Table UP-2: ATC Futures - ATC Energy Collaborative - Michigan

														- ATC Energy Collab oternal Use Only Discus											
						Load A	Assumption	s					January 2, 2009 (ATC Internal Use Only Discussion) (Rev 4.0) Generation Assumptions												
<u>UP Micro-</u> <u>Drivers</u>	Demand Growth Within UP (Demand MWs)			Energy Growth Within UP (Energy MWHrs)				Loads MW added in the UP		Total UP Growth (2018)	Total UP Growth (2024)	Demand Growth Outside UP (MWs)		Existing UP Generation Profile (Note: U.P. generation on-line only if dictated by merit order dispatch, or unless noted below)				ration Additions	UP Generation retirements			Wind Generation			New Generation in Northern Lower Michigan
Bounds		Central	•	West Central		East	West	Central	East	U.P.	U.P.	, ,	West	Central	East	West	Central	East	West	Central	East			ral East	
							(-6 / 0)	(-111 / 0)	(-2 / 0)				Fossil (-69MW Total) 'WP Mine1 2-3 (40) + SM-ST (11) + Warden (18)		9.4MW Diesel Available			5 MW		116 MW					
Lower	-0.10%	0.08%	0.10%	-0.10%	0.08%	0.10%	-6 MW	-111 MW	-2 MW	-1.44%	-0.86%	0.5%	Hydro 20% of max	Hydro 20% of max	0MW Hydro Available	None	None	5MW Diesel	None	PI3-4 (116)	None	Zero	Zero	Zero	Zero
Mid-Lower	0.36%	0.48%	0.40%	0.36%	0.48%	0.40%	No Change	(-40 / 0) -40 MW	No Change	-0.24%	-0.05%	1.0%	(-51MW Total) 'WP Mine1-2-3 (40) + SM-ST (11) Hydro 20% of max	Fossil (-134MW Total) PI5-6 Derate (40) + ESC 1-2 (26) + Neenah-MUN (5) + MBLP (25) + NP7 (38) Hydro 20% of max			None								
Mid	0.73%	0.84%	0.75%	0.73%	0.84%	0.75%	(+5 / 0) +5 MW	(+29 / 0) +29 MW	(+33 / 0) +33 MW	1.14%	0.84%	1.75%	(-40MW Total) 'WP Mine1-2-3 (40) Hydro 40% of max	Fossil (-65MW Total) PI5-6 Derate (40) + MBLP (25) Hydro 40% of max,	11.4MW Diesel Available 20MW Hydro Available	None	10MW 10MW Bio Mass NMU	29 MW 5MW Diesel + 24MW Bio Mass	None		None	25MW	50MW	50MW	100MW
Mid-Upper	1.23%		1.25%			1.25%		(+79 / +20) +99 MW		2.00%			Fossil all available Hydro 50% of max	Fossil (-40MW Total) PI 5-6 (40) Hydro 50% of max	11.4MW diesel Available 32MW Hydro Available		35MW 10 NMU+25 Sawyer Bio Mass	93MW	None		None	50MW	100MW		
Upper	1.93%	2.00%	2.00%	1.93%	2.00%	2.00%			(+46 / +10) +56 MW	3.00%	2.58%	3.0%	Fossil all available Hydro 60% of max	Fossil all available Hydro 60% of max	16MW Diesel Available 44MW Hydro Available	None	50MW 10 NMU+40 Sawyer Bio Mass	101 MW 8MW Diesel + 24MW Bio	None	138 MW PI3-4 (116) +GLAD (22)	None	100MW	200MW		600MW
2018 Futures Descriptions	(14.00%)	L (10.00%)	(10.00%)	(14.00%)	(10.00%)	(10,00%)	(140 MM)	L (140411110)	(+46 MW)	(12.00%)		2.09/	OMW	I annu	20MW Hydro	()	2EM/M	(+104 MW)	(nono)	(116 M/W)	Lann	(105 MM)	. (.50 MM)	. (150 MM)	To coo MAN

•	(+1.93%)	(+2.00%)	(+2.00%)	(+1.93%)	(+2.00%)	(+2.00%)	(+19 MW)	(+134 MW)	(+46 MW)	(+3.00%)		3.0%	-0MW	-0MW	20MW Hydro	(none)	35MW	(+101 MW)	(none)	(-116 MW)	(none)	(+25 MW)	(+50 MW)	(+50 MW)	(+ 600 MW)
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Robust Economy	Upper	Upper	Upper	Upper	Į	Upper	Upper	Upper	Mid	Upper	Mid-Upper	Upper	Lower	Lower	Lower	Mid	Mid	Mid	Upper						
	(+0.73%)	(+0.84%)	(+0.75%)	(+0.73%)	(+0.84%)	(+0.75%)	(+5 MW)	(+29 MW)	(+33 MW)	(+1.14%)	1	1.75%	-69MW	-151MW	32MW Hydro	(none)	(none)	(+29MW)	(none)	(-138 MW)	(none)	(+25 MW)	(+50 MW)	(+50 MW)	(+ 600 MW)
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High Retirements	Mid	Mid	Mid	Mid		Mid	Lower	Lower	Mid-Upper	Lower	Lower	Mid	Lower	Upper	Lower	Mid	Mid	Mid	Upper						
	(+0.36%)	(+0.48%)	(+0.40%)	(+0.36%)	(+0.48%)	(+0.40%)	(no change)	(-40 MW)	(no change)	(-0.24%)		1.0%	-51MW	-134MW	20MW Hydro	(none)	(none)	(+5 MW)	(none)	(-116 MW)	(none)	(+50 MW)	(+100 MW)	(+100 MW)	(none)
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High Environmental	Mid-Lower	Mid-Lower	Mid-Lower	Mid-Lower	Mic	id-Lower	Mid-Lower	Mid-Lower	Mid	Lower	Lower	Lower	Lower	Lower	Lower	Mid-Upper	Mid-Upper	Mid-Upper	Lower						
	(-0.10%)	(+0.08%)	(+0.10%)	(-0.10%)	(+0.08%)	(+0.10%)	(-6 MW)	(-111 MW)	(-2 MW)	(-1.44%)		0.5%	-40MW	-65MW	44MW Hydro	(none)	10MW	(+5 MW)	(none)	(-116 MW)	(none)	(+100 MW)	(+200 MW)	(+200 MW)	(none)
																								()	1
Slow Growth	Lower	Lower	Lower	Lower	L	Lower	Mid	Mid	Upper	Mid	Mid	Lower	Lower	Lower	Lower	Upper	Upper	Upper	Lower						
	(+1.23%)	(+1.25%)	(+1.25%)	(+1.23%)	(+1.25%)	(+1.25%)	(+16 MW)	(+79 MW)	(+35 MW)	(+2.00%)		2.0%	-69MW	-151MW	20MW Hydro	(none)	(none)	(+93 MW)	(none)	(-138 MW)	(none)	(+100 MW)	(+200 MW)	(+200 MW)	(+ 100 MW)
																									(Wind)
DOE 20% Wind	Mid-Upper	Mid-Upper	Mid-Upper	Mid-Upper	Mic	id-Upper	Lower	Lower	Mid	Lower	Lower	Mid-Upper	Lower	Upper	Lower	Upper	Upper	Upper	Mid						
	(+0.73%)	(+0.84%)	(+0.75%)	(+0.73%)	(+0.84%)	(+0.75%)	(no change)	(+6 MW)	(no change)	(0.48%)		1.3%	-40MW	-65MW	0MW Hydro	(none)	10MW	(+5 MW)	(none)	(-116 MW)	(none)	(none)	(none)	(none)	(none)
Fuel and Investment																									
Fuel and Investment	Mid	Mid	Mid	Mid	Mid	Mid	Mid Lawer	Mid-Lower	Mid Lawer	Mid Lawer	Maio	id-l ower	Mid	Mid	Lawar	Mid	Mid	Louis	Lawar	Lower	Lawer	Lower	Lawar	Louis	Lawer
Limitations	IVIIG	IVIIQ	IVIIU	IVIIU	IVIIQ	IVIIU	Mid-Lower	Mid-Lower	Mid-Lowel	Mid-Lower	IVIIC	iu-Lowei	IVIIQ	IVIIU	Lower	IVIIU	IVIIG	Lower	Lowel	Lower	Lower	Lowel	Lower	Lower	Lower

2024 Futures Descriptions

	(+1.93%)	(+2.00%)	(+2.00%)	(+1.93%)	(+2.00%)	(+2.00%)	(+41 MW)	(+184 MW)	(+56 MW)	(+2.58%)	3.0%	-0MW	-0MW	20MW Hydro	(none)	50MW	(+101 MW)	(none)	(-116 MW)	(none)	(+25 MW)	(+50 MW)	(+50 MW)	(+ 600 MW)
Robust Economy	Upper	Upper	Upper	Upper	Upper	Upper	Upper	Mid	Upper	Upper	Upper	Lower	Lower	Lower	Mid	Mid	Mid	Upper						
	(+0.73%)	(+0.84%)	(+0.75%)	(+0.73%)	(+0.84%)	(+0.75%)	(+5 MW)	(+29 MW)	(+33 MW)	(+0.84%)	1.75%	-69MW	-151MW	32MW Hydro	(none)	(none)	(+29MW)	(none)	(-138 MW)	(none)	(+25 MW)	(+50 MW)	(+50 MW)	(+ 600 MW)
High Retirements	Mid	Mid	Mid	Mid	Mid	Lower	Lower	Mid-Upper	Lower	Lower	Mid	Lower	Upper	Lower	Mid	Mid	Mid	Upper						
	(+0.36%)	(+0.48%)	(+0.40%)	(+0.36%)	(+0.48%)	(+0.40%)	(no change)	(-40 MW)	(no change)	(-0.05%)	1.0%	-51MW	-134MW	20MW Hydro	(none)	(none)	(+5 MW)	(none)	(-116 MW)	(none)	(+50 MW)	(+100 MW)	(+100 MW)	(none)
High Environmental	Mid-Lower	Mid-Lower	Mid-Lower	Mid-Lower	Mid-Lower	Mid-Lower	Mid-Lower	Mid	Lower	Lower	Lower	Lower	Lower	Lower	Mid-Upper	Mid-Upper	Mid-Upper	Lower						
	(-0.10%)	(+0.08%)	(+0.10%)	(-0.10%)	(+0.08%)	(+0.10%)	(-6 MW)	(-111 MW)	(-2 MW)	(-0.86%)	0.5%	-40MW	-65MW	44MW Hydro	(none)	10MW	(+5 MW)	(none)	(-116 MW)	(none)	(+100 MW)	(+200 MW)	(+200 MW)	(none)
																							()	
Slow Growth	Lower	Lower	Lower	Lower	Lower	Mid	Mid	Upper	Mid	Mid	Lower	Lower	Lower	Lower	Upper	Upper	Upper	Lower						
	(+1.23%)	(+1.25%)	(+1.25%)	(+1.23%)	(+1.25%)	(+1.25%)	(+19 MW)	(+99 MW)	(+40 MW)	(+1.60%)	2.0%	-69MW	-151MW	20MW Hydro	(none)	(none)	(+93 MW)	(none)	(-138 MW)	(none)	(+100 MW)	(+200 MW)	(+200 MW)	(+ 100 MW)
																							()	(Wind)
DOE 20% Wind	Mid-Upper	Mid-Upper	Mid-Upper	Mid-Upper	Mid-Upper	Lower	Lower	Mid	Lower	Lower	Mid-Upper	Lower	Upper	Lower	Upper	Upper	Upper	Mid						
	(+0.73%)	(+0.84%)	(+0.75%)	(+0.73%)	(+0.84%)	(+0.75%)	(no change)	(+6 MW)	(no change)	(0.45%)	1.3%	-40MW	-65MW	0MW Hydro	(none)	10MW	(+5 MW)	(none)	(-116 MW)	(none)	(none)	(none)	(none)	(none)
Fuel and Investment																						_		
Limitations	Mid	Mid	Mid	Mid	Mid	Mid	Mid-Lower	Mid-Lower	Mid-Lower	Mid-Lower	Mid-Lower	Mid	Mid	Lower	Mid	Mid	Lower	Lower	Lower	Lower	Lower	Lower	Lower	Lower