



Rhode Island Energy™

a PPL company

DG Cost Sharing

October 31, 2022

Agenda



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Scenario 1: Developer & Company cost sharing

Scenario 2: Developer & Load Customer cost sharing

Scenario 3: Developer with subsequent Developer(s) & Company cost sharing

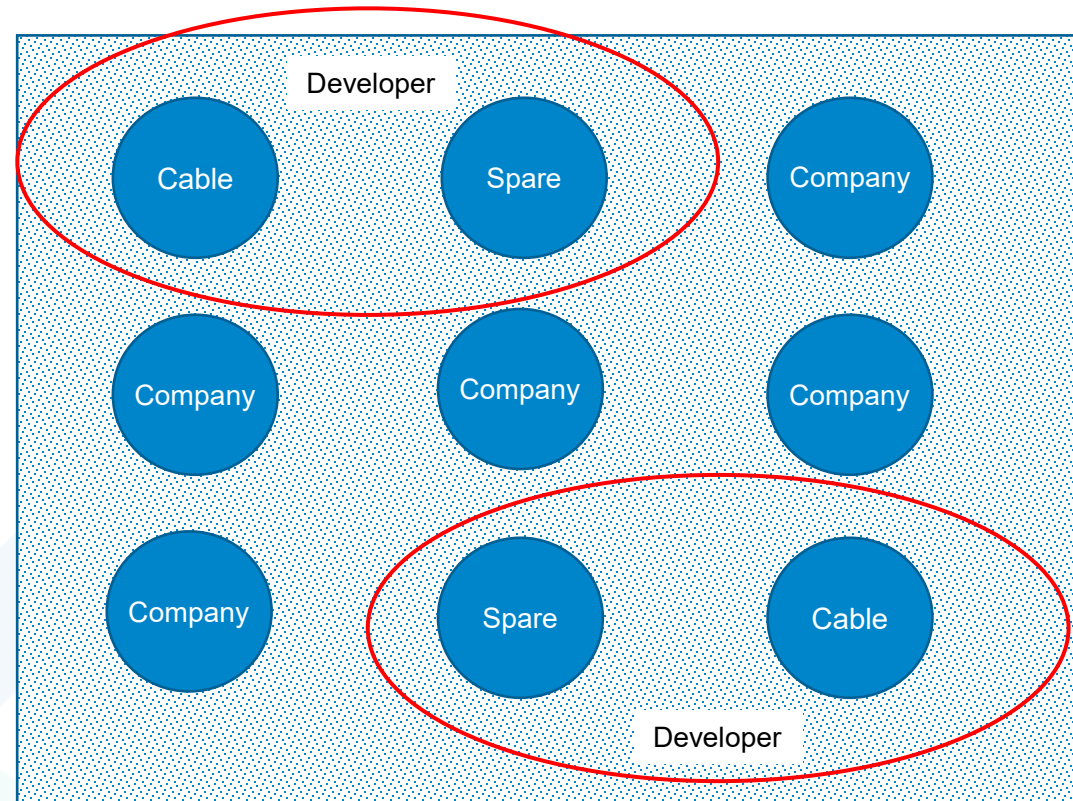
Scenario 1: Developer & Company cost sharing scope

Scope

- DG Developer applies and the Company identifies work within its five-year plan that would share a portion of the DG related work
- DG developer self-builds the civil portion
- Example Case: 9- way duct bank installed by Developer with a single cable
 - Based on the five-year plan, 2/9 of the duct bank and 100% of the cable would be shared
 - The remaining 7/9 was built based on the most efficient engineering design in recognition of underground construction limitations and future utilization
 - Company has no recommendations presently in the workplan to use additional ducts
 - If the Company built this in the future for the work plan, it would have built the same 9-way design
 - Example of a civil/structural build that would be infeasible to go back and expand in the future, thus the design incorporates future use
 - Very difficult and costly, in some cases impossible, to expand to an energized duct bank and cable system in the future

Scenario 1: Developer & Company cost sharing scope

Duct bank diagram



Scenario 1: Developer & Company cost sharing tariff

Sections 5.3 and 5.4 of the Interconnection Tariff discuss costs. This scenario aligns with Section 5.4 of R.I.P.U.C. No. 2244 5.4 Separation of Costs Section b

Effective for Renewable Interconnecting Customer Applications filed on or after July 1, 2017, in the event that the Commission determines that a specific System Modification of the electric distribution system **benefits other customers and has been accelerated due to an interconnection** request and orders the Renewable Interconnecting Customer to fund the modification, the Renewable Interconnecting Customer will be entitled to **repayment of the depreciated value** of the modification as of the time the modification would have been necessary as determined by the Commission. Subsequent Renewable Interconnecting Customers will be responsible for prorated payments **within ten (10) years** of the earlier **Renewable Interconnecting Customer's payment toward System Modifications.**

Scenario 1: Developer & Company cost sharing steps

High level steps

- 1) When evaluating cost sharing amount, scope may be separated:
 - Civil work
 - Electrical work
- 2) Quantify work solely benefiting each entity
- 3) Quantify work shared
- 4) Collect inputs
 - Total cost (If scope is separated for cost sharing, estimates must be separated)
 - Asset life
 - Install year & original Company need date
- 5) Calculate depreciated amount to pay to Developer (see Alternatives 1-3 next slide)
- 6) Determine when to pay Developer



Scenario 1: Developer & Company cost sharing – Alternative Depreciation Methods

Alternative 1 – Company’s Planned Date Determines Depreciation Amount

- Original Company in service date
- Least amount paid back to the Developer (greater depreciation)

Alternative 2 – No Depreciation, Developer’s Install Date Used

- Used and useful at time of installation (entire duct bank)
- Full amount paid back to the developer (no depreciation)

Alternative 3 – Separate Depreciation Treatment for Separate Project Scope

- **Used and useful at time of installation (for portion built to be used solely by the Company) but portion shared used and useful at original Company in service date**
- **Amount in between Alt 1 and Alt 2 paid back to the developer (some depreciation)**

When is payment made:

- For each alternative above, should payment be made at the time of Developer installation (NPV implications) or pay at the later Company need date

Scenario 1: Developer & Company cost sharing – Example Calculations 1



Scenario 1 - Civil duct bank work		\$ 1,000,000	
		Portion Solely for Company Use	Portion Shared
	Number of ducts used	7/9	2/9
	Cost	\$ 777,780	\$ 222,220
	Asset Life	60	60
	Install Year	2023	2023
	Alternative 1	2028	2028
	Alternative 2	2023	2023
	Alternative 3	2023	2028
	Company Share	100%	100%
Amount Paid to Developer from Company	Alternative 1	\$ 712,960	\$ 203,700
	Alternative 2	\$ 777,780	\$ 222,220
	Alternative 3	\$ 777,780	\$ 203,700
Total Amount Paid to Developer from Company	Alternative 1	\$ 916,670	
	Alternative 2	\$ 1,000,000	
	Alternative 3	\$ 981,480	

Alt 1 assumes original Company need date

Alt 2 assumes assets are used and useful as soon as they are built

Alt 3 assumes assets are used and useful as soon as they are built / when it is in service

Paying back depreciated value of the full cost, not splitting costs

Scenario 1: Developer & Company cost sharing – Example Calculations 2

Electrical - Cable & Substation		Portion Shared
		100%
	Cost	\$ 4,700,600
	Asset Life	30
	Install Year	2023
	Alternative 1	2028
	Alternative 2	2023
	Company Share	100%
Total Amount Paid to Developer from Company	Alternative 1	\$ 3,917,170
	Alternative 2	\$ 4,700,600

Scenario 2: Developer & Load cost sharing scope

Scope

- DG Developer comes in first
- Load Customer comes in shortly after; enough time to modify DG Developer scope of work
- Example Case: Overhead line extension, DG and Load sharing poles; Circuits not shared
 - Assume DG on 12.47kV circuit and Load on 23kV circuit
 - Increased pole height
 - DG scope was adjusted to account for scope of subsequent load customer, identified incremental cost
 - Installation Year – 2023

Scenario 2: Developer & Load cost sharing tariff

Sections 5.3 and 5.4 of the Interconnection Tariff discuss costs. This scenario aligns with Section 5.3 of R.I.P.U.C. No. 2244 5.3 System Modification Costs

As appropriate, to the extent that subsequent Interconnecting Customers benefit from System Modifications that were paid for by an earlier Interconnecting Customer, subsequent Interconnection Customers who **benefit from those same System Modifications may retroactively contribute a portion of the initial costs, which may be refunded to the earlier customer.** In this scenario, the Company may assess a portion of the costs to such subsequent Interconnecting Customers, which will be refunded the earlier Interconnecting Customer if collected. Such assessments may occur for a period of **up to five years from the Effective Date of the earlier Interconnecting Customer's Interconnection Service Agreement.**

Scenario 2: Developer & Load cost sharing steps

High level steps

1) When evaluating cost sharing amount, scope may be separated:

- Structural work (poles)
- Reconductoring (electric lines)
- Line extensions (electric lines)

2) For structural, determine quantity of incremental work solely benefiting each entity and quantity of work shared

3) *Reconductoring and line extensions overview on slides 12 and 13*

4) Collect inputs

- Total cost
- Line capacity – pre and post project ratings
- DG and Load system size
- Load revenue justification calculation

Scenario 2: Developer & Load cost sharing - Reconductoring Additional Details

High level steps for reconductoring

Consider existing system prior to DG work. Consider new load customer impact on that prior system and determine if system would be considered 90% loaded

- If customer load would not overload original line, Customer contributes 0 to DG, Company contributes 0 to DG. Although customer would use the new line, the customer did not benefit and would not have needed the reconductoring
- If original line is not greater than 90% loaded and new customer load would require reconductoring, Customer contributes to DG and Company contributes to DG as follows:
 - Compare and apply the load to DG ratio, this determines maximum amount customer will contribute
 - Company pays remainder of Customer apportioned amount from rate base to DG
- If line would be 90% loaded and customer load will overload the line, Customer contributes 0 to DG
 - Company would have to reimburse DG from rate base on the load to DG ratio basis



Scenario 2: Developer & Load cost sharing – Line Extension Additional Details

High level steps for line extensions

Customer would need either the same, or a portion, of the line extension built for DG

- Customer contributes towards cost of their portion of shared line extension on a per MW basis compared to DG MWs
 - Considering peaks, not time of day
- Of this apportionment, customer pays DG. Company pays remainder of customer apportioned amount from rate base to DG

Scenario 2: Developer & Load cost sharing – Example Calculations 1

Scenario 2A - DG Developer Shares with Load Customer - Customer applies shortly after DG, and DG scope can be adjusted to include customer work. Structural example

			\$ 150,000	\$ 700,000
			Portion Solely for Load Customer	Portion Shared with DG
	Increased Pole Height		100%	50%
	Cost		\$ 150,000	\$ 350,000
	Asset Life		30	30
	Install Year		2023	2023
	Alternative 1		2023	2023
Amount Paid to DG from Load Customer			\$ 150,000	\$ 350,000

Split based on number of cost sharing parties, not based on MW

Scenario 2: Developer & Load cost sharing – Example Calculations 2

Scenario 2B - DG Developer Shares with Load Customer - Customer applies 5 years later

			Portion Solely for Load Customer
			100%
	Cost		\$ 850,000
	Asset Life		30
	Install Year		2028
	Alternative 1		2028
Amount Paid from Load Customer to Company			\$ 150,000
Amount Paid from Load Customer to DG			\$ 0

No cost sharing back to DG, work completely redone

Scenario 2: Developer & Load cost sharing – Example Calculations 3

Reconductoring calcs – example where Load Customer and Company pay DG

DG MW	8	<i>System pre-DG is less than 90% loaded, only 50% loaded</i>	
Customer MW	8	<i>Load customer 8 MW would require reconductoring</i>	
Load-DG Ratio	50%	<i>Load customer contributes portion based on load/line rating and relative size to DG</i>	
Load MW of System pre-DG	2.5	<i>8 MW / 10 MW = 80%</i>	
Capacity MW of System pre-DG	5	<i>80% * 50% = 40%</i>	
Load % of Original System	50%		
Capacity MW of System post-DG	10		
Revenue Justification Max	\$ 1,000,000		
Project Cost	\$10,000,000		
	Portion Solely for Load Customer	Portion Customer Shared with DG	Portion Company Shared with DG
	0	40%	10%
Cost	\$ -	\$ 3,000,000	\$ 2,000,000
Asset Life	30	30	30
Install Year	2023	2023	2023
Alternative 1	2023	2023	2023
Amount Paid to DG from Company and Customer	\$ -	\$ 3,000,000	\$ 2,000,000

*40% * \$10M - Revenue Justification = \$3M = CIAC*

*10% * \$10M + Revenue Justification = \$2M*

Scenario 2: Developer & Load cost sharing – Example Calculations 4

Line extension calcs - example where Load Customer pays DG

	DG MW	8		
	Customer MW	8		
	Load-DG Ratio	50%		
	Revenue Justification Max	\$ 1,000,000		
	Project Cost	\$10,000,000		
		Portion Solely for Load Customer	Portion Customer Shared with DG	Portion Company Shared with DG
		0	50%	0%
	Cost	\$ -	\$ 4,000,000	\$ 1,000,000
	Asset Life	30	30	30
	Install Year	2023	2023	2023
	Customer Need Date	2023	2023	2023
	Amount Paid to DG from Customer and Company	\$ -	\$ 4,000,000	\$ 1,000,000

Scenario 3: Developer & with subsequent Developer(s) & Company cost sharing scope

Scope

- DG Developer comes in first
- DG Developer self-builds the civil portion
- Additional Developer(s) in the queue eligible to cost share
- Example Case: 9- way duct bank installed by Developer
 - Initial DG requires 2/9 of the duct bank
 - Next DG shares the 2/9 and requires 2/9 for their own
 - Third DG shares 2/9 with the initial two Developers
 - The remaining 5/9 was built based on the most efficient engineering design in recognition of underground construction limitations and future utilization
 - Cable shared based on MW as follows: 20 MW, 5 MW, 10 MW

Scenario 3: Developer & with subsequent Developer(s) & Company cost sharing - Example Calculations 1

Electrical cable calculations based on MW share

<i>Total Cost</i>			
\$ 10,000,000		20	
MWs	5	10	
Electrical - Cable	Portion Shared DG1	Portion Shared DG2 to DG0	Portion Shared DG2 to DG1
	20%	23%	6%
Asset Life	40	40	40
Install Year	2023	2023	2023
DG Need Date	2023	2024	2024
Amount Paid	\$ 2,000,000	\$ 2,285,710	\$ 571,430

Amount paid to DG0 from DG1

Amount paid to DG0 from DG2

Amount paid to DG1 from DG2

DG0 MWs

5 MW of 25 MW

80% of 10 MW of 35 MW

20% of 10 MW of 35 MW

Appendix



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Follow up to August Tech Session Action Items

- Impact Study/ISA Alignment on Estimates Format
- ESB Update
- Engineering Decisions → impact to scope

Impact Study / ISA Format



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Refer to example PDF

ESB Update

ESB Number will be added to the Screening Memo on Page 1 Executive Summary Section A

- A PDF of the Screening Memo is sent to the Customer at the end of Screening

	kW(AC) Existing Inverter Based Interconnection Project	
200.00	kW(AC) Aggregate of Proposed and Existing Inverter Based Interconnection Project	
Project Address:		

I. **Executive Summary:**

A. The Interconnecting Customer has submitted an application for the interconnection of the generating system described herein to the Rhode Island Energy (Company) Electric Power System (EPS). Reviewed as outlined in:

R.I.P.U.C. 2244 & National Grid's Electric Service Bulletin (ESB) 756 Appendix D

The application does not require further study based on the results of this review.

B. Study Cost: \$0.00

This case qualifies as an Expedited Request.

II. **The Company's Electric Power System (EPS):**

A. **Table of Information for Nearest Feeder**

Feeder Number:	56.86F1	Radial or Network?	Radial
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