

The logo for the American Transmission Company (ATC) is located in the top left corner. It features a stylized white transmission tower with multiple cross-arms and insulators, set against a blue background. A thick, curved black line sweeps across the top of the slide, partially obscuring the tower.

ATC Economic Planning Generation Portfolio Workshop

August 22, 2008



Workshop Agenda

Time	Topic	Presenter
9:30 - 9:45	Introductions	Dale Burmester
9:45 - 10:15	Background Information -ATC Futures Matrix -MISO MTEP PROMOD Models / JCSP Models	Dale Burmester Todd Tadych
10:15 - 11:45	Generation Within the MISO Models -MW vs. Load Percentages -Total Generation - Location and Type -MISO Expansion Generation	Todd Tadych
11:45 - 12:15	Lunch	
12:15 - 1:45	Generation needed to meet the ATC Futures Matrix Assumptions -MW Calculations -Potential Siting Methodology	Todd Tadych
1:45 - 2:00	Next Steps / Q & A	Dale Burmester Todd Tadych

Background Information

ATC Futures Matrix

ATC Futures

Drivers	Load Growth within ATC	Energy Growth within ATC	Load Growth outside ATC	Energy Growth outside ATC	Small Capacity Coal Retirements Within ATC	Generator Additions Within ATC	MISO MTEP09 Generation Portfolios Outside ATC
Bounds	2024	2024	2024	2024	2024	2024	2024
Lower	0.5%	0.5%	0.5%	0.5%	880 MW	No NED	N/A
Mid	1.75%	1.75%	1.75%	1.75%	440 MW	NED	N/A
Upper	3.0%	3.0%	3.0%	3.0%	None	NED, 600 More Coal	N/A
2024 Futures Descriptions							
Robust Economy	3.0%	3.0%	3.0%	3.0%	Upper		Reference
High Retirements	1.5%	1.5%	1.5%	1.5%	Lower (with NED)		Environmental
High Environmental	1.0%	0.8%	1.1%	1.1%	Lower		Environmental
Slow Growth	0.5%	0.5%	0.5%	0.5%	Mid		Reference
DOE 20% Wind	2.0%	2.0%	2.0%	2.0%	Lower		20% Wind
Fuel & Inv. Limitations	1.3%	1.3%	1.3%	1.3%	Mid		Investment Limitation



Background Information

MISO MTEP09 / JCSP PROMOD Models

- MISO Joint Planning Initiatives
 - MISO Transmission Expansion Plan (MTEP09)
 - Joint Coordinated System Plan (JCSP)
 - MISO
 - SPP
 - PJM
 - TVA
 - Other Interested Parties
 - Using process developed by MISO for MTEP08



Background Information

MISO MTEP09 / JCSP PROMOD Models

- MTEP09 Future Scenarios
 - Reference Future
 - Models the Status Quo. This future models the power system as it exists today with reference values and trends based on recent historical data while preserving existing standards for resource adequacy, existing renewable mandates and environmental legislation
 - 20% Wind Mandate Future
 - Requires 20% of the energy consumption come from wind by 2024. Regional Capacity Factors of new units applied toward mandate, and 15% of Maximum Capacity counted toward Reserve Margin Calculations. Existing Wind mandates accounted for in Reference Future are applied to all futures.



Background Information

MISO MTEP09 / JCSP PROMOD Models

- MTEP09 Future Scenarios
 - Environmental Future
 - Assumes environmentally friendly legislation including a carbon tax of \$25 per ton and a 25% higher cost on mercury.
 - Limited Investment Future
 - Future is limited by uncertainty, risk, cost control policies, siting limitations and limited transmission. Permitting limitations on transmission results in limited corridors. Permitting limitations on greenfield sites limits siting of gas to load centers. Risk, uncertainty and permitting of Coal / IGCC causes 5 year delay on generation permitting until clean technologies mature and legislation is identified.



Background Information

MISO MTEP09 / JCSP PROMOD Models

- MTEP09 vs MTEP08
 - Generation expansion process used for MTEP09 followed that developed for MTEP08
 - MTEP09 models include updates to economic variables
 - Incremental generation expansion analysis for MTEP09 is different from MTEP08
 - MTEP08 expansions essentially “wiped clean” prior to starting MTEP09 expansion analysis



Generation and Load Within the MISO Models

- Generation vs Load Percentages from PowerBase

2008 Gen vs Load (%) *Wind at 15%*****

Area	Environmental	Limited Investment	Reference	Wind
MISO - All	4.82%	4.82%	4.82%	-16.09%
MISO - Central	10.35%	10.35%	10.35%	-11.13%
MISO - East	10.60%	10.60%	10.60%	-22.63%
MISO - West	-6.05%	-6.05%	-6.05%	-14.44%
MRO - Non MISO	17.11%	17.11%	17.27%	-0.18%
ComEd	-19.29%	-19.29%	-17.85%	-19.29%

2024 Gen vs Load (%) *Wind at 15%*****

Area	Environmental	Limited Investment	Reference	Wind
MISO - All	17.23%	20.19%	19.38%	19.18%
MISO - Central	25.82%	25.39%	25.39%	26.01%
MISO - East	9.84%	23.24%	20.64%	20.97%
MISO - West	16.79%	12.90%	12.90%	11.51%
MRO - Non MISO	10.23%	10.71%	10.71%	13.28%
ComEd	9.55%	-2.09%	-5.81%	-0.85%



Generation and Load Within the MISO Models

- Total Generation from PowerBase

2008 Total Gen (MW) ***Wind at 15%***				
Area	Environmental	Limited Investment	Reference	Wind
MISO - All	127813.52	127813.52	127813.52	102313.52
MISO - Central	43665.00	43665.00	43665.00	35165.00
MISO - East	44932.07	44932.07	44932.07	31432.07
MISO - West	39216.45	39216.45	39216.45	35716.45
MRO - Non MISO	23032.44	23032.44	23064.44	19632.44
ComEd	19238.77	19238.77	19583.25	19238.77

2024 Total Gen (MW) ***Wind at 15%***				
Area	Environmental	Limited Investment	Reference	Wind
MISO - All	168881.22	178481.22	177281.22	176981.22
MISO - Central	57037.00	60637.00	60637.00	60937.00
MISO - East	54643.07	57043.07	55843.07	55993.07
MISO - West	57201.15	60801.15	60801.15	60051.15
MRO - Non MISO	24664.44	25864.44	25864.44	26464.44
ComEd	32783.25	31583.25	30383.25	31983.25



Generation and Load Within the MISO Models

2008 Non-Coincident Peak Demand (MW)

Area	Environmental	Limited Investment	Reference	Wind
MISO - All	123200.00	123414.00	123414.00	123414.00
MISO - Central	39904.00	40064.00	40064.00	40064.00
MISO - East	41138.00	40954.00	40954.00	40954.00
MISO - West	42158.00	42396.00	42396.00	42396.00
MRO - Non MISO	19826.00	19879.00	19879.00	19879.00
ComEd	24178.00	24292.00	24292.00	24292.00

2024 Non-Coincident Peak Demand (MW)

Area	Environmental	Limited Investment	Reference	Wind
MISO - All	144061.00	148502.00	148502.00	148502.00
MISO - Central	45332.00	48360.00	48360.00	48360.00
MISO - East	49750.00	46288.00	46288.00	46288.00
MISO - West	48979.00	53854.00	53854.00	53854.00
MRO - Non MISO	22376.00	23362.00	23362.00	23362.00
ComEd	29925.00	32259.00	32259.00	32259.00

2008 - 2024 Average Non-Coincident Peak Demand Growth (%)

Area	Environmental	Limited Investment	Reference	Wind
MISO - All	1.0475%	1.2394%	1.2394%	1.2394%
MISO - Central	0.8534%	1.2618%	1.2618%	1.2618%
MISO - East	1.2746%	0.8191%	0.8191%	0.8191%
MISO - West	1.0040%	1.6047%	1.6047%	1.6047%
MRO - Non MISO	0.8098%	1.0819%	1.0819%	1.0819%
ComEd	1.4317%	1.9090%	1.9090%	1.9090%



Generation and Load Within the MISO Models

2008 Energy (GWh)

Area	Environmental	Limited Investment	Reference	Wind
MISO - All	620983.00	621964.00	621964.00	621964.00
MISO - Central	209196.00	209815.00	209815.00	209815.00
MISO - East	204548.00	204038.00	204038.00	204038.00
MISO - West	207239.00	208111.00	208111.00	208111.00
MRO - Non MISO	99330.00	99591.00	99591.00	99591.00
ComEd	104639.00	105061.00	105061.00	105061.00

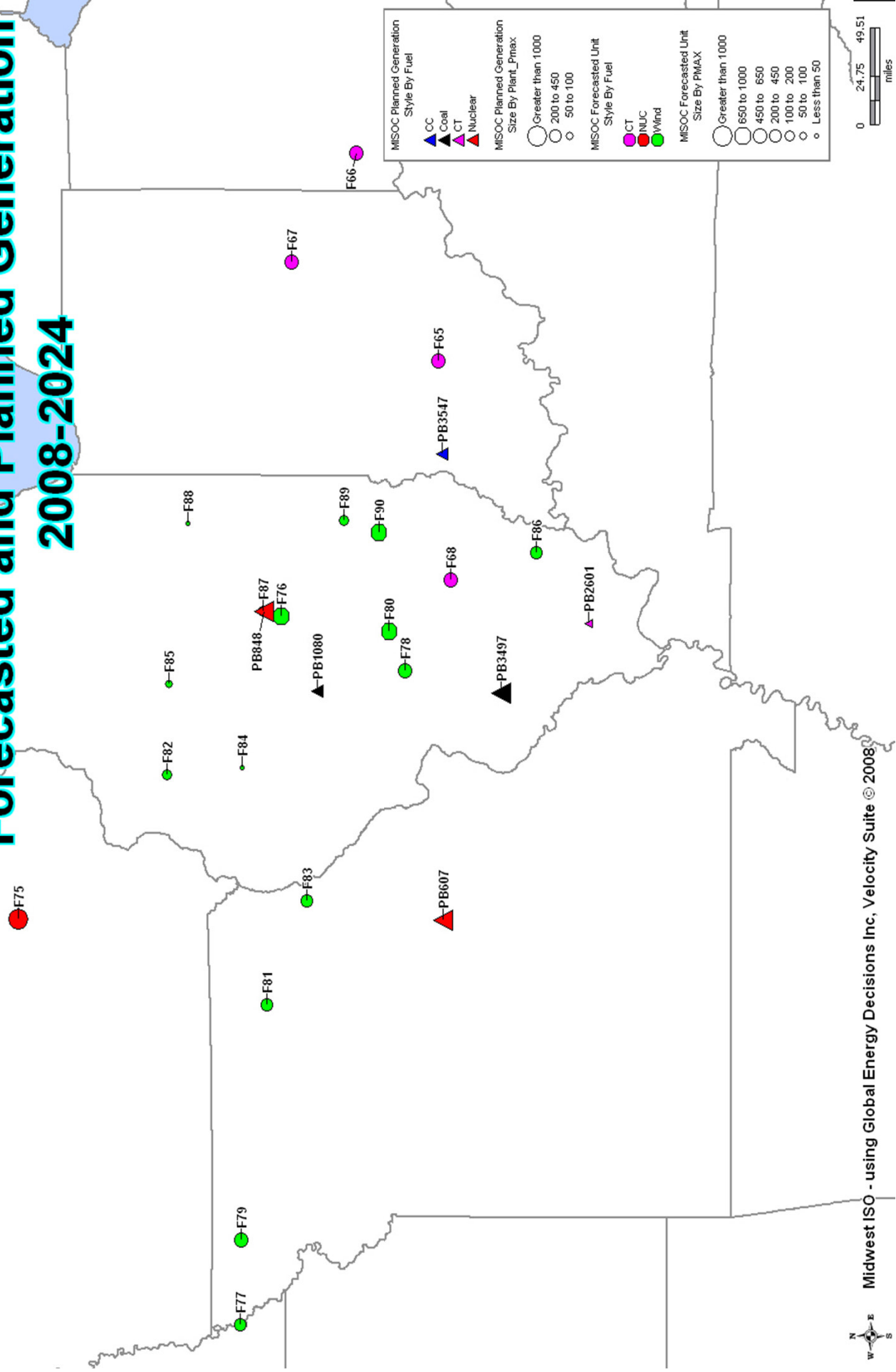
2024 Energy (GWh)

Area	Environmental	Limited Investment	Reference	Wind
MISO - All	714640.01	733941.01	733941.01	733941.01
MISO - Central	237090.00	248632.00	248632.00	248632.00
MISO - East	239926.00	230551.00	230551.00	230551.00
MISO - West	237624.01	254758.01	254758.01	254758.01
MRO - Non MISO	111969.00	116843.00	116843.00	116843.00
ComEd	125632.00	134000.00	134000.00	134000.00

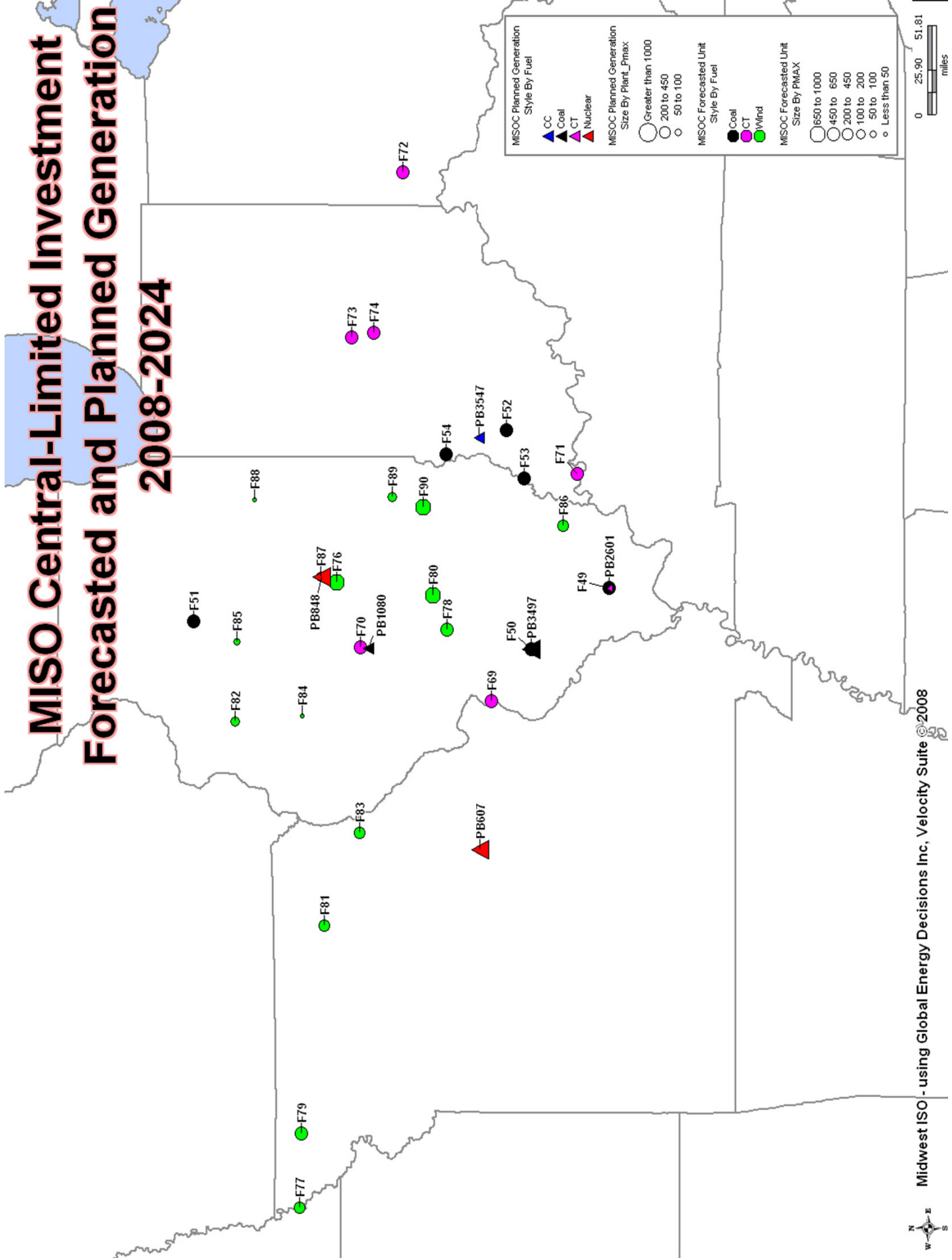
2008 - 2024 Average Energy Growth (%)

Area	Environmental	Limited Investment	Reference	Wind
MISO - All	0.9403%	1.1086%	1.1086%	1.1086%
MISO - Central	0.8375%	1.1376%	1.1376%	1.1376%
MISO - East	1.0688%	0.8173%	0.8173%	0.8173%
MISO - West	0.9155%	1.3556%	1.3556%	1.3556%
MRO - Non MISO	0.8014%	1.0702%	1.0702%	1.0702%
ComEd	1.2264%	1.6352%	1.6352%	1.6352%

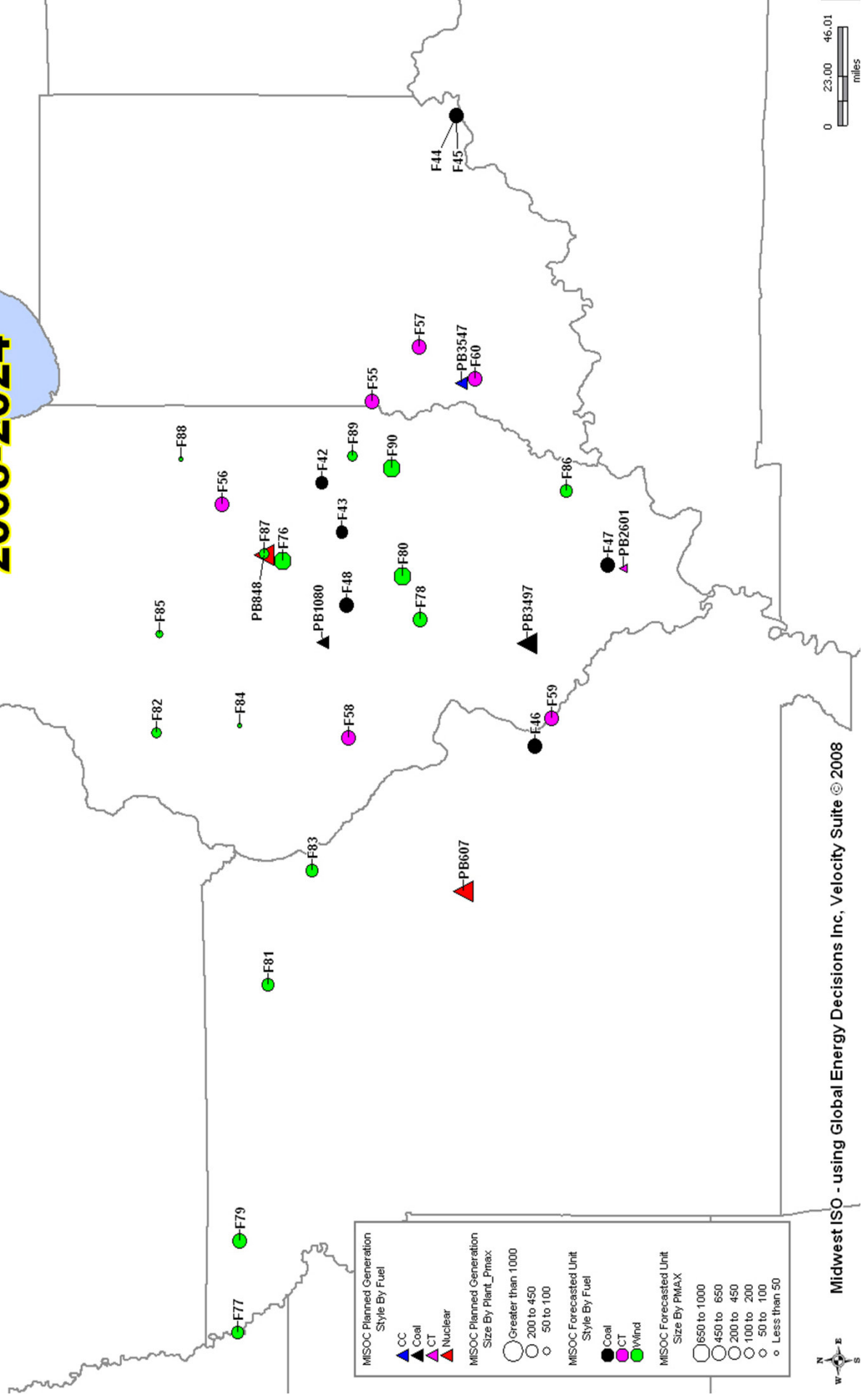
MISO Central-Environmental Future Forecasted and Planned Generation 2008-2024



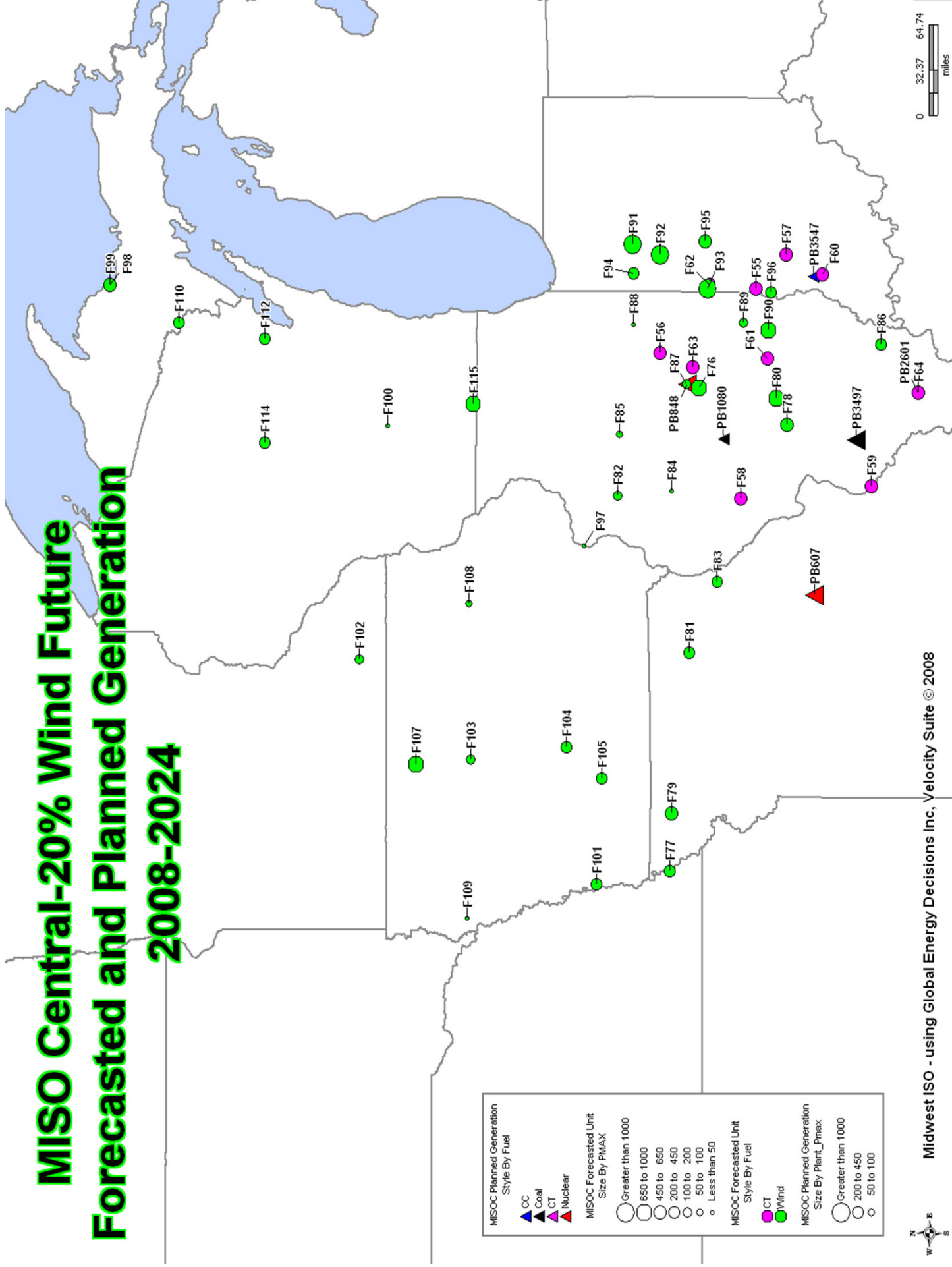
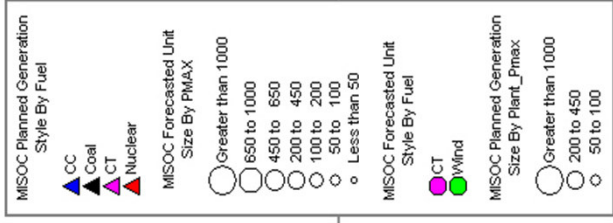
MISO Central-Limited Investment Forecasted and Planned Generation 2008-2024



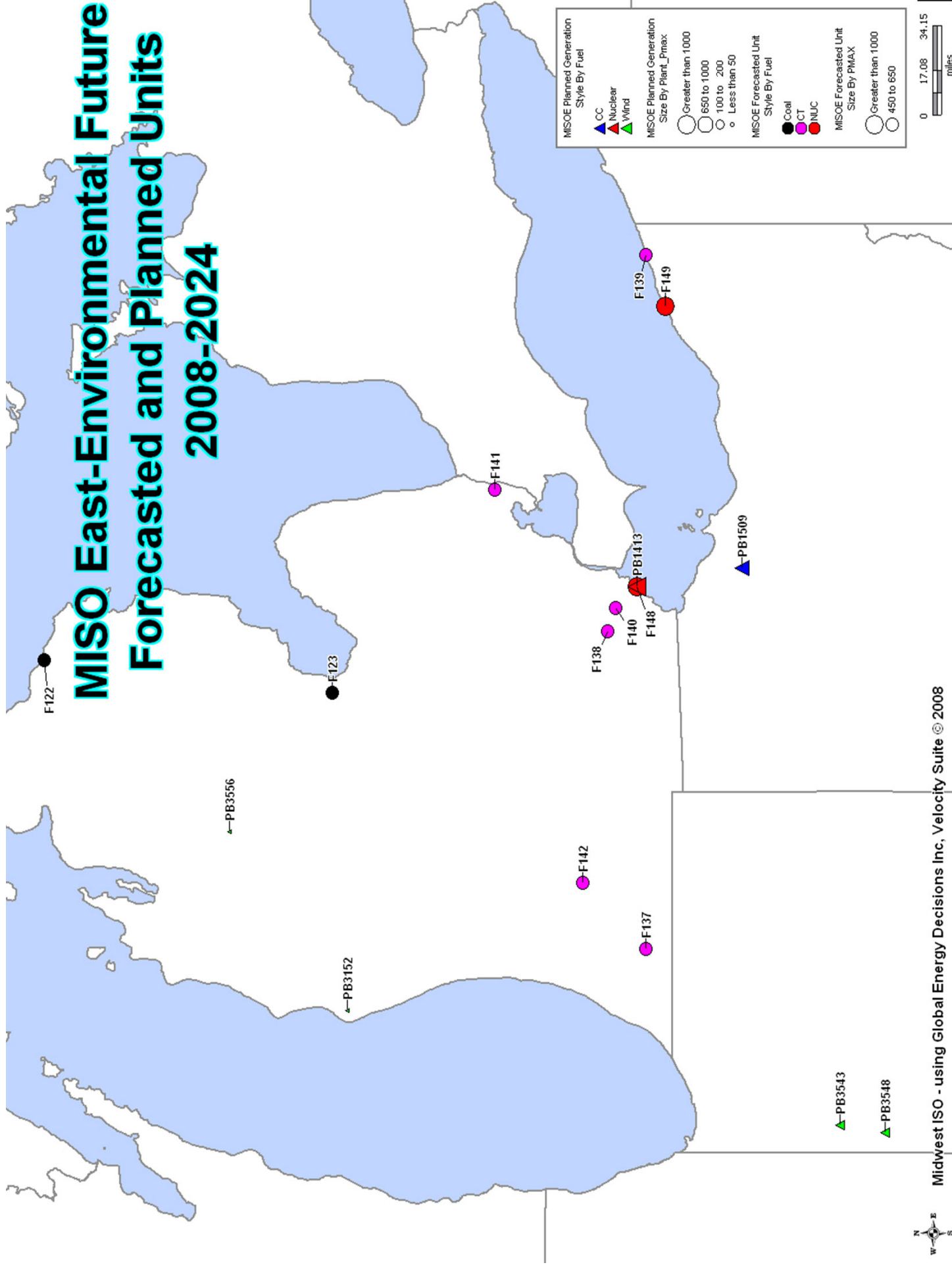
MISO Central-Reference Future Forecasted and Planned Generation 2008-2024



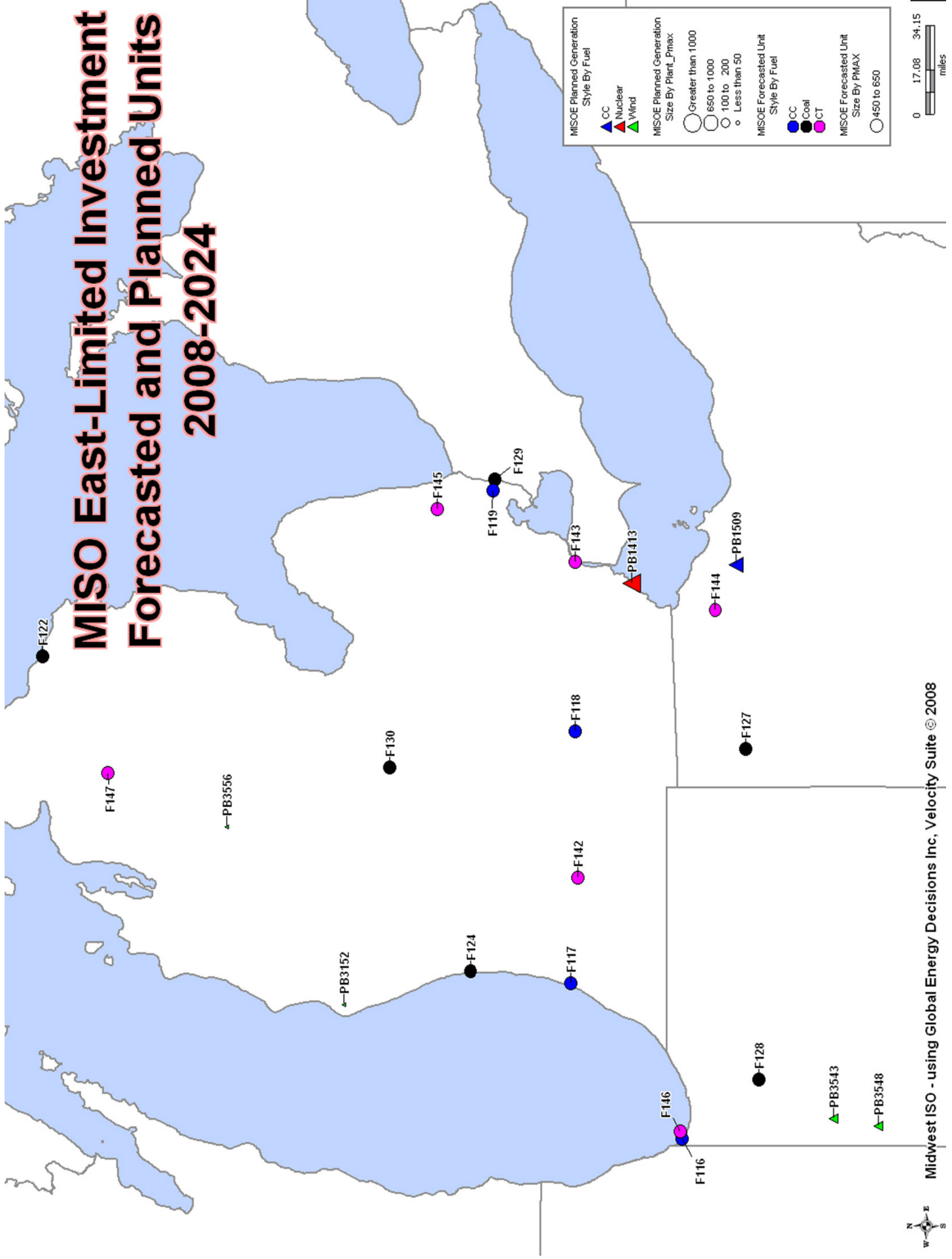
MISO Central-20% Wind Future Forecasted and Planned Generation 2008-2024



MISO East-Environmental Future Forecasted and Planned Units 2008-2024



MISO East-Limited Investment Forecasted and Planned Units 2008-2024



MISO East-Reference Future Forecasted and Planned Units 2008-2024

Legend:

- MISOE Planned Generation Style By Fuel**
 - CC (Blue triangle)
 - Nuclear (Red triangle)
 - Wind (Green triangle)
- MISOE Planned Generation Size By Plant_Pmax**
 - Greater than 1000 (Large circle)
 - 650 to 1000 (Medium circle)
 - 100 to 200 (Small circle)
 - Less than 50 (Tiny circle)
- MISOE Forecasted Unit Style By Fuel**
 - Coal (Black circle)
 - CT (Pink circle)
- MISOE Forecasted Unit Size By Pmax**
 - 450 to 650 (Medium circle)

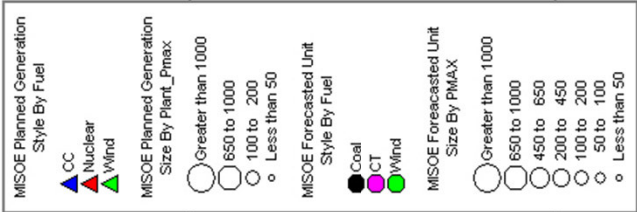
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Scale: 0, 17.08, 34.15 miles

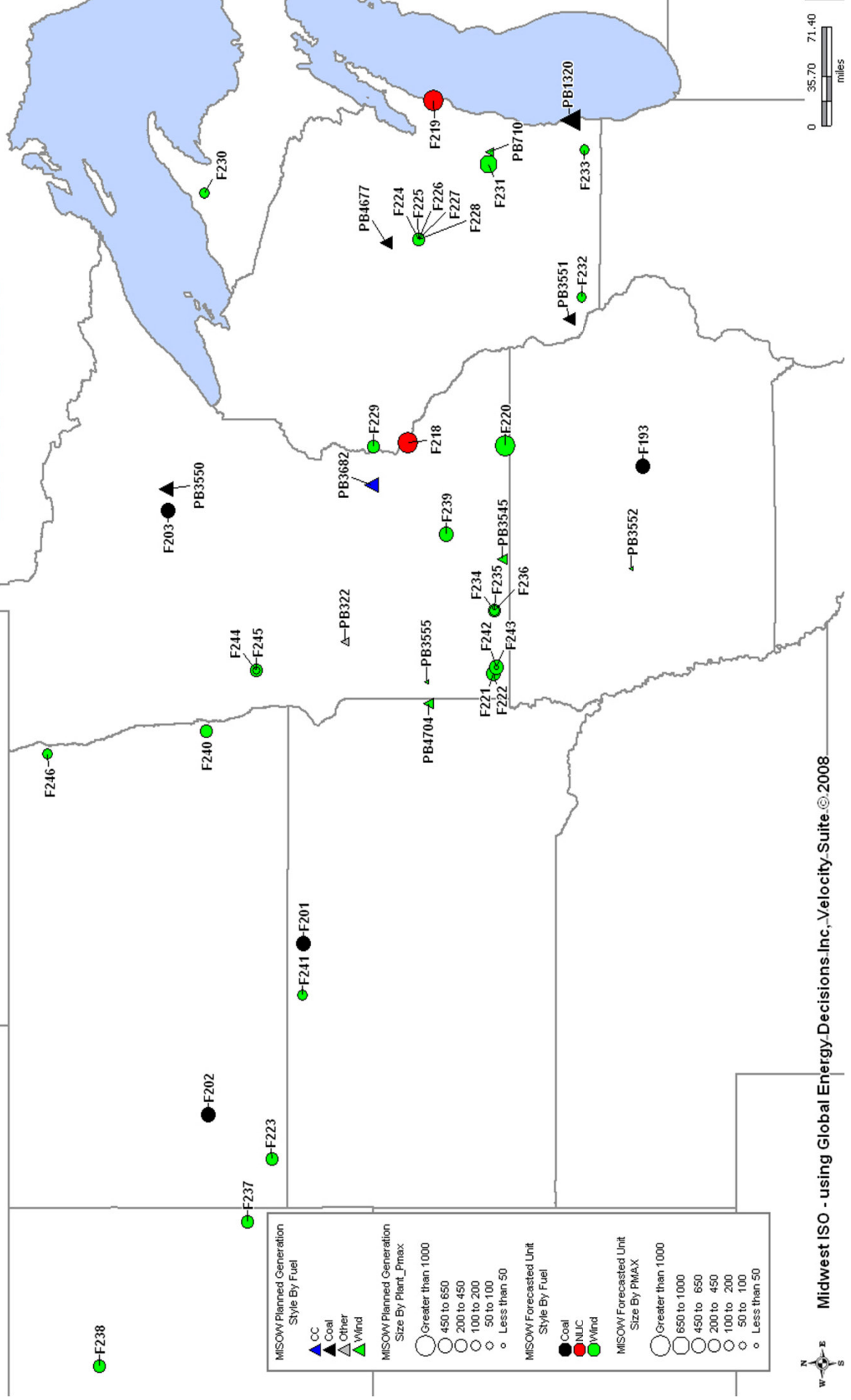
Midwest ISO - using Global Energy Decisions Inc., Velocity Suite © 2008



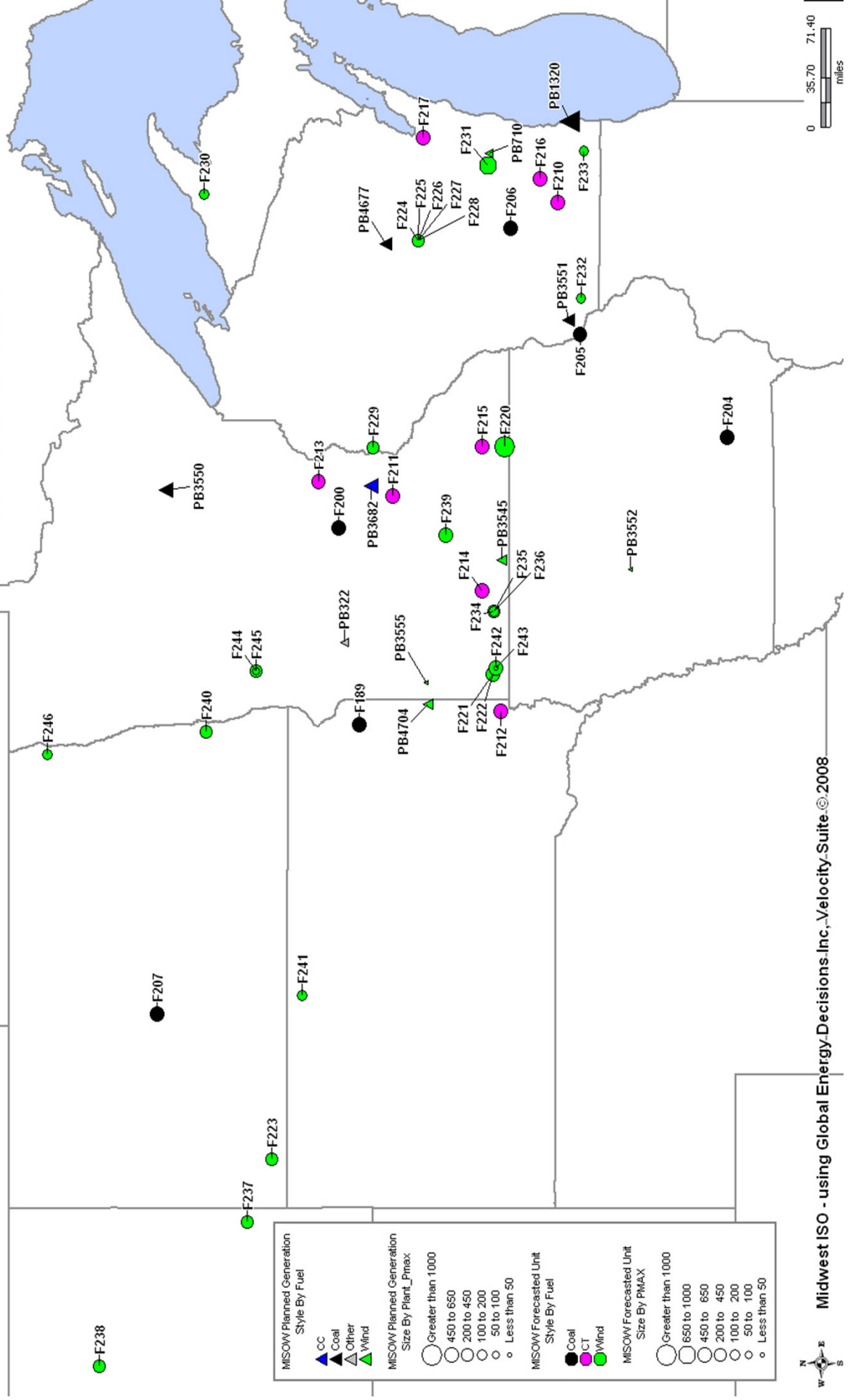
Forecasted and Planned Units



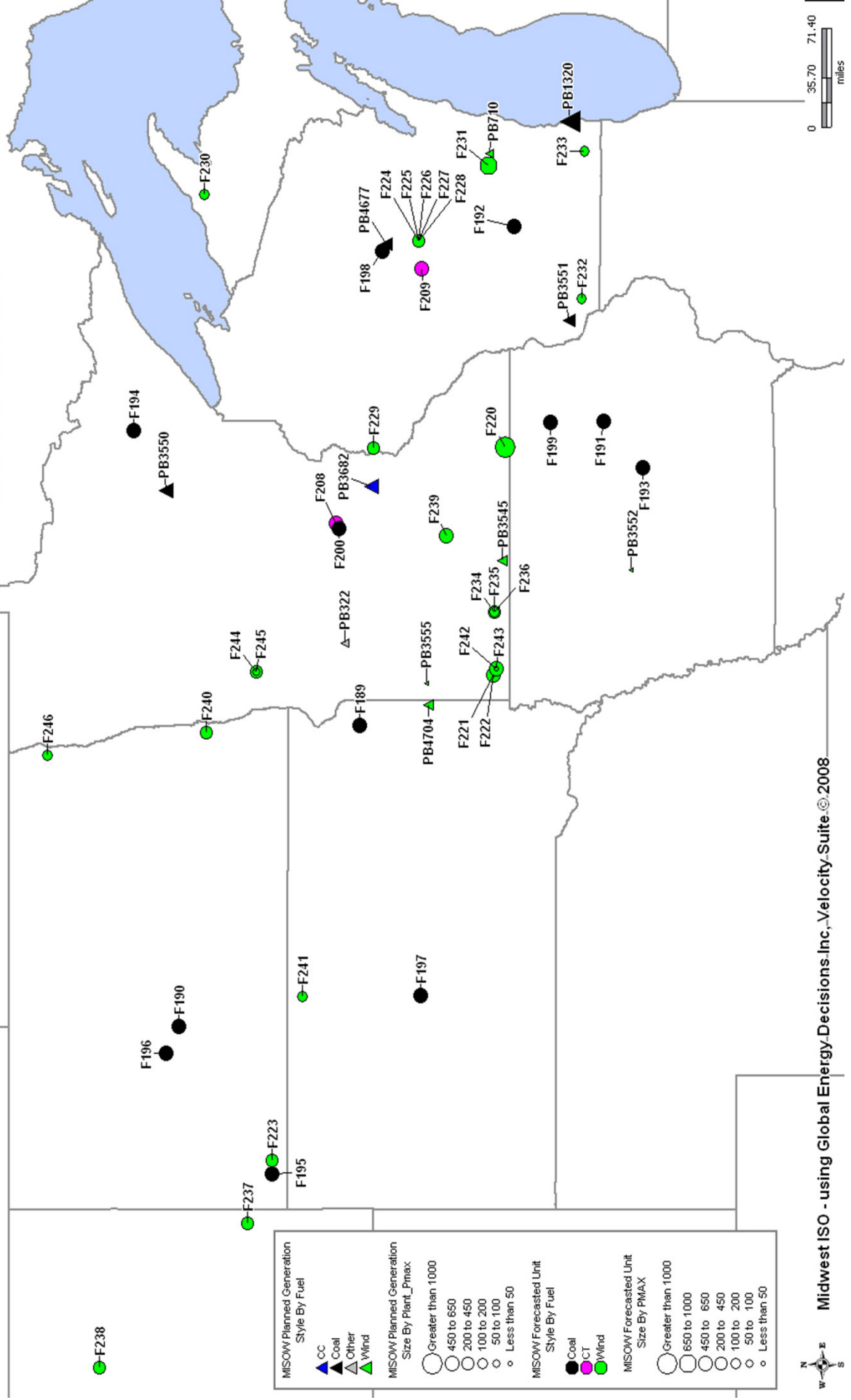
MISO West-Environmental Future Forecasted and Planned Units 2008-2024



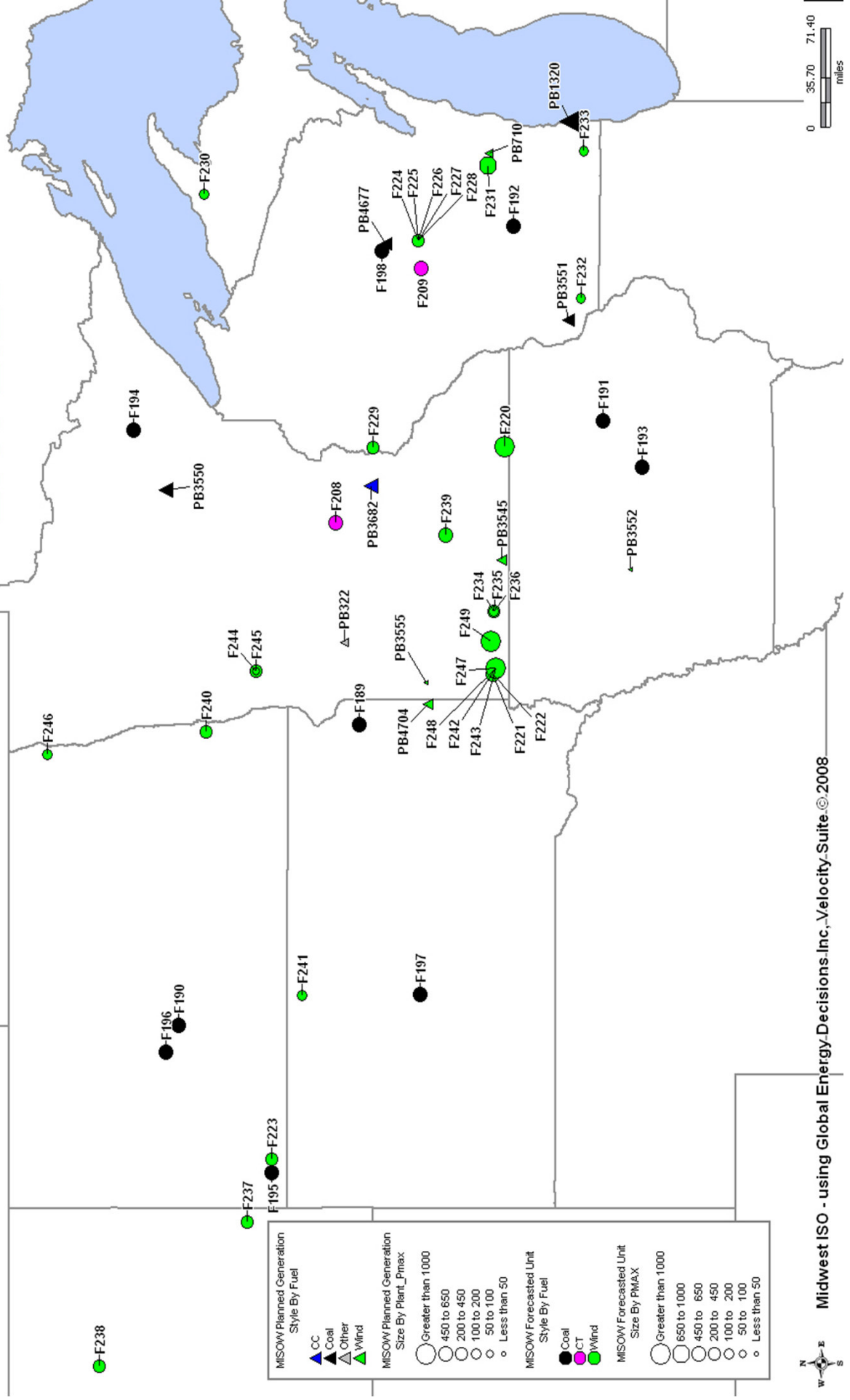
MISO West-Limited Investment Forecasted and Planned Units



MISO West-Reference Future Forecasted and Planned Units 2008-2024



MISO West-20% Wind Future Forecasted and Planned Units 2008-2024





Generation needed to meet the ATC Futures Matrix Assumptions

- 6 ATC Futures
 - Robust Economy
 - High Retirements
 - High Environmental
 - Slow Growth
 - DOE 20% Wind
 - Fuel and Investment Limitations

ATC – Robust Economy

Load Growth Inside / Outside ATC: 3.0% / 3.0%

MISO – Reference Case Load Values

Demand Annual Peak (MW): 2024

Area	MISO - ALL	MISO - Central	MISO - East	MISO - West	MRO	ComEd
PowerBase	148,502	48,360	46,288	53,854	23,362	32,259
3.0%	195,673	63,496	65,190	66,987	31,560	38,251
Difference	47,171	15,136	18,902	13,133	8,198	5,992
2024 Gen vs Load (%) ***Wind at 15%***	19.38%	25.39%	20.64%	12.90%	10.71%	-5.81%
Generation Needed to Meet Reserves (MW)	56,313	18,980	22,803	14,827	9,076	5,992

Area Generation Resource Percentage Summary

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	8.25%	3.23%	11.97%	10.41%	8.34%	3.56%
CT Gas	18.32%	21.66%	19.23%	14.01%	18.21%	22.34%
Nuclear	8.77%	8.18%	11.69%	6.91%	5.64%	26.78%
ST Coal	54.18%	58.50%	56.29%	47.80%	58.16%	20.35%
Wind	10.47%	8.43%	0.82%	20.86%	9.66%	26.97%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Generation to be added based on Resource Percentage Allocations (No Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	3,892	488	2,263	1,367	683	214
CT Gas	8,644	3,278	3,635	1,841	1,492	1,339
Nuclear	4,137	1,237	2,209	908	463	1,605
ST Coal	25,559	8,856	10,640	6,278	4,768	1,220
Wind (15% cap credit)	32,933	8,511	1,036	18,266	5,278	10,773
Total	75,164	22,371	19,783	28,659	12,684	15,149

Generation to be added based on Resource Percentage Allocations (With Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	4,646	612	2,730	1,543	757	214
CT Gas	10,319	4,111	4,385	2,078	1,652	1,339
Nuclear	4,938	1,552	2,665	1,025	512	1,605
ST Coal	30,512	11,104	12,836	7,087	5,278	1,220
Wind (15% cap credit)	39,315	10,672	1,250	20,622	5,844	10,773
Total	89,731	28,051	23,866	32,356	14,043	15,149

ATC – High Retirements

Load Growth Inside / Outside ATC: 1.5% / 1.5%

MISO – Environmental Case Load Values

Demand Annual Peak (MW): 2024

Area	MISO - ALL	MISO - Central	MISO - East	MISO - West	MRO	ComEd
PowerBase	144,061	45,332	49,750	48,979	22,376	29,925
1.5%	154,737	50,212	51,552	52,973	24,957	30,249
Difference	10,676	4,880	1,802	3,994	2,581	324
2024 Gen vs Load (%) ***Wind at 15%***	17.23%	25.82%	9.84%	16.79%	10.23%	-5.81%
Generation Needed to Meet Reserves (MW)	12,515	6,140	1,979	4,664	2,845	324

Area Generation Resource Percentage Summary

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	8.69%	3.43%	12.28%	11.11%	8.80%	3.35%
CT Gas	17.78%	20.92%	19.72%	12.71%	13.67%	19.55%
Nuclear	13.06%	10.81%	17.07%	11.90%	5.95%	34.03%
ST Coal	49.44%	55.87%	50.09%	42.01%	61.38%	17.68%
Wind	11.03%	8.97%	0.84%	22.28%	10.19%	25.38%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Generation to be added based on Resource Percentage Allocations (No Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	928	167	221	444	227	11
CT Gas	1,898	1,021	355	507	353	63
Nuclear	1,394	528	308	475	154	110
ST Coal	5,278	2,726	902	1,678	1,584	57
Wind (15% cap credit)	7,852	2,919	101	5,931	1,754	548
Total	17,350	7,361	1,888	9,035	4,072	789

Generation to be added based on Resource Percentage Allocations (With Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	1,088	211	243	518	250	11
CT Gas	2,225	1,284	390	593	389	63
Nuclear	1,635	664	338	555	169	110
ST Coal	6,187	3,430	991	1,959	1,746	57
Wind (15% cap credit)	9,205	3,672	111	6,926	1,933	548
Total	20,339	9,262	2,073	10,552	4,489	789

ATC – High Environmental

Load Growth Inside / Outside ATC: 1.0% / 1.1%

MISO – Environmental Case Load Values

Demand Annual Peak (MW): 2024

Area	MISO - ALL	MISO - Central	MISO - East	MISO - West	MRO	ComEd
PowerBase	144,061	45,332	49,750	48,979	22,376	29,925
1.1%	145,263	47,138	48,395	49,729	23,429	28,397
Difference	1,202	1,806	-1,355	750	1,053	-1,528
2024 Gen vs Load (%)						
Wind at 15%	17.23%	25.82%	9.84%	16.79%	10.23%	-5.81%
Generation Needed to Meet Reserves (MW)	1,409	2,272	-1,488	876	1,161	-1,528

Area Generation Resource Percentage Summary

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	8.69%	3.43%	12.28%	11.11%	8.80%	3.35%
CT Gas	17.78%	20.92%	19.72%	12.71%	13.67%	19.55%
Nuclear	13.06%	10.81%	17.07%	11.90%	5.95%	34.03%
ST Coal	49.44%	55.87%	50.09%	42.01%	61.38%	17.68%
Wind	11.03%	8.97%	0.84%	22.28%	10.19%	25.38%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Generation to be added based on Resource Percentage Allocations (No Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	104	62	-166	83	93	-51
CT Gas	214	378	-267	95	144	-299
Nuclear	157	195	-231	89	63	-520
ST Coal	594	1,009	-679	315	646	-270
Wind (15% cap credit)	884	1,080	-76	1,114	716	-2,586
Total	1,953	2,724	-1,419	1,698	1,661	-3,726

Generation to be added based on Resource Percentage Allocations (With Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	122	78	-183	97	102	-51
CT Gas	250	475	-293	111	159	-299
Nuclear	184	246	-254	104	69	-520
ST Coal	697	1,270	-745	368	713	-270
Wind (15% cap credit)	1,036	1,359	-84	1,301	789	-2,586
Total	2,290	3,428	-1,559	1,983	1,831	-3,726

ATC – Slow Growth

Load Growth Inside / Outside ATC: 0.5% / 0.5%

MISO – Reference Case Load Values

Demand Annual Peak (MW): 2024

Area	MISO - ALL	MISO - Central	MISO - East	MISO - West	MRO	ComEd
PowerBase	148,502	48,360	46,288	53,854	23,362	32,259
0.5%	132,067	42,856	43,999	45,212	21,301	25,817
Difference	-16,435	-5,504	-2,289	-8,642	-2,061	-6,442
2024 Gen vs Load (%)						
Wind at 15%	19.38%	25.39%	20.64%	12.90%	10.71%	-5.81%
Generation Needed to Meet Reserves (MW)	-19,621	-6,902	-2,761	-9,757	-2,282	-6,442

Area Generation Resource Percentage Summary

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	8.25%	3.23%	11.97%	10.41%	8.34%	3.56%
CT Gas	18.32%	21.66%	19.23%	14.01%	18.21%	22.34%
Nuclear	8.77%	8.18%	11.69%	6.91%	5.64%	26.78%
ST Coal	54.18%	58.50%	56.29%	47.80%	58.16%	20.35%
Wind	10.47%	8.43%	0.82%	20.86%	9.66%	26.97%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Generation to be added based on Resource Percentage Allocations (No Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	-1,356	-178	-274	-899	-172	-230
CT Gas	-3,012	-1,192	-440	-1,211	-375	-1,439
Nuclear	-1,441	-450	-267	-598	-116	-1,725
ST Coal	-8,905	-3,220	-1,288	-4,131	-1,199	-1,311
Wind (15% cap credit)	-11,474	-3,095	-125	-12,020	-1,327	-11,581
Total	-26,189	-8,135	-2,396	-18,859	-3,189	-16,285

Generation to be added based on Resource Percentage Allocations (With Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	-1,619	-223	-331	-1,015	-190	-230
CT Gas	-3,595	-1,495	-531	-1,367	-415	-1,439
Nuclear	-1,721	-564	-323	-675	-129	-1,725
ST Coal	-10,631	-4,038	-1,554	-4,664	-1,327	-1,311
Wind (15% cap credit)	-13,698	-3,881	-151	-13,571	-1,469	-11,581
Total	-31,264	-10,200	-2,890	-21,292	-3,531	-16,285

ATC – DOE 20% Wind

Load Growth Inside / Outside ATC: 2.0% / 2.0%

MISO – 20% Wind Case Load Values

Demand Annual Peak (MW): 2024

Area	MISO - ALL	MISO - Central	MISO - East	MISO - West	MRO	ComEd
PowerBase	148,502	48,360	46,288	53,854	23,362	32,259
2.0%	167,394	54,320	55,768	57,306	26,999	32,723
Difference	18,892	5,960	9,480	3,452	3,637	464
2024 Gen vs Load (%) ***Wind at 15%***	19.18%	26.01%	20.97%	11.51%	13.28%	-0.85%
Generation Needed to Meet Reserves (MW)	22,515	7,510	11,468	3,849	4,120	464

Area Generation Resource Percentage Summary

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	7.16%	2.81%	9.20%	10.09%	7.10%	3.51%
CT Gas	17.16%	22.37%	14.77%	13.58%	15.49%	23.54%
Nuclear	7.61%	7.13%	8.98%	6.70%	4.80%	26.36%
ST Coal	43.24%	45.83%	39.43%	44.28%	49.50%	20.04%
Wind	24.83%	21.85%	27.62%	25.35%	23.11%	26.55%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Generation to be added based on Resource Percentage Allocations (No Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	1,352	168	872	348	258	16
CT Gas	3,242	1,333	1,401	469	563	109
Nuclear	1,438	425	851	231	175	122
ST Coal	8,169	2,731	3,738	1,528	1,800	93
Wind (15% cap credit)	31,272	8,680	17,456	5,832	5,603	821
Total	45,472	13,338	24,318	8,409	8,399	1,162

Generation to be added based on Resource Percentage Allocations (With Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	1,612	211	1,055	388	292	16
CT Gas	3,864	1,680	1,694	523	638	109
Nuclear	1,713	536	1,030	258	198	122
ST Coal	9,735	3,442	4,522	1,704	2,039	93
Wind (15% cap credit)	37,269	10,938	21,116	6,503	6,347	821
Total	54,194	16,807	29,417	9,377	9,514	1,162

ATC – Fuel & Investment Limitations

Load Growth Inside / Outside ATC: 1.3% / 1.3%

MISO – Limited Investment Case Load Values

Demand Annual Peak (MW): 2024

Area	MISO - ALL	MISO - Central	MISO - East	MISO - West	MRO	ComEd
PowerBase	148,502	48,360	46,288	53,854	23,362	32,259
1.3%	149,930	48,652	49,950	51,327	24,182	29,309
Difference	1,428	292	3,662	-2,527	820	-2,950
2024 Gen vs Load (%)						
Wind at 15%	20.19%	25.39%	23.24%	12.90%	10.71%	-2.09%
Generation Needed to Meet Reserves (MW)	1,716	367	4,513	-2,853	908	-2,950

Area Generation Resource Percentage Summary

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	9.63%	3.23%	16.52%	10.41%	8.34%	3.46%
CT Gas	20.35%	21.66%	18.76%	20.36%	18.21%	26.21%
Nuclear	8.71%	8.18%	11.40%	6.91%	5.64%	25.96%
ST Coal	50.91%	58.50%	52.51%	41.46%	58.16%	18.22%
Wind	10.40%	8.43%	0.80%	20.86%	9.66%	26.15%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Generation to be added based on Resource Percentage Allocations (No Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	137	9	605	-263	68	-102
CT Gas	291	63	687	-514	149	-773
Nuclear	124	24	418	-175	46	-766
ST Coal	727	171	1,923	-1,048	477	-537
Wind (15% cap credit)	989	164	196	-3,515	528	-5,142
Total	2,269	432	3,829	-5,515	1,269	-7,321

Generation to be added based on Resource Percentage Allocations (With Reserves)

Resource	MISO - All	MISO - Central	MISO - East	MISO - West	MRO	ComEd
Combined Cycle	165	12	746	-297	76	-102
CT Gas	349	79	847	-581	165	-773
Nuclear	149	30	515	-197	51	-766
ST Coal	874	215	2,370	-1,183	528	-537
Wind (15% cap credit)	1,189	206	241	-3,968	584	-5,142
Total	2,727	542	4,718	-6,226	1,404	-7,321



Open Discussion

- Potential Siting Methodology
- MISO Proposed Additions in WI

MISO MTEP09 Generator Additions Within ATC for Each MISO Future

Model Year	Reference	20% Wind	Environmental	Investment Limitation
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



Next Steps

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Questions