## **ATC Futures**

AICF											
	Load	Energy	Load	Energy							%
	Growth	Growth	Growth	Growth				% Energy in		Renewables	
D	within	within	outside	outside	New low-cost generation			ATC from		inside/ outside WI <sup>2</sup>	
Drivers	ATC 2013,	ATC 2013,	ATC 2013,	ATC 2013,	2013	within ATC <sup>1</sup> 2018	2023	2013	wables 2018,	2013	2018,
	2013, 2018,	2013, 2018,	2013, 2018,	2013, 2018,	2013	2018	2023	2013	2018, 2023	2015	2013, 2023
Bounds	2023	2023	2023	2023					2023		
						Retirements:				Ins	ide:
					300 MW	950 MW	950 MW				
-					coal, No	coal, 500	coal, 500		10.04	50%	50%
Lower	0.5%	0.5%	0.5%	0.5%	NED	MW nuclear,	MW nuclear,	8%	10%	0	ut:
						No NED	No NED			50%	50%
						Retirements:				Ins	ide:
					150 MW	475 MW	475 MW				
Mid <sup>3</sup>	1.5%	1.5%	1.5%	1.5%	coal, NED	coal, NED	coal, NED	8%	10%	50%	50% side:
					is built	is built	is built			Out	side:
										50%	50%
						Retirements:					ide:
					None,	None,	Same as			50%	20%
Upper	3.0%	3.0%	3.0%	3.0%	NED is	NED is	2018, but	10%	25%	Out	side:
					built	built plus 500 MW	add 500 more				
						add'l coal	MWs coal			50%	80%
2013 Futu	res Descr	iptions									
Robust											
Economy High re-	3.0%	3.0%	3.0%	3.0%	Upper		N	Mid		Mid	
tirements	1.5%	1.5%	1.5%	1.5%	Lower		N	Mid	N	GA	
High	1.570	1.570	1.570	1.570	225 MW coal retirements plus NED		10.	IIu	Mid		
Environ.	$1.0\%^{4}$	$1.0\%^{4}$	$1.0\%^{4}$	$1.0\%^{4}$	280 MW built		Ur	Upper		Upper	
Slow Growth											
DOE 20%	0.5%	0.5%	0.5%	0.5%	Mid		Mid		N	lid	
Wind	2.0%	2.0%	2.0%	2.0%	Lower		20%		N	lid	
Fuel&Reg.	2.070	2.070	2.070	2.070	5 year delay on new Coal, CT & CC		2070		14.	lių	
Limitations	1.3%	1.3%	1.3%	1.3%	near loads		Mid		N	lid	
2018 Futu	res Descr	iptions			1			1		1	
Robust Economy	2.00	2.001	2.001	2.00		T			e a		r' 1
High re-	3.0%	3.0%	3.0%	3.0%	Upper		Mid		IV	lid	
tirements	1.5%	1.5%	1.5%	1.5%	Lower		Mid		Ν	[id	
High					950 MW coal retirements plus NED						
Environ. Slow	$1.0\%^{4}$	$1.0\%^{4}$	$1.0\%^{4}$	$1.0\%^{4}$	280 MW built		Upper		Up	per	
Growth	0.5%	0.5%	0.50	0.5%	Mid		Ma		N	C.A	
DOE 20%	0.3%	0.3%	0.5%	0.5%	IVIIU		Mid		IV	lid	
Wind	2.0%	2.0%	2.0%	2.0%		Lower		25	5%	N	lid
Fuel&Reg.					CT & CC near loads, Limited gen. &						
Limitations	1.3%	1.3%	1.3%	1.3%		trans. siting		N	lid	N	[id
2023 Futu Robust	ires Descr	iptions								1	
Economy	3.0%	3.0%	3.0%	3.0%		Upper		N	lid	N	lid
High re-	5.070	5.070	5.070	5.070			10110		Mid		
tirements	1.5%	1.5%	1.5%	1.5%	Lower		Mid		Mid		
High Environ.	4 4	4 4	4	4	950 MW coal retirements plus NED						
Slow	$1.0\%^{4}$	$1.0\%^{4}$	$1.0\%^{4}$	$1.0\%^{4}$	280 MW built		Upper		Ur	per	
Growth	0.5%	0.5%	0.5%	0.5%	Mid		N/	Mid Mid		GA	
DOE 20%	0.5%	0.5%	0.5%	0.5%	Mid		11.	na Mia		uu	
Wind	2.0%	2.0%	2.0%	2.0%	Lower		25	5%	N	lid	
Fuel&Reg.					CT & CC n	ear loads, Lin	nited gen. &				
Limitations	1.3%	1.3%	1.3%	1.3%	trans. siting		N	lid	Mid		

## ATC Futures (cont.)

AICFU		,	-				
	CapX 2020		Natural Gas price		Environmental	Generation Portfolios	
Drivers	Trans. <sup>5</sup>		forecast	Coal Price Forecast	Regulations	outside ATC	
	2013	2018,	2013,	2013,	2013,	2013	2018,
		2023	2018,	2018,	2018,		2023
Bounds			2023	2023	2023		
Doundo		CapX	2020		Status Quo-CAIR &	MISO	MISO
Lower	None	Phase	-30%	-10%	CAMR	MTEP09	MTEP09
Lower	None		-30 /0	-10 //	CANIK	WITE 09	WILL 09
		1				MICO	MIGO
		O V	NYMEX	MISO MAIN	Status Quo-CAIR &	MISO	MISO
		CapX	For 5 Years	\$2.00/MMBTU	CAMR	MTEP09	MTEP09
Mid	None	Phase	Followed by EIA	Delivered in 2010 &			
		1	Escalation Rate	2%/yr. (\$2.34 in			
				2018, \$2.59 in 2023)			
	CapX	CapX			Status Quo-CAIR &	MISO	MISO
Upper	Phase	Phase	40%	30%	CAMR & \$25/ton for	MTEP09	MTEP09
	1	1			CO <sub>2</sub> , 25% Higher		
					Mercury Costs		
2013 Future	s Descrip	tions			•		
Robust						2 1	ΛW
Economy	Upper		Mid-Upper – 20%	Mid-Upper – 15%	Status Ouo		
High re-	- 1 1		· · · · · · · · · · · · · · · · · · ·	III III		? MW	
tirements	No	ne	Mid-Upper – 20%	Lower	Status Quo		
High	110	lie		Lower	\$25/ton CO2 Tax,	? MW	
Environ.	No		Unnor	Lower	+25% Mercury Cost	MISO Environmental	
	INO	ne	Upper	Lower	+23% Mercury Cost		
Slow			T			? MW	
Growth	No	ne	Lower	Mid	Status Quo		
DOE 20%						? MW	
Wind	Upper		Upper	Lower	Status Quo		0% Wind
Fuel&Reg.						? MW	
Limitations	None		Mid-Upper – 20%	Mid	Status Quo	MISO Reg. Limitation	
2018 Future	s Descrip	tions					
Robust						? N	4W
Economy	Upper		Mid-Upper – 20%	Mid-Upper – 15%	Status Quo		
High re-						? MW	
tirements	Mid		Mid-Upper – 20%	Lower	Status Quo		
High					\$25/ton CO2 Tax,	2 N	4W
Environ.	Mid		Upper	Lower	+25% Mercury Cost	MISO Environmental	
Slow	19110		opper	Lower		? MW	
Growth	M	d	Lower	Mid	Status Quo	: 1	1 **
	IVI	iu	Lower	Wild	Status Quo	21	4337
DOE 20%	NC 1					? MW	
Wind	Mid		Upper	Lower	Status Quo	MISO 20% Wind	
Fuel&Reg.					a -	? MW	
Limitations	M		Mid-Upper – 20%	Mid	Status Quo	MISO Reg	. Limitation
2023 Future	s Descrip	tions					
Robust						? N	IW
Economy	Upper		Mid-Upper – 20%	Mid-Upper – 15%	Status Quo		
High re-						? N	1W
tirements	Mid		Mid-Upper – 20%	Lower	Status Quo		
High			**		\$25/ton CO2 Tax,	? N	1W
Environ.	Mid		Upper	Lower	+25% Mercury Cost	MISO Environmental	
Slow							IW
Growth	Mid		Lower	Mid	Status Quo	. 1	- · ·
DOE 20%	141	u	Lowel	19110	Status Quo	91	ſW
	1.0		I.I.e.	T	Status O		
Wind	Mid		Upper	Lower	Status Quo	MISO 20% Wind ? MW	
Fuel&Reg.			10111 005				
Limitations	Mid		Mid-Upper – 20%	Mid	Status Quo	MISO Reg. Limitation	

Notes:

- 1) All scenarios include Weston 4 and Elm Road 1 and 2 for a total of about 1,800 MWs.
- 2) Approach: Determine # of MWh that could be produced from planned renewables in WI, all other comes from outside.
- 3) Mid load growth was based primarily on ATC's normalized peak growth rate over the past 5 years.
- 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.
- 5) Includes approved transmission upgrades from MTEP for 2013, 2018 & 2023.