



Worth Street Direct Cost Model

Traditional Trenching Method vs. Utilidor Method

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1. Project Information

1 Project street

Worth Street from Hudson Street to Park Row (3275 ft)

2 Number of street excavation permits

Total 604 utility street cuts permits from 1991 to 2024

Average 18.3 utility cut permits per year for the project area

3 Number of permits results in actual street cuts

6.1 (1 out of 3)

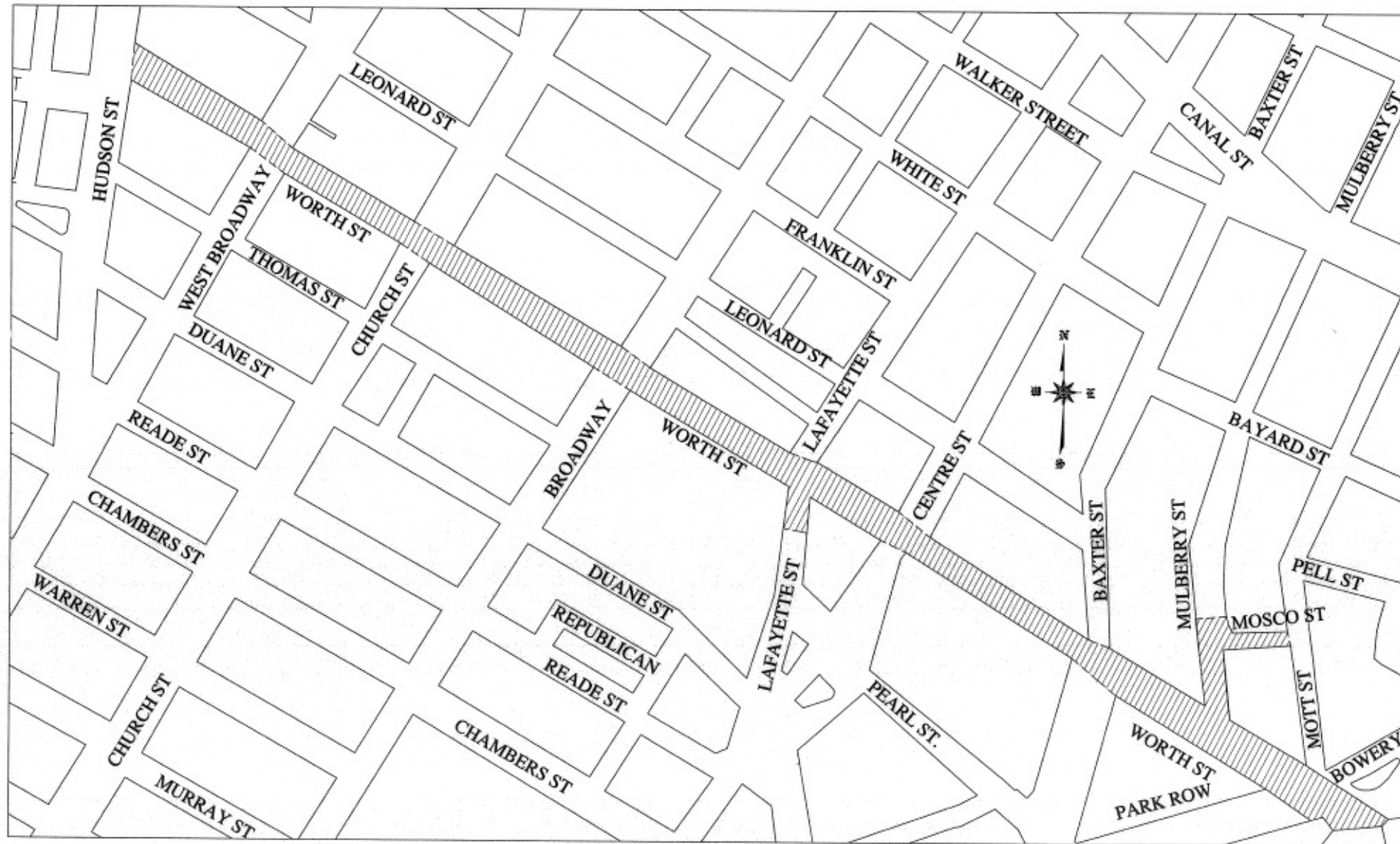
4 Growth rate of actual street cuts

0.05% (after first 25 years)

WORTH STREET FROM HUDSON STREET TO PARK ROW

INCLUDING SEWER, WATER MAIN, STREET LIGHTING, TRAFFIC SIGNAL AND PRIVATE UTILITY WORK,
TOGETHER WITH ALL WORK INCIDENTAL THERETO

BOROUGH OF MANHATTAN
CITY OF NEW YORK



2.1 Traditional Construction: Costs & Debt Services

According to the contract data

Public capital costs	\$23,001,572.20 (34%)	\$31,479,239.82 (FV to 2024)
Private capital costs	\$43,846,693.01 (66%)	\$60,007,227.02 (FV to 2024)
Total capital costs	\$66,848,265.21	\$91,486,466.84 (FV to 2024)

Total Debt Service for Original Construction Costs

City	\$61,805,050.30
Utilities	\$115,911,019.07
Total debt services	\$177,716,069.38

2.2 Traditional Construction: DOT Resurfacing Costs

Per John Speroni, road resurfacing cost = \$160,000 * lane mile

Total lane mile 0.6203 * \$160,000	\$99,242.42	PV
2018		Every 13 years
2031	\$130,596.26	FV From 2024
2044	\$217,452.37	
2057	\$362,074.18	
2070	\$602,880.13	
2083	\$1,003,839.74	
2096	\$1,671,466.95	
2109	\$2,783,115.34	
DOT Resurfacing Costs (100 years)	\$6,771,424.98	

2.3 Traditional Construction: Utility Trenching Costs



Number of cut permits

18.3 with 0.05% growth for the first 25 years then flat

Actual cut

1/3 of cut permits

Average cost per foot

378 and it increases 8% every 10 years (Con Ed as proxy)

Each year cost = actual cut * length of excavation * average cost per foot

Utility Trenching Costs for 100 years = \$ 881,405,412.91

2.4 Traditional Construction: Total Costs

		PV
City	\$61,805,050.30	
Utilities	\$115,911,019.07	
Total Debt Services for Original Construction Costs	\$177,716,069.38	
DOT Resurfacing Costs (100 years)	\$6,771,424.98	
Private Utility Trenching Costs (100 years)	\$881,405,412.91	
Traditional Trench Method Total	\$1,065,892,907.26	\$21,104,722.32

3.1 Utilidor: Costs & Debt Services (2X Estimation)

The original estimation for Utilidor method: "placing utility lines in a tunnel approximately **doubles the initial capital investment:**

Total capital costs (FV to 2024)	\$91,486,466.84
Total utilidor costs (FV to 2024)	\$182,972,933.68

Total Debt Service for Utilidor

Useful Life	40 years
Interest Rate	4%
Total debt services	\$369,777,242.46

Utilidor: Post-construction Operation & Maintenance (2X Estimation)

Post-construction operation & maintenance cost for utilidor has been assumed to be **10% of original construction costs**:

Original construction costs (Total debt services)	\$369,777,242.46
Post-construction O&M	\$36,977,724.25
Post-construction O&M – FV (100 Years)	\$100,017,859.92

Utilidor: Total Costs (2X Estimation)

PV

Total Debt Service for Utilidor

\$369,777,242.46

Post-construction O&M - FV

\$100,017,859.92

Utilidor Total

\$469,795,102.38

\$9,301,961.87

Traditional vs Utilidor (2X Estimation)

Traditional Trench Method Total	\$ 1,065,892,907.26	\$21,104,722.32 (PV)
Total Debt Service for Original Construction Costs	\$ 177,716,069.38	
DOT Resurfacing Costs	\$6,771,424.98	
Private Utility Trenching Costs	\$ 881,405,412.91	
Utilidor Total	\$469,795,102.38	\$9,263,374.73 (PV)
Total Debt Service for Original Costs	\$369,777,242.46	
O+M @10% construction costs	\$100,017,859.92	
Traditional / Utilidor	2.27	2.27

Utilidor: Costs & Debt Services (3X Estimation)

We also try another estimation, setting the cost for utilidor as **three times the initial capital investment**:

Total capital costs (FV to 2024)	\$91,486,466.84
Total utilidor costs (FV to 2024)	\$274,459,400.52

Total Debt Service for Utilidor



Useful Life	40 years
Interest Rate	4%
Total debt services	\$554,665,863.68

Utilidor: Post-construction Operation & Maintenance (3X Estimation)

Post-construction operation & maintenance cost for utilidor has been assumed to be **10% of original construction costs**:

Original construction costs (Total debt services)	\$554,665,863.68
Post-construction O&M	\$55,466,586.37
Post-construction O&M – FV (100 Years)	\$150,026,789.88

Traditional vs Utilidor (3X Estimation)

Traditional Trench Method Total	\$ 1,065,892,907.26	\$21,104,722.32 (PV)
Total Debt Service for Original Construction Costs	\$ 177,716,069.38	
DOT Resurfacing Costs	\$6,771,424.98	
Private Utility Trenching Costs	\$ 881,405,412.91	
Utilidor Total	\$704,692,653.56	\$13,952,942.81 (PV)
Total Debt Service for Original Costs	\$554,665,863.68	
O+M @10% construction costs	\$150,026,789.88	
Traditional / Utilidor	1.51 	1.51 

Traditional vs Utilidor: Break-even Analysis

To understand when the final total cost of the Utilidor approach could be the same as the traditional approach, we conduct a break-even analysis to calculate the multiplier between the Utilidor cost and the initial capital investment of the traditional approach in this case.

Calculated Multiplier

4.54

Sensitivity Analysis (Under 2X Estimation)

1 Discount Rate | 4%

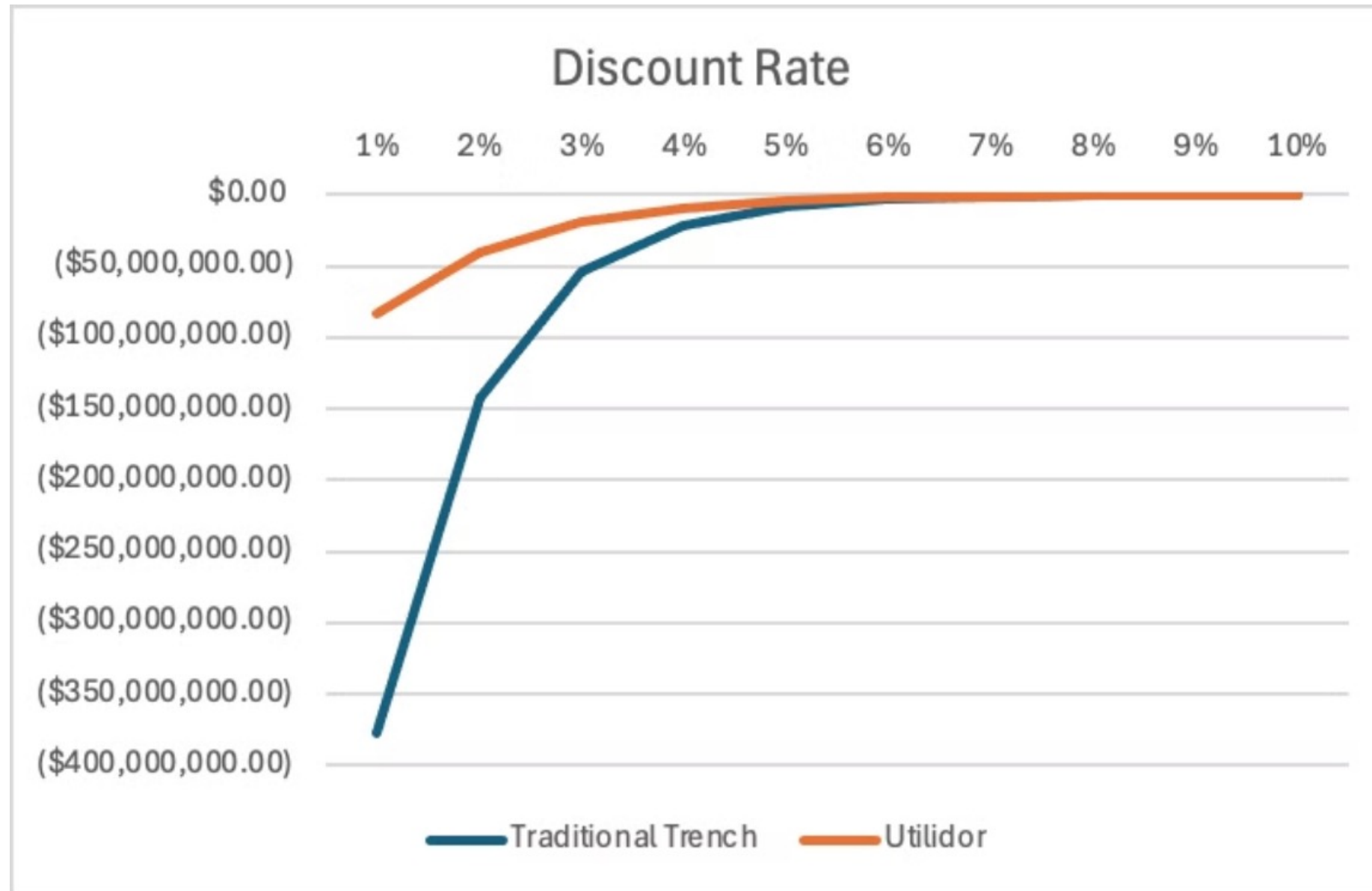
2 Number of Street Cuts (% of Total Number of Street Cut Permits) | 1 out of 3

3 Cost of construction (% of current estimation) | 100%

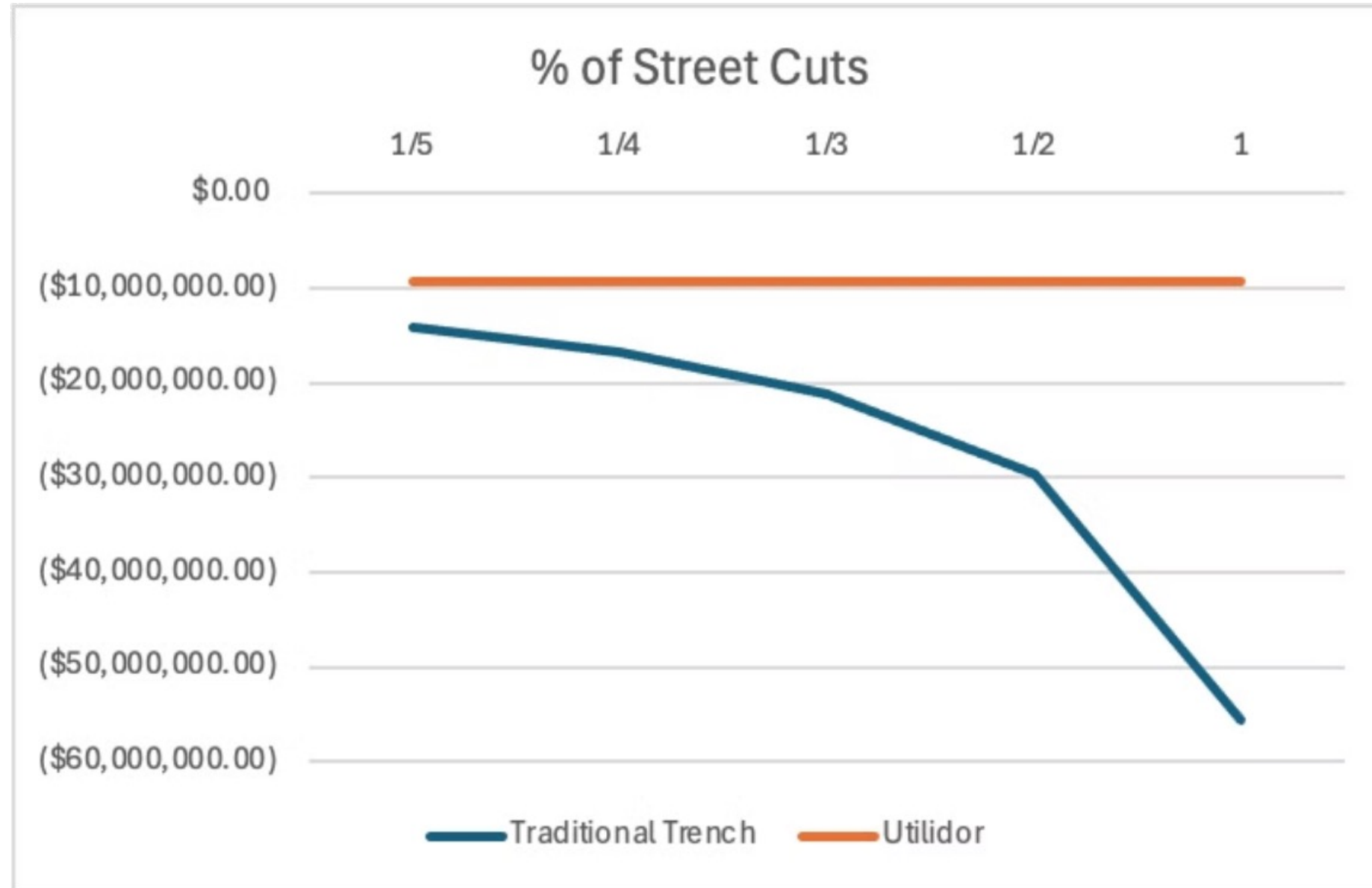
4 Trenching cost per foot | 378 and with 8% growth every 10 years

5 Debt service for O+M after end of first 40-year period

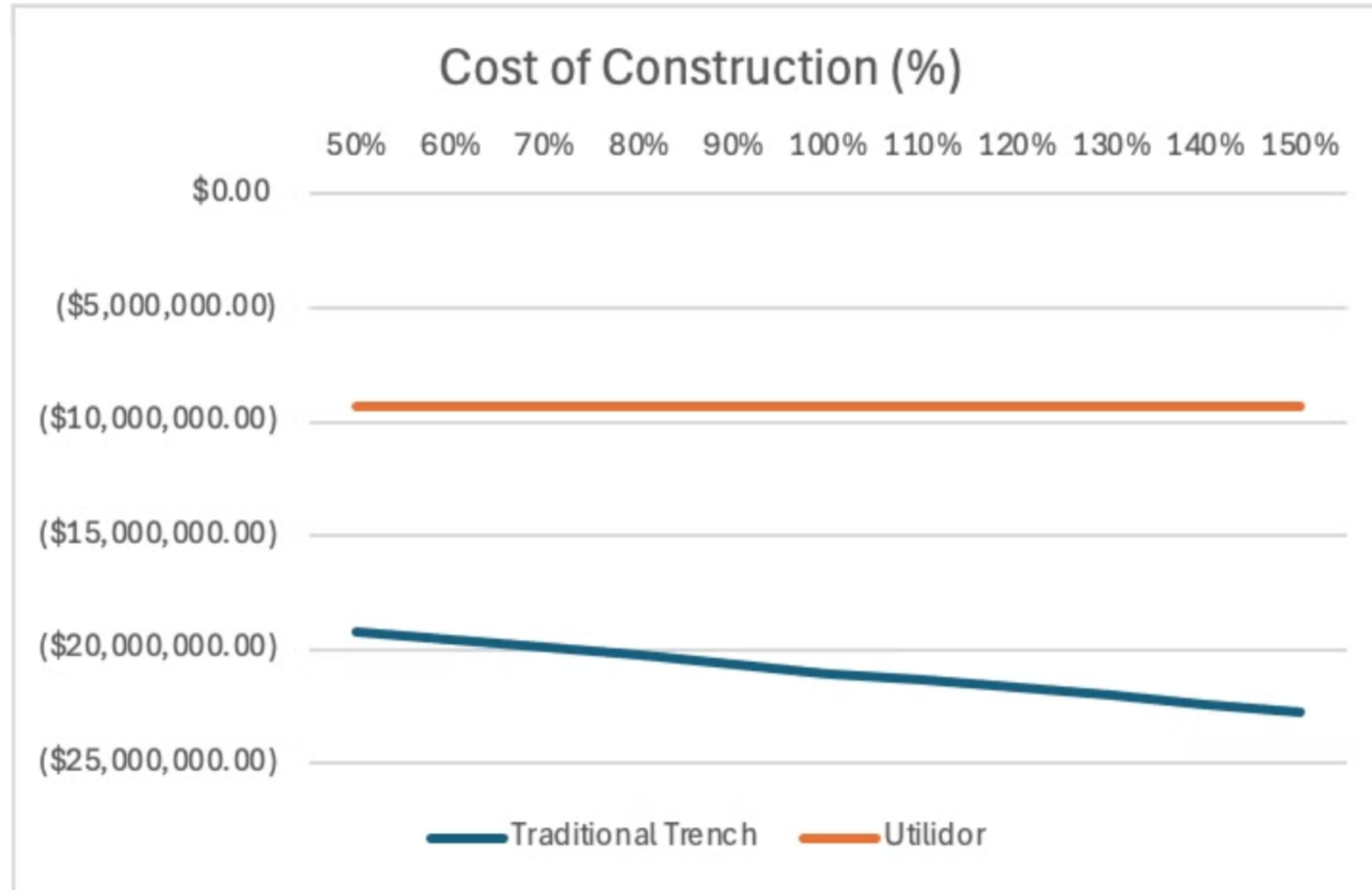
Sensitivity Analysis - Discount Rate



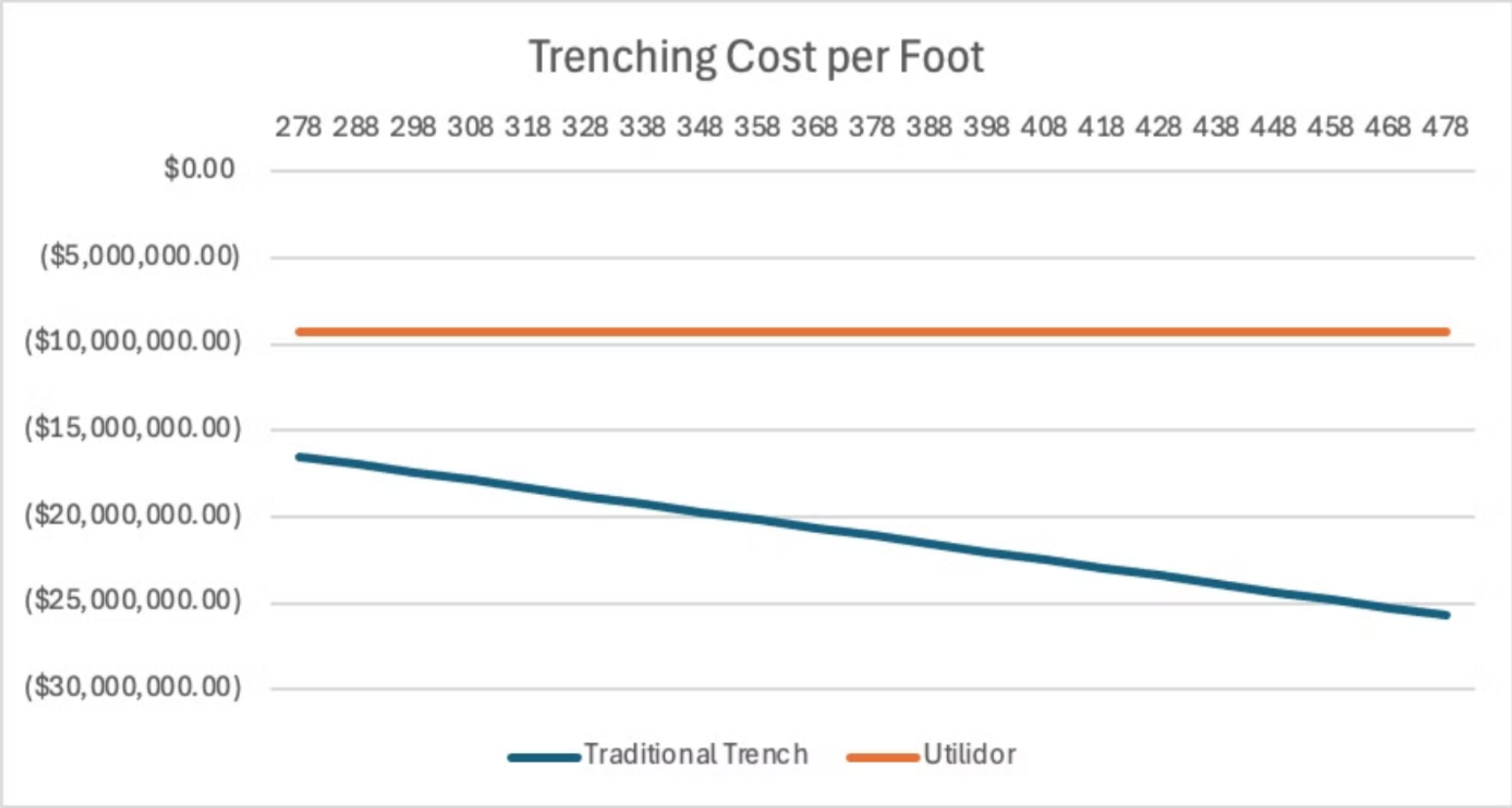
Sensitivity Analysis - Number of Street Cuts





Sensitivity Analysis - Cost of Construction



Sensitivity Analysis - Trenching Cost per Foot



Traditional vs Utilidor: After recalculating debt service for O+M after 40 years

Traditional Trench Method Total	\$ 1,065,892,907.26	\$21,104,722.32 (PV)
Total Debt Service for Original Construction Costs	\$ 177,716,069.38	
DOT Resurfacing Costs	\$6,771,424.98	
Private Utility Trenching Costs	\$ 881,405,412.91	
Utilidor Total	\$467,846,260.86	\$9,263,374.73 (PV)
Total Debt Service for Original Costs	\$369,777,242.46	
Total debt service for O+M	\$98,069,018.41	
Traditional / Utilidor	2.28 	2.28 

Conclusion

The Worth Street project presents a compelling case for the utilization of the utilidor method. Despite higher initial costs, the utilidor approach offers significant long-term benefits in terms of avoided excavations, lower maintenance costs, and enhanced sustainability.

