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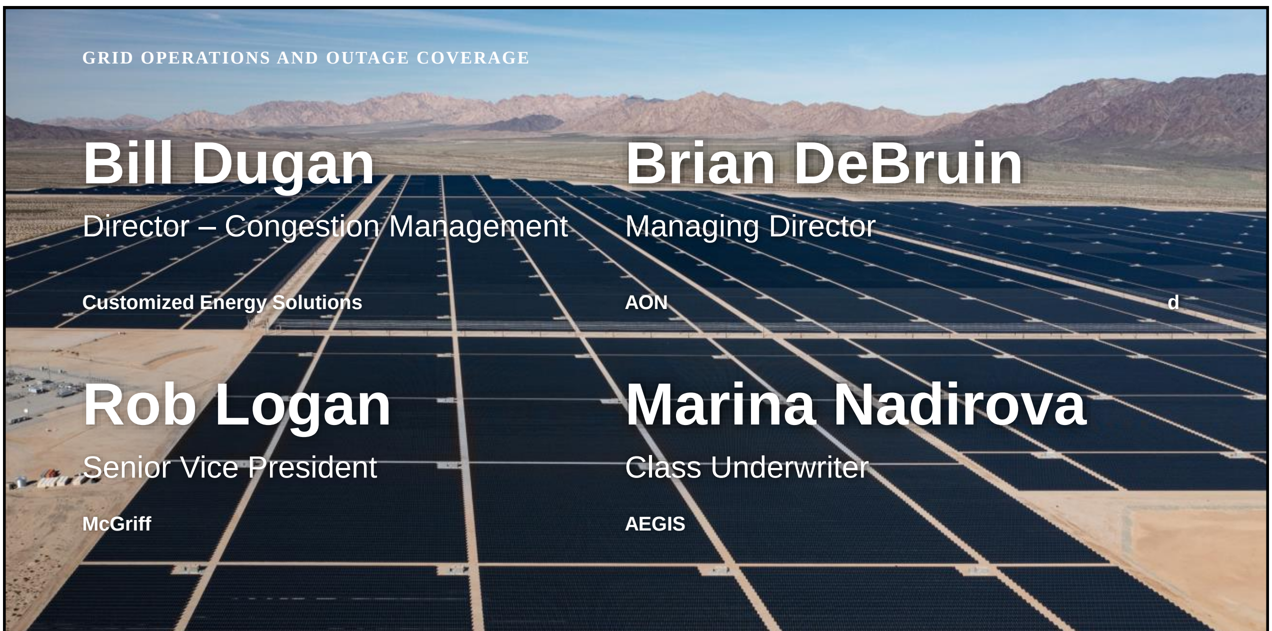

GRID OPERATIONS AND OUTAGE COVERAGE

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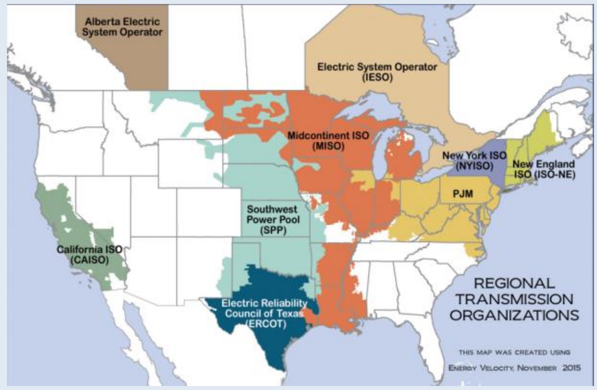
REGIONAL TRANSMISSION ORGANIZATION (RTO) MARKET OPERATIONS

Generator Dispatch

- All electricity markets in the USA use Day-Ahead and Real-Time markets to schedule energy on the Bulk Electric System
- Creates both nodal and zonal Locational Marginal Pricing
- ISOs are required to procure energy at the lowest cost to consumers while respecting transmission limits & reserve requirements
  - Least cost dispatch
  - Daily “auction” for schedule results in Day-Ahead prices



Source: FERC

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DAY-AHEAD AND REAL-TIME SCHEDULING

Generator Operations

- RTO runs Day-Ahead market to schedule all generation expected based on ISO’s load forecast for the day
  - Generation then scheduled based on offers made into this market
  - All generation **must** offer into the market as a capacity resource
    - This differs in RTOs with more flexible capacity requirements
  - Day-Ahead prices for all locations for 24-hour day are then calculated
- This is communicated to plants to schedule operation accordingly
- Real-Time market or “Balancing” responds to actual market conditions in 5-minute intervals and ISO dispatches generation accordingly
  - Real-Time similarly calculates pricing for all locations for 24 Hours

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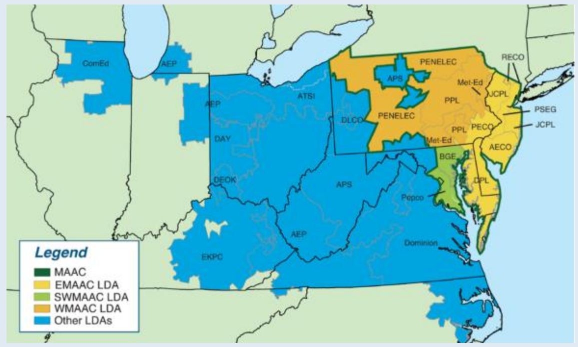
CAPACITY MARKET

Capacity Markets in ISO Regions

- Multiple ISO regions use capacity markets to procure forward capacity commitments from generation resources
  - This includes ISO-NE, NYISO, PJM, MISO
  - Some use Annual procurement (PJM) while others use seasonal e.g. NYISO/MISO
- PJM procures capacity three years ahead on a June 1 - May 31 delivery year
- Forward knowledge of prices allow for clarity of future revenues, incent building of new plants, uprates, or ways to reduce in peak periods
- Procurement focused on peaks during each season, depending on location



PJM Locational Deliverability Area Map

Source : PJM State of the Market Report 2022

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GENERATION OUTAGE PRODUCTS

Contingent Outage (CO) & Capacity Performance (CP)

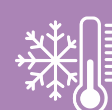
Energy Market Trigger

Electricity prices are above pre-agreed strikes or insured prices

Forced Outage

Unplanned outage/derate (e.g., mechanical failure, alarming condition, trip, startup failure)

Capacity Market Trigger



Emergency conditions cause generator to be assessed non-performance charges

AEGIS Contingent Outage Insurance

AEGIS Capacity Performance Insurance

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CONTINGENT OUTAGE (CO) INSURANCE OVERVIEW

- The product has a double trigger that indemnifies power producers against a financial loss due to an unplanned outage/derate during price spikes in power markets
- Unplanned outages and derates are defined by NERC GADS codes (U1, 2, 3, SF and D1, 2, 3)
- The policy payout is calculated by comparing actual prices to the Insured Price multiplied by MW lost and length of unplanned event
- Product is bespoke and the Insured Price, deductible, and coverage period is selected by the Insured
- Claims settlement: simple mathematical calculation using publicly available data, no claim adjusters
- AEGIS actively sells CO product in most US regions: NY ISO, New England, PJM, SPP, ERCOT, MISO, California (to come)

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CONTINGENT OUTAGE INSURANCE

The Exposure: All generators have exposure due to the DA and RT market. Further, any generator with contracted power sales or tolling agreements have more acute exposures given the guarantees contained within those contracts

The Challenge:

- Traditional Business Interruption coverage includes a waiting period deductible. Based on plant technology, waiting periods are ranging from 60-120 days. CO policy doesn't have waiting periods
- Extra expense replacement power cost is an exclusion under BI policies
- Traditional Property Insurance covers a mechanical breakdown event, CO policy doesn't have this limitation

The Charge: Should all generators consider Forced Outage / Contingent Outage Insurance as part of their traditional risk transfer portfolio? How does this change for regulated vs. non-regulated generators?

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CO CASE STUDY

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IMPACT FROM STORM URI

- The extreme cold hit Texas in the second week of February 2021 and by 13th of February 2021 prices were touching the $9,000/MWh administrative cap level
- The system started showing weakness when 185 generating units, including gas and coal-fired power plants, tripped offline during the winter storm
- The grid operator said that about 46 gigawatts of natural gas, coal and wind generation wasn't working — roughly 40% of what it had expected to be available
- The aftermath of the event was bad resulting in $16 billion in charges for the generators that were not available
- The grid operator was facing a $2.5 billion shortfall as more than a dozen companies faced default

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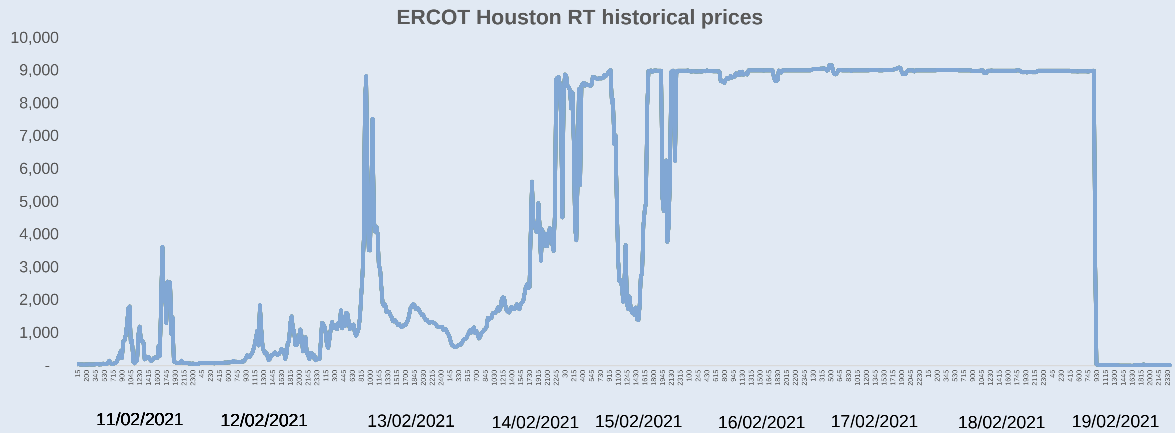
ERCOT HISTORICAL PRICES – FEBRUARY 2021

- The Real Time (RT) prices hit the administrative cap of $9,000/MWh in all major ERCOT hubs for largely all the hours of 16th, 17th and 18th of February 2021



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CO CLAIM EXAMPLE

Storm Uri

- A 100MW power plant in the ERCOT Houston region bought a one year (Jan-Dec 2021) CO policy. It suffered from an unplanned outage from 02/17/21 00:00 to 02/18/21 at 23:59 due to a tube leak. The policy covered 7x24 period (i.e. all hours during the day). The policy had no waiting period, but a $2mm aggregate deductible. The limit on the policy was $50mm. The strike was $30/MWh. The realized prices were below. The policy settled on the difference between average realized daily prices and the insured price
- The final payout was: $21,528,000+$21,499,200-$2,000,000 **= $41,027,200**

Price $	02/17/2021	02/18/2021
Average realized daily price	9,000	8,988
Insured price	30	30
Difference	8,970	8,958
Hours covered	24	24
MW covered	100	100
Daily payout	**21,528,000**	**21,499,200**

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CAPACITY PERFORMANCE (CP) INSURANCE OVERVIEW

- The product has a double trigger that indemnifies power producers against a financial loss due to an unplanned outage/derate during a declared emergency action by the ISO
- Unplanned outages and derates are defined by NERC GADS unit data
- The MAX penalty amount is calculated by multiplying the Net CONE * 365 * committed capacity * 150%
- The $ penalties currently are:
  - ~$3,000/MWh in PJM
  - $3,500/MWh in New England, climbing to $5,455/MWh by 2024
- The limit purchased is typically set to the exposure of a single plant with the largest exposure within the portfolio. The marketplace and cost is prohibitive to purchasing the full exposure across multiple plants
- Claims settlement: simple mathematical calculation using publicly available data, no claim adjusters
- AEGIS actively sells the CP product in PJM and New England

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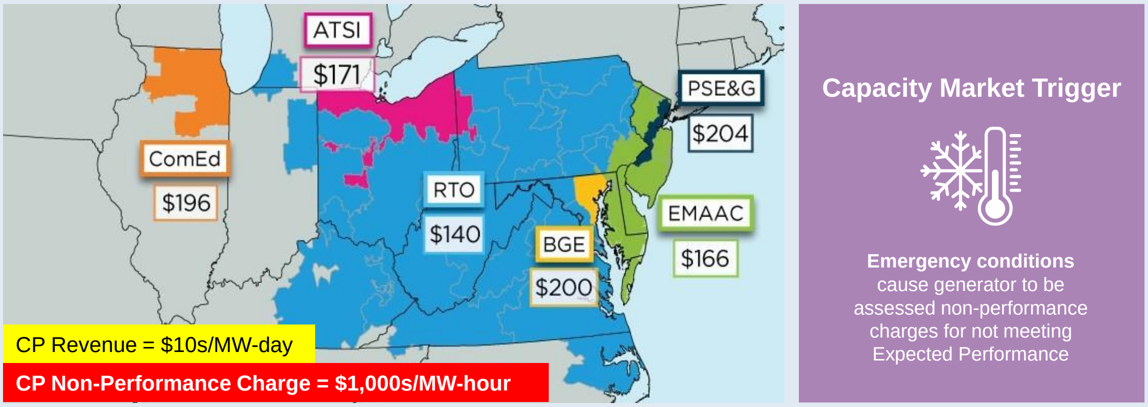
INSURING CAPACITY MARKET EXPOSURES

PJM Capacity Performance Revenue vs Non-Performance Charges



Emergency conditions
cause generator to be assessed non-performance charges for not meeting Expected Performance

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CP CASE STUDY

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WINTER STORM ELLIOTT IMPACTS IN PJM

Capacity Market Impacts

- Widespread cold weather was observed across the Midwest & Northeast United States over December 23-25th 2022
- Coldest wind chill ranged from -50 F to -5 F in Midwest & NE
- Unusual load levels during holiday weekend
  - Contribution to issue included natural gas procurement
- Load came in much stronger than forecast
  - Forecast load around 125 GW, actual load peaked at 140 GW
- All-time peak for holiday weekend occurred over period

Source: NOAA

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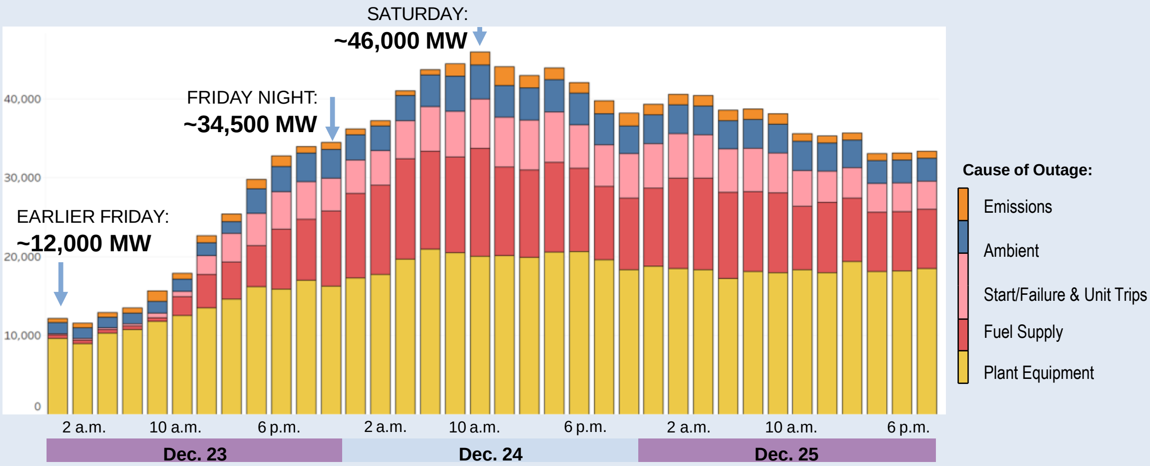
DECEMBER 2022 EMERGENCY – UNPLANNED OUTAGES

Emergency actions – scarcity conditions



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CAPACITY PENALTY IMPACTS FROM ELLIOTT

Penalties assessed to resources in PJM from the events of the storm

- PJM is assessing $1.8 billion in gross penalties to generators throughout 2024
  - Driven by Emergency Event penalties across footprint on Dec-23/24
  - Paid back in bonus payments to overperforming generators
  - Spread across roughly 200 market participants
- Multiple bankruptcies declared in Apr 2023 after charges were assessed
  - Complaints issued by many generators in Illinois to FERC
  - Lincoln Power (IL) assessed $39 million for two plants
- PJM required significant collateral posting from many participants to handle penalties
- Wind & solar also effected significantly
  - Some wind farms with low temperature lockouts were unable to perform
  - Most events on 12/23 occurred during evening, meaning solar could not perform during those evening & morning hours

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OBTAINING GENERATION OUTAGE TERMS

Stakeholders: Often times, trading and origination falls outside of the insurable risk management group. Organizational savvy is key to connecting the right stakeholders in the organization

Assets/Commercial Outlook: Assembling a team of risk, operations, regulatory, legal, and trading will be important to review the outlook for the plants/units and the exposure that is present

Is the company long/short on power for Summer/Winter periods?

Are units being retired?

Is there contracted power that needs to be covered?

Do regulators look to risk transfer vs. rate base to recover Forced Outage exposures?

Broker: AEGIS requires a Surplus Lines Broker to transact cover

Expertise: Remove the mystique around this cover. Brian and Rob will gladly represent all opportunities

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INFORMATION REQUIRED FOR QUOTATIONS

Historical Outage History
Typically provided through exporting from NERC Generation Availability Data System (GADS). Optimal information is up to 5 years of unencumbered, "event level" GADS data by component.

Condition of Assets
Most recent property and boiler and machinery (B&M) insurance risk survey reports.

Basis of Loss Exposure
- Is the plant/portfolio exposed to a capacity commitment?
- Capacity market LDA or Capacity Zone to be covered?
- Preferred limits?
- Deductible appetite?

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Q&A

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APPENDIX

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CAPACITY PERFORMANCE MODEL

Capacity Performance in PJM

- Generators are required to offer into the Day-Ahead market every day (barring outage)
- Generators are also expected to perform when called during emergency events
  - Also known as Performance Assessment Intervals
  - Typically occur on hottest or coldest days of the year
  - Could be driven by local transmission issues e.g. June 15, 2022
- Penalties for non-performance are around $3,000/MWh depending on location
- Unavailability for an 8-hour emergency event could result in $10-$12-million-dollar loss for a 500 MW plant

Source : PJM State of the Market Report 2022

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ENERGY SETTLEMENTS

Day-Ahead and Real-Time

- Day-Ahead schedules are financially binding for all market participants
  - For example, if a generator trips offline, a DA schedule for 50 MW must be bought back at real-time price
    - 50 MW * $100 DA LMP = $5,000
    - 50 MW * $200 RT LMP = $10,000
    - (50*$100) – (50*$200) = $5,000 net loss for Hour
- Additional energy pricing risk comes in form of congestion pricing
  - Each node has individual settled price based on transmission constraints
  - Transmission constraints are physical limits to transferring power on the infrastructure of the grid
- A generator in Chicago may have a delivery point in NJ, but will always be paid the price at the generator's node
  - The difference between locations is the "congestion" pricing of the system
  - Additional hedging mechanisms exist to mitigate this risk

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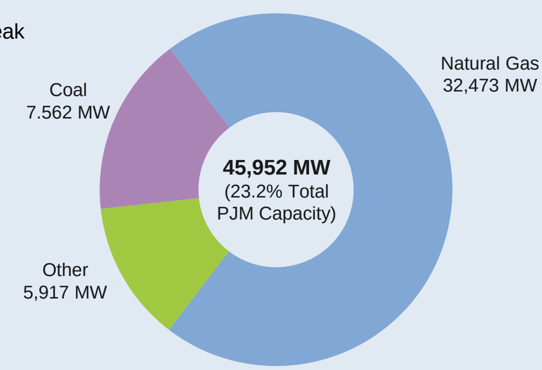
OUTAGE IMPACTS ACROSS FOOTPRINT

Peaked at 46 GW forced out during December 24

- Total fleet installed capacity is approximately 186 GW
  - Additional demand response available as well
  - At peak, total of 57 GW were unavailable for morning peak
- In addition, 6 GW of generation late to start on 12/24
- Heavily driven by gas procurement
  - Christmas holiday over weekend led to 4-day gas day as 12/26 was a holiday
  - Gas must be procured in 4-day block leading to inflexible spot market on 12/23 and 12/24
  - Most gas must be procured prior to DA market close on 12/23 so significant uncertainty remained

Total Forced Outages
Dec 24, 2022



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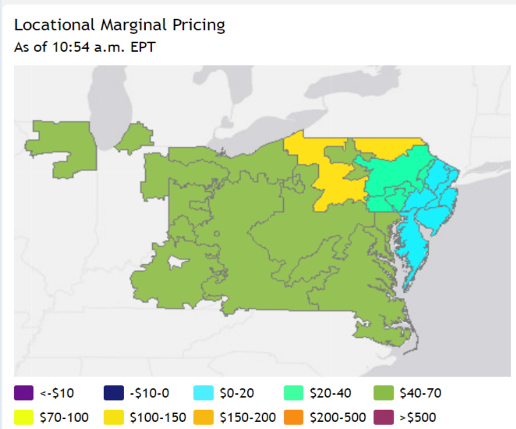
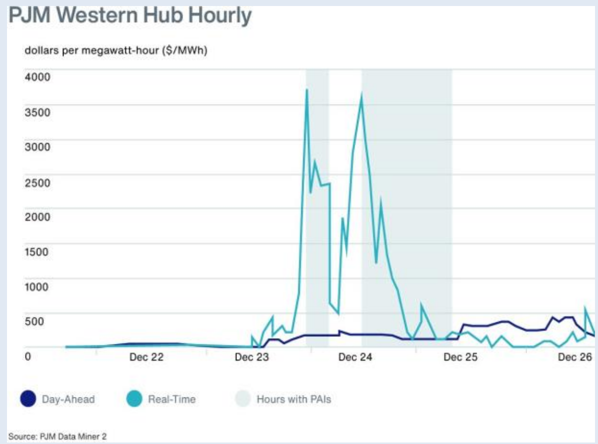
ELECTRICITY PRICE VOLATILITY

Electricity Market Prices

Normal Conditions



Emergency Conditions



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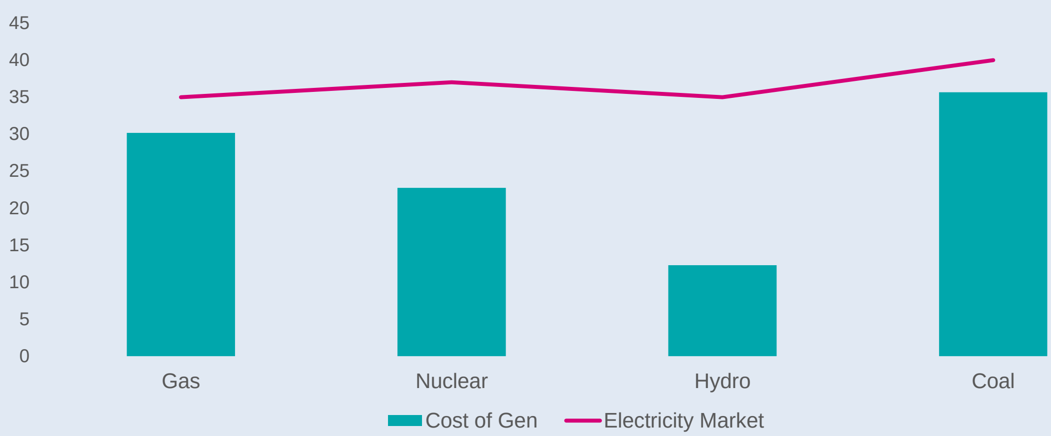
INSURING ENERGY MARKET EXPOSURES

Electricity Price ($/MWh)

Plant Ops Expense* vs. Electricity Market Prices (normal conditions)



* https://www.eia.gov/electricity/annual/html/epa_08_04.html

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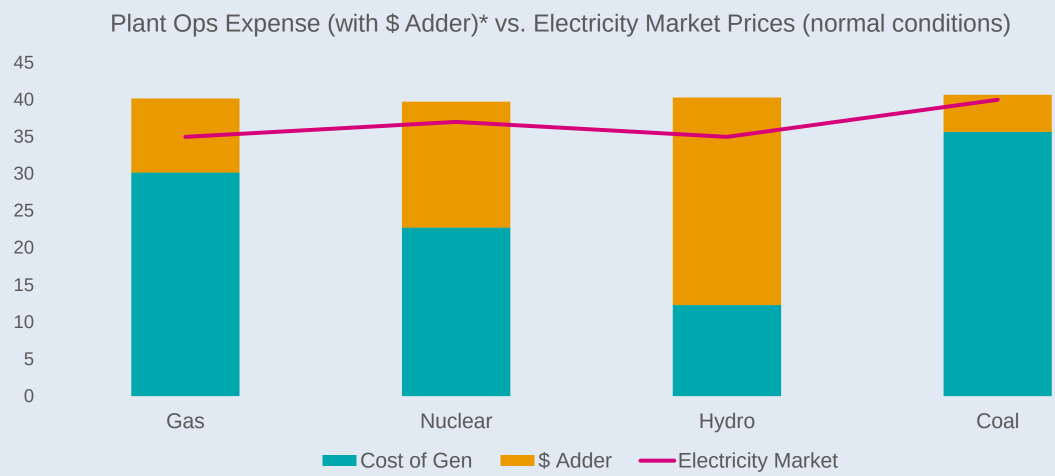
INSURING ENERGY MARKET EXPOSURES

Electricity Price ($/MWh)



* https://www.eia.gov/electricity/annual/html/epa_08_04.html

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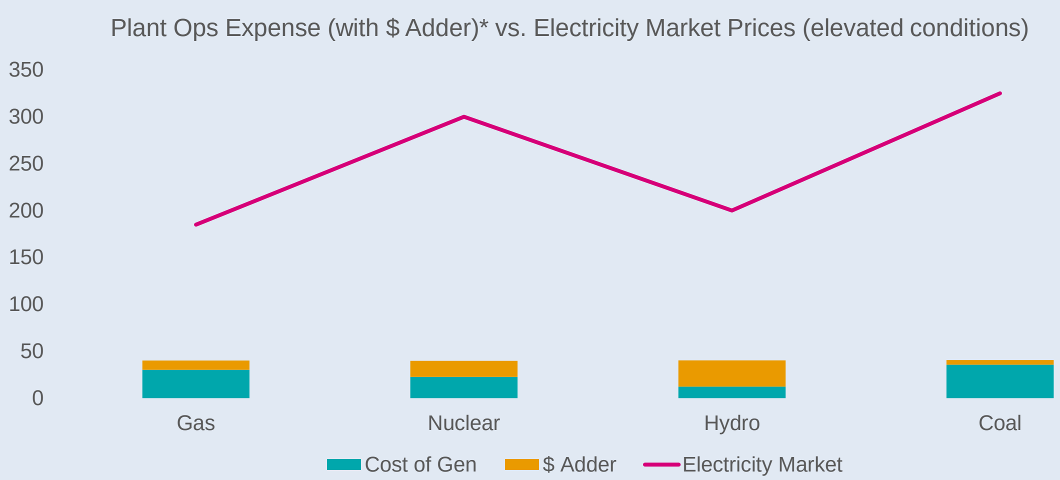
INSURING ENERGY MARKET EXPOSURES

Electricity Price ($/MWh)



* https://www.eia.gov/electricity/annual/html/epa_08_04.html

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INSURING CAPACITY MARKET EXPOSURES

CP and PFP Resources (PJM & ISO-NE)

- Generator gets capacity payments
- Generators must meet their commitments to deliver electricity to meet power system emergencies
- Generator has outage/derate risk **~$3,000 per MWh**

LDA NAME	NetCONE (ICAP)	PAI Charge Rate*	PAH	PAH @ 100MW
ATSI	249.81	253.97	$3,047.68	$304,768
BGE	208.38	211.85	$2,542.24	$254,224
COMED	270.6	275.11	$3,301.32	$330,132
DAY	234.48	238.39	$2,860.66	$286,066
DEOK	239.9	243.9	$2,926.78	$292,678
DPL-SOUTH	251.56	255.75	$3,069.03	$306,903
EMAAC	276.68	281.29	$3,375.50	$337,550
MAAC	261.22	265.57	$3,186.88	$318,688
PEPCO	256.39	260.66	$3,127.96	$312,796
PPL	265.43	269.85	$3,238.25	$323,825
PSEG	284.51	289.25	$3,471.02	$347,102
SWMAAC	232.39	236.26	$2,835.16	$283,516
RTO	261.1	265.45	$3,185.42	$318,542

*PAI Charge Rate is the (Net Cone in ICAP / 30 / 12) x 365

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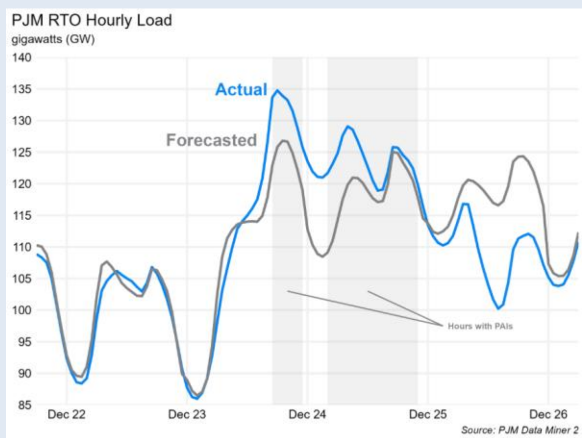
WINTER STORM EFFECT ON POWER GRID RELIABILITY

Emergency actions – scarcity conditions

- Inaccurate forecasts of peak loads
- Severe spike in load (~135 GW)
- Low point was higher than any peak in a decade for Dec. 24
- High rate of unplanned outages (>46GW)
- Grid-wide generation emergencies



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SAMPLE TERM SHEET (CONTINGENT OUTAGE)

General Indicative Terms - PROPRIETARY & CONFIDENTIAL

		ANNOTATION
Date:	Spring 2023	Quote Date
Insured (Legal Entity & Domicile):	*Regulated Utility*	Named Insured
Perils Insured Against:	Losses incurred due to Unplanned Outages (U1, U2, U3, SF) and Unplanned Derates (D1, D2, D3)	These are the triggering codes from the GADS reporting. All 7 codes are currently captured for the initial quote request but can be scaled down as a cost reduction strategy by removing the Derates.
	Term	
Inception Date:	June 1, 2023	Starting date of coverage period
Expiration Date:	September 30, 2023	Ending date of coverage period
Delivery Days/Hours:	Monday - Sunday, Including NERC Holidays (7x16) and Monday - Friday (5x16)	The coverage will be eligigle all 7 days of the week. A premium saving option is to reduce to 5 days (Monday-Friday). The 16 is the 16 "on-peak" hours of the day that would be covered. Coverage can be designed to cover all 24 hours but is more expensive. On peak is generally 0700 - 2200.
Covered Unit(s):	CC1, CC2, P1, P2, P3, Base 1	These are the units covered as part of the quote. Units can be removed as needed.

Unit name:	CC1	CC2	P1	P2	P3	Base 1	Total
Covered Capacity(MW):	250	250	100	100	75	275	1050
Capacity Ratio:	1.0	1.0	1.0	1.0	1.0	1.0	1.0

In respect of each Delivery Hour, the amount by which the sum of Outage Capacity amounts for such Delivery Hour across all Covered Units exceeds the Aggregate Capacity Deductible (100MW).

Capacity Ratio is the proportion of generation from a Covered Unit that is included in determination of Covered Capacity

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SAMPLE TERM SHEET (CONTINGENT OUTAGE)

General Indicative Terms - PROPRIETARY & CONFIDENTIAL

		Annotation
Planned Outage Schedules:	None	Known Planned Outages will need to be reported to carrier prior to inception so they can be scheduled.
Power Price Index (PPI) ($/MWh):	MISO TBD Hub or Node	This is the Hub/Node (source) that the power pricing will be measured at.
Event Duration Limit (EDL):	60 days	The amount of coverage for each Unplanned Outage or Unplanned Derate. Example: if a U3 is experienced on July 4, 2023, the EDL will allow loss measurement until September 1, 2023.
Aggregate Capacity Deductible (MW):	100 MW	The amount of MW that would be deducted from the lost MW after an Unplanned Outage or Unplanned Derate before recovery is eligible.
	OR	
Term $ Deductible:	$500,000	A flat dollar amount that would be deducted from the loss after an Unplanned Outage or Unplanned Derate before recovery is eligible.
Insured Price (IP):	ATM	The price per MWh based on the forward pricing curves at time of binding.
Policy Limit:	$15,000,000 to $40,000,000 (options provided)	The total limit that could be paid out during a policy term.
Sub-limit:	n/a	
Settlement Calculation:		Clarification of how a loss recovery is calculated for the day of the Unplanned Outage or Unplanned Derate and beyond.

Real-Time Settlement (RT)	Day-Ahead Settlement (DAM)
- Avg of the RT PPI less the IP; during applicable hours	- Avg of the DAM PPI less the IP; during applicable hours
- Remainder of day; plus next day if outage commences after 9:00 am PT	- Remainder of the outage beyond the RT Settlement

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SAMPLE TERM SHEET (CONTINGENT OUTAGE)

General Indicative Terms - PROPRIETARY & CONFIDENTIAL

	1	2	3	4	5	6	7	8	9	10	11	12
Strike	ATM	ATM	ATM	ATM	ATM	ATM	ATM	ATM	ATM	ATM	ATM	ATM
Settlement:	7x16	7x16	7x16	7x16	7x16	7x16	5x16	5x16	5x16	5x16	5x16	5x16
Limit ($)	$25,000,000	$40,000,000	$15,000,000	$25,000,000	$40,000,000	$15,000,000	$25,000,000	$40,000,000	$15,000,000	$25,000,000	$40,000,000	$15,000,000
Term $ Deductible ($):	$500,000	$500,000	$25,000,000	$0	$0	$25,000,000	$500,000	$500,000	$25,000,000	$0	$0	$25,000,000
MW deductible:	0	0	0	100	100	100	0	0	0	100	100	100

	NOTES
	Option number
	Strike is At The Money based on time of binding
	Options include all days (7) and M-F (5). All options shown are on-peak 16 hours of each day.
	Policy limits ranging from $25m primary, $40m primary, or $15m x/s $25m.
Net Premium:	
Brokerage :	Brokerage compensation for placement.
Gross Premium:	Net Premium + Brokerage
Surplus Lines Taxes and Fees:	Surplus Lines Tax specific to the state where risk is based or HQ is located - on GROSS Premium (including brokerage)
No Claims Bonus:	Potential credit taken at policy inception or policy expiration if no claims are made during the policy period.
Renewal Discount:	Potential credit for the renewal of this policy at the next Term.

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SAMPLE TERM SHEET – CAPACITY MARKET INSURANCE

General Terms - PROPRIETARY & CONFIDENTIAL

Date:	June 21, 2023
Insured (Legal Entity & Domicile):	ABC Power Center LLC Illinois
Perils Insured Against:	Losses incurred due to Unplanned Outages (U1, U2, U3, SF) and Unplanned Derates (D1, D2, D3) during a PJM Emergency Action

	Term A
Inception Date:	June 1, 2023
Expiration Date:	May 31, 2024

Delivery Days/Hours:	All days and hours of the Policy Term (7x24)
Covered Unit(s):	XYZ Power Plant near Anywhere, IL and consisting of 2 simple cycle units of approximately 300MW each.
Planned Outage Schedules:	See Unit Details Tab

	XYZ Power Plant		
	Unit 1	Unit 2	Total
Summer Capacity (MW):	80	80	160
Winter Capacity (MW):	80	80	160
Capacity Ratio:	1.00	1.00	1.00
Committed Capacity (MW):	60	60	120

					PJM Maximum Penalty ($):	
LDA:	LDA	Modeled LDA	Net CONE ($/MW-d):	MWh Indemnity ($/MWh):	Unit 1	Unit 2
XYZ CC (Train 1 & 2):	ComEd	ComEd	$270.60	$3,301.32	$8,913,564	$8,913,564

Term $ Deductible:	$1,000,000
Policy Limit:	$10,000,000
Event Duration Limit (EDL):	366 Days
Unit Deductible (MW):	For each Covered Unit: (Capacity * Capacity Ratio) - (Balancing Ratio * Committed Capacity)
Settlement Calculation:	Each Delivery Interval the product of (i) MWh Indemnity (ii) $^{1}/_{12}$ and (iii) the number of MW lost exceeding the Unit Deductible due to a Covered Event during a PJM Emergency Action
Non-Standard Coverage:	Additional facilities (See Unit Details tab)

	Term A	Term B
Net Premium**:		
Brokerage Comm/Fees:	$0.00	$0.00
Surplus Lines Tax (3.5%)*:	$0.00	$0.00
Stamping Fees (0.075%)*:	$0.00	$0.00
Premium Total Costs:	$0.00	$0.00

* State of Illinois

TRIA Coverage: This coverage contains an exclusion for events caused by terrorism

The terms set forth above are non-binding and are for discussion purposes only. Execution of any transaction is subject to, among other things, customary legal and credit approvals and the execution of mutually acceptable documentation.

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