

Gas Utility Supply Planning

2021-2022 WHS Survey Results



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Agenda

- Overview of the American Gas Association and Natural Gas Utilities
- Winter Heating Season Survey Background
- Why do Utilities Plan for the Winter Season
- Winter Heating Season Survey Highlights

American Gas Association

- Overview of the American Gas Association
 - Represents more than 200 local energy companies (LDCs) that deliver clean natural gas throughout the United States
 - Everyday American's natural gas utilities provide clean, reliable, affordable natural gas to nearly half our population - 180 million Americans - and 5.5 million of our nation's businesses.
 - Natural gas meets more than thirty percent of the United States' energy needs
 - AGA is an advocate for natural gas utility companies and their customers and provides a broad range of programs and services for members

Gas Supply Planning

- Portfolio Design
- Demand (Load)
- Transportation Capacity
- Storage
- Commodity
- Plan Review and/or Approval by Utility Commission(s)

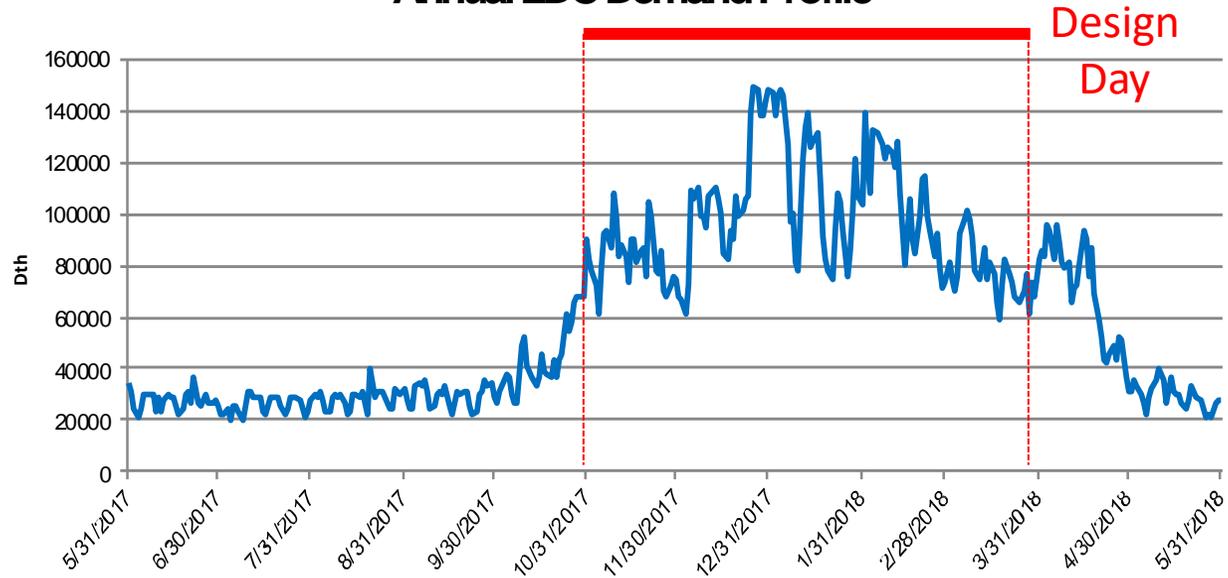
Gas Supply Planning Portfolio Design

- LDC's are Required to Supply their Firm Sales Customers
 - Regulatory Authorities Require
 - Parameters and Balance
- LDC's Aim to (and are Expected to) Provide Reliable Service
 - Multiple Supplies and Pipelines
- LDC's Wish to Provide Lowest Cost
 - Negotiating Price
 - Performance Incentives
- LDC's Need to Balance Risks and Costs of Supply Options
- Planning for Reliability Provides Resilience on Non-Peak Days

Gas Demand for an LDC

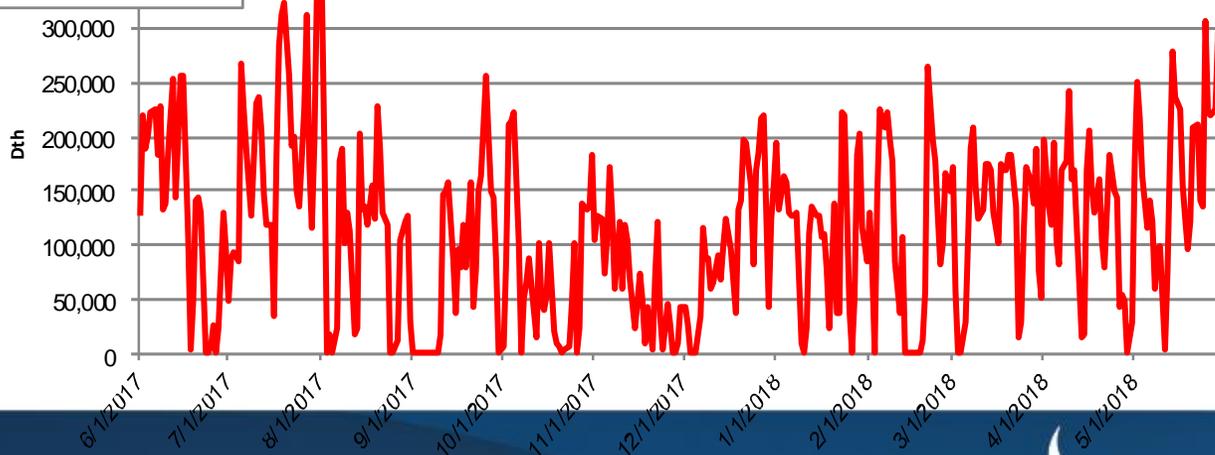
- Firm Sales Customers
 - Residential / Commercial / Industrial
 - Fundamentally Weather Dependent
- Interruptible Sales Customers
- Transportation Customers
 - Firm
 - Interruptible
 - Power Plants
- Peak Day Demand
 - Historical Peak Days
 - Design Day Calculation

Annual LDC Demand Profile



Daily peaks in demand occur throughout the year. “Design Peak” is based on lowest temperature and highest demand in previous years. This is normalized to current demand profile.

Annual Generation Demand Profile



Gas Fired Power Generation may be On System or connected to the same interstate pipelines as the LDC. Their firm contracted capacity must be considered in any peak day demand estimates.

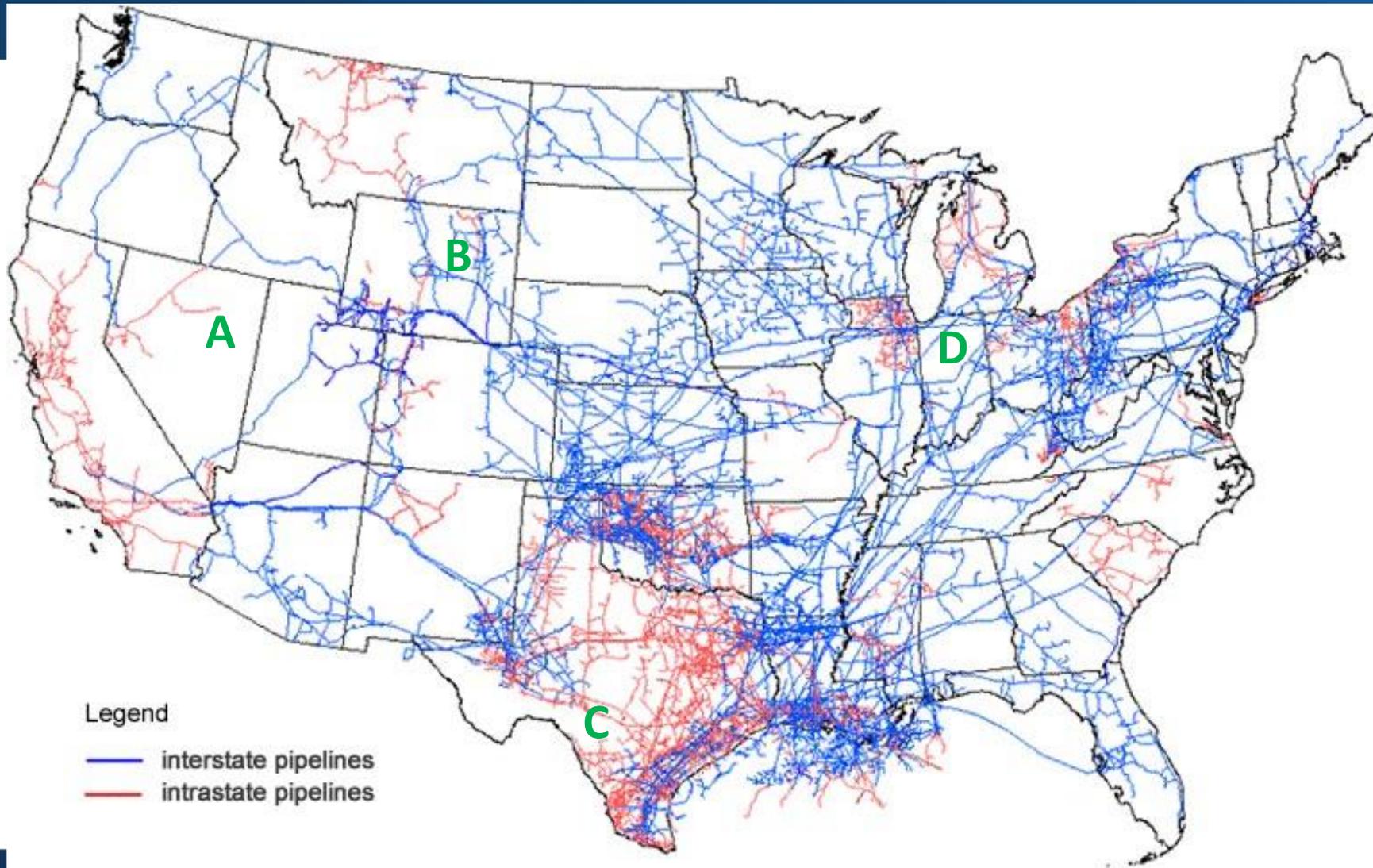
Data shown is meant to be an example demand profile of typical utilities and generators.

Peak Day Demand

- How do LDC's know how much gas they need?
 - Design Day Assumptions
 - Customer Data
- What is a "Design Day"
- Determining Connected Load
- Residential/Commercial Generators
 - How Are They Factored?
 - Contingencies/System Reinforcement
 - System Planning Is A Continuous Process

Transportation Capacity

- Moving Gas from Purchase Location to City Gate
 - Firm v. Interruptible
 - In Path
 - Out of Path
 - Delivered
- Moving Gas On-System for Transportation Customers
 - Firm
 - Interruptible
 - Backup and/or "Supplier of Last Resort"



Legend

- interstate pipelines
- intrastate pipelines

Source: U.S. Energy Information Administration, *About U.S. Natural Gas Pipelines*

Producer

- Location
- Quantity
- Connections

Pipelines

- Available Capacity
- Pricing
- Available Delivery Points

Points A,B,C, and D represent geographic locations in the US.

Gas Storage

- Off System
 - Location
 - Transport to System
- On System
 - Location
 - Delivery to Market Centers
- Inventory Management
 - Maintaining Inventory for Late Season Peaks
 - Managing Balance During Cold and Warm Winters
- Pricing
 - LIFO/FIFO/Average
- Peak Deliverability

Gas Commodity

- Seasonal and Monthly Activities

- Base Load Purchases – meet minimum daily requirements
 - Diversified Supply – mix of seasonal and monthly contracts matched to primary transport receipt points
 - Monthly Index Price - supplemented with financial hedges for the LDC portfolios
 - Procurement methods - electronic exchanges, bi-lateral markets, reverse auctions, and RFPs
- Storage – inject summer/withdraw winter

- Daily Activities

- Daily Purchases – meet incremental daily requirements
 - Locational Supply – based on transport availability and pricing
 - Pricing – daily index price, fixed price
- Storage – Intraday balancing/WACOG pricing
- Scheduling – minimize delivery costs and penalties

Plan Review and/or Approval by Utility Commission(s)

- Does the LDC's Portfolio Design (from previous slide)
 - Supply their Firm Sales Customers
 - Provide Reliable Service
 - Provide Reasonable Cost (if not Lowest)
 - Balance Risks and Costs of Supply Options
- Few PUCs Allow for Recovery in Rate Base for:
 - Planning for Resilience
 - Planning to Serve Interruptible Transportation

Why do Utilities Plan for Winter Heating Season

- Anticipate demand
- Mitigate physical flow and market fluctuations
 - Extreme day-to-day demand and consumption fluctuations due to weather
- Diversify sources of gas
 - Balances consumption with domestic and international suppliers
- Deliver low-cost and reliable natural gas to customers
 - On the coldest day, week and month of the season

Sources: [AGA 2018-2019 Winter Heating Season Report](#), [AGA 2020-2021 Winter Heating Season Sources](#)

Winter Heating Season Presentation & Resource Deck

- Details critical elements of the 2021-2022 winter heating season (WHS) from the perspective of natural gas utility supply portfolio planning.
 - Documents gas delivery system operations
 - Insights into gas supply trends and procurement portfolio management
 - Represents a snapshot of aggregated supply procurement practices of participating LDCs
- The survey focused on:
 - Peak-day and peak-month supply practices
 - Pricing mechanisms
 - Regulatory frameworks
 - Market hedging practices

Big Picture

- 2021 – 2022 LDC participants
 - Total utility respondents: 49
 - Gross utility WHS reported volume - Dth: 82,368,961
 - Total WHS utility customers: 29,966,953

Key Terms

- Asset managed contracts: when a shipper holding firm transportation and/or storage capacity on a pipeline or multiple pipelines temporarily releases all or a portion of that capacity along with associated gas production and gas purchase agreements to an asset manager
- Firm Transportation: receipt, delivery, and transportation of natural gas not subject to interruption or curtailment
- First-of-the-month: a price which represents the most commonly traded fixed price at a major trading point and as published by Inside FERC Gas Market Report (“IFERC” or any successor publication widely used to establish index pricing in the U.S. natural gas trading market).

Key Terms

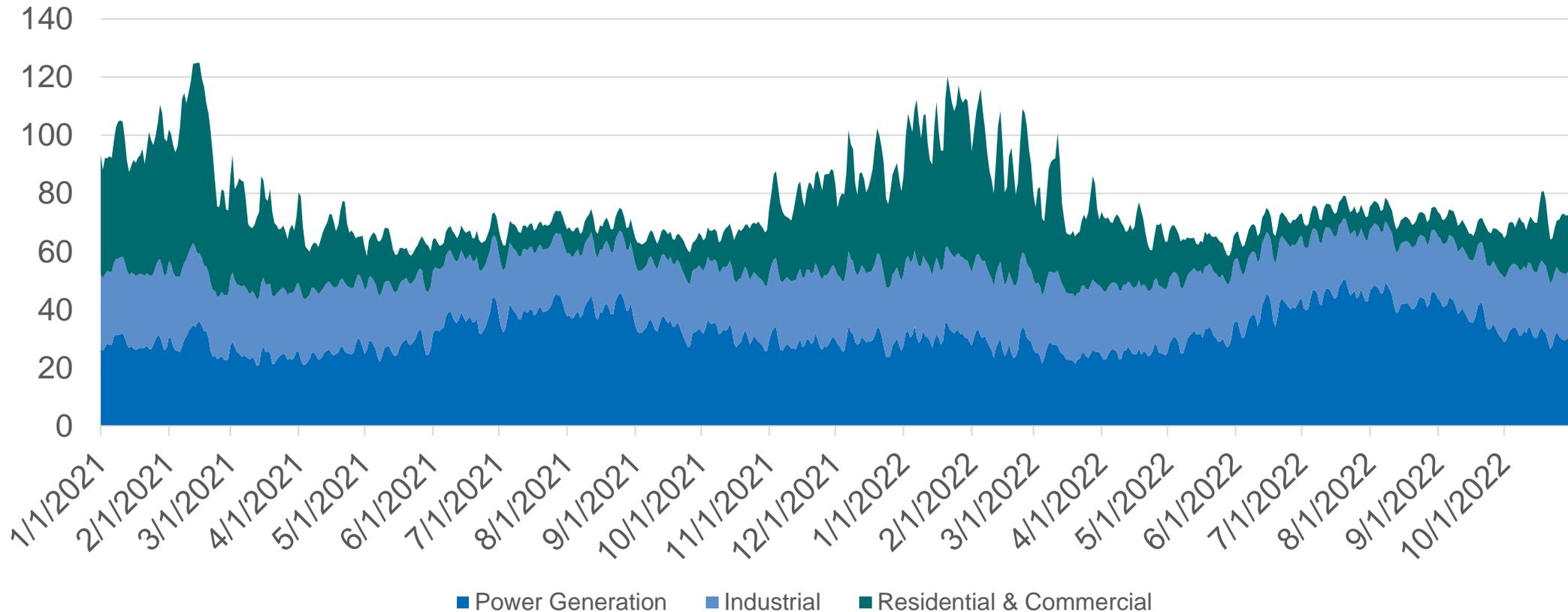
- Fixed Pricing: a mechanism to lock a single price per MMBtu or Dth for volume and term at an exact delivery point; can be NYMEX, basis price or both
- Line pack: 'extra' volumes of gas in transmission lines at a higher pressure
- Local production: production within the utility's jurisdiction
- Long-term contracts: greater than one year
- Mid-term contracts: greater than one month but less than or equal to one year

Key Terms

- On-system underground storage: natural gas storage reservoirs on a utility's system
- Other Storage (Pipeline or Other Storage): Companies who contract with a pipeline company to hold storage for supply portfolio
- 'Other' Source for Peak Day/Month: Includes purchases with third-party suppliers, on-system balancing, and line pack to supplement imbalances
- Short-term contracts: less than or equal to one month
- SNG: Synthetic/Substitute Natural Gas, natural gas alternatives that are as close as possible in composition and properties to natural gas

WHS Daily Consumption doesn't necessarily equate to annual/monthly averages

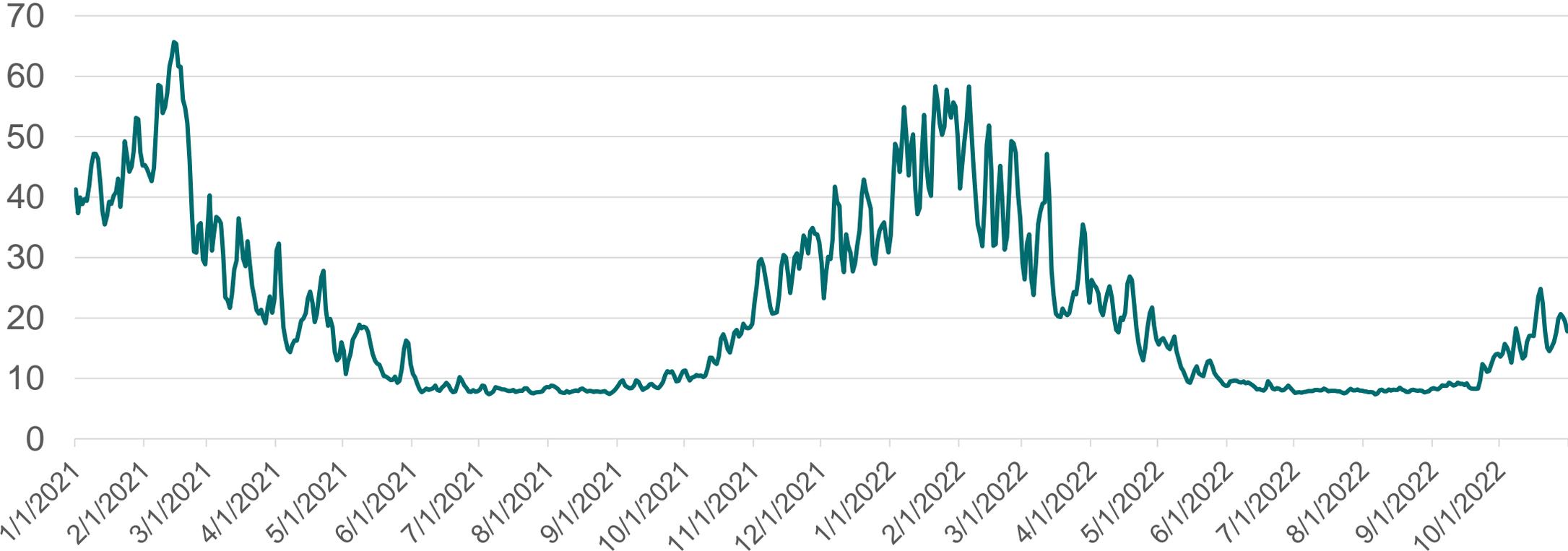
Natural Gas Consumption (Bcf)



Source: S&P Global

Consumption represents load swing for LDCs

Daily Residential & Commercial Consumption(Bcf)



Source: S&P Global



A relatively warm winter heating season

Monthly Comparison of National Heating Degree Data

October 2014 - March 2022

Month	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
October	-19.7%	-19.7%	-40.3%	-27.7%	-2.9%	-4.8%	-5.2%	-33.8%
November	12.4%	-17.5%	-23.3%	-9.2%	10.9%	9.3%	-20.9%	-6.3%
December	-12.9%	-16.3%	-2.4%	-1.0%	-11.1%	-12.0%	-8.5%	-22.3%
January	-2.5%	-5.4%	-15.3%	-3.2%	-4.6%	-18.5%	-11.6%	1.3%
February	20.3%	-12.2%	-24.3%	-11.5%	1.6%	-7.5%	12.5%	0.4%
March	-0.9%	-23.7%	-6.9%	2.0%	8.8%	-14.9%	-12.6%	-8.3%
TOTAL	0.7%	-14.5%	-15.9%	-6.1%	-0.5%	-9.6%	-7.4%	-9.0%

Red = Warmer

Blue = Colder

LDCs adjust peak supplies from lessons learned

Sources of Participant Peak Gas Supplies by Number of Companies

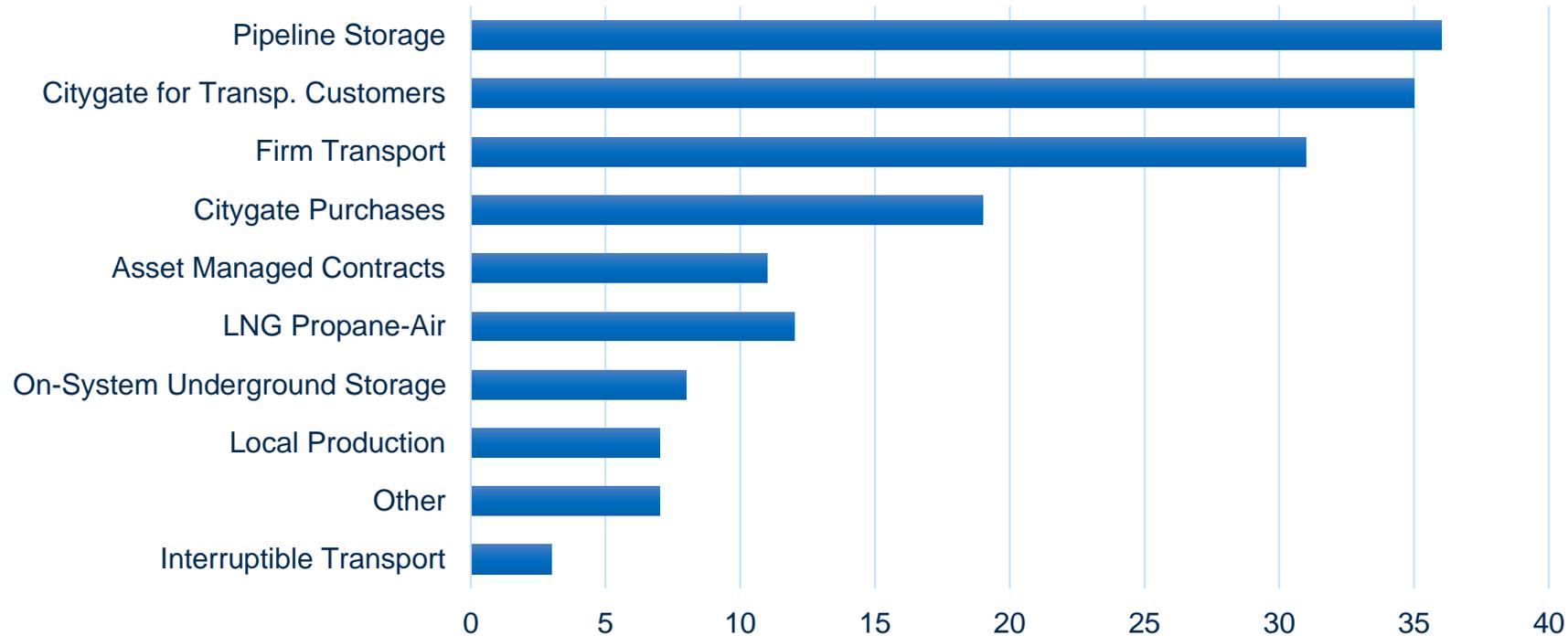
2021-2022 Winter Heating Season

Supply Volume Percentage Ranges	Interruptible Transport	Other	Local Production	On-System Underground Storage	LNG Propane-Air	Asset Managed Contracts	Citygate Purchases Sales	Firm Transp.	Citygate for Transp. Customers	Pipeline Storage
Peak Day										
1 - 25%	1	6	6	4	11	5	12	9	18	20
26 - 50%	1	0	0	4	1	1	6	12	15	8
51 - 75%	0	1	0	0	0	3	0	9	0	8
76 - 100%	1	0	1	0	0	2	1	1	2	0
0%	46	42	42	41	37	38	30	18	14	13
Peak Month										
1 - 25%	1	4	7	6	10	5	13	8	16	22
26 - 50%	1	0	0	3	0	1	4	14	17	9
51 - 75%	0	0	0	0	0	3	2	6	2	3
76 - 100%	1	1	1	0	0	3	2	3	2	0
0%	46	44	41	40	39	38	28	18	12	15

Red: year-over-year decrease
Green: year-over-year increase

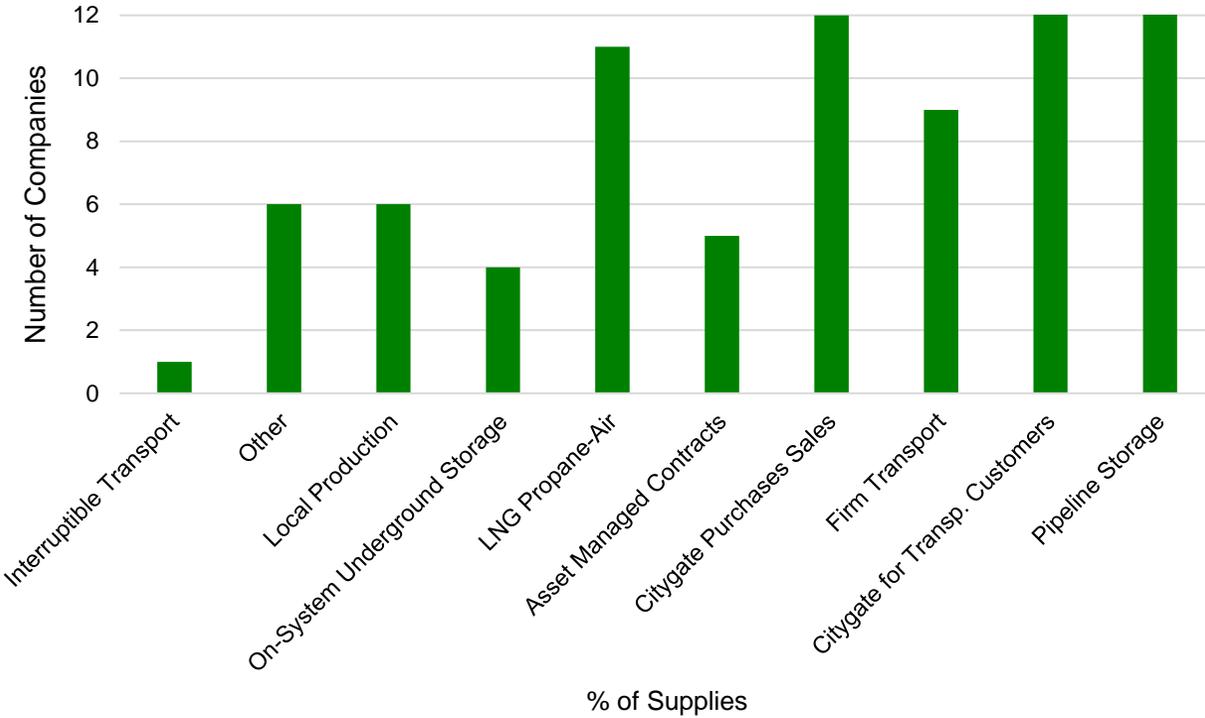
Pipeline storage utilized most for peak day supplies

Source of Peak Day Gas Supplies Number of Companies using Supply Resource

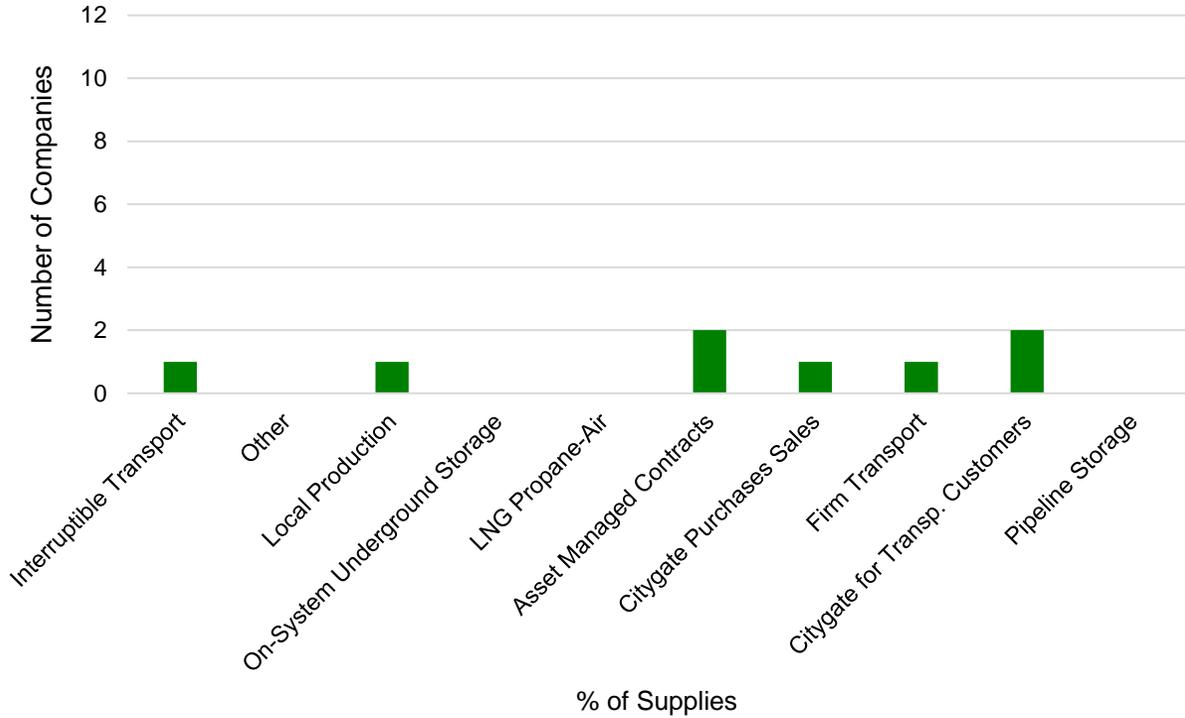


LDCs focus on source diversity

Sources that Represent 1-25% of Peak Day Supplies
2021-2022 Peak Day



Sources that Represent 76-100% of Peak Day Supplies
2021-2022 Peak Day



Aggregate results show consistency year to year

Aggregate Peak Day Supplies

2021 - 2022 Winter Heating Season

Supply Source	Thousand Dth	%
Local production	356,000	1%
LNG / Propane-air / SNG	578,000	2%
Asset managed contracts	848,000	3%
Citygate purchases for sales customers	1,309,000	4%
Other	2,868,000	9%
Purchases moved via interruptible transportation	3,717,000	11%
Pipeline or other storage	3,953,000	12%
On-system underground storage	4,650,000	14%
Citygate supplies for transportation customers	5,765,000	17%
Purchases moved via firm transportation	9,361,000	28%
TOTAL	33,405,000	100%

Aggregate Peak Month Supplies

2021 - 2022 Winter Heating Season

Supply Source	Thousand Dth	%
LNG / Propane-air / SNG	2,481,000	0%
Local production	9,959,000	1%
Asset managed contracts	19,327,000	3%
Citygate purchases for sales customers	22,497,000	3%
Purchases moved via interruptible transportation	65,707,000	10%
Pipeline or other storage	66,745,000	10%
On-system underground storage	68,408,000	10%
Other	80,602,000	12%
Citygate supplies for transportation customers	158,454,000	23%
Purchases moved via firm transportation	190,391,000	28%
TOTAL	684,571,000	100%

Source: AGA Winter Heating Season Performance Survey
2021 - 2022

49 respondents

Red: year-over-year decrease
Green: year-over-year increase



Uri fueled by local production

February 7 – 20		
Supply Source	Volume (Dth)	%
Citygate purchases for sales customers	10,881,000	5%
Citygate supplies for transportation customers	53,458,000	26%
LNG / Propane-air / SNG	2,126,000	1%
Local production	51,520,000	25%
On-system underground storage	26,985,000	13%
Pipeline or other storage	29,200,000	14%
Purchases moved via firm transportation	61,514,000	30%
Purchases moved via interruptible transportation	4,370,000	2%
Asset managed contracts	-	0%
Other	-	0%
TOTAL	202,746,000	100%

49 respondents

Red: year-over-year decrease

Green: year-over-year increase

Increase in the use of Asset Management

Portions of Winter Heating Season Acquisitions Via Asset Management			
Agreements for Supply by Number of Companies			
Supply Volume Percentage Ranges	Peak Day	Winter Season	Annual
1 - 25%	6 (4)	5 (4)	6 (5)
26 - 50%	4 (5)	5	5
51 - 75%	7	7	3
76 - 100%	6	7	9
0%	27	26	27

49 respondents

(X): 2020-2021 Results

Red: year-over-year decrease

Green: year-over-year increase

Shift in contract duration – longer terms

Gas Supply Contract Terms by Number of Companies			
2021-2022 Winter Heating Season			
Supply Volume Percentage Ranges	Short Term % 1 Month or Less	Mid Term % 1 Month - 1 Year	Long Term % Greater Than 1 Year
1 - 25%	9 (10)	4 (5)	7
26 - 50%	16 (13)	4 (6)	4
51 - 75%	2 (5)	15 (12)	0 (1)
76 - 100%	6	13	3 (4)

49 respondents

(X): 2020-2021 Results

Red: year-over-year decrease

Green: year-over-year increase

(Less than or equal to
1 month)

(Greater than 1 month
but less than or equal
to 1 year)

(Greater than 1 year)

Four primary purchasing methods

Gas Supply Pricing Mechanisms by number of Companies				
2021-2022 Winter Heating Season				
Supply Volume Percentage Ranges	NYMEX	Fixed	Daily (Spot or Index Price)	First-of-the-Month
1 - 25%	12	15	13	2
26 - 50%	3	9 (8)	17 (16)	16 (15)
51 - 75%	2	2	6	15
76 - 100%	0	2	1	7
0	32	21	12	9

49 respondents

(X): 2020-2021 Results

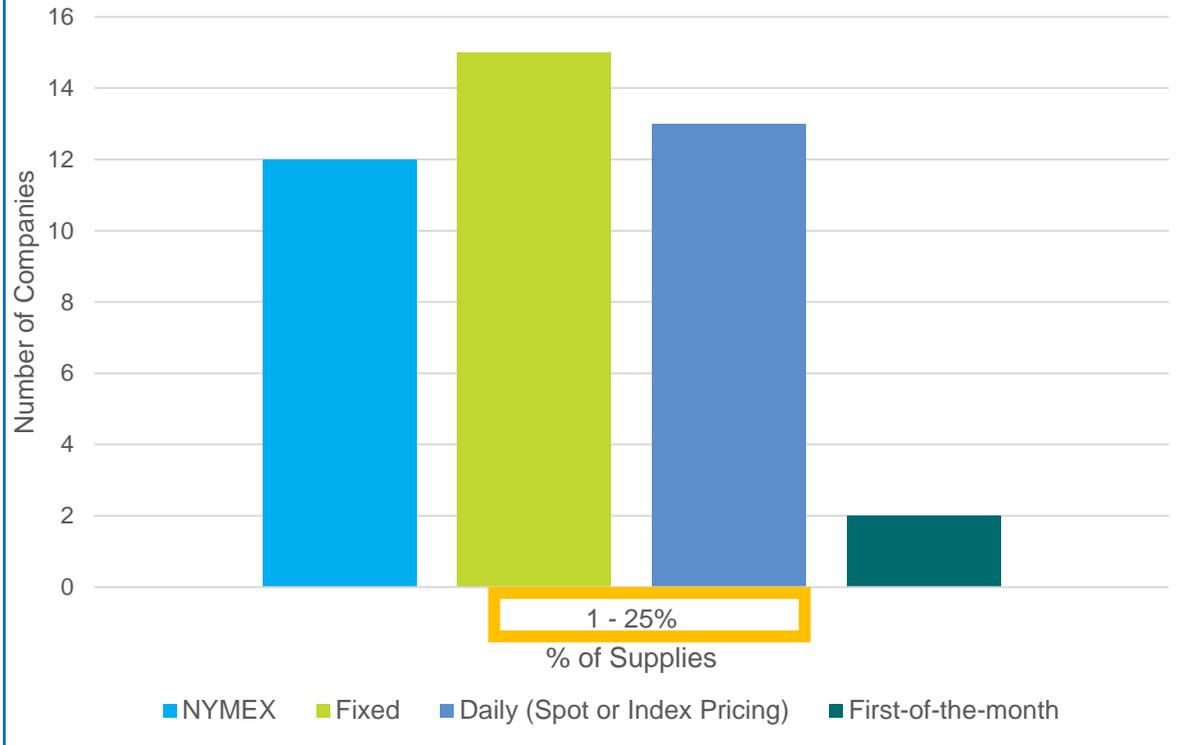
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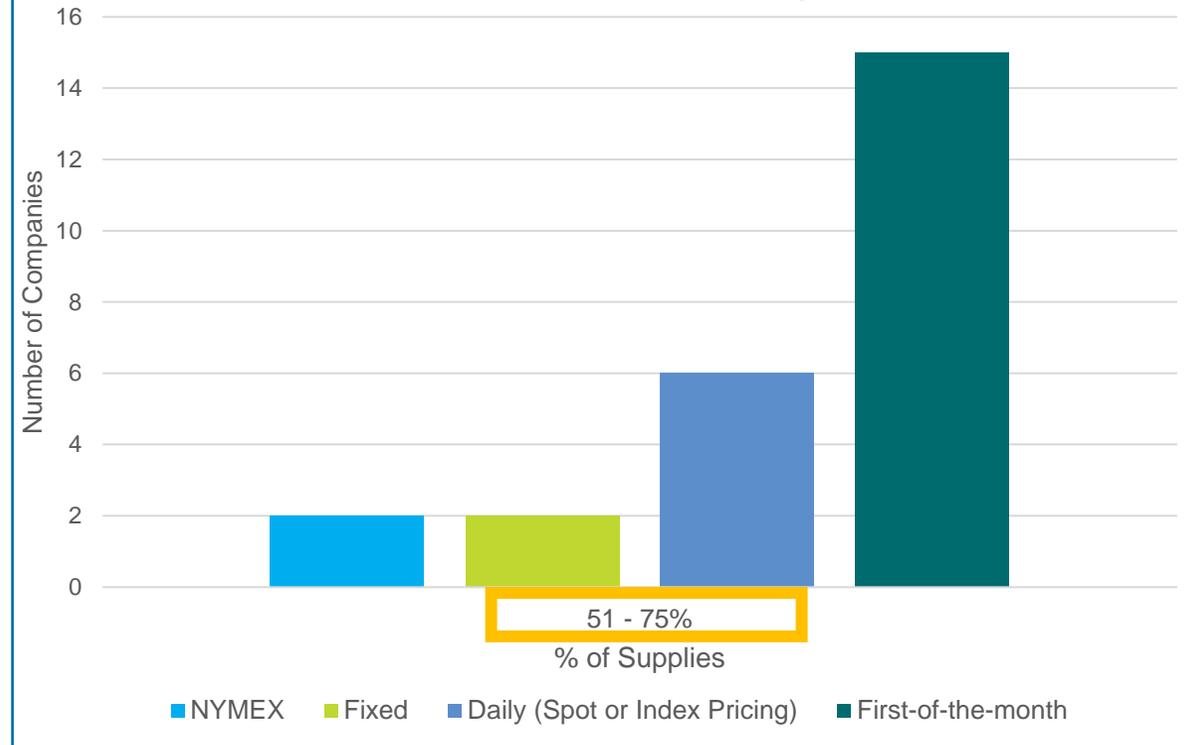
Fixed Pricing: a fixed index price; a contract to deliver gas at a certain time and at a specific price

First-of-the-month futures lead as preferred purchasing method

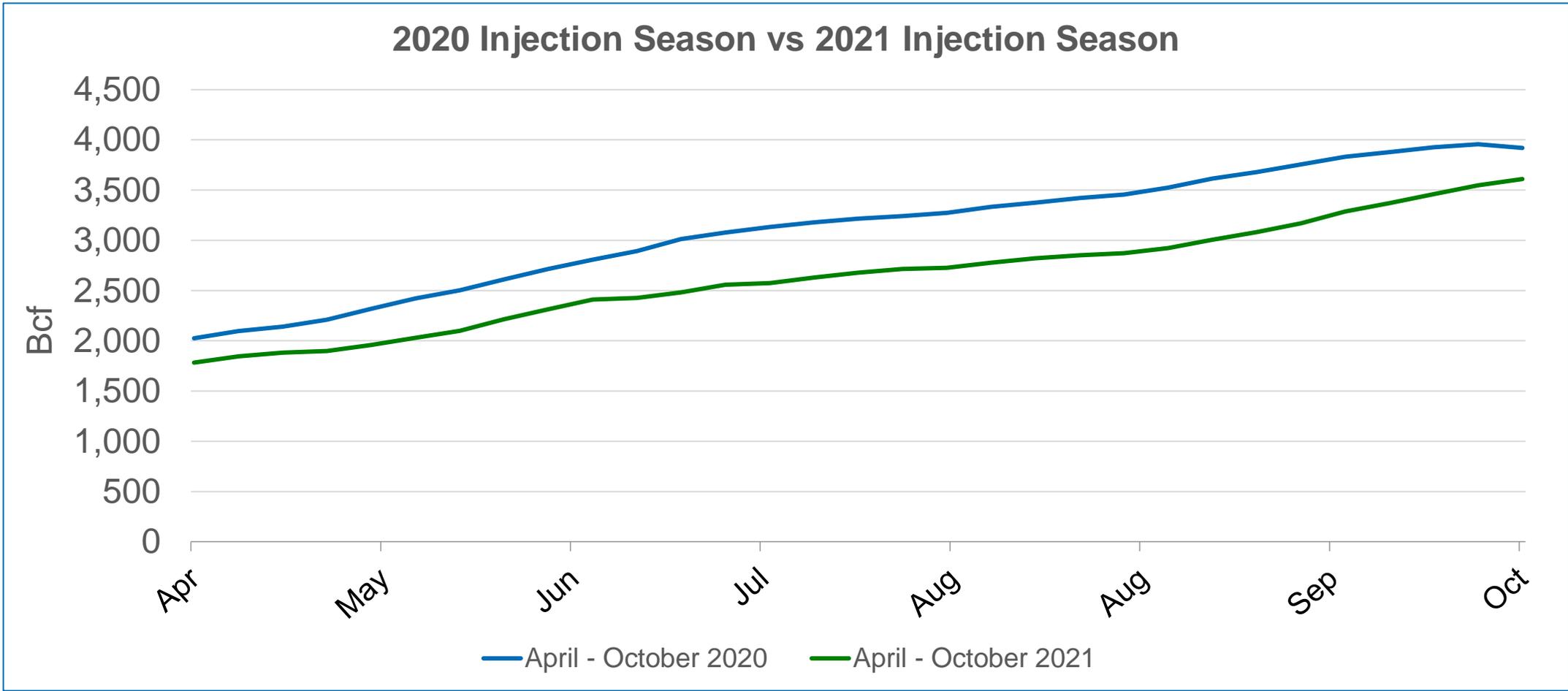
Gas Supply Pricing Mechanisms
2021-2022 Winter Heating Season



Gas Supply Pricing Mechanisms
2021-2022 Winter Heating Season



Strong Injection Season



Source: Energy Information Administration



Spot and First-of-the-month favored for injection season

Pricing Mechanisms for Gas Injected into Underground Storage by Number of Companies				
2020 Refill Season (April - October)				
Supply Volume Percentage Ranges	Daily (Spot or Index Price)	First-of-the-Month	Fixed	NYMEX
1 - 25%	11	1	8	6
26 - 50%	9	8	3	2
51 - 75%	2	8	1	1
76 - 100%	3	14	3	4
0	23	17	33	35
2021 Refill Season (April - October)				
Supply Volume Percentage Ranges	Daily (Spot or Index Price)	First-of-the-Month	Fixed	NYMEX
1 - 25%	11	1	8	6
26 - 50%	9	8	3	2
51 - 75%	2	8	1	1
76 - 100%	4	16	3	4
0	23	16	34	36

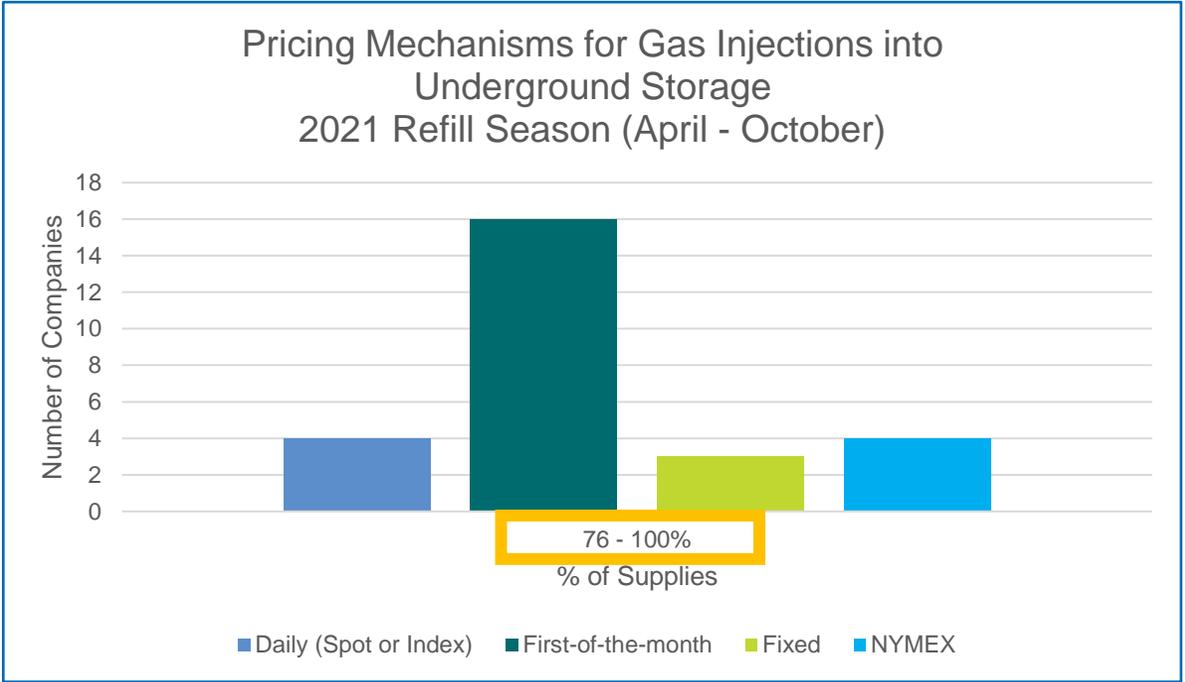
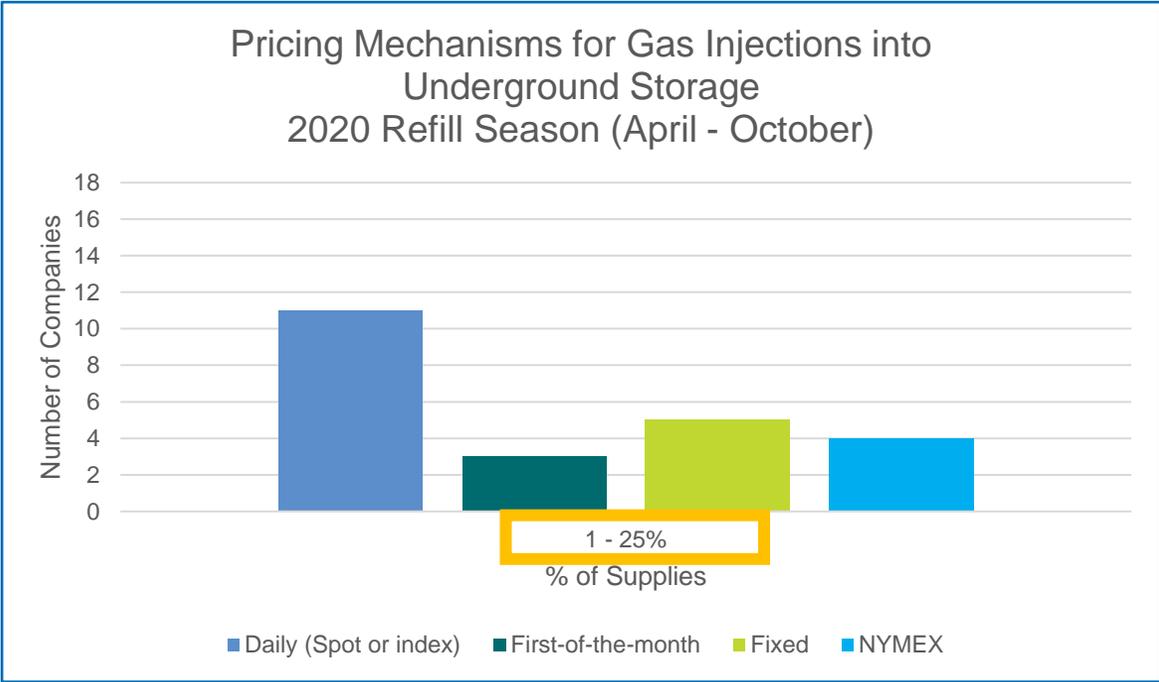
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Fixed Pricing: a fixed index price; a contract to deliver gas at a certain time and at a specific price

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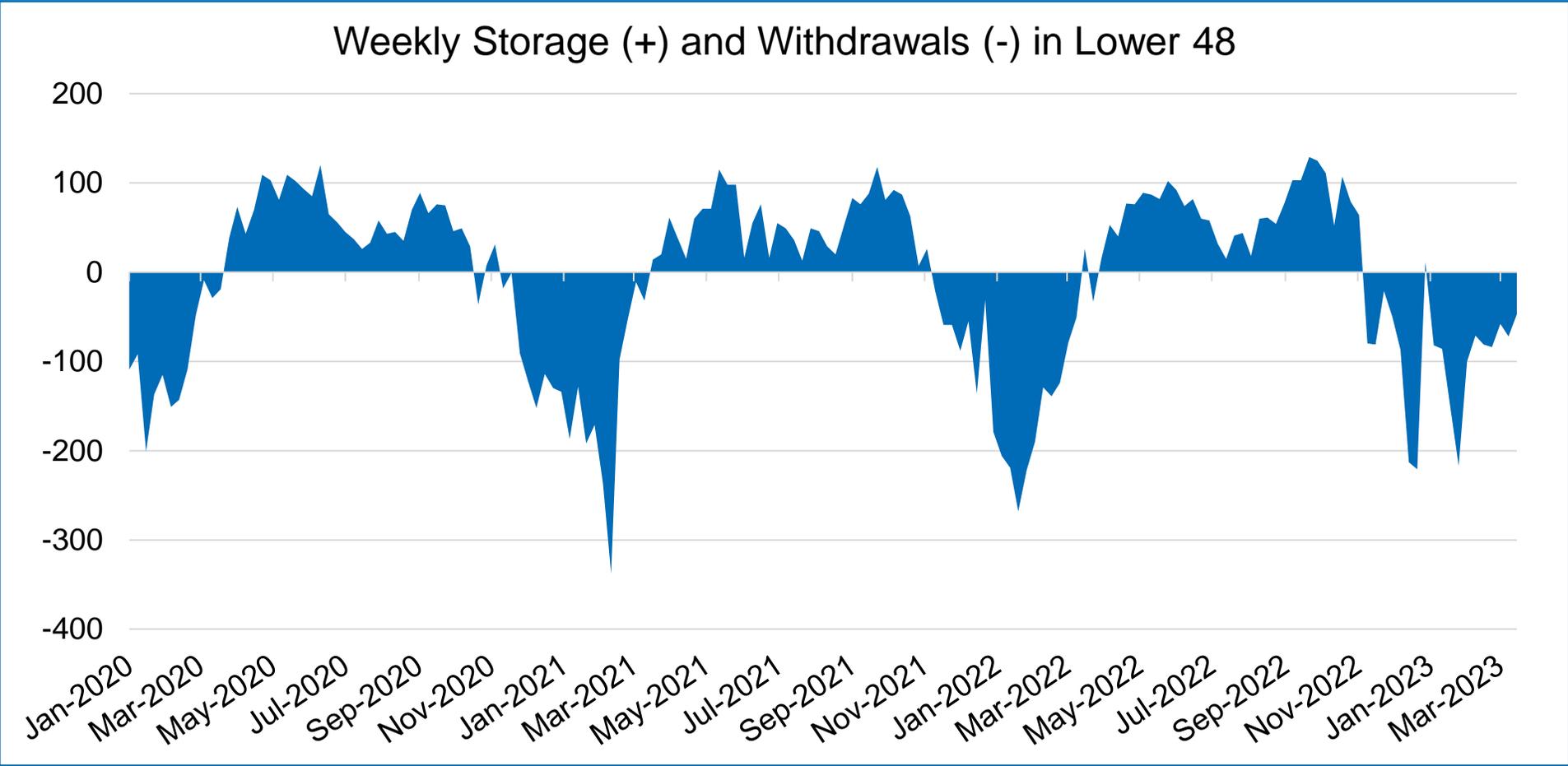
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First-of-the-month constitutes the majority of injections



Source: AGA Winter Heating Season Performance Survey
2021 - 2022

Daily Storage Injections (+) and Withdrawals (-)



Source: Energy Information Administration
Chart: American Gas Association

Final Thoughts

- Based on individual utility-specific conditions, utilities plan for reliable natural gas deliveries on a daily, weekly, monthly, and seasonal basis by matching supply resources to forecasted demand and preparing for “design day” conditions (or a historic peak day load).
- Companies tend to deliver their supply strategy in increments that often amount to less than 50 percent of their total supply package.
- Supply planners use a portfolio approach to pricing gas supplies, mirroring their approach to supply sources, providers, and transportation options.

Next Steps

- Data collection for the 2022-2023 winter heating season will open this week! (mhoy@aga.org)
- If your utility is doing something new, implementing a new supply strategy, pricing mechanism, etc., LET US KNOW! The intent of the survey is to document the data as a snapshot of supply behavior by our member LDCs.

ANNUAL WINTER HEATING OUTLOOK WEBINAR

AGA WEBINAR
WENESDAY, OCTOBER 25, 2023
2:00 - 3:00 PM ET



Registration link in the chat!

Thank you!

Thank you to the local gas utilities that participated in the survey. We value their continued participation tremendously and would not be able to provide these reports valuable takeaways without their time and effort!

Questions?

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