

Stand Alone Project Summary: Davenport Project

	ITEM/PROJECT	ESTIMATED
1		
2	Davenport Fiber and Outside Plant	\$1,478,243.99
3	Davenport Shelter/Equipment	\$45,422.77
4	Network Construction Subtotal	\$1,523,666.76
5	Project Management, Network Engineering, Integration, and Testing	\$228,550.01
6	Engineering, Construction Inspection, Permitting and Fees	\$169,871.21
7	Railroad Permitting (0 crossing) - engineering and fees	\$0.00
8	Misc. Fees, and Technical Services	\$76,183.34
9	Bookkeeping and Administration	\$3,000.00
10	Other Costs Subtotal	\$477,604.56
11	Contingency (10%)	\$200,127.13
12	Project Total	\$2,201,398.46

Total Linear Construction	16.99 miles
Total Underground Construction	16.56 miles
Total Aerial Construction	2,242 feet
Buildings Passed	593
Buildings Connected	12

Notes/Assumptions:

This includes the backbone link from the center of the County up to Davenport as well as a modest FTTP network in Davenport.

It should be noted that due to Rt. 1 being designated a Scenic Highway any portion of the route must be underground where visible from the highway.

Davenport - Backbone and limited drops

V1	VARIABLE	VALUE	NOTES
V2	Aerial Construction percentage	2.50%	
V3	Trenching percentage	10.00%	
V4	Boring percentage	20.00%	
V5	Vibratory Plow	67.50%	
V6	Linear construction length	89,692 feet	Length of segment in feet.
V7	Underground Construction	87,450 feet	
V8	Aerial Construction	2,242 feet	
V9	Conduit Exists	0 feet	
V10	Poles (for make ready)	8 poles	
V11	Handholes	60	Number of handholes for the segment.
V12	FOSCs	60	
V13	Optimism	5	0-10 scale used in Best Estimate column (10 is best)
V14	Buildings Passed	593	368 Residential, 225 Business
V15	Take Rate	2.00%	
V16	Drop Construction	12	

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Generic 1.25" Conduit	2 87,450	\$0.40	\$0.50	\$69,960.00	\$87,450.00	\$78,705.00
3	Buried Fiber Marker Posts/Medallions	180	\$6.00	\$12.00	\$1,080.00	\$2,160.00	\$1,620.00
4	144 Strand Fiber Optic Cable (avg strand count)	89,692	\$0.80	\$0.95	\$71,753.60	\$85,207.40	\$78,480.50
5	Slack Fiber (50' per hand hole)	2,990	\$0.80	\$0.95	\$2,392.00	\$2,840.50	\$2,616.25
6	Trace Wire - Insulated 12AWG or better	87,450	\$0.10	\$0.15	\$8,745.00	\$13,117.50	\$10,931.25
7	Muletape 1250P (3000ft reel) or equivalent	30	\$115.00	\$230.00	\$3,450.00	\$6,900.00	\$5,175.00
8	Handhole - 24x30x24 Concrete Polymer (incl. Lid)	60	\$300.00	\$350.00	\$17,938.40	\$20,928.13	\$19,433.27
9	Handhole Installation Materials (Gravel, Straw, etc.)	60	\$5.00	\$10.00	\$298.97	\$597.95	\$448.46
10	FOSC (144 count TYCO Type B or equivalent)	60	\$125.00	\$250.00	\$7,474.33	\$14,948.67	\$11,211.50
11							
12	Aerial Cable Placement	2,242	\$2.00	\$5.00	\$4,484.00	\$11,210.00	\$7,847.00
13	Make Ready Heavy	0	\$450.00	\$1,000.00	\$0.00	\$0.00	\$0.00
14	Make Ready Light	8	\$200.00	\$450.00	\$1,600.00	\$3,600.00	\$2,600.00
15	Pole Replacement	0	\$1,200.00	\$2,400.00	\$0.00	\$0.00	\$0.00
16	Trenching	8,970	\$8.00	\$10.00	\$71,760.00	\$89,700.00	\$80,730.00
17	Boring (Road Crossings)	17,939	\$25.00	\$40.00	\$448,475.00	\$717,560.00	\$583,017.50
18	Direct Bury / Vibratory Plow	60,543	\$3.00	\$5.00	\$181,629.00	\$302,715.00	\$242,172.00
19	Handhole Installation	60	\$600.00	\$800.00	\$35,876.80	\$47,835.73	\$41,856.27
20	FOSC Assembly and Installation	12	\$350.00	\$600.00	\$4,200.00	\$7,200.00	\$5,700.00
21	Drop Construction (average cost per drop)	12	\$2,750.00	\$5,000.00	\$33,000.00	\$60,000.00	\$46,500.00
22	Splicing (per splice estimate)	8,640	\$25.00	\$35.00	\$216,000.00	\$302,400.00	\$259,200.00
23	Total:				\$1,180,117.11	\$1,776,370.88	\$1,478,243.99
24							

25	Notes/Assumptions: -Estimate includes funding for drop construction for 2.00% of the buildings passed.						
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S1	ITEM	VALUE
S2	Total Materials	\$208,621.23
S3	Total Labor	\$1,269,622.77
S4	OSP - Fiber Construction	\$1,478,243.99

Davenport - Shelter and Equipment

V1	VARIABLE	VALUE	NOTES
V2	Buildings Passed	593	
V3	Initial Sign Up	2.00%	
V4	Initial ONTs/Equip.	12	
V5	Optimism	5	0-10 scale used in Best Estimate column (10 is best)

1	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Small Shelter	1	\$9,000.00	\$14,000.00	\$9,000.00	\$14,000.00	\$11,500.00
3	Shelter Installation	1	\$4,000.00	\$6,000.00	\$4,000.00	\$6,000.00	\$5,000.00
4	Patch Panel (144 port)	5	\$3,000.00	\$4,500.00	\$15,000.00	\$22,500.00	\$18,750.00
5	New Power Service / Installation	1	\$500.00	\$1,250.00	\$500.00	\$1,250.00	\$875.00
6	Patch Cables (POP)	12	\$14.00	\$25.00	\$166.04	\$296.50	\$231.27
7	Patch Cables (Customer Premises)	12	\$20.00	\$30.00	\$237.20	\$355.80	\$296.50
8	Calix E7-2 Shelf	1	\$600.00	\$700.00	\$600.00	\$700.00	\$650.00
9	Calix E7-2 GE24 (FTTx Line Card)	1	\$3,800.00	\$4,000.00	\$3,800.00	\$4,000.00	\$3,900.00
10	Calix 10G Optics	2	\$300.00	\$350.00	\$600.00	\$700.00	\$650.00
11	Calix CSFP (FTTx Optics)	11	\$160.00	\$180.00	\$1,760.00	\$1,980.00	\$1,870.00
12	Calix 48V DC System Retrofit Kit	1	\$1,500.00	\$1,900.00	\$1,500.00	\$1,900.00	\$1,700.00
13							
14							
15							
16							
17							
18							
19					\$37,163.24	\$53,682.30	\$45,422.77
20							
21	Notes/Assumptions:						

S1	ITEM	VALUE
	OSP	\$36,125.00
	Equipment	\$9,297.77
S2	Core Equipment & Pre-fab shelters	\$45,422.77

Urban Core - Summary

	ITEM/PROJECT	ESTIMATED
1		
2	Urban Core Fiber and Outside Plant	\$941,596.38
3	Urban Core Equipment	\$17,310.43
4	Network Construction Subtotal	\$958,906.80
5	Project Management, Network Engineering, Integration, and Testing	\$143,836.02
6	Engineering, Construction Inspection, Permitting and Fees	\$49,748.11
7	Misc. Fees, and Technical Services	\$47,945.34
8	Bookkeeping and Administration	\$3,000.00
9	Other Costs Subtotal	\$244,529.47
10	Contingency (10%)	\$120,343.63
11	Project Total	\$1,323,779.90

Total Linear Construction	4.97 miles
Total Underground Construction	4.48 miles
Total Aerial Construction	2,626 feet
Buildings Passed	553
Buildings Connected	28

Notes/Assumptions:

This urban core is required if any of the three urban segments (Live Oak, Medical Area, or the Upper 41st Avenue Area) are to be built. This assumes that we can locate equipment at the Cabrillo College campus which is a logical meet-me point for this portion of the network.

Urban Core - Backbone and Limited Drops

V1	VARIABLE	VALUE	NOTES
V2	Aerial Construction percentage	10.00%	
V3	Trenching percentage	10.00%	
V4	Boring percentage	70.00%	
V5	Vibratory Plow	10.00%	
V6	Linear construction length	26,267 feet	Length of segment in feet.
V7	Underground Construction	23,641 feet	
V8	Aerial Construction	2,626 feet	
V9	Conduit Exists	0 feet	
V10	Poles (for make ready)	9 poles	
V11	Handholes	38	Number of handholes for the segment.
V12	FOSCs	19	
V13	Optimism	5	0-10 scale used in Best Estimate column (10 is best)
V14	Buildings Passed	553	377 Residents, 176 Businesses
V15	Take Rate	5.00%	
V16	Drop Construction	28	

1	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Generic 1.25" Conduit	2 23,641	\$0.40	\$0.50	\$18,912.80	\$23,641.00	\$21,276.90
3	Buried Fiber Marker Posts/Medallions	53	\$6.00	\$12.00	\$318.00	\$636.00	\$477.00
4	144 Strand Fiber Optic Cable (avg strand count)	26,267	\$0.80	\$0.95	\$21,013.60	\$24,953.65	\$22,983.63
5	Slack Fiber (50' per hand hole)	1,880	\$0.80	\$0.95	\$1,504.00	\$1,786.00	\$1,645.00
6	Trace Wire - Insulated 12AWG or better	23,641	\$0.10	\$0.15	\$2,364.10	\$3,546.15	\$2,955.13
7	Muletape 1250P (3000ft reel) or equivalent	9	\$115.00	\$230.00	\$1,035.00	\$2,070.00	\$1,552.50
8	Handhole - 24x30x24 Concrete Polymer (incl. Lid)	38	\$300.00	\$350.00	\$11,257.29	\$13,133.50	\$12,195.39
9	Handhole Installation Materials (Gravel, Straw, etc.)	38	\$5.00	\$10.00	\$187.62	\$375.24	\$281.43
10	FOSC (144 count TYCO Type B or equivalent)	19	\$125.00	\$250.00	\$2,345.27	\$4,690.54	\$3,517.90
11							
12	Aerial Cable Placement	2,626	\$2.00	\$5.00	\$5,252.00	\$13,130.00	\$9,191.00
13	Make Ready Heavy	0	\$450.00	\$1,000.00	\$0.00	\$0.00	\$0.00
14	Make Ready Light	9	\$200.00	\$450.00	\$1,800.00	\$4,050.00	\$2,925.00
15	Pole Replacement	0	\$1,200.00	\$2,400.00	\$0.00	\$0.00	\$0.00
16	Trenching	2,627	\$8.00	\$10.00	\$21,016.00	\$26,270.00	\$23,643.00
17	Boring (Road Crossings)	18,387	\$25.00	\$40.00	\$459,675.00	\$735,480.00	\$597,577.50
18	Direct Bury / Vibratory Plow	2,627	\$3.00	\$5.00	\$7,881.00	\$13,135.00	\$10,508.00
19	Handhole Installation	38	\$600.00	\$800.00	\$22,514.57	\$30,019.43	\$26,267.00
20	FOSC Assembly and Installation	28	\$350.00	\$600.00	\$9,800.00	\$16,800.00	\$13,300.00
21	Drop Construction (average cost per drop)	28	\$2,750.00	\$5,000.00	\$77,000.00	\$140,000.00	\$108,500.00
22	Splicing (per splice estimate)	2,760	\$25.00	\$35.00	\$69,000.00	\$96,600.00	\$82,800.00
23	Total:				\$732,876.25	\$1,150,316.51	\$941,596.38
24							

25	Notes/Assumptions: -Estimate includes funding for drop construction for 5.00% of the buildings passed.						
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S1	ITEM	VALUE
S2	Total Materials	\$66,884.88
S3	Total Labor	\$874,711.50
S4	OSP - Fiber Construction	\$941,596.38

Urban Core - Equipment

V1	VARIABLE	VALUE	NOTES
V2	Buildings Passed	553	
V3	Initial Sign Up	5.00%	
V4	Initial ONTs/Equip.	28	
V5	Optimism	5	0-10 scale used in Best Estimate column (10 is best)

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Medium Telecom Cabinet	0	\$4,500.00	\$8,500.00	\$0.00	\$0.00	\$0.00
3	Cabinet Foundation and Installation	0	\$300.00	\$800.00	\$0	\$0.00	\$0.00
4	Patch Panel (144 port)	1	\$3,000.00	\$4,500.00	\$3,000	\$4,500.00	\$3,750.00
5	New Power Service / Installation	0	\$500.00	\$1,250.00	\$0	\$0.00	\$0.00
6	Patch Cables (POP)	28	\$14.00	\$25.00	\$387.10	\$691.25	\$539.18
7	Patch Cables (Customer Premises)	28	\$20.00	\$30.00	\$553	\$829.50	\$691.25
8	Calix E7-2 Shelf	1	\$600.00	\$700.00	\$600	\$700.00	\$650.00
9	Calix E7-2 GE24 (FTTx Line Card)	2	\$3,800.00	\$4,000.00	\$7,600	\$8,000.00	\$7,800.00
10	Calix 10G Optics	2	\$300.00	\$350.00	\$600	\$700.00	\$650.00
11	Calix CSFP (FTTx Optics)	19	\$160.00	\$180.00	\$3,040	\$3,420.00	\$3,230.00
12	Calix 48V DC System Retrofit Kit	0	\$1,500.00	\$1,900.00	\$0.00	\$0.00	\$0.00
13	Battery Backup System	0	\$1,500.00	\$1,900.00	\$0.00	\$0.00	\$0.00
14	Small Network Core Router	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
15					\$15,780.10	\$18,840.75	\$17,310.43
16							
17	Notes/Assumptions:						

S1	ITEM	VALUE
	OSP	\$3,750.00
	Equipment	\$13,560.43
S2	Core Equipment & Pre-fab shelters	\$17,310.43

Cabinet Foundation and Installation

Stand Alone Project: Live Oak

	ITEM/PROJECT	ESTIMATED
1		
2	Live Oak Fiber and Outside Plant	\$2,442,946.59
3	Live Oak Cabinet/Equipment	\$58,074.40
4	Network Construction Subtotal	\$2,501,020.99
5	Project Management, Network Engineering, Integration, and Testing	\$375,153.15
6	Engineering, Construction Inspection, Permitting and Fees	\$173,804.92
7	Railroad Permitting (0 crossing) - engineering and fees	\$0.00
8	Misc. Fees, and Technical Services	\$125,051.05
9	Bookkeeping and Administration	\$3,000.00
10	Other Costs Subtotal	\$677,009.12
11	Contingency (10%)	\$317,803.01
12	Project Total	\$3,495,833.12

Total Linear Construction	17.38 miles
Total Underground Construction	15.64 miles
Total Aerial Construction	9,176 feet
Buildings Passed	2,584
Buildings Connected	130

Notes/Assumptions:

This covers a dense residential area with few businesses.

Live Oak - FTTP

VI	VARIABLE	VALUE	NOTES
V2	Aerial Construction percentage	10.00%	
V3	Trenching percentage	25.00%	
V4	Boring percentage	35.00%	
V5	Vibratory Plow	30.00%	
V6	Linear construction length	91,769 feet	Length of segment in feet.
V7	Underground Construction	82,593 feet	
V8	Aerial Construction	9,176 feet	
V9	Conduit Exists	0 feet	
V10	Poles (for make ready)	31 poles	
V11	Handholes	131	Number of handholes for the segment.
V12	FOSCs	66	
V13	Optimism	5	0-10 scale used in Best Estimate column (10 is best)
V14	Buildings Passed	2,584	2,215 Residential, 269 Business
V15	Take Rate	5.00%	
V16	Drop Construction	130	

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Generic 1.25" Conduit	2 82,593	\$0.40	\$0.50	\$66,074.40	\$82,593.00	\$74,333.70
3	Buried Fiber Marker Posts/Medallions	184	\$6.00	\$12.00	\$1,104.00	\$2,208.00	\$1,656.00
4	144 Strand Fiber Optic Cable (avg strand count)	91,769	\$0.80	\$0.95	\$73,415.20	\$87,180.55	\$80,297.88
5	Slack Fiber (50' per hand hole)	6,555	\$0.80	\$0.95	\$5,244.00	\$6,227.25	\$5,735.63
6	Trace Wire - Insulated 12AWG or better	82,593	\$0.10	\$0.15	\$8,259.30	\$12,388.95	\$10,324.13
7	Muletape 1250P (3000ft reel) or equivalent	31	\$115.00	\$230.00	\$3,565.00	\$7,130.00	\$5,347.50
8	Handhole - 24x30x24 Concrete Polymer (incl. Lid)	131	\$300.00	\$350.00	\$39,329.57	\$45,884.50	\$42,607.04
9	Handhole Installation Materials (Gravel, Straw, etc.)	131	\$5.00	\$10.00	\$655.49	\$1,310.99	\$983.24
10	FOSC (144 count TYCO Type B or equivalent)	66	\$125.00	\$250.00	\$8,193.66	\$16,387.32	\$12,290.49
11							
12	Aerial Cable Placement	9,176	\$2.00	\$5.00	\$18,352.00	\$45,880.00	\$32,116.00
13	Make Ready Heavy	0	\$450.00	\$1,000.00	\$0.00	\$0.00	\$0.00
14	Make Ready Light	31	\$200.00	\$450.00	\$6,200.00	\$13,950.00	\$10,075.00
15	Pole Replacement	0	\$1,200.00	\$2,400.00	\$0.00	\$0.00	\$0.00
16	Trenching	22,943	\$8.00	\$10.00	\$183,544.00	\$229,430.00	\$206,487.00
17	Boring (Road Crossings)	32,120	\$25.00	\$40.00	\$803,000.00	\$1,284,800.00	\$1,043,900.00
18	Direct Bury / Vibratory Plow	27,531	\$3.00	\$5.00	\$82,593.00	\$137,655.00	\$110,124.00
19	Handhole Installation	131	\$600.00	\$800.00	\$78,659.14	\$104,878.86	\$91,769.00
20	FOSC Assembly and Installation	130	\$350.00	\$600.00	\$45,500.00	\$78,000.00	\$61,750.00
21	Drop Construction (average cost per drop)	130	\$2,750.00	\$5,000.00	\$357,500.00	\$650,000.00	\$503,750.00
22	Splicing (per splice estimate)	4,980	\$25.00	\$35.00	\$124,500.00	\$174,300.00	\$149,400.00
23	Total:				\$1,905,688.77	\$2,980,204.41	\$2,442,946.59
24							

Notes/Assumptions:
-Estimate includes funding for drop construction for 5.00% of the buildings passed.

SI	ITEM	VALUE
S2	Total Materials	\$233,575.59
S3	Total Labor	\$2,209,371.00
S4	OSP - Fiber Construction	\$2,442,946.59

Live Oak - Cabinet and Equipment

VI	VARIABLE	VALUE	NOTES
V2	Buildings Passed	2,584	
V3	Initial Sign Up	5.00%	
V4	Initial ONTs/Equip.	129	
V5	Optimism	5	0-10 scale used in Best Estimate column (10 is best)

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Medium Telecom Cabinet	1	\$4,500.00	\$8,500.00	\$4,500.00	\$8,500.00	\$6,500.00
3	Cabinet Foundation and Installation	1	\$300.00	\$800.00	\$300	\$800.00	\$550.00
4	Patch Panel (144 port)	1	\$3,000.00	\$4,500.00	\$3,000	\$4,500.00	\$3,750.00
5	New Power Service / Installation	1	\$500.00	\$1,250.00	\$500	\$1,250.00	\$875.00
6	Patch Cables (POP)	129	\$14.00	\$25.00	\$1,808.80	\$3,230.00	\$2,519.40
7	Patch Cables (Customer Premises)	129	\$20.00	\$30.00	\$2,584	\$3,876.00	\$3,230.00
8	Calix E7-2 Shelf	3	\$600.00	\$700.00	\$1,800	\$2,100.00	\$1,950.00
9	Calix E7-2 GE24 (FTTx Line Card)	6	\$3,800.00	\$4,000.00	\$22,800	\$24,000.00	\$23,400.00
10	Calix Gigabit Optics	6	\$0.00	\$0.00	\$0	\$0.00	\$0.00
11	Calix CSFP (FTTx Optics)	70	\$160.00	\$180.00	\$11,200	\$12,600.00	\$11,900.00
12	Calix 48V DC System Retrofit Kit	1	\$1,500.00	\$1,900.00	\$1500	\$1,900.00	\$1,700.00
13	Battery Backup System	1	\$1,500.00	\$1,900.00	\$1500	\$1,900.00	\$1,700.00
14	Small Network Core Router	0	\$0.00	\$0.00	\$0	\$0.00	\$0.00
15					\$51,492.80	\$64,656.00	\$58,074.40
16							
17	Notes/Assumptions:						

SI	ITEM	VALUE
	OSP	\$11,675.00
	Equipment	\$46,399.40
S2	Core Equipment & Pre-fab shelters	\$58,074.40

Stand Alone Project: Medical Focus Area

	ITEM/PROJECT	ESTIMATED
1		
2	Medical Focus Area Fiber and Outside Plant	\$515,739.77
3	Medical Focus Area Equipment	\$21,032.35
4	Network Construction Subtotal	\$536,772.12
5	Project Management, Network Engineering, Integration, and Testing	\$80,515.82
6	Engineering, Construction Inspection, Permitting and Fees	\$38,482.95
7	Misc. Fees, and Technical Services	\$26,838.61
8	Bookkeeping and Administration	\$3,000.00
9	Other Costs Subtotal	\$148,837.38
10	Contingency (10%)	\$68,560.95
11	Project Total	\$754,170.45

Total Linear Construction	3.85 miles
Total Underground Construction	3.46 miles
Total Aerial Construction	2,031 feet
Buildings Passed	446
Buildings Connected	23

Notes/Assumptions:

Covering the Medical Focus Area, this is the lowest cost focus area to build fiber. This also may provide the most benefit for the expense as this portion of the County has DSL and limited High Speed Cable Internet, but has a need for symmetric bandwidth.

Medical Focus Area - FTTP

V1	VARIABLE	VALUE	NOTES
V2	Aerial Construction percentage	10.00%	
V3	Trenching percentage	25.00%	
V4	Boring percentage	35.00%	
V5	Vibratory Plow	30.00%	
V6	Linear construction length	20,319 feet	Length of segment in feet.
V7	Underground Construction	18,288 feet	
V8	Aerial Construction	2,031 feet	
V9	Conduit Exists	0 feet	
V10	Poles (for make ready)	7 poles	
V11	Handholes	29	Number of handholes for the segment.
V12	FOSCs	15	
V13	Optimism	5	0-10 scale used in Best Estimate column (10 is best)
V14	Buildings Passed	446	283 Residential, 163 Business
V15	Take Rate	5.00%	
V16	Drop Construction	23	

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Generic 1.25" Conduit	2 18,288	\$0.40	\$0.50	\$14,630.40	\$18,288.00	\$16,459.20
3	Buried Fiber Marker Posts/Medallions	41	\$6.00	\$12.00	\$246.00	\$492.00	\$369.00
4	144 Strand Fiber Optic Cable (avg strand count)	20,319	\$0.80	\$0.95	\$16,255.20	\$19,303.05	\$17,779.13
5	Slack Fiber (50' per hand hole)	1,451	\$0.80	\$0.95	\$1,160.80	\$1,378.45	\$1,269.63
6	Trace Wire - Insulated 12AWG or better	18,288	\$0.10	\$0.15	\$1,828.80	\$2,743.20	\$2,286.00
7	Muletape 1250P (3000ft reel) or equivalent	7	\$115.00	\$230.00	\$805.00	\$1,610.00	\$1,207.50
8	Handhole - 24x30x24 Concrete Polymer (incl. Lid)	29	\$300.00	\$350.00	\$8,708.14	\$10,159.50	\$9,433.82
9	Handhole Installation Materials (Gravel, Straw, etc.)	29	\$5.00	\$10.00	\$145.14	\$290.27	\$217.70
10	FOSC (144 count TYCO Type B or equivalent)	15	\$125.00	\$250.00	\$1,814.20	\$3,628.39	\$2,721.29
11							
12	Aerial Cable Placement	2,031	\$2.00	\$5.00	\$4,062.00	\$10,155.00	\$7,108.50
13	Make Ready Heavy	0	\$450.00	\$1,000.00	\$0.00	\$0.00	\$0.00
14	Make Ready Light	7	\$200.00	\$450.00	\$1,400.00	\$3,150.00	\$2,275.00
15	Pole Replacement	0	\$1,200.00	\$2,400.00	\$0.00	\$0.00	\$0.00
16	Trenching	5,080	\$8.00	\$10.00	\$40,640.00	\$50,800.00	\$45,720.00
17	Boring (Road Crossings)	7,112	\$25.00	\$40.00	\$177,800.00	\$284,480.00	\$231,140.00
18	Direct Bury / Vibratory Plow	6,096	\$3.00	\$5.00	\$18,288.00	\$30,480.00	\$24,384.00
19	Handhole Installation	29	\$600.00	\$800.00	\$17,416.29	\$23,221.71	\$20,319.00
20	FOSC Assembly and Installation	23	\$350.00	\$600.00	\$8,050.00	\$13,800.00	\$10,925.00
21	Drop Construction (average cost per drop)	23	\$2,750.00	\$5,000.00	\$63,250.00	\$115,000.00	\$89,125.00
22	Splicing (per splice estimate)	1,100	\$25.00	\$35.00	\$27,500.00	\$38,500.00	\$33,000.00
23	Total:				\$403,999.96	\$627,479.58	\$515,739.77
24							
25	Notes/Assumptions: -Estimate includes funding for drop construction for 5.00% of the buildings passed.						

S1	ITEM	VALUE
S2	Total Materials	\$51,743.27
S3	Total Labor	\$463,996.50
S4	OSP - Fiber Construction	\$515,739.77

Medical Focus Area - Equipment

V1	VARIABLE	VALUE	NOTES
V2	Buildings Passed	446	
V3	Initial Sign Up	5.00%	
V4	Initial ONTs/Equip.	22	
V5	Optimism	5	0-10 scale used in Best Estimate column (10 is best)

1	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Medium Telecom Cabinet	1	\$4,500.00	\$8,500.00	\$4,500.00	\$8,500.00	\$6,500.00
3	Cabinet Foundation and Installation	0	\$300.00	\$800.00	\$0	\$0.00	\$0.00
4	Patch Panel (144 port)	1	\$3,000.00	\$4,500.00	\$3,000	\$4,500.00	\$3,750.00
5	New Power Service / Installation	0	\$500.00	\$1,250.00	\$0	\$0.00	\$0.00
6	Patch Cables (POP)	22	\$14.00	\$25.00	\$312.20	\$557.50	\$434.85
7	Patch Cables (Customer Premises)	22	\$20.00	\$30.00	\$446	\$669.00	\$557.50
8	Calix E7-2 Shelf	1	\$600.00	\$700.00	\$600	\$700.00	\$650.00
9	Calix E7-2 GE24 (FTTx Line Card)	1	\$3,800.00	\$4,000.00	\$3,800	\$4,000.00	\$3,900.00
10	Calix 10G Optics	2	\$300.00	\$350.00	\$600	\$700.00	\$650.00
11	Calix CSFP (FTTx Optics)	17	\$160.00	\$180.00	\$2,720	\$3,060.00	\$2,890.00
12	Calix 48V DC System Retrofit Kit	1	\$1,500.00	\$1,900.00	\$1,500	\$1,900.00	\$1,700.00
13					\$17,478.20	\$24,586.50	\$21,032.35
14							
15	Notes/Assumptions:						

S1	ITEM	VALUE
	OSP	\$10,250.00
	Equipment	\$10,782.35
S2	Core Equipment & Pre-fab shelters	\$21,032.35

Stand Alone Project: Upper 41st Avenue

	ITEM/PROJECT	ESTIMATED
1		
2	Upper 41st Avenue Fiber and Outside Plant	\$177,746.61
3	Upper 41st Avenue Equipment	\$19,505.05
4	Network Construction Subtotal	\$197,251.66
5	Project Management, Network Engineering, Integration, and Testing	\$29,587.75
6	Engineering, Construction Inspection, Permitting and Fees	\$10,178.03
7	Misc. Fees, and Technical Services	\$9,862.58
8	Bookkeeping and Administration	\$3,000.00
9	Other Costs Subtotal	\$52,628.36
10	Contingency (10%)	\$24,988.00
11	Project Total	\$274,868.02

Total Linear Construction	1.02 miles
Total Underground Construction	0.92 miles
Total Aerial Construction	537 feet
Buildings Passed	218
Buildings Connected	11

Notes/Assumptions:

Upper 41st Avenue - FTTP

VI	VARIABLE	VALUE	NOTES
V2	Aerial Construction percentage	10.00%	
V3	Trenching percentage	25.00%	
V4	Boring percentage	35.00%	
V5	Vibratory Plow	30.00%	
V6	Linear construction length	5,374 feet	Length of segment in feet.
V7	Underground Construction	4,837 feet	
V8	Aerial Construction	537 feet	
V9	Conduit Exists	0 feet	
V10	Poles (for make ready)	2 poles	
V11	Handholes	11	Number of handholes for the segment.
V12	FOSCs	11	
V13	Optimism	5	0-10 scale used in Best Estimate column (10 is best)
V14	Buildings Passed	218	136 Residential, 82 Business
V15	Take Rate	5.00%	
V16	Drop Construction	11	

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Generic 1.25" Conduit	2 4,837	\$0.40	\$0.50	\$3,869.60	\$4,837.00	\$4,353.30
3	Buried Fiber Marker Posts/Medallions	11	\$6.00	\$12.00	\$66.00	\$132.00	\$99.00
4	144 Strand Fiber Optic Cable (avg strand count)	5,374	\$0.80	\$0.95	\$4,299.20	\$5,105.30	\$4,702.25
5	Slack Fiber (50' per hand hole)	537	\$0.80	\$0.95	\$429.60	\$510.15	\$469.88
6	Trace Wire - Insulated 12AWG or better	4,837	\$0.10	\$0.15	\$483.70	\$725.55	\$604.63
7	Muletape 1250P (3000ft reel) or equivalent	2	\$115.00	\$230.00	\$230.00	\$460.00	\$345.00
8	Handhole - 24x30x24 Concrete Polymer (incl. Lid)	11	\$300.00	\$350.00	\$3,224.40	\$3,761.80	\$3,493.10
9	Handhole Installation Materials (Gravel, Straw, etc.)	11	\$5.00	\$10.00	\$53.74	\$107.48	\$80.61
10	FOSC (144 count TYCO Type B or equivalent)	11	\$125.00	\$250.00	\$1,343.50	\$2,687.00	\$2,015.25
11							
12	Aerial Cable Placement	537	\$2.00	\$5.00	\$1,074.00	\$2,685.00	\$1,879.50
13	Make Ready Heavy	0	\$450.00	\$1,000.00	\$0.00	\$0.00	\$0.00
14	Make Ready Light	2	\$200.00	\$450.00	\$400.00	\$900.00	\$650.00
15	Pole Replacement	0	\$1,200.00	\$2,400.00	\$0.00	\$0.00	\$0.00
16	Trenching	1,344	\$8.00	\$10.00	\$10,752.00	\$13,440.00	\$12,096.00
17	Boring (Road Crossings)	1,881	\$25.00	\$40.00	\$47,025.00	\$75,240.00	\$61,132.50
18	Direct Bury / Vibratory Plow	1,613	\$3.00	\$5.00	\$4,839.00	\$8,065.00	\$6,452.00
19	Handhole Installation	11	\$600.00	\$800.00	\$6,448.80	\$8,598.40	\$7,523.60
20	FOSC Assembly and Installation	11	\$350.00	\$600.00	\$3,850.00	\$6,600.00	\$5,225.00
21	Drop Construction (average cost per drop)	11	\$2,750.00	\$5,000.00	\$30,250.00	\$55,000.00	\$42,625.00
22	Splicing (per splice estimate)	800	\$25.00	\$35.00	\$20,000.00	\$28,000.00	\$24,000.00
23	Total:				\$138,638.54	\$216,854.68	\$177,746.61
24							

25	Notes/Assumptions: -Estimate includes funding for drop construction for 5.00% of the buildings passed.						
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SI	ITEM	VALUE
S2	Total Materials	\$16,163.01
S3	Total Labor	\$161,583.60
S4	OSP - Fiber Construction	\$177,746.61

Upper 41st Avenue - Equipment

V1	VARIABLE	VALUE	NOTES
V2	Buildings Passed	218	
V3	Initial Sign Up	5.00%	
V4	Initial ONTs/Equip.	11	
V5	Optimism	5	0-10 scale used in Best Estimate column (10 is best)

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Medium Telecom Cabinet	1	\$4,500.00	\$8,500.00	\$4,500.00	\$8,500.00	\$6,500.00
3	Cabinet Foundation and Installation	0	\$300.00	\$800.00	\$0	\$0.00	\$0.00
4	Patch Panel (144 port)	1	\$3,000.00	\$4,500.00	\$3,000	\$4,500.00	\$3,750.00
5	New Power Service / Installation	0	\$500.00	\$1,250.00	\$0	\$0.00	\$0.00
6	Patch Cables (POP)	11	\$14.00	\$25.00	\$152.60	\$272.50	\$212.55
7	Patch Cables (Customer Premises)	11	\$20.00	\$30.00	\$218	\$327.00	\$272.50
8	Calix E7-2 Shelf	1	\$600.00	\$700.00	\$600	\$700.00	\$650.00
9	Calix E7-2 GE24 (FTTx Line Card)	1	\$3,800.00	\$4,000.00	\$3,800	\$4,000.00	\$3,900.00
10	Calix 10G Optics	2	\$300.00	\$350.00	\$600	\$700.00	\$650.00
11	Calix CSFP (FTTx Optics)	11	\$160.00	\$180.00	\$1,760	\$1,980.00	\$1,870.00
12	Calix 48V DC System Retrofit Kit	1	\$1,500.00	\$1,900.00	\$1500	\$1,900.00	\$1,700.00
13					\$16,130.60	\$22,879.50	\$19,505.05
14							
15	Notes/Assumptions:						

S1	ITEM	VALUE
	OSP	\$10,250.00
	Equipment	\$9,255.05
S2	Core Equipment & Pre-fab shelters	\$19,505.05

Stand Alone Project: Aptos Area

	ITEM/PROJECT	ESTIMATED
1		
2	Aptos Area Fiber and Outside Plant	\$928,613.96
3	Aptos Area Equipment	\$20,063.10
4	Network Construction Subtotal	\$948,677.06
5	Project Management, Network Engineering, Integration, and Testing	\$142,301.56
6	Engineering, Construction Inspection, Permitting and Fees	\$64,560.61
7	Misc. Fees, and Technical Services	\$47,433.85
8	Bookkeeping and Administration	\$3,000.00
9	Other Costs Subtotal	\$257,296.02
10	Contingency (10%)	\$120,597.31
11	Project Total	\$1,326,570.38

Total Linear Construction	6.46 miles
Total Underground Construction	5.16 miles
Total Aerial Construction	6,817 feet
Buildings Passed	632
Buildings Connected	16

Notes/Assumptions:

This segment includes a backbone link back to the center of the County and local FTTP in the focus area.

Aptos Area - FTTP

VI	VARIABLE	VALUE	NOTES
V2	Aerial Construction percentage	20.00%	
V3	Trenching percentage	20.00%	
V4	Boring percentage	50.00%	
V5	Vibratory Plow	10.00%	
V6	Linear construction length	34,088 feet	Length of segment in feet.
V7	Underground Construction	27,271 feet	
V8	Aerial Construction	6,817 feet	
V9	Conduit Exists	0 feet	
V10	Poles (for make ready)	23 poles	
V11	Handholes	40	Number of handholes for the segment.
V12	FOSCs	40	
V13	Optimism	5	0-10 scale used in Best Estimate column (10 is best)
V14	Buildings Passed	632	375 Residential, 257 Businesses
V15	Take Rate	2.50%	
V16	Drop Construction	16	

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Generic 1.25" Conduit	2 27,271	\$0.40	\$0.50	\$21,816.80	\$27,271.00	\$24,543.90
3	Buried Fiber Marker Posts/Medallions	69	\$6.00	\$12.00	\$414.00	\$828.00	\$621.00
4	144 Strand Fiber Optic Cable (avg strand count)	34,088	\$0.80	\$0.95	\$27,270.40	\$32,383.60	\$29,827.00
5	Slack Fiber (50' per hand hole)	2,005	\$0.80	\$0.95	\$1,604.00	\$1,904.75	\$1,754.38
6	Trace Wire - Insulated 12AWG or better	27,271	\$0.10	\$0.15	\$2,727.10	\$4,090.65	\$3,408.88
7	Muletape 1250P (3000ft reel) or equivalent	12	\$115.00	\$230.00	\$1,380.00	\$2,760.00	\$2,070.00
8	Handhole - 24x30x24 Concrete Polymer (incl. Lid)	40	\$300.00	\$350.00	\$12,031.06	\$14,036.24	\$13,033.65
9	Handhole Installation Materials (Gravel, Straw, etc.)	40	\$5.00	\$10.00	\$200.52	\$401.04	\$300.78
10	FOSC (144 count TYCO Type B or equivalent)	40	\$125.00	\$250.00	\$5,012.94	\$10,025.88	\$7,519.41
11							
12	Aerial Cable Placement	6,817	\$2.00	\$5.00	\$13,634.00	\$34,085.00	\$23,859.50
13	Make Ready Heavy	0	\$450.00	\$1,000.00	\$0.00	\$0.00	\$0.00
14	Make Ready Light	23	\$200.00	\$450.00	\$4,600.00	\$10,350.00	\$7,475.00
15	Pole Replacement	0	\$1,200.00	\$2,400.00	\$0.00	\$0.00	\$0.00
16	Trenching	6,818	\$8.00	\$10.00	\$54,544.00	\$68,180.00	\$61,362.00
17	Boring (Road Crossings)	17,044	\$25.00	\$40.00	\$426,100.00	\$681,760.00	\$553,930.00
18	Direct Bury / Vibratory Plow	3,409	\$3.00	\$5.00	\$10,227.00	\$17,045.00	\$13,636.00
19	Handhole Installation	40	\$600.00	\$800.00	\$24,062.12	\$32,082.82	\$28,072.47
20	FOSC Assembly and Installation	16	\$350.00	\$600.00	\$5,600.00	\$9,600.00	\$7,600.00
21	Drop Construction (average cost per drop)	16	\$2,750.00	\$5,000.00	\$44,000.00	\$80,000.00	\$62,000.00
22	Splicing (per splice estimate)	2,920	\$25.00	\$35.00	\$73,000.00	\$102,200.00	\$87,600.00
23	Total:				\$728,223.94	\$1,129,003.98	\$928,613.96
24							
25	Notes/Assumptions: -Estimate includes funding for drop construction for 2.50% of the buildings passed.						

S1	ITEM	VALUE
S2	Total Materials	\$83,078.99
S3	Total Labor	\$845,534.97
S4	OSP - Fiber Construction	\$928,613.96

Aptos Area - Equipment

V1	VARIABLE	VALUE	NOTES
V2	Buildings Passed	632	
V3	Initial Sign Up	2.50%	
V4	Initial ONTs/Equip.	16	
V5	Optimism	5	0-10 scale used in Best Estimate column (10 is best)

I	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	Medium Telecom Cabinet	1	\$4,500.00	\$8,500.00	\$4,500.00	\$8,500.00	\$6,500.00
3	Cabinet Foundation and Installation	0	\$300.00	\$800.00	\$0	\$0.00	\$0.00
4	Patch Panel (144 port)	1	\$3,000.00	\$4,500.00	\$3,000	\$4,500.00	\$3,750.00
5	New Power Service / Installation	0	\$500.00	\$1,250.00	\$0	\$0.00	\$0.00
6	Patch Cables (POP)	16	\$14.00	\$25.00	\$221.20	\$395.00	\$308.10
7	Patch Cables (Customer Premises)	16	\$20.00	\$30.00	\$316	\$474.00	\$395.00
8	Calix E7-2 Shelf	1	\$600.00	\$700.00	\$600	\$700.00	\$650.00
9	Calix E7-2 GE24 (FTTx Line Card)	1	\$3,800.00	\$4,000.00	\$3,800	\$4,000.00	\$3,900.00
10	Calix 10G Optics	2	\$300.00	\$350.00	\$600	\$700.00	\$650.00
11	Calix CSFP (FTTx Optics)	13	\$160.00	\$180.00	\$2,080	\$2,340.00	\$2,210.00
12	Calix 48V DC System Retrofit Kit	1	\$1,500.00	\$1,900.00	\$1,500	\$1,900.00	\$1,700.00
13					\$16,617.20	\$23,509.00	\$20,063.10
14							
15	Notes/Assumptions:						

S1	ITEM	VALUE
	OSP	\$10,250.00
	Equipment	\$9,813.10
S2	Core Equipment & Pre-fab shelters	\$20,063.10

Project Summary: Stand Alone Projects - minimum investment

	ITEM/PROJECT	ESTIMATED
2	Core, Spare, and Customer Premise Equipment	\$54,600.00
3	Network Construction Subtotal	\$54,600.00
4	Project Management, Network Engineering, Integration, and Testing	\$5,460.00
5	Engineering, Construction Inspection, Permitting and Fees	\$0.00
6	Business, Service Provider and Operations Development	\$75,000.00
7	Misc. Fees, and Technical Services	\$2,000.00
8	Bookkeeping and Administration	\$850.00
9	Other Costs Subtotal	\$83,310.00
10	Contingency (10%)	\$13,791.00
11	Project Total	\$151,701.00

Total Linear Construction	0 miles
Total Underground Construction	0 miles
Total Aerial Construction	0 feet
Buildings Passed	0
Buildings Connected	0

Notes/Assumptions:

If they County of Santa Cruz decides to invest in individual segments as opposed to all segments the total in this sheet is required for any investment if the County builds a "lit" network.

As an example, if only the Urban core and the Medical Office areas are to be constructed, this cost should be added to the cost of those two segments to understand the total cost for the lit network.

Core, Spare, and Other Network Equipment

V1	VARIABLE	VALUE	NOTES
V2	Weight Variable	5	0-10 scale used in Best Estimate column (10 is best)
V3	Potential Connections		
V4	Take Rate		
V5	Drop Construction	0	

1	ITEM/PROJECT	UNITS	COST(LOW)	COST(HIGH)	TOTAL (LOW)	TOTAL (HIGH)	BEST ESTIMATE (WEIGHTED AVERAGE)
2	CORE EQUIPMENT - minimum requirement						
3	Calix Advantage System Support and Maintenance (1 year)	2	\$3,500.00	\$7,500.00	\$7,000	\$15,000.00	\$11,000.00
4	CMS Server	1	\$3,000.00	\$4,500.00	\$3,000.00	\$4,500.00	\$3,750.00
5	Dell Server	1	\$2,500.00	\$3,500.00	\$2,500.00	\$3,500.00	\$3,000.00
6	Calix E7-2 GE24 (FTTx Line Card)	1	\$3,800.00	\$4,000.00	\$3,800.00	\$4,000.00	\$3,900.00
7	Battery Backup System	1	\$1,500.00	\$1,900.00	\$1,500.00	\$1,900.00	\$1,700.00
8	Medium Network Core Router	1	\$12,500.00	\$25,000.00	\$12,500.00	\$25,000.00	\$18,750.00
9	SPARE EQUIPMENT						
10	Backup Generator	1	\$1,200.00	\$1,800.00	\$1,200.00	\$1,800.00	\$1,500.00
11	Calix E7-2 Chassis	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
12	Calix GE24 Active Ethernet Card	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
13	CUSTOMER PREMISES EQUIPMENT						
14	Calix 716 GE - I	50	\$200.00	\$240.00	\$10,000.00	\$12,000.00	\$11,000.00
15			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
16			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
17			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
18			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
19	Total:				\$41,500.00	\$67,700.00	\$54,600.00
20							
21	Notes/Assumptions: Identify a storage area that can be available to contractors on a 24/7 basis.						

S1	ITEM	VALUE
	Equipment	\$43,600.00
	Customer Premises Equipment	\$11,000.00
S2	Other Equipment	\$54,600.00

Project Summary: Santa Cruz Fiber Buildout - all segments

I	ITEM/PROJECT	ESTIMATED
2	Davenport Fiber and Outside Plant	\$1,478,243.99
3	Davenport Shelter/Equipment	\$45,422.77
4	Urban Core Fiber and Outside Plant	\$941,596.38
5	Urban Core Equipment	\$17,310.43
6	Live Oak Fiber and Outside Plant	\$2,442,946.59
7	Live Oak Cabinet/Equipment	\$58,074.40
8	Medical Focus Area Fiber and Outside Plant	\$515,739.77
9	Medical Focus Area Equipment	\$21,032.35
10	Upper 41st Area Fiber and Outside Plant	\$177,746.61
11	Upper 41st Area Equipment	\$19,505.05
12	Aptos Area Fiber and Outside Plant	\$928,613.96
13	Aptos Area Equipment	\$20,063.10
14	Core, Operations, and Spare Equipment (minimum requirement)	\$54,600.00
15	Network Construction Subtotal	\$6,720,895.39
16	Project Management, Network Engineering, Integration, and Testing	\$672,089.54
17	Engineering, Construction Inspection, Permitting and Fees	\$367,121.12
18	Railroad Permitting (0 crossings) - engineering and fees	\$0.00
19	Business, Service Provider and Operations Development	\$75,000.00
20	Misc. Fees, and Technical Services	\$336,045
21	Bookkeeping and Administration	\$18,000
22	Legal	\$35,000
23	Other Costs Subtotal	\$1,503,255.43
24	Contingency (10%)	\$822,415.08
25	Project Total	\$9,046,565.90

Total Linear Construction	43.19 miles
Total Underground Construction	40.15 miles
Total Aerial Construction	16,075 feet
Buildings Passed	4,176
Buildings Connected	193

Notes/Assumptions:

This estimate contains the segments needed to complete the core "lit" network.

There are economies of scale included in this summary table which if taken individually would not be present. Therefore if you take the sum of all the individual segment stand alone summaries in the subsequent pages and add them up, they would exceed the cost of the full buildout. This is due to reductions in PM and engineering cost when taken as a whole.