ATC Futures

AICF		_		_							
	Load	Energy	Load	Energy						4	76
	Growth	Growth	Growth	Growth			% Energy in		Renewables		
	within	within	outside	outside	Generation		ATC from		inside/		
Drivers	ATC	ATC	ATC	ATC	within ATC ¹		Renewables		outside WI ²		
	2013,	2013,	2013,	2013,	2013	2018	2024	2013	2018,	2013	2018,
	2018,	2018,	2018,	2018,					2024		2024
Bounds	2024	2024	2024	2024							
					Small Cap	acity Coal R	etirements:			Ins	ide:
					1					50%	50%
Lower	0.5%	0.5%	0.5%	0.5%	270 MW	880 MW	880 MW	8%	10%		
Lower	0.3%	0.3%	0.3%	0.3%		erator Addit		070	10%		ut:
					No NED ⁹	No NED	No NED			50%	50%
						acity Coal R					ide:
					130 MW	440 MW	440 MW			50%	35%
Mid ³	1.75%	1.75%	1.75%	1.75%	Gen	erator Additi	ions:	8%	15%	Out	side:
					NED ⁹	NED	NED			50%	65%
						acity Coal R					ide:
					None	None	None			45%	25%
Hanaa	3.0%	3.0%	3.0%	3.0%				20%	25%		side:
Upper	5.0%	5.0%	5.0%	5.0%		erator Addit		20%	23%		
					NED ⁹ ,	NED, 500	NED, 500			55%	75%
					None	MW Coal	More Coal				
2013 Futu	2013 Futures Descriptions										
Robust											
Economy	3.0%	3.0%	3.0%	3.0%		Upper		Μ	lid	Μ	lid
High re-											
tirements	1.5%	1.5%	1.5%	1.5%	Lower (with NED ⁹)		M	Mid		lid	
High	1.5 //	1.5 /0	1.5 /0	1.5 /0	LU			101	liu	101	liu
Environ.	$1.2\%^{4}$	$1.2 \%^4$	$1.2\%^{4}$	$1.2\%^{4}$		Lower		10)%	м	lid
Slow	1.270	1.2 /0	1.2/0	1.2 /0		Lower		10) /0	IV	liu
Growth	0.5%	0.5%	0.5%	0.5%	Mid		La	Lower		wer	
DOE 20%	0.3%	0.5%	0.5%	0.3%		MIG		LO	wei	LO	wei
Wind	2.00	2.001	2.00	2.007		T		T.T.		TT	
Fuel&Reg.	2.0%	2.0%	2.0%	2.0%	Lower		Upper		Upper		
Limitations	1.201	1.00	1.00	1.20	Mid		MCA				
	imitations 1.3% 1.3% 1.3% Mid 018 Futures Descriptions					N	Mid		Mid		
	ires Descr	iptions	1	1	1			1		1	
Robust											
Economy	3.0%	3.0%	3.0%	3.0%	Upper		Mid		M	lid	
High re-											
tirements	1.5%	1.5%	1.5%	1.5%	Lower		Mid		M	lid	
High											
Environ.	$1.0\%^{4}$	$0.8\%^4$	$1.1\%^{4}$	$1.1\%^{4}$	Lower		20%		Up	per	
Slow											
Growth	0.5%	0.5%	0.5%	0.5%		Mid		Lo	wer	Lo	wer
DOE 20%											
Wind	2.0%	2.0%	2.0%	2.0%		Lower		Un	per	Up	per
Fuel&Reg.											
Limitations	1.3%	1.3%	1.3%	1.3%		Mid		Μ	lid	М	lid
2024 Futu			/0	/0							
Robust		1									
Economy	3.0%	3.0%	3.0%	3.0%		Upper		M	lid	M	lid
High re-	3.070	3.070	3.070	5.070		Opper		11	14	IV	
tirements	1.5%	1.5%	1.5%	1.5%		Lower		•	lid		lid
High	1.3%	1.3%	1.3%	1.3%		Lower		IV	uu	IV	uu
Environ.	1.0014	0.0014	1 1 07 4	1 1 0 4	Ŧ						
	$1.0\%^{4}$	$0.8\%^{4}$	$1.1\%^{4}$	$1.1\%^{4}$	Lower		20	20% Upper		per	
Slow Growth	0.5									_	
	0.5%	0.5%	0.5%	0.5%		Mid		Lo	wer	Lo	wer
DOE 20%											
Wind	2.0%	2.0%	2.0%	2.0%	Lower		Up	per	Up	per	
Fuel&Reg.											
Limitations	1.3%	1.3%	1.3%	1.3%		Mid		Μ	lid	Μ	lid

ATC Futures (cont.)

AICIU	tul es (cont.)			
	Natural Gas price	Coal Price Forecast for	Environmental	Generation Portfolios
Drivers	forecast	New Units ⁵	Regulations ⁶	outside ATC ⁷
	2013,	2013,	2013,	2013
	2018,	2018,	2018,	2018,
Bounds	2024	2024	2024	2024
_			\$0/ton for CO ₂ , 0%	
Lower	-40%	-10%	Higher Mercury Costs	N/A
	NYMEX	MISO MAIN	$25/ton for CO_2,$	
	For 5 Years	\$2.00/MMBTU	25% Higher Mercury	
Mid	Followed by EIA	Delivered in 2010 &	Costs	N/A
	Escalation Rate	2%/yr. (\$2.34 in		
		2018, \$2.59 in 2024)	<u> </u>	
	500	200	\$44/ton for CO ₂ , 25%	37/4
Upper	50%	20%	Higher Mercury Costs	N/A
	s Descriptions			
Robust				
Economy	Mid-Upper +25%	Upper	Mid	Reference
High re-				D.C.
tirements	Mid-Low -20%	Mid	Mid	Reference
High		T	TT	
Environ.	Upper	Lower	Upper	Environmental
Slow			Ŧ	D.C.
Growth	Lower	Mid	Low	Reference
DOE 20%	161	Ŧ		
Wind	Mid	Lower	Mid	20% Wind
Fuel&Reg. Limitations	N. 1 11	16.1	16.1	
	Mid-Upper +25%	Mid	Mid	Reg. Limitation
	s Descriptions			
Robust	Mid Umman + 2507	Unnon	Mid	Reference
Economy	Mid-Upper +25%	Upper	Mid	Reference
High re-	Mid-Low -20%	Mid	Mid	Reference
tirements	MID-LOW -20%	IVIIU	Mild	Reference
High Environ.	Unnor	Lower	Unnor	Environmental
Slow	Upper	Lower	Upper	Environmentai
Growth	Lower	Mid	Low	Reference
DOE 20%	Lower	Ivilu	LOW	Kelefellee
Wind	Mid	Lower	Mid	20% Wind
Fuel&Reg.	Ivita	Lower	Wild	20% Wind
Limitations	Mid-Upper +25%	Mid	Mid	Reg. Limitation
2024 Future	s Descriptions	Iviiu	1011d	rteg. Elilitation
Robust	5 Descriptions			
Economy	Mid-Upper +25%	Upper	Mid	Reference
High re-		- rp**		
tirements	Mid-Low -20%	Mid	Mid	Reference
High				
Environ.	Upper	Lower	Upper	Environmental
Slow	11			
Growth	Lower	Mid	Low	Reference
DOE 20%				
Wind	Mid	Lower	Mid	20% Wind
Fuel&Reg.		İ.		
Limitations	Mid-Upper +25%	Mid	Mid	Reg. Limitation

Notes:

1) All scenarios include Weston 4 and Elm Road 1 and 2 for a total of about 1,850 MWs. The amount and type of generation additions in ATC's Futures start with MISO's expansion plans and are adjusted based on the load forecast specified in each ATC Future.

Model Year	Reference	20% Wind	Environmental	Regulatory ^a
2013	600 MW CT	600 MW CT		600 MW CT
2018	600 MW Coal	600 MW Coal		1,200 MW CT
2024	600 MW Coal	600 MW Coal	1,200 Nuclear	1,200 MW Coal

MISO MTEP09 Generator Additions Within ATC for Each MISO Future:

^a 5 year delay on new Coal and Combustion Turbines (CTs) & Combined Cycle (CC) near loads.

- 3) For ATC, the Mid load and energy growth rates are based on 2008 customer-supplied forecasts.
- 4) A lower load growth percentage was selected for the High Environmental future due to increased Demand Side Management and Energy Efficiency, not because of low economic growth. Conservation programs are assumed to impact the rate of energy growth inside ATC somewhat more than the peak demand growth in 2018 and 2024.
- 5) Most existing coal-fired generators have unit specific coal price forecasts from Ventyx (formerly NewEnergy Associates).
- 6) CAIR and CAMR regulations are assumed to be met in the mandated timeframes. This column means that the CO_2 tax affects the dispatch of the generators. The CO_2 tax can also affect the generation expansion plans. The starting point for the MISO expansion plan used in each ATC Future is specified in the next column.
- 7) The Reference, Environmental, 20% Wind and Regulatory Limitation refer to separate MISO MTEP09 Expansion plans.
- 8) CAPX Group 1 is assumed in place for 2018 and 2024 for all Futures. Also, all Futures include approved transmission upgrades from MTEP for 2013, 2018 & 2024.
- 9) NED is Alliant Energy's proposed 280 MW Nelson Dewey power plant.

²⁾ Approach: Determine the number of MWh that could be produced from planned renewables in WI, all other comes from outside.