Last Resort Service Procurement Technical Session

May 15, 2023

Rhode Island Energy™
a PPL company

Agenda

- ***Section 1:*** Wholesale Energy Market Update
- ***Section 2:*** Rhode Island Energy Last Resort Service – *Current State*
- ***Section 3:*** Peer Wholesale Procurement Approaches
- ***Section 4:*** Community Choice Aggregation – *Lessons From Neighboring Jurisdictions and the Potential Impact For Rhode Island Energy Last Resort Service*
- ***Section 5:*** Future Last Resort Service Considerations & Concluding Remarks

Section 1:
Wholesale Energy Market Update

Last Resort Service & Its Market-Based Components

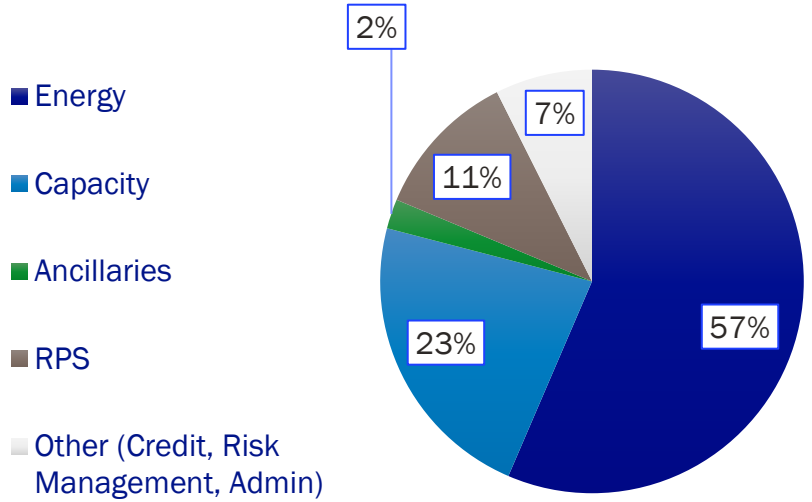
Primary Drivers:

- Energy ($/MWh) – established through marginal clearing prices in the market
- Capacity ($/MW) – established through wholesale auctions; *including secondary cost components such as Mystic Cost of Service (CoS) and other Reliability Must Run (RMR) facilities*
- Ancillary (vary, but usually $/MWh)

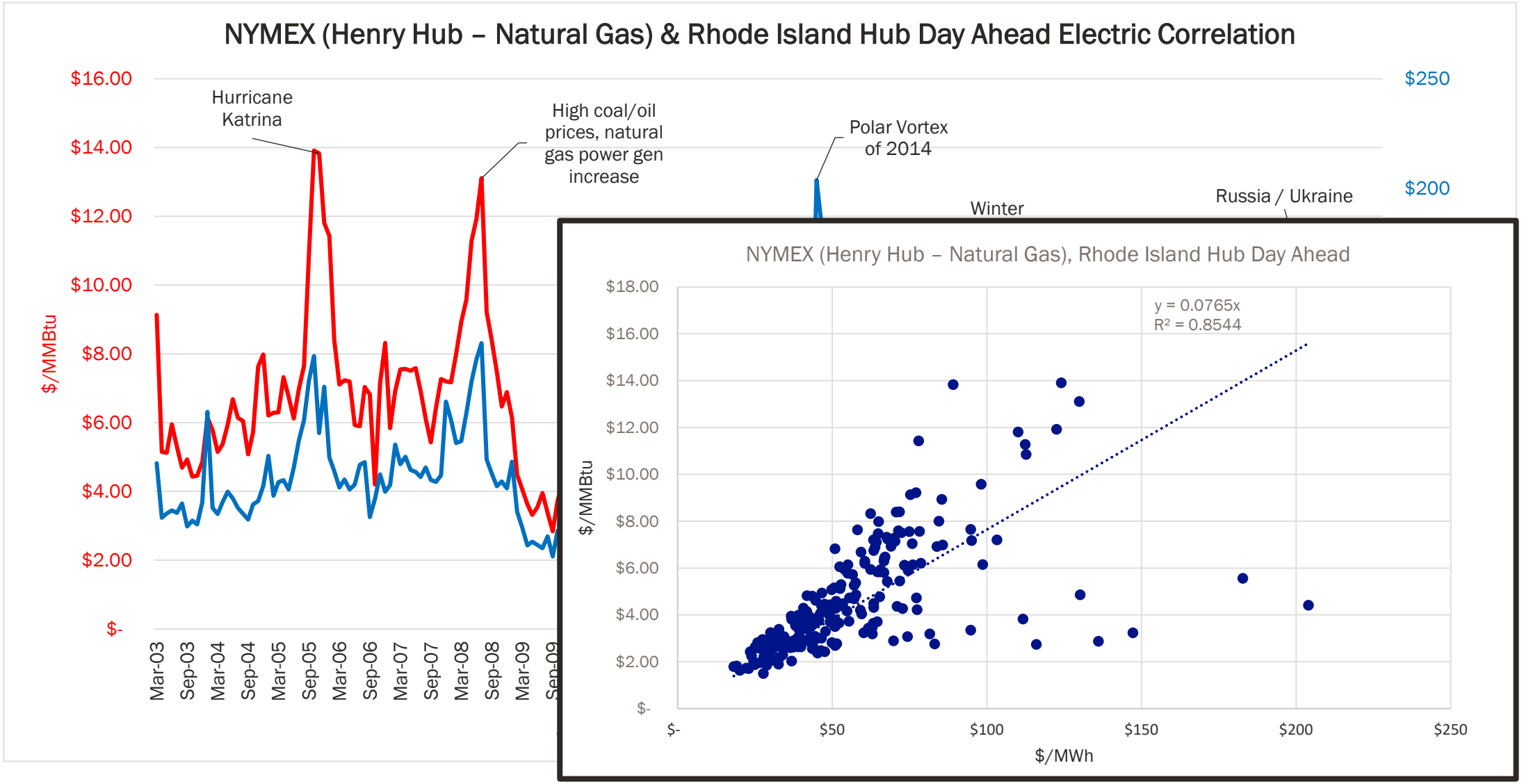
Other Correlated Cost Components:

- Fuel Prices (e.g. Natural Gas and Oil)
- Wholesale Supplier Risk Premiums & Hedged Positions

Estimated Generation Rate Component Ratio



Correlation Between Natural Gas & Wholesale Electric Prices



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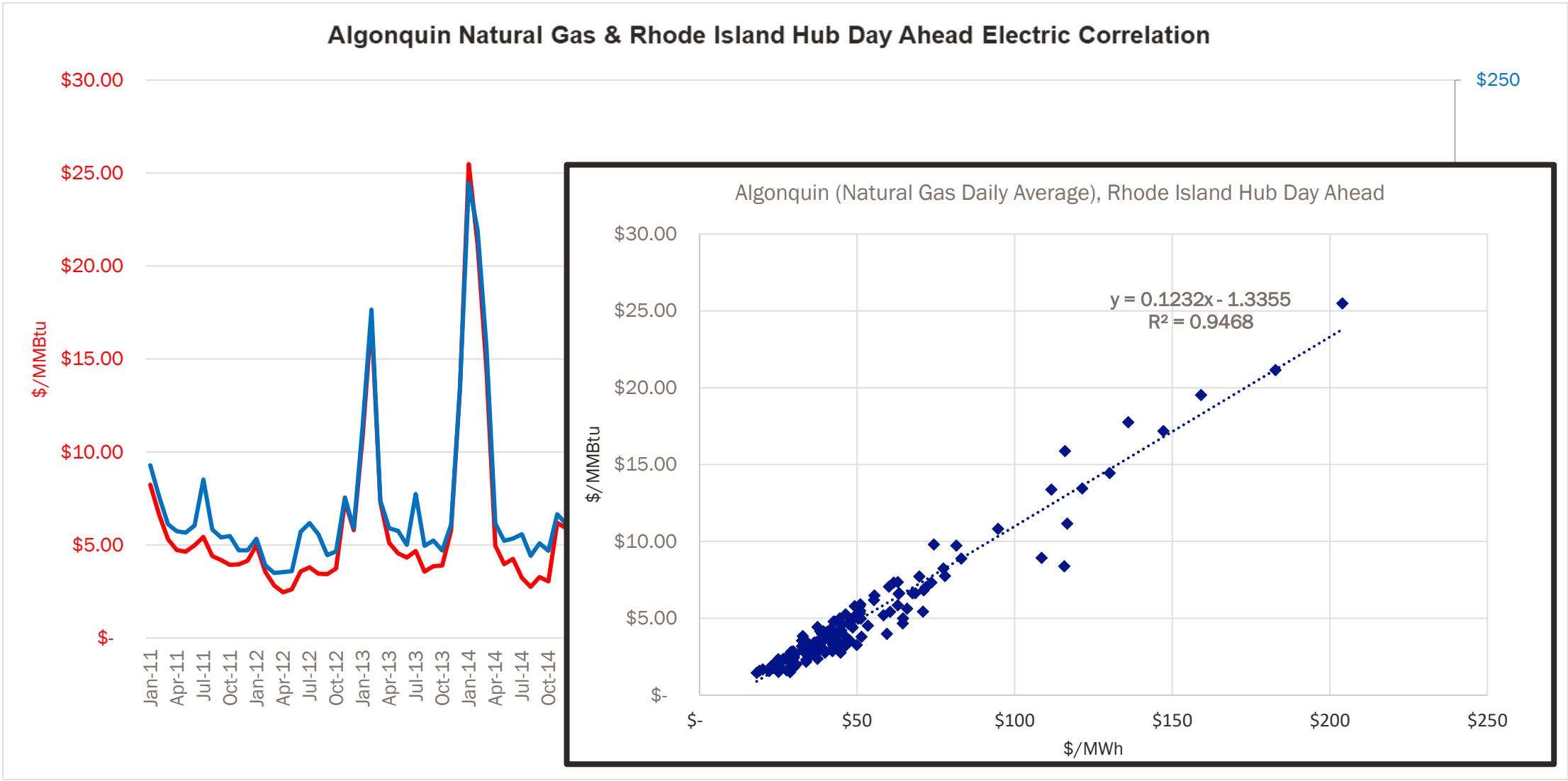
Correlation Between Natural Gas & Wholesale Electric Prices (*cont.*)



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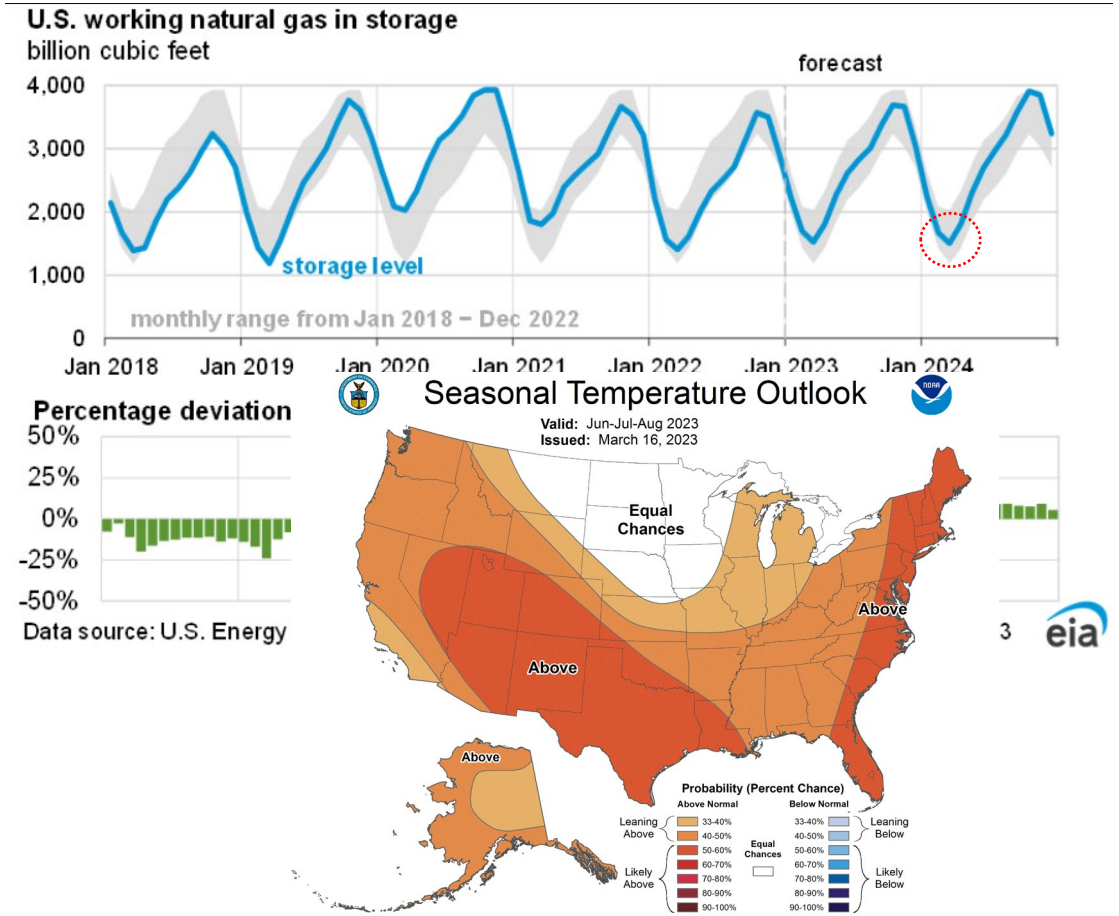
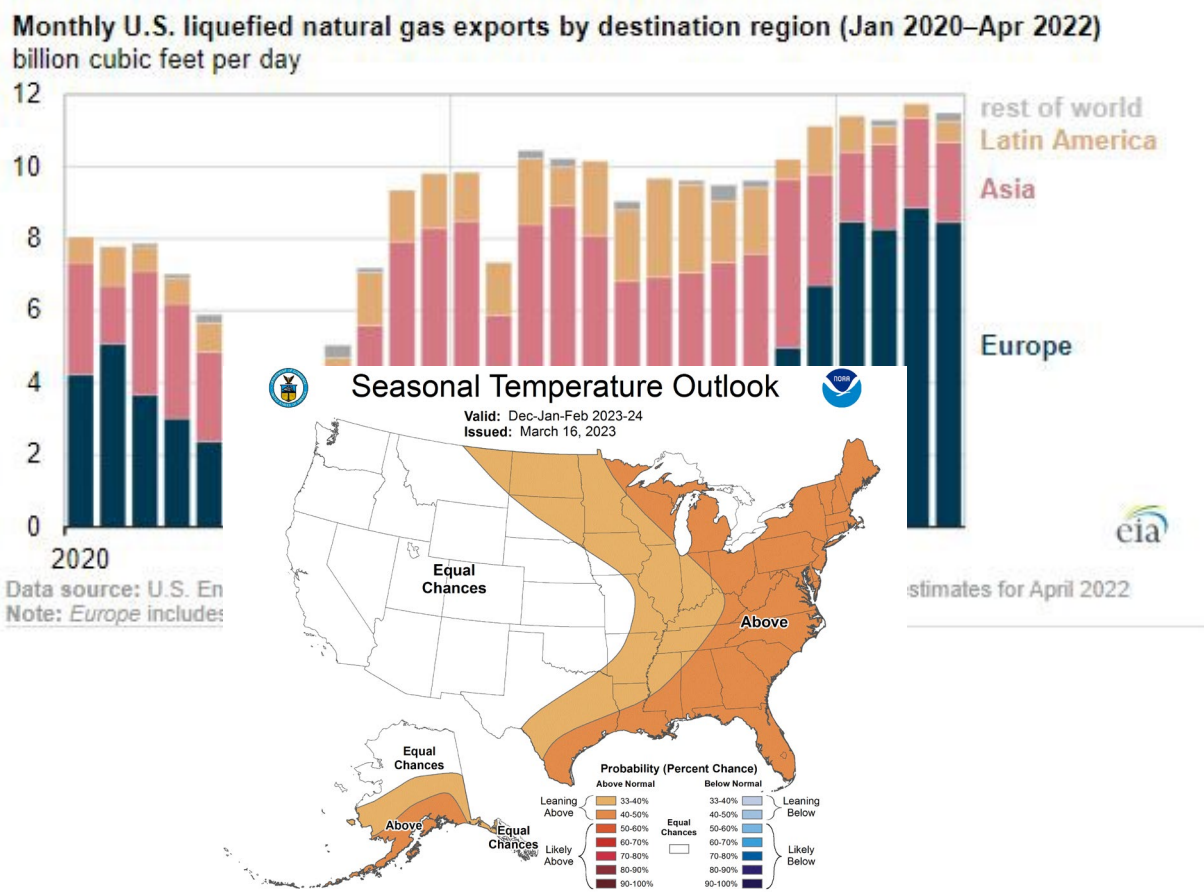
Natural Gas – Forecasts (2022 vs. Current)

A mild winter in 2022/2023 has led to a short-term price collapse (~$2.50/MMBtu); however, mid-term forecasts anticipate a natural gas price spike in winter 2023/2024 (est. $12/MMBtu+). Key drivers include: forecast/actual weather, natural gas production, and LNG exports.

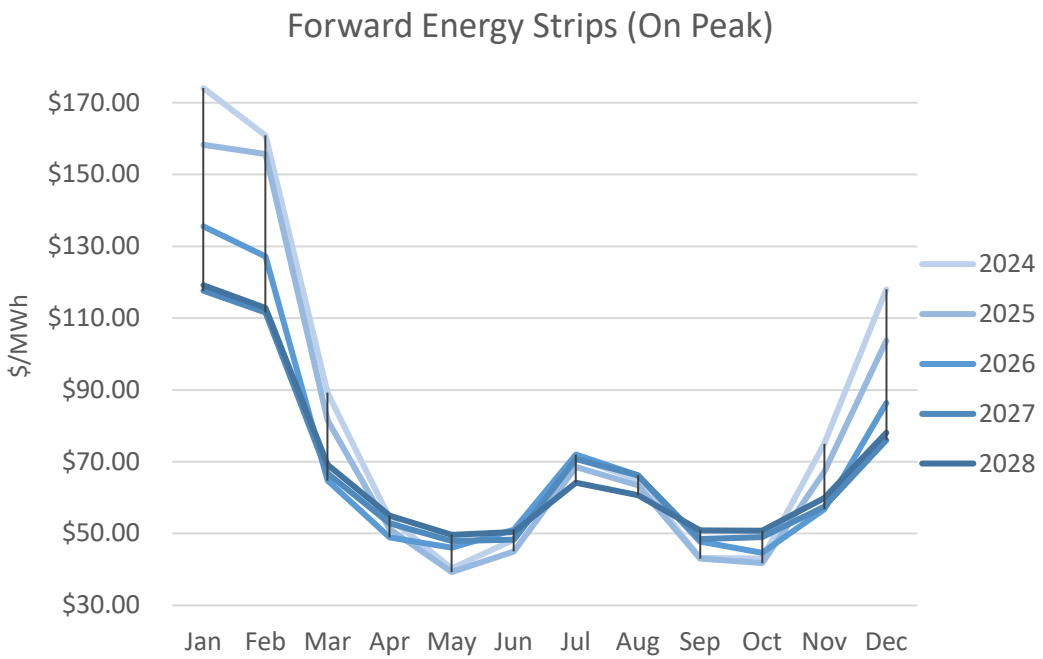
2022 natural gas forecasts indicated a substantive price spike in early 2023 (Jan/Feb), followed by a drop in the spring of 2023 and a spike in late 2023/early 2024. The primary driver for the spike in 2023 was driven by natural gas constraints going into winter.

Mitigating Natural Gas Considerations

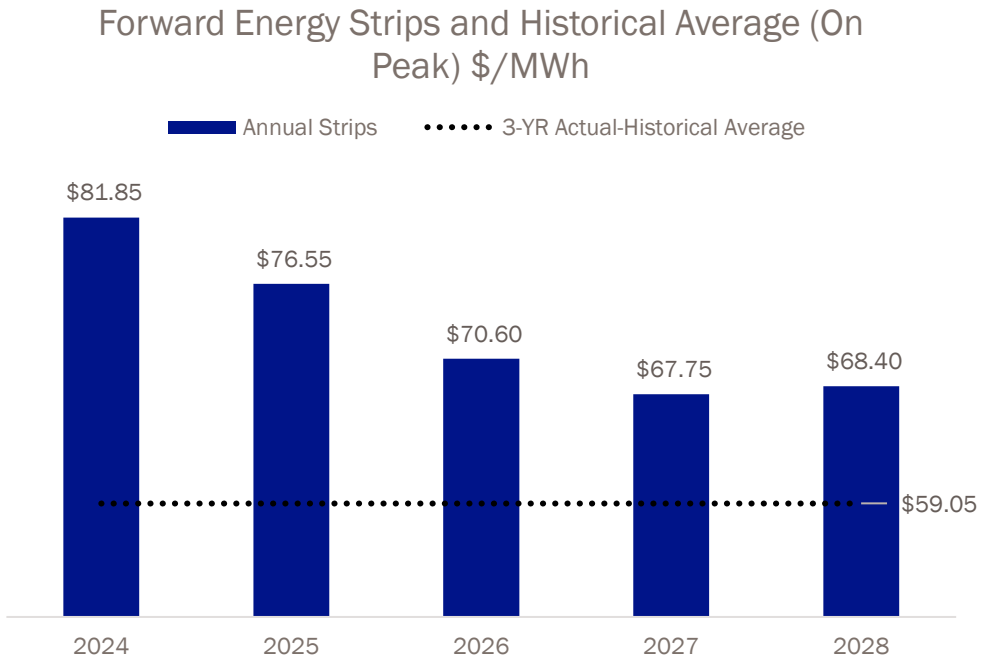




Futures – Short-term vs. Long-term



Under longer-term procurement approaches, futures energy strips may capture lower prices - closer to historic average prices. However, there is a risk that it may also lock-in prices at higher prices if acquired during high market prices or if there is uncertainty into the future.



If a “market event” occurs, previously procured long-term contracting may buffer customers – as long as not being procured during event. If an event is occurring, or there are retreating prices, procuring short-term contracts is likely preferred.

Typically shoulder season months (Apr – May, Sep - Oct) are lower in the short term and the most volatile months (Jan & Feb) are lower in the long term.

Section 2:

Rhode Island Energy Last Resort Service - *Current State*

Rhode Island Energy Last Resort Service

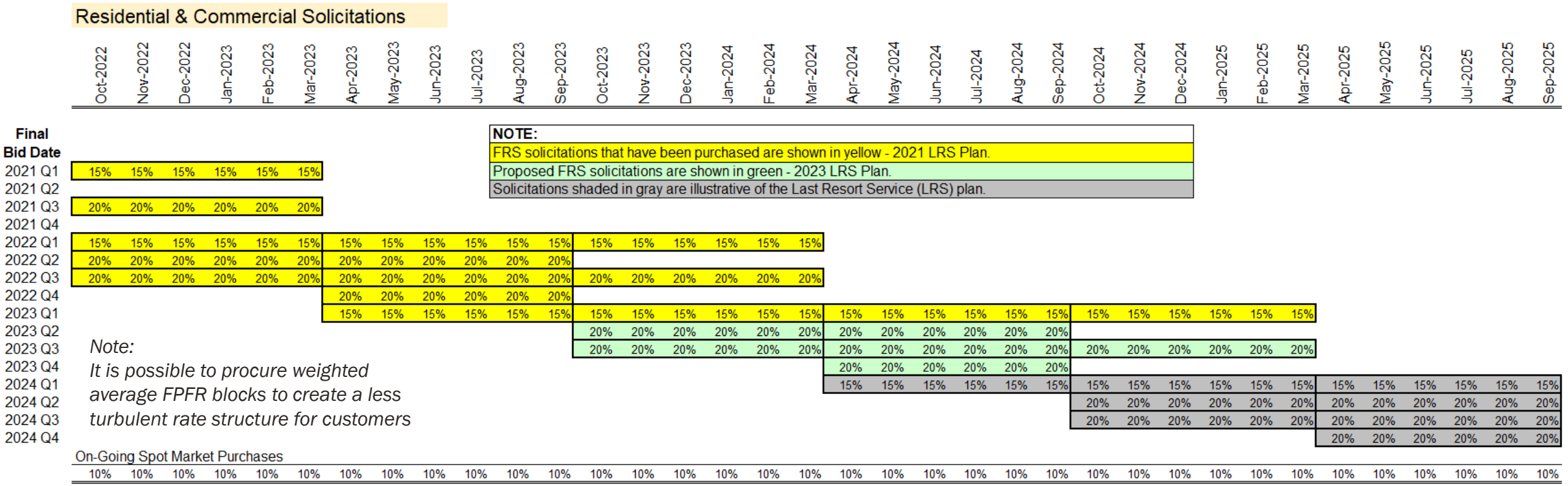
- Rhode Island General Laws §§ 39-1-27.3 and 39-1-27.8 requires the Company to arrange for power supply for those customers who are not otherwise receiving electric service from a Non-Regulated Power Producer (NPP).
- Standard Offer Supply (SOS) transitioned to Last Resort Service (LRS) in 2020. The LRS plan term also evolved from 1 year to 2 years.
- Rhode Island Energy (RIE) currently leverages both Fixed Price Full Requirements (FPFR) service and spot market contracts in supply of customers on Last Resort Service (LRS).
  - Quarterly auctions
  - No load caps or limits on supply
  - Terms broken up into “summer” and “winter” periods (April – Sept, Oct – March)
- FPFR load following services buffer LRS customers from volatility in energy and ancillary costs. The Forward Capacity Market (FCM) cost volatility is mitigated utilizing capacity cost estimation.

Last Resort Service Plan, Products, & Terms (*current*)

- The current LRS Plan is 2-year term and will run through December 2024.
- RIE holds auctions quarterly (January, April, July, and October).
- Products and terms bid for each customer class vary
  - **For Residential & Commercial** – 90% is fixed price full requirements load following supply and 10% is spot market supply. Contract terms vary from 6 months to 24 months.
  - **For Industrial** – 100% is 3-month fixed price full requirements load following supply.

- Wholesale suppliers bid a fixed $/MWh price for the specified term in the auction. A winning supplier then becomes responsible for the energy, ancillary services and any other miscellaneous Independent System Operator-New England ("ISO-NE") charges associated with the LRS customer load.
- RIE assumes the costs associated with Capacity – with suppliers passing through these costs without mark-up for margin or risk.

Residential and Commercial Laddering Approach



Buying Sequence (Hedges) – 4 RFPs / Year:

- 24-mo: 15%
- 12-mo: 20%
- 18-mo: 20%
- 6-mo: 20%
- 24-mo: 15%

Total: 90%

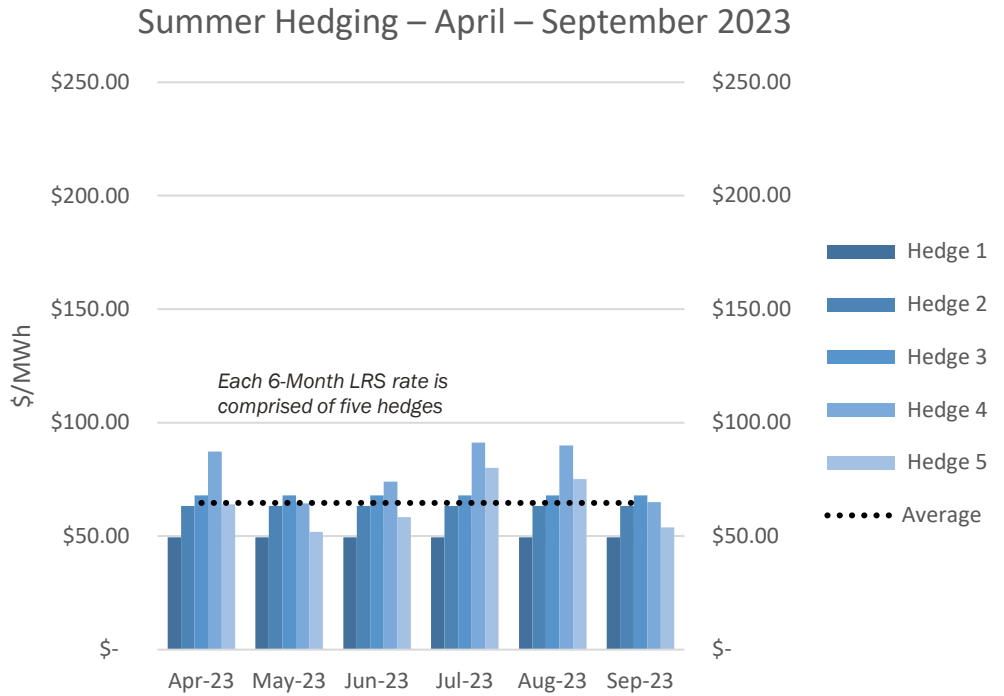
Additional Notes:

- RIE also procures 10% spot market supply
- Suppliers may bid on and be awarded one or more blocks of supply (lowest price wins)

Residential & Commercial Supply

- While the terms being procured each auction range from as little as 6-months and as long as 24-months, the terms are then broken-up into 6-month blocks.
  - For example, a 12-month term running April 2023 through March 2024 is comprised of 2x6-month blocks.
  - A single supplier may win the first block (April – Sept. 2023), the second block (Oct 2023 through March 2024), or both blocks for the full term. **Lowest price wins.**
- Based upon the 6-month "block" procurement approach, the supply start dates can vary dramatically.
  - The shortest gap from bid to load flow is ~3mo.
  - The longest gap from bid to load flow is ~22mo.
- RFPs now must be completed, and rates filed 75 days prior to the beginning of the rate period.

ISO-NE Layered Strategy Risk Mitigation (Energy & Ancillaries)

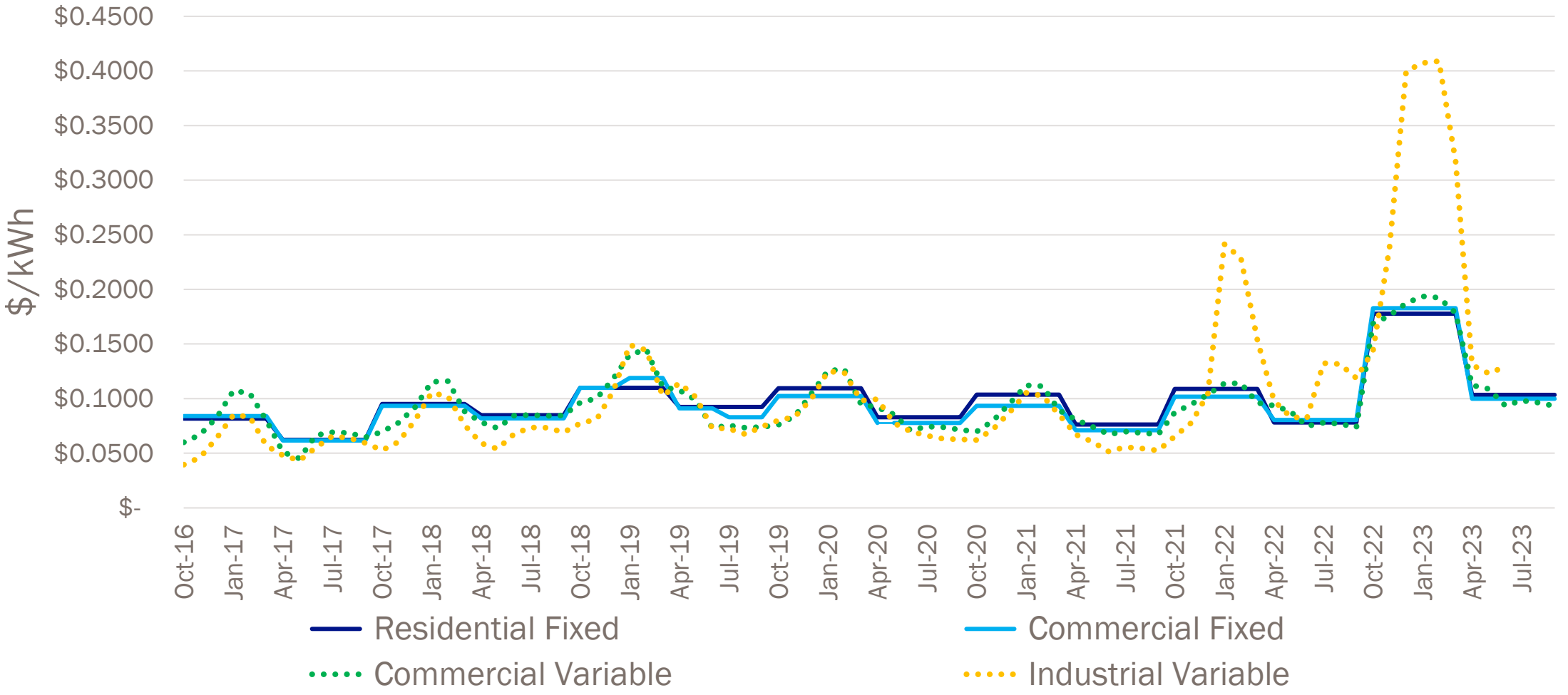


For Winter 22/23 - earlier hedges going back to 2021 (Hedge 1 & 2) helped alleviate and reduce the final rate.

For Summer ’23 – a similar pattern appears in relation to the Winter 22/23; however, much less volatility exists because January and February are not present.

Result out of Winter 2022/23 (actual) - A warm winter with ample natural gas supplies resulted in a low, actual market rate relative to the hedges in place.

LRS Generation Rates Over time (Res./Comm./Ind.)



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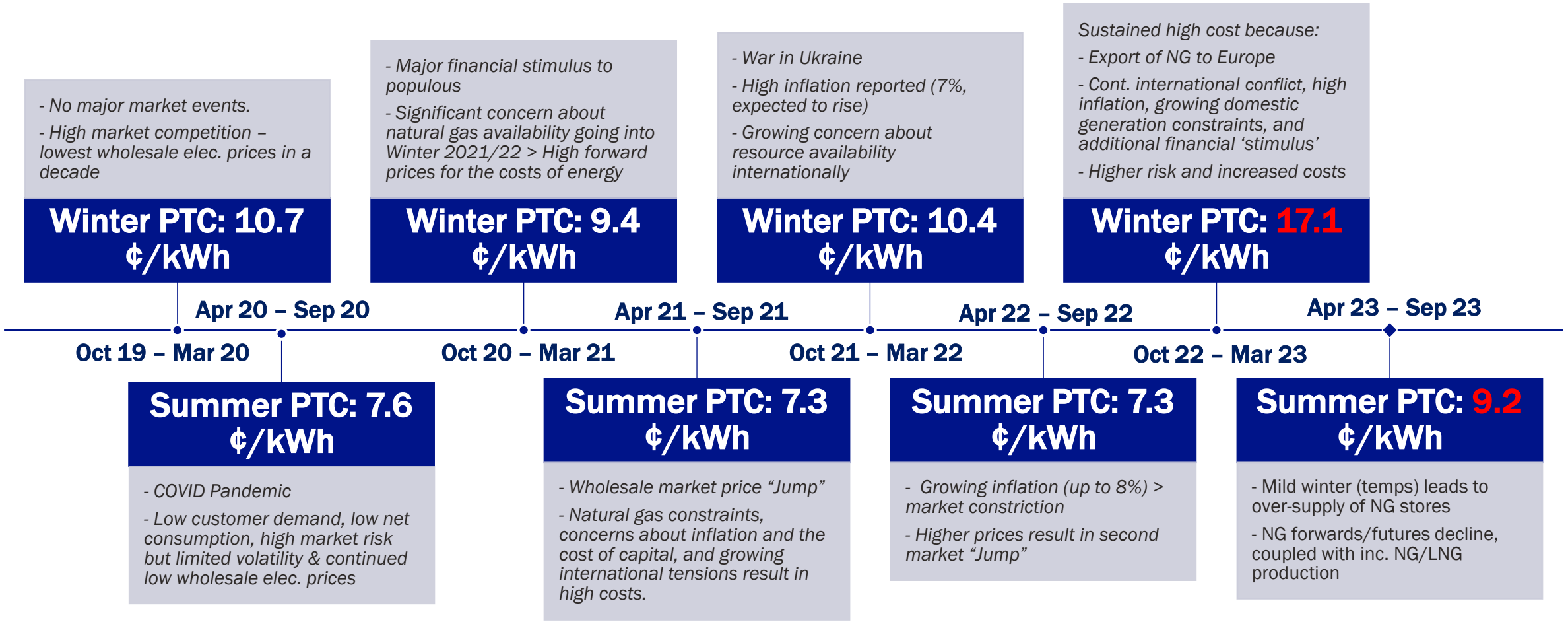
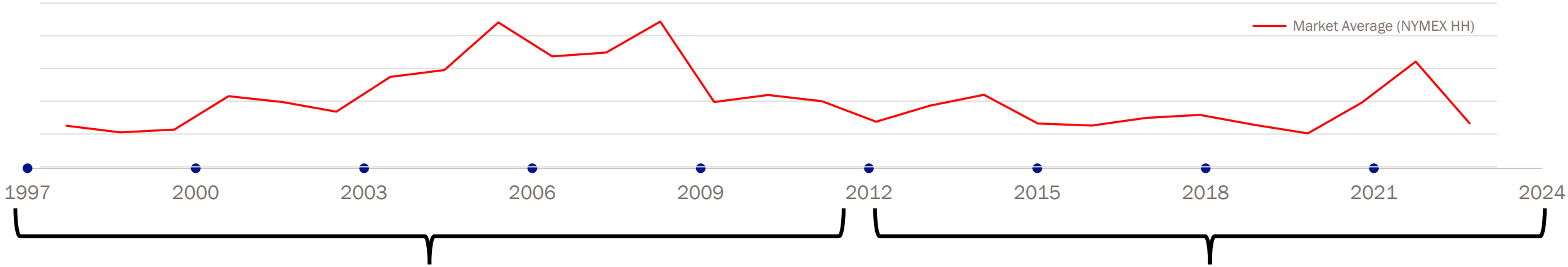
What Has Driven High, Volatile Wholesale Electric Costs?



Section 3:
Peer Wholesale Procurement Approaches

Events Impacting Rhode Island Last Resort Service



1998
Deregulation Law Passes Utility Restructuring Act (URA)

2006
SOS is reviewed and extended until 2020

2009
Docket 4041 - RI PUC Approves 5% spot procurement for Small Customer Group

2010
Docket 4149 - Implementation of 10% spot purchase

2012
10% spot procurement begins

2013
Docket 4315 - Industrial can be 1-4 month transactions

2014
Docket 4490 - Industrial Group split into two; contingency plans introduced; average winning prices must be published within 90 days

2018
Docket 4809 - RIE transitions to capacity cost pass-through in 2019

2020
Docket 4978 - 2-year procurement plan approved bid filings after both indicative and final bid rounds are not required – only one filing is required

2021
SOS transition to new nomenclature LRS

Auction Methodology

Trends:

- New England states typically leverage sealed-bid auctions – some conducted by the state (or its designee), but many by the local EDC with oversight from the state utility commissions.
- New York and the Mid-Atlantic states employ combinations of Sealed Bid Auctions and Declining Clock Auction (DCA), with most auctions conducted by the Electric Distribution Company (EDC) - with oversight from the state utility commission.
- PPL Electric Utilities Corporation (PPL Electric) in Pennsylvania has always utilized a sealed-bid auction platform.

	Sealed-Bid	Descending Clock Auction	Auction Conducted By
CT	✓		State
DE		✓	Mix
DC	✓		Mix
IL	✓		State
ME	✓		State
MD	✓		Mix
MA	✓		EDC
NH	✓		EDC
NJ		✓	Mix
NY	✓	✓	EDC
OH		✓	State
PA	✓	✓	EDC
RI	✓		EDC

Sealed Bid vs. DCA

Sealed-Bid Auction

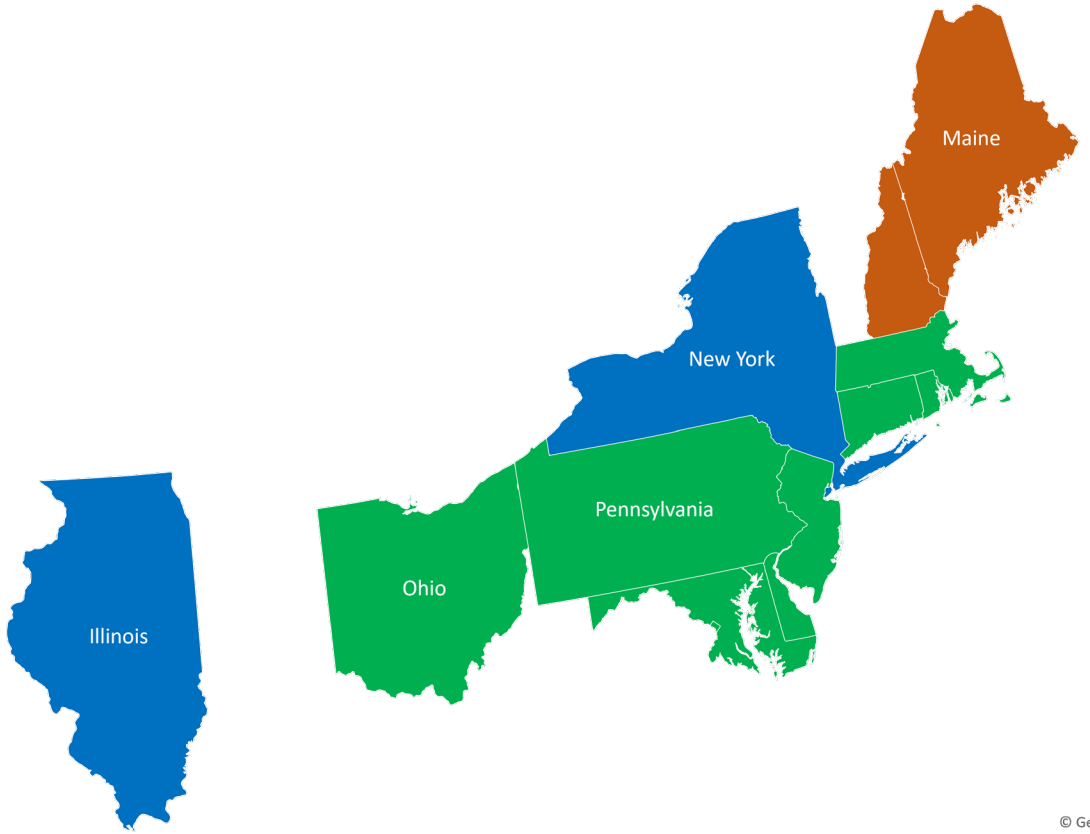
Opportunities	Risks
• Quick and efficient processing time (usually 1-2 hour bid windows) • Emphasizes "best and final" approach to bids • Universally utilized by most jurisdictions – bidders understand the methodology and process • Provide PUC with selection or rejection of discretionary bids • Moderate-low costs of implementation (relatively low-tech)	• Could result in "errant" bids by suppliers given "final" nature of the auction (e.g. outlier bids, unlikely low or high bids, etc.) • Require bidders to pick which products they wish to bid on – no ability to "move" collateral to other products mid-auction • No market signals or transparency to/with other bidders
Currently leveraged by both PPL Companies – Rhode Island Energy and PPL Electric Used by most New England EDCs & PUCs	

Declining Clock Auction

Opportunities	Risks
• Provides transparency to participating suppliers – helping to communicate market signals • Proponents argue it could result in increased competition and/or lower market prices • Limited ability to create "outlier" or errant bids • Allows bidders to switch products mid-auction • Advantageous for EDCs with multiple types of complimentary products	• Typically takes between 1-2 days to complete auction – occasionally can take longer (3+) • Requires continuous attention of bidders given continuous change in price (*declining nature of the auction*) • Mixed positions if the auctions result in lower prices or increased supplier competition • Requires proprietary DCA model which can add costs to the auction process
Use in Mid-Atlantic, with hybrid use in New York and Pennsylvania	

PiP (Percentage of Income) original format; content extracted, adapted and simplified from the Alternative Ratemaking Report (Dec 2021)

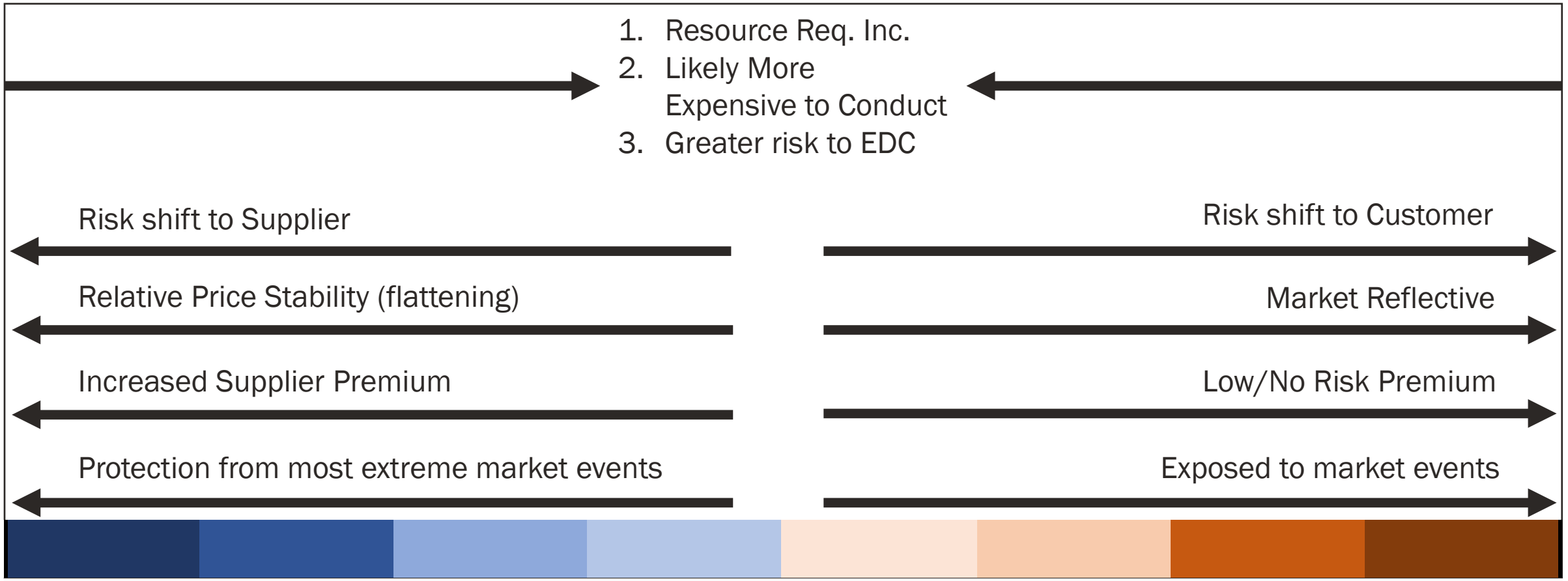
Procurement Approach



	Laddered	FPFR	Block	Spot
CT	✓	✓		
DE	✓	✓		
DC	✓	✓		
IL	✓		✓	✓
ME		✓		
MD	✓	✓		
MA	✓	✓		
NH		✓		
NJ	✓	✓		
NY	✓		✓	✓
OH	✓	✓		
PA	✓	✓	✓	✓
RI	✓	✓		✓

FPFR = Fixed Price Full Requirements load-following contracts (also known as full-requirements service)
Block = fixed quantity of supply over a specific period of time (e.g., round-the-clock)
Spot = Spot market contracts (i.e. real-time price); most jurisdictions are full requirements load following obligations (some bid, some managed by EDC)

Procurement Product & Service Risk Assessment



Peer Jurisdiction Default Service/LRS Procurements

Massachusetts

- Auctions held 2x per year
- 6 & 12-month products for 50% of supply
- Includes Capacity in full requirements obligation

Connecticut

- Quarterly auctions
- 3-4 procurements to created laddered supply comprised of 6-mo FPFR blocks (20-40% of supply per auction, including capacity)
- 8 RFP rounds complete the circuit / laddering cycle over 2-years

Pennsylvania (PPL Electric)

- Auctions held 2x per year
- Residential and Small C&I 6 and 12-month products; also includes 5-year block supply
- Large C&I is entirely spot supply (bid product for ancillary services)

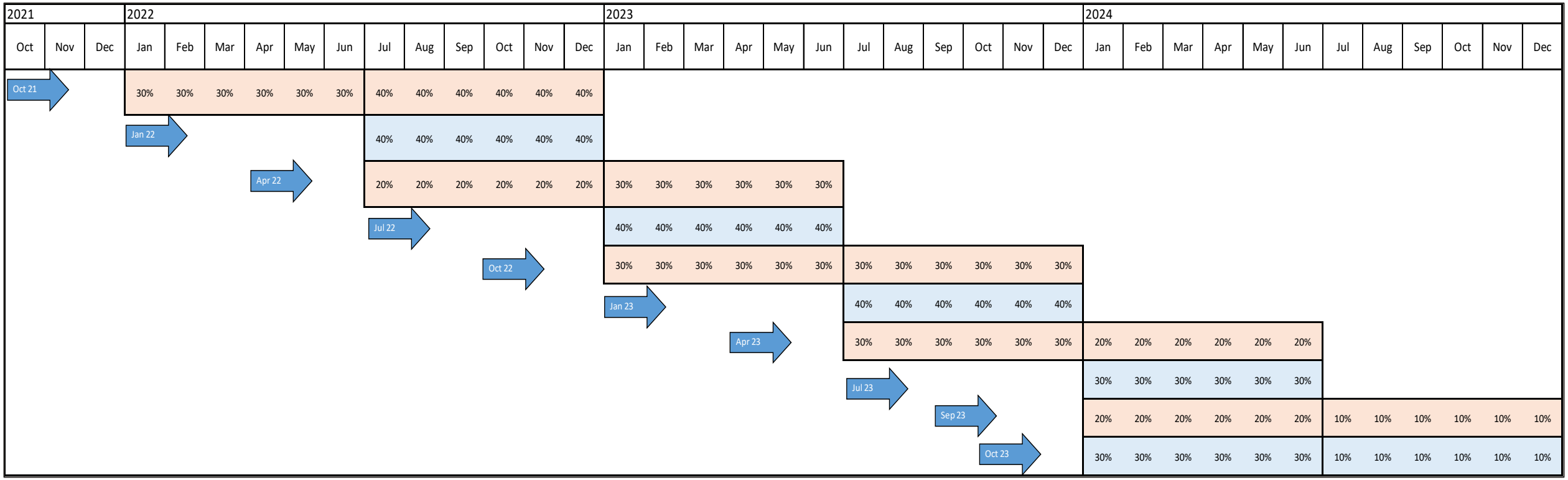
Pennsylvania (other approaches)

- Auctions held 2x to 4x per year (varies by EDC)
- Residential and Small C&I 12 and 24-month products
- Mixed approaches to including or not including Transmission Service Costs in PTC

Procurement Approach Comparison

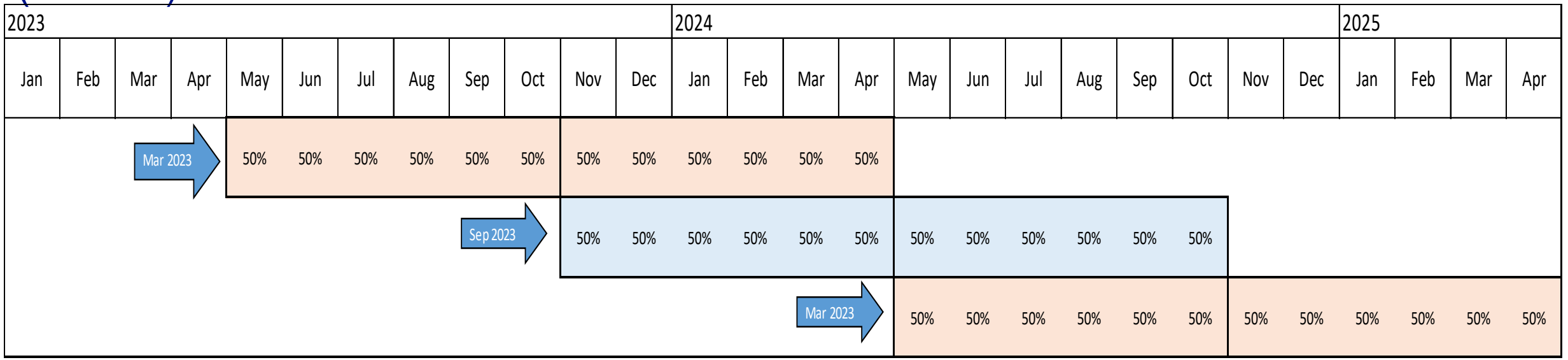
- Laddered contracts buffers customers from the cost-risk associated with a market event occurring. It effectively "dollar-cost averages" procurement to alleviate the need to time the market.
  - Only a portion of the overall supply portfolio is subject to turn-over at any particular time)
  - Generally increased price stability (lower volatility and less market-exposed risk)
- Spot market products provide market reflectivity
  - Over the long-term - typically the most competitive price with the least premiums
  - Rates are highly volatile with exposure to market events
- FPFR contracts provide price hedging and reduced market risk to the customer
  - Includes higher risk premiums relative to most other products (risk is shifted to the supplier)
  - May provide price stability (depending on term of FPFR contracts)
- Block products decrease combined commodity risk with fixed out-put/structured deals
  - Malleable and may be linked to specific facilities
  - May limit risk premiums

Connecticut: Eversource/CL&P Procurement Strategy (Residential) (PURA)



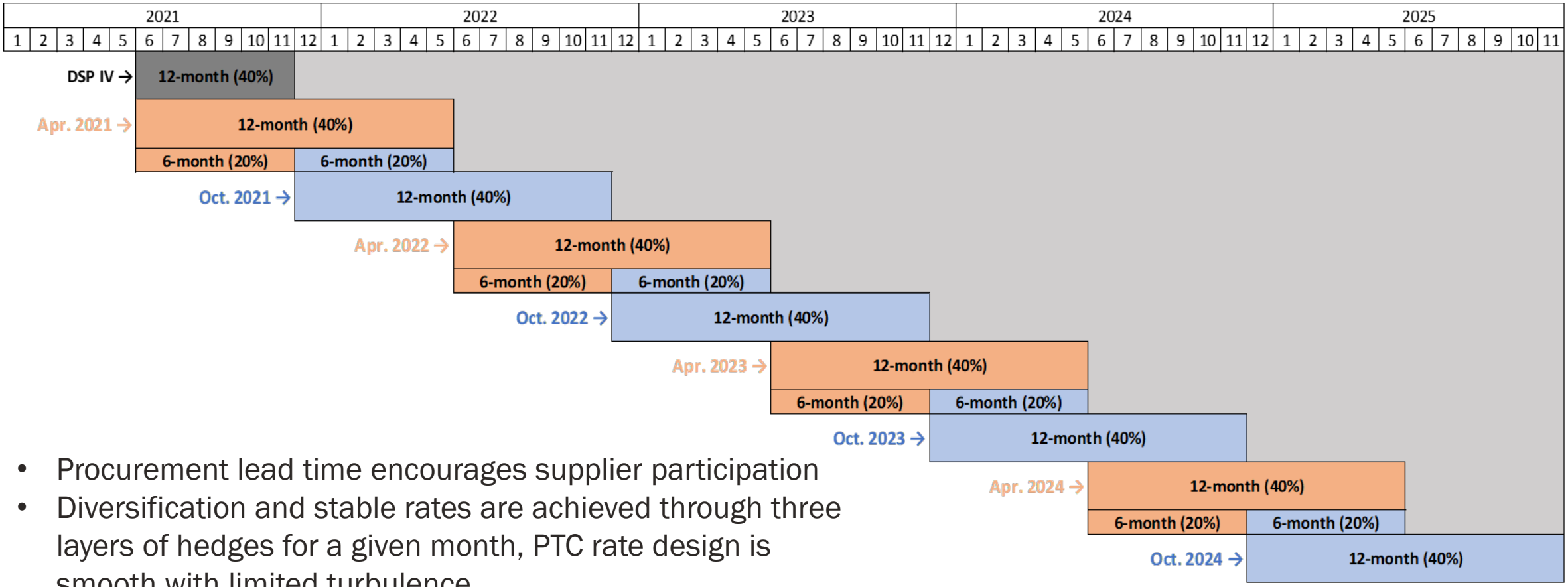
- Diversification protects from volatility
- Energy strips are procured relatively close to the start date, greater market liquidity
- Block purchases allow for suppliers to more readily bid on contingency tranches
- Less capture of further out futures rates if they are advantageous (relative to LRS)

Massachusetts: National Grid Procurement Strategy (Residential) (MDPU)



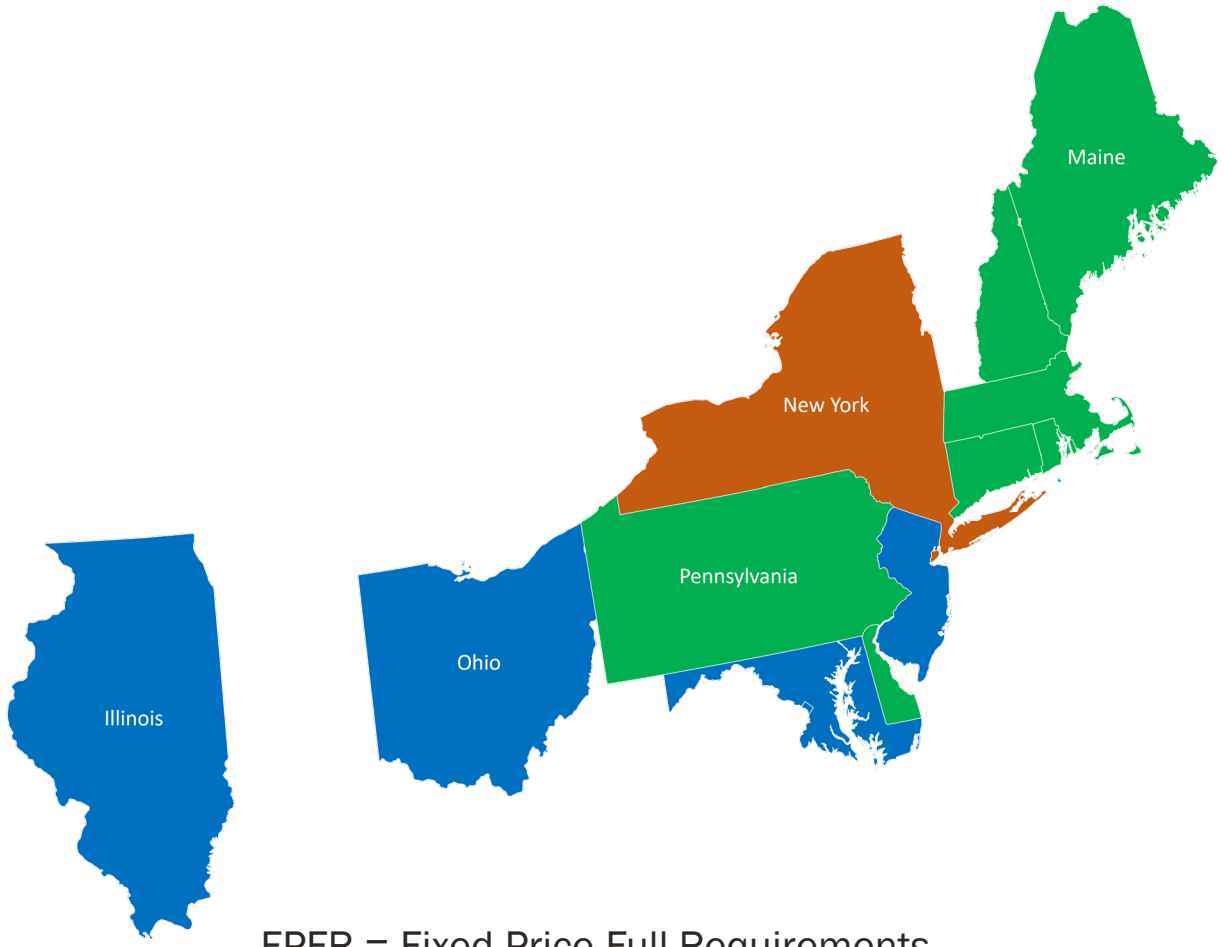
- Simplicity allows for strategy allocations elsewhere such as LSE considerations
- Supplier participation may be increased with increased load size
- Diversification is achieved
- Less capture of further out futures rates if they are advantageous (relative to LRS)
- No market component (relative to LRS)

Pennsylvania: PPL Electric Procurement Strategy (Residential) (PAPUC)



- Procurement lead time encourages supplier participation
- Diversification and stable rates are achieved through three layers of hedges for a given month, PTC rate design is smooth with limited turbulence
- Lead times maximize liquidity while allowing for capture of advantageous market with less risk exposure

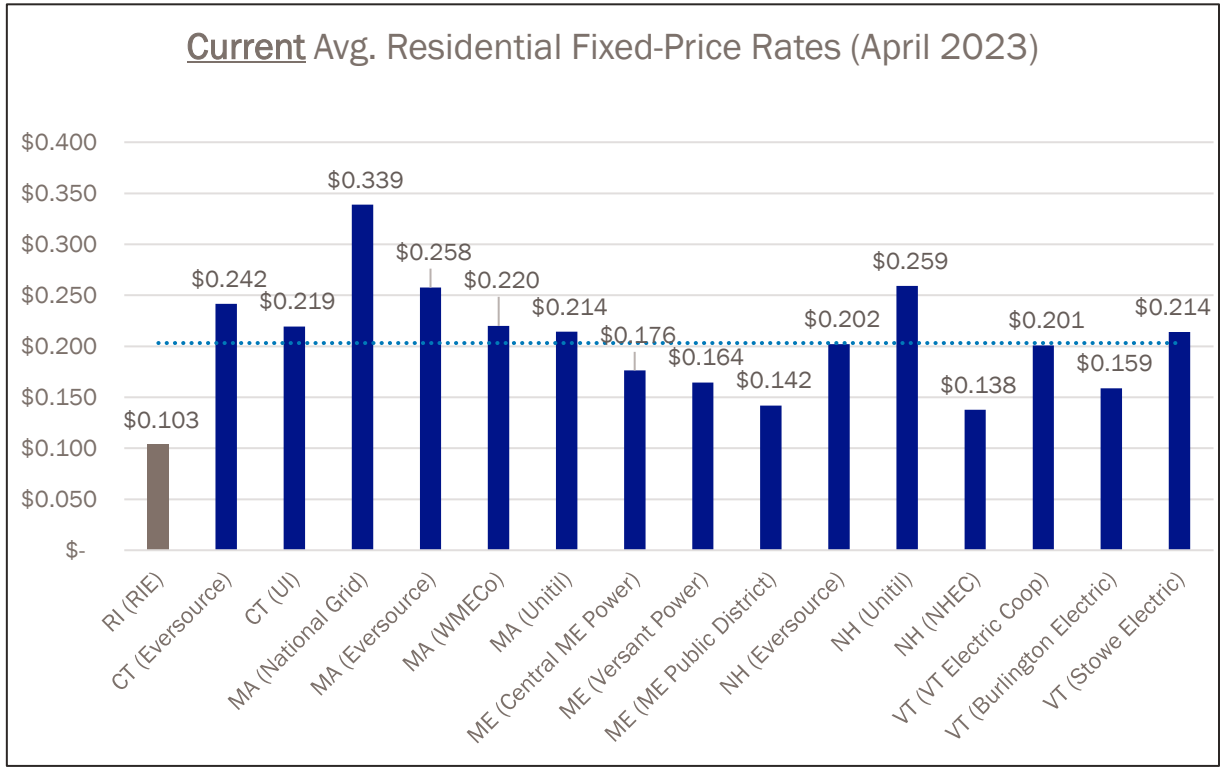
Residential and/or Small Non-Residential Rate Design

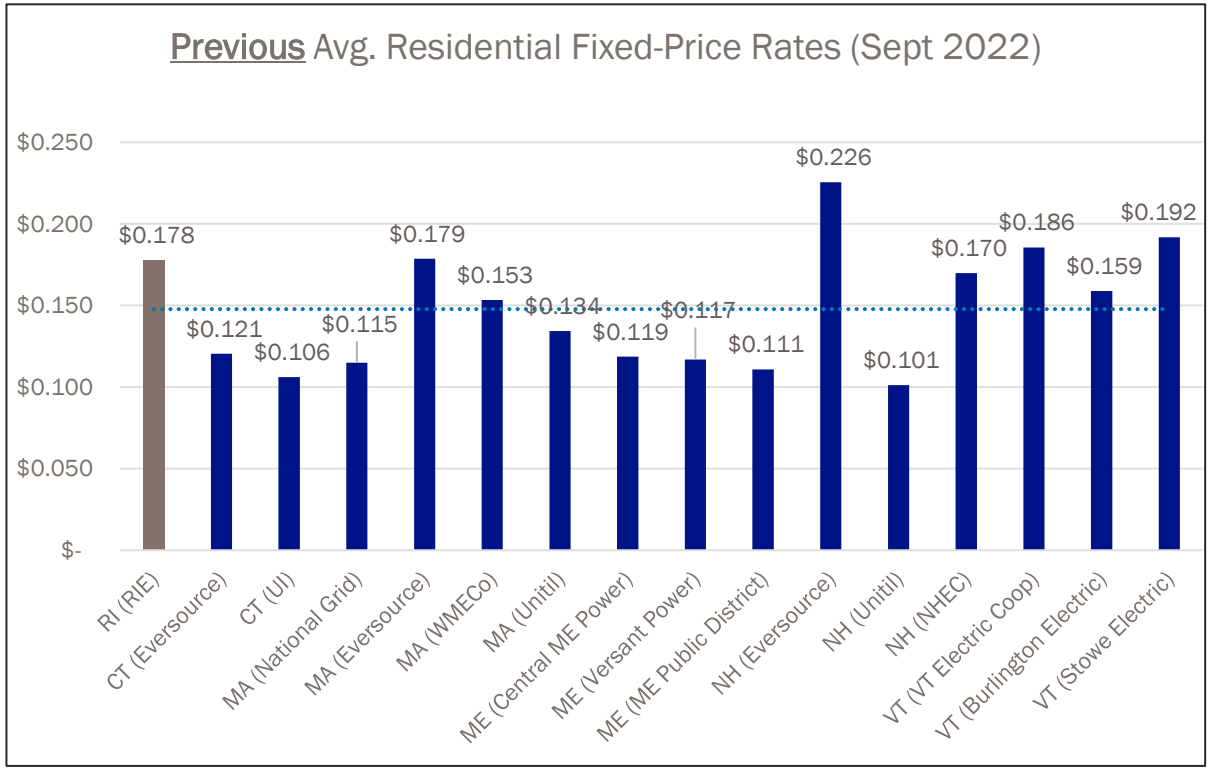


	Multi-month FPFR	Seasonal FPR	TOU Option
CT	6-month		✓
DE	6-month		✓
DC		✓	✓
IL		✓	✓
ME	12-month		✓
MD		✓	✓
MA	6-month	✓	✓ (EV charging)
NH	6-month		✓
NJ		✓	✓
NY*			
OH		✓	
PA	6-12-month		✓
RI	6-month	✓	

FPFR = Fixed-Price Full Requirements
TOU = Time-of-Use Rate
* New York has monthly or bi-monthly FPFR

Comparison of Residential Electric Rates





Notes: ME rates are for calendar years. 6-month periods vary slightly between utilities and states. National Grid in MA has a new rate of $0.14115 starting May 1, 2023. Unitil in MA had a Dec 2022 rate of $0.17859. VT Burlington Electric rate was effective as of August 2021 and does not appear to have changed since then.

As of April 2023, RIE currently has the lowest average Residential FPR for 2023 and is well below the average among the utilities sampled. This is a significant improvement to the previous period which was slightly above the average.

Section 4: Community Choice Aggregation - *Lessons From Neighboring Jurisdictions and the Potential Impact on Rhode Island Energy Last Resort Service*

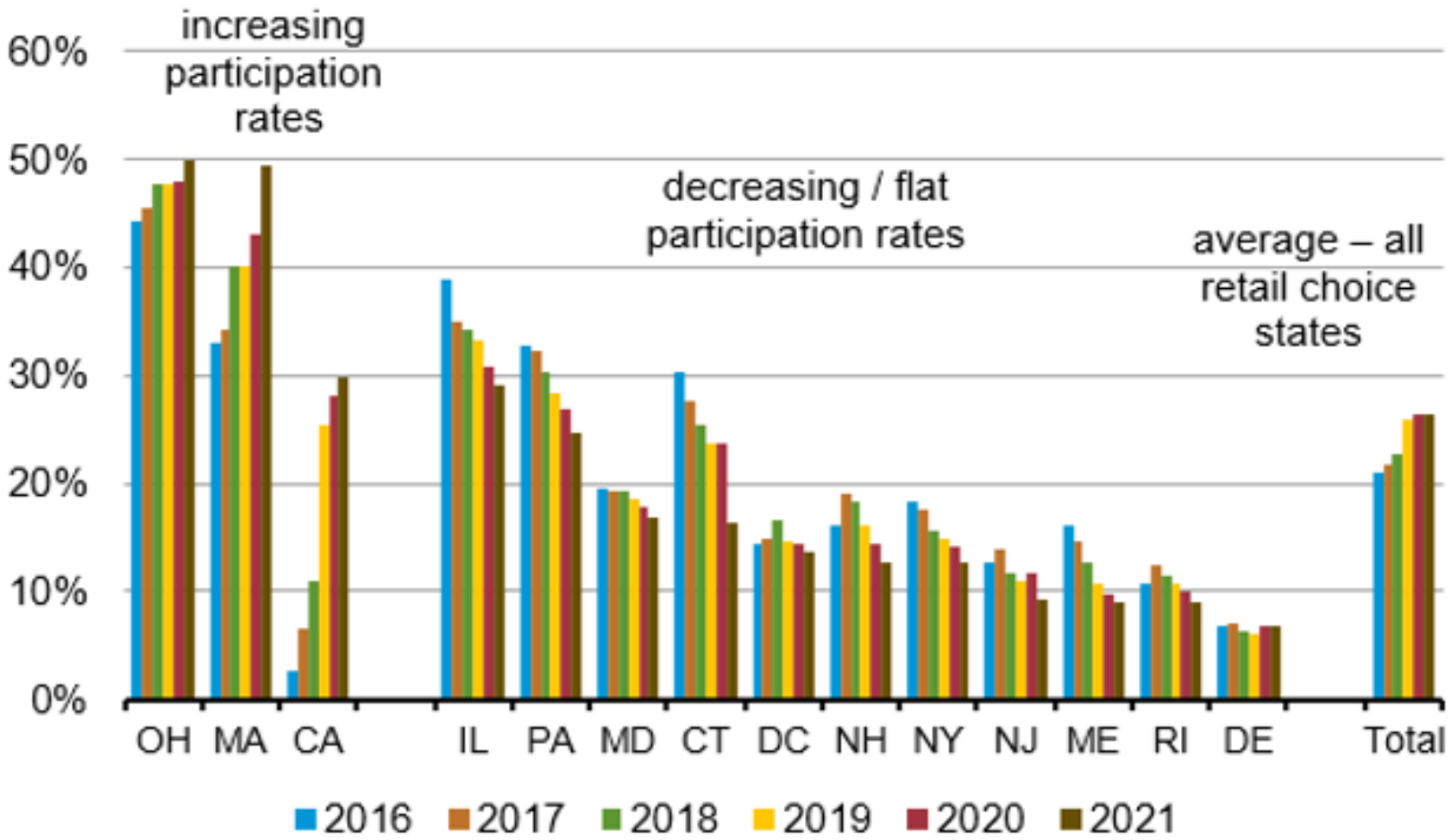
First…

For the purposes of this presentation…

Community Choice Aggregation (CCA) is equivalent to Municipal Aggregation (MA).

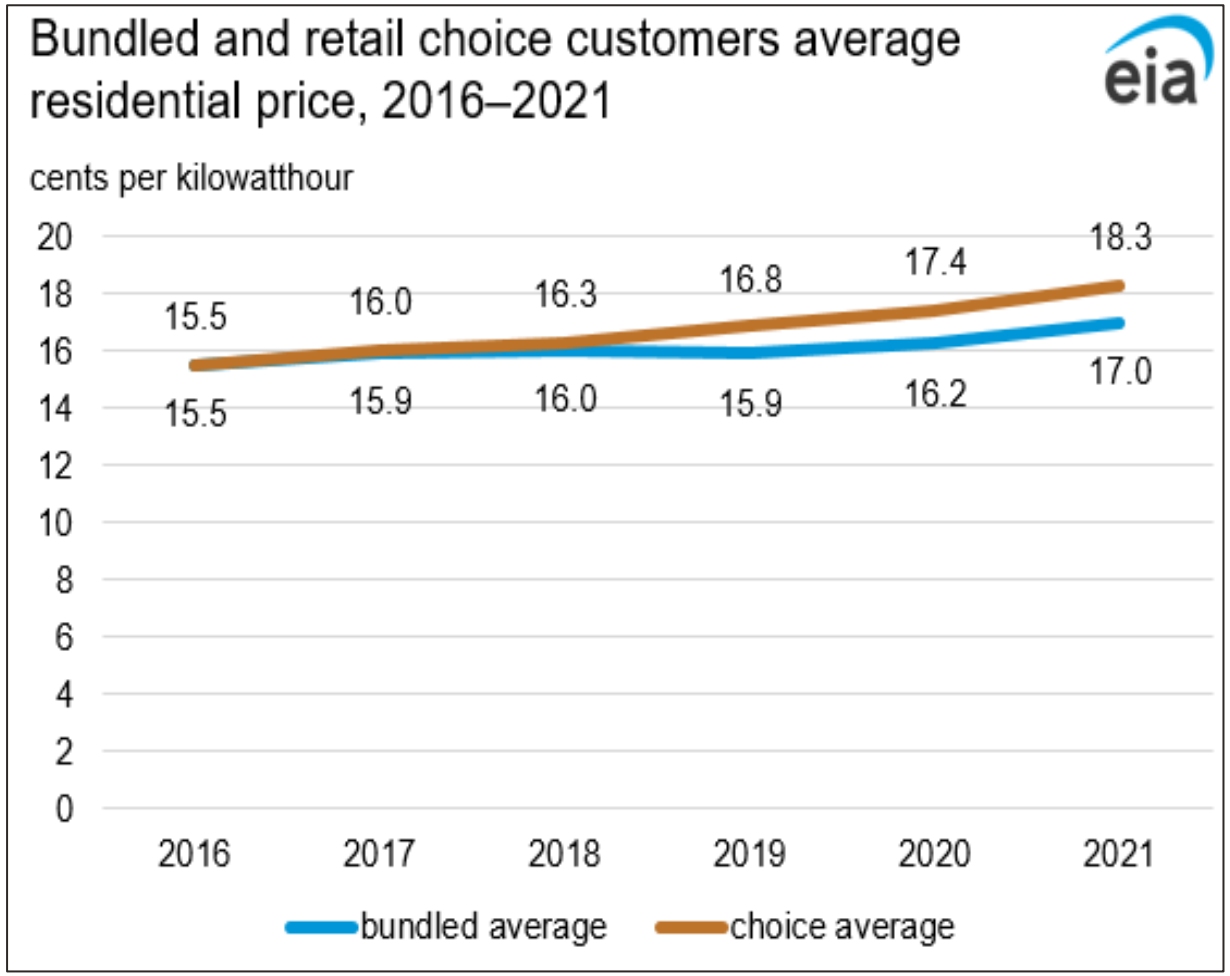
We will be using the acronym CCA to eliminate confusion of “MA” meaning Municipal Aggregation or Massachusetts.

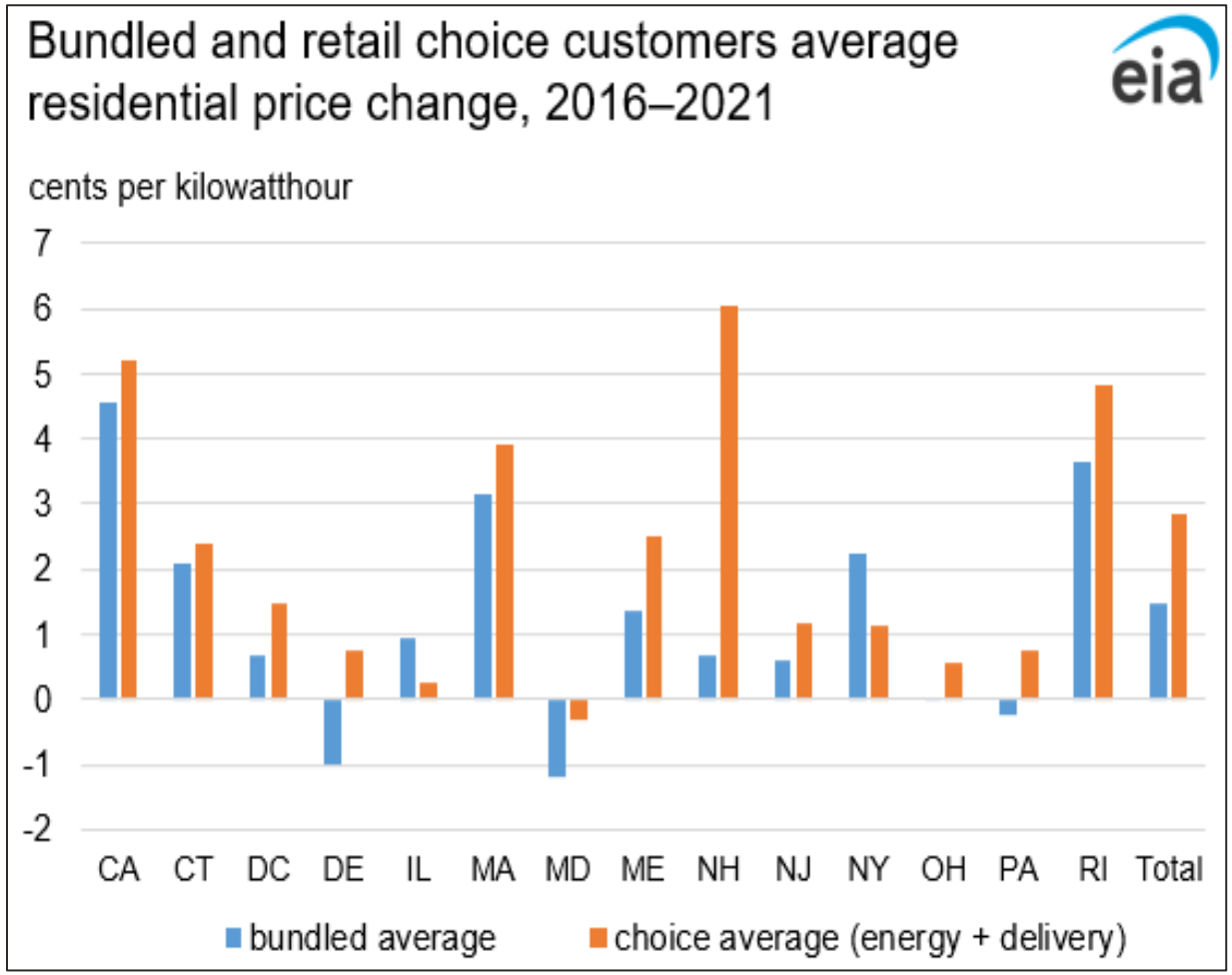
Setting the Stage: Retail Choice Throughout the U.S.



Source: EIA. 2023. Electricity Monthly Update. January 2023. URL: https://www.eia.gov/electricity/monthly/update/archive/january2023/

Setting the Stage: Bundled vs. Retail Choice Customers



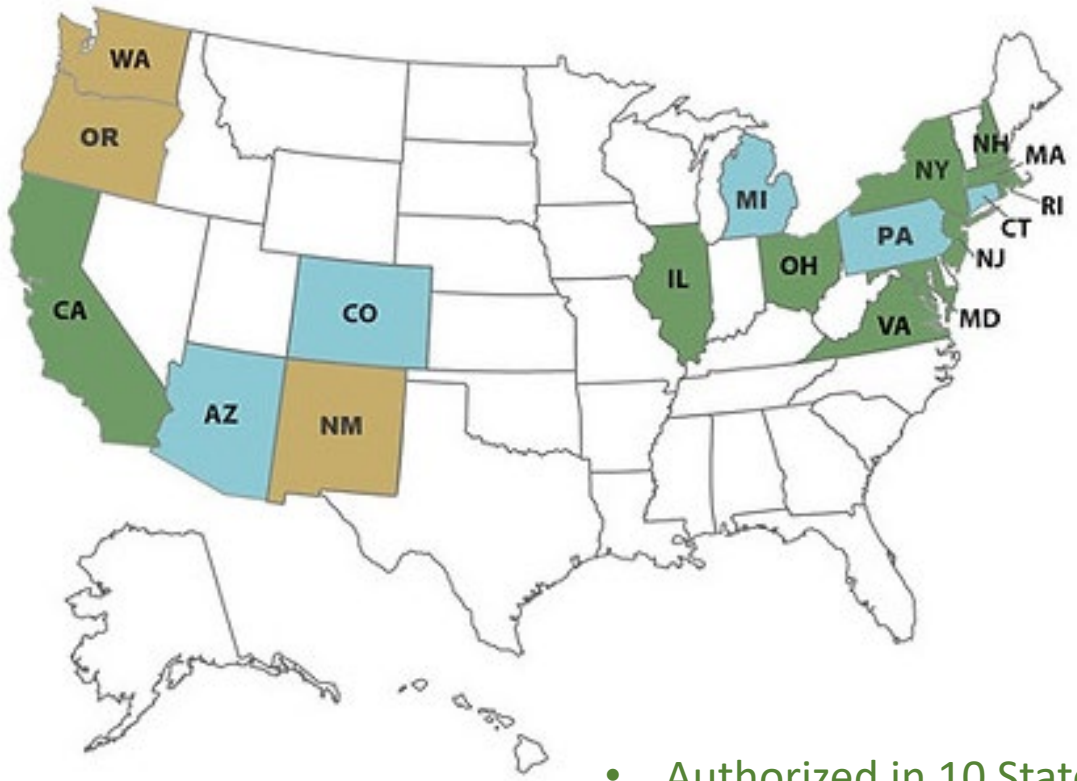


Source: EIA. 2023. Electricity Monthly Update. January 2023. URL: https://www.eia.gov/electricity/monthly/update/archive/january2023/

What is Community Choice Aggregation (CCA)?

- Also called "*Municipal Aggregation*" in some states.
- It is a form of retail electric shopping for end-use customers.
- It is provided as a "bundled" retail electric service offering, usually through a "local authority" such as a municipality, city, or township.
- The local authority contracts with a retail supplier to provide generation service to customers in its territory.
- It can include all customer classes or focus on individual customer segments (e.g., residential only).
- In most jurisdictions, customers must 'opt-out' of the service (i.e. if no action is taken, they are part of the CCA).

Community Choice Aggregation in the U.S.



- Authorized in 10 States
- Actively investigated in 5
- Watch list/potential in 3

State	Year	Statue	Notes
CA	2002	Assembly Bill 117 and Senate Bill 790	Opt-out provision, joint power agencies run programs on behalf of multiple jurisdictions
IL	2009	House Bill 362	Opt-out provision; for residential and small business utility customers
MD	2021	House Bill 768	Montgomery County CCE Pilot Program
MA	1997	Acts 1997, Chapter 164	Opt-out provision
NH	2019	Senate Bill 286	Opt-out provision
NJ	2009	Assembly Bill 2165	Opt-out provision for residential customers; opt-in provision for municipal and commercial customer
NY	2014	Governor's Press Release	Opt-out provision
OH	1999	Gov. Energy Aggregation, Senate Bill 3; Senate Bill 221 (2007)	Opt-in or opt-out provisions
RI	2002	House Bill 7786	Opt-out provision
VA	2018	House Bill 1590	Opt-in or opt-out provisions

Source: LEAN Energy. 2023. URL:https://www.leanenergyus.org/cca-by-state

Goals of Community Choice Aggregation

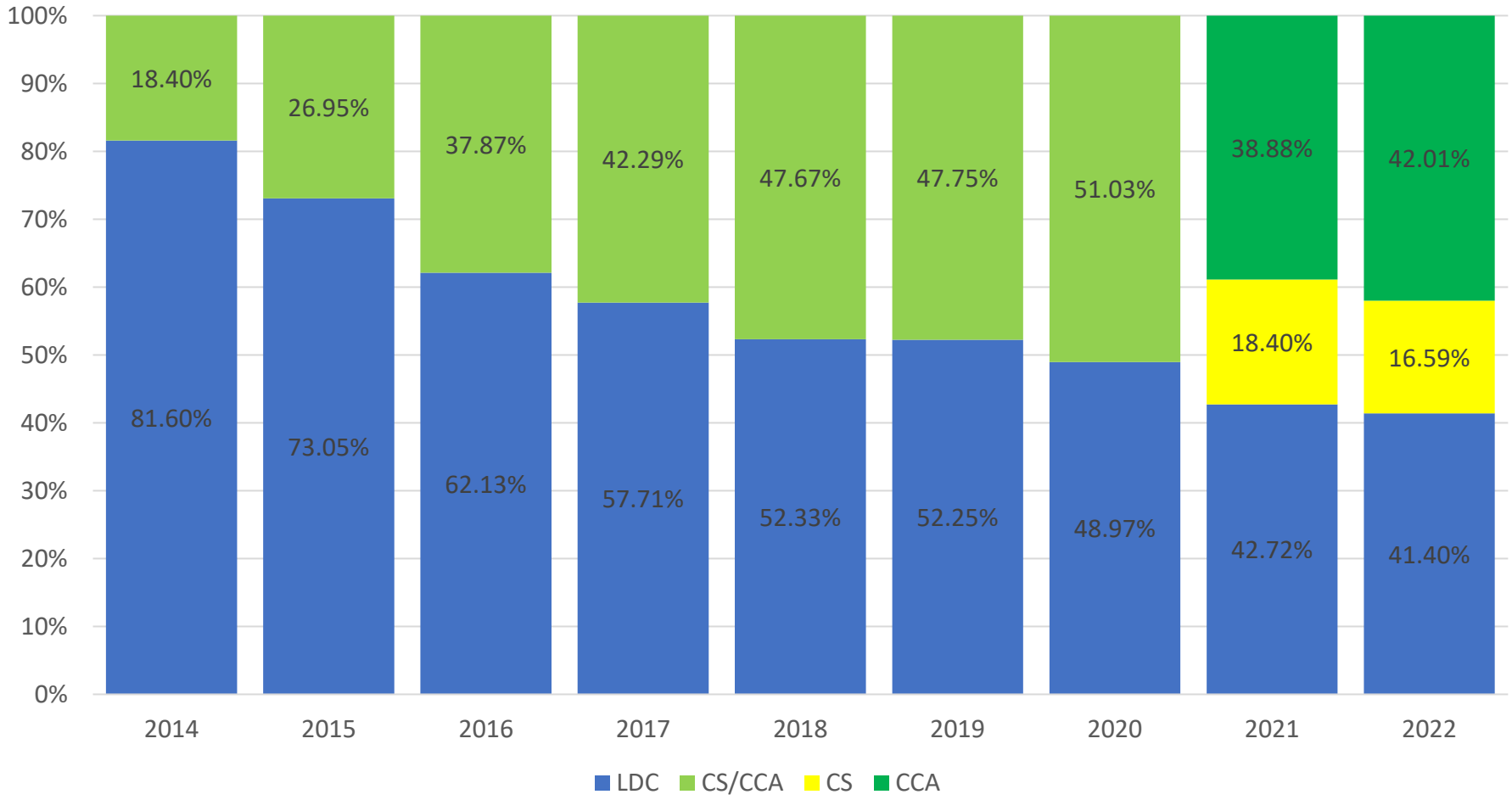
- Aggregate or bundle customers together to more efficiently “bulk buy” power, thereby reducing electricity costs for customers
- Increased price stability (aggregations can typically purchase for longer periods than a utility)
- Smooth supply curves for aggregators/suppliers (easier forecasting)
- Limit cost for aggregators/suppliers to acquire customers, which, in theory results in lower products for customers due to lower expense
- (*Typically*) Include renewable energy at a higher percentage than required by state law (and obtained by the default service provider)
  - (*typically*) Procure local renewable energy (within the same community)
  - May also include special alternative energy products/services such as demand response

Challenges for Community Choice Aggregation

- Maintaining cost savings to customers to maintain customer retention
- Balancing local autonomy and regional cooperation (town vs. county or state level)
  - Individual communities may not have the resources or the legal, energy market, and regulatory expertise to successfully administer a CCA
  - There may be additional benefits to aggregating at larger geographic levels, such as the ability of large programs to offer additional services and leverage economies of scale
- Customer awareness
  - Many CCAs use some mix of local, regional, and nationally sourced renewable energy in their voluntary green power products. These blended products create opportunities for customer confusion, especially given lack of customer familiarity with RECs
- Initial Customer enrollment
  - Should existing competitive supplier customers be enrolling in the CCA?
  - Should move-in customers be enrolled into default service or in the CCA?

Source: NREL. 2019. Community Choice Aggregation: Challenges, Opportunities, and Impacts on Renewable Energy Markets. URL: https://www.nrel.gov/docs/fy19osti/72195.pdf

Case Study: Residential Sales in Massachusetts



CCA = Community Choice Aggregation

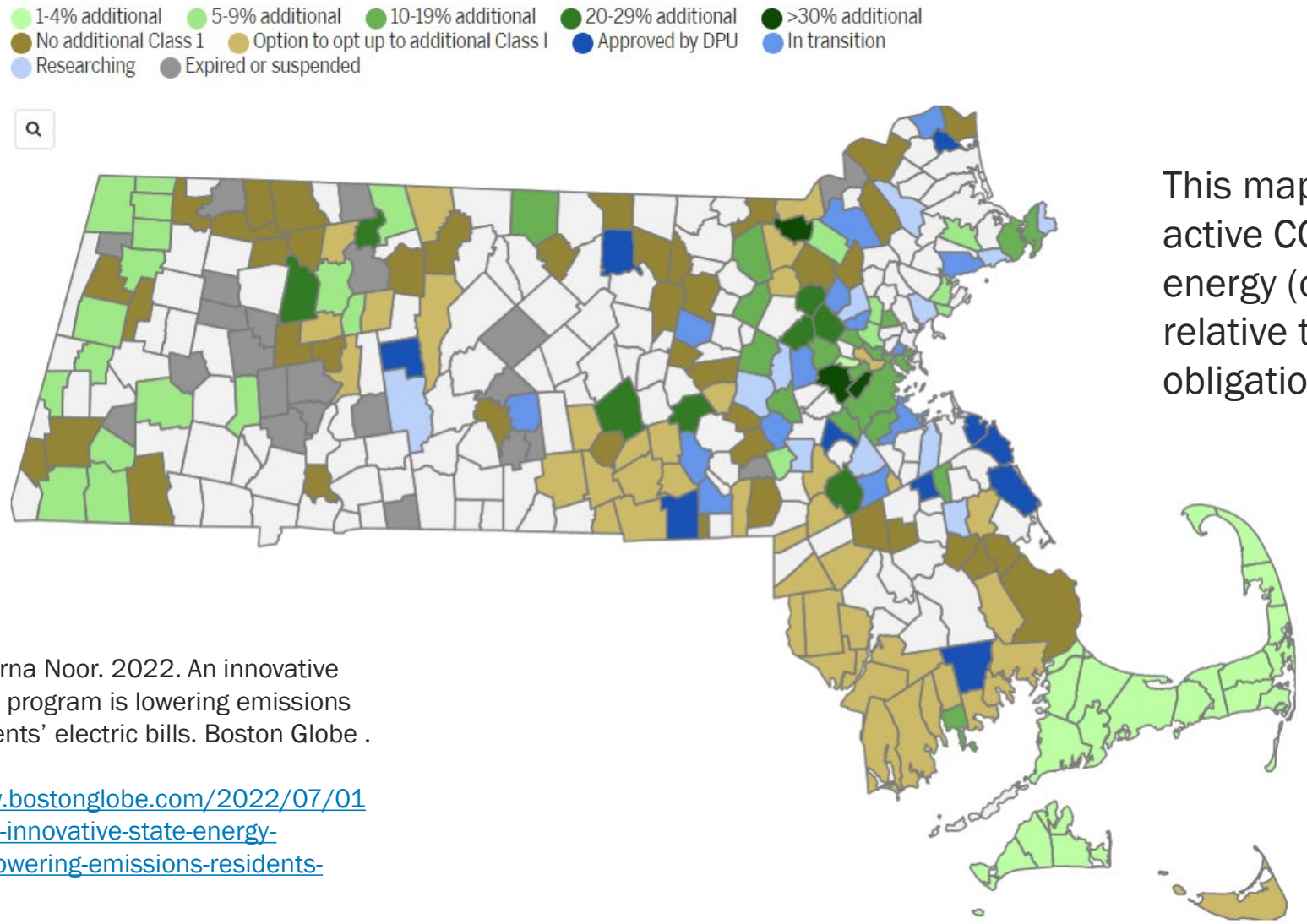
CS = Competitive Suppliers*

LDC= Local Distribution Company

*CS not reported separately until 2021

Data Source: Commonwealth of Massachusetts.2023. Electric Customer Choice Data. URL: https://www.mass.gov/info-details/electric-gas-customer-choice-data

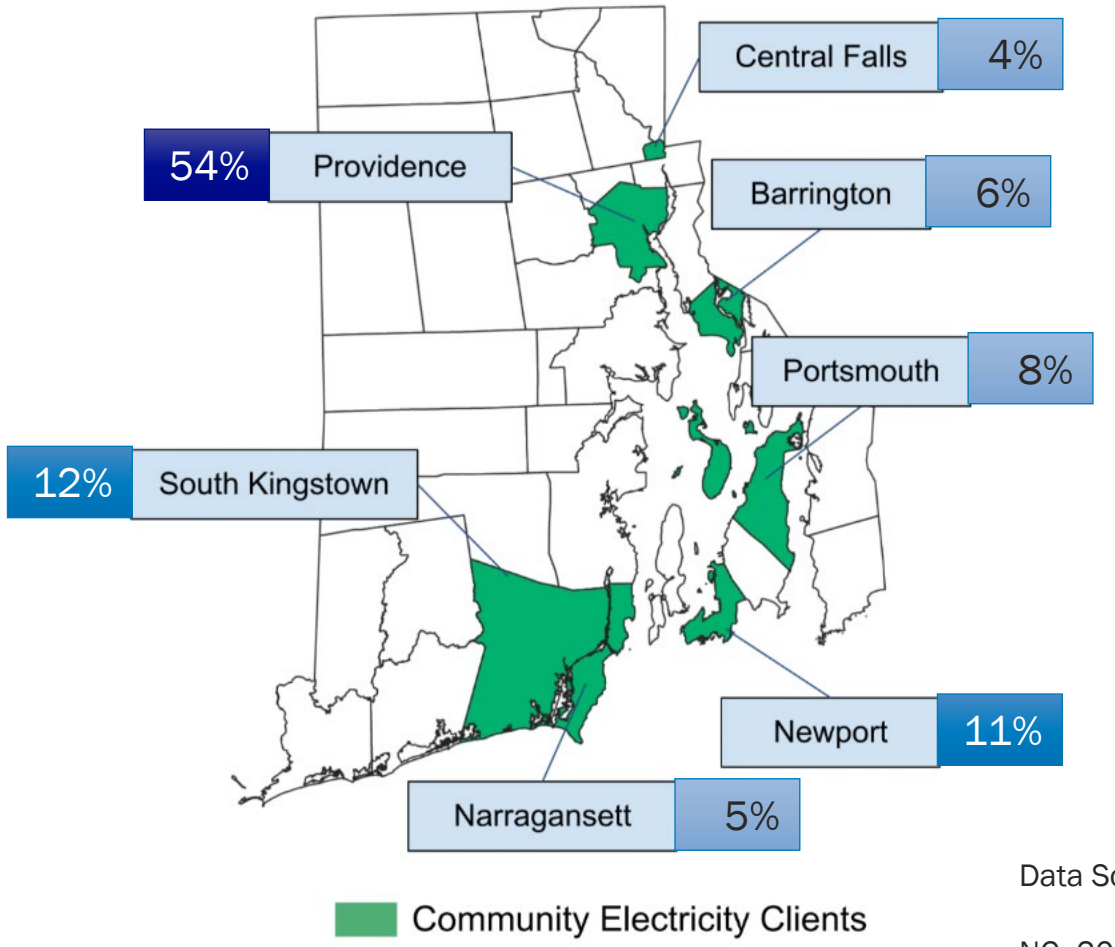
Case Study: Community Choice Aggregation Clean Energy Mix in MA



This map shows Massachusetts' currently active CCAs and the relative mix of clean energy (offsets) as part of their supply mix, relative to the state relative state obligations.

Source: Dharna Noor. 2022. An innovative state energy program is lowering emissions — and residents' electric bills. Boston Globe . URL: https://www.bostonglobe.com/2022/07/01/science/an-innovative-state-energy-program-is-lowering-emissions-residents-electric-bills

Community Choice Aggregation in Rhode Island



Status Summary:

- Seven (7) municipalities set to launch CCA programs in May 2023
- Each municipality developed its own aggregation plan, customized to reflect its community priorities
- The combined load of these municipalities is around 14% of the State's electric load and 25% of current LRS load
- After a competitive bidding process, the group selected NextEra Energy Services, LLC as its electricity supplier
- Final pricing was announced in March 2023
- Electricity customer using LRS supply from RIE will be eligible for automatic enrollment in the CCA programs

Data Sources: GoodEnergy. 2023. Community Electricity Aggregation. URL: https://goodenergy.com/rhode-island/
NG. 2023. RI Municipal Aggregation Data. URL: https://www9.nationalgridus.com/energysupply/current_procurement.asp

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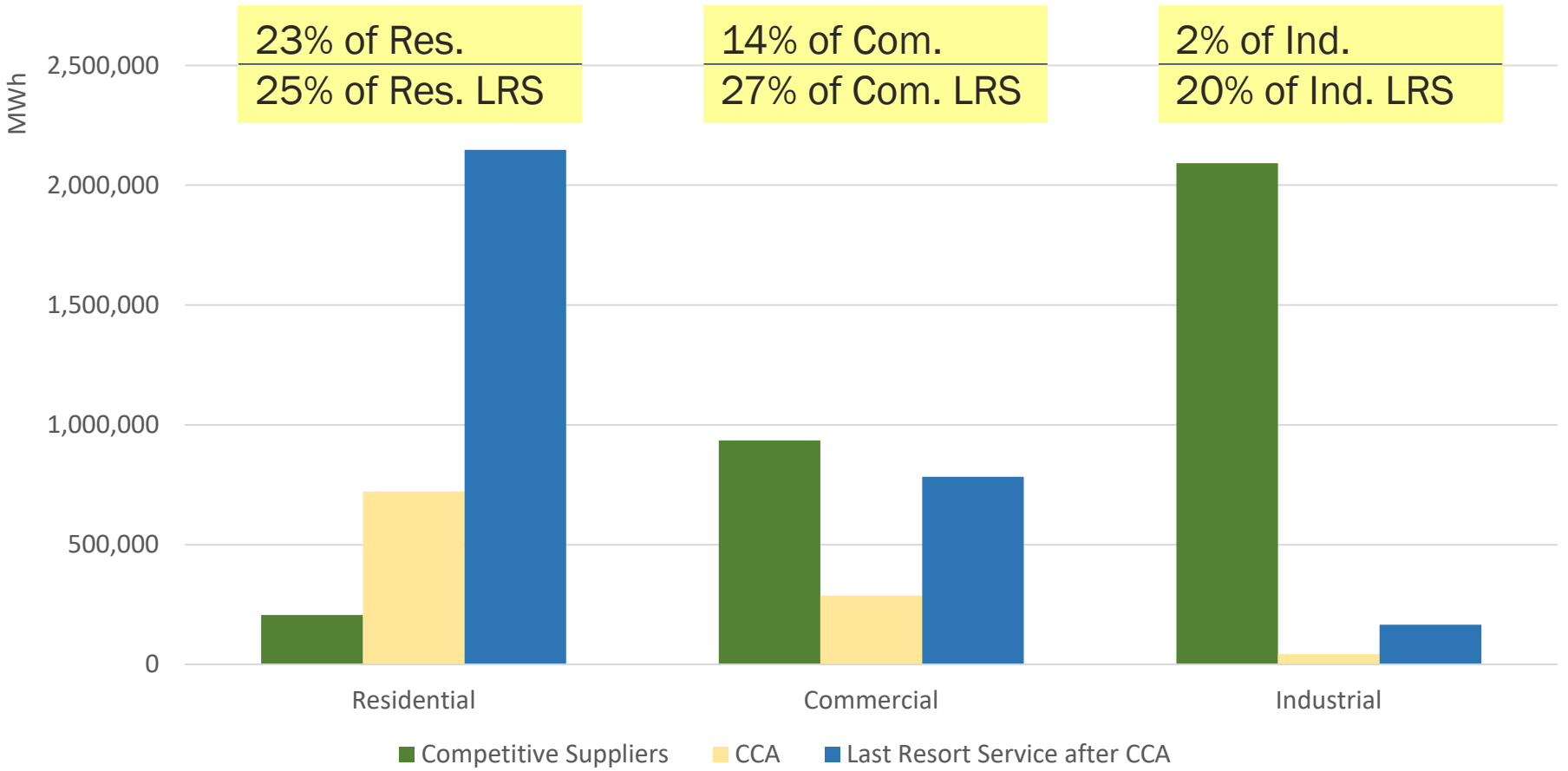
Rhode Island Energy Zone – Est. Annual Electricity Sales after CCA*



Compare to Total:

14% of Total Load
25% of Total LRS Load

Data Source: RI Energy. 2023 Annual Retail Rate Filing (2/15/23).
*** Based on CY 2022 estimates**

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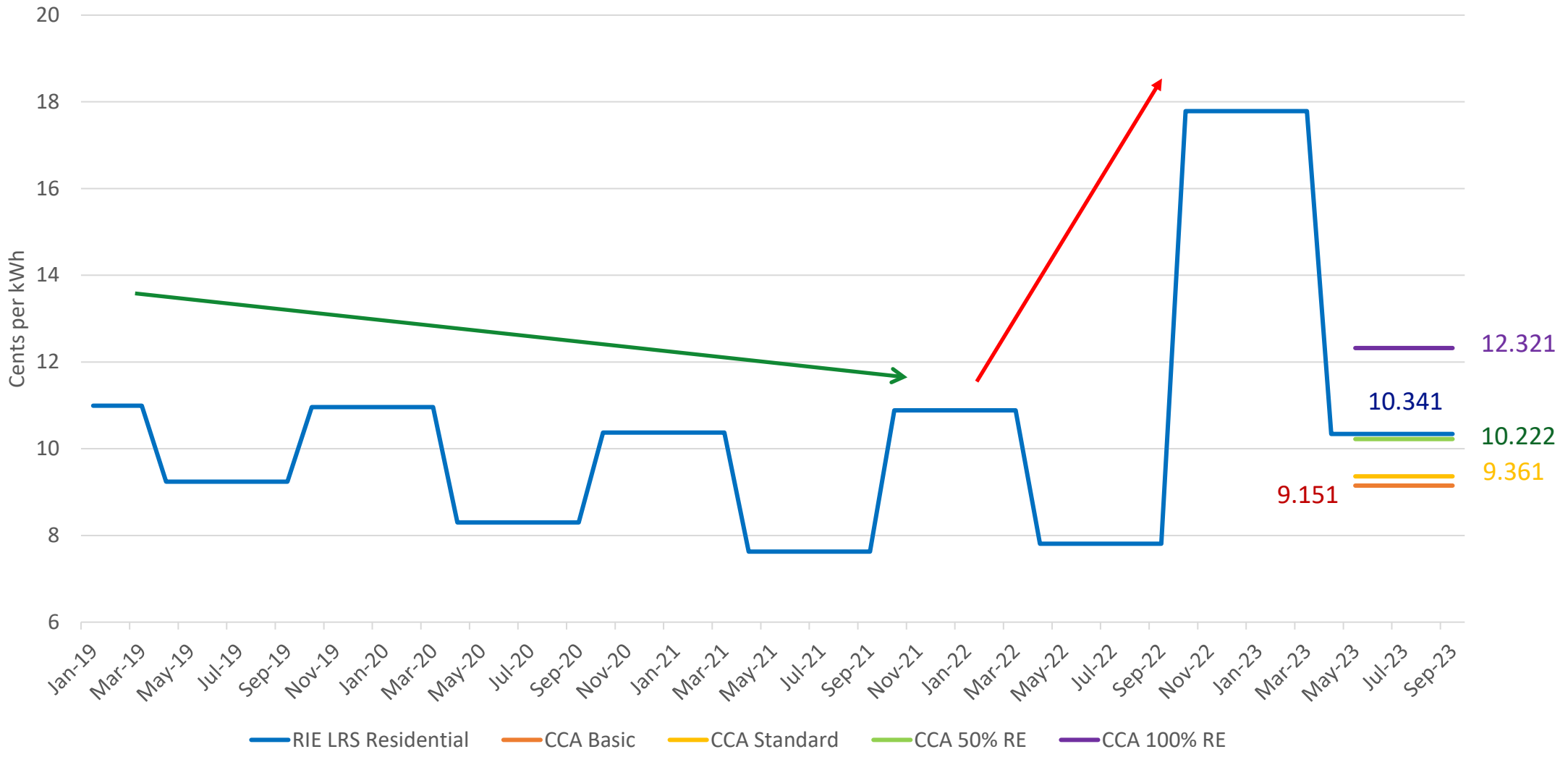
Rhode Island Energy Last Resort Service vs. CCA Rates in Rhode Island

	Res.	Comm.	Ind.	RE Share in 2023
Basic	9.151	9.689	11.719	23%
Standard (for automatic enrollment)	9.361 (9.5% Savings vs. LRS)	9.897 (1.0% Savings vs. LRS)	11.920 (5.5% Savings vs. LRS)	28%
50% RE	10.222	10.749	12.743	50%
100% RE	12.321	12.825	14.749	100%
RIE LRS	10.341	9.997	12.612	23%

Rhode Island Energy Last Resort Service vs. CCA Longer Term View



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Potential Impacts of CCA to Rhode Island Energy Last Resort Service

- **Initial risks**
  - Impact on wholesale supplier participation in LRS auctions (concern about energy volume variability/uncertainty) – esp. in April/July 2023 auctions
  - Wholesale supplier risk premiums
  - Note: greater potential risk to Commercial and Industrial customer LRS programs given higher average load per customer (i.e. medium and large commercial/industrial customer migration has a greater impact)
- **On going risks**
  - Customer migration and "churn" to and from LRS to shopping/CCA (chasing lowest rate options)
  - Increasing volumetric uncertainty for suppliers

Section 5:

Future Last Resort Service Considerations & Concluding Remarks

Prospective Analysis – Last Resort Service Products & Terms

1. **Evaluate balance between market reflectivity and price stability between product offerings (history and future prospective products)**
2. **Consider different product mixes and terms:**
   - 12, 18, and 24-month strips (without 6-month blocks)
   - Impact of spot market supply ('real' impact, and the impact of forecast vs. actual)
   - Block Energy contracts (either RTC or peak/off-peak period supply)
   - Lag between procurement of supply and load flow
3. **Auction and product parameters**
   - Tranche size (i.e. percentage of supply per tranche)
   - Evaluate impact of "summer/winter" period dynamic price changes
4. **Evaluate supply forecasting impacts**
   - Capacity
   - Spot market

Considerations When Evaluating LRS Procurement Changes

- **Customer Risks**
  - Frequency of rate changes (could result in rate chasing)
  - Generation rate transitions from summer to winter periods (and back)
  - Risk born by customers vs. wholesale suppliers through LRS contracts
  - Consider impacts of Community Choice Aggregation (Example Questions: Can customers freely leave CCA? Restrictions to re-entering CCA? Terms of CCA contracts? Customers included in the CCA?)
- **Supplier Participation**
  - Historic declining supplier participation (*potential narrowing of market*)
  - LRS products and their ability to attract suppliers
- **EDC Supplier Risk Management**
  - Evaluate needs for bid and load caps (relative to supplier participation and resulting auction prices)
  - Collateral management processes (defend against risk of supplier default)

Considerations (cont.)

- Are LRS buffer periods necessary?
  - **Concept**: if customer leaves retail supplier (shopping), customer placed on intermediate rate or there is a delayed return to LRS supply (includes CCA)
  - **Risk**: Creates a customer cost concern if they are seeking to leave a high rate or a program that does not otherwise meet their needs – ***customer harm consideration***
  - ***Likely outside of LRS plan proceeding***
- Alternative or additional LRS offerings (rates/programs) to provide a transition
  - **Concept**: create an intermediary 'default' rate offering that customers return to before the traditional LRS offering
  - **Risks:** bifurcating customers (increasing risks to suppliers, increasing costs to customers, creating greater variability in LRS rates); low/no supplier participation in micro-programs
  - May not actually provide value to wholesale suppliers (i.e no lessening of the risk premiums, could create confusion, etc.)

Step-Back – What are we trying to solve?

- Volatility of LRS rates relative to price stability (e.g. frequency of rate changes, rate periods - summer/winter period impacts, etc.)
- Market risks shifting between customers and suppliers
- Costs embedded in LRS products (exposure to market, risk premiums)
- Improved LRS auction competition – supplier participation

Next Steps & Timing for Rhode Island Energy LRS

<u>High-level Next Steps:</u>

- Consider prior LRS approaches (products, terms, and purchase to load flow) and potential new or additive products/terms (additional procurement strategies)
- Analyze market changes (historic, current, prospective future)
- Consider the balance between market reflective products vs. price stability, including seasonality (summer/winter)

<u>Timing:</u>

- Now through early 2024 – Analysis & LRS Plan development for next plan filing
- Spring 2024 (*tentative*) – LRS filing

Questions?