

EV Charging Requirements

		Hayward’s Current Reach Code (% of dwelling units)	2022 CalGreen (% of parking spaces)	2022 Model Reach Code	2022 Model Reach Code Affordable Housing	Option A	Option B
Multi-Family (more than 20 dwelling units)		25% Level 2 EV Capable 75% Level 2 EV Ready	10% Level 2 EV Capable 25% <u>low power</u> Level 2 EV Ready 5% <u>high power</u> Level 2 EVSE	60% Level 1 EV Ready 40% <u>high power</u> Level 2 EVSE	60% Level 1 EV Ready 25% <u>low power</u> Level 2 EV Ready 15% <u>high power</u> Level 2 EVSE	60% <u>high power</u> Level 2 EV Ready 40% <u>high power</u> Level 2 EVSE	80% <u>low power</u> Level 2 EV Ready 20% <u>high power</u> Level 2 EVSE
Costs for a 100-unit Multi-Family Project*	L1 Ready			60	60		
	L2 Capable	25	15				
	L2 Low Power Ready		38		25		80
	L2 High Power Ready	75				60	
	L2 High Power EVSE		8	40	15	40	20
	Total Ports	100	61	100	100	100	100
	Total Cost		\$146,421	\$194,185	\$175,635	\$397,801	\$273,079
	Cost/Port		\$2,400	\$1,942	\$1,756	\$3,978	\$2,731
	% of dwellings w/access	100%	40-60%	100%	100%	100%	100%
	% of total const. cost**		0.3%	0.4%	0.4%	0.8%	0.6%

* Costs are estimated for 2022 and do not include the cost of transformers or increase panel capacity. Assuming 1.5 parking spaces per dwelling unit.

** The “% of total construction cost” may be as high as double as what is when accounting for transformers, etc. This is especially true of ‘Option A’ which includes the highest power requirements.

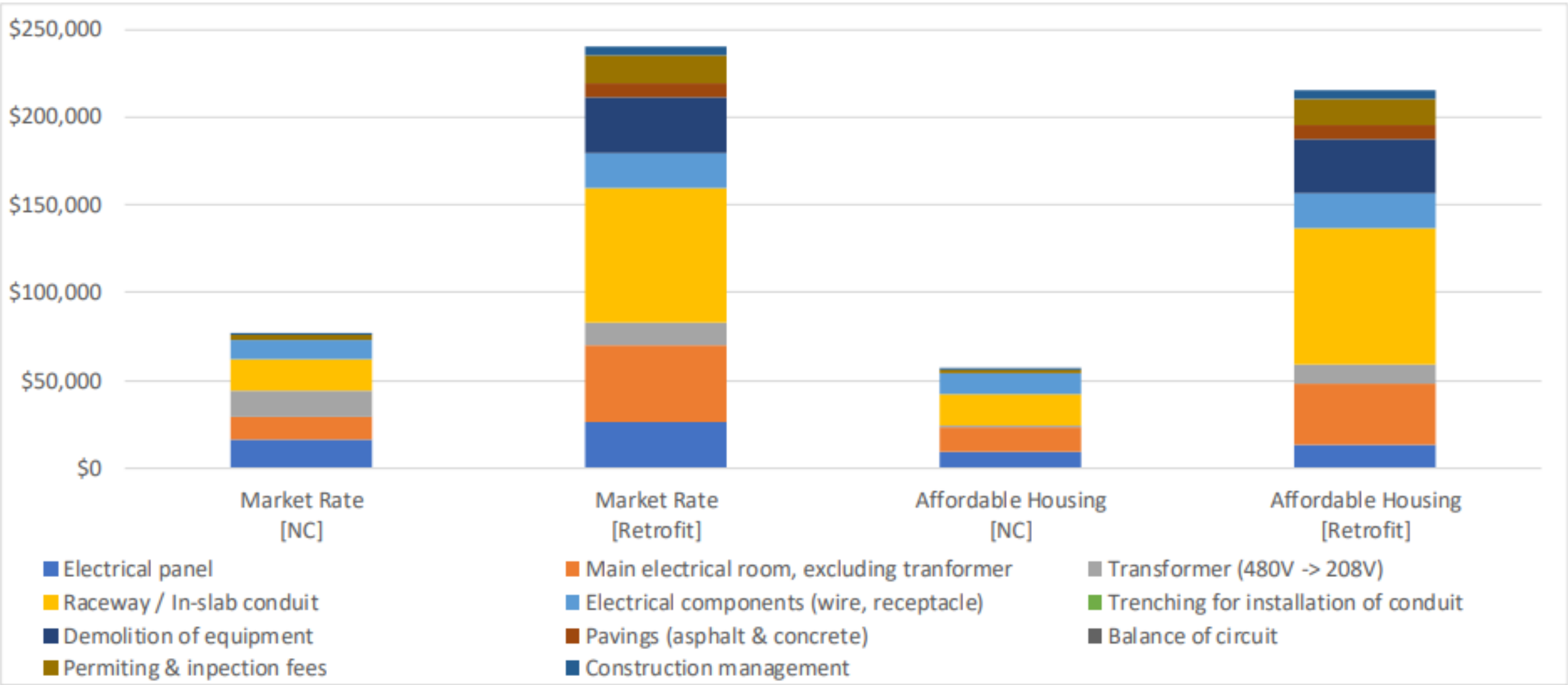
EV Charging Requirements (continued)

	2019 CalGreen	Hayward’s Current Reach Code	2022 CalGreen	<i>Model Reach Code (potential requirements)</i>	<i>Recommended</i>
Multi-Family ≤20 dwelling units	100% Level 2 EV Ready space	10% Level 2 EV Capable 25% <u>low power</u> Level 2 EV Ready (35% total)	40% <u>high power</u> Level 2 EVSE 60% Level 1 EV Ready (100% total)	15% <u>high power</u> Level 2 EVSE; 25% <u>low power</u> Level 2 EV Ready 60% Level 1 EV Ready (100% total)	TBD
Single Family & Townhome	One Level 2 EV Capable for one parking space per dwelling unit	Two Level 2 EV Ready spaces per dwelling unit	<i>No changes from 2019 CalGreen</i>	One Level 2 EV Ready space One Level 1 EV Ready space	Two Level 2 EV Ready spaces per dwelling unit
Non-Res Office	6% Level 2 EV Capable	20% Level 2 EVSE; 30% Level 2 EV Capable	5% Level 2 EVCS; 10% Level 2 EV Capable	20% Level 2 EVSE; 30% Level 2 EV Capable	
Non-Res Non-Office		15% Level 2 EVSE		10% Level 2 EVSE; 10% Level 2 EV Capable	
Hotel/ Motel	NA	NA	NA	5% Level 2 EVSE; 25% <u>low power</u> Level 2 EV Ready	

EV Charging Cost Estimates

The following cost estimates are from a 2019 study¹ prepared for Peninsula Clean Energy (PCE) and Silicon Valley Clean Energy (SVCE) analyzing the costs for: 1) a 60-unit multi-family project; 2) a 150-unit multi-family project; and 3) an office building with 60 parking spaces. The costs below are for EV Ready and do include costs for transformers. This study does not include costs for EVSE, and does not include and has a overall 20% contingency to account for ADA compliance. ADA can be a significant source of cost and in this study is only intended to capture a limited scope of ADA compliance.

Figure1. Cost Break-down for 60-unit Multi-family Residential Project



¹ https://bayareareachcodes.org/wp-content/uploads/2020/03/PCE_SVCE-EV-Infrastructure-Report-2019.11.05.pdf

Table 1. Estimated Incremental Cost of installing EV Infrastructure: 60-unit Multi-family Residential Project

Retrofit	60-Unit MUD			
	Market Rate [NC]	Market Rate [Retrofit]	Affordable Housing [NC]	Affordable Housing [Retrofit]
Level 2 Ports Added	9	9	0	0
Level 1 Ports Added	45	45	54	54
Electrical panel	\$15,960	\$26,008	\$9,289	\$13,004
Main electrical room, excluding transformer	\$13,609	\$43,911	\$14,055	\$35,193
Transformer (480V -> 208V)	\$14,164	\$12,743	\$1,081	\$10,897
Raceway / In-slab conduit	\$18,059	\$77,247	\$18,059	\$77,247
Electrical components (wire, receptacle)	\$11,366	\$20,131	\$11,307	\$20,049
Trenching for installation of conduit	\$0	\$0	\$0	\$0
Demolition of equipment	\$0	\$31,940	\$0	\$30,918
Pavings (asphalt & concrete)	\$0	\$7,889	\$0	\$7,889
Permitting & inspection fees	\$2,435	\$15,592	\$2,435	\$15,592
Construction management	\$549	\$4,449	\$403	\$4,264
TOTAL	\$76,142	\$239,909	\$56,629	\$215,051
TOTAL (Price per Port)	\$1,410	\$4,443	\$1,049	\$3,982

NC = New Construction

Figure2. Cost Break-down for 150-unit Multi-family Residential Project

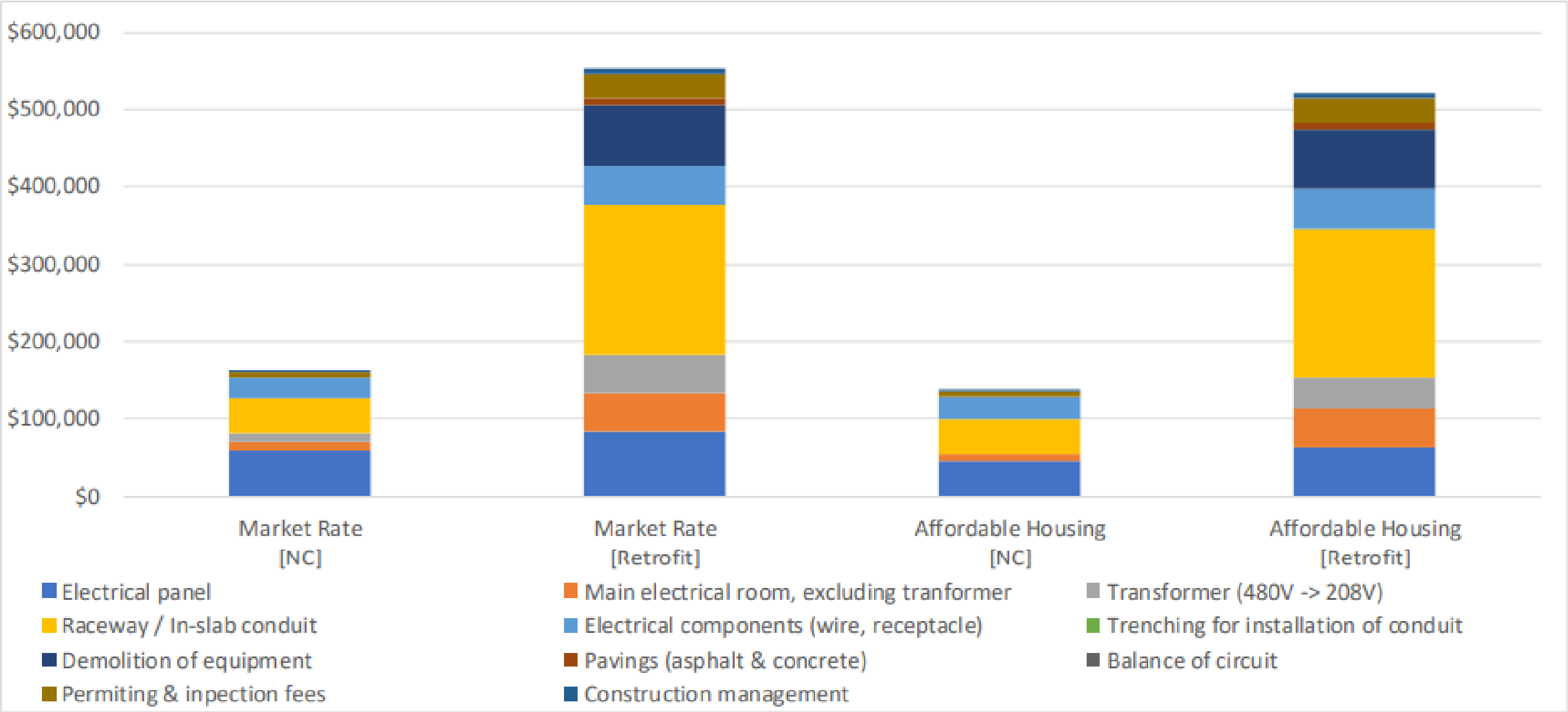


Table 2. Estimated Incremental Cost of installing EV Infrastructure: 150-unit Multi-family Residential Project

Retrofit	150-Unit MUD			
	Market Rate [NC]	Market Rate [Retrofit]	Affordable Housing [NC]	Affordable Housing [Retrofit]
Level 2 Ports Added	23	23	0	0
Level 1 Ports Added	112	112	135	135
Electrical panel	\$59,785	\$83,699	\$44,926	\$62,896
Main electrical room, excluding transformer	\$10,059	\$49,276	\$10,059	\$49,276
Transformer (480V -> 208V)	\$11,539	\$49,742	\$0	\$40,621
Raceway / In-slab conduit	\$45,147	\$193,116	\$45,147	\$193,116
Electrical components (wire, receptacle)	\$28,062	\$49,833	\$28,407	\$50,317
Trenching for installation of conduit	\$0	\$0	\$0	\$0
Demolition of equipment	\$0	\$79,850	\$0	\$77,294
Pavings (asphalt & concrete)	\$0	\$8,442	\$0	\$8,442
Permitting & inspection fees	\$5,798	\$33,069	\$5,798	\$33,069
Construction management	\$1,159	\$6,655	\$964	\$5,196
TOTAL	\$161,550	\$553,682	\$135,301	\$520,227
TOTAL (Price per Port)	\$1,197	\$4,101	\$1,002	\$3,854

NC = New Construction

Figure 3. Cost Break-down for Office Building with 60 Parking Spaces

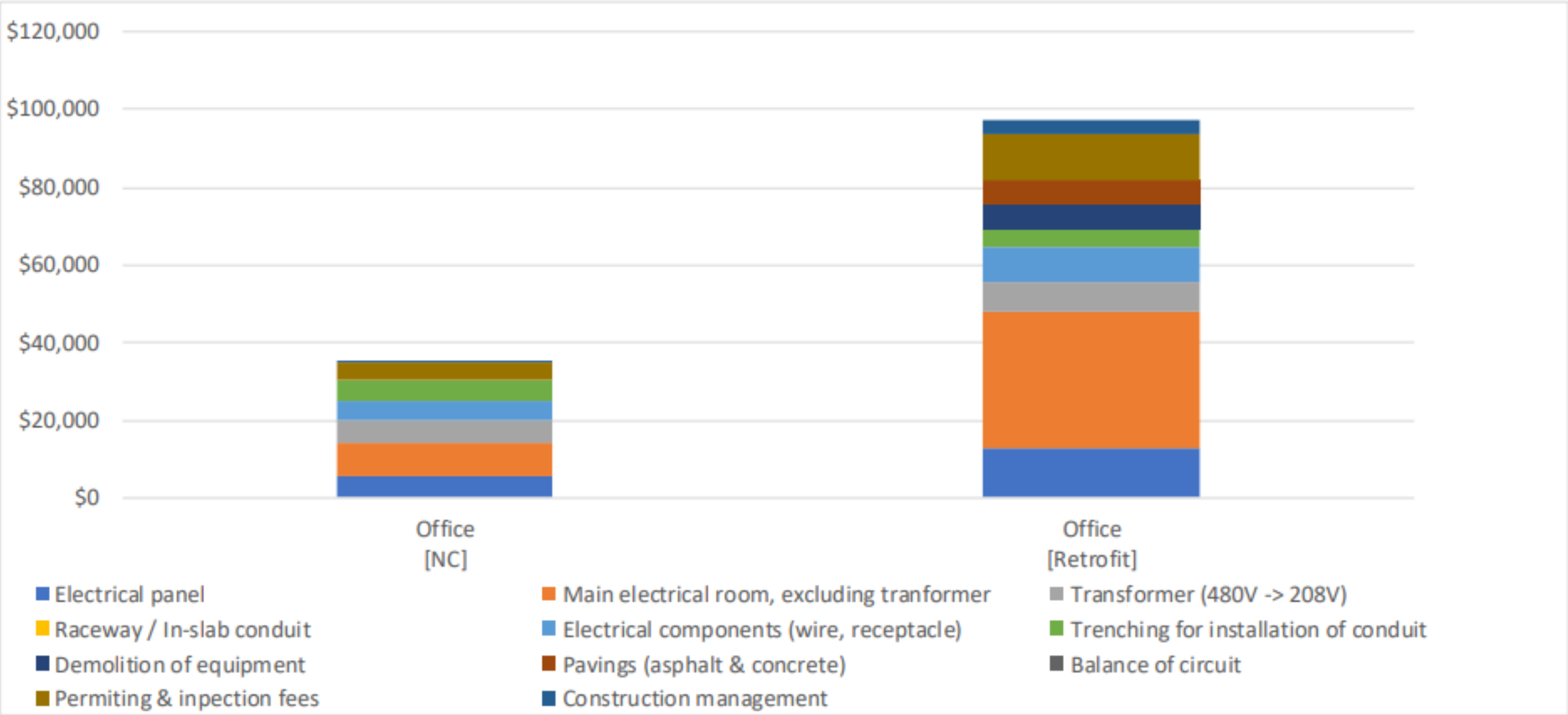


Table 3. Estimated Incremental Cost of installing EV Infrastructure: Office Building with 60 Parking Spaces

Retrofit	60-Space Office	
	Office [NC]	Office [Retrofit]
Level 2 Ports Added	2	2
Level 1 Ports Added	24	24
Electrical panel	\$5,571	\$13,004
Main electrical room, excluding transformer	\$8,558	\$35,005
Transformer (480V -> 208V)	\$5,748	\$7,786
Raceway / In-slab conduit	\$0	\$0
Electrical components (wire, receptacle)	\$5,285	\$9,031
Trenching for installation of conduit	\$5,133	\$4,562
Demolition of equipment	\$0	\$6,211
Pavings (asphalt & concrete)	\$0	\$6,305
Permitting & inspection fees	\$4,448	\$11,652
Construction management	\$227	\$3,414
TOTAL	\$34,971	\$96,970
TOTAL (Price per Port)	\$1,166	\$3,232

NC = New Construction