

C.A. CROWLEY ENGINEERING INC. CONSULTING ENGINEERS 645 COUNTY STREET TAUNTON, MA 02780			ESTIMATE OF COST HVAC Upgrades Study DATE 04/16/2021 100% CD X BY TO/CH FINAL CHECKED MHV				CLIENT FHA/DHCD PROJECT Fitchburg Housing Green Acres DHCD Project Number 097147 PROJECT NUMBER 20044.00		
ITEM DESCRIPTION	UNIT	QUANTITY	LABOR		MATERIAL		OVERHEAD & PROFIT	TOTAL COST	
			UNIT COST	AMOUNT	UNIT COST	AMOUNT			
<b>HVAC (BASE BID)</b>									
Demolition	EA			\$800.00			\$120.00	\$920.00	
Furnace	EA	1		\$400.00		\$2,200.00	\$390.00	\$2,990.00	
Ductwork	EA	1		\$650.00		\$300.00	\$142.50	\$1,092.50	
Controls	LS			\$500.00		\$500.00	\$150.00	\$1,150.00	
Start Up & Testing	LS			\$200.00		\$0.00	\$30.00	\$230.00	
<b>Sub Total</b>	LS							\$6,382.50	
<b># of Units</b>								8.00	
<b>GENERAL CONDITIONS 10%</b>	LS							\$5,106.00	
<b>CONTINGENCY 10%</b>	LS							\$5,106.00	
<b>HVAC BASE BID TOTAL</b>								\$61,272.00	
<b>PLUMBING (BASE BID)</b>									
Demolition	EA			\$800.00			\$120.00	\$920.00	
Venting	EA	1		\$400.00		\$200.00	\$90.00	\$690.00	
Electric Domestic Water Heater	LS	1		\$250.00		\$600.00	\$127.50	\$977.50	
Water & Gas Piping	LS	1		\$400.00		\$150.00	\$82.50	\$632.50	
Start Up & Testing	LS			\$200.00		\$0.00	\$30.00	\$230.00	
<b>Sub Total</b>	LS							\$3,450.00	
<b># of Units</b>								8.00	
<b>GENERAL CONDITIONS 10%</b>	LS							\$2,760.00	
<b>CONTINGENCY 10%</b>	LS							\$2,760.00	
<b>PLUMBING BASE BID TOTAL</b>								\$33,120.00	
<b>ELECTRICAL (BASE BID)</b>									
See Attached	LS							\$2,590.55	
<b># of Units</b>								8.00	
<b>ELECTRICAL BASE BID TOTAL</b>								\$20,724.40	
<b>BASE BID GRAND TOTAL</b>								\$115,116.40	

HVAC (ALTERNATE #1)								
Demolition	EA			\$800.00			\$120.00	\$920.00
Indoor Heat Pump	EA	12	\$100.00	\$1,200.00	\$600.00	\$7,200.00	\$1,260.00	\$9,660.00
Outdoor Heat Pump	EA	1		\$400.00		\$3,200.00	\$540.00	\$4,140.00
Branch Box	EA	2	\$300.00	\$600.00	\$800.00	\$1,600.00	\$330.00	\$2,530.00
Refrigerant Piping	LS	1		\$1,200.00		\$800.00	\$300.00	\$2,300.00
Outdoor Housekeeping Pad	EA	1		\$300.00		\$75.00	\$56.25	\$431.25
Start Up & Testing	LS			\$400.00		\$0.00	\$60.00	\$460.00
<b>Sub Total</b>	LS							\$20,441.25
<b># of Units</b>								2.00
<b>GENERAL CONDITIONS 10%</b>	LS							\$4,088.25
<b>CONTINGENCY 10%</b>	LS							\$4,088.25
<b>HVAC ALTERNATE #1 TOTAL</b>								\$49,059.00
PLUMBING (ALTERNATE #1)								
Demolition	EA			\$800.00			\$120.00	\$920.00
Electric Domestic Water Heater	LS	1		\$250.00		\$600.00	\$127.50	\$977.50
Water & Gas Piping	LS	1		\$400.00		\$150.00	\$82.50	\$632.50
Start Up & Testing	LS			\$200.00		\$0.00	\$30.00	\$230.00
<b>Sub Total</b>	LS							\$2,760.00
<b># of Units</b>								2.00
<b>GENERAL CONDITIONS 10%</b>	LS							\$552.00
<b>CONTINGENCY 10%</b>	LS							\$552.00
<b>PLUMBING ALTERNATE #1 TOTAL</b>								\$6,624.00
ELECTRICAL (ALTERNATE #1)								
See Attached	LS							\$10,201.75
<b># of Units</b>								2.00
<b>ELECTRICAL ALTERNATE #1 TOTAL</b>								\$20,403.50
<b>ALTERNATE #1 GRAND TOTAL</b>								\$76,086.50

HVAC (ALTERNATE #2)								
Demolition	EA			\$800.00			\$120.00	\$920.00
Indoor Heat Pump	EA	2	\$400.00	\$800.00	\$2,600.00	\$5,200.00	\$900.00	\$6,900.00
Outdoor Heat Pump	EA	1		\$400.00		\$3,200.00	\$540.00	\$4,140.00
Ductwork	EA	1		\$1,000.00		\$1,500.00	\$375.00	\$2,875.00
Refrigerant Piping	LS	1		\$1,200.00		\$800.00	\$300.00	\$2,300.00
Branch Box	EA	1	\$300.00	\$300.00	\$800.00	\$800.00	\$165.00	\$1,265.00
Outdoor Housekeeping Pad	EA	1		\$300.00		\$75.00	\$56.25	\$431.25
Start Up & Testing	LS			\$400.00		\$0.00	\$60.00	\$460.00
Cutting/Patching for new Ductwork	LS			\$1,000.00		\$800.00	\$270.00	\$2,070.00
<b>Sub Total</b>	LS							\$21,361.25
<b># of Units</b>								2.00
<b>GENERAL CONDITIONS 10%</b>	LS							\$4,272.25
<b>CONTINGENCY 10%</b>	LS							\$4,272.25
<b>HVAC ALTERNATE #2 TOTAL</b>								\$51,267.00
PLUMBING (ALTERNATE #2)								
Demolition	EA			\$800.00			\$120.00	\$920.00
Electric Domestic Water Heater	LS	1		\$250.00		\$600.00	\$127.50	\$977.50
Water & Gas Piping	LS	1		\$400.00		\$150.00	\$82.50	\$632.50
Start Up & Testing	LS			\$200.00		\$0.00	\$30.00	\$230.00
<b>Sub Total</b>	LS							\$2,760.00
<b># of Units</b>								2.00
<b>GENERAL CONDITIONS 10%</b>	LS							\$552.00
<b>CONTINGENCY 10%</b>	LS							\$552.00
<b>PLUMBING ALTERNATE #2 TOTAL</b>								\$6,624.00
ELECTRICAL (ALTERNATE #2)								
See Attached	LS							\$4,943.88
<b># of Units</b>								2.00
<b>ELECTRICAL ALTERNATE #2 TOTAL</b>								\$9,887.76
<b>ALTERNATE #2 GRAND TOTAL</b>								\$67,778.76
<b>PROJECT GRAND TOTAL</b>								\$258,981.66

NANGLE ENGINEERING INCORPORATED

Construction Cost Estimate

NEI Project No.: **20030**  
 Project Name: **Fitchburg HA Green Acres**

Project Phase: **100%CD 3rd Submission**  
 Notes: Labor rate at \$ 100 per hour  
 Design Contingency at **0** %

By: **CWN**  
 Date: **4/16/21**

Item Description	Qty.	Units	Unit Material	Extended Material	Unit Labor	Extended Labor	Material & Labor
<b>FURNACE &amp; EWH PER UNIT - BASE BID</b>							
Demolition	1	ls		\$ -	\$ 400.00	\$ 400.00	\$ 400.00
GFCI Duplex Receptacle	1	ea	\$ 15.00	\$ 15.00	\$ 39.60	\$ 39.60	\$ 54.60
15A/1P CB	2	ea	\$ 6.00	\$ 12.00	\$ 65.00	\$ 130.00	\$ 142.00
30A/2P CB	1	ea	\$ 12.00	\$ 12.00	\$ 89.00	\$ 89.00	\$ 101.00
50A/2P CB	0	ea	\$ 15.00	\$ -	\$ 89.00	\$ -	\$ -
60A Disconnect NEMA 3R	0	ea	\$ 250.00	\$ -	\$ 348.00	\$ -	\$ -
30A Disconnect	1	ea	\$ 150.00	\$ 150.00	\$ 258.00	\$ 258.00	\$ 408.00
Manual Motor Starter	1	ea	\$ 60.00	\$ 60.00	\$ 75.00	\$ 75.00	\$ 135.00
Equipment Connection	2	ls	\$ 6.50	\$ 13.00	\$ 100.00	\$ 200.00	\$ 213.00
20A Branch Ckt Wiring	5	lf	\$ 1.58	\$ 7.90	\$ 15.35	\$ 76.75	\$ 84.65
30A Feeder	35	lf	\$ 1.67	\$ 58.45	\$ 15.55	\$ 544.25	\$ 602.70
50A Feeder	0	lf	\$ 3.33	\$ -	\$ 18.92	\$ -	\$ -
Subtotal				\$ 328.35		\$ 1,812.60	\$ 2,140.95
Design Contingency	0	%					\$ -
Subtotal							\$ 2,140.95
Contractor's Overhead	10	%					\$ 214.10
Subtotal							\$ 2,355.05
Contractor's Profit	10	%					\$ 235.50
<b>TOTAL</b>							<b>\$ 2,590.55</b>
<b>AIR SOURCE HEAT PUMP PER UNIT - ALTERNATE NO. 1</b>							
Demolition	1	ls		\$ -	\$ 400.00	\$ 400.00	\$ 400.00
GFCI Duplex Receptacle	1	ea	\$ 15.00	\$ 15.00	\$ 39.60	\$ 39.60	\$ 54.60
15A/1P CB	4	ea	\$ 6.00	\$ 24.00	\$ 65.00	\$ 260.00	\$ 284.00
30A/2P CB	1	ea	\$ 12.00	\$ 12.00	\$ 89.00	\$ 89.00	\$ 101.00
50A/2P CB	1	ea	\$ 15.00	\$ 15.00	\$ 89.00	\$ 89.00	\$ 104.00
60A Disconnect NEMA 3R	1	ea	\$ 250.00	\$ 250.00	\$ 348.00	\$ 348.00	\$ 598.00
30A Disconnect	1	ea	\$ 150.00	\$ 150.00	\$ 258.00	\$ 258.00	\$ 408.00
Manual Motor Starter	9	ea	\$ 60.00	\$ 540.00	\$ 75.00	\$ 675.00	\$ 1,215.00
Equipment Connection	11	ls	\$ 6.50	\$ 71.50	\$ 100.00	\$ 1,100.00	\$ 1,171.50
20A Branch Ckt Wiring	180	lf	\$ 1.58	\$ 284.40	\$ 15.35	\$ 2,763.00	\$ 3,047.40
30A Feeder	35	lf	\$ 1.67	\$ 58.45	\$ 15.55	\$ 544.25	\$ 602.70
50A Feeder	20	lf	\$ 3.33	\$ 66.60	\$ 18.92	\$ 378.40	\$ 445.00
Subtotal				\$ 1,486.95		\$ 6,944.25	\$ 8,431.20
Design Contingency	0	%					\$ -
Subtotal							\$ 8,431.20
Contractor's Overhead	10	%					\$ 843.12
Subtotal							\$ 9,274.32
Contractor's Profit	10	%					\$ 927.43
<b>TOTAL</b>							<b>\$ 10,201.75</b>

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 Design Contingency at **0** %

By: **CWN**  
 Date: **4/16/21**

Item Description	Qty.	Units	Unit Material	Extended Material	Unit Labor	Extended Labor	Material & Labor
<b>AIR SOURCE HEAT PUMP PER UNIT - ALTERNATE NO. 2</b>							
Demolition	1	ls		\$ -	\$ 400.00	\$ 400.00	\$ 400.00
GFCI Duplex Receptacle	1	ea	\$ 15.00	\$ 15.00	\$ 39.60	\$ 39.60	\$ 54.60
15A/1P CB	2	ea	\$ 6.00	\$ 12.00	\$ 65.00	\$ 130.00	\$ 142.00
30A/2P CB	0	ea	\$ 12.00	\$ -	\$ 89.00	\$ -	\$ -
50A/2P CB	1	ea	\$ 15.00	\$ 15.00	\$ 89.00	\$ 89.00	\$ 104.00
60A Disconnect NEMA 3R	1	ea	\$ 250.00	\$ 250.00	\$ 348.00	\$ 348.00	\$ 598.00
30A Disconnect	0	ea	\$ 150.00	\$ -	\$ 258.00	\$ -	\$ -
Manual Motor Starter	4	ea	\$ 60.00	\$ 240.00	\$ 75.00	\$ 300.00	\$ 540.00
Equipment Connection	5	ls	\$ 6.50	\$ 32.50	\$ 100.00	\$ 500.00	\$ 532.50
20A Branch Ckt Wiring	75	lf	\$ 1.58	\$ 118.50	\$ 15.35	\$ 1,151.25	\$ 1,269.75
30A Feeder	0	lf	\$ 1.67	\$ -	\$ 15.55	\$ -	\$ -
50A Feeder	20	lf	\$ 3.33	\$ 66.60	\$ 18.92	\$ 378.40	\$ 445.00
Subtotal				\$ 749.60		\$ 3,336.25	\$ 4,085.85
Design Contingency	0	%					\$ -
Subtotal							\$ 4,085.85
Contractor's Overhead	10	%					\$ 408.59
Subtotal							\$ 4,494.44
Contractor's Profit	10	%					\$ 449.44
<b>TOTAL</b>							<b>\$ 4,943.88</b>
<b>REPLACE SERVICE ENTRANCE CONDUCTORS PER 4-UNIT BUILDING - BASE BID</b>							
Demolition	1	LS		\$ -	\$ 200.00	\$ 200.00	\$ 200.00
350KCMIL	45	LF	\$ 9.11	\$ 409.95	\$ 3.20	\$ 144.00	\$ 553.95
3"RGS	10	LF	\$ 18.75	\$ 187.50	\$ 32.00	\$ 320.00	\$ 507.50
Subtotal				\$ 597.45		\$ 664.00	\$ 1,261.45
Design Contingency	0	%					\$ -
Subtotal							\$ 1,261.45
Contractor's Overhead	10	%					\$ 126.15
Subtotal							\$ 1,387.60
Contractor's Profit	10	%					\$ 138.76
<b>TOTAL</b>							<b>\$ 1,526.35</b>

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 Notes: Labor rate at \$ 100 per hour  
 Design Contingency at **0** %

By: **CWN**  
 Date: **4/16/21**

Item Description	Qty.	Units	Unit Material	Extended Material	Unit Labor	Extended Labor	Material & Labor
<b>REPLACE SERVICE ENTRANCE CONDUCTORS PER 2-UNIT BUILDING - ALTERNATE NO. 1</b>							
Demolition	1	LS		\$ -	\$ 300.00	\$ 300.00	\$ 300.00
125A METER/BREAKER	1	EA	\$ 550.00	\$ 550.00	\$ 380.00	\$ 380.00	\$ 930.00
#1/3 SE-R Cable	60	LF	\$ 10.71	\$ 642.60	\$ 7.25	\$ 435.00	\$ 1,077.60
250KCMIL	45	LF	\$ 6.14	\$ 276.30	\$ 2.76	\$ 124.16	\$ 400.46
2" RGS	10	LF	\$ 8.48	\$ 84.80	\$ 17.80	\$ 178.00	\$ 262.80
Subtotal				\$ 1,553.70		\$ 1,417.16	\$ 2,970.86
Design Contingency	0	%					\$ -
Subtotal							\$ 2,970.86
Contractor's Overhead	10	%					\$ 297.09
Subtotal							\$ 3,267.94
Contractor's Profit	10	%					\$ 326.79
<b>TOTAL</b>							<b>\$ 3,594.73</b>
<b>REPLACE SERVICE ENTRANCE CONDUCTORS PER 2-UNIT BUILDING ALTERNATE NO. 2</b>							
Demolition	1	LS	\$ -	\$ -	\$ 200.00	\$ 200.00	\$ 200.00
#3/0 THHN	45	LF	\$ 4.60	\$ 207.00	\$ 2.76	\$ 124.16	\$ 331.16
2"RGS	10	LF	\$ 8.48	\$ 84.80	\$ 17.80	\$ 178.00	\$ 262.80
Subtotal				\$ 291.80		\$ 502.16	\$ 793.96
Design Contingency	0	%					\$ -
Subtotal							\$ 793.96
Contractor's Overhead	10	%					\$ 79.40
Subtotal							\$ 873.35
Contractor's Profit	10	%					\$ 87.34
<b>TOTAL</b>							<b>\$ 960.69</b>

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