

October 20, 2023

VIA ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

**RE: Docket No. 5209 - FY 2023 Electric Infrastructure, Safety, and Reliability Plan
Reconciliation Filing
Response to Record Request No. 2**

Dear Ms. Massaro:

On behalf of The Narragansett Electric Company d/b/a Rhode Island Energy (the “Company”), enclosed is the Company’s response to Record Request No. 2 issued at the Public Utilities Commission’s Evidentiary Hearing in the above-referenced docket.

This transmittal completes the Company’s responses to the record requests issued in this matter.

Thank you for your attention to this filing. If you have any questions, please contact me at 401-784-4263.

Sincerely,



Andrew S. Marcaccio

Enclosures

cc: Docket No. 5209 Service List

Record Request No. 2

Request:

Referencing the Company’s response to PUC 3-1, please provide an explanation for the variances.

Response:

General Insights

Table 1 below shows the projects included in PUC 3-1, as well as:

- Original CAPEX estimate;
- Estimate base year;
- Original In-service date;
- Projected in-service date;
- In-service date variance, and;
- Estimate age at project completion.

These projects are projected to be complete 9 to 13 years after the original estimates were developed. Table 1 also shows the average in-service date delay, not including the Tiverton Area, is over 28 months.

Table 1 – Major Projects Estimates and In-Service Dates

	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Major Project Grouping	Original CAPEX Estimate	Estimate Base Year	Conceptual Estimate In-Service Date	Actual/Projected In-Service Date	In-service Date Variance (Months)	Estimate Age at Project Completion (years)
1	Southeast	\$13.8m	2015	May-2018	Mar-2021	34	10
2	Dyer Street	\$12.0m	2014	Sep-2020	Sep-2024	48	11
3	Admiral Street 1A	\$10.0m	2014	Dec-2022	Mar-2023	3	9
4	Admiral Street 1B	\$25.9m	2014	Dec-2023	Apr-2026	28	12
5	Providence Study Projects - Ph 2	\$23.9m	2014	Dec-2025	Nov-2026	11	13
6	Knightsville - Ph 4	\$8.4m ¹	2014	Dec-2023	Aug-2024	9	11
7	East Providence	\$13.4m	2015	Dec-2022	Dec-2026	48	12
8	Warren	\$7.6m	2015	Dec-2022	Oct-2026	45	13
9	Tiverton Area	\$21.0m ²	2021	Dec-2028	Dec-2028	0	9

¹ The \$8.4m estimate referenced in PUC 3-1 only includes the distribution line work. Table 2 and 3 have been updated with the entire scope.

² The Tiverton Area project estimate referenced in PUC 3-1 included a double count of cable procurement costs. The new estimate in Table 2 and Table 3 have been reduced by \$1.5M.

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Please refer to column (c) for the estimate year. Historically, conceptual estimates did not include inflation or escalation adjustments. With inflation around 2%, it was not expected to be a major cost factor.

The Company also assumed projects would be completed as originally scheduled. Schedule variances of the magnitude seen in Table 1 can significantly increase cost. As documented in RIPUC Docket No. 22-53-EL PUC 6-4, the 18-month Dyer Street delays resulted in a \$1.15M cost increase. The cost impacts of schedule delays are extremely sensitive to when the delay occurs within the project lifecycle.

Two different scenarios are:

1. A delay in the project's start date results in the same project duration; cost increases are associated with inflation.
2. A delay that occurs during the execution increases costs in two ways. First, the duration gets extended and team members continue to support the project, e.g., the project requires replanning and there are increased carrying costs. The second way relates to increases associated with inflation/escalation. The Dyer Street delay referenced above is an example of this type of delay.

Inflation Analysis

The Company performed two inflation analysis to convert the estimate from base year to then-year dollars. The data used in these analysis are from three sources:

1. RS Means (<https://www.rsmeans.com/>)
2. Consumer Price Index (<https://www.rateinflation.com/consumer-price-index/usa-historical-cpi/>)
3. Congressional Budget Office (<https://www.cbo.gov/publication/59431>).

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Data Source Background

1. RS Means History and Background

- a. In the construction industry, RS Means data has been tracked for decades. Robert Snow Means was a Civil Engineer who kept meticulous construction costs in a series of leather-bound books he made at his kitchen table. By the early 1940s, his peers began offering to buy his "cost books." Today, the database contains more than 92,000-line items. Cost engineers spend more than 30,000 hours researching and validating the costs every year. This database is owned and copyrighted by Gordian.
- b. The RS Means Index provides historical construction inflation/escalation adjusts to be able to compare actuals across time.
- c. Utilizing this index, the Admiral St Substation 1A estimate increases from \$10.0M to \$15.6M.
- d. The RS Means escalation adjustment does not capture schedule duration increases or scope changes.

2. Consumer Price Index (CPI)

- a. The Consumer Price Index is another method to assess historical impacts of general inflation; it is a measure of the average change over time in the prices paid by urban consumers.
- b. Example of utilizing this index, Admiral St Substation 1A escalates from \$10.0M to \$12.8M.
- c. CPI also does not capture cost changes due to schedule duration increases or scope changes.

3. Congressional Budget Office (CBO)

- a. The Congressional Budget Office inflation data was utilized, in conjunction with RS Means and CPI, for future year inflation impacts.
- b. The CBO future year inflation forecasts are as follows:
 - i. From 2023 to 2024: Inflation Rate of 2.4%
 - ii. From 2024 to 2025: Inflation Rate of 2.2%
 - iii. After 2025, the CBO has not forecasted a rate; however, the company assumed a conservative annual rate of 2.2%.

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Figure 1 is the Congressional Budget Office, <https://www.cbo.gov/publication/59431>, general inflation actuals and future year projections.

Figure 1 – CBO Inflation Actuals and Projections

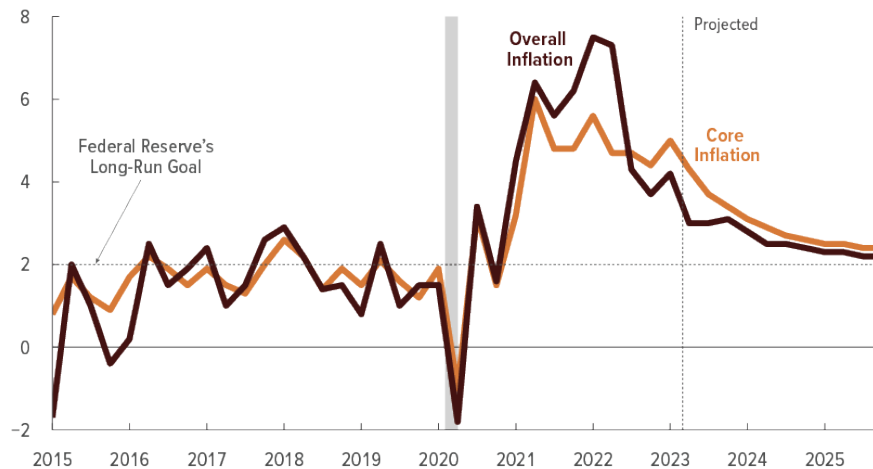


Table 2 below shows the results of the inflation analysis for the major projects. The RS Mean/CBO Adjustment uses the RS Means Index to adjust historical data and the CBO inflation rate projects for future years. The CPI /CBO Adjustment uses the CPI data for historical and the CBO rates for future years ones. Please note, these results do not include costs associated with increases in either schedule durations and/or scope.

The global supply chain disruption is a result of lingering effects of the COVID-19 pandemic as well as the war in Ukraine. Figure 1 above shows this issue started becoming apparent in the broader economy during calendar year 2021. Most of the major projects have experienced increased material costs and dramatically increased lead times, which have in turn extended the schedule duration. It is difficult to generalize the cost impacts of schedule duration delays outlined in the second example above. Please see the Project Specific Information section for the duration change impacts.

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Table 2 - Inflation Analysis Results

	(a)	(b)	(c)	(d)	(e)	(f)
	Major Project Grouping	Original CAPEX Estimate (base year dollars)	RS Mean/CBO Adjustment to Then-Year Dollars	CPI /CBO Adjustment into Then-Year Dollars	Average of the Indices ((c) +(d))/2	Estimate at Completion
1	Southeast	\$13.8m	\$21.3m	\$17.7m	\$19.5m	\$23.7m
2	Dyer Street	See RIPUC Docket No. 5209 PUC 6-4 for details				
3	Admiral Street 1A	\$10.0m	\$15.6M	\$12.8m	\$14.2m	\$8.8m
4	Admiral Street 1B	\$25.9m	\$38.8M	\$32.7m	\$35.8m	\$46.5m
5	Providence Study Projects – Ph 2	\$23.9m	\$37.3m	\$30.7m	\$34.0m	\$25.1m ³
6	Knightsville - Ph 4	\$13.8m ²	\$19.3m	\$16.2m	\$17.8m	\$20.0m
7	East Providence Substation	\$13.4m	\$21.0m	\$17.7m	\$19.4m	\$17.0m ³
8	Warren Substation	\$7.6m	\$11.8m	\$9.9m	\$10.9m	\$10.2m ³
9	Tiverton Area	\$19.5m ⁴	\$24.1m	\$21.9m	\$23.0m	\$19.8m ³

² Original estimate only included the line work; the substation scope (\$5.4m) has been added into the original budget.

³ Currently these projects are being re-estimated to fully account for changes.

⁴ The original Tiverton Area estimates includes double counting of cable procurement costs; the Original CAPEX Estimate has been reduced from \$21.0M to \$19.5M.

General Insights – Conclusion

The inflationary adjustments do not account for all costs associated with extending project schedules; because of this, projects early in their lifecycle, including Providence Study Phase 2, East Providence, Warren, and Tiverton are being re-estimated. Once the estimates are completed, the results will be reported in the appropriate quarterly reports. The remaining projects are not being re-estimated because they were too far along to add value.

When the average of the two indices are compared to the Estimate at Completion, current project forecast, the variances range from -22% to 38%; these percentages are within the expected range for conceptual estimates. The original response to PUC 3-1 showed the variance range, unadjusted dollars to the then year actuals, was -12% to 138%.

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Project Specific Information

Please see project specific information below. Please note, these increases are associated with either a scope or duration increase.

Southeast Substation

The final cost of the Southeast Substation project was impacted by several factors including scope change, material costs, and site conditions. Some of the specific issues encountered include:

- After the project was initiated, a review of the protection scheme resulted in the need for additional equipment and civil work (\$1.2M).
- During the control house excavation site conditions caused a design change with additional helical piles and drilled foundations. (\$1.5M).
- Total impact = \$2.7M.

Admiral Street Substation 1A

Admiral Street Substation 1A was largely unaffected by the supply chain disruption, as it had secured most materials and construction resources prior to the global supply chain impacts and thus was not impacted by it. This allowed it to be completed essentially on schedule and below the inflation adjusted estimate.

Admiral Street Substation 1B

Both the scope and duration of the Admiral Street Substation 1B were increased; the increases were due to outage limitations, local requirements changing, contaminated soil handling, and extending the duration. The specific issues encountered were:

- The original scope did not include a temporary transformer; during detailed outage planning, it was determined that the substation could not be completely offloaded. The solution was to install a temporary transformer to carry the required load (\$3.44M).
- Road restoration paving requirements changed, previously the Company was only required to install permanent pavement trench repairs, however the permit issued required milling with curb-to-curb paving (\$2.08M).
- The original estimate assumed substation soils would be reused on-site; during Preliminary Engineering, testing showed it needed to be disposed of and replaced with clean fill. Additionally, the conceptual estimate did not account for the extent of the Police detail scope. (\$2.19M).

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- Permitting, winter construction moratorium, and material lead times delays increased the project duration (\$0.80M).
- Total impact = \$8.51M.

Providence Study Projects – Ph 2

The Company decided to revise the forecast back to the budget of \$23.9M. The engineering design phase has just started, and the estimate has not been updated since the conceptual phase. It is felt the estimate will increase but right now there is not a solid basis for changing the forecast. The team is now developing a new cost estimate which is expected to be complete by the end of February 2024. Once the new estimates are complete, we expect the cost to be closer to \$34M, as explained in the General Insights section.

Knightsville Substation – Ph 4

The Knightsville substation scope was increased; the detailed outage plan determined a mobile transformer was required to carry the load which was not in the original scope.

- Total Impact = (\$1.207M).

East Providence Substation

The East Providence project impacts were:

- Originally, there was a delay in obtaining the required real estate rights which added 10 months to the schedule. (\$0.272M)
- Additionally, the global supply chain disruption has also increased the project duration. This has resulted in the ready-for-load being further 12-month delay. The long lead materials delays are outlined below describe the schedule impacts:
 - Transformer:
 - The original lead time assumed was 24-months.
 - The actual award lead time is 36-month, which increases the project duration (critical path) by 12-months.
 - An additional 12-months of schedule duration is \$0.694M
 - Although, the original budget was \$1.4M and the actual award is \$2.262M, it is assumed this increase is covered by the inflation adjustment discussed in the General Insights

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- Metal-clad switchgear (“MCSPC”):
 - The original lead time was 18 months lead time and the projected lead time based on the budgetary proposal 24 months, the project duration has not been increased beyond that caused by the transformer.
 - After the transformer bids and MCSPC budgetary proposal were reviewed, the team updated the MCSPC order schedule to align delivery with the transformer. As discussed for the transformer, the \$0.554M material cost increase is covered by the inflation adjustment discussed above.

The project specific schedule delays impacts are \$0.966M (\$0.272M+\$0.695M).

The known material and construction cost increases are limited to the transformer and MCSPC; the project team is re-estimating the project. Once the re-estimate is completed, the forecast will be updated (anticipated at the end of FY24).

Warren Substation

The Warren Substation project has experienced approximately a 3-year delay with the bike path permitting for undergrounding the sub-transmission station feeds. This path is owned by RIDOT and managed by RIDEM. The team has been working with both agencies to obtain easement rights to underground the sub-transmission circuit, which is currently overhead. At the beginning of FY24, the team had already spent \$0.48M on obtaining the permit. It was determined that the best path forward was to decouple the sub-transmission scope from the asset condition work. At the start of this fiscal year, the substation and distribution line scope began progressing through design. The team continues working with both agencies on a plan forward for the sub-transmission scope (\$0.48M).

The Warren substation is susceptible to flooding; a 2019 flood study recommended mitigation efforts. This scope has been added, but the impacts are currently not known. The project is being designed and will be re-estimated by the end of FY24 (TBD).

- Total Impact = TBD

Tiverton Area Study

The Tiverton project has just been initiated and once engineering and design is complete, it will be re-estimated. Presently, it is too early in the project lifecycle to assess the original estimate.

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Conclusion

Table 3 shows the original estimate, average of the indices from Table 2, project specific impacts, and the estimate at completion.

Table 3 – Final Comparison

	(a)	(b)	(c)	(d)	(e)	(f)
	Major Project Grouping	Original CAPEX Estimate (base year dollars)	Average of the Indices from Table 2	Project Specific Information	Average of the Indices plus Project Specific (c+d)	Estimate at Completion
1	Southeast	\$13.8m	\$19.5m	\$2.7m	\$22.2m	\$23.7m
2	Dyer Street	See RIPUC Docket No. 22-53-EL PUC 6-4				
3	Admiral Street 1A	\$10.0m	\$14.2m	\$0.0m	\$14.2m	\$8.8m
4	Admiral Street 1B	\$25.9m	\$35.8m	\$8.51m	\$44.3m	\$46.5m
5	Providence Study Projects – Ph 2	\$23.9m	\$34.0m	\$0.0m	\$34.0m	\$25.1m
6	Knightsville - Ph 4	\$13.8m	\$17.8m	\$1.21m	\$19.0m	\$20.0m
7	East Providence Substation	\$13.4m	\$19.4m	\$0.97m ⁵	\$20.4m	\$17.0m
8	Warren Substation	\$7.6m	\$10.9m	TBD ⁶	\$10.9m	\$10.2m
9	Tiverton Area	\$19.5m	\$23.0m		\$23.0m	\$19.8m

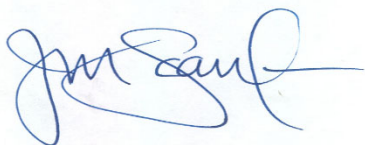
⁵ Only includes the project duration increases, not the additional material ones. Project is being re-estimated to ensure all costs align with the project execution plan.

⁶ Cost of flood mitigation scope increase to be determined when the project is re-estimated.

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.



Joanne M. Scanlon

October 20, 2023

Date

**Docket No. 5209 – RI Energy’s Electric ISR Plan FY 2024
Service List as of 9/11/2023**

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