



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

Historical and Projected Population

The population of the counties in Zone 5 grew at an annual rate of 0.5% from 2001 to 2010. The highest growth rate occurred in Washington County (1.2%), while the largest increase in population occurred in Waukesha County, which increased about 22,900 people over the period.

Population in Zone 5 is projected to grow at 0.5% annually for the 2011 through 2020 period. Waukesha County is projected to realize the largest increase in population of 43,500, while Washington County is projected to have the highest growth rate (1.5%).

Historical and Projected Employment

During the same period, the annual employment growth rate declined slightly. The highest growth rate was in Washington County of 0.5% and the highest increase in employment of 3,000.

Employment in Zone 5 is projected to grow at 0.8% annually between 2011 and 2020. Waukesha County is projected to realize the largest increase in employment of 30,400, while Washington County the highest growth rate (1.2%).



| Employment | | | |
|--------------------|---------|----------------|--------|
| Annual Growth Rate | | | |
| 2001-2010 | | 2011-2020 | |
| Zone 5 | -0.3 | Zone 5 | 0.8 |
| Washington, WI | 0.5 | Washington, WI | 1.2 |
| Total Increase | | | |
| 2001-2010 | | 2011-2020 | |
| Zone 5 | -29,618 | Zone 5 | 89,609 |
| Washington, WI | 3,043 | Waukesha, WI | 30,458 |

| Population | | | |
|--------------------|--------|----------------|--------|
| Annual Growth Rate | | | |
| 2001-2010 | | 2011-2020 | |
| Zone 5 | 0.5 | Zone 5 | 0.5 |
| Washington, WI | 1.2 | Washington, WI | 1.5 |
| Total Increase | | | |
| 2001-2010 | | 2011-2020 | |
| Zone 5 | 81,496 | Zone 5 | 90,138 |
| Waukesha, WI | 22,973 | Waukesha, WI | 43,549 |

Zone 5 environmental considerations

Zone 5 encompasses the southeastern portion of the state and is the most densely populated planning zone. 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 2012, 2016, 2021 and 2026 are shown in Table ZS-12. The table also shows existing generation, proposed generation based on projected in-service year, and resultant capacity margins (with and without the proposed generation).



The table shows that load in Zone 5 is projected to grow at roughly 1.25 percent annually from 2012 through 2021. Comparing load with generation (at maximum output) within the zone indicates that Zone 5 has more 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,
- A significant 138-kV network in the Milwaukee area, a portion of which is underground,
- Heavy flows on aging facilities, and
- Heavy market flows from and to the south, resulting in high 345-kV and 138-kV line loadings and the need to monitor potential multiple contingency conditions.
- Several provisional projects in past 10-Year Assessments found low voltage and thermal overload issues which did not appear in the 2011 Assessment. The provisional project in-service dates were retained for now until it can be determined in future assessments that these voltage and thermal issues no longer exist.

Apart from the analysis performed in this Assessment, there is one major area event that could impact transmission plans in Zone 5. The proposed road rebuild of the Zoo interchange is moving forward with the following in-service dates:

- Expand/update Watertown Plank area (2013),
- Expand/update Highway 100/Highway 45 area (2014), and
- Expand/update remainder of freeway (2015-2018).

The analyses of this road relocation project will likely result in new projects to reconfigure the transmission system around Bluemound and 96th Street substations. Further projects may develop depending on the Department of Transportation's plans to rebuild the interchange. Studies are ongoing and plans will be finalized in the 2011-2012 timeframe.