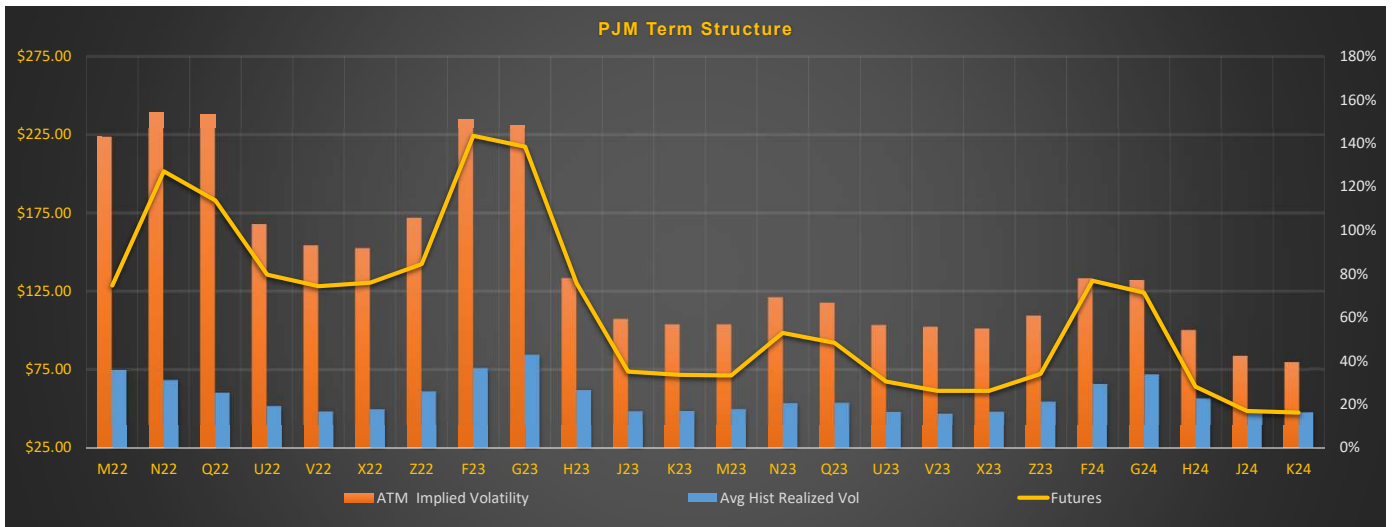


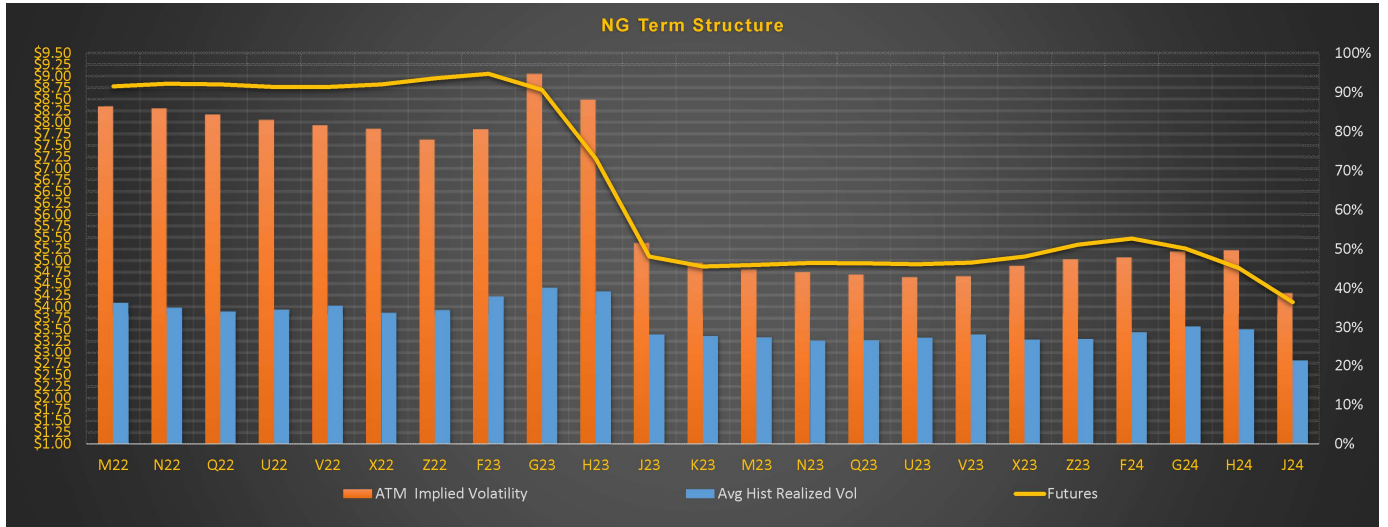
Date: 5/6/2022



Contract	Option Expiry	Trade Days to Expiry	PJM Term Structure							Realized Volatility		Implied Volatility and Skew				
			Futures Price	ATM Straddle	Break-even	ATM Implied Volatility			Avg Hist	30 day	10d Put	25d Put	ATM	25d Call	10d Call	
						Vol	1D Chg	1Wk Chg	1Mo Chg							
M22	5/27/22	16	\$ 128.50	\$ 36.06	9.62	143.0%	-2.6%	54.9%	79.0%	35.7%	105.7%	-34.5%	-32.4%	143.0%	11.3%	22.6%
N22	6/29/22	38	\$ 201.60	\$ 94.62	16.29	154.4%	4.3%	58.4%	88.4%	31.1%	137.0%	-7.3%	-2.4%	154.4%	3.7%	7.2%
Q22	7/28/22	58	\$ 182.95	\$ 105.73	14.70	153.5%	3.4%	58.5%	88.5%	25.3%	142.5%	-9.7%	-4.7%	153.5%	11.5%	25.0%
U22	8/30/22	81	\$ 135.50	\$ 61.94	7.29	102.8%	2.9%	26.8%	48.3%	19.2%	97.5%	-10.5%	-5.4%	102.8%	5.4%	11.7%
V22	9/29/22	102	\$ 128.25	\$ 60.05	6.25	93.1%	0.8%	23.1%	42.2%	16.7%	98.8%	-11.5%	-6.2%	93.1%	5.0%	11.5%
X22	10/28/22	123	\$ 130.40	\$ 65.10	6.27	91.8%	-0.1%	22.8%	41.8%	17.7%	100.7%	-12.3%	-7.7%	91.8%	5.5%	12.1%
Z22	11/29/22	144	\$ 142.20	\$ 87.52	7.87	105.7%	-0.3%	21.7%	42.7%	25.9%	99.0%	-16.3%	-10.6%	105.7%	10.3%	21.2%
F23	12/29/22	165	\$ 224.35	\$ 205.57	17.71	150.8%	6.0%	33.8%	49.0%	36.8%	108.2%	-28.4%	-15.1%	150.8%	39.4%	65.0%
G23	1/30/23	185	\$ 217.30	\$ 205.68	16.84	148.1%	11.1%	32.2%	48.2%	42.9%	107.3%	-27.0%	-14.2%	148.1%	40.5%	65.0%
H23	2/27/23	204	\$ 130.10	\$ 71.64	5.31	78.0%	1.2%	20.0%	25.0%	26.6%	93.9%	-6.0%	-1.0%	78.0%	20.3%	23.8%
J23	3/30/23	227	\$ 73.55	\$ 32.97	2.28	59.3%	-0.1%	24.4%	25.7%	16.8%	65.1%	-5.8%	-3.5%	59.3%	10.4%	10.1%
K23	4/27/23	246	\$ 71.45	\$ 31.29	2.12	56.8%	-0.1%	22.7%	24.2%	16.9%	61.5%	-3.2%	-1.6%	56.8%	9.2%	9.9%
M23	5/30/23	268	\$ 71.15	\$ 32.59	2.12	56.8%	-0.2%	21.8%	24.2%	17.8%	63.0%	-3.3%	-2.0%	56.8%	9.8%	12.3%
N23	6/29/23	290	\$ 98.30	\$ 57.42	3.56	69.2%	0.1%	23.2%	29.2%	20.5%	71.9%	-7.5%	-4.0%	69.2%	9.2%	23.3%
Q23	7/28/23	310	\$ 92.05	\$ 52.53	3.21	66.7%	-0.6%	21.7%	27.8%	20.7%	72.9%	-7.1%	-4.5%	66.7%	10.9%	30.0%
U23	8/30/23	333	\$ 67.15	\$ 33.69	1.99	56.5%	-1.0%	22.6%	23.2%	16.5%	61.6%	-4.2%	-2.6%	56.5%	13.2%	26.1%
V23	9/28/23	353	\$ 61.25	\$ 31.33	1.79	55.7%	0.0%	22.6%	23.6%	15.7%	57.4%	-4.3%	-2.5%	55.7%	11.7%	18.1%
X23	10/30/23	375	\$ 61.40	\$ 31.82	1.76	54.8%	0.0%	21.8%	22.8%	16.6%	63.0%	-3.3%	-0.8%	54.8%	9.5%	15.4%
Z23	11/29/23	396	\$ 72.10	\$ 42.20	2.29	60.8%	-0.2%	20.8%	22.3%	21.3%	59.1%	-2.5%	-0.6%	60.8%	14.6%	18.4%
F24	12/28/23	416	\$ 131.65	\$ 100.23	5.37	77.9%	0.0%	9.9%	15.4%	29.4%	74.7%	-2.0%	-1.1%	77.9%	18.3%	22.4%
G24	1/30/24	437	\$ 124.00	\$ 96.80	5.00	77.1%	0.1%	10.1%	15.6%	33.7%	74.7%	-2.3%	-1.2%	77.1%	18.2%	22.4%
H24	2/28/24	457	\$ 64.00	\$ 36.72	1.81	54.1%	0.0%	11.1%	15.1%	22.7%	53.2%	-1.6%	-0.7%	54.1%	7.9%	8.3%
J24	3/27/24	477	\$ 48.45	\$ 22.57	1.07	42.3%	0.2%	8.3%	15.3%	16.4%	55.2%	-5.0%	-2.8%	42.3%	1.2%	0.3%
K24	4/29/24	499	\$ 47.45	\$ 20.33	0.98	39.4%	-1.0%	7.4%	13.4%	16.2%	58.6%	-3.9%	-2.4%	39.4%	2.1%	1.0%

PJM Cal 1x Term Structure																
Contract	Option Expiry	Trade Days to Expiry	Futures Price	ATM Straddle	Break-even	ATM Implied Volatility				Realized Volatility		Implied Volatility and Skew				
						Vol	1D Chg	1Wk Chg	1Mo Chg	Avg Hist	30 day	10d Put	25d Put	ATM	25d Call	10d Call
Cal23	12/23/22	162	\$ 103.00	\$ 58.75	\$ 4.94	91.6%	0.7%	31.8%	45.3%	13.5%	77.1%	-12.1%	-7.9%	91.6%	8.6%	9.9%
Cal24	12/22/23	413	\$ 67.25	\$ 37.56	\$ 2.07	58.7%	-0.2%	23.8%	27.2%	10.9%	59.3%	-3.5%	-1.9%	58.7%	8.0%	11.4%
Cal25	12/20/24	664	\$ 59.00	\$ 33.70	\$ 1.45	47.1%	0.0%	16.8%	20.5%	9.8%	43.8%	-1.5%	-0.9%	47.1%	4.5%	7.8%

Option Trade Recap	



NG Term Structure																
Contract	Option Expiry	Trade Days to Expiry	Futures Price	ATM Straddle	Break-even	ATM Implied Volatility				Realized Volatility		Implied Volatility and Skew				
						Vol	1D Chg	1Wk Chg	1Mo Chg	Avg Hist	30 day	10d Put	25d Put	ATM	25d Call	10d Call
M22	5/25/22	14	\$ 8.783	\$ 1.15	\$ 0.478	86.4%	4.9%	12.2%	31.0%	36.3%	77.9%	-1.6%	-2.1%	86.4%	5.8%	14.7%
N22	6/27/22	36	\$ 8.841	\$ 1.71	\$ 0.478	85.9%	4.4%	10.7%	31.1%	35.1%	76.8%	-8.1%	-5.3%	85.9%	8.7%	16.1%
Q22	7/26/22	56	\$ 8.823	\$ 2.04	\$ 0.469	84.3%	4.4%	10.0%	30.0%	34.1%	76.4%	-10.6%	-7.3%	84.3%	10.0%	13.5%
U22	8/26/22	79	\$ 8.773	\$ 2.37	\$ 0.458	82.9%	3.6%	8.0%	29.3%	34.5%	76.9%	-10.2%	-7.1%	82.9%	11.3%	15.4%
V22	9/27/22	100	\$ 8.767	\$ 2.64	\$ 0.451	81.6%	3.3%	7.2%	27.8%	35.5%	76.5%	-9.9%	-7.4%	81.6%	13.6%	17.1%
X22	10/26/22	121	\$ 8.823	\$ 2.82	\$ 0.449	80.7%	2.8%	4.5%	27.1%	33.7%	75.3%	-7.6%	-5.7%	80.7%	15.0%	24.1%
Z22	11/25/22	142	\$ 8.953	\$ 3.17	\$ 0.439	77.9%	-2.5%	-1.0%	19.8%	34.4%	73.9%	-6.2%	-5.5%	77.9%	20.1%	41.0%
F23	12/27/22	163	\$ 9.053	\$ 3.70	\$ 0.459	80.5%	-3.2%	1.0%	17.8%	37.9%	72.9%	-7.7%	-6.0%	80.5%	22.3%	29.1%
G23	1/26/23	183	\$ 8.708	\$ 3.95	\$ 0.519	94.7%	5.1%	7.2%	29.3%	40.1%	72.0%	-9.2%	-6.8%	94.7%	20.9%	29.6%
H23	2/23/23	202	\$ 7.218	\$ 3.39	\$ 0.401	88.1%	1.7%	2.5%	22.5%	39.2%	66.4%	-9.0%	-4.9%	88.1%	20.5%	29.1%
J23	3/28/23	225	\$ 5.090	\$ 1.53	\$ 0.165	51.5%	1.1%	3.5%	12.3%	28.2%	51.7%	1.5%	0.1%	51.5%	3.8%	8.9%
K23	4/25/23	244	\$ 4.872	\$ 1.31	\$ 0.143	46.5%	2.4%	6.0%	12.6%	27.8%	49.5%	1.5%	-0.1%	46.5%	4.0%	8.5%
M23	5/25/23	266	\$ 4.910	\$ 1.30	\$ 0.139	44.8%	2.9%	6.0%	12.4%	27.5%	48.9%	1.6%	0.0%	44.8%	4.0%	8.5%
N23	6/27/23	288	\$ 4.950	\$ 1.34	\$ 0.138	44.1%	3.1%	6.4%	12.4%	26.6%	48.2%	1.4%	0.1%	44.1%	3.4%	8.9%
Q23	7/26/23	308	\$ 4.947	\$ 1.36	\$ 0.136	43.5%	3.1%	6.4%	11.7%	26.7%	48.0%	1.4%	0.1%	43.5%	3.4%	9.0%
U23	8/28/23	331	\$ 4.924	\$ 1.40	\$ 0.133	42.8%	3.1%	5.9%	10.9%	27.4%	48.4%	1.4%	0.1%	42.8%	3.7%	9.3%
V23	9/26/23	351	\$ 4.958	\$ 1.45	\$ 0.135	43.1%	3.2%	6.0%	10.3%	28.2%	47.9%	1.6%	0.1%	43.1%	3.9%	9.4%
X23	10/26/23	373	\$ 5.091	\$ 1.56	\$ 0.147	45.7%	5.0%	8.0%	11.5%	26.9%	45.3%	-2.9%	-2.2%	45.7%	9.3%	12.2%
Z23	11/27/23	394	\$ 5.344	\$ 1.81	\$ 0.160	47.4%	4.7%	8.1%	10.9%	27.1%	41.3%	-2.7%	-2.2%	47.4%	9.3%	10.3%
F24	12/26/23	414	\$ 5.478	\$ 2.01	\$ 0.165	47.9%	2.7%	7.0%	9.1%	28.8%	39.9%	2.3%	-0.2%	47.9%	10.2%	22.0%
G24	1/26/24	435	\$ 5.263	\$ 2.03	\$ 0.164	49.4%	2.6%	7.5%	9.6%	30.3%	38.5%	2.3%	-0.3%	49.4%	12.0%	26.9%
H24	2/26/24	455	\$ 4.844	\$ 1.96	\$ 0.152	49.7%	2.2%	7.4%	9.2%	29.5%	36.8%	2.3%	-0.2%	49.7%	12.2%	25.5%
J24	3/25/24	475	\$ 4.100	\$ 1.44	\$ 0.100	38.8%	2.7%	3.9%	6.8%	21.3%	35.4%	1.2%	-0.1%	38.8%	4.3%	8.1%