ATC Futures for the 2026 Study Year

Date: 4-27-11

Drivers	Load Growth within ATC	Energy Growth within ATC	Load Growth outside ATC[2]	Energy Growth outside ATC[2]	Total Coal Retirements (or conversions to natural gas) Within ATC[3]	Generator Additions Within ATC[4]	Total Percent Energy from Renewables for ATC & Inside/Outside Percent[7]	Natural Gas Price Forecast	Coal Price Forecast for New Units[9]	Environmental Regulations[11]	Renewable Portfolio Standards (RPSs) and Wind Power Zones (GW: Existing Model / Expansion / Total)[24]	Transmission Overlay Outside ATC[16]	Generation Portfolio Outside ATC[17]
Bounds	2026	2026	2026	2026	2026	2026	2026	2026	2026	2026	2026	2026	2026
Lower	0.2%	0.1%	0.3%	0.3%	2,039 MW	Planned Wind[5] Plus Wind Specified Below	10/7.4/2.6%	- 40%	- 10%	$0/ton for CO_2, 0% higher mercury costs	Current State RPSs for MN, IA, IL & WI (for 2026) and Allocation to Wind Zones located only in the UMTDI States in Proportion to Associated Cap. Factors[12]	Overlay Light-CAPX, Corridor & RIGO Projects	See Below
Mid[1]	1.40%	1.10%	0.75%	1.00%	907 MW	Planned Wind[5] Plus Wind Specified Below	20/10.5/9.5%[8]	NYMEX for as many years as available followed by EIA esc. rate (2026 Avg: $9.09/MMBtu)	MISO Central & West $2.34 & $1.96 per MMBTU, respectively, for 2026[10]	$25/ton for CO_2, 25% higher mercury costs	WI 20%[13] RPS & MN, IA & IL RPSs (for 2026) and Allocation to RGOS I Wind Zones in Proportion to Associated Capacity Factors[14]	RGOS Phase I UMTDI Local / Intra-Regional Transfer Overlay	See Below
Upper	2.5%	2.2%	1.6%	2.19%	Announced (289 MW)	Fossil[6] & Planned Wind[5] Plus Wind Specified Below	25/13/12%[8]	+ 50%	+ 20%	$50/ton for CO_2, 25% higher mercury costs	WI 25%[13] & All MISO States with an RPS (for 2026) and Allocation to RGOS I Wind Zones in Proportion to Associated Capacity Factors[15]	RGOS Phase I plus latest RGOS additions	See Below
2026 Futures Descriptions													
Robust Economy	2.50%	2.2%	1.6%	2.19%	Upper	+1,593 MW ATC Wind[6]	20/9.8/10.2%[8]	Mid-Upper +25% (2026 Avg: $10.38/MMBtu[25])	Upper	Low	Mid (~4.7 GW / ~14.9 GW / ~19.6 GW)[21]	UMTDI Local-765KV Overlay	Reference
Green Economy	1.4%[18]	2.2%[18]	0.75%	2.19%	Mid (907 MW)	+2,333 MW ATC Wind & DRG[6,20]	25/12.5/12.5%[8]	Upper (2026 Avg: $13.64/MMBtu)	Mid	Upper	Upper (~4.7 GW / ~26.9 GW / ~31.6 GW)[21]	Intra-Regional Transfer-345kV Overlay + latest RGOS	Gas-only
Slow Growth	0.2%	0.1%	0.3%	0.3%	Mid-Upper (453 MW)	+44 MW ATC Wind	10/7.4/2.6%	Lower (2026 Avg: $4.98/MMBtu[25])	Mid	Low	Low (~4.7 GW / ~7.2 GW / ~11.9 GW)[21]	Overlay Light	Reference
Regional Wind	1.70%	1.4%	1.6%	1.32%	Mid (907 MW)	+1,159 MW ATC Wind[6]	20/9.7/10.3%[8]	Mid (2026 Avg: $9.09/MMBtu)	Lower	Mid	Upper-20% WI (~4.7 GW / ~22.6 GW / ~27.3 GW)[21]	Intra-Regional Transfer-765kV Overlay + latest RGOS	Reference
Limited Investment	1.0%	0.7%	0.75%	1.0%	Mid-Upper (453 MW)	+172 MW ATC Wind	10/7.2/2.8%	Mid-Upper +25% (2026 Avg: $11.36/MMBtu)	Upper	Mid	Low (~4.7 GW / ~8.6 GW / ~13.3 GW)[21]	Overlay Light	Gas-only
Carbon Constrained[23]	0.2%[19]	0.1%[19]	0.3%	0.3%	Lower	+1,077 MW ATC Wind & DRG[20]	25/12.4/12.6%[8]	Mid (2026 Avg: $9.09/MMBtu)	Lower	Upper	Mid-25% WI[22] (~4.7 GW / ~9.4 GW / ~14.1 GW)[21]	UMTDI Local-345kV Overlay	OMS CARP

Notes:

1) For ATC, the Mid load and energy growth rates are based on 2009 customer-supplied forecasts.

2) Outside ATC is defined as all of MISO, the Non-MISO Midwest Reliability Organization (MRO) Areas and Commonwealth Edison excluding the ATC utilities (e.g. Alliant, MG&E, We Energies, WPPI, and WPS). Load and energy growth rates are those from the Organization of MISO States (OMS) Cost Allocation and Regional Planning (CARP) planning study.

3) Some small coal-fired retirements have been publicly announced and/or have recently occurred and are included as basecase assumptions. Conversion of Blount 6 & 7 from coal to natural gas at the end of 2011 is included in the "Announced" coal-fired retirements total. Other announced retirements include Blount units 3, 4 & 5 (totaling ~90 MW) by the end of 2013. Presque Isle Units 3 & 4 (116 MWs) and Pulliam units 3 & 4 (~55 MW) were already retired. The "Upper" level of retirements as used in the Carbon Constrained Future includes some intermediately sized units and is consistent with MISO's Cap and Trade Scenario from the OMS CARP analysis.

4) The uprate of Point Beach is a basecase assumption.

5) 439 MW of wind are expected to be in-service by the end of 2009 within ATC. An additional 856.5 MW of "planned" wind have signed Interconnection Agreements (IAs) that are not in suspension as of March 31, 2010. These total 1295.5 MW.

6) Generator Additions Within ATC from MISO's Expansion Plans:

Unit Type	Unit Size	Location	Robust Economy	Green Economy	Slow Growth	Regional Wind	Limited Investment	Carbon Constrained
Photovoltaic	30 MW	Rockdale	---	---	---	---	---	X
Photovoltaic	10 MW	Rockdale	---	---	---	---	---	X
Photovoltaic	110 MW	Rockdale	---	---	---	---	---	X
Biomass	200 MW	North Madison	---	---	---	---	---	X
CT Gas	600 MW	Rocky Run	X	X	---	X	---	---
CT Gas	600 MW	Rockdale	X	X	---	X	---	---
CT Gas	600 MW	Rockdale	X	---	---	---	---	---
Combined Cycle	600 MW	North Appleton	X	---	---	X	---	---
Combined Cycle	600 MW	Werner West	X	---	---	---	---	---
Combined Cycle	600 MW	Racine	X	---	---	---	---	---
Combined Cycle	600 MW	Cedarsauk	X	---	---	---	---	---
ST Coal	600 MW	Columbia	X	---	---	X	---	---
ST Coal	600 MW	Gardner Park	X	---	---	---	---	---

7) 2,080 MW of new Manitoba Hydro generation is a basecase assumption in MISO's PROMOD models, however, it does not qualify under the current Renewable Portfolio Standard (RPS) for WI, but would under the WI Governor's Global Warming Task Force (GWTF) recommended RPS.

8) The new Manitoba Hydro (MH) generation for WPS and WPPI, which totals 600 MW, is estimated to provide approximately 3,504 GWh of energy to meet the WI GWTF RPS recommended renewable percentages.

9) Most existing coal-fired generators have unit specific coal price forecasts from Ventyx (formerly NewEnergy Associates).

10) Use "MISO Central" coal costs for MISO expansion plan generators added within ATC.

11) The upper CO_2 tax of $50/ton is consistent with values used by MISO in the OMS CARP analysis. The generation expansion plan comes from MISO so the CO_2 tax only affects generation dispatch in ATC's PROMOD model. CAIR's and CAMR's status is uncertain, but other air pollution regulations have a similar impact to these regulations.

12) The RPS requirements for Illinois, Michigan, Ohio-Pennsylvania & Missouri are currently assumed to be met internally. This assumption was made to be consistent with the Upper Midwest Transmission Development Initiative (RGOS, Phase 1) which includes wind zones in SD, ND, MN, IA, and WI to primarily serve the RPS requirements for MN, IA & WI. ATC is reviewing the assumption and may refine this to be more consistent with other regional studies.

13) Based on the Wisconsin Governor's Task Force on Global Warming (GWTF) recommendation of 20% by 2020 and 25% by 2025.

14) RGOS is MISO's Regional Generator Outlet Study. The RGOS I wind zones include the UMTDI wind zones plus zones in Illinois. The RPS requirements for the RGOS II states (including MI, OH-PA & MO) are assumed to be met internally.

15) Sufficient wind power is added so that all of the Load Serving Entities (LSEs) within MISO that have state RPS requirements can meet them from wind power coming from the RGOS I wind zones. However, the wind power to meet Michigan's RPS must be met by in-state resources and therefore does not come from the RGOS I wind zones. States without RPS requirements as of 9/15/09 with MISO LSEs include Indiana and Kentucky. North and South Dakota have renewable goals, rather than mandates, and are therefore not included in the requirements.

16) CAPX Group 1 and the Minnesota "Corridor" and "RIGO" projects are assumed in place by 2026. The transmission overlays are designed to move wind generation to load centers. However, transmission was not added to deliver the expansion plan generation (mainly fossil) added by MISO to maintain adequate reserve margins in 2026. "UMTDI Local" is equivalent to the previously named "15 GW" case. "Intra-Regional Transfer" is equivalent to the previously named "25 GW" case. The inclusion of the latest RGOS additions to the overlay will primarily be focused on new additions to the east of the RGOS Phase I (UMTDI) footprint, including Indiana, Michigan, and Ohio.

17) Reference and Gas-Only refer to separate MISO generation expansion plans and futures. ATC utilizes the identified generator additions within these expansion plans in order to develop its futures based on changes in peak demand forecasts. For cases where peak demand growth is low, generating units are typically removed from the expansion plan and may not be used at all for significantly low growth rates. For cases where peak demand growth is high, generating units are added to accomodate this growth. Reference refers to expansion consisting of CT Gas, Combined Cycle, and ST Coal generators. Gas-Only refers to expansion consisting of CT Gas and Combined Cycle generators. OMS CARP expansion was used for the Carbon Constrained Future in alignment with the MISO OMS CARP Cap and Trade Scenario.

18) A lower peak load growth rate relative to energy growth rate was selected for the Green Economy future due to increased Demand Side Management and Smart Grid, not because of low economic growth.

19) The low peak demand and energy growth rates are assumed to result from increased demand-side management (DSM) and energy efficiency.

20) Distributed Renewable Generation (DRG) provides 0.5% of the energy subject to the WI RPS in 2020 and includes Solar PV, Biogass, and Wind. Depending on the assumed energy growth rate, this percentage results in up to 67 MW of DRG. PSC Staff assumed 80 MW of DRG in its ratepayer impact scenario in its 5/20/09 Advanced Renewable Tariff (ART) Memo.

21) The "existing" renewables are from MISO's PowerBase database. The MISO-wide total for existing and planned wind within this model is 4.7 GW. MISO total installed wind capacity as of 12-1-2009 was approximately 7.72 GW. For MN, IA and WI the existing renewables total 4.4 GW, of which 0.9 GW is hydro and biomass. For MN, IA, WI and IL the existing renewables total 4.8 GW, of which 0.9 GW is hydro and biomass. The incremental GWs of wind needed to meet the specified "Lower", "Mid" and "Upper" RPS requirements are provided for information purposes and are approximate. The wind power to meet Michigan's RPS must be met by in-state resources and therefore does not come from the RGOS I wind zones and is not included in the total.

22) Consistent with a lower amount of additional transmission.

23) Assumptions of the Carbon Constrained Future as they pertain to small capacity coal retirements within ATC have been modified to match those assumptions used by MISO in the OMS CARP Cap and Trade Scenario.

24) Assumptions of the Renewable Portfolio Standards external to ATC are under review and may be revised to ensure appropriate levels are utilized within the analysis.

25) Natural Gas price assumptions for the Robust Economy and Slow Growth Futures were updated to reflect changes in natural gas futures including the impact of Shale Gas. The average 2026 mid-level price used to determine the updated values for Robust Economy and Slow Growth is $8.30/MMBtu