commission, 2012 Municipal Water Utility Annual Reports

Note: Population was derived from Municipal Water Utility Annual Reports and Wis. Dept. of Administration Demographics Services Ctr. 2012 Population Estimates.

Wellhead Protection Plans

Protecting the region's water supply is of foremost importance based on public input received during the planning process. Protecting the high capacity wells that serve cities and villages and provide potable water for residents is critical to maintaining ground water resources. Within in the region there are twenty four wellhead protection plans. The wellhead protection plans may be required by NR811 or voluntarily implemented by local units of government. Four wellhead protection plans are in place in Jackson, Monroe and Pierce counties while Buffalo, Crawford, and Pepin counties each have one municipality with a plan. According to DNR records, the following communities have implemented a wellhead protection plan for at least one of their wells in the MRRPC Region, (see Table 4.3).

Table 4.3 MRRPC Region Communities Implementing Wellhead Protection Plans

County	No. of Plans	Communities
Buffalo	1	Mondovi
Crawford	1	Prairie du Chien
Jackson	4	Black River Falls, Brockway Sanitary Dist #1, Merrillan, Northfield San Dist 1
La Crosse	3	Holmen, Onalaska, West Salem
Monroe	4	Norwalk, Oakdale, Tomah, Wilton
Pepin	1	Durand
Pierce	4	Bay City, Elmwood, Prescott, River Falls
Trempealeau	3	Arcadia, Ettrick, Galesville
Vernon	3	Coon Valley, La Farge, Westby

Source: <http://dnr.wi.gov/topic/DrinkingWater/documents/WHP/communities.pdf>

REGIONAL SOLID WASTE ANALYSIS

Solid Waste Disposal

Solid waste is the unused material generated in excess of the usable items that people use in their daily lives and that businesses produce for sale. In other words, solid waste is the trash, garbage, or refuse that we throw away. According to the Wisconsin Department of Natural Resources, (DNR), “solid waste is any material no longer used for its originally intended purpose that will be discarded, treated to reclaim its original properties or processed to be used for an alternative purpose.” This definition includes items that are beyond any further use and are contained in landfills or incinerated for energy recovery as well as items that are recycled. Both categories are important parts of protecting public health, not just in removing noxious or foul substances from populated areas where they may pose an injury or disease hazard, but also in helping to reduce pollution of the air, water, and soil, thus helping to prevent or reduce instances of severe and even fatal illnesses. Proper management of solid waste, and recycling of whatever items are possible, is a fundamental way to protect the health, safety, and welfare of the general public both now and well into the future.

Traditionally, solid waste in urban areas was collected from residences, businesses, and other locations and transported to one or more city dump sites, while in rural areas, most landowners burned or buried their garbage. With rising concerns about air, soil, and water pollution, regulations have been enacted to require safer and more environmentally conscientious disposal of solid waste. This has resulted in greater consolidation of solid waste in fewer, bigger, and purposely designed landfills. These landfills are designed to prevent environmental pollution, and are regulated by the DNR. As is shown in Table 4.4 the Mississippi River Region's nine counties have three operating municipal waste landfills in La Crosse, Monroe and Vernon Counties with 3,626,256 cubic yards of excess capacity as of 2011. La Crosse County's landfill with 2.9 million yards of capacity provides 80% of this unused capacity with Monroe County's landfill providing 13% followed by the Vernon County's landfill providing the remaining 7% of unused capacity. The estimated life of each landfill follows a similar order with La Crosse's Landfill projected to have 24 more years of service followed by Monroe with 14 years and then Vernon with 10 more years of municipal waste service capacity. Table 4.7 identifies the origin and amount of solid waste that is generated in the region as well as the location where the solid waste is disposed at. Based on per capita estimates and landfill disposal trends it is estimated that the region generates over 230 thousand tons of municipal solid waste a year.

Table 4.4 Solid Waste Landfill Tonnage 1995-2010

Facility Name	Initial or Original Capacity	Cap. as of Jan. 1995 In Cu Yds	Cap. as of Jan. 2000 In Cu Yds	Cap. as of Jan. 2005 In Cu Yds	Cap. as of Jan. 2010 In Cu Yds	Cap. as of Jan. 2011 In Cu Yds	Est. Site Life In Years
Dairyland Power Coop Off-Site Ash Phase III (Buffalo Co)	1,655,700	767,914	358,077	-	-	-	1
Dairyland Power Coop Phase IV - Belvidere (Buffalo Co)	3,011,000	-	-	2,930,304	2,566,401	2,511,755	14
Jackson County Sanitary LF Inc.		51,995	-	-	-	-	
La Crosse Cnty LF MSW & Ash Monofill	1,672,200	1,478,058	1,163,649	781,111	3,002,094	2,914,727	24
Monroe Cnty Ridgeville San LF	750,000	290,000	-	-	-	-	
Monroe Cnty Ridgeville II San LF	997,500		188,222	860,000	508,355	459,968	14
Vernon Cnty Solid Waste/Recycling Facility	283,448	263,008	103,220	108,493	275,325	251,561	10
Totals	8,369,848	2,850,975	1,813,168	4,679,908	6,352,175	6,138,011	63

Facility Name	1995-2010 Cat, 1 (tons)	1995-2010 Cat, 2-6 (tons)	1995-2010 Cat, 19 (tons)	1995-2010 Cat, 20 (tons)	1995-2010 Cat, 21-25 (tons)	1995-2010 Out-of-State
Dairyland Power Coop Off-Site Ash Phase III (Buffalo Co)	0	670,874			670,874	
Dairyland Power Coop Phase IV - Belvidere (Buffalo Co)	0	478,294	47,390		324,842	
Jackson County Sanitary LF Inc.	89,505	10,663			100,168	
La Crosse Cnty LF MSW & Ash Monofill	642,463	151,851	43,851	28,545	1,012,408	89,640
Monroe Cnty Ridgeville San LF	171,605	24,435	22,717		276,511	
Monroe Cnty Ridgeville II San LF	284,447	0			235,440	242
Vernon Cnty Solid Waste/Recycling Facility	157,545	0			149,542	
Totals	1,345,565	1,336,118	113,958	28,545	2,769,785	89,882

KEY

Category 1: Municipal Waste

Category 2: Utility Ash/Sludges

Category 3: Pulp/Papermill Mfg waste

Category 4: Foundry Waste

Category 5: POTW Sludges

Category 6: All other SW (not HW)

Category 19: Fee Exempt waste used for dikes, berms, etc

Category 20: Energy Recovery Incinerator Ash

Category 21: High Volume Industrial used for daily cover, etc.

Category 22: Shredder Fluff used for daily cover

Category 23: Treated Contaminated Soil used for daily cover

Category 24: Exempt Unusable Paper Making Materials

Category 25: Construction & Demolition (C&D) Waste

Category 26: Sediments Contaminated with PCBs

Category 27: Waste Generated by a Non-Profit Org

Source: <http://dnr.wi.gov/org/aw/wm/solid/landfill/tonnagerpts/lftonnages.htm>**The Region's Solid Waste Final Destination Sites Today**

Today the vast majority of the region's municipal solid waste is transported to the five landfills listed in the Table 4.5 below. These Landfills have an expected life ranging from 6 years at the Seven Mile Landfill site in Eau Claire County with a remaining capacity of about 2.3 million cubic yards to 28 years of life at the La Crosse County Landfill with 2.7 million cubic yards of space. A concept to extend the life of the region's landfills is to make greater use Xcel Energy's waste to energy facility and La Crosse County's ash disposal site. This would reduce landfill use and extend the life of the landfills beyond their now projected site life. Another concept for consideration is using one or more of the region's landfills as a specialty landfill that would only accept construction and demolition materials for example, with the municipal solid waste ordinarily going to that landfill being burned at the Xcel facility. With the Seven Mile Creek landfill in Eau Claire having only 6 years left and Monroe County's landfill expectancy only 8 years, it is important to start planning for future solid waste disposal alternatives. Map 4.04 at the end of this chapter illustrates the origin and final disposal locations of solid waste in the region and some of the counties in Minnesota.

Table 4.5 Municipal Solid Waste Landfills Used by the Communities in the Mississippi River Region

Landfill Name	Landfill Location	Landfill Owner	Landfill 2014 Capacity in Cubic Yards	Site Life in Years
Seven Mile Creek	Eau Claire County, WI	Advanced Disposal Services	2,293,180	6
Janesville	Janesville WI	City of Janesville	2,144,452	11
La Crosse County	City of La Crosse	La Crosse County	2,670,793	28
Monroe County	Monroe County	Monroe County	336,941	8
Vernon County	Vernon County	Vernon County	283,448	10

Source: Wisconsin DNR

Recycling Operations

Among the first steps in dealing with solid waste is to separate from solid waste any materials that can be recycled. This can be done by residents, putting solid waste in one bin and recyclables in others; or it can be done at a sorting facility, where workers pick through collected garbage and remove any items that can be recycled. Some communities rely on a combination of both methods. Wisconsin passed the Solid Waste Reduction, Recovery and Recycling Law in 1990. This statute created new ways to manage solid waste and encourage reduction, reuse and recycling of Wisconsin's solid waste. Recycling has shown some real economic and environmental success in the last quarter-century. Throughout the state of Wisconsin, about 37% of all waste is removed from landfill-bound garbage and recycled instead. This has resulted in a volume equal to about five average-sized landfills staying out of the ground since 1990. In other words, since instituting aggressive recycling efforts in 1990, the state has removed enough recyclable materials that five average-size landfills have not been necessary to build.

In 1991, 1993, and 1995, various forms of solid waste were banned from landfilling or incineration:

- lead-acid batteries
- major household appliances
- waste oil
- yard waste (banned from landfilling; can be incinerated for energy recovery)
- aluminum, steel, aluminum-steel alloy, plastic, foam polystyrene, and glass containers
- corrugated cardboard
- magazines, newspapers, and other printed material
- office paper
- tires (banned from landfilling; can be incinerated for energy recovery)

An exception exists for two "grandfathered" incinerator service areas, one of which is in La Crosse County. Otherwise, local governments have a responsibility to develop recycling plans to allow for proper disposal of items banned from landfilling and incineration.

In 2009, Wisconsin enacted an Electronics Recycling Law, which bans landfilling and incineration of most common electronic devices: computers; desktop printers, including printers combined with fax machines; scanners; copiers; fax machines; video display devices (at least 7" long in longest diagonal dimension - TVs, laptops and computer monitors); computer peripherals including keyboards, mice, hard drives; speakers; flash drives; external modems; DVD players, VCRs, DVRs and other video players; and cell phones. Banned devices can be recycled through E-Cycle Wisconsin.

Recycling in Wisconsin communities is conducted by Responsible Units (RUs). RUs are local governments that take on the responsibility of planning how to recycle items banned from landfilling and incineration, and collecting the items for recycling. RUs are typically village, city, or county governments, but some towns have taken on this responsibility. Table 4.6 lists responsible units for recycling for all municipalities in the MRRPC Region.

Table 4.6 Responsible Units for Recycling

County	Community	Responsible Unit
Buffalo	City of Alma	City of Alma
	City of Fountain City	City of Fountain City
	Alma, Belvidere, Buffalo, Canton, Cross, Dover, Gilmanton, Lincoln, Maxville, Milton, Modena, Mondovi, Naples, and Nelson Townships; Villages of Cochrane and Nelson; and Cities of Mondovi and Buffalo City	County of Buffalo
	Town of Glencoe	Town of Glencoe
	Montana and Waumandee Townships	Town of Waumandee
Crawford	Village of Bell Center	Village of Bell Center
	Town of Bridgeport	Town of Bridgeport
	Town of Clayton	Town of Clayton
	Village of De Soto	County of Vernon
	Town of Eastman	Town of Eastman
	Village of Eastman	Village of Eastman
	Village of Ferryville	Village of Ferryville
	Town of Freeman	Town of Freeman
	Village of Gays Mills	Village of Gays Mills
	Town of Haney	Town of Haney
	Village of Lynxville	Village of Lynxville
	Town of Marietta	Town of Marietta
	Village of Mount Sterling	Village of Mount Sterling
	City of Prairie Du Chien	City of Prairie Du Chien
	Town of Prairie Du Chien	Town of Prairie Du Chien
	Town of Scott	Town of Scott
	Town of Seneca	Town of Seneca
	Village of Soldiers Grove	Village of Soldiers Grove
	Village of Steuben	Village of Steuben
	Town of Utica	Town of Utica
	Town of Wauzeka	Town of Wauzeka
	Village of Wauzeka	Village of Wauzeka
Jackson	Adams, Albion, Alma, Bear Bluff, Brockway, City Point, Cleveland, Curran, Franklin, Garden Valley, Garfield, Hixton, Irving, Knapp, Komensky, Manchester, Melrose, Millston, North Bend, Northfield, and Springfield Townships; Villages of Alma Center, Hixton, Merrillan, and Taylor; and City of Black River Falls	County of Jackson
	Village of Melrose	Southern Trempealeau County Solid Waste
La Crosse	Town of Bangor	Town of Bangor
	Village of Bangor	Village of Bangor
	Town of Barre	Town of Barre
	Town of Burns	Town of Burns
	Town of Campbell	Town of Campbell
	Town of Farmington	Town of Farmington
	Town of Greenfield	Town of Greenfield
	Town of Hamilton	Town of Hamilton
	Town of Holland	Town of Holland
	Village of Holmen	Village of Holmen
	City of La Crosse	City of La Crosse
	Town of Medary	Town of Medary
	City of Onalaska	City of Onalaska
	Town of Onalaska	Town of Onalaska
	Village of Rockland	Village of Rockland
	Town of Shelby	Town of Shelby
	Town of Washington	Town of Washington
	Village of West Salem	Village of West Salem
Monroe	Adrian, Angelo, Byron, Clifton, Greenfield, Jefferson, La Fayette, La Grange, Leon, Lincoln, Little Falls, New Lyme, Oakdale, Portland, Ridgeville, Scott, Sheldon, Sparta, Tomah, Wellington, Wells, and Wilton Townships; Villages of Cashton, Kendall, Melvina, Norwalk, Oakdale, Warrens, Wilton, and Wyeville; and Cities of Sparta and Tomah	County of Monroe
	Town of Glendale	Town of Glendale
	Town of Grant	Town of Grant
Pepin	Federally Recognized Tribal Governing Body of Ho Chunk Nation	Federally Recognized Tribal Governing Body
	Albany, Durand, Frankfort, Lima, Pepin, Stockholm, Waterville, and Waubeek Townships; Villages of Pepin and Stockholm; City of Durand	County of Pepin

Table 4.6 Responsible Units for Recycling

County	Community	Responsible Unit
Pierce	Clifton, Diamond Bluff, El Paso, Ellsworth, Gilman, Hartland, Isabelle, Maiden Rock, Martell, Oak Grove, Rock Elm, Salem, Spring Lake, Trenton, Trimble, and Union Townships; Villages of Bay City, Ellsworth, Elmwood, Maiden Rock, Plum City, and Spring Valley; and Cities of Prescott and River Falls	Pierce County Solid Waste
	Town of River Falls	Town of River Falls
Trempealeau	Albion Township and Village of Eleva	Eleva-Albion Garbage And Recycling Comm.
	City of Arcadia	City of Arcadia
	Town of Arcadia	Town of Arcadia
	City of Blair	City of Blair
	Town of Burnside	Town of Burnside
	Caledonia, Dodge, Gale, and Trempealeau Townships; Village of Trempealeau; and City of Galesville	Southern Trempealeau County Solid Waste
	Town of Chimney Rock	Town of Chimney Rock
	Town of Ettrick	Town of Ettrick
	Village of Ettrick	Village of Ettrick
	Town of Hale	Town of Hale
	City of Independence	City of Independence
	Town of Lincoln	Town of Lincoln
	City of Osseo	City of Osseo
	Village of Pigeon Falls	Village of Pigeon Falls
	Town of Pigeon	Town of Pigeon
	Town of Preston	Town of Preston
	Village of Strum	Village of Strum
	Town of Sumner	City of Osseo
	Town of Unity	Village of Strum
	City of Whitehall	City of Whitehall
Vernon	Bergen, Christiana, Clinton, Coon, Forest, Franklin, Genoa, Greenwood, Hamburg, Harmony, Hillsboro, Jefferson, Kickapoo, Stark, Sterling, Union, Viroqua, Webster, Wheatland and Whitestown; Villages of Chaseburg, Coon Valley, De Soto, Genoa; La Farge, Ontario, Readstown, Stoddard, Viola, Cities of Hillsboro, Viroqua, and Westby	County of Vernon
	Town of Liberty	Town of Liberty

Source: Wisconsin Department of Natural Resources

Solid Waste Generation Estimates and Projections

Tables 4.7 and 4.8 provides estimates and projections on solid waste generated in the region in 2013 and for the planning year 2034. These calculations are mostly based on each person in the Mississippi River Region generating 4 pounds of municipal solid waste per day. This figure is based on an average of EPA's estimate of 4.38 pounds per person per day and the Wisconsin DNR estimate that included out of state waste of 3.73 pounds per person per day. From this it is projected that total solid waste generated in the region will grow from 233,139 tons to 262,718 tons per year or about 13% over this time period. Recycled wastes are estimated to grow from 69,942 tons to 78,815 tons per year; this estimate is based on a recycling rate of 30% that is 4% higher than the EPA estimate for the nation in 2012. A higher rate was used because of Wisconsin's recycling law and recent recycling increases in La Crosse County due to program changes. Composting is also expected to increase commensurately with population growth increasing from 18,651 tons to 21,017 tons per year, based on EPA's 2012 U.S. Estimate of 8%. The amount of waste in the region that will be burned for energy recovery at the Xcel Energy Waste to Energy Facility is expected to increase from 66,053 tons to 73,406 tons or 11% based on the percentage estimate of waste that is delivered to Xcel's waste to energy plant from each county after, accounting for recycling, and composting. The remaining amount that will be landfilled in 2034 is expected to grow to 89,480 tons from 78,495 tons a year in 2013 or about 14%. La Crosse County is in the midst of updating their County Solid Waste plan and it is expected that better figures on waste generation, recycling, composting, incineration and landfilling rates will become available to update these estimates and projections based on regional trends versus state and U.S. trends.

Table 4.7 Mississippi River Region Municipal Solid Waste Generation Estimate - 2013

Jurisdiction	2013 Population (1)	Total MSW Generated in Tons Annually (2)	Amount Recycled in Tons (3)	Amount Composted in Tons (4)	Amount Combusted for Energy Recovery 2013(5)	Amount Landfilled 2013 (6)
Buffalo	13,630	9,950	2,985	796	5,552	617
Crawford	16,658	12,160	3,648	973	0	7,539
Jackson	20,551	15,002	4,501	1,200	4,651	4,651
La Crosse	115,928	84,627	25,388	6,770	47,222	5,248
Monroe	45,198	32,995	9,898	2,640	2,046	18,411
Pepin	7,448	5,437	1,631	435	0	3,371
Pierce	40,940	29,886	8,966	2,391	0	18,529
Trempealeau	29,086	21,233	6,370	1,699	6,582	6,582
Vernon	29,930	21,849	6,555	1,748	0	13,546
Region	319,369	233,139	69,942	18,651	66,053	78,495
State	5,717,110	4,173,490	1,252,047	333,879	310,508	2,277,056
U.S. (7)	313,914,000	250,927,156	65,241,061	20,074,172	19,873,431	145,738,492

Table 4.8 Mississippi River Region Municipal Solid Waste Generation Projections - 2034

Jurisdiction	2034 Population (1)	Total MSW Generated in Tons Annually (2)	Amount Recycled in Tons (3)	Amount Composted In Tons (4)	Amount Combusted for Energy Recovery (5)	Amount Landfilled (6)
Buffalo	13,362	9,754	2,926	780	5,443	605
Crawford	17,232	12,579	3,774	1,006	0	7,799
Jackson	23,336	17,035	5,111	1,363	5,281	5,281
La Crosse	129,488	94,526	28,358	7,562	52,746	5,861
Monroe	53,766	39,249	11,775	3,140	2,433	21,901
Pepin	7,165	5,230	1,569	418	0	3,243
Pierce	46,405	33,876	10,163	2,710	0	21,003
Trempealeau	33,154	24,202	7,261	1,936	7,503	7,503
Vernon	35,980	26,265	7,880	2,101	0	16,285
Region	359,888	262,718	78,815	21,017	73,406	89,480
State	6,456,198	4,713,025	1,413,907	377,042	565,563	2,356,512
U.S. (7)	386,364,400	282,046,012	73,331,963	22,563,681	22,338,044	163,812,324

Table 4.7 and 4.8 Sources:

(1) Population for counties and state of WI are 2013 U.S. Census Estimates. Population for U.S. is 2012

(2) Municipal solid waste generation based on consideration of both EPA 2012 nationwide estimate of 4.38 pounds per person and State of Wisconsin 2013 Estimate of 3.73 pounds per person waste generated, that included out of state wastes. An average of 4.0 pounds per person was used based on average of the two for County and State Estimates. 4.38 lbs was used for U.S. Estimate in 2013 but 2034 U.S. estimate used 4.0 lbs per person per day due to downward trend.

(3) Recycling rate based on EPA's 2012 U.S. percentage estimate of 26%. Each county and state of Wisconsin percentages were increased to 30% due to Wisconsin's recycling law and report stating that communities that use waste-to-energy facilities have higher recycling participation rates.

(4) Composting rate based on EPA's 2012 nationwide percentage rate of 8%.

(5) Waste to energy rate estimate is based on estimated population in region using Xcel facility: Buffalo County - 90%, Crawford County - 0%, Jackson County - 50%, La Crosse County -90%, Monroe County -10%, Pepin County – 0%, Pierce County – 0%, Trempealeau County – 50%, Vernon County – 0%. Percentages are applied after reduction in each county for recycling and composting. U.S. Projection and State of WI are based on 2012 EPA Report of 12% of total waste generated.

(6) Landfilled estimate is the amount of waste remaining after reduction for recycling, composting and energy recovery

(7) All U.S. data is based on figures and percentages in 2012 EPA Report for Nation.

PARK AND RECREATION FACILITIES LOCATION, USE AND CAPACITY

County, State and Federal Park and Recreation Facilities

The MRRPC Region is fortunate to have an abundant amount of County, State, and Federal public parkland and recreation acres. At approximately 890 acres for every 1,000 persons, by any standard the region has incredible open space opportunities for residents and visitors. Within the region there are over 282,000 acres of county, state, and federal park and recreation acres (See Table 4.9). The Jackson County Forest is the largest recreation area in the region with 120,000 acres. Also listed in the table are multi-use trails and the corridors provide additional acreage for recreational purposes. The amount of County, State and Federal recreational acreage is adequate to support the recreational needs of the projected population over the planning period.



Ice Cave at Kickapoo Reserve near La Farge in Vernon County

State Wildlife Areas illustrated in Table 4.9 are open to outdoor recreational uses that include hunting, fishing, trapping, hiking, nature study and berry picking. Dog training or trialing (hunting dog competitions) may be allowed by permit. A limited number of properties allow additional outdoor recreation at designated locations like camping, bicycling, horseback riding and snowmobiling. The MRRPC Region has about 35,000 acres of designated State Natural Areas, many of which contain few or no amenities such as parking areas, restrooms, or maintained trails. Public use of SNAs can include scientific research and compatible recreation uses, however a permit must be issued from the Wisconsin Department of Natural Resources before studies are conducted or specimens collected.

There are also 48 State Fishery Areas in the MRRPC Region providing outstanding fishing opportunities: Crawford (5), Jackson (11), La Crosse (5), Monroe (14), Pierce (1), Trempealeau (3), and Vernon (9).

In addition to the recreation areas listed in Table 4.9 there are 3,471 acres of Mississippi Valley Conservancy Land available for public use in the Region: Buffalo (20 acres), Crawford (361 acres), Jackson (20 acres), La Crosse (1,640 acres), Trempealeau (55 acres) and Vernon (1,375 acres). The Mississippi Valley Conservancy opens thousands of acres of recreational land to the public while preserving the scenic beauty and protecting wildlife habitat, and providing opportunities for hiking, cross-country skiing, bird watching, hunting, fishing, biking, and nature photography.

Table 4.9 County, State and Federal Park and Recreation Facilities

Recreation Facility Name	Acreage	Federal, State, County	Description
Buffalo County			
Upper Mississippi River Nat'l Wildlife & Fish Refuge	15,112	Federal	Most significant portion of federal refuge in Buffalo County is Nelson-Trevino bottomland (3,100 acres) in Chippewa River delta S of STH 35.
Trempealeau Nat'l Wildlife Refuge	2,500	Federal	Northern terminus of Great River State Trail; provides hunting, fishing and hiking opportunity at Trempealeau River mouth.
Corps of Engineers Lock and Dams, Nos. 4, 5 & 5a		Federal	3 dams in County. Lock and Dam No. 4 has visitor observation platform.
Merrick State Park	322	State Park	Located along Mississippi River N of Fountain City. Camping, boat landings, canoeing, hiking/snowshoe trails; fishing and bird watching.
Tiffany Wildlife Area	8,823	State	Southern boundary of property is STH 35, federal wildlife refuge lands continue S of STH 35. State Natural Area (SNA) Tiffany Bottoms (717 Acres) is located within.
Whitman Dam State Wildlife Area	2,173	State	Bordered by Merrick State Park & Federal Wildlife Refuge properties.
Big Swamp Wildlife Area	1,390	State owned/leased	Located in Northern part of county along Buffalo River. Big Swamp Tamarack Fen (SNA) (354 Acres) is located within.
Trempealeau River Meadow SNA	443	State	Located at T intersection of Doelle Valley Road and River Valley Rd.
Buffalo River State Trail	36 Miles	State	Between Mondovi and Fairchild, walking and bicycling. (Buffalo, Jackson, Eau Claire, and Trempealeau Counties)
Crawford County			
Upper Mississippi River Nat'l Wildlife & Fish Refuge		Federal	Refuge stretches for 261 miles along the Mississippi River, from Wabasha, MN, to nearly Rock Island, IL.
Corps of Engineers Lock and Dam No. 9		Federal	Located on Mississippi River mile 647.9 near Lynxville, has public viewing platform.
Kickapoo Wildlife Area	1,550	State	Located 2 miles south of Gays Mills along STH 131. Kickapoo Wild Woods SNA (635

Table 4.9 County, State and Federal Park and Recreation Facilities

Recreation Facility Name	Acreage	Federal, State, County	Description
Hogback Prairie SNA	1,093	State	acres) located within.
Limery Ridge SNA	210	State	Located on Citron Valley Road Northwest of Steuben.
Rush Creek SNA	2,848	State	Located 2 miles North of Prairie du Chien on STH 35.
Sugar Creek Bluff SNA	77	State	Located North of Ferryville.
Wauzeka Bottoms SNA	798	State	From STH 35/CTH C intersection at Ferryville, .3 miles south.
Husher Park		County Park	Located in Lower Wisconsin State Riverway.
Indian Mound Park		County Park	Located near Wauzeka on STH 131; Picnicking/observation platform.
Crowley Ridge Park		County Park	Wayside park located in Wauzeka Township on Highway 60.
			Located on CTH E in the Town of Marietta.
Jackson County			
Black River State Forest	68,000	State	Located at edge of the glaciated central plains, E of the "driftless" area of Wis. Camping, hunting, hiking, skiing and ATV riding. Castle Mound Forest (118 acres), Catfish Eddy Terraces SNA (75 acres), East Fork of the Black River SNA (513 acres), Ketchum Creek Pines (160 acres), Robinson Creek Pines (85 acres), Starlight Wetlands SNA (1,054 acres), Upper Black River SNA (1,562 acres), Washburn Marsh SNA (604 acres), Wildcat Ridge SNA (379 acres), Dike 17 Wildlife Area (3,100 acres) located within.
Bauer-Brockway Barrens SNA	320	State	Northeast of Black River Falls on Brockway Road, T21N-R3W, Section 16
Bear Bluff SNA	186	State	Located on Goodyear Road near Juneau County. T20N-R1E, Section 7
Jay Creek Pine Forest SNA	360	State	Located on East Starlight Road, T20N-R1W, Sections 28, 33
Morgan Marsh Wildlife area	192	State	Located 11 miles west of Black River Falls at junction of CTH C & CTH N.
North Bend Bottoms Wildlife Area	1,500	State	Located outside Town of North Bend in SW Jackson County. Black River Savanna SNA (566 acres), Half Moon Bottoms SNA (202 acres), North Bend Wet Prairie SNA (34 acres) located within.
Southwest Beaver Creek Wildlife Area	1,000	State	Located west of Village of Melrose.
West Taylor Wildlife Area	177	State	Located southwest of Village of Taylor.
East Arbutus County Park		County Park	Located on the shores Lake Arbutus. Fishing, water-skiing, swimming, boating, hiking, playground, camping, access to nearby ATV trails.
West Arbutus County Park		County Park	Located on the shores Lake Arbutus. Camping, boat launch, playground and swimming beach.
Merlin Lambert County Park		County Park	Located on the shores of Potter's Flowage. Camping, fishing, boat launch, picnicking.
Crawford Hills County Park		County Park	Located approx. 15 miles E of Black River Falls on STH 54. Camping and access over 100 miles of ATV/dual-sport motorcycle trails.
Wazee Lake	1,300	County Park	Clearest and deepest inland lake in state. Scuba diving, camping, hiking, bicycle trails, beach, picnic areas, fishing pier, boat launch.
Jackson County Forest	120,000	County Forest	Timber sales, hunting, permit camping, ATV and motorcycle trails. Brockway Ponds SNA (84 acres), Deer Island SNA (2,121 acres), Glen Creek Barrens SNA (84 acres), Millston Sand Barrens SNA (181 acres), Spaulding Fen SNA (479 acres) located within.
La Crosse County			
Corps of Engineers Lock and Dam 7		Federal	Located on Mississippi River mile 702.5 just upstream from La Crosse.
Coulee Experimental State Forest	3,000	State Forest	Located 15 miles E of La Crosse. Hunting, cross-country skiing, hiking, and horseback riding. Berg Prairie and Billy Goat Ridge SNA (92 acres), Northeast Coulee Oak Woodland (287 acres) located within.
Great River State Trail	24 miles	State Trail	Between Onalaska and Trempealeau. Walking and bicycling. (La Crosse and Trempealeau Counties)
La Crosse River State Trail	22 Miles	State Trail	Between Sparta and La Crosse, Walking and Bicycling. (La Crosse and Monroe Counties)
Holland Sand Prairie SNA	61	State	Northside of Holmen, go west on County MH 1.5 miles.
Midway Railroad Prairie SNA	3	State	Located on CTH ZM near Midway.
Van Loon Wildlife Area	3,918	State	Located 3.5 miles NW of Village of Holmen. Van Loon Floodplain Forest (317 acres), Van Loon Floodplain Savanna (1,574 acres) located within.
Mindoro Park, Mindoro	114	County Park	Located 1 mile W of Mindoro on CTH D. Picnicking, nature trail.
Neshonoc Swarthout Park, West Salem	20	County Park	Located ½ mile N of West Salem STH 16. Campground, boat landing, volleyball, beach playground area, shelter, picnicking.

Table 4.9 County, State and Federal Park and Recreation Facilities

Recreation Facility Name	Acreage	Federal, State, County	Description
Veteran's Memorial Park, West Salem	232	County Park	Located 1 mile W of West Salem, STH 16. Camping, canoe landing, ball diamonds, playgrounds, horseshoes, picnicking, nature trail.
Goose Island Park, Stoddard	710	County Park	Located 3 miles S of La Crosse on Hwy. 35. Camping, picnicking, boat ramps, beach, playgrounds, nature trails.
Neshonoc South, West Salem	60	County Park	Located 1 mile E of West Salem. Boat ramp, picnicking.
Bice Forest	462	County Forest	Located on Vogel Road, Wildlife habitat, cross country ski trails, hiking.
Hoeth Forest	439	County Forest	Located on Radcliffe Road. Wildlife habitat.
Monroe County			
Pineview Recreation Area		Federal military installation	Located on Fort McCoy military reservation. Camping, playgrounds, beach, canoes, kayaks, biking/hiking, disc golf, volleyball/basketball.
Mill Bluff State Park	1,220	State Park	Located in Juneau County but western portion lies in Monroe Co. in T of Oakdale. Camping, picnicking, playground, swimming, nature trails. Mill Bluff SNA 485 acres located within (Monroe & Juneau Counties).
Eureka Maple Woods SNA	135	State	Located west of Village of Cashton.
La Crosse River Trail Prairies SNA	70	State	Located along La Crosse River State Trail between Bangor and Sparta.
Portland Bluff SNA	102	State	Located within Coon Creek Fishery Area.
Sand Creek Pines SNA	150	State	Located within Sand Creek Fishery Area.
Elroy-Sparta State Trail	32.5 miles	State	1 st rail-to-trail in U.S. Between Sparta and Elroy. Walking and Bicycling. (Monroe and Juneau Counties)
Mc Cullen County Park	1,000	County Park	Located 2.5 miles NW of Warrens. Camping, trails, lake.
Monroe County Forest	7,000	County Forest	Located in tracts throughout county. Timber, wildlife, & general extensive recreation.
County Watershed Land	592	County Watershed	Located in S central part of the county. Hiking, hunting, nature observation.
Paul and Matilda Wegner Grotto	-	County	Folk-art sculptures and shapes.
Pepin County			
Tiffany Wildlife Area	3,900	State	Located W side of Chippewa River opposite Durand on N to mouth of Chippewa River on S. Five Mile Bluff Prairie SNA (194 acres) located within.
Maiden Rock Bluff SNA	258	State	Located NW of Stockholm on Long Lane.
Chippewa River State Trail	26 miles	State	State trail travels between downtown Eau Claire to Town of Durand (Eau Claire, Dunn and Pepin Counties). Trail also intersects with Red Cedar Trail in Dunn County.
Silver Birch Lake/Holden Park	22	County Parks	Adjacent parks located in T. Waterville on CTH N and NN, 2.5 miles S of Arkansaw. Camping, picnicking, playground, fishing, boat ramps, shooting range, walking trail.
Arkansaw Creek Park	3	County Park	Located along CTH N in Arkansaw. Class II trout stream, picnicking, playground, observation deck, natural amphitheater.
Ella Boat Landing	2	Boat Landing	Located along CTH N, 6 miles S of Arkansaw. Boat ramp and informal overnight camping.
Pierce County			
Eau Galle Lake	630	Federal	Located N of Spring Valley in Pierce and St. Croix counties. 150 acre lake, beach, fishing pier, boat ramps, hiking & equestrian trails.
Kinnickinnic State Park	1,200	State Park	Located in T. Clifton on St. Croix River. Camping, boating, beach, trails.
Morgan Coulee Prairie SNA	54	State	Located North of Maiden Rock.
Plum Creek Woods SNA	80	State	Located about 4 miles from Plum City.
Rush River Delta SNA	341	State	Located West of Maiden Rock.
Trenton Bluff Prairie SNA	110	State	Located North of Hager City.
Nugget Lake County Park	752	County Park	Located in T. Rock Elm on Plum Creek. Camping, lake with beach, fishing, boat ramp, playgrounds, hiking trails, 116 acre lake. Kinnickinnic River Gorge and Delta (100 acres) located within.
Lee-Klee-Kay Family Educational County Forest	40	County Forest	Located approx. 3 miles W of Spring Valley on STH 29. Educational forest, .6 mile self-guided hiking trail loop.
Trimbelle Recreation Area	32	County	Located approx. 5 miles W of Ellsworth on CTH O. Picnicking, hiking trail, access to trout stream.
Martell County Forest	24	County Forest	Located approx. 1 mile W of Martell. Fishing, hiking & river frontage.

Table 4.9 County, State and Federal Park and Recreation Facilities

Recreation Facility Name	Acreage	Federal, State, County	Description
Trempealeau County			
Trempealeau National Wildlife Refuge	6,200	Federal	Refuge lies within the Mississippi River flyway. Supports a variety of wildlife species & is a breeding ground for migratory birds and other wildlife.
Corps of Engineers Lock and Dam 6		Federal	Located near Trempealeau.
Perrot State Park	1,243	State Park	Located on Sullivan Rd, Trempealeau. Picnicking, camping, hiking, biking, canoeing, scenic views. Brady's Bluff Prairie SNA (65 acres) and Trempealeau Mountain SNA (90 acres) located within.
Borst Valley Wildlife Area	1,343	State	Located 7 miles NW of Independence. Borst Valley Sedge Meadow SNA (21 acres) located within.
Chimney Rock Wildlife Area	634	State	Located 9 miles north of Independence. Chimney Rock Oak Savanna SNA (30 acres) and Hawkinson Creek Wet Prairie SNA (79 acres) located within.
Lakes Coulee Wildlife Area	808	State	Located 2 miles SW of Blair.
Tamarack Creek Wildlife Area	542	State	Located 10 miles N of Trempealeau. Tamarack Creek Bog SNA (130 acres) located within.
Tollefson Marsh Wildlife Area	120	State	Located 4 miles south of Osseo.
Vosse Coulee Wildlife Area	123	State	Located 2 miles SW of Blair. Vosse Coulee SNA (100 acres) located within.
Buffalo River Trail Prairies SNA	153	State	Located 4 miles east of Osseo in Jackson and Trempealeau Counties.
Pietrick County Park	100	County Park	Located on the Trempealeau River, STH 93. Camping, picnicking, nature trails, playground, canoe landing. Adjacent to 4-H horse arena, & riding trails.
4-H Horse Arena		County	Located on STH 93 between Independence & Arcadia adjacent to Pietrek County Park. Camping, horse trail, horse arena.
Vernon County			
Corps of Engineers Lock and Dam No 8		Federal	Located on Mississippi River mile 679.2 near Genoa, Wis. Site has public observation platform.
Kickapoo Valley Reserve Note: The reserve was designated a State Natural Area (SNA) in 2002.	8,569	State/Ho Chunk Nation	Located between the villages of La Farge and Ontario. Equestrian and mountain biking trails, canoeing, camping, hiking, hunting, fishing, trapping, environmental education, winter activities. Prehistoric archeological sites.
Wildcat Mountain State Park	3,603	State Park	Located off STH 33 near Ontario. Picnicking, canoeing, hiking, scenic views, equestrian trails, nature center, cross country skiing, camping. Mount Pisgah Hemlock-Hardwoods SNA (65 acres) located within.
Battle Bluff Prairie SNA	348	State	Located about 4 miles North of De Soto.
Bergen Bluffs SNA	30	State	Located 2.2 miles south of STH 35/162 intersection in Stoddard.
Coon Creek Cliffs SNA	28	State	Located about 2 miles NE of Coon Valley.
Tunnel Cliffs SNA	150	State	Located about 3 miles SW of La Farge.
Hillsboro State Trail	4 miles	State	Between Hillsboro and Union Ctr. (Vernon and Juneau Counties)
Sidie Hollow Recreation Area	521	County Recreation Area	Located 3 miles W of Viroqua on CTH XX. Camping, hiking, picnicking, fishing, trout stream, shelter, playground areas etc.
Jersey Valley	371	County Park	Located NE of Westby on CTH X. Swimming, fishing, boating, hiking and picnicking, handicap accessible fishing dock.
Esofea-Rentz Memorial County Park	124	County Park	Located 9 miles NW of Viroqua, just off of CTH B. Camping, picnicking, hiking trails, playground, spring fed ponds, trout stream.
Blackhawk County Park	2	County Park	Located in Wheatland Township just off STH 35 on CTH Bl. 500' of Mississippi River Frontage, campsites, public boat launch.
Duck Egg County Forest	707	County Forest	Located 10 miles W of Viroqua, just off of CTH Y. Timber management. Hunting, fishing, hiking, and equestrian trails.
Kooyumjian-Lost Creek County Forest	120	County Forest	Located on Pine Ave. Union Township. Timber mgt., hunting, hiking.
Runge Hollow Recreation Area	44*	County Lake	Located on CTH "Y" in T. of Jefferson. Lake with fishing pier/boat ramp.
TOTAL	282,949		

Source: <http://dnr.wi.gov/topic/lands/WildlifeAreas/alpha.html>, http://www.fws.gov/refuge/upper_mississippi_river/, County Websites and Outdoor Rec Plans. *Lake surface.

Energy Generating Facilities Capacity and Transmission

This section analyzes the region's supply and demand of energy for electricity and heat for the purpose of devising regional energy and economic development strategies that will lead to becoming less dependent on fossil fuels. Numerous cases show that regions that generate their own energy pay less for it, retain more income and create more quality jobs than those regional economies dependent on outside energy sources. Another benefit of creating energy from renewable sources such as wind, solar, biomass, hydro power etc. is the reduction for fossil fuel energy which in turn reduces geologic carbon dioxide emissions a greenhouse gas and contributor to climate change.

Region's Energy Demand

To determine the Mississippi River Region's capability of decreasing its dependence on fossil fuels an estimate on the amount of electricity consumed in the region needs to be made to benchmark the region's demand. Based on U.S. Energy Information Administration (EIA) data and Dairyland Power Company's (DPC) electricity sales it is estimated that the Mississippi River Region consumes between 3.10 and 3.84 billion kilowatt hours (KWHs) of electricity per year. This estimate of the region's electricity consumption is based on comparing electricity sales estimated by EIA for the state of Wisconsin on a per capita basis and Dairyland Power Company's production sales on a per capita basis then applying these factors to the Mississippi River Region's population. The Dairyland Power Company's estimates are used over other electricity generators because the social, economic, and land use characteristics of its service area is very similar to the Mississippi River Region. Low, medium and high electricity consumption estimates are made from this analysis. The calculations are shown in Table 4.10 below. Depending on which estimate is selected, the region would need to produce 3.10, 3.46 or 3.84 billion KWHs of electricity annually from renewable energy such as wind, solar and biomass in order to be independent from fossil fuels. For the rest of this report the medium range estimate 3.46 billion kilowatt hours of electricity annually is used as the region's annual demand figure.

Table 4.10 The Mississippi River Region's Annual Electricity Consumption Estimate

2013 Wisconsin Electricity Consumption (1)	68,767,000,000 Kilowatt Hours KWHs
2013 Wisconsin Electricity Consumption Per Capita (1)	12,028 KWHs Per Capita = (68,767,000,000 KWHs / 5,717,110 State Population)
2013 Region's Electricity Consumption Based on EIA Electricity Sales adjusted on a Per Capita Basis	3,841,370,332 KWHs = (12,028 KWHs PC x 319,369 Regional Population)
2012 Dairyland Power Company's Electricity Sales (2)	5,800,000,000 Kilowatt Hours KWHs
2012 Dairyland Power Company's Electricity Consumption Per Capita (2)	9,666 KWHs Per Capita = (5,800,000 KWHs / 600,000 Dairyland Power Company's population)
2012 Region's Electricity Consumption based on Dairyland Power's Per Capita Consumption	3,087,020,754 KWHs = (9,666 KWHs x 319,369 Regional Population)
Region's High Annual Electricity Consumption Estimate Using EIA State wide Electricity Sales Estimate	3,841,370,332 KWHs or 12,028 KWHs per capita
Region's Medium Electricity Consumption Estimate Using the Average of the EIA State Per Capita Estimate for the region and Dairyland Power Company's Per Capita Estimate	3,464,195,543 KWHs = 10,847 KWHs Per Capita x 319,369 Population [(12,028 + 9,666) / 2] = 10, 847 KWHs Per Capita]
Region's Low Electricity Consumption Estimate Using Dairyland Power Company's Sales Estimate Per Capita Estimate and Multiplying that Factor by the Region's Population	3,087,020,754 = (9,666 KWHs Per Capita x 319,369 Regional Population)

(1) Source US Energy Information Administration electricity sales estimate for Wis. (2) Dairyland Power Company's 2012 Annual Report

The Mississippi River Region is a Net Producer of Electricity

According to U.S. Energy information, Wisconsin electricity generation in 2013 totaled 64.3 billion kilowatt hours but disposed of 68.8 billion kilowatt hours leaving a generating deficit of 4.5 billion kilowatt hours that was filled by importing electricity from other areas (grid purchases). This use of 68.8 kilowatt hours in 2010 by Wisconsin residents represents 12,028 Kwhs for each of Wisconsin's 5,717,110 residents in 2013. Multiplying this figure by each of the 319,369 residents in the Mississippi River Region in 2013 would equal a regional demand for electricity of 3.84 billion Kwh annually, but because of the Mississippi River Region's more rural nature and less number of businesses on a proportional basis as the state as a whole it is highly

likely that the region consumes around 9,000 –11,000 Kwh, per capita that is more in line with the Dairyland Power Electric Power Cooperative demand figure in 2012 of 9,666 Kwhs per capita, Table 4.10 and 4.11.

Table 4.11 Electricity Generation and Consumption - 2010

	Region	Wisconsin	United States
Generation	5.4 billion Kwh	64.3 billion Kwh	4,125 billion Kwh
Consumption	3.5 billion Kwh	68.8 billion Kwh	3,754 billion Kwh
Difference	1.9 billion Kwh	-4.5 billion Kwh	0.371 billion Kwh

Source: Energy Information Administration (EIA)

The Mississippi River's Role in Generating Electricity

The Mississippi River is highly involved in supplying the region's 3.46 billion KWHs of electrical annual demand. The river's cool and deep flowing waters make it a desirable location for electrical generating stations fueled by coal, solid biomass, and nuclear energy. The river is used both for production of steam and for cooling. There are seven power stations in or near the Mississippi River Region that generate more electricity than the region consumes, contributing to other regions electrical needs. Dairyland Power Cooperative's John P Madgett Station in Alma and their Genoa Station in Genoa, are two of the Mississippi River Region's largest electrical generating facilities. The third facility in the region is owned by Xcel Energy and is located in the Town of Campbell near La Crosse on French Island. It has two resource recovery turbines that burn wood waste, railroad ties and municipal solid waste that can process more than 100,000 tons of municipal solid waste each year, reducing demand on valuable landfill space. It also has two diesel oil back up turbines for peak demand.

Other facilities across the river in Minnesota are the Prairie Island Nuclear Power Station just north of Redwing, MN and a Refuse Derived Fuel Facility in Redwing, MN. Both of these power stations are owned by Xcel Energy. Further down river in Iowa is the Lansing coal fired power station owned by Interstate Power and Light. The seventh station near the Region and further down river is the DTE Stoneman Station in Cassville, Wisconsin. This Station formerly owned by Dairyland Power Cooperative is now owned by DTE Energy Services who sells its electricity to Dairyland Power Cooperative. Its electricity is generated from burning of wood waste including green wood residue from forestry and tree trimming operations, railroad ties, demolition waste and sawdust.

There are also 11 municipal utilities that generate electricity or purchase power for their own use. The municipal generators total less than 21,000 kilowatt capacity in comparison the Alma-Madgett and Genoa Dairyland Power Cooperative coal stations with a combined capacity of 772,000 kilowatt generating capacity or the 1.1 million Kilowatt producing Prairie Island nuclear station just north of Redwing, MN.

The following is a description of the major regional electrical generating stations in and near the region. Table 4.12 provides an estimate of kilowatt production capacity of each regional or municipal electrical utility facility if it was reported. Based on the reported data, 818,695 of kilowatt capacity is available from both regional and municipal utilities, with approximately 95% of it being generated by coal, Table 4.12 and Map 4.06.

John P Madgett Station, Alma WI This station is operated by the Dairyland Power Cooperative; the Alma Site has the John P. Madgett Station. It came into production in 1979 and has a total power generation of 395 Megawatts, which is enough to power about 360,000 typical homes. The Alma Site also has the Alma Station a coal-fired plant built in 1947 that was shut down in late 2013. It contains five subunits, which today could generate a combined 210 Megawatts. This is the equivalent of being able to power roughly 190,000 single-family residences. Associated with this is the Alma Off-Site facility that is located three miles from the Alma Site. Coal ash generated at the two stations is transported to the site and is pumped into silos for treatment and disposal. In 2004, 90% of the ash was recycled for beneficial re-use, such as use as a cement additive.

Genoa Station, Genoa WI This station is operated by Dairyland Power Cooperative, the Genoa Station #3 is a super-efficient, single unit coal-fired station located just south of Genoa on HWY 35. It was completed in 1969 and is the third station to be built at the Genoa site. It has a total output of 377 Megawatts, or enough to supply 345,000 average single-family homes. Great River Energy of Maple Grove, Minnesota has a life-of-the-plant agreement with Dairyland Power Cooperative to share the output of the plant, though Dairyland has full ownership of the facility. The La Crosse Boiling Water Reactor (LACBWR)

located at the Genoa site, is a nuclear powered reactor that was in operation from 1967 to 1987. Until the spent nuclear fuel is removed, Dairyland Power cannot fully decommission the facility. Maintenance and monitoring of the current storage site costs the member-owners of the coop \$6 million annually. There is a plan in place to move the spent fuel to a more secure storage facility at the south end of the Genoa Site until there is a national repository for spent nuclear fuel.

French Island Generating Station, Town of Campbell, La Crosse County Operated by Xcel Energy, the French Island plant is a combination generating plant and resource recovery facility. The generating plant and resource recovery facility generated over 88,500 MWH of electricity in 2012 (enough to power nearly 10,000 homes). The facility was originally built in the 1940's as a coal-fired generating facility. The plant converted from coal to oil in 1972, and in the early 1980s went to waste wood. Today two of the plants generating units burn wood waste, railroad ties, and processed municipal solid waste called refuse-derived fuel (RDF) having a total capacity of 26 MW or 13 MW for each generator. The same French Island station has two oil turbines used for peak demand each has a rating of 70 MW.

Prairie Island Nuclear Generating Plant Owned and operated by Xcel Energy, the Prairie Island Nuclear Generating Facility is located 5 miles north of Red Wing, Minnesota on the west bank of the Mississippi River. The facility is a two-unit pressurized water reactor. Unit 1 began operation in 1973 and Unit 2 began operation in 1974. The site encompasses nearly 520 acres and 700 people are employed full-time at the facility. The plant has a generating capacity of about 1,100 Megawatts, or enough to power 1 million average homes. The U.S. Nuclear Regulatory Commission (NRC) ratings for the Prairie Island plant are at the NRC's highest ranking (green) for all indicators monitored by the NRC. NRC licenses for the two units at Prairie Island are set to expire in 2013 and 2014 respectively.

Table 4.12 Regional and Municipal Utility Electric Generating Facilities in and Near the Region

In Region Facilities	Location	Owner	Fuel Source	Generating Capacity Kilowatts	Power Potential in Homes
John P. Madgett Station	Alma, WI	Dairyland Power	Coal	395,000	360,000
Genoa Station #3	Genoa, WI	Dairyland Power	Coal	377,000	345,000
French Island Generating Station	La Crosse, WI	Xcel Energy	Two units powered by waste wood, railroad ties, and municipal waste, 13 MW each. Plus two oil powered turbines to meet peak generation demand, 70,000 KW each.	26,000	10,000
City of Arcadia	Arcadia, WI	City of Arcadia	Diesel & Purchase Power Dairyland Power	17,000	15,000
Village of Bangor	Bangor, WI	Village of Bangor	Purchased power – Xcel Energy		
City of Black River Falls*	Black River Falls, WI	City of BRF	Member of WPPI Energy		
Village of Cashton	Cashton, WI	Village of Cashton	Purchased Power – Dairyland Power/ Internal Combustion Reciprocating		
Village of La Farge	La Farge, WI	Village of La Farge	Purchased Power – Dairyland Power/ & Recip Generation	1,510	
Village of Merrillan	Merrillan, WI	Village of Merrillan	Purchased Power – Dairyland Power/Hydraulic Production Plant - Internal Combustion Turbine	385	
City of River Falls*	River Falls, WI	City of River Falls	Member of WPPI Energy		
Village of Trempealeau	Trempealeau, WI	Village of Trempealeau	Purchased Power – Xcel Energy		
Village of Viola	Viola, WI	Village of Viola	Purchased Power – Dairyland Power/ Internal Combustion Reciprocating (Oil)	1,800	
City of Westby*	Westby, WI	City of Westby	Member of WPPI Energy		
City of Whitehall*	Whitehall, WI	City of Whitehall	Member of WPPI Energy		
In Region Subtotal				818,695	730,000
Near Region Facilities					
Prairie Island Nuclear Power Plant	Welch, MN	Xcel Energy	Nuclear, two reactors generate 20% of electricity to Xcel's customers in upper Midwest	1,100,000	1,000,000
Lansing Power Station	Lansing IA	Interstate Power & Light Co.	Coal	317,000	310,000
DTE Stoneman Station	Cassville, WI	DTE Energy Services	Wood waste, including green wood residue from forestry and tree trimming operations, railroad ties, demolition waste and sawdust.	40,000	28,000
Redwing Xcel Energy	Redwing, MN	Xcel Energy	Processed municipal solid waste, called refuse-derived fuel	24,000	
Near Region Subtotal				1,481,000	1,338,000
TOTAL				2,299,695	2,068,000

Red Wing Station Owned and operated by Xcel Energy, this is a two-unit generating plant that burns processed municipal solid waste, referred to as refuse derived fuel (RDF). It was originally built as a coal-fired generating plant that was converted in 1987. Although these units use RDF it produces electricity the same as conventional plants – a source of heat turns water to steam that drives a turbine generators. RDF is a fluffy, burnable fuel produced from municipal waste by Resource Recovery Technologies in Newport, MN. That is then transported to the Red Wing Station. Unit 1 has a power production capability of 24 megawatts and unit 2 has a power production capability of 12 megawatts.

Lansing Power Station The Lansing Power Station, located in Lansing, Iowa on the west bank of the Mississippi River is owned by Interstate Power and Light Company, a subsidiary of Alliant Energy. The plant began operation in 1948 with a single coal fired unit, adding later units in 1949, 1957, and 1977. The four units at the site generate a combined 317 Megawatts, or enough to power nearly 310,000 average homes.

DTE Stoneman Station The E.J. Stoneman Station is a biomass powered plant owned and operated by DTE Energy Services of Ann Arbor, Michigan, a subsidiary of DTE Energy. It is delivering electrical power to Dairyland Power Cooperative from the burning of wood waste including green wood residue from forestry and tree trimming operations, railroad ties, demolition waste and sawdust. This renewable energy station was formerly a coal station owned and operated by Dairyland Power Cooperative from 1951 through the 1990s and is now selling renewable energy back to its original owner. This 40 megawatt station will supply electrical needs to power 28,000 homes across the Dairyland Power Cooperative System.

The Region's Electrical Generating Capacity from Solar, Wind, Hydro, Biogas and Biomass Resources

An inventory of the Mississippi River Region's solar, wind, hydro, biogas and biomass installations show just 44,000 kW capacity. This kilowatt capacity pales in comparison to the coal fired Madgett Station in Alma WI and the Genoa Station with a 395,000 KW and 377,000 KW capacities respectively. These two stations even operating at 52% of capacity could supply all of the Mississippi River Region's nine counties electrical needs estimated at 3.46 billion kilowatt hours annually. Table 4.13 lists all of the renewable energy projects in the region including solar photovoltaic, wind, hydro, biogas, and biomass facilities. This wide variation between renewable energy producing electricity versus electricity produced from coal shows the challenge the region faces if it is to achieve energy independence from fossil fuels for electricity. The location of these renewable energy facilities is shown on Map 4.07.

Solar, Wind, Hydro, Biomass, Bio Gas and Fossil Fuel Electrical Generators Rates of Efficiency

No electricity generator can operate at total capacity continuously. A generator's capacity is reduced for down time for repairs and maintenance. Plus electricity from solar and wind need to be further discounted because the sun doesn't shine and the wind doesn't blow all the time. Research indicates that for coal, biomass and hydro electric generators a 25% discount is not unreasonable. Electricity capacity discounts for solar of 83% and 65% for wind would not be unreasonable based on the region's latitude and its hilly topography. Hydro power can also vary from 30% to 75% depending on the river's watershed and precipitation levels. Because of these capacity discount variations the amount of renewable energy capacity reported in Table 4.13 would need to increase much more than the 17 times increase needed if it were ever to substitute solar, wind, biogas, hydro and biomass power for the Alma - Madgett and Genoa coal fired stations.

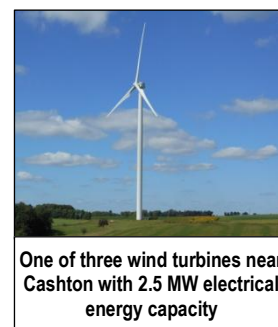


Table 4.13 Renewable Electrical Energy Project Installations in the MRRPC Region

User Name of Owner	Type of Installation	Type of Organization	Location	Capacity	Date of Installation
Private	Solar PV	Private	6 Installations- Zip 55022 (River Falls)	Combined 22.49 kW	Varied
Arctic Supply	Solar PV	Business	Spring Valley	12.4 kW	2010
Sorenson Residence	Solar PV	Home	Prescott	10.4 kW	2010
Private	Solar PV	Private	3 installations - Zip Code 54738 (Eleva)	Combined 20.67 kW	Varied
Pipkin Residence	Solar PV	Home	Sparta	10 kW	2011
Gundersen Lutheran	Solar PV	Hospital	La Crosse	58 kW	2009
Private	Solar PV	Private	4 installations- Zip Code 54601 (La Crosse)	Combined 60.48 kW	Varied
Private	Solar PV	Private	2 installations- Zip Code 54658 (Stoddard)	Combined 6.82 kW	Varied

Table 4.13 Renewable Electrical Energy Project Installations in the MRRPC Region

User Name of Owner	Type of Installation	Type of Organization	Location	Capacity	Date of Installation
Private	Solar PV	Private	Chaseburg	10.4 kW	2009
Private	Solar PV	Private	Genoa	11.04 kW	2010
Private	Solar PV	Private	2 installations - Zip Code 54660 (Tomah)	Combined 13.25 kW	Varied
Private	Solar PV	Private	4 installations- Zip Code 54665 (Viroqua)	Combined 25.98 kW	Varied
Private	Solar PV	Private	3 installations - Zip Code 54639 (La Farge)	Combined 12 kW	Varied
Private	Solar PV	Private	Hillsboro	12.6 kW	2010
Prairie Industries	Solar PV	Business	Prairie du Chien	20 kW	2008
Prairie du Chien School District	Solar PV	School	Prairie du Chien	70.5 kW	2010
Design Homes	Solar PV	Business	Prairie du Chien	13.1 kW	2009
Private	Solar PV	Private	9 installations- Zip Code 53821(PDC)	Combined 53.62 kW	Varied
Total Solar PV kW				443.75 kW	
Cashton Green Wind Project	Commercial Wind	Community: Organic Valley, La Farge, Gunderson Health System, V Cashton	Cashton	5,000 kW	2012
Alan Hines Construction	Wind	Business	Ellsworth	35 kW	2010
Burt Residence	Wind	Home	Ellsworth	20 kW	2008
Christianson Residence	Wind	Home	Maiden Rock	20 kW	Unknown
KD Farm I	Wind	Home	Arkansas	10 kW	Unknown
Prehn Cranberry Farm	Wind	Farm	T. Byron	70 kW	2009
Ray's Gas & Goodies	Wind	Business	Cashton	50 kW	2010
Total Wind kW				5,205 kW	
City Brewing / Gunderson Lutheran	Biogas	Business	La Crosse	633 kW	2009
Gunderson Lutheran/ La Crosse County Landfill	Biogas	Business	Onalaska	1,100kW	2012
Wild Rose Dairy/ DPC	Biogas	Farm	La Farge	750 kW	2005
Dairy Farm (Peters)/DPC	Biogas	Farm	Chaseburg	45 kW	2012
Total Biogas kW				2,528 kW	
French Island Station/Xcel	Biomass	Xcel- Public Utility	Town of Campbell , La Crosse County	26,000	
Gunderson Lutheran Wood Chip Biomass (Combined Heat and Power Facility)	Biomass – Wood Chips	Gunderson Lutheran Hospital	City of La Crosse, La Crosse County	360	2013
Total Biomass kW				26,360 kW	
Neshonoc Dam	Hydro	North American Hydro	West Salem, La Crosse County	420	
Hatfield Dam	Hydro	North American Hydro	Hatfield, Jackson County	7,200	
Black River Falls Dam	Hydro	City of Black River Falls	Black River Falls, Jackson County	1,300	
Town of Angelo Dam	Hydro	Western Technical College	Town of Angelo, Monroe County	205	
City of River Falls Junction Dam	Hydro	City of River Falls	River Falls, Pierce County	235	
City of River Falls Powell Dam	Hydro	City of River Falls	River Falls, Pierce County	110	
Total Hydro kW				9,470 kW	
Grand Total Mississippi River Region's Estimated Electricity Production Capacity from Renewables				44,007 KW	

Source: <https://www.ferc.gov/industries/hydropower.asp> and North American Hydro; <http://www.renewwisconsin.org/data/projectswimap.html> A two acre solar farm with 305 kW capacity near Westby WI was nearing completion at the time the above inventory and is not included in Table 4.13.

Energy from Dams on the Mississippi River

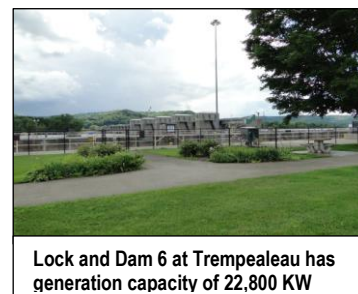
The dams on the Mississippi River have been studied by the Department of Energy for their hydroelectric potential. To date a hydro kinetic turbine operated a 100kW generator up to 2012 below Lock and Dam 2 near Hastings, Minnesota by a Houston Texas based firm but has since ceased operations. This same firm has conventional hydropower projects planned at Lock and Dams 5, 13 and 21. The interests of the U.S. Army Corps of Engineer's navigation mission, Federal Emergency Regulatory Commission, Upper Mississippi River Wildlife and Fish Refuge protection mission, plus boaters, fisherman, hunters, utility companies and environmental groups create a situation where installing turbines and generators can be an extremely challenging endeavor. As shown below in Table 4.14 these dams could play an important role in providing electricity from a renewable source. Combined they have a total capacity of 236,800 Kilowatts in the Mississippi River Region alone. If generators on these dams operated at 50% of capacity they could provide enough electricity to 89,000 homes (assumes

11,550 KWHs per home annually, based on average of home serviced by Xcel and Dairyland Power Company) and would further reduce the region's dependence on coal and reduce geologic carbon dioxide emissions. Figure 4.2 shows the megawatt capacity of all the non-powered dams in the U.S. from a report produced by the Department of Energy's Oak Ridge National Laboratory.

Table 4.14 Hydropower Potential from Existing Non-Powered Dams on Mississippi River Region

Name of Dam	Location	Generation Potential KW	Year Built
Lock and Dam 3	Goodhue, MN	18,800	1938
Lock and Dam 4	Alma WI	25,300	1935
Lock and Dam 5	Alma/Winona, MN	33,600	1935
Lock and Dam 5a	Winona, MN	19,500	1936
Lock and Dam 6	Trempealeau WI	22,800	1936
Lock and Dam 7	Dresbach, MN	31,700	1937
Lock and Dam 8	Victory WI	46,200	1937
Lock and Dam 9	Prairie du Chien WI	38,900	1937
Total		236,800 KW	

Source: Energy.gov (energy.gov/maps/us-hydropower-potential-existing-non-powered-dams) Oak Ridge National Laboratory



Lock and Dam 6 at Trempealeau has generation capacity of 22,800 KW

The Region's Demand Versus Supply for Renewable Electricity

Table 4.15 below uses the data in tables 4.10 through 4.14 with the discounted electrical generation rates discussed above. This analysis shows that the region can generate 5,208,006,150 kilowatt hours from, coal, diesel and municipal purchases or 95% of total KWHs produced and 247,892,495 KWHs of electricity from renewable energy sources or just under 5% of total production. The large generating capacity of the coal fired John P. Madgett Station in Alma and the coal fired Genoa Station are again exemplified in this table by showing the surplus of electricity that can be produced primarily because of these stations. The region can generate about 5.4 billion kilowatt hours of electricity from all sources, but as is reported in Table 4.10 and 4.16 the region's consumption of electricity is approximately 3.46 billion kilowatt hours, therefore the region is supplying other areas. The region's electricity produced from renewables is estimated at about 7% of the region's total demand for electricity, Table 4.16.

Table 4.15 Mississippi River Region's Existing Electricity Production Sources

Regional Energy for Electricity by Source	Kilowatt Capacity	Annual Kilowatt Hour Capacity	% of Generator Capacity	Actual KWH Capacity	% of Total Annual KWH Production
Coal	772,000	6,762,720,000	75	5,072,040,000	92.96
Biomass	26,360	230,913,600	75	173,185,200	3.17
Hydro	9,470	82,957,200	50	41,478,600	0.76
Municipal	20,695	181,288,200	75	135,966,150	2.49
Wind	5,205	45,595,800	35	15,958,530	0.29
Biogas	2,528	22,145,280	75	16,608,960	0.30
Solar	444	3,889,440	17	661,205	0.01
Total	836,702	7,329,509,520		5,455,898,645	100.00
Regional Electricity Production From Fossil Fuels (Coal & Diesel) & Municipal Purchases	792,695	6,944,008,200	75	5,208,006,150	95.50
Regional Electricity From Renewables	44,007	385,501,320	64	247,892,495	4.50
Total Renewable Energy Gap	792,695	6,944,008,200		5,208,006,150	100

Table 4.16 Regional Kilowatt Hour Demand And Supply Summary Comparison of Fossil Fuels to Renewables

Regional Kilowatt Hours Supply and Demand Components	Kilowatt Hours	Percent
Regional Electricity KWH Production all Sources	5,455,898,645	100
Regional KWH Demand	3,464,195,543	100
Regional KWH Surplus	1,991,703,102	36
Regional KWH Demand Provided by Fossil Fuel and Municipal Production or Purchases	3,216,303,048	93
Regional KWH Demand Provided from Renewables	247,892,495	7

Diverse Renewable Energy Sources, Energy Security and Affordability

A reliance on any one renewable energy source puts the region at a higher risk because of weather and market conditions impacting supply and pricing, so a mix of these renewable electrical generating sources is preferred. Table 4.17 was developed to show how much any one of the following five renewable energy sources would have to be developed to meet the region's annual demand of 3.4 billion kilowatt hours. The five examples shown below are based on increasing the number of existing or proposed facilities in or near the region as explained in the footnotes below Table 4.17.

Table 4.17 Renewable Energy Sources Needed to become 100% Independent from Fossil Fuels

Renewable Energy Source	Kilowatt Capacity	KWH Capacity at 8760 Hours Per Year	KWH % of Generator Capacity	Total KWH Production Need to Meet Regional Demand	Number Needed to meet Regional Demand	Estimated Land Area in Acres Needed Per Unit	Total Land Area Needed in Acres	Total Land Area Needed in Square Miles
1. Wind Turbine	2,500	21,900,000	(35%) 7,665,000	3,464,195,543	452	20	9,040	14.0
2. Solar	305	2,671,800	(17%) 454,206	3,464,195,543	7,627	2	15,254	24.0
3. Biomass	40,000	350,400,000	(75%) 262,800,000	3,464,195,543	13	20	520	1.0
4. Biogas	775	6,789,000	(75%) 5,091,750	3,464,195,543	680	2	1,360	2.0
5. Hydro	13,000	113,880,000	(60%) 68,328,000	3,464,195,543	51	5	255	0.40

(1) Wind turbine regional example: Two turbines in Cashton WI, developed by Gunderson Lutheran and Organic Valley each turbine having 2,500 KW capacities, 35% of generator KWH capacity used on wind. (2) Solar farm regional example: Vernon Electric Cooperative 2 acre solar farm in Westby with 305 KW capacity, 17% of generator KWH capacity used on solar power. (3) Biomass regional example: The DTE Stoneman Biomass Power Station in Cassville WI with 40,000 KW capacity, 75% of generator KWH capacity used on biomass. (4) Biogas regional example: Buckeye Ridge -Wild Rose Dairy 775 KW anaerobic digester in the Town of Webster, Vernon County, 75% of generator KWH capacity used on biogas. (5) Hydro regional example: HGE's Lock and Dam 5 Hydro project on Mississippi River 13,000 KW, 60% of generator KWH capacity used.

The Region's Unique Biomass, Hydro and Biogas Energy Resources

Biomass The region's capacity of being able to generate renewable energy from biomass is illustrated in Department of Energy's National Renewable Energy Laboratory report that depicts biomass resources available in each county in the United States. Trempealeau county in the Mississippi River Region ranked highest at an estimated 250-500 thousand tons per year; Pierce, Buffalo, Jackson, Monroe Crawford and Vernon came in the next lowest category of 150-250 thousand tons per year; and La Crosse and Pepin County was in the category of 100-150 thousand tons per year. The majority of the counties in Wisconsin and the entire United States had biomass tonnage rankings below the Mississippi River Region's tonnage, Figure 4.1.

Hydro The region's hydro power has much greater potential because of the Mississippi River. A Houston Texas based company is proposing hydro power projects at Lock and Dams 5, 13, and 21. The proposed hydropower project at Lock and Dam 5 will have a 13,000 KW capacity with annual energy production of 80,000,000 KWH or enough to serve more than 6,900 homes in the Mississippi River Region. The proposed hydro power projects further down river at Lock and Dams 13 and 21 will have 25-29 % less kilowatt hour potential than their hydropower project on Lock and Dam 5, Figure 4.2.

Biogas The region's biogas is produced mostly from a solid waste landfill or manure from dairy cattle. The methane from La Crosse County's landfill is piped to Gundersen Lutheran Health Care Campus in Onalaska where it is converted into both heat and electricity. This facility in Onalaska is the only medical complex in the US that meets 100% of its entire energy needs from a renewable energy source. This project could be duplicated at other landfills in the region. Two dairy farms both in Vernon County use methane from manure to power their farms with the excess electricity purchased by Dairyland Power Cooperative. With the region's high number of dairy and chicken farms, this form of renewable energy has great potential when you consider methane digesters are manufactured in Tomah, WI.

Figure 4.1 U.S. Biomass Energy Resources

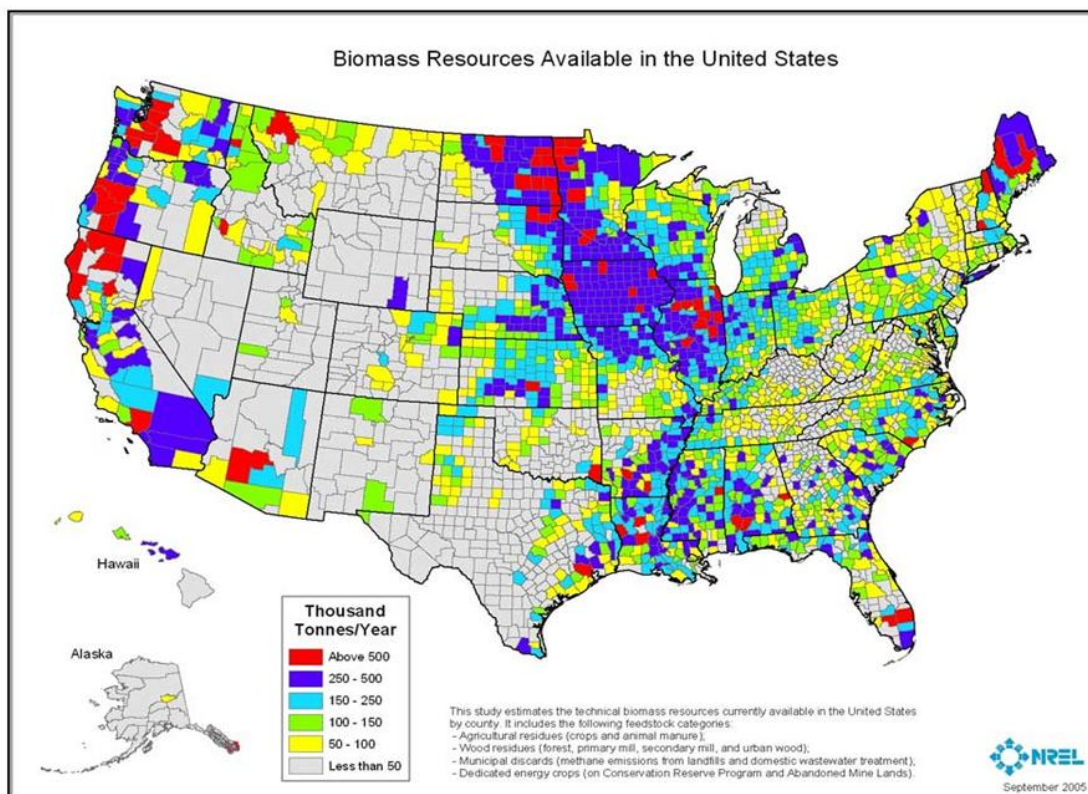
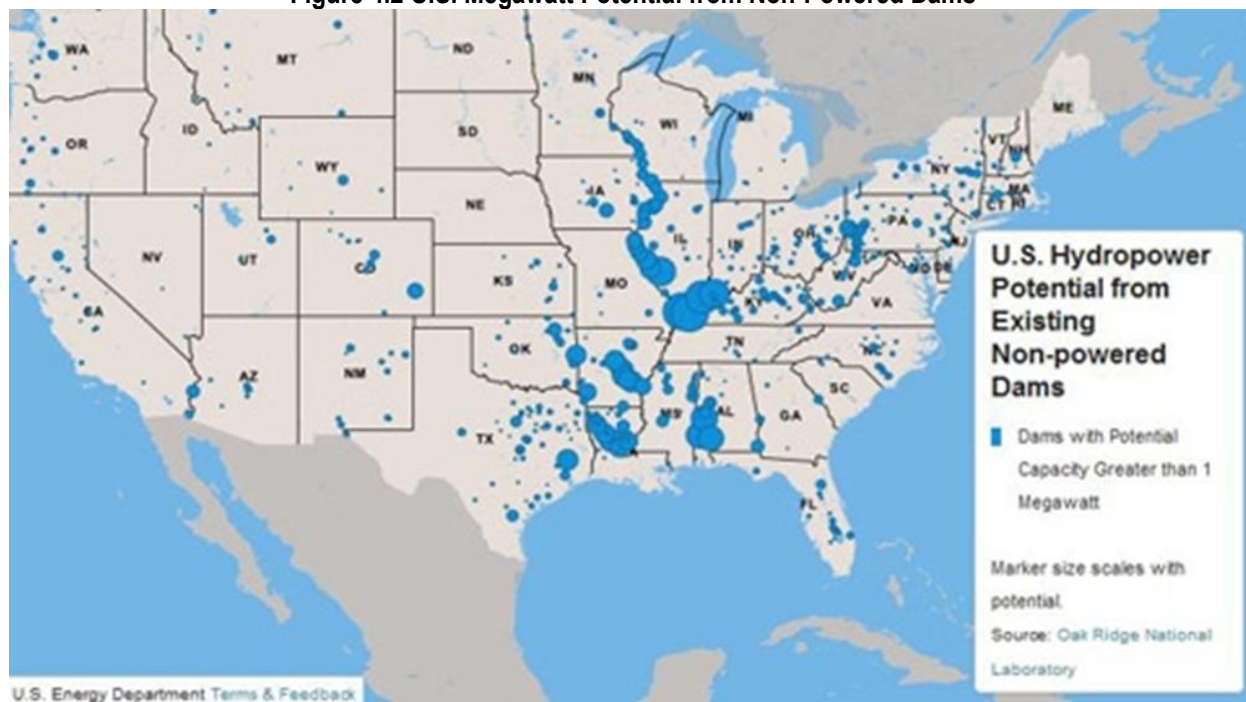


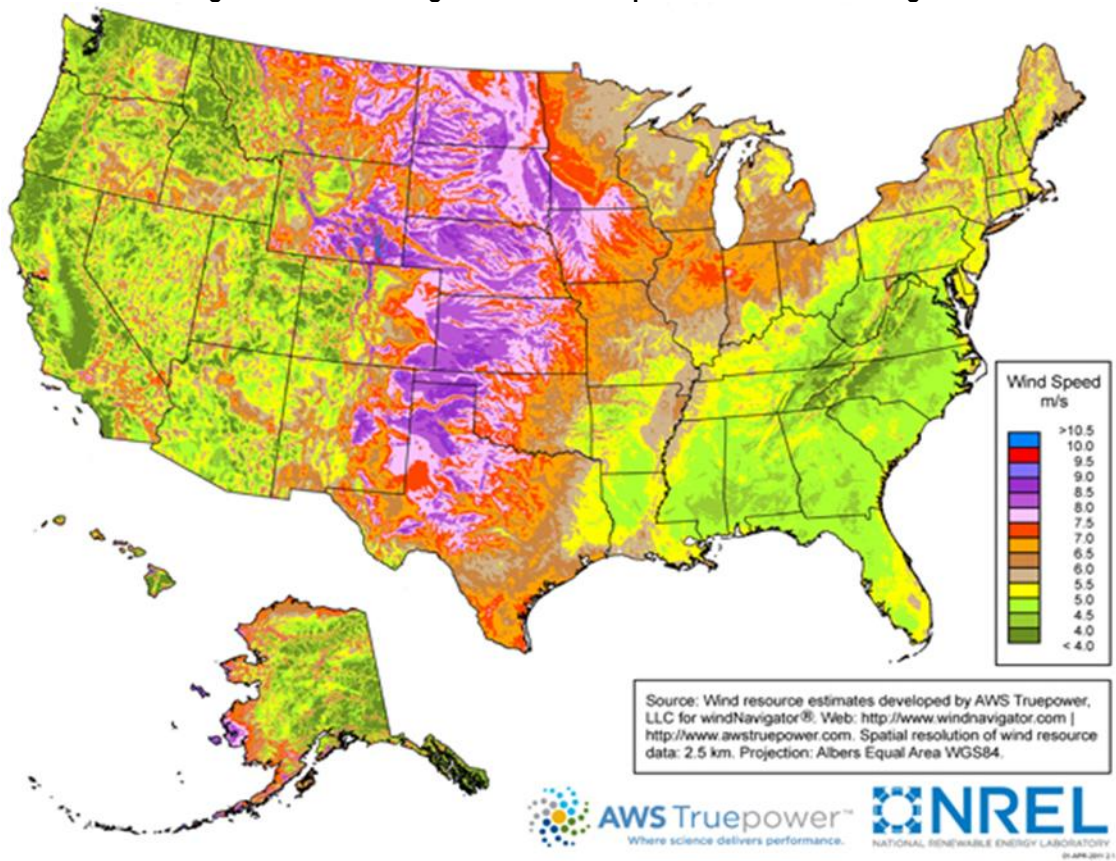
Figure 4.2 U.S. Megawatt Potential from Non-Powered Dams



The Region's Solar and Wind Power Challenge

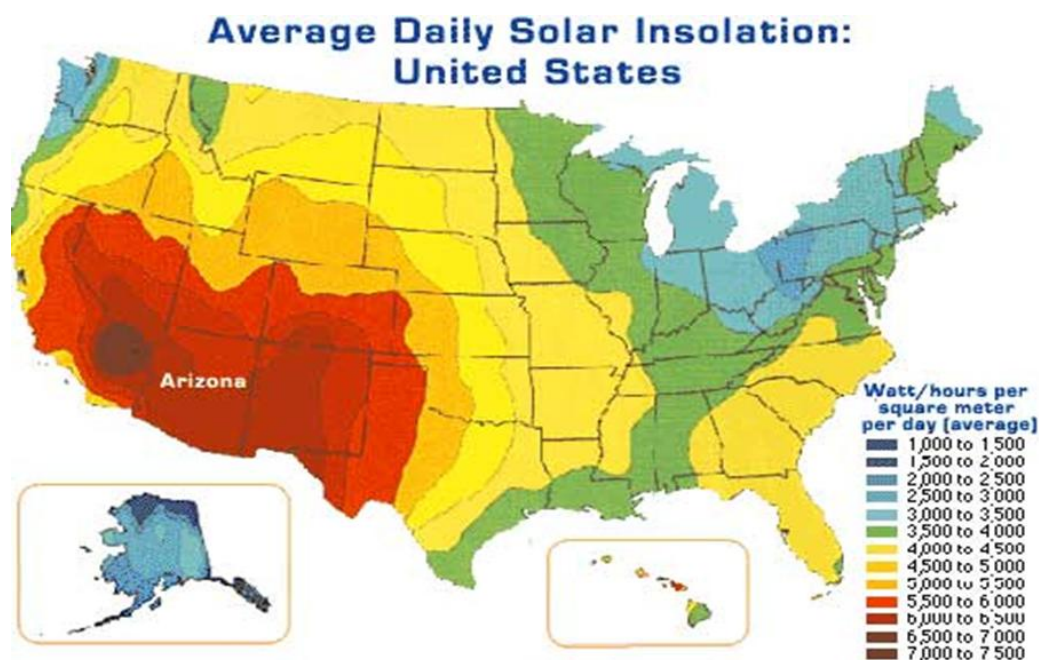
Wind The counties in the region with the most wind energy potential (measured at 80 meters in height) are Pierce, Monroe and Vernon counties who had annual average wind ratings of 6.5 meters per second; other counties are mostly below this. Wind speeds in North Dakota, South Dakota, Western Minnesota, Western Iowa, Nebraska, Kansas, Oklahoma and Texas all had much higher speed ratings over large geographic areas having annual average wind speeds over 9.5 meters per second, or more, Figure 4.3.

Figure 4.3 U.S. Average Annual Wind Speed at 80 Meters in Height



Solar The region's solar insolation capacity rating according to the National Renewable energy Lab is an average of 3,500 – 4,000 watt hours per square meter per day; the entire state of Wisconsin and most of Minnesota also had this same rating. The region is well shy of 7,000 plus watt hours per square meter per day capacity that Southwestern states have or the 4000-5,500 watt hours per square meter of many Plain states, Figure 4.4.

Figure 4.4 U.S. Solar Power



Regionally Sourced Energy and Lower Electricity Rates

Table 4.18 shows the electricity rates for the six states that have the lowest rates and the six states that have the highest rates, and compares them to six Midwest states. Electricity rates paid by Wisconsin residents are significantly higher than rates by neighboring states of Minnesota and Iowa. Each of these states also produce more than twice the amount of electricity from renewables than Wisconsin does, Table 4.19. The residential electricity rates paid in the State of Washington are the second lowest in the U.S. and Washington is also the nation's leader in renewable energy production. This comparison of Wisconsin to its neighboring states rates and their renewable energy production along with the favorable rates in Washington shows a cost-beneficial correlation between high renewable energy production and lower electricity rates.

Table 4.18 Electricity Rates Comparison (2011)

Jurisdiction	Residential Average Price (Cents per Kilowatt Hour)	Residential Average Monthly Bill (Dollars)	Commercial Retail Average Price (Cents per Kilowatt Hour)	Commercial Average Monthly Bill (Dollars)	Industrial Retail Average Price (Cents per Kilowatt Hour)	Industrial Average Monthly Bill (Dollars)
Idaho	7.87	82.5	6.49	323.89	5.10	1,443.12
Washington	8.28	88.41	6.96	497.24	4.09	3,417.73
North Dakota	8.58	98.46	6.81	450.33	6.24	6,171.01
Louisiana	8.96	120.84	7.69	555.09	5.69	7,880.02
Utah	8.96	70.61	6.96	503.23	5.10	4,228.60
Arkansas	9.02	106.27	7.56	406.96	5.63	2,434.40
Iowa	10.46	93.94	7.55	341.16	5.21	11,326.86
Minnesota	10.96	89.14	7.92	538.24	6.47	11,926.73
Ohio	11.42	104.86	9.65	594.58	6.12	13,943.61
Illinois	11.78	90.8	11.31	823.87	6.42	41,060.29
Wisconsin	13.02	92.39	9.57	532.08	7.33	31,570.22
Michigan	13.27	90.63	9.24	560.11	7.32	14,884.65
Vermont	16.26	93.19	12.93	428.53	9.83	52,503.39
New Hampshire	16.52	102.28	14.55	581.23	12.27	5,669.84
Alaska	17.62	114.42	14.46	723.13	15.71	13,935.58
Connecticut	18.11	134.07	16.86	1,257.12	13.24	8,508.16
New York	18.26	111.59	15.51	940.83	7.83	10,656.82
Hawaii	34.68	202.72	21.86	1,013.94	28.40	124,259.87
U.S.	11.72	110.14	10.26	636.36	6.82	7,739.60

Source: U.S. Energy Information Administration

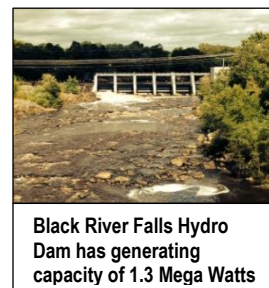
Table 4.19 Six Highest and Lowest Total Renewable Energy Net Generation States in Comparison to Six Midwest States in 2009

Nat'l Rank	State	Total	Hydro Electric	Bio Mass	Wind	Solar Thermal/PV	Geothermal	Wood and Derivative Fuels
1	Washington	77,977	72,933	167	3,572	-	-	1,305
2	California	53,428	27,888	2,468	5,840	647	12,853	3,732
3	Oregon	37,306	33,034	128	3,470	-	-	674
4	New York	32,082	27,615	1,665	2,266	-	-	536
5	Texas	22,133	1,029	429	20,026	-	-	649
6	Alabama	15,585	12,535	14	NA	-	-	3,035
11	Iowa	8,560	971	168	7,421	-	-	NA
14	Minnesota	7,546	809	887	5,053	-	-	796
27	Michigan	3,995	1,372	834	300	-	-	1,489
28	Wisconsin	3,734	1,394	519	1,052	-	-	769
30	Illinois	3,666	136	710	2,820	-	-	NA
45	Ohio	1,161	528	210	14	-	-	410
44	Connecticut	1,268	510	758	NA	-	-	1
46	New Jersey	992	32	928	21	11	-	-
47	Nebraska	883	434	66	383	-	-	NA
48	Hawaii	817	113	284	251	1	168	NA
49	Rhode Island	149	5	145	NA	-	-	NA
50	Delaware	126	NA	126	NA	-	-	NA

Source: U.S. Energy Information Administration (EIA)

The Region's 19 Electrical Utilities

The largest utility companies serving the region are Xcel Energy, Wisconsin Power and Light and Dairyland Power Cooperative (DPC). DPC is comprised of 25 Class A electric cooperatives in a four state area. Seven of these electric cooperatives are in the Mississippi River Region and five of the region's municipal utilities are Class D members of Dairyland Power Cooperative with power purchase agreements. The other five municipals have power purchase agreements with either Xcel Energy or Wisconsin Public Power Inc. (WPPI). Table 4.20 lists the electric utilities serving the Region.

**Table 4.20 Region's Electric Utilities**

Utility Name	Area Served in Region	Utility Name	Area Served in Region
1) Eau Claire Energy Coop (DPC)	Northwest Jackson County	11) Bangor Municipal Utility (Xcel)	Village of Bangor
2) Jackson Electric Coop (DPC)	Jackson, La Crosse, Monroe & Clark	12) Black River Falls Municipal Utility	City of Black River Falls
3) Oakdale Electric Coop (DPC)	Monroe and Jackson Counties	13) Cashton Municipal Electric (DPC)	Village of Cashton
4) Pierce Pepin Coop (DPC)	Pierce and Pepin Counties	14) LaFarge Municipal Electric Utility (DPC)	Village of La Farge
5) Riverland Energy Coop (DPC)	Buffalo, La Crosse, & Trempealeau Counties	15) River Falls Municipal Utility (WPPI)	City of River Falls
6) Scenic Rivers Energy Coop (DPC)	Crawford County	16) Trempealeau Municipal Electric (Xcel)	Village of Trempealeau
7) Vernon Electric Cooperative (DPC)	Vernon County	17) Viola Municipal Electric Utility (DPC)	Village of Viola
8) Wisconsin Power and Light	Crawford, Monroe and Eastern Vernon County	18) Westby Municipal Electric Utility (WPPI)	City of Westby
9) Xcel Energy	Parts of Buffalo, Jackson, La Crosse, Monroe, Pepin, Pierce and Vernon County	19) Whitehall Municipal Electric Utility (WPPI)	City of Whitehall
10) Arcadia Electric Utility (DPC)	City of Arcadia		

Source: Wisconsin Public Service Commission

The Region's Two Controversial Electric Transmission Lines

Electrical transmission lines ranging in size from 69 kilovolts (kV) to 345 kV carry electric energy from power plants to substations in local communities that reduce the high-voltage energy and transfer it to lower voltage distribution lines that carry the electric energy down streets and close to individual houses and businesses. Map 4.08 shows the location of transmission lines and distribution substations in the region, as well as the controversial CapX2020 Transmission Line and the Badger Coulee Transmission Line projects that are discussed in more detail below.

Table 4.21 Existing and Proposed Transmission Line

Owner	Location	Voltage Range	Status
Xcel Energy	Transmission lines in all MRRPC counties except Crawford	69-345 kV	In use
Dairyland Power Cooperative	All MRRPC Counties	69-161 kV	In use
American Transmission Co.	Crawford and Monroe Counties	69-161 kV	In use
CapX2020 Project	Buffalo, Trempealeau, La Crosse Counties	345 kV	Under Construction
ATC Badger Coulee Transmission Line Prj	Study area includes La Crosse, Jackson, Trempealeau, Monroe and Vernon counties	345 kV	Proposed

CAPX 2020 and Badger Coulee Transmission Lines

CAPX 2020 This double circuit capable 345 kilovolt (kV) transmission line is presently under construction. The transmission line will run between a new substation near Hampton, Minnesota traveling southeast to a new substation north of Pine Island, Minnesota (North Rochester) continuing east crossing the Mississippi River at Alma, Wisconsin. The line then heads southeast another 50 miles to the Briggs Road Substation near Holmen in La Crosse County, Map 4.08. The Hampton-Rochester-La Crosse CAPX2020 project consists of a 345kV line for 120-140 miles and a 161kV line for 15-18 miles. Typically 345 kV poles are between 140 and 170 tall, between 800 and 1,000 feet apart with a 150-foot right-of-way. The additional 161 kV line was completed between North Rochester and the existing Chester Substation east of Rochester, MN in August 2013. Construction of the 345 KV transmission line began in 2013 and is expected to be complete in 2015 with an estimated cost of \$2.1 billion. CAPX2020 filed a Certificate of Public Convenience and Necessity (CPCN) with the Wisconsin Public Service Commission and Wisconsin Department of Natural Resources in late December 2010 that was approved in May 2012, Map 4.08.

Badger Coulee On October 22, 2013 American Transmission Company (ATC) and Northern States Power Company submitted an application to the Public Service Commission for the Badger Coulee Transmission Project. This project involves construction of a 345 KV line running from the Briggs Road Substation in La Crosse County, Wisconsin (where the CAPX 2020 project terminates) to the Cardinal Substation, in Dane County, Wisconsin. Over the past two and a half years, Northern States Power Company (Xcel Energy) and ATC held public meetings to hear concerns about the proposed Badger Coulee Project. The Badger Coulee project comes with a price tag of over \$550 million and depending on the route; the line would run 159 to 182 miles along steel towers up to 180 feet high. If approved, construction would begin in 2016 and end in 2018, Map 4.08.

There are two proposed routes (Northern and Southern), both converging near Lyndon Station in Juneau County and then following similar paths into Madison. The southern route is the most direct route beginning from the Briggs Road substation in Holmen through Onalaska, West Salem, Bangor, through Rockland then dropping southeast following Hwy 27 south to Cashton, then heading east along the Monroe-Vernon county line traveling east through Juneau County intersecting with I-90 and then south to Lyndon Station following I-90 to Wisconsin Dells. The line then follows the existing transmission line to Portage and travels south through Columbia County into Dane County to the North Madison Substation in the Town of Vienna where it meanders its way through Dane County to the Cardinal Substation in the Town of Middleton. The northern route, a longer alternative runs north through the Trempealeau County communities of Ettrick and Blair, cutting east to Black River Falls. After intersecting with I-94, the new 345 kV line heads southeast adjacent to the interstate (I-94 and I-90/I-94) for approximately 38.6 miles. Northwest of the village of Camp Douglas, the new line departs the interstate corridor to avoid airspace restrictions and travels south and east cross country until it intersects the interstate corridor southeast of Camp Douglas. The line then heads southeast along the interstate corridor to the I-90/I-94 & USH 12 interchange to Lyndon Station and on to Wisconsin Dells where it departs the interstate corridor traveling south and east cross country for approximately 1 mile until it again intersects the interstate. The line then travels south through Columbia County into Dane County to the North Madison Substation in the Town of Vienna and then on to the Cardinal Substation in the Town of Middleton. The Wisconsin Public Service Commission is expected to act on the Badger Coulee Transmission Line application in late 2014.

Proponents of building the line contend construction of the project would avoid spending hundreds of millions in upgrades and provide lower-cost energy to local customers. They also emphasize the higher voltage lines would be more efficient, carry more energy and would benefit local communities by alleviating stress on lower voltage lines that deliver power locally. Another benefit is the line could provide a useful conduit to move renewable energy into the region and provide local utilities with a connection to other energy markets to buy and sell electricity to help moderate costs for energy consumers. The line would also provide more efficiency in transfer of power between Minnesota and Wisconsin, and enhance the ability to import electricity from wind farms west of Wisconsin.

Opponents of the project are concerned the project is about increasing access to the wholesale energy market so that utilities can trade their energy beyond Wisconsin, and Wisconsin becomes a through-put state. They stress energy efficiency through locally generated power would be a better way and would create jobs locally and reduce greenhouse gas emissions. They also stress declining demand for electricity due to conservation measures and increased use of renewables. According to the Citizens Energy Task Force, 90 plus municipalities have signed resolutions asking the Public Service Commission and the utilities to give equal consideration to non-transmission alternatives. Many municipalities are concerned about the adverse effect the line could have on the natural assets and scenic beauty of the region.

The Region's Top Five Sources for Heat are Natural Gas, Propane, Electricity, Wood and Fuel Oil

Natural Gas Over 48 percent of the occupied households in the region or about 61,000 homes use natural gas as their primary heat source, Table 4.22. Natural gas is provided to the region by three pipeline companies. These companies and the sources of their natural gas are listed below. (Natural Gas Pipeline Company and Guardian Pipeline Company also serve Wisconsin but do not serve the Mississippi River Region):

- ANR, this pipeline connects markets in Wisconsin, Michigan, Illinois and Ohio with supply in Texas, Oklahoma and the Gulf of Mexico.
- Viking Transmission Company - Viking connects with major pipeline systems like TransCanada, Northern Natural Gas Company, Great Lakes Transmission and ANR, allowing it to serve markets in North Dakota, Minnesota and Wisconsin.
- Northern Natural Gas Company serves the market areas of Nebraska, South Dakota, Iowa, Minnesota and Wisconsin, Illinois and Michigan from its supply area of Texas, Oklahoma, and Kansas.

Bottled Tank or LP Gas is the second most popular heating fuel in the region with about 19% of occupied households in the region using it as their primary heat source. Buffalo County on a percentage basis was the highest user of LP gas with over 40% of the households using it, Table 4.22

Electricity is the third most popular heating fuels with about 16% of all occupied households in the region using it as their primary heating source. La Crosse County was the most heavily dependent upon it with about 22% of its households using it, Table 4.22.

Wood is the fourth most popular heat source with 9% of all occupied households in the region using it as their primary heat source. Vernon County was the most heavily dependent upon it with about 20% of its occupied households using it, Table 4.22. Wisconsin Energy Statistics (2010) provided information on estimated biomass resources available in each county. Pierce County and Trempealeau counties ranked highest at an estimated 150-200 tons per square kilometer per year; Buffalo, Crawford, Pepin, and Vernon had an estimated 100-150 tons; and Jackson, La Crosse and Monroe counties ranked the lowest at an estimated 50-100 tons per year.

Fuel Oil is the fifth most popular heat source with 6% of all occupied households in the region using it as their primary heat source. Buffalo County was the most heavily dependent upon it with 12% of its occupied households using it, Table 4.22.

Solar, Coal and Other Solar, coal and other sources of heating fuel made up the final 2% of heating sources in the region, Table 4.22.

Table 4.22 Mississippi River Region's Energy Sources for Heat – 2012

County	2012 Total Occupied Households	Bottled, Tank or LP Gas	Electricity	Fuel Oil, Kerosene Etc.	Coal or Coke	Wood	Utility Gas	Solar Energy	Other Fuel	No Fuel Used	Total Households	%
Buffalo	5,706	2,315	770	690	0	811	1,006	0	80	34	5,706	100.0
Crawford	6,841	1,270	721	315	0	1,188	3,288	0	59	0	6,841	100.0
Jackson	8,167	2,649	1,123	633	0	1,095	2,531	12	103	21	8,167	100.0
La Crosse	46,058	2,634	9,931	1,875	0	1,386	29,730	0	415	87	46,058	100.0
Monroe	17,444	4,103	2,376	896	3	2,015	7,757	3	243	48	17,444	100.0
Pepin	3,017	1,124	382	273	0	474	728	0	32	4	3,017	100.0
Pierce	14,975	4,019	2,622	500	3	908	6,596	11	212	104	14,975	100.0
Trempealeau	11,673	2,104	1,458	1,101	6	1,428	5,453	12	89	22	11,673	100.0
Vernon	11,737	3,359	1,219	879	0	2,328	3,773	10	161	8	11,737	100.0
MRRPC Reg.	125,618	23,577	20,602	7,162	12	11,633	60,862	48	1,394	328	125,618	100.0
Wisconsin	2,286,339	246,965	318,867	82,998	290	104,207	1,503,766	472	20,434	8,340	2,286,339	100.0
United	115,226,802	5,797,150	40,920,801	7,444,637	133,994	2,398,110	56,946,717	42,747	501,131	1,041,515	115,226,802	100.0

Source: 2008-2012 Community Survey, 5 Year Estimates, House Heating Fuel

The following is a list of solar thermal installations generating heat in the region.

Table 4.23 Mississippi River Region Solar Thermal Installations

Solar Thermal Installation	Type/Owner	Location	Size	Year
Prairie du Chien Hospital	Business	Prairie du Chien	1,680 sq. ft.	2010
Vernon County Jail	Government	Viroqua	640 sq. ft.	2011
Gund Brewery Loft	Apartments	La Crosse	960 sq. ft.	2007
Law Enforcement Ctr, La Crosse	Government	La Crosse	1,280 sq. ft.	2010
UW-La Crosse Centennial Hall	School	La Crosse	960 sq. ft.	2011
Capacity for Solar Thermal			5,520 sq. ft	

Solar Thermal (500 sq. ft. & larger)

The following is a list of the natural gas service providers in the region.

Table 4.24 Region's Natural Gas Utilities

Utility Name	Areas Served in Region
Northern States Power	La Crosse County: Cities of La Crosse and Onalaska, Village of Holmen; and Towns of Barre, Campbell, Greenfield, Holland, Medary, Onalaska and Shelby. Monroe County: Fort McCoy. Pierce County: Village of Maiden Rock; and Towns of El Paso, Maiden Rock and Salem.
Madison Gas & Electric	Crawford County: City of Prairie du Chien; Villages Bell Center, Eastman, Gays Mills, Mt. Sterling, Soldiers Grove and Wauzeka; and Towns of Bridgeport, Clayton, Eastman, Haney, Prairie du Chien, Seneca, Utica and Wauzeka. Vernon County: City of Viroqua; Village of Readstown; and Towns of Liberty, Kickapoo, and Viroqua.
Midwest Natural Gas	Buffalo County: City of Mondovi; and Towns of Glencoe, Naples and Mondovi. La Crosse County: Village of Holmen and Towns of Barre, Greenfield, Holland and Onalaska. Trempealeau County: Cities of Arcadia; Galesville, Independence, and Whitehall; Villages of Elewa, Ettrick, Strum; and Trempealeau; and Towns of Arcadia, Burnside, Caledonia, Dodge, Elewa, Ettrick, Gale, Hale, Lincoln, Trempealeau and Unity.
Wisconsin Gas	Jackson County: City of Black River Falls; Villages of Alma Center, Hixton, Merrillan, and Taylor; and Towns of Adams, Albion, Alma, Brockway, Curran, Hixton, and Springfield. La Crosse County: Villages of Bangor, Rockland and West Salem; and Towns of Bangor, Burns and Hamilton. Monroe County: Cities of Sparta and Tomah; Villages of Cashton and Wyeville; and Towns of Adrian, Angelo, Byron, Greenfield, Jefferson, Lafayette, LaGrange, Leon, Sparta, and Tomah. Pepin County: City of Durand and Towns of Durand, Waterville and Waubeek. Pierce County: City of Ellsworth; Villages of Plum City and Spring Valley; and Towns of Ellsworth, Gillman, Hartland, Isabelle, Spring Lake, Trenton, and Union. Trempealeau County: Cities of Blair and Osseo; Village of Pigeon Falls; and Towns of Pigeon, Preston, and Sumner.
St. Croix Valley Natural Gas Company	Pierce County: Cities of Prescott and River Falls; and Towns of Clifton and River Falls.

Source: Wisconsin Public Service Commission

Region's Energy Cost Savings With Wood Pellets

A recent analysis by the Mississippi River Regional Planning Commission found that 51,341 occupied households in the region or 41% use the higher priced heating fuels of propane, fuel oil and electricity. The analysis based on equivalent BTU use basis found that if just one in five of the households using these more expensive fossil fuels switched to wood pellets as a heating source the combined regional savings would total over \$8 million annually. Switching would also induce the consumption of 36,000 tons of pellets that would generate pellet sales revenue of \$7 million annually and create over 80 jobs, Table 4.25.

Table 4.25 Regional Household Heat Savings by Switching from Propane, Fuel Oil, and Electricity to Wood Pellets

County Higher Cost Fossil Fuels	Occupied House-holds in County Using Propane, Fuel Oil or Electricity (1)	20% of Occupied Households Using Higher Cost Fuels	Household Yearly Savings by Burning Wood Pellets vs Higher Cost Fossil Fuels \$ (2)	Estimated Savings if 20% of Occupied Households Switched to Wood Pellets \$ (3)	Induced Pellet Demand in Tons From Switching (4)	Pellet Sales From Induced Pellet Demand \$ (5)	Number of Jobs From Induced Pellet Demand (6)	Earnings From Induced Pellet Demand \$ (7)
Buffalo	3,775	755.00	P = \$519 FO = \$1,021 E = \$1,016	537,659.00	2,658.00	531,600.00	8	172,454
Crawford	2,306	461.20	"	342,656.20	1,623.42	324,684.80	4	107,920
Jackson	4,405	881.00	"	632,418.40	3,101.12	620,224	6	190,104
La Crosse	14,440	2888.00	"	2,674,263.40	10,165.76	2,033,152.00	30	818,030
Monroe	7,375	1475.00	"	1,091,657.80	5,192.00	1,038,400.00	8	331,834
Pepin	1,779	355.80	"	250,040.20	1,252.42	250,483.20	5	81,673
Pierce	7,141	1428.20	"	1,052,062.60	5,027.26	1,005,452.80	9	317,442
Trempealeau	4,663	932.60	"	739,485.00	3,282.75	656,550.40	7	207,674
Vernon	5,457	1091.40	"	775,856.80	3,841.73	768,345.60	7	257,108
Region	51,341	10,268.20	"	8,096,099.40	36,144.06	7,228,812.80	82	2,564,502
State of WI	648,830	129,766.00	"	107,376,933.00	456,776.32	91,355,264.00	1,140	46,585,476
U.S.	54,162,588	10,832,517.60	"	10,437,045,808.60	38,130,461.95	7,626,092,390.40	236,504	11,083,412,897

- (1) Higher cost fuels are classified as propane, fuel oil and electricity
- (2) Annual difference in cost of burning wood pellets on a per-million BTU basis in comparison to higher cost fossil fuels includes installed costs and October 2013 fuel prices. P = Propane, FO = Fuel Oil E= Electricity
- (3) Column D multiplied by column E
- (4) 3.52 tons per household per year multiplied by column D
- (5) Based on pellet sales of \$ 200 a ton multiplied by column G
- (6) Job impact based on increased sales shown in column H inputted into Economic Modeling Specialists Int'l – EMSI Software for each county.
- (7) Earnings impact based on input of increased sales shown in column H inputted into Economic Modeling Specialists Int'l – EMSI Software for each county
- (8) Households only, businesses and industries not included 1.19

Analysis of the Region's Energy Sources

Location of the energy resource, amount of the resource available, its dependability, its energy potential, production costs, economic impact, land use impact, transport costs and environmental impacts are all factors influencing its use. Table 4.26 below analyzes the benefits and costs of the various energy sources used in the region and Table 4.27 provides a rating system that analyzes them based on criteria that favor use of regional energy sources that are indigenous to the Mississippi River Region. The results indicating that wind, solar, hydro, biogas and solid biomass show that they are the most cost beneficial with coal, propane and fuel oil being the least cost beneficial.

Table 4.26 Costs and Benefit Analysis of Energy Resources

Energy Source	Benefits/Strengths/Opportunities	Costs/Weaknesses/Threats
Coal	<ul style="list-style-type: none"> • Great supply • Long term contracts in place • High BTU Value • Improvements in clean coal technology 	<ul style="list-style-type: none"> • High rail delivery costs • Susceptible to higher rate hikes • Low economic impact • High CO₂ emissions • Not indigenous
Natural Gas	<ul style="list-style-type: none"> • High BTU Value • Best efficiency of all fossil fuels • Increased supply, recently, especially due to advances in exploration and extraction technology • Fewer greenhouse gas emissions than other fossil fuels • Versatility: use in heating, transportation, manufacturing, etc. • Because of gaseous state, does not pollute soils or water • Convenience: infrastructure widely exists to distribute it; and it can be used for home appliances other than heaters 	<ul style="list-style-type: none"> • Supply influenced by global markets and geopolitical factors • Destructively flammable and highly toxic; and danger is increased because it is naturally colorless and odorless • Releases greenhouse gases during combustion • Unburned gas contains dangerous levels of methane • Increased recent supply is due to hydraulic fracturing (“fracking”), a technique that has contentious environmental effects, and whose seismic consequences are not well understood
Propane	<ul style="list-style-type: none"> • Infrastructure widely exists to distribute it • Lower price than electricity • Lower greenhouse gas emissions than some other fossil fuels • Versatility: it can be used as a vehicle fuel; it contributes to longer engine life, gets better mileage, and is often less expensive than gasoline • Portability allows it to be used in remote places • Partners well with other forms of energy (especially renewables) 	<ul style="list-style-type: none"> • Supply was not able to reach demand in 2014 causing prices to triple in some locations • Flammable • Higher price than natural gas and some other fossil fuels • Stored in tanks at the home or business – not part of integrated grid, meaning that there is not a constant, stable supply of fuel. • Risk of hazardous spill during transportation
Fuel Oil, Diesel or Gasoline	<ul style="list-style-type: none"> • Heating oil is not flammable in a liquid state • Modern oil heating systems operate with efficiencies close to those of natural gas • Modern oil heating systems release greenhouse gas emissions similar to those of natural gas • Higher burning temperature of heating oil means that rooms and water heat faster with oil than with natural gas. • Not connected to the energy grid, because fuel is stored on-site in a tank; property owners enjoy some independence if, for example, power is disrupted due to a natural disaster 	<ul style="list-style-type: none"> • Gasoline and diesel are dangerously flammable • Price is volatile, subject to international markets, and geopolitical instability • Often much higher cost than other fossil fuels • Delivered to storage tanks at the home – not part of integrated grid, meaning that there is not a constant, stable supply of fuel • Releases greenhouse gases during combustion • Risk of hazardous spill during transportation

Energy Source	Benefits/Strengths/Opportunities	Costs/Weaknesses/Threats
Wind	<ul style="list-style-type: none"> Power source is free and universally available – no need for extraction or generation No post-construction CO₂ emissions Land under turbines is still suitable for other uses (such as agriculture) Allows for power-generation without connection to a centralized grid Avoids price volatility of international markets 	<ul style="list-style-type: none"> Inconsistent electrical production due to variation in wind strength Noise is generated, along with electricity Some find the structures to be unsightly High initial capital cost for construction and for ongoing storage of energy (if batteries are used as part of the system) Bird and bat strikes Requires large tracts of land
Solar	<ul style="list-style-type: none"> Power source is free and universally available No post-construction CO₂ emissions Allows for power-generation without connection to a centralized grid Avoids price volatility of international markets 	<ul style="list-style-type: none"> Inconsistent electrical production due to variation in sunshine High initial capital cost for construction and for ongoing storage of energy in batteries Requires large tracts of land to be covered with photovoltaic cells, reducing that land's usefulness for other purposes (unless elevated).
Hydro	<ul style="list-style-type: none"> Renewable energy source No post-construction CO₂ emissions Comparatively lower cost energy source Miss. River has capacity to power 130,000 homes Moderate economic impact 	<ul style="list-style-type: none"> Will impact fish and wildlife habitat Difficulty reaching agreement on hydropower among federal and state agencies, sportsmen, and environmental groups. Limited locations where it can be installed Inconsistent electrical production due to variation in precipitation and water levels
Biogas	<ul style="list-style-type: none"> Renewable source Allows for power-generation without connection to a centralized grid Avoids price volatility of international markets Small initial capital costs, great for small-scale adoption Low emissions of greenhouse gases By-products useful as natural fertilizer Use of waste materials for fuel decreases amount of waste in landfills Region's Dairy farms are already supplying two methane digesters in the region. Curbs use of land spreading manure that that can create high phosphorus levels in streams and e-coli infections and diseases Methane digesters are manufactured in the region 	<ul style="list-style-type: none"> Low efficiency, and greater efficiencies very difficult to achieve Shipping Manure to a digester can be costly and poses environmental and safety problems if accident occurs Storing manure for processing causes odors Digesters can leak
Solid Biomass	<ul style="list-style-type: none"> Renewable energy source Price stability, especially during the heating season Involves release of biogenic carbon as opposed to added geologic carbon Modern efficiencies allow for low emissions of greenhouse gases Use of waste materials for fuel decreases amount of waste in landfills Incentive to keep forests sustainably managed for biofuel use can be a powerful anti-sprawl motivation, and can preserve scenic areas that are important in tourism economies 	<ul style="list-style-type: none"> Difficulty of harvesting in some areas will increase costs Only accepting materials and residue from sustainably managed croplands and forests must be instituted to prevent depletion of the resource

Table 4.27 Rating Energy Sources in the Mississippi River Region

Rating System: 1= The energy source doesn't or minimally meets the factor, 2 = The energy source moderately meets the factor, 3 = The energy source strongly or highly meets the factor

Regional Energy Source Factors	Coal	Natural Gas	Propane	Fuel Oil, Gas or Diesel Fuel	Wind	Solar	Hydro	Biogas	Solid Biomass
Is Indigenous to the Region	1	1	1	1	3	3	3	3	3
Is abundant or dependable	3	3	1	3	1	1	2	2	2
Has a high energy potential	3	3	3	3	2	2	2	2	2
Has low production cost	1	1	1	1	3	3	2	2	2
Region can benefit economically from its production and distribution	1	1	1	1	3	3	2	3	3
Has low transportation costs	1	2	2	1	3	3	3	2	2
Has low environmental impacts	1	2	2	1	3	3	2	2	2
Total	11	13	11	11	18	18	16	16	16

Renewable Energy Standards and Goals

Twenty-nine states in the U.S. have approved renewable energy standards. The following table summarizes the standards of five Midwest states.

Table 4.28 Midwest States Renewable Energy Standards

State	Renewable Energy Standard
Illinois	25% by compliance year 2025 – 2026
Iowa	105 MW of renewable generating capacity by 1999
Michigan	10% by 2015 and two larger utilities must increase to a certain MW by 2015
Minnesota	30 percent by 2020 with at least 24 percent of sales from wind and no more than 1 percent sales from solar
Wisconsin	10% by year-end 2015, and each utility must increase renewable energy 6 percent over its baseline

Location, Use and Capacity of Police, Fire and Rescue Facilities, Health Care, Libraries, and Schools

According to the 2008 Census of State and Local Law Enforcement Agencies (CSLLEA) and the 2007 Law Enforcement Management and Administrative Statistics (LEMAS) survey conducted by the United States Department of Justice—Bureau of Justice Statistics (BJS), municipal police departments nation-wide had an average of 2.3 full-time sworn law enforcement officers per 1,000 residents. BJS counts tribal law enforcement agencies in its statistics. Most municipal law enforcement agencies in the MRRPC Region have a rate of sworn officers per 1,000 residents that is lower than the national average.

In the MRRPC Region there are over sixty law enforcement offices (Table 4.29). Each county maintains a Sheriff's office for police protection and numerous small cities and villages receive police protection through the county Sheriff's offices. Forty-three cities and villages maintain their own law enforcement offices for police protection. Two towns (Campbell and Shelby) both located in La Crosse County have their own law enforcement offices. Law enforcement protection varies from .9 Sworn Law Enforcement Employees per 1,000 population to 9 Sworn Law Enforcement Employees per 1,000 population. The vast majority of communities provide 1 to 3 Sworn Law Enforcement Employees per 1,000 population. To help maintain adequate police protection agencies fall under the statewide mutual aid agreement.

Table 4.29 Law Enforcement Facilities

Law Enforcement Facilities			Law Enforcement Facilities		
Name	Municipality	(1) 2010 FT Sworn Law Enforcement Employee Rates /1000	Name	Municipality	2010 FT Sworn Law Enforcement Employee Rates /1000 population
Buffalo County Police Departments			Pepin County Police Departments		
Buffalo County Sheriff's Office	Alma	1.3	Pepin County Sheriff's Office	Durand	1.5
Alma Police Department	Alma		Durand Police Department	Durand	1.6
Fountain City Police Department	Fountain City	1.1	Pepin Police Department	Pepin	1.1
Mondovi Police Department	Mondovi	1.6			
Crawford County Police Departments			Pierce County Police Departments		
Crawford County Sheriff's Office	Prairie du Chien	2.7	Pierce County Sheriff's Office	Ellsworth	2.1
Prairie du Chien Police Department	Prairie du Chien	2.3	Ellsworth Police Department	Ellsworth	1.6
Jackson County Police Departments			Village of Elmwood Police Dept.	Elmwood	
Jackson County Sheriff's Office	Black River Falls	1.2	Prescott Police Department	Prescott	1.8
Black River Falls Police Department	Black River Falls	1.8	River Falls Police Department	River Falls	1.5
Ho-Chunk Nation Police Department	Black River Falls		UW-River Falls Police Department	River Falls	
Village of Melrose Police Dept.	Melrose		Village of Spring Valley Police Dept.	Spring Valley	
Merrillan Police Department	Merrillan				
WisDOC Jackson Corr Institute	Black River Falls		Trempealeau County Police Departments		
La Crosse County Police Departments			Trempealeau County Sheriff's Office	Whitehall	1.5
La Crosse County Sheriff's Office	La Crosse	1.6	Arcadia Police Department	Arcadia	2.1
Bangor Police Department	Bangor	1.4	Blair Police Department	Blair	1.6
Campbell Police Department	La Crosse	1.1	Eleva Police Department	Eleva	1.6
Holmen Police Department	Holmen	1.1	Ettrick Police Department	Ettrick	
La Crosse Police Department	La Crosse	1.7	Galesville Police Department	Galesville	
La Crosse Mun. Airport Police Dept	La Crosse		Independence Police Department	Independence	1.6
UW La Crosse Police Dept	La Crosse		Osseo Police Department	Osseo	2.5
Onalaska Police Department	Onalaska	1.5	Strum Police Department	Strum	9
Shelby Police Department	La Crosse		Trempealeau Police Department	Trempealeau	1.1
West Salem Police Department	West Salem	1.2	Whitehall Police Department	Whitehall	2.5
Monroe County Police Departments			Vernon County Police Departments		
Monroe County Sheriff's Department	Sparta	0.9	Vernon County Sheriff's Department	Viroqua	1.3
Cashton Police Department	Cashton	1.9	Coon Valley Police Department	Coon Valley	1.4
Dept of Veterans Affairs Police Dept	Tomah		Hillsboro Police Department	Hillsboro	1.5
Kendall Marshal's Office	Kendall		La Farge Police Department	La Farge	
Norwalk-Wilton Police Department	Norwalk		Ontario Police Department	Ontario	
Sparta Police Department	Sparta	2	Readstown Police Department	Readstown	2.7
Tomah Police Department	Tomah	2.3	*Viola Police Department	Viola	
Warrens Police Department	Warrens		Viroqua Police Department	Viroqua	2.1
			Westby Police Department	Westby	1.4

Wisconsin Dept of Justice Law Enforcement Directory, July 2011 and Office of Justice Assist. - 2010 Law Enforcement Employees in Wis., April 2011

In the MRRPC Region there are eighty fire and rescue facilities and seventy-seven fire and rescue departments (see Table 4.30). The majority of fire and rescue departments are volunteer departments or employ a fire chief and/or assistant to manage the volunteer force. The City of La Crosse and Fort McCoy employ fulltime fire department staff. Mutual aid for fire departments, ambulance, and first responders varies, throughout the region and this cooperation helps ensure adequate fire and rescue protection for the region's resident today and into the future.

Table 4.30 Fire and Rescue Facilities

Fire and Rescue Facilities	
Name	Municipality
Buffalo County Fire Departments	
Alma Volunteer Fire Department	Alma
Fountain City Fire Department	Fountain City
Mondovi Fire Department	Mondovi
Nelson Volunteer Fire Company Inc.	Nelson
Tri Community Fire Department	Buffalo City
Waumandee - Montana Volunteer Fire Dept.	Cochrane
Crawford County Fire Departments	
Bridgeport Volunteer Fire Department	Prairie du Chien
Eastman Volunteer Fire Department	Eastman
Ferryville Volunteer Fire Department	Ferryville
Gays Mills Volunteer Fire Department	Gays Mills
Prairie du Chien Fire Department	Prairie Du Chien
Seneca Volunteer Fire Department	Seneca
Soldiers Grove Fire Department	Soldiers Grove
Wauzeka Volunteer Fire Department	Wauzeka
Jackson County Fire Departments	
Alma Center Volunteer Fire Department	Alma Center
Black River Falls Fire Department	Black River Falls
City Point Volunteer Fire Dept.	Pittsville
Hatfield Fire Department	Merrillan
Hixton Volunteer Fire department	Hixton
Melrose Volunteer Fire Department	Melrose
Merrillan Volunteer Fire Department	Merrillan
Taylor Volunteer Fire Department	Taylor
La Crosse County Fire Departments	
Bangor -Burns Volunteer Fire Department	
Campbell Township Fire Department	La Crosse
Farmington Volunteer Fire Department	Mindoro
Holmen Area Fire Department	Holmen
City of La Crosse Fire Station #1	La Crosse
City of La Crosse Fire Station #2	La Crosse
City of La Crosse Fire Station #3	La Crosse
City of La Crosse Fire Station #4	La Crosse
Onalaska Fire Department	Onalaska
Shelby Fire Department	La Crosse
West Salem Volunteer Fire Department	West Salem
Monroe County Fire Departments	
Cashton Volunteer Fire Department	Cashton
Fort McCoy Fire Department	Fort McCoy
Kendall Fire Department	Kendall
Lincoln Township Fire Department	Warrens
Norwalk Fire Department	Norwalk
Oakdale Area Fire Association	Tomah
Sparta City Fire Department	Sparta
Sparta Rural (EVRS) Fire Department	Sparta
Tomah Volunteer Fire Department	Tomah
VA. Fire Department	Tomah
Wilton Volunteer Fire Department	Wilton

Fire and Rescue Facilities	
Name	Municipality
Pepin County Fire Departments	
Durand City Volunteer Fire Department	Durand
Durand Rural Volunteer Fire Department	Durand
Pepin Fire Department	Pepin
Lund Fire Department	Stockholm
Pierce County Fire Departments	
Bay City Fire Department	Bay City
Ellsworth Fire Service Association	Ellsworth
Elmwood Area Fire Department INC	Elmwood
Plum City/Union Fire Department	Plum City
Prescott Fire and Rescue	Prescott
Spring Valley Fire Department	Spring Valley
River Falls Fire Department	River Falls
Trempealeau County Fire Departments	
Arcadia/Glencoe Fire Dept.	Arcadia
Blair/Preston Volunteer Fire Department	Blair
Dodge Volunteer Fire Department	Dodge
Eleva Volunteer Fire Department	Eleva
Ettrick Volunteer Fire Department	Ettrick
Hale Township Fire Department	Whitehall
Galesville Area Fire Department	Galesville
Independence Volunteer Fire Department	Independence
Osseo Rural Fire Department	Osseo
Pigeon Falls Volunteer Fire Department	Pigeon Falls
Strum /Unity Volunteer Fire Department	Strum
Trempealeau Volunteer Fire Department	Trempealeau
Whitehall Volunteer Fire Department	Whitehall
Vernon County Fire Departments	
Coon Creek Fire Fighters Association	Coon Valley
DeSoto Volunteer Fire Department	De Soto
Genoa Volunteer Fire Department	Genoa
Hillsboro Volunteer Fire Department	Hillsboro
La Farge Fire Department	La Farge
Ontario Fire Department	Ontario
Readstown Volunteer Fire Dept.	Readstown
Stoddard/Bergen Fire Dept.	Stoddard
Viola Volunteer Fire Department	Viola
Viroqua Fire Department	Viroqua
Westby-Christiana Fire Protection District	Westby
Wheatland Volunteer Fire Department	De Soto

Source: Wis. Department of Safety and Professional Services

The MRRPC Region is home to two major regional medical centers in La Crosse — Gundersen Medical Center and Mayo Clinic Health System, a Veterans Administration hospital in Tomah, and 10 other hospitals, totaling almost 900 beds (see table 4.31). Every county in the Region, except Buffalo County, has at least one hospital with 18 beds. The MRRPC Region has 42 clinics, many of which are operated by the Gundersen Medical Center and Mayo Health System hospitals. Every county in the Region has at least two clinics. Finally, there are 33 licensed residential care facilities in the Region. Every county has at least one licensed residential care facility with 40 beds.

Table 4.31 Health Care Facilities

Hospitals				
Name	Municipality	Bed Net Count	Accredited	Subtype
Crawford County				
Prairie du Chien Memorial Hospital	Prairie du Chien	25	Yes	Critical
Jackson County				
Black River Memorial Hospital	Black River Falls	25	Yes	Critical
La Crosse County				
Mayo Clinic Health System	La Crosse	331	Yes	Short Term
Gundersen Health Medical Center	La Crosse	325	Yes	Short Term
Monroe County				
Mayo Health Systems Hospital-Sparta	Sparta	25	Yes	Critical
Tomah Memorial Hospital	Tomah	25	Yes	Critical
Tomah VA Hospital	Tomah			
Pepin County				
Chippewa Valley Hospital	Durand	25	No	Critical
Pierce County				
River Falls Area Hospital	River Falls	25	Yes	Critical
Trempealeau County				
Luther Midelfort Oakridge-Osseo	Osseo	18	Yes	Critical
Tri-County Memorial Hospital, Inc.	Whitehall	25	No	Critical
Vernon County				
St. Joseph's Health Services Inc.	Hillsboro	25	No	Critical
Vernon Memorial Hospital	Viroqua	25	No	Critical
MRRPC Region		899		
State of Wisconsin		18,450		

Wisconsin Dept. of Health Services - Hospital Directory 6/11

Clinics
Buffalo County
2 clinics: 1) Mayo Clinic Health System Lake City - Alma Clinic, Alma and 2) Luther Midelfort Oakridge, Mondovi
Crawford County
3 clinics: Mayo Clinic Health System - Prairie du Chien and Gundersen Health Prairie du Chien Clinic; Kickapoo Valley Medical Clinic; Soldiers Grove
Jackson County
2 clinics: Ho Chunk National Health Care Center, Black River Falls and Krohn Clinic, Black River Falls
La Crosse County
7 clinics: Mayo Clinic Health System – Health Care Clinics, (2) La Crosse, Holmen and Onalaska; St. Claire Health Mission, La Crosse; Gundersen Health System Clinics, La Crosse and Onalaska
Monroe County
6 clinics: Warrens Walk-In Clinic, Warrens; Gundersen Health Medical Centers, Sparta and Tomah; Scenic Bluffs Community Health, Cashton and Norwalk; Mayo Clinic Health System - Health Care Clinic-Lake Tomah Clinic, Tomah
Pepin County
2 clinics: Durand Medical Clinic, Durand; and Castleberg Clinic, Durand
Pierce County
5 clinics: Western Medical Associates - Ellsworth, Spring Valley and River Falls; Fairview Ellsworth Clinic, Ellsworth; Allina Medical Clinic, Prescott
Trempealeau County
8 clinics: Mayo Clinic Health System - Health Care Clinic, Arcadia; Gundersen Medical Centers - Blair, Independence, and Whitehall; Marshfield Clinics - Arcadia and Osseo; Buffalo River Clinic, Osseo; Ashley Wellness Center, Arcadia
Vernon County
7 Clinics: Gundersen Health Clinics - Hillsboro and Viroqua; La Farge Medical Clinic; Hirsch Medical Clinic, Viroqua; Bland Clinic, Westby; Viola Health Services, Viola; St. Joseph Family Clinic, Hillsboro

Licensed Residential Care Facilities		
Name	Municipality	Beds
Buffalo County		
American Lutheran Home Mondovi	Mondovi	40
Crawford County		
Prairie Health Care Center	Prairie du Chien	64
Sannes Skogdalen	Soldiers Grove	66
Jackson County		
Family Heritage Care Center	Black River Falls	50
Pine View Care Center	Black River Falls	95
La Crosse County		
Bethany Riverside	La Crosse	123
Benedictine Manor of La Crosse	La Crosse	80
Mulder Health Care Facility	West Salem	93
Onalaska Care Center	Onalaska	104
Bethany St. Joseph Care Center	La Crosse	160
Hillview Health Care Center	La Crosse	199
Ravenwood Behavioral Health	West Salem	10
Lakeview Health Center	West Salem	120
Monroe County		
Morrow Memorial Home	Sparta	99
Rolling Hills Rehabilitation Center	Sparta	90
Tomah Nursing and Rehabilitation Center	Tomah	74
Pepin County		
Oakview Care Center	Durand	50
Pepin Manor	Pepin	50
Pierce County		
Ellsworth Care Center	Ellsworth	60
Heritage of Elmwood Nursing Home	Elmwood	46
Plum City Care Center	Plum City	50
Prescott Nursing & Rehab. Community	Prescott	65
Spring Valley Health Care Center	Spring Valley	50
Trempealeau County		
Grand View Care Center	Blair	98
Marinuka Manor	Galesville	59
Mayo Clinic Health Sys./Oakridge Inc.	Osseo	21
Pigeon Falls Health Care Center	Pigeon Falls	37
Strum Nursing Home/Crystal Lake Manor	Strum	46
Trempealeau Cnty Health Care Ctr	Whitehall	34
Tri-County Memorial Hosp. Nursing Home	Whitehall	50
Vernon County		
Bethel Home and Services, Inc.	Viroqua	90
Vernon Manor	Viroqua	98
Norseland Nursing Home	Westby	59
MRRPC Region		2,430

The MRRPC Region has a total of 49 libraries and branches that serve all nine counties. The libraries are members of one of three library systems throughout the Region: the Indianhead Federated Library System (Pepin and Pierce Counties), the Southwest Wisconsin Library System (Crawford County), and the Winding Rivers Library System (Buffalo, Jackson, La Crosse, Monroe, Trempealeau, and Vernon Counties). Libraries within these systems share materials automatically with other members. Materials from outside the systems, including from some libraries outside the state of Wisconsin, can sometimes be borrowed through inter-library loan, which is delivered via US Mail. The City of La Crosse has the largest library, measured by annual number of circulation, annual library visits, and annual users of public internet computers across its three branches.

Table 4.32 Libraries

Library Name	Municipality	Total Service Population	Annual Circulation	Annual Library Visits	Annual Users of Public Internet Computers
Buffalo County					
Alma Public Library	Alma	6,547	22,561	8,840	1,525
Mondovi Public Library	Mondovi	7,745	37,310	16,099	3,490
Crawford County					
Gays Mills Public Library	Gays Mills	2,300	12,995	5,605	1,936
Joseph W. & Emma L. Wachute Memorial Library	Prairie du Chien	12,286	74,386	34,500	9,991
Soldiers Grove Public Library	Soldiers Grove	2,907	15,711	8,897	4,444
Jackson County					
Black River Falls Public Library	Black River Falls	19,364	98,423	57,200	17,326
Taylor Memorial Library	Taylor	941	4,198	2,842	1,044
La Crosse County					
La Crosse County Library (5 branches)	Bangor, Campbell, Holmen, Onalaska, West Salem	61,418	440,781	285,282	48,406
La Crosse Public Library (3 branches)	La Crosse	51,900	1,214,086	709,825	143,819
Monroe County					
Cashton Memorial Library	Cashton	2,003	13,600	7,280	1,495
Kendall Public Library	Kendall	1,410	10,099	3,475	3,006
Norwalk Public Library	Norwalk	1,145	8,740	7,737	4,429
Sparta Free Library	Sparta	17,317	124,148	120,569	20,078
Tomah Public Library	Tomah	19,907	156,414	116,401	16,402
Wilton Public Library	Wilton	2,838	24,088	21,789	6,150
Pepin County					
Durand Community Library	Durand	4,823	34,399	35,340	4,090
Pepin Public Library	Pepin	2,954	27,128	12,064	5,563
Pierce County					
Ellsworth Public Library	Ellsworth	7,150	86,680	43,394	7,932
Elmwood Public Library	Elmwood	1,204	22,308	5,000	1,040
Pierce County Library Service	Elmwood (Co. Ser.)	0	6,868	0	0
Plum City Public Library	Plum City	2,129	36,106	13,725	1,653
Prescott Public Library	Prescott	5,930	75,845	56,126	9,535
River Falls Public Library	River Falls	24,993	374,132	197,362	42,732
Spring Valley Public Library	Spring Valley	2,195	33,955	15,000	4,200
Trempealeau County					
Arcadia Free Public Library	Arcadia	5,104	50,369	17,000	6,303
Blair-Preston Public Library	Blair	2,869	24,070	5,980	5,375
Ettrick Public Library	Ettrick	750	5,012	3,285	657
Galesville Public Library	Galesville	4,082	36,860	21,944	6,914
Independence Public Library	Independence	1,655	9,431	12,052	3,161
Hauge Memorial Library	Osseo	2,463	20,532	12,480	3,137
Strum Public Library	Strum	2,015	13,382	3,500	6,240
Shirley M. Wright Memorial Library	Trempealeau	4,410	37,863	10,000	6,947
Whitehall Public Library	Whitehall	5,186	40,844	21,284	5,936
Vernon County					
Knutson Memorial Library	Coon Valley	2,664	26,900	9,953	3,315
De Soto Public Library	De Soto	772	6,701	3,034	1,159
Hillsboro Public Library	Hillsboro	5,034	56,007	13,520	3,131
Lawton Memorial Library	La Farge	2,334	20,573	11,700	2,348
Ontario Public Library	Ontario	1,279	17,645	11,811	2,670
Readstown Public Library	Readstown	1,509	23,478	14,480	4,428
McIntosh Memorial Library	Viroqua	10,181	128,617	82,001	17,878
Bekkum Memorial Public Library	Westby	6,039	58,757	19,500	8,750
Region Totals		319,752	3,532,002	2,057,876	448,635

Wisconsin Department of Public Instruction - 2009 Wisconsin Public Library Service Data

The MRRPC Region is served by 41 school districts. The district with the largest enrollment in the 2009-2010 school year was the La Crosse School District, with 7,023, while the smallest was Gilmanton, with 187 students. Overall, the Region lost - 1,398 students between the 2000-2001 school year and 2009-2010. The Mondovi School District had the highest drop-out rate in 2009-2010, with 1.59%, just under the state rate of 1.60%, while the Gilmanton, Alma Center, Melrose-Mindoro, Cashton, Durand, Elmwood, Plum City, River Falls, La Farge, and Kickapoo Area School Districts had drop-out rates of 0.00%. The Pepin Area School District spent \$16,031 per student in 2009-2010, which was more than any other district in the Region, and 21st in the state. The Wauzeka-Steuben (64%), and Alma Center and Kickapoo Area School Districts (59%) had the highest percentage of students qualify for free and reduced lunches, while River Falls had the lowest rate, 20%.

Table 4.33 Public Schools - Enrollment, Drop Out Rate, Cost Per Student, Free/Reduced Lunches

District Name	⁽¹⁾ Enrollment			⁽²⁾ Drop Out Rate %		⁽³⁾ Total Educational Cost per Member	⁽³⁾ State Rank	⁽⁴⁾ Free/Reduced Lunches		
	2000-01	2009-10	% Chge 2000-2010	2000-2001	2009-2010	2009-2010	2009-2010	% Free	% Reduced	Total
Buffalo County										
Alma	409	299	-26.9	0.46%	0.67%	\$12,911	118	27%	10%	38%
Cochrane-Fountain City	782	667	-14.7	0.75%	1.10%	\$11,665	272	22%	12%	34%
Gilmanton	256	187	-27.0	0.00%	0.00%	\$11,775	252	29%	8%	37%
Mondovi	1,114	1,085	-2.6	0.82%	1.59%	\$11,112	353	31%	8%	38%
Crawford County										
North Crawford	652	469	-28.1	1.96%	0.47%	\$12,627	139	45%	12%	57%
Prairie du Chien Area	1,269	1,150	-9.4	1.07%	1.07%	\$12,934	112	44%	12%	56%
Seneca	372	283	-23.9	0.00%	0.81%	\$14,040	51	36%	21%	57%
Wauzeka-Steuben	377	347	-8.0	0.00%	0.68%	\$14,016	53	43%	21%	64%
Jackson County										
Alma Center	622	612	-1.6	1.52%	0.00%	\$12,996	107	46%	13%	59%
Black River Falls	2,003	1,843	-8.0	1.19%	1.39%	\$11,599	285	37%	9%	46%
Melrose-Mindoro	729	738	1.2	0.84%	0.00%	\$11,328	328	31%	6%	37%
La Crosse County										
Bangor	676	629	-7.0	0.00%	0.32%	\$12,280	175	25%	6%	32%
Holmen	2,976	3,656	22.8	0.59%	0.32%	\$12,483	152	20%	7%	27%
La Crosse	7,775	7,023	-9.7	0.87%	0.96%	\$13,506	75	40%	8%	48%
Onalaska	2,762	2,960	7.2	0.89%	0.15%	\$10,722	396	25%	5%	30%
West Salem	1,562	1,754	12.3	0.14%	0.12%	\$11,050	361	19%	7%	26%
Monroe County										
Cashton	579	569	-1.7	0.67%	0.00%	\$12,703	132	32%	12%	44%
Norwalk-Ontario-Wilton	690	699	1.3	0.68%	1.68%	\$12,417	158	46%	10%	55%
Sparta Area	2,783	2,586	-7.1	1.23%	1.28%	\$11,986	223	37%	11%	47%
Tomah Area	3,106	3,141	1.1	0.25%	0.87%	\$10,638	402	32%	7%	39%
Pepin County										
Durand	1,194	1,013	-15.2	0.15%	0.00%	\$12,725	130	29%	8%	37%
Pepin Area	328	251	-23.5	0.54%	0.81%	\$16,031	21	32%	6%	38%
Pierce County										
Ellsworth Community	1,841	1,695	-7.9	0.10%	0.49%	\$11,637	279	16%	6%	22%
Elmwood	413	347	-16.0	0.00%	0.00%	\$14,796	32	32%	11%	43%
Plum City	384	308	-19.8	0.53%	0.00%	\$14,109	49	27%	8%	35%
Prescott	1,175	1,264	7.6	0.00%	0.74%	\$11,520	297	16%	6%	22%
River Falls	2,905	2,993	3.0	0.63%	0.00%	\$11,403	309	16%	4%	20%
Spring Valley	733	737	0.5	0.00%	0.32%	\$11,649	277	29%	13%	42%
Trempealeau County										
Arcadia	881	1,048	19.0	0.00%	0.21%	\$12,599	141	39%	8%	47%
Blair-Taylor	734	650	-11.4	3.10%	0.65%	\$12,574	143	32%	10%	42%
Eleva-Strum	680	629	-7.5	0.59%	0.35%	\$11,876	239	29%	8%	37%
Galesville-Ettrick-Trempealeau	1,437	1,448	0.8	0.00%	0.31%	\$11,560	292	22%	9%	31%
Independence	331	378	14.2	0.00%	1.21%	\$13,841	60	42%	6%	48%
Osseo-Fairchild	985	1,022	3.8	0.90%	1.15%	\$12,259	178	32%	9%	41%
Whitehall	757	760	0.4	0.87%	0.28%	\$11,814	247	41%	10%	51%

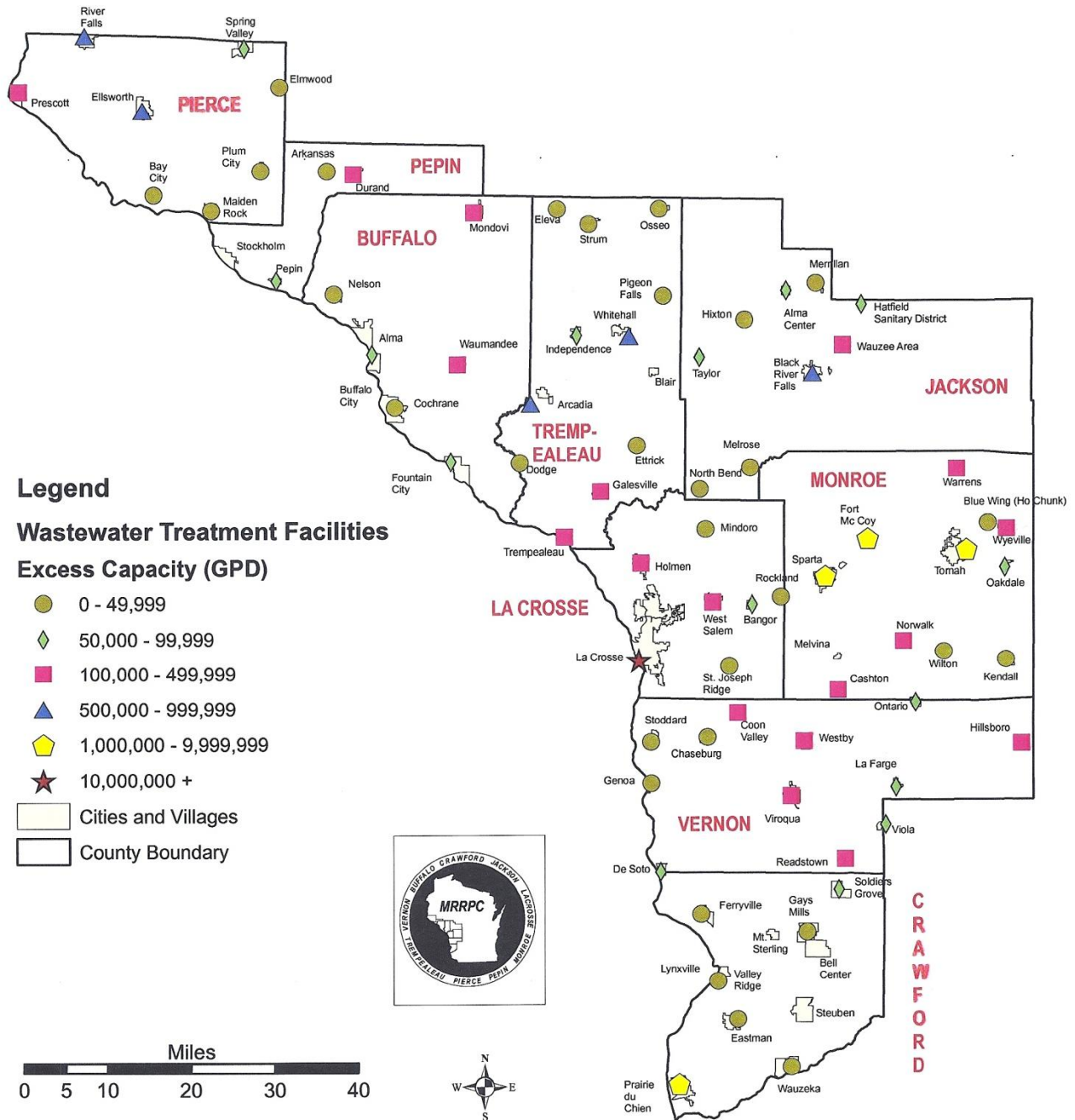
	⁽¹⁾ Enrollment			⁽²⁾ Drop Out Rate %		⁽³⁾ Total Educational Cost per Member	⁽³⁾ State Rank	⁽⁴⁾ Free/Reduced Lunches		
District Name	2000-01	2009-10	% Chge	2000-2001	2009-2010	2009-2010	2009-2010	% Free	% Reduced	Total
Vernon County										
De Soto Area	605	550	-9.1	1.04%	0.38%	\$12,073	206	35%	15%	50%
Hillsboro	656	558	-14.9	0.64%	0.39%	\$12,053	209	32%	10%	43%
La Farge	317	259	-18.3	1.16%	0.00%	\$14,472	38	47%	11%	58%
Kickapoo Area	437	468	7.1	0.00%	0.00%	\$12,670	135	45%	14%	59%
Viroqua Area	1,312	1,181	-10.0	0.30%	0.92%	\$12,496	149	35%	10%	45%
Westby Area	1,182	1,127	-4.7	1.03%	0.42%	\$12,197	190	23%	10%	33%
State of Wis.	879,476	872,436	-0.8	1.58%	1.60%	\$12,087*	NA	36%	6%	42%

(1) Wisconsin Department Public Instruction (DPI) Enrollment Data; (2) Wis. DPI, WINSS Data Analysis; (3) Wis. DPI, FY 2009-2010 Comparative Cost per Member for All School Districts - * = State Avg.; (4) Wis. DPI Enrollment Participation Free/Reduced Lunches Oct. 2010

Regional Utilities, Community Facilities and Energy Goals and Recommendations

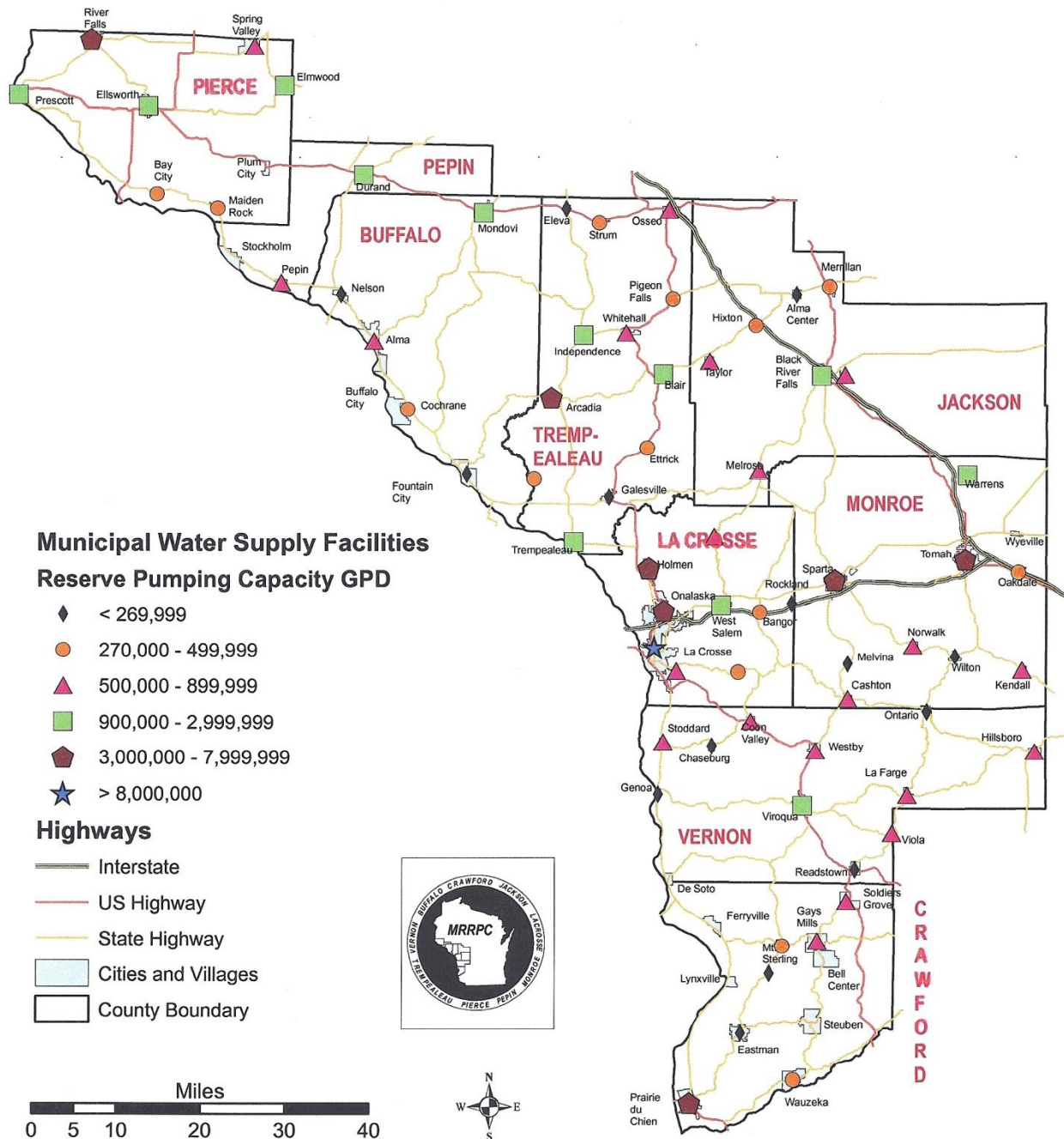
Regional utilities, community facilities, and energy goals and recommendations are listed in Chapter 9 – Implementation.

MAP 4.01 MISSISSIPPI RIVER REGION WASTEWATER TREATMENT FACILITIES

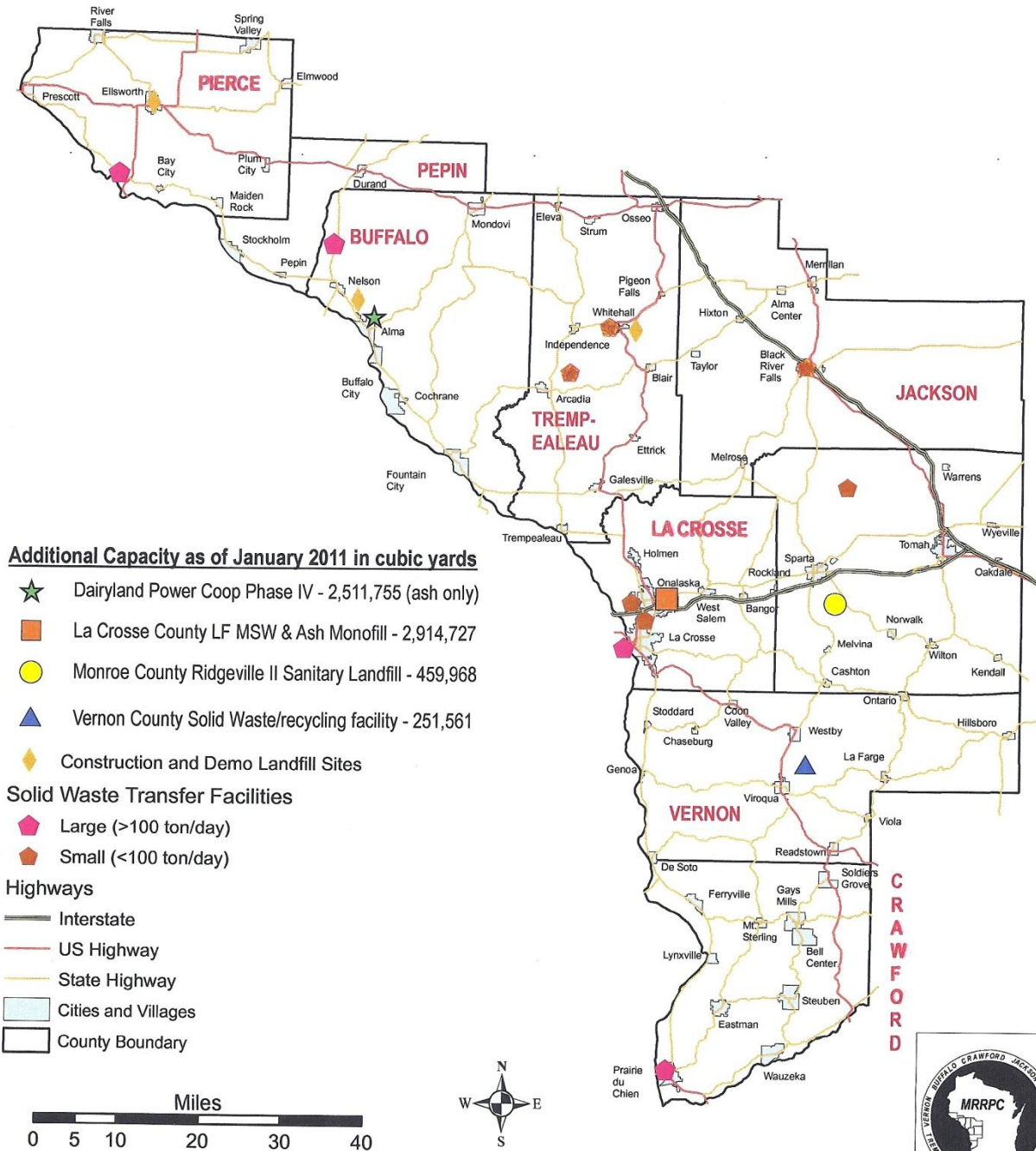


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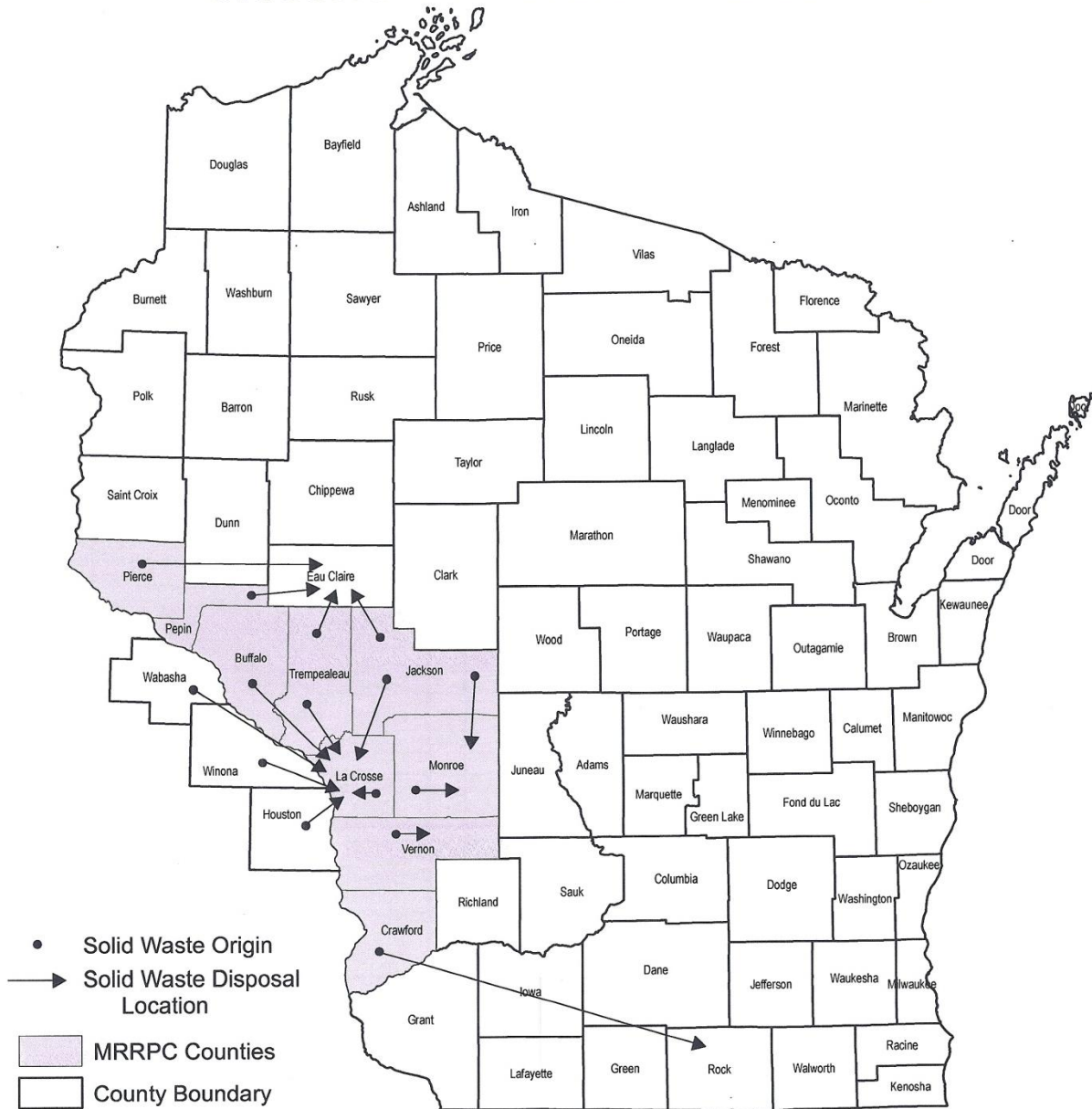
MAP 4.02 MISSISSIPPI RIVER REGION MUNICIPAL WATER SUPPLY FACILITIES



MAP 4.03 MISSISSIPPI RIVER REGION SOLID WASTE FACILITIES SITES

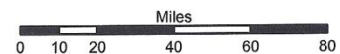


MAP 4.04 MISSISSIPPI RIVER REGION SOLID WASTE ORIGIN AND FINAL DISPOSAL LOCATION

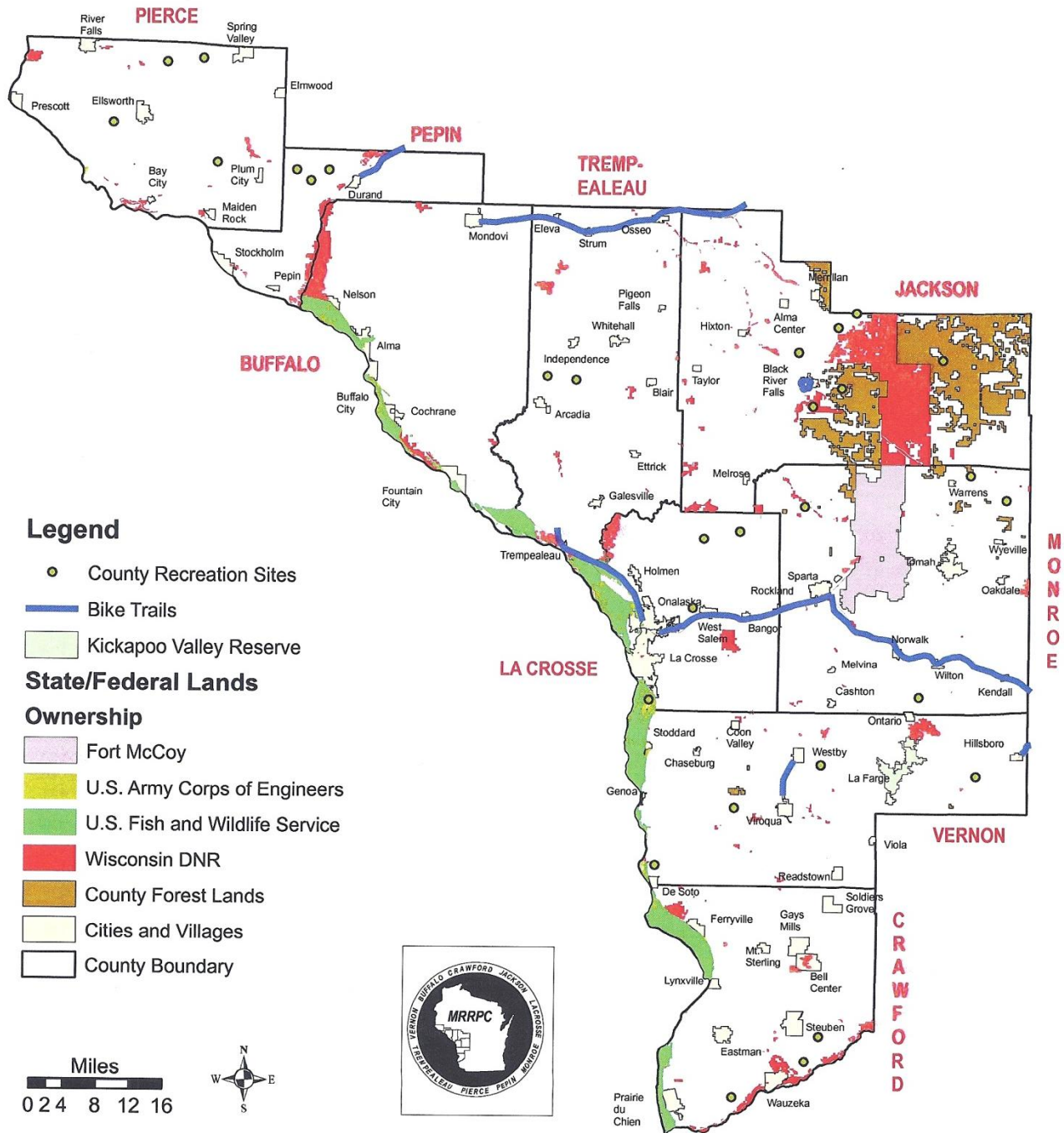


Expected life of landfills used by the Mississippi River Region's Communities as of 2014

Landfill	2014 Capacity Cubic Yards	Site Life in Years
Eau Claire Seven Mile Creek	2,293,180	6
Janesville Landfill	2,144,452	11
La Crosse County Landfill	2,670,793	28
Monroe County Landfill	336,941	8
Vernon County Landfill	283,448	10

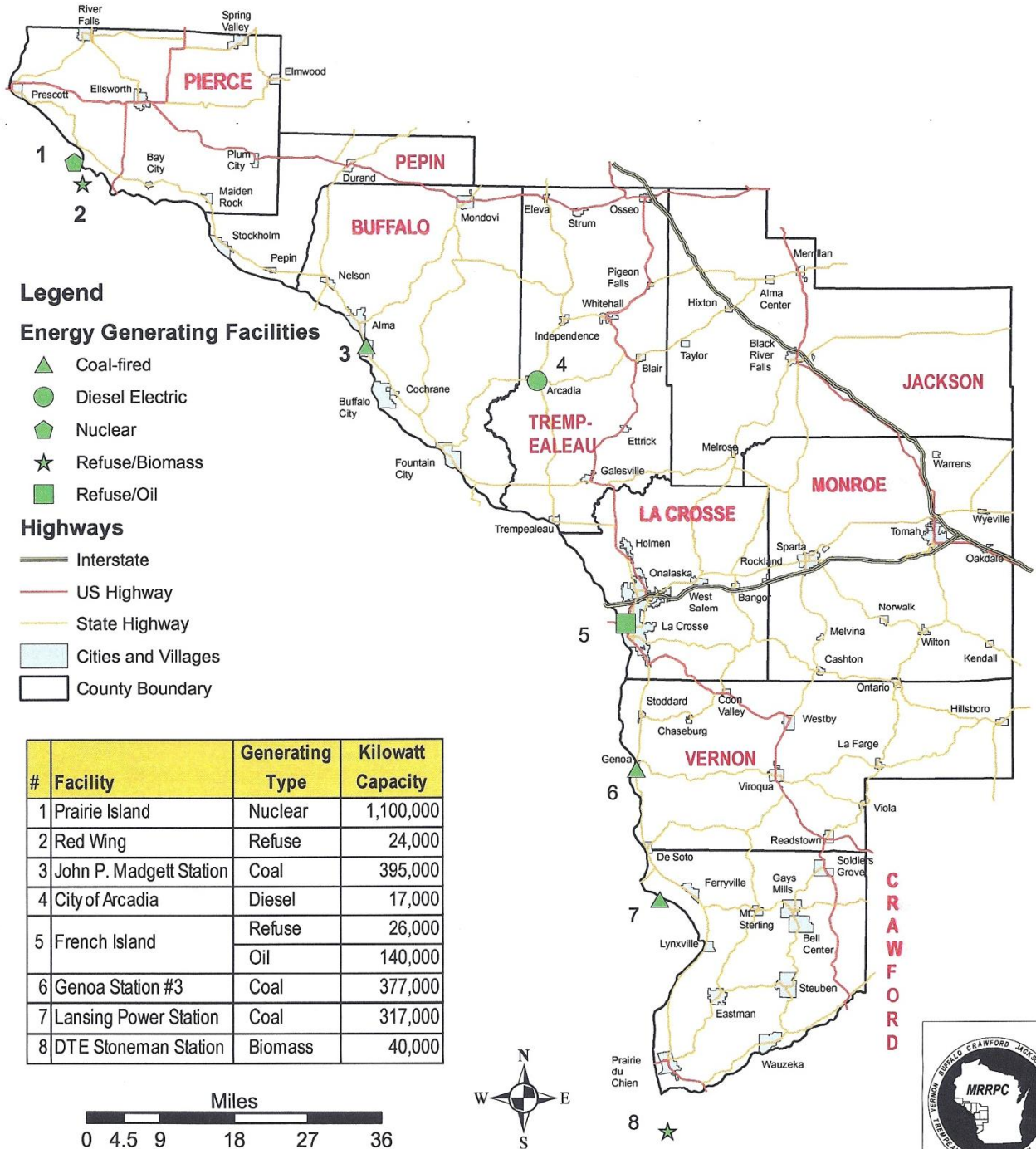


MAP 4.05 MISSISSIPPI RIVER REGION PUBLIC RECREATION SITES AND FACILITIES



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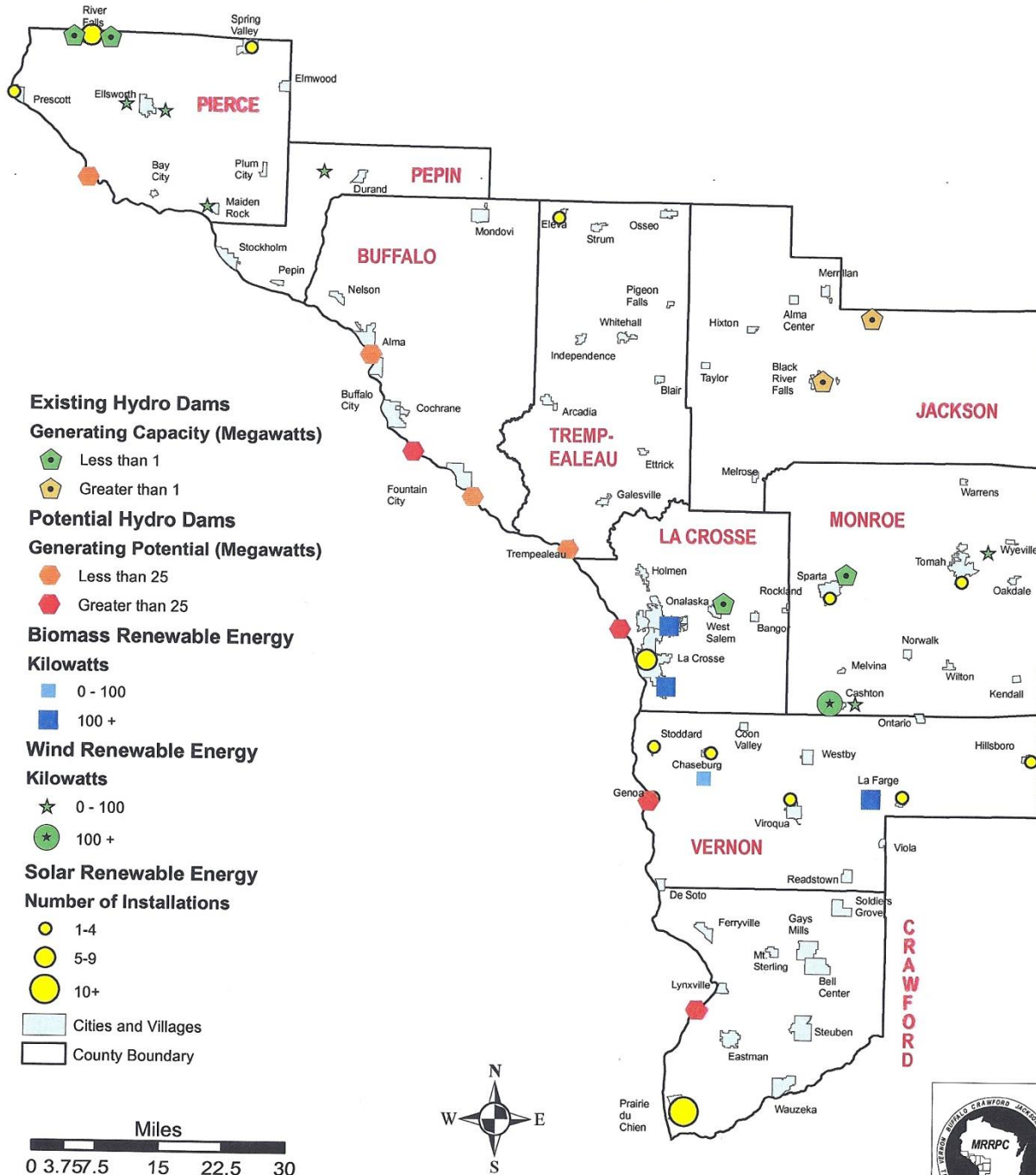
MAP 4.06 LARGEST ELECTRICAL GENERATING FACILITIES IN OR NEAR THE MISSISSIPPI RIVER REGION



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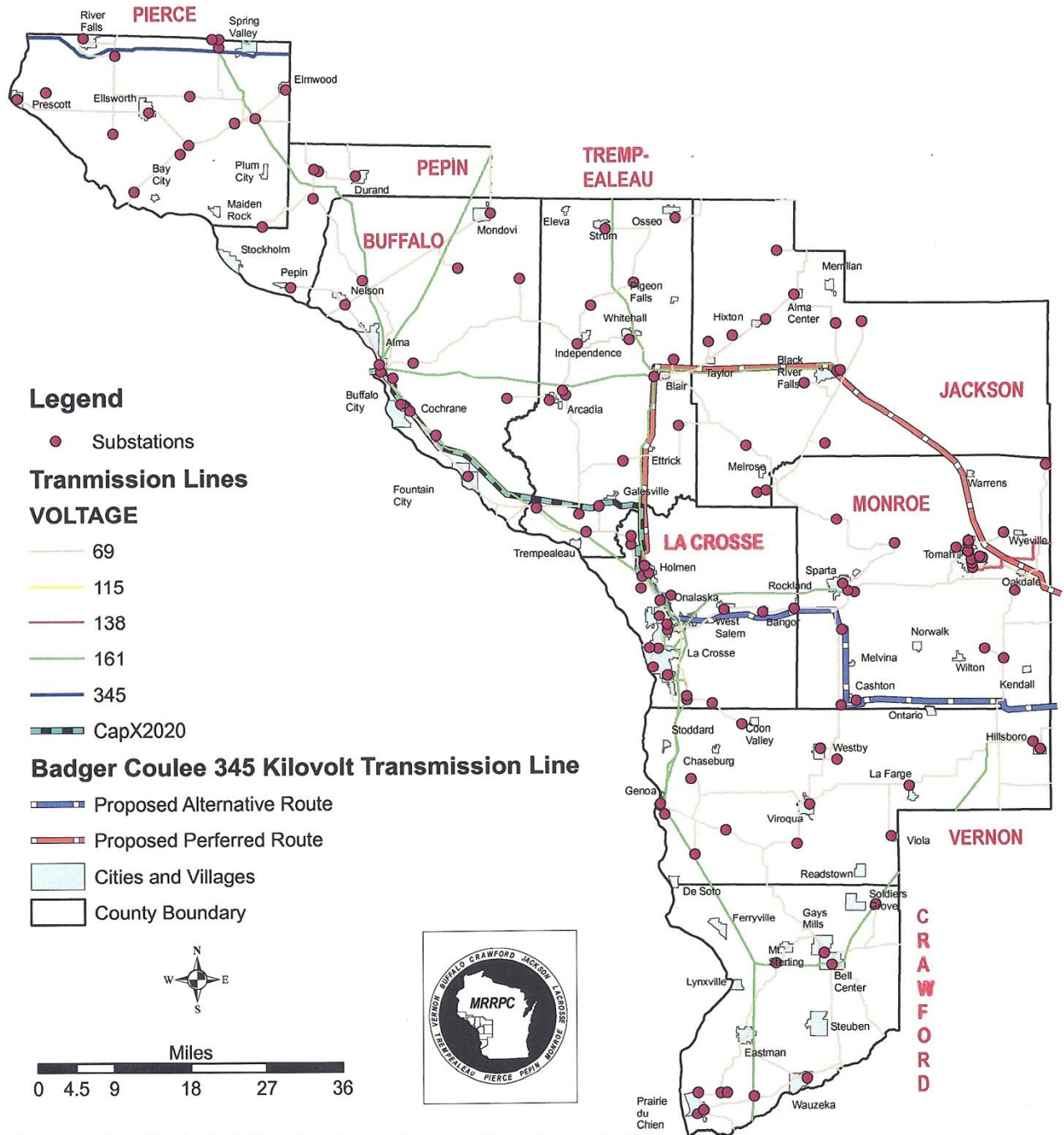


MAP 4.07 MISSISSIPPI RIVER REGION SOLAR, WIND, BIOGAS AND HYDRO ELECTRIC INSTALLATIONS



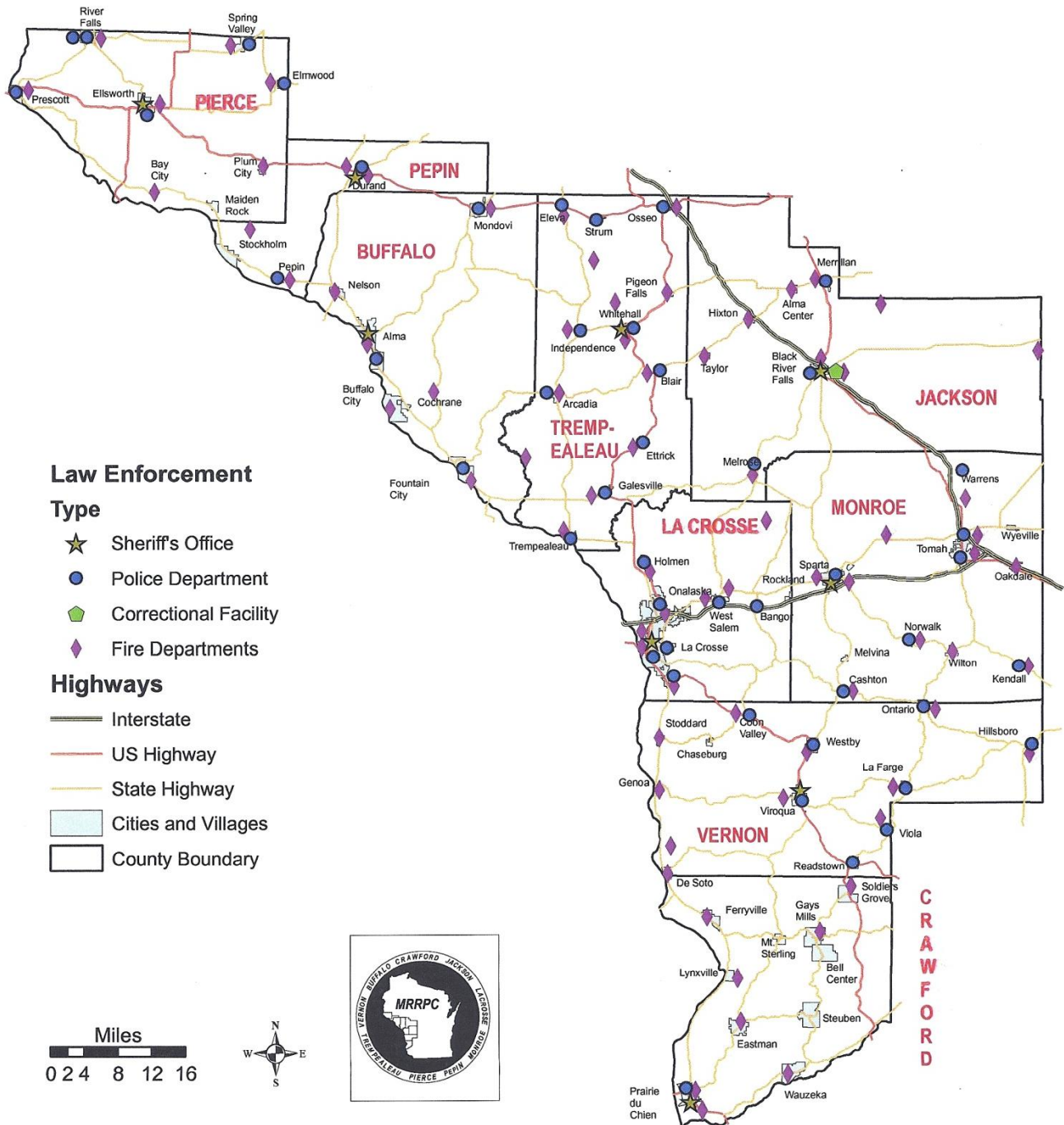
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MAP 4.08 MISSISSIPPI RIVER REGION TRANSMISSION LINES AND SUBSTATIONS

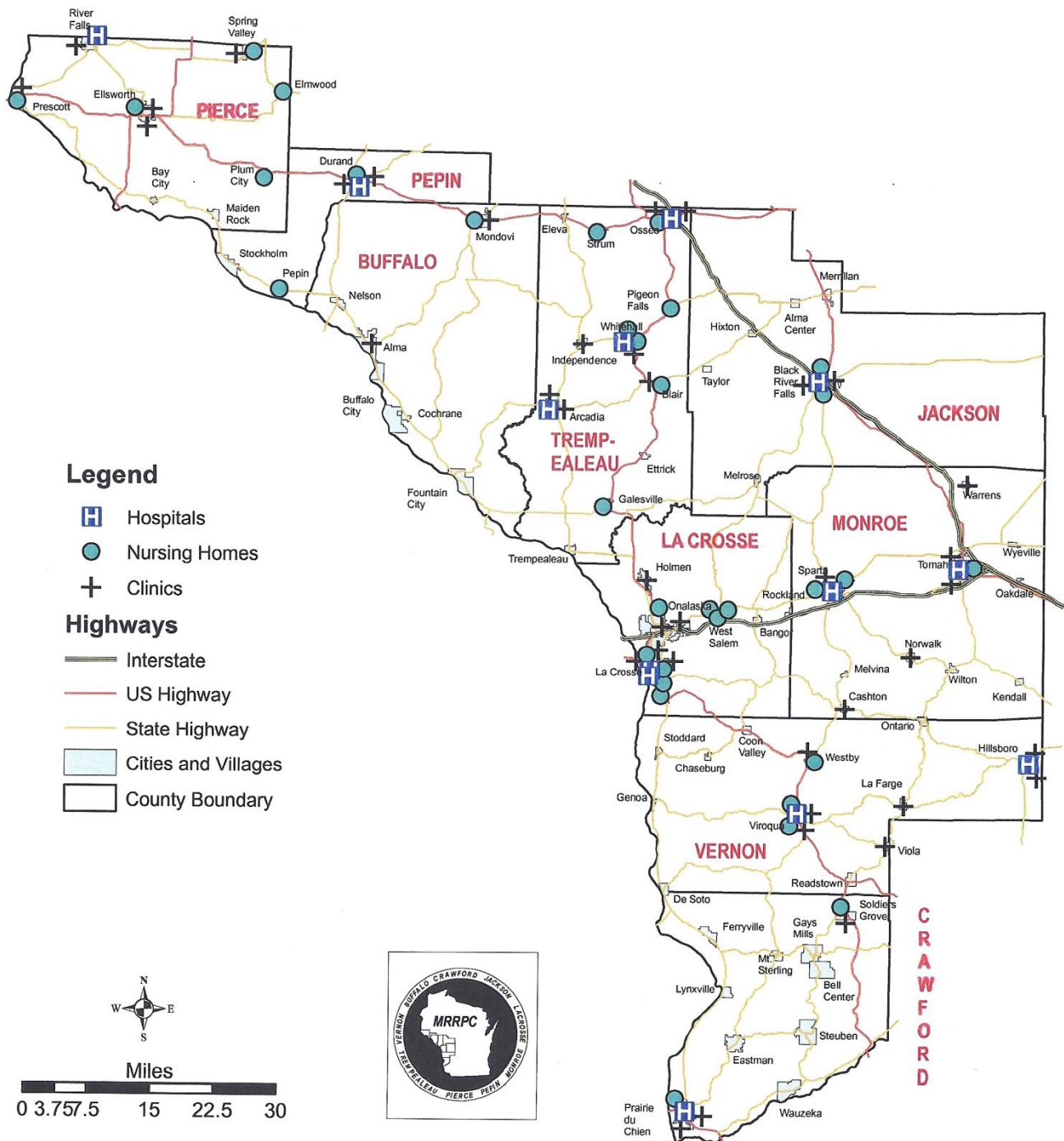


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MAP 4.09 MISSISSIPPI RIVER REGION LAW ENFORCEMENT AND FIRE FACILITIES

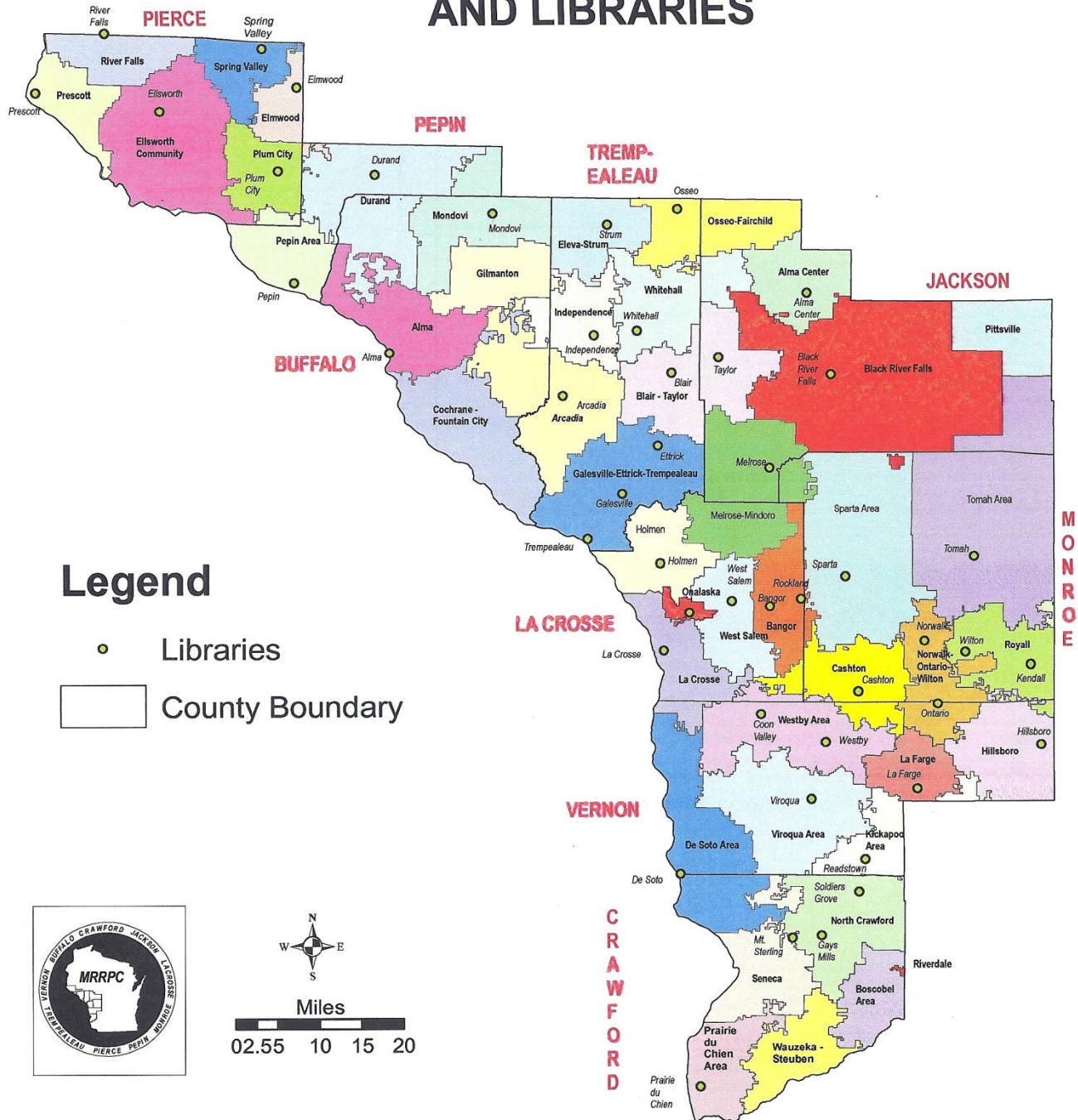


MAP 4.10 MISSISSIPPI RIVER REGION HEALTH CARE FACILITIES



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MAP 4.11 MISSISSIPPI RIVER REGION PUBLIC SCHOOL DISTRICTS AND LIBRARIES



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