



## **Zone 5 overview**

Zone 5 includes the Wisconsin counties of:

- Kenosha
- Milwaukee
- Ozaukee
- Racine
- Washington
- Waukesha

The physical boundaries of Zone 5 and transmission facilities located in Zone 5 are shown in Figure ZS-26.

Zone 5 encompasses southeast Wisconsin.

Land use in Zone 5 is largely urban, though some agricultural uses exist.

The major population center in Zone 5 is the metropolitan Milwaukee area.

Zone 5 typically experiences peak demands during the summer months. Large industrial loads in the Milwaukee metropolitan area (such as Charter Steel, Miller Brewing) are among the largest electricity users in the zone.

### **Demographics**

The population of the counties in Zone 5 grew at an annual rate of 0.5 percent from 1998 to 2008. The highest growth rate occurred in Washington County, while the largest increase in population occurred in Waukesha County, which increased by approximately 32,000 people over the period.

During the same period, the annual employment growth rate was 0.7 percent. The highest growth rate was in Kenosha County and the highest increase in employment occurred in Waukesha County.

### **Future Population and Employment Projections**

Population in Zone 5 is projected to grow at 0.6 percent annually for both the 2008 and 2013 and 2013 through 2018 periods. From 2008 to 2013, Waukesha County is projected to realize the largest increase in population, while Washington County is projected to have the highest growth rate.

Employment in Zone 5 is projected to grow at 1.3 percent annually between 2008 and 2013 and at 1.2 percent from 2013 through 2018. From 2008 to 2013, Waukesha County is



projected to realize the largest increase in employment and to have the highest growth rate.

	1998-2008	2008-2013	2013-2018	1998-2008	2008-2013	2013-2018
	Annual Growth Rate			Increase		
Employment						
Zone 5	0.71	1.30	1.21	83,309	81,802	81,304
Kenosha County	2.17					
Waukesha County		2.75	2.35	49,714	44,709	43,347
Population						
Zone 5	0.47	0.57	0.61	88,002	55,090	61,051
Washington County	1.35	1.87	1.76			
Waukesha County				32,235	30,025	31,217

**Zone 5 environmental considerations**

Zone 5 encompasses the southeastern portion of the state and is the most densely populated of the zones. The area lies in the Southern Lake Michigan Coastal and Southeast Glacial Plains ecological landscape regions. Most of the zone lies in the drainage basins of the Milwaukee, Root or Fox rivers. The Kettle Moraine State Forest lies in the western portions of the zone, and Lake Michigan forms its eastern boundary. Pre-settlement vegetation varied from prairie and oak savanna in the south, to southern mesic forest in the northern portions of the zone. Agricultural land uses are common throughout this zone.

**Zone 5 electricity demand and generation**

The coincident peak load forecasts for Zone 5 for 2009, 2013, 2018 and 2023 are shown in Table ZS-12. Existing generation, along with proposed generation based on projected in-service year, are also shown. The resultant capacity margins, with or without the proposed generation, are shown as well.

The table shows that load is projected to grow at roughly 1.8 percent annually from 2009 through 2018. Comparing load with generation (at maximum output) within the zone indicates that Zone 5 has less generation than load during peak load periods.

**Zone 5 transmission system issues**

Key transmission facilities in Zone 5 include:

- ❑ the southern portion of 345-kV lines from Point Beach and Edgewater,
- ❑ the Saukville, Arcadian, Granville, Oak Creek, and Racine 345/138-kV substations,
- ❑ the transmission lines emanating from the Pleasant Prairie and Oak Creek power plants,
- ❑ 230 kV facilities near Milwaukee, and



# 10-Year Assessment

An annual report summarizing proposed additions and expansions to the transmission system to ensure electric system reliability.

2008

September 2008 10-Year Assessment  
[www.atc10yearplan.com](http://www.atc10yearplan.com)

- a significant 138-kV network in the Milwaukee area, a portion of which is underground.

Key system performance issues in Zone 5 include:

- heavy flows on aging facilities,
- new generation projects are being planned that may influence the solutions to load-serving needs in the zone,
- heavy flows from the west (Zone 3) resulting in heavily loaded 138-kV facilities in the western portion of Zone 5,
- heavy market flows from the south, resulting in high 345- and 138-kV line loadings and the need to monitor potential multiple contingency conditions,
- sagging voltage profile in portions of Washington, Waukesha and Jefferson counties and
- stability of existing and proposed generation in the southeast portion of Zone 5.

In addition, the Wisconsin Department of Transportation is reconstructing the Marquette Interchange in downtown Milwaukee and portions of the interstate system near the Marquette Interchange. This project affects one ATC transmission line and a We Energies power plant connected to the 138-kV transmission system.

- A portion of Everett - 28<sup>th</sup> Street underground 138-kV circuit was relocated in 2004. No other ATC facilities were affected by the project.
- The 138-kV switchyard at the Valley Power Plant will require various equipment modifications and a more extensive maintenance program.
- The proposed rebuild of the Zoo interchange will necessitate some review of the existing 138-kV lines originating from the Bluemound Substation. This review could result in new projects within the next few years.