

## **Consolidated Edison Company of New York, Inc.**

### **Rider X - Workpapers**

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## Backbone/Spur Route Rate Calculation

**Formula based on FCC "Reconsideration Order", Appendix F-2, adopted May 22, 2001**

Rate = (1 / number of innerduct) X (Net Conduit Investment / Total System Conduit Footage) X Carrying Charge

Where;

Information Source

Net Conduit Investment	(A)	2,018,156,415	Schedule 1, page 2 of 5
Carrying Charge	(B)	40.49%	Schedule 1, page 4 of 5
Total System Conduit Footage	(C)	133,470,340	Schedule 1, page 5 of 5
Rate per Foot of Innerduct (Existing Conduit)	= (1 / Number of Innerducts) X ( A / C ) X B		
Average Innerduct per Duct		2.94	Schedule 1, page 5 of 5
Rate per Foot of Innerduct (Existing Conduit)		<b>\$2.0827</b>	Annual Rate

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## Net Conduit Investment Calculation

		<u>Information Source</u>
Gross Conduit Investment, Acct. 366	\$ 3,991,952,525	PSC Annual Report, p. 207, line 66, col g
Less Accumulated Depreciation, Acct. 366	890,029,319	Schedule 1, page 3 of 5
Less ADIT, Conduit	<u>1,083,766,791</u>	Schedule 1, page 3 of 5
Net Conduit Investment	\$ 2,018,156,415	

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**ADIT & Accumulated Depreciation**

Formula based on FCC "Reconsideration Order", Appendix F-2, adopted May 22, 2001

**ADIT****Accounts 366, 367, 369**

ADIT (366, 367, 369) = [Gross Conduit Investment (Account 366, 367, or 369) / Total Gross Plant (electric)] X (Total ADIT Account 190, electric)

Given:

			<u>Information Source</u>
Gross Conduit Investment, Account 366	A	3,991,952,525	PSC Annual Report, p. 207, line 66, col g
Gross UG Conductors and Devices Investment, Account 367	B	6,029,644,922	PSC Annual Report, p. 207, line 67, col g
Gross Services Conduit Investment, Account 369	C	820,497,205	PowerPlant CPR
Total Gross Plant, electric	D	25,940,932,385	PSC Annual Report, p. 200, line 8, col c
	E	7,042,649,146	Acct (281, 282, 283) - 190

Then:

ADIT, conduit, Account 366	= (A / D) X E	1,083,766,791
ADIT, UG Conductors and Devices, Account 367	= (B / D) X E	1,636,975,612
ADIT, services, Account 369	= (C / D) X E	<u>222,755,060</u>
		2,943,497,462

**Accumulated Depreciation****Accounts 366, 367, 369**

			<u>Information Source</u>
Electric Plant			
Accumulated Depreciation, Plant	F	5,783,683,607	PSC Annual Report, p. 200, line 22, col c
Gross Plant Investment	G	25,940,932,385	PSC Annual Report, p. 200, line 8, col c
Plant Depreciation Ratio, overall	= (F / G)	0.22	
Conduit, Account 366			
Gross Conduit Investment	H	3,991,952,525	PSC Annual Report, p. 207, line 66, col g
Plant Depreciation Ratio	I	<u>0.22</u>	
Accumulated Depreciation, Conduit	= (H X I)	890,029,319	
Underground Conductors and Devices, Account 367			
Gross UG Conductors and Devices Investment	J	6,029,644,922	PSC Annual Report, p. 207, line 67, col g
Plant Depreciation Ratio	K	<u>0.22</u>	
Accumulated Depreciation	= (J X K)	1,344,344,836	
Services, Account 369			
Gross Services Conduit Investment	L	820,497,205	PowerPlant CPR
Plant Depreciation Ratio	M	<u>0.22</u>	
Accumulated Depreciation, services	= (L X M)	182,934,683	

<b>Carrying Charge Rate</b>	<b>(A+B+C+D+E)</b>	<b>40.49%</b>
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**Innerduct Footage, Account 366**

Accounts 6096 &amp; 6994

Duct size diameter

Footage

Number of innerduct

Total Footage of Innerduct

< 3"	3" - 3.5"	4" - 4.5"	5"+	Total System Footage
468,102	25,336,031	89,425,165	18,241,042	<b>133,470,340</b>
1	2	3	4	
<b>468,102</b>	<b>50,672,062</b>	<b>268,275,495</b>	<b>72,964,168</b>	<b>392,379,827</b>

**Total Footage of Innerduct for  
Backbone / Spur System**

**2.94** Innerduct per duct,  
current weighted average

<u>Account 6096</u>	Footage less than 3"	3 - 3.5	4" - 4.5"	5"+	
	455,383	11,216,564	64,088,223	10,625,923	
Sub-total	455,383	11,216,564	64,088,223	10,625,923	86,386,093
<u>Account 6994</u>	Footage less than 3"	3 - 3.5	4" - 4.5"	5"+	
	12,719	14,119,467	25,336,942	7,615,119	
Sub-total	12,719	14,119,467	25,336,942	7,615,119	47,084,247
Total					<b>133,470,340</b>

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## Service Lateral Rental Rate Calculation

Rate = (1 / number of innerduct per duct) X (Net Service Investment / Total Service Footage) X Carrying Charge

**Note:** The weighted average number of innerduct per service duct is **1.91** from Schedule 2, page 3 of 4

Where;

			<u>Information Source</u>
Net Service Investment	(A)	414,807,462	Schedule 2, page 2 of 4
Carrying Charge	(B)	43.10%	Schedule 2, page 4 of 4
Total footage of duct	(C)	18,586,476	Acct. 369, PowerPlant CPR , Acct 369200
Rate per Foot of Service Lateral	= ( A / C ) X B X 1 / 1.91		Schedule 2, page 3 of 4
Rate per Foot of Service Lateral	\$	<b>5.03</b>	Annual Rate

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## Net Service Investment Calculation

Where;

Net Service Conduit Investment = (Gross Service Investment, Acct. 369) - (Accum. Service Depreciation) - (ADIT, services)

Book Cost, Acct. 369	\$ 820,497,205	PowerPlant CPR
Less Depreciation 369	\$ 182,934,683	Schedule 1, page 3 of 5
Less ADIT (services)	<u>\$ 222,755,060</u>	Schedule 1, page 3 of 5
Net Service Conduit Investment	\$414,807,462	



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## Service Laterals- Average Weighted Innerduct per Duct

**Acct. 369**

**Based on Data From PowerPlant CPR and PowerPlant Equipment ledger Year-end 2016**

<u>Diameter</u>	<u>No. Svcs</u>	<u>Feet</u>	<u>Innerduct</u>	<u>Innerduct feet</u>
1	4	101	0	-
1.5	1,951	59,861	0	-
2	238,686	8,173,924	1	8,173,924
2.5	19,807	701,140	1	701,140
3	87,581	2,349,472	2	4,698,944
3.5	3,952	122,508	2	245,016
4	188,428	7,022,030	3	21,066,090
4.5	13	445	3	1,335
5	3,910	155,667	4	622,668
6	4	1,328	5	6,640
	<b>544,335</b>	<b>18,586,476</b>		<b>35,515,757</b>

Total Innerduct Footage	35,515,757
Total Service Footage	18,586,476
Average Innerduct per Service Duct	<b>1.91</b>

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Schedule 2

**Service Lateral Carrying Charge** Rider X

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**Account 369****A) Administrative Element**

Same as Backbone/Spur	<b>6.61%</b>	Schedule 1, page 4 of 5
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**B) Maintenance Element**

Same as Backbone/Spur	<b>3.48%</b>	Schedule 1, page 4 of 5
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**C) Depreciation Element =  $\frac{(\text{Gross Service Investment, 369}) \times \text{Depreciation Rate}}{\text{Net Service Investment, 369}}$** 
Information Source

Gross Service Conduit Investment, 369	820,497,205	PowerPlant CPR
Net Service Conduit Investment	414,807,462	Schedule 2, page 2 of 4
Depreciation rate, services	3.13%	
	<b>6.19%</b>	

**D) Taxes Element**

Same as Backbone/Spur	<b>15.57%</b>	Schedule 1, page 4 of 5
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**E) Rate of Return Element**

<b>11.25%</b>	Schedule 1, page 4 of 5	, FCC Default
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<b><u>Carrying Charge Rate</u></b>	(A+B+C+D+E)	<b>43.10%</b>
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**Consolidated Edison Company of New York, Inc.****Rider X*****Calculation of Rates Effective September 1, 2017*****Calculation of Rental Rate for Use of Innerduct****Electric Underground Facilities**

a	Rental Rate (\$/ft of innerduct)	\$2.0827
b	Innerduct Footage in existing duct	<u>530,051</u>
c	Revenue Requirement, Electric Underground Facilities (a * b)	\$1,103,937

**Telecommunications Underground Facilities**

d	Innerduct Footage	<u>105,127</u>
<u>Calculation of Levelized Charge</u>		
e	Telecommunications Underground Facilities Costs	<u>\$923,708</u>
f	Levelized Carrying Charge	19.30%
g	Levelized Charge (e * f)	\$178,276
<u>Calculation of 10% Charge on Original Book Cost</u>		
h	Original Book Cost	<u>\$14,251,228</u>
i	10% Charge (h * 10%)	1,425,123
j	Revenue Requirement, Telecom Underground Facilities (g + i)	\$1,603,399

**Calculation of Rental Rate for Use of Innerduct**

k	Total Revenue Requirement (c + j)	\$2,707,336
l	Footage of Innerduct in use or reserved in Electric (b)	530,051
m	Footage of Telecom Underground Facilities (d)	<u>105,127</u>
n	Total Footage (l + m)	635,178
o	Rental Rate for Use of Innerduct (k / n), \$ Per Innerduct Foot Per Year	<b>\$4.2623</b>

**Calculation of Rental Rate for Telecom Manholes****Calculation of Levelized Charge**

p	Telecom Underground Facilities Costs, with Adders	\$0
q	Levelized Carrying Charge	19.30%
r	Levelized Charge (p * q)	\$0

**Calculation of 10% Charge on Original Book Cost**

s	Original Book Cost	<u>\$9,295,794</u>
t	10% Charge (s * 10%)	929,579
u	Rev Requirement, Telecom Manholes (r + t)	\$929,579
v	Number of Manhole Uses	<u>424</u>
w	Rental Rate, \$ / manhole use / year (u / v)	<b>\$2,192</b>

**Tunnel Rate Calculations**

Formula =  $\frac{(\text{Revenue Requirement of Unusable Space})}{\text{Number of Users}} + \frac{((25\% \text{ of Book Cost} - \text{Revenue Requirement of Unusable Space}) \times \text{Area of Innerduct w/ hanger})}{\text{Usable Area}}$

		Tunnel Crossings		
		A	B	C
Book Cost, Year-End 2016	a	\$ 5,906,178	\$ 16,658,290	\$ 9,505,110
25% Carrying Charge = a X 0.25	b	\$ 1,476,545	\$ 4,164,573	\$ 2,376,277
Shaft Diameter, feet	c	10	26	18
Total Area sq footage = $3.14 \times (c / 2)^2$	d	78.5	530.7	254.3
Usable Area = d - f	e	31.6	227.4	75.1
Common Area, See p. 2 of 2	f	46.9	303.3	179.2
Percent Unusable Area = $f / d$	g	59.7%	57.2%	70.5%
Revenue Requirement of Usable Area = b - j	h	\$ 594,850	\$ 1,784,194	\$ 701,763
Cost per Sq. Ft., Usable Area = $h / e$	i	\$ 18,809	\$ 7,847	\$ 9,344
Revenue Requirement of Unusable Area = b X g	j	\$ 881,695	\$ 2,380,379	\$ 1,674,514
Area of innerduct with hanger, 2" x 2" space	k	0.03	0.03	0.03
Cost per innerduct = $i \times k$	l	\$ 564	\$ 235	\$ 280
Total Cost per innerduct or cable = $(j / m) + l$				
Number of Users*				
5	m	<b>\$176,903</b>		
4	m		<b>\$595,330</b>	
6	m			<b>\$279,366</b>

\* Con Edison electric is considered a separate user for each transmission voltage in a tunnel.  
Con Edison Gas, Steam and communication are each considered separate users.  
Each Telecom innerduct/cable is considered a user.

**Tunnel Rate Calculations****UNUSABLE SPACE CALCULATION****Tunnel Crossing A**

Total Area

Diameter 10.17 ft

Total Area 78.5 sq-ft

78.5

**Unusable/common space items in shaft**

Elevator (5 x 2.5)/2

6.3

Landing 25% of shaft inclusive of 1/2 elev &amp; Maint riser

19.6

I beams .67 x 27ft

18

Ladder 1.5 x 2

3

Maintenance riser 0

0

unusable/common space 46.9

**Tunnel Crossing B**

Total Area

Dia 26 ft

Total Area 530.7 sq-ft

530.7 sq-ft

**Unusable/common space items in shaft**

Elevator 8.125 x 3.25

0.0 sq-ft

Landing 4.875 x 19.5 inclusive of elevator

95.1 sq-ft

I beams (.83 x 68.25) + (.5 x 51.2)

82.485 sq-ft

Ladder 1.5 x 2

3 sq-ft

Maintenance riser

122.8 sq-ft

unusable/common space 303.3

**Tunnel Crossing C**

Total Area

Dia 18 ft

Total Area 254.34 sq-ft

254.34 sq-ft

**Unusable/common space items in shaft**

Elevator 0

0 sq-ft

Landing 6.25 x 20 inclusive of elevator &amp; Maint riser

125 sq-ft

I beams (.67 x 69.3) + (.5 x 10)

51.2 sq-ft

Ladder 1.5 x 2

3 sq-ft

Maintenance riser 0

0 sq-ft

unusable/common space 179.2

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## River Crossings

### **River Crossing, D**

Original book cost	649,959	A
Number of duct	7	B
Average cost per duct	\$92,851	$C = (A / B)$
Number of Innerduct	5	D
Carrying Charge	25.00%	E
Annual Rate	<b>\$4,643</b>	$F = (C/D)*E$

### **River Crossing, E**

Original book cost	80,147	A
Number of duct	2	B
Average cost per duct	\$40,073	$C = (A / B)$
Number of Innerduct	7	D
Carrying Charge	25.00%	E
Annual Rate	<b>\$1,431</b>	$F = (C/D)*E$

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## Manhole POE to Enter/Exit Company Facilities

$$\text{Formula} = \frac{(\text{Carrying Chg. of an Elec. MH}) \times (\text{Avg. Original Bk. Cost of an Elec. MH})}{(\text{Avg. No. of POE's in an Elec. MH})}$$

		<u>Formula</u>	
Average Original Book Cost of Electric Manhole	a		\$5,579
Carrying Charge of an Electric Manhole	b		25%
Average Number of POE's in an Electric Manhole	c		16
<b>Rate</b>		<b>(a X b)/c</b>	<b>\$87.1719</b>

## Consolidated Edison Company of New York, Inc.

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## Transmission Tower Attachments

$$\text{Formula} = \frac{(\text{Book Cost, facility}) \times (\text{Number of Pot. Telecom Attachments per Tower}) \times (\text{Carrying Charge})}{\text{Total Potential Attachments per Tower}}$$

## "K" Line

Book Cost, entire facility- towers and fixtures only	a		\$31,376,771
Potential Number of Telecom Attachments (used) per Tower	b		1
Carrying Charge	c		25.00%
Total Potential Attachments* per Tower	d		16
Rate, entire facility	e	(a x b x c)/d	\$490,262.05
Number of Towers	f		378
Rate/Tower	g	g = (e / f )	\$1,296.99
Usable Space Factor	h		80.00%
<b>Attachment/Tower</b>	i	i = g * h	<b>\$1,038</b>

## "E" Line

Book Cost, entire facility- towers and fixtures only	a		\$11,087,195
Potential Number of Telecom Attachments (used) per Tower	b		1
Carrying Charge	c		25.00%
Total Potential Attachments* per Tower	d		16
Rate, entire facility	e	(a x b x c)/d	\$173,237.42
Number of Towers	f		144
Rate/Tower	g	g = (e / f )	\$1,203.04
Usable Space Factor	h		80.00%
<b>Attachment/Tower</b>	i	i = g * h	<b>\$962</b>

\* 16 Total Potential Attachments

2 pair of 3 phase conductors  
 2 Circuits X 2  
 2 Static lines  
 Potential Telecom Attachments  
 Total Potential Attachments

[6](#)  
 12  
[2](#)  
 14  
[2](#)  
**16**



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## Rights-of-Way

Findings based on Real Estate Appraisal study of February 27, 1997 with 3% annual escalation

<b>Aerial:</b>	\$0.8592 per foot	1998	0.4900	1.03
		1999	0.5047	
		2000	0.5198	
		2001	0.5354	
		2002	0.5515	
		2003	0.5680	
		2004	0.5851	
		2005	0.6026	
		2006	0.6207	
		2007	0.6393	
		2008	0.6585	
		2009	0.6783	
		2010	0.6986	
		2011	0.7196	
		2012	0.7412	
		2013	0.7634	
		2014	0.7863	
		2015	0.8099	
		2016	0.8342	
		2017	0.8592	
<b>Underground:</b>	\$1.7535 per foot	1998	1.0000	1.03
		1999	1.0300	
		2000	1.0609	
		2001	1.0927	
		2002	1.1255	
		2003	1.1593	
		2004	1.1941	
		2005	1.2299	
		2006	1.2668	
		2007	1.3048	
		2008	1.3439	
		2009	1.3842	
		2010	1.4258	
		2011	1.4685	
		2012	1.5126	
		2013	1.5580	
		2014	1.6047	
		2015	1.6528	
		2016	1.7024	
		2017	1.7535	

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**Rider X****Calculation of Average Cost of a Telecom Manhole**

Manhole Construction Costs Through May 2003 (incl adders)	\$9,100,368
Manhole Costs June through October 2003	51,660
Telergy Manholes Occupied by CEC through Oct. 2003	531,505
Manhole Costs Nov. 2003 through Jan. 2004	51,656
Subtotal	\$9,735,189
Customer Contributions to Manhole Depreciation	(1,330,196)
Manhole Costs Net of Depreciation Recoveries	\$8,404,993
CIAC Tax	1,284,332
Manhole Cost Including CIAC	\$9,689,325
Add Back Depreciation Recoveries	1,330,196
Subtotal	\$11,019,521
Manhole Costs Feb. 2004 - June 2004	\$74,800
Manhole Costs July 2004 - June 2005	\$41,379
Manhole Costs July 2005 - June 2006	\$104,669
Manhole Costs July 2006 - June 2007	\$30,716
Manhole Costs July 2007 - June 2008	\$0
Manhole Costs July 2008 - June 2009	\$0
Manhole Costs July 2009 - June 2010	\$0
Manhole Costs July 2010 - June 2011	\$60,987
Manhole Costs July 2011 - June 2012	\$95,344
Manhole Costs July 2012 - June 2013	\$0
Manhole Costs July 2013 - June 2014	\$152,433
Manhole Costs July 2014 - June 2015	\$0
Manhole Costs July 2015 - June 2016	0
Manhole Costs July 2016 - June 2017	0
Total Manhole Costs	\$11,579,848
Number of Telecom Manholes	285
Average Cost Per Telecom Manhole	<b>\$40,631</b>

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**Unused Telecom Manhole Average Cost**

	Number of Manholes	Total Costs	Average Cost Per Manhole
Telergy Manholes	83	\$2,925,641	<b>\$35,249</b>