



# CITY OF HAYWARD

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**File #:** ACT 22-050

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**DATE:** May 9, 2022

**TO:** Council Sustainability Committee

**FROM:** Director of Public Works

**SUBJECT**

2023 Reach Code - Information and Discussion

**RECOMMENDATION**

That the Council Sustainability Committee (CSC) reviews and comments on this report and provides direction to staff.

**SUMMARY**

Hayward's current Reach Code will expire on December 31, 2022. To continue the current requirements that prohibit or limit the use of natural gas in new buildings and to continue to require electric vehicle charging infrastructure beyond what is required in the State building code, a new ordinance will need to be adopted. On March 14, 2022, the CSC considered potential elements that may be included in a new Reach Code. This report presents additional considerations for new non-residential buildings and for electric vehicle charging requirements.

**ATTACHMENTS**

- Attachment I Staff Report
- Attachment II EV Charging Glossary
- Attachment III EV Charging Requirements



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## **BACKGROUND**

On March 3, 2020<sup>2</sup>, Council adopted a local amendment to the 2019 California Building Code known as a Reach Code. The Reach Code ordinance, as well as checklists for builders and developers, are available on the City's website<sup>3</sup>. The Code requires all new single-family homes and new low-rise multi-family buildings (up to 3 stories) to be all-electric. Non-residential and high-rise residential buildings can be either all-electric or mixed fuel (both electric and natural gas equipment). The Reach Code also includes requirements for Electric Vehicle (EV) charging infrastructure. When Hayward's Reach Code was adopted in March 2020, there were already twenty-eight such codes adopted by local jurisdictions throughout California. In December 2021, Contra Costa County became the 54<sup>th</sup> local jurisdiction to adopt an electrification reach code.

The California Building Code is updated every three years. The 2019 California Building Code and Hayward's Reach Code will both expire on December 31, 2022. The 2022 CalGreen Code will take effect on January 1, 2023. In order to continue Hayward's current Reach Code

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<sup>1</sup> <https://hayward.legistar.com/LegislationDetail.aspx?ID=5523060&GUID=4A5988AD-D820-4426-9F53-9CC938F9C94F&Options=&Search=>

<sup>2</sup> <https://hayward.legistar.com/LegislationDetail.aspx?ID=4345454&GUID=25134FC7-B7A3-4060-955A-F7A30A27567A&Options=&Search=>

<sup>3</sup> <https://www.hayward-ca.gov/reach-code>

requirements, a new Reach Code must be adopted this year to be effective along with the 2022 California Building Code in January 2023.

Staff is working closely with a Bay Area working group<sup>4</sup> led by East Bay Community Energy (EBCE), Peninsula Clean Energy (PCE), Silicon Valley Clean Energy (SVCE), and their consultants to prepare Hayward's new Reach Code. The working group is developing model codes for local jurisdictions to consider. The draft model codes were used to develop preliminary considerations for Hayward's new reach code, which were presented to the CSC on March 14, 2022. Following is a summary of the comments made by the CSC:

1. New Low Rise Residential Buildings – The CSC supported continuing the existing all-electric requirement for new Low Rise Residential Buildings.
2. New Non-Residential & High-Rise Residential Buildings - The CSC supported staff's recommendation to remove the existing mixed-fuel pathway so that all new buildings would have to be all-electric. For new non-residential buildings, the CSC wants to allow some flexibility – especially for industrial uses.
3. New Accessory Dwelling Units – The CSC supported ending the current exemption for ADUs smaller than 400 square feet but asked about how it may impact the cost of building an ADU. (A cost-effectiveness study including an analysis for an all-electric ADU should be available later this month.)
4. Existing Buildings – The CSC supported prohibiting gas extensions in older homes, however, doing so may make it difficult to build smaller attached ADUs. Regarding extensions of gas lines in older existing industrial buildings, the CSC directed staff to consult with the business community.
5. End of Flow – The CSC supported the concept of ending the flow of gas by 2045 but asked about the difficulty of enforcing such a policy and questioned community acceptance.
6. Existing Residential – The CSC agreed Hayward should wait for the California Air Resources Board (CARB) or the Bay Area Air Quality Management District (BAAQMD) to enact a ban on the sale of gas appliances.
7. EV Charging Requirements – The CSC would like to see robust requirements, but asked for more information about the costs of developing charging infrastructure.

## DISCUSSION

Since the March 14 CSC meeting staff has explored further the idea of banning gas in non-residential buildings as well as the costs associated with installing EV charging infrastructure.

*New Non-Residential and High-rise Residential Buildings* – The current Reach Code allows non-residential and high-rise residential buildings to be either all-electric or mixed-fuel. At the March 14 meeting, staff recommended eliminating the mixed-fuel option. Hayward's

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<sup>4</sup> <https://bayareareachcodes.org/>

Economic Development staff has also expressed support for the Reach Code and is interested in having exceptions – particularly for restaurants and life science-related industries. Staff is continuing to research the best approach to incorporate flexibility and allow exceptions – potentially for certain industrial uses and restaurants.

Exceptions are also being explored in light of the California Environmental Quality Act (CEQA) and the goal to be carbon neutral by 2045. On April 20, 2022, the Bay Area Air Quality District Board of Directors adopted new thresholds of significance for use in environmental analyses prepared pursuant to CEQA. The thresholds are used to determine when an environmental impact is considered “significant.” If an impact is considered significant and cannot be mitigated, the project is required to have an environmental impact report prepared. While the previous thresholds were quantitative, such as a certain number of metric tons of carbon dioxide equivalent per year, the new thresholds are qualitative due to the state’s carbon neutrality goal.

The new thresholds state that any new building must either:

1. not include natural gas; or
2. be consistent with a local climate action plan (CAP).

The Reach Code can include exceptions for certain uses, such as restaurants and certain industrial operations; however, in order for a project to avoid having a significant impact, Hayward’s CAP would need to identify a means for offsetting the greenhouse gas (GHG) emissions from the gas use by 2045. Staff is currently working with a consultant team on an update of the CAP and plans to find a way to allow some gas use, while still maintaining a path toward carbon neutrality by 2045.

*EV Charging* – At its March 14 meeting, the CSC requested more information about the costs to install EV charging infrastructure. Attachment II is a glossary of terms and Attachment III includes potential requirements and cost estimates. The first page of Attachment III includes cost estimates in today’s dollars for a range of code requirement options.

While the new CalGreen code will require 40% of spaces to have Level 2 readiness, the recommended model code requires the remaining 60% of spaces to be Level 1 EV Ready. As noted during the March 14 meeting, staff is not recommending Level 1 chargers as an overnight charge providing 30 miles of range is not sufficient for many people. New EVs have large batteries that may make Level 1 charging obsolete in the next few years. Staff is recommending some combination of Level 2 charging readiness and Level 2 chargers.

Also in Attachment III are cost estimates from a 2019 report<sup>5</sup> prepared for Peninsula Clean Energy and Silicon Valley Clean Energy. The study analyzed the costs for a 60-unit multi-family project; a 150-unit multi-family project; and an office building with 60 parking spaces. The study considered the cost of electrical service upgrades, electrical panels and transformers and includes the following key findings:

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<sup>5</sup> [https://bayareareachcodes.org/wp-content/uploads/2020/03/PCE\\_SCVE-EV-Infrastructure-Report-2019.11.05.pdf](https://bayareareachcodes.org/wp-content/uploads/2020/03/PCE_SCVE-EV-Infrastructure-Report-2019.11.05.pdf)

- Costs [for EV charging] for new construction were significantly lower, at almost four times as much per spot compared to the retrofit scenario. This indicates that increasing code requirements for charging infrastructure could potentially save significant amounts of money to building owners in the new construction context rather than waiting for tenants to become interested in electric vehicles, at which point significant costs related to invasive demolition and electrical infrastructure replacement would be necessary.
- Transformer capacity limitations are not expected to occur very frequently and that even in the retrofit context most buildings should be able to meet the added load. For those that do not have significant capacity, utilizing lower power “Level 1” ports or load management may be promising options. However, transformer upgrades are more likely with the increased EV infrastructure requirements such as those for Level 2 charging.
- For larger new buildings in need of a second transformer and associated electrical infrastructure, the owner/developer would need to bear those costs estimated to be approximately \$50,000 (or significantly more in a retrofit context).
- Installing an EV Capable parking space means that wiring, etc. would need to be installed at later date. Installing an EV Ready space at the outset (installing a complete electrical circuit with wiring and circuit breakers) will achieve better economies of scale and avoid the overhead and time needed to hire an electrician. This includes the need for tenants to get approvals from building owner for an electrical wiring retrofit (as in the case of a condominium with a homeowner’s association). Similarly, installing EVSE during new construction can be completed at a much lower cost than retrofitting later.

## **FISCAL IMPACT**

Development of this year’s Reach Code will not impact the City’s General Fund. Time spent on research and writing of the Code will be completed by existing, budgeted staff. Enforcement of Hayward’s current Reach Code has not resulted in significant costs/impacts to staff; however, the changes being considered for the new Reach Code may make it simpler and easier to enforce.

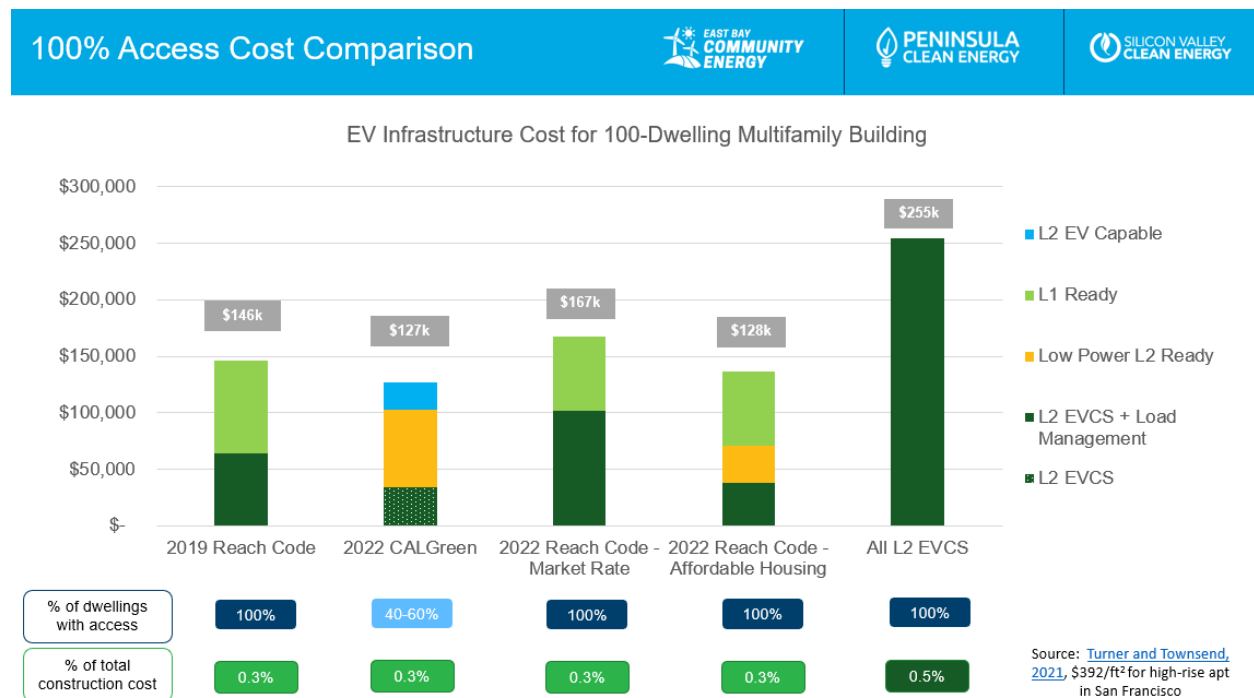
## **ECONOMIC IMPACT**

Local amendments to the California Energy Code require documentation to ensure the proposed requirements are cost-effective. This year’s Reach Code could be adopted as a stand-alone ordinance and not as an amendment to the Energy Code if it does not address energy efficiency. This approach would not require a cost-effectiveness study; however, the Statewide Codes & Standards Reach Codes team is preparing a study that may be used by local jurisdictions. The cost-effectiveness study completed in 2019 found that, generally, electric appliances are not more expensive compared to those fueled by natural gas. When considering the avoided cost of installing gas infrastructure (plumbing), in most cases, all-electric construction is cost-effective over a 30-year period.

The requirements for EV charging infrastructure will increase the cost of construction; however, future residents or employees can benefit from the cost savings of operating an EV compared to a gasoline vehicle. In addition, significant savings can be realized when installing EV Capable and EV Ready circuits at the time of new construction as compared with the retrofit of an existing building or existing parking lot.

Figure 1 below summarizes a study prepared for the Bay Area working group showing that the cost to install charging required by the 2022 CalGreen Code will cost approximately \$127,000 for a 100-unit multi-family building. It also estimates that compliance with the recommended model reach code would cost approximately \$167,000, and that the recommended model reach code for affordable housing projects would cost approximately \$128,000 for a 100-unit building. The key to keeping costs low is the installation of Automatic Load Management Systems (ALMS), which manage electrical loads across one or more electric vehicle chargers, circuits, or panels, and share electrical capacity and/or automatically manage power at each connection point. It is important to note that the costs noted above are just for panels, conduit, wiring and chargers and do not include costs for transformers or service upgrades as the need for such improvements will vary from site to site.

**Figure1. Cost Estimates 100-unit Multi-family Residential Project**



Additional cost estimates from the 2019 study<sup>6</sup> prepared for Peninsula Clean Energy (PCE) and Silicon Valley Clean Energy (SVCE) are included in Attachment III.

<sup>6</sup> [https://bayareareachcodes.org/wp-content/uploads/2020/03/PCE\\_SVCE-EV-Infrastructure-Report-2019.11.05.pdf](https://bayareareachcodes.org/wp-content/uploads/2020/03/PCE_SVCE-EV-Infrastructure-Report-2019.11.05.pdf)

## **STRATEGIC ROADMAP**

This agenda item supports the Strategic Priority of Combat Climate Change. Specifically, this item relates to the implementation of the following projects:

- Project 1a Ban natural gas in new residential buildings (Completed with the March 2020 adoption of the Reach Code.)
- Project 1b Require EV charging infrastructure in new construction (Completed with the March 2020 adoption of the Reach Code.)
- Project 1c Explore feasibility of banning natural gas in non-residential (commercial) buildings

## **SUSTAINABILITY FEATURES**

The use of electric appliances in homes and businesses avoids indoor air pollution associated with the burning of natural gas. Ending the use of natural gas and providing the infrastructure needed for a transition to electric vehicles are both necessary to meet the City's long term GHG reduction goals, which include:

- 30% below 2005 levels by 2025
- 55% below 2005 levels by 2030
- work with the community to develop a plan that may result in the reduction of community-based GHG emissions to achieve carbon neutrality by 2045

## **PUBLIC CONTACT**

The Bay Area working group hosted two workshops for building industry stakeholders and community members on February 15 and 16, 2022. Staff sent an email to 658 builders and developers to let them know about these workshops and the March 14 CSC meeting. At the February workshops, attendees were generally supportive of reach codes. Specific comments included:

- Automatic Load Management (for EV charging) is critical and still new, and more education is needed.
- Multi-family property owners said they do not want to be in the EV charging business. They requested that EV charging be required such that it is on the utility's side of the electric meter.

In addition, in early 2022, staff reached out to six representatives of affordable housing developers and had phone conversations with three to review existing and potential EV charging requirements. Staff has conducted limited outreach for this first discussion on the 2023 Reach Code. Upon direction from the CSC, staff will continue to communicate with and seek input from development and business stakeholders. Specifically, staff intends to engage with the Chamber of Commerce and industrial property developers before returning to the CSC with more refined recommendations.

On May 6, 2022, staff presented to the Hayward Chamber of Commerce's Government Relations Committee. Staff will share a summary of the discussion during the presentation to the CSC on May 9, 2022.

## NEXT STEPS

Upon direction from the CSC, staff will continue to work with the Bay Area working group and stakeholders to prepare a draft reach code ordinance for Council's consideration. Following is a tentative timeline:

May 26, 2022	Present to draft Reach Code to the Planning Commission
June 21, 2022	Council Work Session to consider draft Reach Code
July 2022	Present draft Reach Code Ordinance to CSC
October 2022	Council to considers adoption
January 2023	Reach Code takes effect along with the 2022 CA Building Code

*Prepared by:* Erik Pearson, Environmental Services Manager

*Recommended by:* Alex Ameri, Director of Public Works

*Approved by:*



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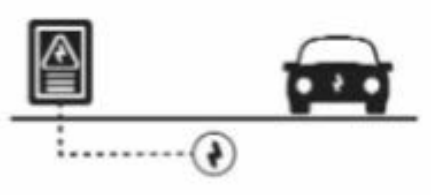
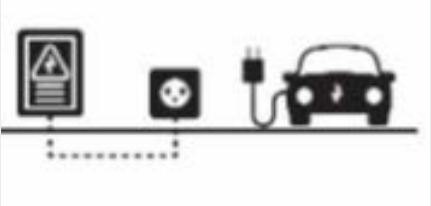

Kelly McAdoo, City Manager



## Electric Vehicle Charger Types

Level 1		15-20 Amp, 120 Volt (standard household outlet)  Driving Distance provided: 3-4 miles/hour
Low Power Level 2		20 Amp, 208/240 Volt  Driving Distance provided: 10-15 miles/hour
High Power Level 2		40+ Amp, 208/240 Volt  Driving Distance provided: 25-30 miles/hour
DC Fast Charge		80-400 Amp, 200-600 Volt DC (direct current)  Driving Distance provided: 125-1000 miles/hour

## EV Charging Infrastructure

<b>EV Capable</b>		Raceway (conduit), electrical capacity (breaker space)
<b>EV Ready</b>		EV Capable + overcurrent protection devices, wiring and outlet (i.e. full circuit)
<b>EVCI</b> (electric vehicle charger installed)  Also known as <b>EVSE</b> (electric vehicle supply equipment)		All equipment to deliver electricity to EV

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.

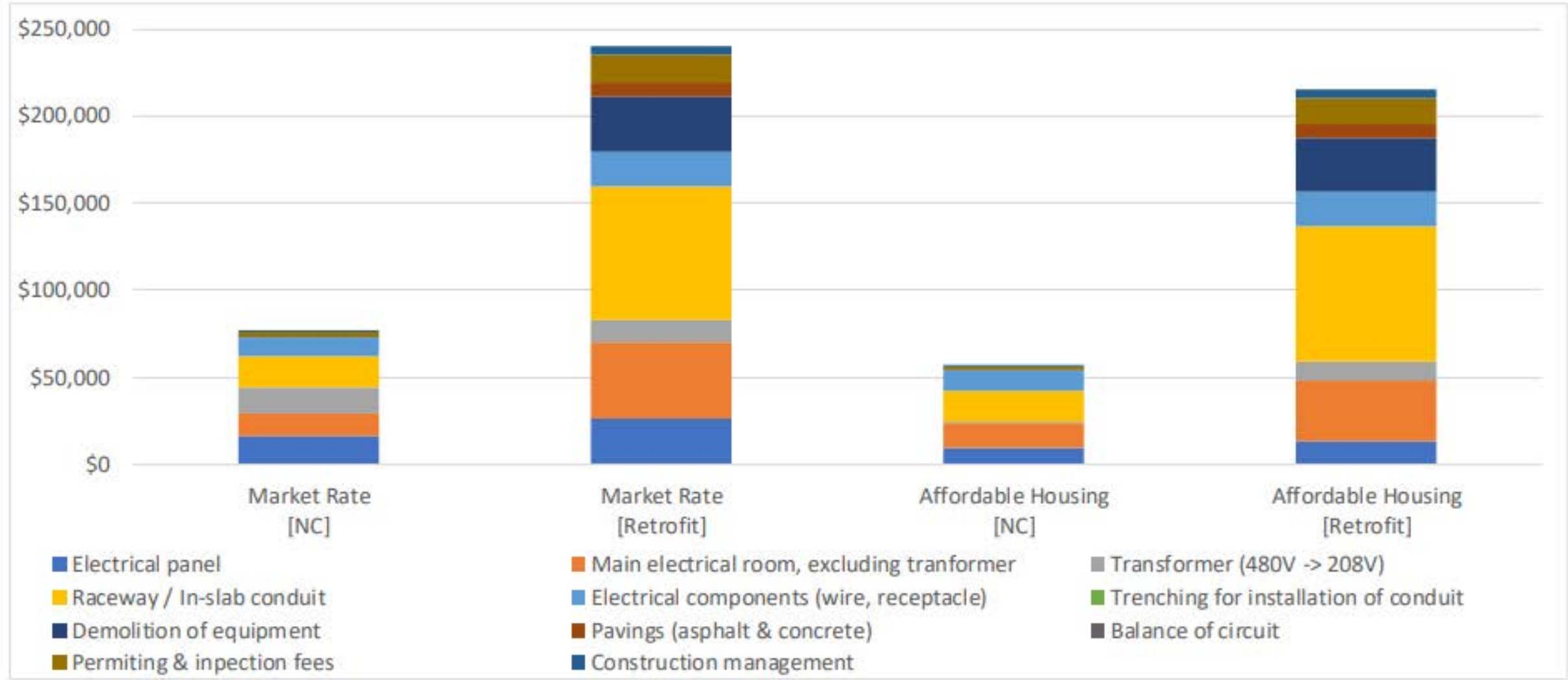
## EV Charging Requirements (continued)

	2019 CalGreen	Hayward's Current Reach Code	2022 CalGreen	<i>Model Reach Code (potential requirements)</i>	<i>Recommended</i>
<b>Multi-Family ≤20 dwelling units</b>	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
<b>Single Family &amp; Townhome</b>	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
<b>Non-Res Office</b>	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	
<b>Non-Res Non-Office</b>		15% Level 2 EVSE		10% Level 2 EVSE; 10% Level 2 EV Capable	
<b>Hotel/ Motel</b>	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 study<sup>1</sup> 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**



<sup>1</sup> [https://bayareareachcodes.org/wp-content/uploads/2020/03/PCE\\_SVCE-EV-Infrastructure-Report-2019.11.05.pdf](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

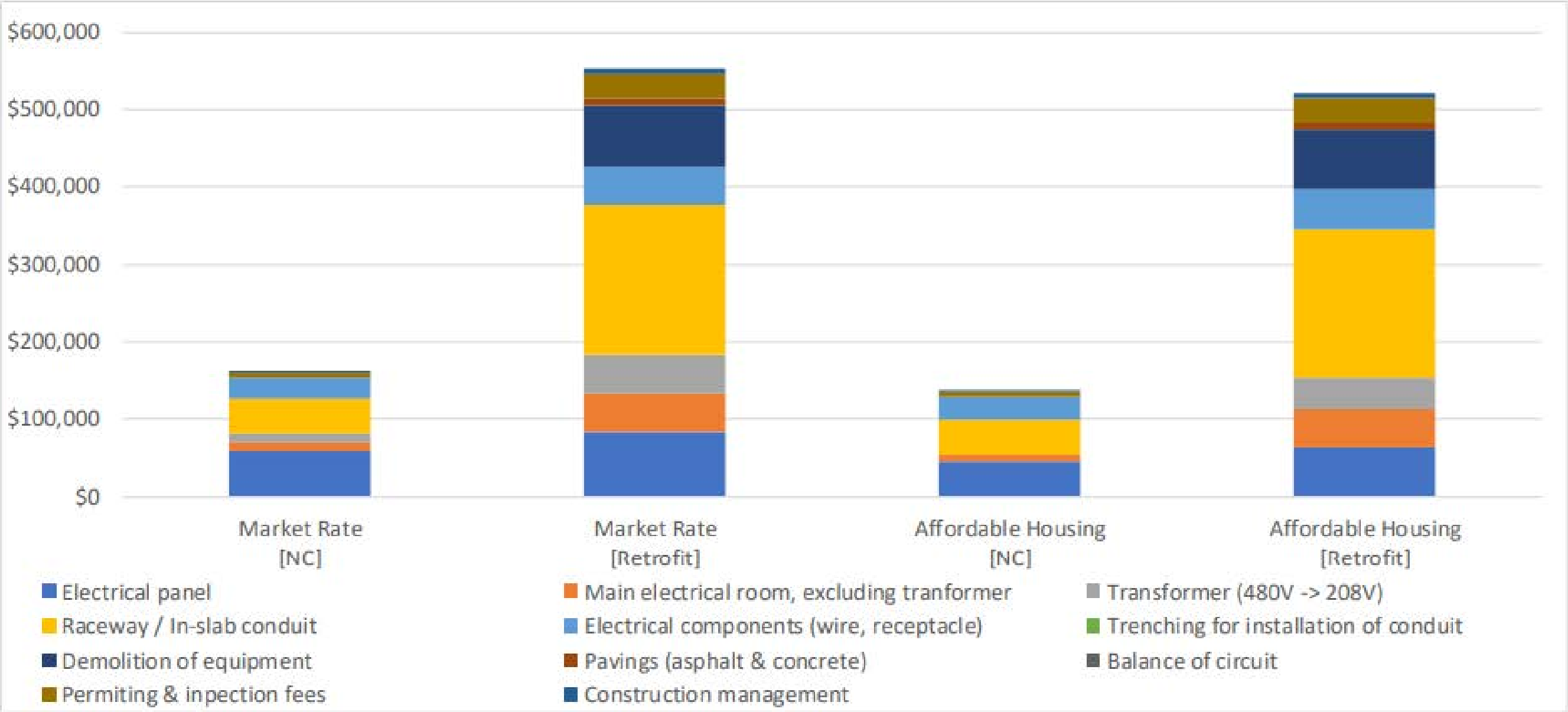




Table 2. Estimated Incremental Cost of installing EV Infrastructure: 150-unit Multi-family Residential Project

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

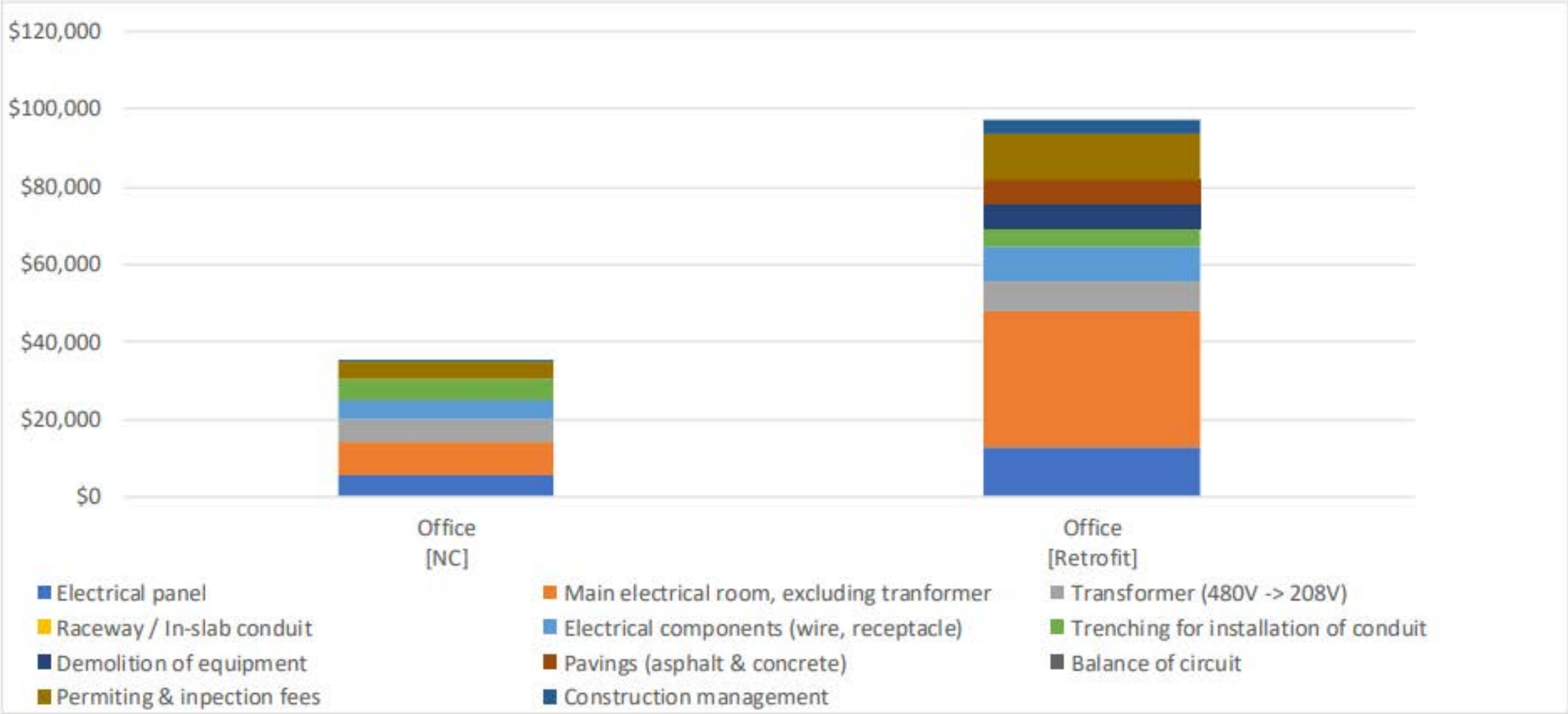


Table 3. Estimated Incremental Cost of installing EV Infrastructure: Office Building with 60 Parking Spaces

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