DRAFT - PRELIMINARY

ATC Futures for the 2020[1] Study Year

Date: 4-15-11

Drivers[2]	Load Growth within ATC[3]	Energy Growth within ATC[3]	Load Growth outside ATC[4]	Energy Growth outside ATC[4]	Total Coal Retirements (or conversions to natural gas) Within ATC[5]	Generator Additions Within ATC[6]	Total Percent Energy from Renewables for ATC	Natural Gas Price Forecast	Coal Price Forecast for New Units[7]	Environmental Regulations[8]	Renewable Portfolio Standards (RPSs) and Wind Power Zones (GW: Existing Model / Expansion / Total)	Transmission Overlay Outside ATC	Generation Portfolio Outside ATC
Bounds	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
Lower	0.00%	0.00%	0.03%	0.05%	453 MW	Planned Wind, Plus required expansion generation (Wind / Fossil)	10%	- 50% (2020 Price = $3.29 / MMBtu)	- 10%	$0/ton for CO_2, 0% higher mercury costs	Current State RPSs for MN, IA, IL & WI (for 2020) and Allocation to Wind Zones located only in the UMTDI States in Proportion to Associated Cap. Factors[12]	MISO MVP Starter Projects	Business as Usual - Gas Only[16]
Mid	1.00%	1.00%	0.78%	0.79%	907 MW	Planned Wind, Plus required expansion generation (Wind / Fossil)	15%	NYMEX forecast[11] (2020 Price = $6.58 / MMBtu)	Mid (Actual - Projected)	$25/ton for CO_2, 25% higher mercury costs	WI 15% RPS & MN, IA & IL RPSs (for 2020) and Allocation to RGOS I Wind Zones in Proportion to Associated Capacity Factors[13]	MISO MVP Starter Projects Enhanced[15]	Business as Usual[17]
Upper	1.70%	1.70%	1.28%	1.42%	1,521 MW	Planned Wind, DRG[9], Plus required expansion generation (Wind / Fossil)	25%[10]	+ 50% (2020 Price = $9.87 / MMBtu)	+ 20%	$50/ton for CO_2, 25% higher mercury costs	WI 25%[10] & All MISO States with an RPS (for 2020) and Allocation to RGOS I Wind Zones in Proportion to Associated Capacity Factors[14]	MISO RGOS Native Voltage Overlay	OMS CARP[18]
2020 Futures Descriptions[19]													
Slow Growth	Lower	Lower	Lower	Lower	Upper	Lower	Mid	Lower	Mid	Mid	Mid	Lower	Upper
Limited Investment	Mid	Mid	Mid	Mid	Lower	Mid	Lower	Mid	Upper	Lower	Lower	Mid	Mid
Green Economy	Upper	Upper	Upper	Upper	Mid	Upper	Upper	Upper	Lower	Upper	Upper	Upper	Lower

Notes :

1) Study Year will be 2020 for this analysis cycle.

2) Drivers and values as shown are preliminary. This is intended as a starting point for discussion in the 2011 analysis process.

3) Load and Energy Growth assumptions within ATC are curretly under internal review and are subject to change.

4) 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 the effective growth rates from the MISO MTEP 11 process as approved by the MISO PAC on 3/23/2011.

5) 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 "Lower" level of retirements includes all announced retirements in addition to retirements of older (commissioned prior to ~1965), smaller (less than ~50 MW) coal-fired generators within the ATC footprint The "Mid" level of retirements includes all announced retirements in addition to retirements of older (commissioned prior to ~1975), smaller (less than ~100 MW) coal-fired generators within the ATC footprint. The "Upper" level of retirements includes all announced retirements in addition to retirements of older (commissioned prior to ~1975), smaller (less than ~150 MW) coal-fired generators within the ATC footprint.

6) Actual values and generating units to be included for expansion within ATC to meet appropriate demand levels will be calculated and determined following finalization of the internal Load and Energy growth assumptions within ATC.

7) Most existing coal-fired generators have unit specific coal price forecasts from Ventyx.

8) The upper CO_2 tax of $50/ton is consistent with values used by MISO in the MTEP 10 OMS CARP analysis. The generation expansion plan comes from MISO so the CO_2 tax only affects generation dispatch in ATC's PROMOD model. Current EPA regulations will be reviewed for inclusion within this analysis.

9) 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.

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

11) NYMEX price forecast for natural gas was taken from published information effective January of 2011.

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) which includes wind zones in SD, ND, MN, IA, and WI to primarily serve the RPS requirements for MN, IA & WI. ATC has reviewed the assumption to ensure consistency with other regional studies.

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

14) 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 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 wind zones. States without RPS requirements as of 4/11/2011 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.

15) ATC is currently reviewing assumptions and transmission projects that may be utilized in an Enhanced version of the MISO MVP Starter Projects.

16) Business as Usual refers to a future expansion plan utilized within the MISO MTEP 10 analysis cycle. 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. For this particular case, Gas-Only refers to expansion which may consist of CT Gas, Combined Cycle, and IGCC as identified in the MISO EGEAS expansion plan modeling from the MTEP 10 planning cycle.

17) Business as Usual refers to a future expansion plan utilized within the MISO MTEP 10 analysis cycle. 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. For this particular case, expansion generation may consist of Coal, Nuclear, CT Gas, Combined Cycle, IGCC, Wind, Biomass, Hydro, Photovoltaic, and Demand Response as identified in the MISO EGEAS expansion plan modeling from the MTEP 10 planning cycle.

18) OMS CARP refers to a future expansion plan utilized within the MISO MTEP 10 analysis cycle. 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. OMS CARP refers to expansion consisting of CT Gas, Combined Cycle, Nuclear, IGCC, Wind, Biomass, Hydro, Photovoltaic, and Demand Response as identified in teh MISO EGEAS expansion plan modeling from teh MTEP 10 planning cycle.

19) Three futures are being considered for this analysis cycle.