Attachment A Cost analysis for EV for New Construction and Existing with Additions or Alterations

Economic and Fiscal Impact Statement (Form 399) Attachment

Amend the 2022 CALGreen for inclusion in the 2025 CALGreen Code, CCR, Title 24, Part 11

BACKGROUND

This proposed action by BSC adopts mandatory green building standards for occupancies within its authority, building upon a framework of voluntary measures adopted by BSC in 2008 and makes modifications and clarifications to the 2022 CALGreen Code for inclusion into the 2025 CALGreen Code. The intent of the code continues to: (1) reduce greenhouse gas (GHG) emissions from buildings; (2) promote environmentally responsible, cost-effective, healthier places to live and work; and (3) respond to the directives by the Governor in 2008 to develop a green building code.

California adopted Senate Bill 32, *California Global Warming Solutions Act of 2006: Emissions Limit*, which mandates the state reduce its greenhouse gas emission levels to 40% below 1990 levels by 2030. California's transportation sector comprises 41% of the greenhouse gas emissions statewide when considering mobile source direct emissions.[1] Reducing emissions from the transportation sector not only helps California reach its greenhouse gas emission goals but can also lead to better air quality through the reduction of criteria pollutants. BSC's proposed action will support the implementation of the Governor's Executive Orders B-16-2012, B-48-2018 and N-79-2020 to achieve the goals of having over 1.5 million zero-emission vehicles (ZEVs) on California roadways by 2025, 5 million ZEVs on California roadways by 2030, and 100% sales of electric vehicles by 2035, respectively. The Energy Commission's latest draft AB 2127[2] report estimates that 7.1 million plug-in vehicles will be on the road by 2030 and 15.2 million plug in in vehicles will be on the road by 2035. CARB staff expects drivers to continue to rely on home charging if available and supplement their charging needs with public charging stations. Currently, early ZEV adopters typically have a higher income and may live in a single-family home with consistent access to home charging. However, as ZEV driver demographics shift away from early adopters to the majority of the market, there may be an increased demand for public and workplace charging.

As of September 2023, the Energy Commission estimates that there are31,779 public level 2 chargers and 9,605 Direct Current fast chargers (DCFCs). According to the Energy Commission's most recent AB 2127 staff report California will need approximately 1 million chargers (including 39,000 DCFCs) to support 7.1 million ZEVs on the road by 2030. These charger needs span a range of capabilities and applications, including: 1) Multi-family Level 1 and 2 chargers, 2) Shared Private Level 2 charging at workplaces, 3) Public Level 2 charging at workplaces, 4) Public Level 2 charging at non-work locations, and 5) DCFCs. EV charging requirements in the building code have multiple benefits. First, the installation of charging infrastructure during new construction and qualifying additions or alterations may be cheaper than installing infrastructure as needed. Second, requiring EV charging infrastructure to be installed helps accelerate charger deployment beyond other public and private efforts and ensure that California will have the number of chargers needed to support future and current plug-in vehicle drivers. Further, installing EVSE increases charger visibility and helps assure future plug-in vehicle drivers that they will be able to use public or workplace charging as needed. All of this will be necessary to achieve the ZEV goals set be Executive Order N-79-20.

The proposed changes to the building standards with statewide application will lead to substantial environmental benefits through reduction in energy use, GHG emissions, criteria pollutants, and fossil fuel dependency leading to improved public health, and potentially result in significant cost savings (avoided costs) associated with future installation of EV charging stations at nonresidential buildings.

[1] Current California GHG Emission Inventory Data | California Air Resources Board
[2] https://efiling.energy.ca.gov/GetDocument.aspx?tn=251866&DocumentContentId=86859

Objectives of the Proposed Amendments
The objectives of the proposed amendments are to further advance the potential for EV preparedness and provide clarity to the code user in consistent reference nomenclature to other parts of Title, 24.

ECONOMIC IMPACT STATEMENT
Items:

A. ESTIMATED PRIVATE SECTOR COST IMPACTS

1. Estimate the economic impact of the proposed amendments:

BSC is proposing the following amendments to the 2024 Triennial Code Cycle for existing facilities.

- For nonresidential buildings excluding office and retail buildings, BSC proposes to continue to have 20% of spaces be EV Capable and to increase the percentage of EV Capable spaces with EVSE to create Electric Vehicle Charging Stations (EVCS) from 25% to 50% for 201 and over parking spaces. This will result in a net installation of 10% EV Capable Spaces and 10% EVCS.
- For office and retail buildings BSC proposes to have 20% of spaces be EV Capable spaces and increase the percentage of from 25% of EV Capable spaces to 75% of EV Capable spaces to have Level 2 EVSE. This will result in a net installation of 5% EV Capable spaces and 15% EVSE.

BSC is proposing the following amendments to the 2024 Triennial Code Cycle for newly constructed facilities,

- For nonresidential buildings excluding office and retail buildings, BSC proposes to increase the percentage of EV Capable spaces with Level 2 EVSE from 25% to 50%. This will result in a net installation of 10% EV Capable Spaces and 10% Level 2 EVSE.
- For office and retail building BSC proposes to 20% EV Capable spaces and increase the percentage from 25% of EV Capable spaces to 75% of EV Capable spaces to have Level 2 EVSE. This will result in a net installation of 10% EV Capable Spaces and 10% Level 2 EVSE.

Statewide costs estimated for the proposed amendments were calculated over a 3-year period, from January 1, 2026 through December 31, 2028. For all existing facilities that undergo a qualifying addition or alteration, BSC estimates statewide cost for these new provisions to be $204.0 million to $434.6 million. For all newly constructed nonresidential buildings BSC estimates the statewide cost for these new provisions to be $448.6 million to $852.9 million. The total statewide cost estimate for all existing nonresidential facilities and newly constructed nonresidential facilities for this 3-year period is from low $652.6 million to high $1,287.5 million.

Pursuant to the definition in Section 2000 of Title 1, Division 3, Chapter 1 of the California Code of Regulations, a “major regulation means any proposed rulemaking…that will have an economic impact…exceeding fifty million dollars ($50,000,000) in any 12-month period ….”

Since the purpose of Section A2 is to identify whether or not the proposed rulemaking is considered a major regulation, the cost estimates specified in this section are estimated on an annual basis. The annual costs of the proposed amendments for existing facilities are $68.0 million to $184.7 million. The annual costs of the proposed amendments for new construction are $149.5 million to $284.3 million. For both existing and newly constructed buildings, the annual costs of the proposed amendments are $217.5 million to $469.0 million. Based on this annual cost estimate, the category “Over $50 million” was selected.

For all cost calculations, staff have assumed that the building developers or owners directly bear the costs to install EV infrastructure. However, Electric Vehicle Service Providers (EVSPs) in today’s market often operate with different business structures. The EVSPs may

therefore bear all or some of the upfront costs calculated here and have various business models for charging for ongoing electric vehicle charging service at the installation site.

2. Describe the types of businesses (Include nonprofits):

   The types of businesses impacted by the EV charging infrastructure provisions are any businesses funding the development of new nonresidential buildings. These businesses could be in retail, grocery, restaurants, small and large offices, warehouses, hospitals, etc. However, EV charging requirements for public schools and community colleges are addressed separately. Businesses that fund and complete additions and alterations to existing parking facilities would also be impacted by EV charging provisions would also be impacted by the proposed code amendments. Existing facilities with parking facilities with 10 or more parking spaces would be affected. These businesses could be in retail, grocery, restaurant, small and large offices, warehouse, hospital etc. Like new construction, EV charging requirements for public schools and community colleges are addressed separately.

3. Total Number of Businesses Impacted
   According to California's Employment Development Department, there are 1,755,291 businesses located in California.[3]

   Total Number of Small Businesses Impacted
   California Government Code defines small business as an entity that is independently owned and operated with 100 or fewer employees or an average gross receipt of $15 million or less, over the last three tax years. BSC assumes that small businesses are in nonresidential buildings between 1,001 to 5,000 square feet. Approximately 48 percent of new nonresidential buildings impacted by the proposed amendments are projected to be less than 5,000 square foot in size. Staff estimates approximately half of these projects will be subject to these proposed amendments. Therefore, an estimated 240 (i.e., 500 x 0.48) small businesses are likely to be impacted by the proposed amendments.

   BSC assumes that existing small businesses are in buildings between 1,001 to 5,000 square feet. According to California's Employment Development Department, approximately 1.7 million businesses have under 100 employees. Therefore, an estimated 816,000 (i.e.,1.7 million x 0.48) businesses will be impacted by the amendments.

B. ESTIMATED COSTS

Estimated Statewide Dollar Costs for Businesses and Individuals

The totals presented in the tables below are for the required provisions only (EV Capable and Level 2 EVSE). The cost of level 2 EV capable infrastructure (raceway and panel capacity) is estimated to range from $779 to $1,100[4]. The average cost of a level 2 charger ranges from $1,409 to $2,040 [5]. The cost of other components (wiring, panel capacity, conduit, protective bollards) adds another $1,112 to $1,907 per level 2 EVSE space, bringing the total cost for level 2 EVSE to $2,521 to $3,947 per space. The proposed code will also allow for existing property owners or managers to install 2 low power level 2 charging receptacles to replace 1 EV capable space. BSC-CG further proposes requiring low power level 2 charging receptacles to have the raceway to support a full powered level 2 EVSE. The average cost of a low power level 2 charging receptacle with this raceway ranges from $1,795 to $2,216. The code requires Level 2 EVSE to be installed. The proposed code will also allow for the use of the Power Allocation Method, and the DCFC Alternative Compliance Method.

- **Existing Buildings excluding Office and Retail**

  The proposed amendment would require all existing nonresidential buildings undergoing a qualifying addition or alteration to meet the requirements of Section 5.106.3.4 and Table

[3] Size of Business Data for California (Quarterly)
[4] 2023 National Construction Estimator, 71th Edition, Edited by Richard Pray, Craftsman Book Company, October 2023.
[5] Staff took the average of over 30 non-networked and networked chargers to estimate an average cost of a nonnetworked level 2 charger and a networked level 2 charger.

5.106.3.1. The proposed amendment would only apply to buildings that would add or alter at least 10 spaces. The table below presents the total number of required EV Capable spaces and required Level 2 EVSE and the total initial construction cost over the lifetime of the proposed amendments. The totals presented in the table have been rounded to the nearest whole number.

Staff will also present the impact of the low power level 2 allowance. To estimate the impacts of this allowance staff assumed that every developer elected to install 2 low power level 2 charging receptacles to replace 1 EV Capable space. The true cost of the low power level 2 charging receptacles will depend on how many property owners or mangers elect to pursue this allowance and how many low power level 2 charging receptacles are installed.

Staff used 14 years of data (2016-2030) to estimate the number of spaces that may be impacted by the proposed amendment. Staff reviewed previous CALGreen code EV building standards to estimate the number of existing EV capable spaces. Staff assumed developers knew which spaces were already EV capable and would use the remaining spaces to meet the proposed code requirements. Staff multiplied an estimated annual average number of EV capable spaces by 3 years to estimate the total number of retrofitted EV capable spaces over the lifetime of the proposed amendment.

	Total Number of Spaces	Total Initial Construction Cost ($)
EV Capable	36,440 to 45,754	$28.4 million to $50.3 million
Optional Replacement for EV Capable Spaces: Low power Level 2 charging receptacles	72,880 to 91,507	$130.8 million to $202.8 million
Level 2 EVSE	36,440 to 45,754	$91.9 million to $180.6 million
Total (EV Capable + Level 2 EVSE)	72,880 to 91,508	$120.3 million to $230.9 million

Developers may use the power allocation method, as illustrated in Table 5.106.5.3.6. Staff ran two analyses based on Table 5.106.5.3.6, one without the installation of DCFCs and one with the installation of DCFCs. Mandatory existing building EV requirements will be required when 10 or more spaces are added or altered. For existing buildings with 10 or more parking spaces, staff estimated for existing sites without DCFCs, the cost ranges from $6,601 to $114,034 per site and for locations with DCFCs the cost ranges from $9,412 to $100,136 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the charging level distribution (number of EV capable, level 2 EVSE, low power level 2 receptacles and DCFC).

The code does not make any changes to the DCFC Alternative Compliance Pathway. Under this pathway, property owners or managers could elect to install 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not estimate the construction cost of the alternative DCFC pathway, since staff has no way to estimate the number of DCFCs that would be installed or the power levels that developers may be likely to install.

- **Existing Office and Retail**

The proposed amendment would require all existing office and retail buildings undergoing a qualifying addition or alteration to meet the requirements of Section 5.106.3.4 and Table 5.106.3.1. The proposed amendment would only apply to buildings that would add or alter at least 10 spaces. The table below presents the total number of required EV Capable spaces and required Level 2 EVSE and the total initial construction cost over the lifetime of the proposed amendments. The totals presented in the table have been rounded to the nearest whole number.

Staff will also present the impact of the low power level 2 allowance. To estimate the impacts of this allowance staff assumed that every developer elected to install 2 low power level 2 charging receptacles to replace 1 EV Capable space. The true cost of the low power level 2 charging receptacles will depend on how many property owners or mangers elect to pursue this allowance and how many low power level 2 charging receptacles are installed.

Staff used 14 years of data (2016-2030) to estimate the number of spaces that may be impacted by the proposed amendment. Staff reviewed previous CALGreen code EV building standards to estimate the number of existing EV capable spaces. Staff assumed developers knew which spaces were already EV capable and would use the remaining spaces to meet the proposed code requirements. Staff multiplied an estimated annual average number of EV capable spaces by 3 years to estimate the total number of retrofitted EV capable spaces over the lifetime of the proposed amendment.

	Number of Spaces	Initial Construction Cost ($)
EV Capable	10,032 to 15,741	$7.8 million to $17.3 million
Optional Replacement for EV Capable Spaces: Low power Level 2 charging receptacles	20,063 to 31,483	$36.0 million to $69.8 million
Level 2 EVSE	30,095 to 47,224	$75.8 million to $186.3 million
Total (EV Capable + Level 2 EVSE)	40,127 to 62,965	$83.7 million to $203.7 million

Developers may use the power allocation method, as illustrated in Table 5.106.5.3.6. Staff ran two analyses based on Table 5.106.5.3.6, one without the installation of DCFCs and one with the installation of DCFCs. For existing buildings with 10 or more parking spaces, staff estimated for existing sites without DCFCs, the cost ranges from $8,343 to $115,848 per site and for locations with DCFCs the cost ranges from $11,154 to $127,906 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the charging level distribution (number of EV capable, level 2 EVSE, low power level 2 receptacles and DCFC).

The code does not make any changes to the DCFC allowance. Developers could elect to install 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not estimate the construction cost of the alternative DCFC pathway, since staff has no way to estimate the number of DCFCs that would be installed or the power levels that developers may be likely to install.

- **All New Nonresidential Construction excluding Office and Retail**

The proposed amendment would require all newly constructed nonresidential buildings, excluding office and retail buildings, to meet the requirements of Section 5.106.3.4 and Table 5.106.3.1. The proposed amendment would only apply to buildings with 10 or more parking spaces. The table below presents the number of required EV Capable spaces and required Level 2 EVSE. The totals presented in the table have been rounded to the nearest whole number.

Staff will also present the impact of the low power level 2 allowance. To estimate the impacts of this allowance staff assumed that every developer elected to install 2 low power level 2 charging receptacles to replace 1 EV Capable space. The true cost of the low power level 2 charging receptacles will depend on how many property owners or mangers elect to pursue this allowance and how many low power level 2 charging receptacles are installed.

	Total Number of Spaces	Total Initial Construction Cost ($)
EV Capable	69,850 to 85,545	$54.4 million to $94.1 million
Optional Replacement for EV Capable Spaces: Low power Level 2 charging receptacles	139,700 to 171,089	$250.8 million to $379.1 million
Level 2 EVSE	69,850 to 85,545	$176.1 million to $337.6 million
Total	139,700 to 171,090	$230.5 million to $431.7 million

Developers may use the power allocation method, as illustrated in Table 5.106.5.3.6. The Power Allocation Method applies to newly constructed parking facilities with 10 or more parking spaces. Staff ran two analyses based on Table 5.106.5.3.6, one without the installation of DCFCs and one with the installation of DCFCs. For newly constructed nonresidential buildings, excluding office and retail buildings, staff estimates for locations without DCFCs, the cost ranges from $12,222 to $106,885 per site and for locations with DCFCs the cost ranges from $9,412 to $96,804 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles Level 2 EVSE, and DCFC).

The code does not make any changes to the DCFC allowance. Developers could elect to install 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not estimate the construction cost of the alternative DCFC pathway, since staff cannot way to estimate the number developers that would use elect to use the alternative DCFC pathway.

- **New Construction Office and Retail**

The proposed amendment would require all newly constructed nonresidential buildings, excluding office and retail buildings, to meet the requirements of Section 5.106.3.4 and Table 5.106.3.1. The proposed amendment would only apply to buildings with 10 or more parking spaces. The table below presents the number of required EV Capable spaces and required Level 2 EVSE. The totals presented in the table have been rounded to the nearest whole number.

Staff will also present the impact of the low power level 2 allowance. To estimate the impacts of this allowance staff assumed that every developer elected to install 2 low power level 2 charging receptacles to replace 1 EV Capable space. The true cost of the low power level 2 charging receptacles will depend on how many property owners or mangers elect to pursue this allowance and how many low power level 2 charging receptacles are installed. The true cost of the low power level 2 charging receptacles will depend on how many property owners or mangers elect to pursue this allowance and how many low power level 2 charging receptacles are installed.

	Total Number of Spaces	Total Initial Construction Cost ($)
EV Capable	26,132 to 32,549	$20.4 million to $35.8 million
Optional Replacement for EV Capable Spaces: Low power Level 2 charging receptacles	52,265 to 65,097	$93.8 million to $144.2 million
Level 2 EVSE	78,397 to 98,513	$197.6 million to $385.8 million
Total (EV Capable + Level 2 EVSE)	99,716 to 131,062	$218.0 million to $421.2 million

Developers may use the power allocation method, as illustrated in Table 5.106.5.3.6. The Power Allocation Method applies to newly constructed parking facilities with 10 or more parking spaces Staff ran two analyses based on Table 5.106.5.3.6, one without the installation of DCFCs and one with the installation of DCFCs. For newly constructed buildings with 10 or more parking spaces, staff estimated for locations without DCFCs, the cost ranges from $12,222 to $112,516 per site and for locations with DCFCs the cost ranges from $8,343 to $123,474 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The code does not make any changes to the DCFC allowance. Property owners or managers could elect to install 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not estimate the construction cost of the alternative DCFC pathway, since staff cannot way to estimate the number developers that would use elect to use the alternative DCFC pathway.

The proposed amendments would also require the following:

a) Costs to Small Business

BSC assumes that small businesses are in nonresidential buildings between 1,001 to 5,000 square feet. Approximately half of these buildings typically have 9 parking spaces or fewer, which would not be subject to the amendments. However, some small businesses may be buildings in the 2,501 to 5,000 square foot range, which may be required to install EV charging infrastructure. Staff used the low estimates for the smaller buildings and the high estimates for the larger buildings.

- **Existing Buildings excluding Office and Retail**

For all existing building types in the 2,501to 5,000 square foot range excluding office and retail, developers must install 1 to 3 EV Capable space and 1 Level 2 EVSE with a cost estimate of $3,300 to $7,247. A developer could elect to install a maximum of 2 to 6 low power level 2 charging receptacles and 1 Level 2 EVSE with a cost estimate of $6,111 to $17,242.

Building size (sq ft)	2,501	5,000
Number of EV Capable Spaces	1	3
Number of Optional Low power Level 2 Spaces	2	6
Number of EVSE	1	1

- **Existing Office and Retail**

For existing office and retail buildings in the 2,501 to 5,000 square foot range, property owners or manages must install 0 to 1 EV Capable space sand 0 to 3 Level 2 EVSE for a cost ranging from $0 to $12,940. Property owners or managers could elect to install a maximum of 0 to 2 low power level 2 charging receptacle to replace all EV Capable spaces and 0 to 3 Level 2 EVSE. Staff estimates a construction cost of $0 to $16,272.

Building size (sq ft)	2,501	5,000
Number of EV Capable Spaces	0	1
Number of Optional Low power Level 2 Spaces	0	2
Number of EVSE	0	3

- **All New Nonresidential Construction excluding Office and Retail**

For new construction, in all building types except for office and retail buildings in the 2,501 to 5,000 square foot range, developers must install 1 to 3 EV Capable space and 1 to 3 Level 2 EVSE with a cost estimate of $3,300 to $15,140. Developers could elect to install a maximum of 0 to 2 low power level 2 charging receptacles to replace all EV Capable spaces, for an initial construction cost of $6,111 to $25,136.

Building size (sq ft)	2,501	5,000
Number of EV Capable Spaces	1	3
Number of Optional Low power Level 2 Spaces	2	6
Number of EVSE	1	3

- **New Construction Office and Retail**

For newly constructed office and retail buildings in the 2,501 to 5,000 square foot range, a developer must install 0 to 1 EV Capable spaces and 0 to 2 Level 2 EVSE, for a total cost ranging from $0 to $8,994. A developer could elect to install 0 to 2 low power level charging receptacles to replace all required EV Capable spaces, for an initial construction cost of $0 to $12,325.

Building size (sq ft)	2,501	5,000
Number of EV Capable Spaces	0	1
Number of Optional Low power Level 2 Spaces	0	2
Number of EVSE	0	2

Summary: Initial costs for a small business: a newly constructed nonresidential building (office/retail plus non-office or retail):
Low-end range: $0 + $3,300=$3,300.
High-end range: $15,140 + $8,994=$24,134.

b) Costs to Typical Business
Typical businesses are assumed to be constructing new nonresidential buildings in the 5,001 to 100,000 square foot size range. These businesses account for 52% of affected businesses. Staff used the low estimates for the smaller buildings (5,000 square feet) and the high estimates for the larger buildings (100,000 square feet).

- **All Existing Buildings excluding Office and Retail**

For all existing buildings except for office and retail building types with a size of 5,001 to 100,000 square feet, property owners or managers would be required to install 2 to 55 EV capable spaces and 2 to 55 Level 2 EVSE, with a cost estimate ranging from $6,601 to $277,569. Developers could elect to install a maximum of 8 to 110 low power level 2 charging receptacles to replace all EV Capable spaces and 2 to 55 Level 2 EVSE, for a construction cost of $15,127 to $651,221.

Building size (sq ft)	5,001	100,000
Number of EV Capable Spaces	2	55

Building size (sq ft)	5,001	100,000
Number of Optional Low power Level 2 Spaces	4	110
Number of EVSE	4	55

- **Existing office and retail**

For existing office and retail building types with a with a size of 5,001 to 100,000 square feet, property owners or managers would be required to install1 to 20 EV Capable spaces and 2 to 59 Level 2 EVSE, for a construction cost ranging from $5,822 to $254,859. Developers could elect to install 2 to 40 low power level 2 charging receptacles to replace all EV Capable spaces and 2 to 59 Level 2 EVSE. Staff estimates a construction cost of $8,632 to $321,497.

Building size (sq ft)	5,001	100,000
Number of EV Capable Spaces	1	20
Number of Optional Low power Level 2 Charging Receptacles	2	40
Number of EVSE	2	59

- **All New Nonresidential Construction excluding Office and Retail**

In newly constructed nonresidential buildings of 5,001 to 100,000 square feet, developers must install 2 to 55 EV capable spaces and 2 to 55 Level 2 EVSE, with a cost estimate ranging from $6,601to $277,569. A developer could elect to install only low power level 2 charging receptacles and Level 2 EVSE for a total of 2 to110 low power level 2 charging receptacles and 1 to 55 Level 2 EVSE, with a cost estimate of $12,222 to $460,823.

Building size (sq ft)	5,001	100,000
Number of EV Capable Spaces	2	55
Number of Optional Low power Level 2 Charging Receptacles	4	110
Number of EVSE	2	55

- **New Construction Office and Retail**

In newly constructed office and retail buildings of 5,001 to 100,000 square feet, developers must install 1 to 14 EV capable spaces and 2 to 41 Level 2 EVSE, with a cost estimate ranging from to $5,822 to $177,217. A developer could elect to install only low power level 2 charging receptacles and Level 2 EVSE for a total of 2 to 28 low power level 2 charging receptacles and 2 to 41 Level 2 EVSE, with a cost estimate $8,632.36 to $223,863.65.

Building size (sq ft)	5,001	100,000
Number of EV Capable Spaces	1	14
Number of Optional Low power Level 2 Charging Receptacles	2	28
Number of EVSE	2	41

Summary: Initial costs for a typical business-newly constructed nonresidential building (office-retail plus non-office or retail):
Low-end range**:** $6,601 + $5,822=$12,423.
High-end range: $277,569 + $177,217 =$454,786

c) In all newly constructed nonresidential buildings except for office and retail the mandatory provisions (installing EV Capable and EVSE) will account for 1.00% to 1.05% of the total new construction cost. If a developer elects to install only low power level 2 charging receptacles and Level 2 EVSE, that will account for 1.74% to 1.84% of the total new construction cost. In newly constructed office and retail buildings, the required provisions of EV capable and Level 2 EVSE will account for 1.33% to 1.46% of the total new construction costs. If a developer elects to install only low power level 2 charging receptacles and Level 2 EVSE, that will account for 1.78% to 1.83% of the total new construction costs.

5. Explain the need for State regulation given the existence or absence of Federal regulations:
Currently there are no federal regulations for mandatory electric vehicle infrastructure installations during additions and alterations made to existing buildings. Assembly Bill 1092 (Ch. 410, Stats of 2013) directed BSC to develop mandatory EV standards for nonresidential buildings. In addition, these amendments support the implementation of the Governor's Executive Orders B-48-2018 and N-79-2020 to achieve a benchmark for having over 5 million zero-emission vehicles (ZEVs) on California roadways by 2030 and 100% sales of electric vehicles by 2035.

California's National Electric Vehicle Infrastructure (NEVI) Plan was approved on September 15, 2022. California will receive $384 million in federal funding, over the next 5 years, to install direct current fast chargers throughout selected highway corridors.[6] While the funding from the NEVI program will help California support zero-emission vehicles, it only addresses a specific charging need, drivers that need charging on long-distance commutes. End-point charging locations, such as workplaces, meet a different charging need. These charging locations provide drivers with convenient access to charging, without having to travel to locations outside of their normal driving routes. However, nonresidential site developers may have opportunities to reduce the out-of-pocket cost of installing EV charging infrastructure via NEVI funds. Staff cannot estimate the total cost reductions because it depends on the eligibility requirements of the funding opportunity.

C. ESTIMATED BENEFITS

1. Explain the estimated benefits to be derived from this proposal:
The benefits of these amendments include sustaining California's natural resources by reducing energy, greenhouse gas emissions, criteria pollutants, and dependency on fossil fuel. The tables below list the estimated number of spaces over the lifetime of the proposed amendments. The total presented in the following tables are for the required provisions only (EV capable and Level 2 EVSE). To estimate the total number of spaces and greenhouse gas emissions reduction potential of the optional low power level 2 replacement for EV Capable, staff assumed that every EV Capable space was replaced by 2 low power level 2 charging receptacles. The true number of spaces and greenhouse gas emission reduction benefit potential of low power level 2 charging receptacles will depend on the number of low power level 2 charging receptacles that are installed. The greenhouse gas emission reduction potential benefit is presented annually. The totals presented in the table have been rounded to the nearest whole number.

- **Existing Buildings excluding Office and Retail**

[6] National Electric Vehicle Infrastructure Program (NEVI) | California Energy Commission

	Total Number of Spaces	Annual GHG Emission Reduction Potential Benefit (metric tons CO_2e)
EV Capable	36,440 to 45,754	27,000 to 43,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	72,880 to 91,507	90,000 to 143,000
Level 2 EVSE	36,440 to 45,754	90,000 to 143,000
Total	72,880 to 91,508	117,000 to 186,000

- **Existing Office and Retail**

	Number of Spaces	Annual GHG Emission Reduction Potential Benefit (metric tons CO_2e)
EV Capable	10,032 to 15,741	11,000 to 15,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	20,063 to 31,483	25,000 to 50,000
Level 2 EVSE	30,095 to 47,224	74,000 to 148,000
Total	40,127 to 62,965	85,000 to 163,000

Staff cannot estimate the greenhouse gas emissions reduction benefits based on the power allocation method (Table 5.106.5.3.6), because staff cannot accurately estimate the number and configuration of how developers would elect to implement the power allocation method at any given site.

Staff cannot estimate the greenhouse gas emissions reduction benefits of the alternative DCFC pathway. Staff cannot predict how many developers would elect to use the alternative DCFC pathway.

- **All New Nonresidential Construction excluding Office and Retail**

	Number of Spaces	Annual GHG Emission Reduction Benefit Potential (metric tons CO_2e)
EV Capable	69,850 to 85,545	154,000 to 241,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	139,700 to 171,089	513,000 to 802,000

	Number of Spaces	Annual GHG Emission Reduction Benefit Potential (metric tons CO_2e)
Level 2 EVSE	69,850 to 85,545	513,000 to 802,000
Total (EV Capable + Level 2 EVSE)	139,700 to 171,090	667,000 to 1,043,000

Staff cannot estimate the greenhouse gas emissions reduction benefits based on the power allocation method, Table 5.106.5.3.6., because staff cannot estimate how many developers will implement the table or the combination of the various EV chargers.

Staff cannot estimate the greenhouse gas emissions reduction benefits of the alternative DCFC pathway. Staff cannot predict how many developers would elect to use the alternative DCFC pathway.

- **Newly Constructed Office and Retail**

	Number of Spaces	Annual GHG Emission Reduction Benefit Potential (metric tons CO_2e)
EV Capable	26,132 to 32,549	58,000 to 92,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	52,265 to 65,097	192,000 to 306,000
Level 2 EVSE	78,397 to 97,646	576,000 to 916,000
Total (EV Capable + Level 2 EVSE)	104,529 to 130,195	634,000 to 1,008,000

Staff cannot estimate the greenhouse gas emissions reduction benefits based on the power allocation method, Table 5.106.5.3.6., because staff cannot estimate how many developers will implement the table or the combination of the various EV chargers.

Staff cannot estimate the greenhouse gas emissions reduction benefits of the alternative DCFC pathway. Staff cannot predict how many developers would elect to use the alternative DCFC pathway.

3. <u>What are the total statewide benefits (avoided costs) from this regulation over its lifetime?</u>

If the proposed amendment is not adopted, CARB staff assumed that every one of these parking spaces would need the basic EV charging infrastructure (raceway and panel capacity) to become EV Capable and support future installation of Level 2 charging stations. Staff estimated the statewide benefits by subtracting the construction costs from the estimated retrofit costs. Based on a 2019 report by CARB[7], adding panel capacity and conduit alone to support Level 2 charging in existing buildings costs $7,000 to $8,000 per space. The table below includes the total number of spaces, avoided retrofit costs and

[7] Electric Vehicle (EV) Charging Infrastructure: Nonresidential Building Standards. CARB, Sacramento, CA: 2019.

statewide benefits over the lifetime of the proposed amendments. The totals presented in the table have been rounded to the nearest whole number.

- **All Existing Facilities excluding Office and Retail**

	Total Number of Spaces	Total Avoided Retrofit Costs ($)	Total Statewide benefit ($)
EV Capable	36,440 to 45,754	$255.1 million to $366.0 million	$204.8 million $337.6 million
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	72,880 to 91,507	$510.2 million to $732.1 million	$307.4 million to $601.2 million
Level 2 EVSE	36,440 to 45,754	$255.1 million to $366.0 million	$74.5 million to $274.2 million
Total	72,880 to 91,508	$510.2 million to $732.0 million	$279.3 million to $611.8 million

Staff cannot estimate the total statewide benefits based on the power allocation method, (Table 5.106.5.3.6), because staff cannot estimate how many developers will implement the table or how developers will install EV charging infrastructure.

Staff cannot estimate the total statewide benefits of allowing 1 DCFC to substitute for 5 EV capable or 5 level 2 EVSE. Staff cannot predict how many developers would elect to install DCFCs and the power level of the installed DCFCs.

- **All Existing Office and Retail**

	Total Number of Spaces	Total Avoided Retrofit Costs ($)	Total Statewide Benefit ($)
EV Capable	10,032 to 15,741	$70.2 million to $125.9 million	$52.9 million to $118.1 million
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	20,063 to 32,866	$140.4 million to $251.9 million	$70.7 million to $215.8 million
Level 2 EVSE	30,095 to 47,224	$210.7 million $377.8 million	$24.3 million to $301.9 million
Total (EV Capable + Level 2 EVSE)	40,127 to 62,965	$280.9 million to $503.7 million	$77.2 million to $420.0 million

Staff cannot estimate the total statewide benefits based on the power allocation method, Table 5.106.5.3.6., because staff cannot estimate how many developers will implement the table or how developers will install EV charging infrastructure.

Staff cannot estimate the total statewide benefits of allowing 1 DCFC to substitute for 5 EV capable or 5 level 2 EVSE. Staff cannot predict how many developers would elect to install DCFCs and the power level of the installed DCFCs.

- **All New Nonresidential Construction excluding Office and Retail**

	Total Number of Spaces	Total Avoided Retrofit Costs ($)	Total Statewide Benefit ($)
EV Capable	69,850 to 85,545	$488.9 million to $684.4 million	$394.9 million to $629.9 million
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	139,700 to 171,089	$977.9 million to $1,368.7 million	$598.8 million to $1,117.9 million
Level 2 EVSE	69,850 to 85,545	$488.9 million to $684.4 million	$151.3 million to $508.3 million
Total (EV Capable + Level 2 EVSE)	139,700 to 171,090	$977.8 million to $1,368.8 million	$546.2 million to $1,138.2 million

Staff cannot estimate the total statewide benefits based on the power allocation method, Table 5.106.5.3.6 because staff cannot estimate how many developers will implement the table or how developers will install EV charging infrastructure.

Staff cannot estimate the total statewide benefits of allowing 1 DCFC to substitute for 5 EV capable or 5 level 2 EVSE. Staff cannot predict how many developers would elect to install DCFCs and the power level of the installed DCFCs.

- **Newly Constructed Office and Retail**

	Total Number of Spaces	Total Avoided Retrofit Costs ($)	Total Statewide Benefit ($)
EV Capable	26,132 to 32,549	$182.9 million to $260.4 million	$147.1 million to $240.0 million
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	52,265 to 65,097	$365.9 million to $520.8 million	$221.6 million to $427.0 million
Level 2 EVSE	78,397 to 97,646	$548.8 million to $781.2 million	$163.4 million to $583.5 million
Total (EV Capable + Level 2 EVSE)	104,529 to 130,195	$731.7 million to $1,041.6 million	$310.5 million to $823.5 million

Staff cannot estimate the total statewide benefits based on the power allocation method, Table 5.106.5.3.6 because staff cannot estimate how many developers will implement the table or how developers will install EV charging infrastructure.

Staff cannot estimate the total statewide benefits of allowing 1 DCFC to substitute for 5 EV capable or 5 level 2 EVSE. Staff cannot predict how many developers would elect to install DCFCs and the power level of the installed DCFCs.

Summary: Total Statewide benefits for this regulation over its lifetime:
Low-end range: $546.2 million +$310.5 million=$857 million
High-end range: $1,138.2 million +$823.5 million=$1,962 million

D. ALTERNATIVES TO THE REGULATION

2. In addition to proposed mandatory regulations, BSC considered four voluntary alternatives that would apply to existing facilities and newly constructed facilities. BSC is proposing these 4 alternatives for the Voluntary Tier 1 and Tier 2 Measures. Alternatives 1 and 2 apply to the Voluntary Tier 1 and 2 Measures for newly constructed parking facilities. Alternatives 3 and 4 have been proposed as Voluntary Tier 1 and Voluntary Tier 2 Measures for existing facilities.

   Alternative 1, Tier 1 Newly Constructed: BSC is proposing for newly constructed nonresidential buildings, excluding office and retail buildings, that 30% of parking spaces to be EV Capable and 50% of those EV Capable spaces to must have Level 2 EVSE installed. For newly constructed office and retail buildings, BSC proposes that 30% of parking be EV Capable and 75% EV Capable spaces have Level 2 EVSE installed. BSC proposes the low power level 2 charging receptacle alternative compliance, the DCFC alternative compliance method, and the Power Allocation Method (Table A5.106.5.3.2) will also be applicable to this amendment.

   - Newly Constructed Nonresidential Buildings, excluding Office and Retail Buildings

   BSC proposing for newly constructed nonresidential buildings, excluding office and retail buildings 30% of parking spaces must be EV Capable and 50% of those EV Capable spaces must have Level 2 EVSE installed. The table below presents the total number of spaces, construction cost and an annualized estimate of the greenhouse gas emissions reduction benefit potential. The totals presented in the table have been rounded to the nearest whole number.

   Staff will present the low power level 2 charging receptacle allowance. To estimate the total number of spaces, construction cost and annualized estimate of the greenhouse gas emissions reduction benefit potential, staff assumed that every developer elected to replace all EV Capable spaces with low power level 2 charging receptacles. The true number of spaces, construction cost and potential greenhouse gas emissions reduction depend on the number of property owners or managers that elect to use this allowance and the number of low power level 2 charging receptacles installed.

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
EV Capable	105,994 to 129,261	$82.6 million $142.2 million	234,000 to 364,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	211,988 to 258,522	$380.5 million to $572.9 million	778,000 to 1,203,000
Level 2 EVSE	105,994 to 129,261	$267.2 million to $510.2 million	778,000 to 1,212,000
Total (EV Capable + Level 2 EVSE)	211,988 to 258,522	$349.8 million to $652.4 million	1,012,000 to 1,576,000

The Power Allocation Method (Table A5.106.5.3.2) will apply newly constructed parking facilities, including parking facilities with 0 to 9 spaces. Staff ran two analyses, one without

the installation of DCFCs and one with the installation of DCFCs. For newly constructed parking facilities, staff estimate for locations without DCFCs, the cost ranges from $3,300 to $155,153 per site and for locations with DCFCs the cost ranges from $6,111 to $175,631 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The DCFC alternative compliance allowance will remain applicable. A developer would have the option of installing 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not perform an analysis on the DCFC compliance pathway. Staff cannot estimate the number of DCFCs that will be installed under the pathway or the power level of the installed DCFCs.

- Newly Constructed Office and Retail Buildings

BSC proposing for newly constructed office and retail buildings 30% of parking spaces must be EV Capable and 75% of those EV Capable spaces must have Level 2 EVSE installed. The table below presents the total number of spaces, construction cost and greenhouse gas emissions over the 3-year lifetime of this amendment. The totals presented in the table have been rounded to the nearest whole number.

Staff will present the low power level 2 charging receptacle allowance. To estimate the total number of spaces, construction cost and total potential greenhouse gas emissions reduction benefit, staff assumed that every developer elected to replace all EV Capable spaces with low power level 2 charging receptacles. The true number of spaces, construction cost and potential greenhouse gas emissions reduction depend on the number of property owners or managers that elect to use this allowance and the number of low power level 2 charging receptacles installed.

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
EV Capable	39,198 to 51,396	$30.5 million to $56.5 million	87,000 to 145,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	78,397 to 102,792	$140.7 million to $227.8 million	288,000 to 482,000
Level 2 EVSE	126,434 to 154,187	$318.8 million to $608.5 million	928,000 to 1,446,000
Total (EV Capable + Level 2 EVSE)	165,632 to 205,583	$349.3 million to $665.1 million	1,015,000 to 1,591,000

The Power Allocation Method (Table A5.106.5.3.2) will apply to all newly constructed office and retail parking facilities, including parking facilities with 0 to 9 parking spaces. Staff ran two analyses, one without the installation of DCFCs and one with the installation of DCFCs. For newly constructed office and retail parking facilities, staff estimate for locations without DCFCs, the cost ranges from $3,300 to $151,821 per site and for locations with DCFCs the cost ranges from $6,111 to $172,299 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The DCFC alternative compliance allowance will remain applicable. A developer would have the option of installing 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not perform an analysis on the DCFC compliance pathway. Staff cannot estimate the number of DCFCs that will be installed under the pathway or the power level of the installed DCFCs.

Summary Costs Alternative 1: Total statewide costs and benefits from this regulation and each alternative considered.

Low-end range: $349.8 million +$349.3 million=$699 million
High-end range: $652.4 million +$665.1 million=$1,317.5 million

Alternative 2, Tier 2 Newly Constructed: BSC is proposing for newly constructed nonresidential buildings, excluding office and retail buildings, that 45% of parking spaces to be EV Capable and 50% of those EV Capable spaces to must have Level 2 EVSE installed. For newly constructed office and retail buildings, BSC proposes that 45% of parking spaces be EV Capable and 75% of those EV Capable spaces have Level 2 EVSE installed. BSC proposes the low power level 2 charging receptacle alternative compliance, the DCFC alternative compliance, and the Power Allocation Method (Table A5.106.5.3.4) will also be applicable to this amendment.

- Newly Constructed Nonresidential Buildings, excluding Office and Retail Buildings

BSC proposing for newly constructed nonresidential buildings, excluding office and retail buildings 45% of parking spaces must be EV Capable and 50% of those EV Capable space must have Level 2 EVSE installed. The table below presents the total number of spaces, construction cost and an annualized estimate of the greenhouse gas emissions reduction benefit potential. The totals presented in the table have been rounded to the nearest whole number.

Staff will present the low power level 2 charging receptacle allowance. To estimate the total number of spaces, construction cost and annualized estimate of the greenhouse gas emissions reduction benefit potential, staff assumed that every developer elected to replace all EV Capable spaces with low power level 2 charging receptacles. The true number of spaces, construction cost and potential greenhouse gas emissions reduction depend on the number of property owners or managers that elect to use this allowance and the number of low power level 2 charging receptacles installed.

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
EV Capable	158,991 to 193,891	$123.9 million to $213.3 million	350,000 to 546,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	317,982 to 384,783	$570.8 million to $859.3 million	1,167,000 to 1,818,000
Level 2 EVSE	158,991 to 193,891	$400.8 million to $765.2 million	1,167,000 to 1,818,000

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
Total (EV Capable + Level 2 EVSE)	317,982 to 387,782	$525 million to $978.5 million	1,517,000 to 2,364,000

The Power Allocation Method (Table A5.106.5.3.4) will apply to newly constructed nonresidential parking facilities, including parking facilities with 0 to 9 spaces. Staff ran two analyses, one without the installation of DCFCs and one with the installation of DCFCs. For newly constructed parking facilities, staff estimate for locations without DCFCs, the cost ranges from $11,933 to $351,327 per site and for locations with DCFCs the cost ranges from $14,744 to $367,947 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The DCFC alternative compliance allowance will remain applicable. A developer would have the option of installing 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not perform an analysis on the DCFC compliance pathway. Staff cannot estimate the number of DCFCs that will be installed under the pathway or the power level of the installed DCFCs.

- Newly Constructed Office and Retail

BSC proposing for newly constructed office and retail buildings 45% of parking spaces must be EV Capable and 75% of those EV Capable space must have Level 2 EVSE installed. The table below presents the total number of spaces, construction cost and greenhouse gas emissions over the 3-year lifetime of this amendment. The totals presented in the table have been rounded to the nearest whole number.

Staff will present the low power level 2 charging receptacle allowance. To estimate the total number of spaces, construction cost and total potential greenhouse gas emissions reduction benefit, staff assumed that every developer elected to replace all EV Capable spaces with low power level 2 charging receptacles. The true number of spaces, construction cost and potential greenhouse gas emissions reduction depend on the number of property owners or managers that elect to use this allowance and the number of low power level 2 charging receptacles installed.

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
EV Capable	60,176 to 77,094	$46.9 million to $84.8 million	133,000 to 217,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	120,352 to 154,187	$216.0 million to $341.7 million	442,000 to 723,000
Level 2 EVSE	189,651 to 231,281	$478.1 million to $912.8 million	1,392,000 to 2,168,000

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
Total (EV Capable + Level 2 EVSE)	249,827 to 308,375	$525.0 million to $997.6 million	1,525,000 to 2,385,000

The Power Allocation Method (Table A5.106.5.3.4) will apply to all newly constructed office and retail parking facilities with 0 to 9 spaces. Staff ran two analyses, one without the installation of DCFCs and one with the installation of DCFCs. For existing buildings that undergo a qualifying addition or alteration, staff estimate for locations without DCFCs, the cost ranges from $14,071 to $380,052 per site and for locations with DCFCs the cost ranges from $15,813 to $344,923 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The DCFC alternative compliance allowance will remain applicable. A developer would have the option of installing 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not perform an analysis on the DCFC compliance pathway. Staff cannot estimate the number of DCFCs that will be installed under the pathway or the power level of the installed DCFCs.

Summary Costs Alternative 2: Total statewide costs and benefits from this regulation and each alternative considered.

Low-end range: $525 million +525 million=$1,050 million
High-end range: $978.5 million +$997.6 million=$1,976.1 million

Alternative 3, Tier 1 Existing Facilities: BSC is proposing for existing buildings, excluding office and retail buildings, that undergo a qualifying addition or alteration that 30% of the added or altered spaces must be EV Capable and 50% of those added or altered EV Capable spaces to must have Level 2 EVSE installed. For existing office and retail buildings, BSC proposes that 30% of added or altered spaces be EV Capable and 75% of those added or altered EV Capable spaces have Level 2 EVSE installed. BSC proposes the low power level 2 charging receptacle alternative compliance, the DCFC alternative compliance, and the Power Allocation Method (Table A5.106.5.3.2) will also be applicable to this amendment.

- All Existing Nonresidential Buildings, excluding Office and Retail Buildings

BSC proposing for existing nonresidential buildings, excluding office and retail buildings, that undergo a qualifying addition or alteration, that 30% of the added or altered spaces must be EV Capable and 50% of those added or altered EV Capable space must have Level 2 EVSE installed. The table below presents the total number of spaces, construction cost and greenhouse gas emissions over the 3-year lifetime of this amendment. The totals presented in the table have been rounded to the nearest whole number.

Staff will present the low power level 2 charging receptacle allowance. To estimate the total number of spaces, construction cost and total potential greenhouse gas emissions reduction benefit, staff assumed that every developer elected to replace all EV Capable spaces with low power level 2 charging receptacles. The true number of spaces, construction cost and potential greenhouse gas emissions reduction depend on the number of property owners or managers that elect to use this allowance and the number of low power level 2 charging receptacles installed.

	Total Number of Spaces	Total Initial Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
EV Capable	56,381 to 69,978	$43.9 million to $77.0 million	42,000 to 66,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	112,762 to 139,957	$202.4 million to $310.1 million	138,000 to 219,000
Level 2 EVSE	56,381 to 69,978	$142.1 million to $276.2 million	138,000 to 219,000
Total (EV Capable + Level 2 EVSE)	112,762 to 139,757	$186.0 million to $353.2 million	180,000 to 285,000

The Power Allocation Method (Table A5.106.5.3.2) will apply to all existing nonresidential building that undergo a qualifying addition or alternation. This alternative would apply to all existing parking facilities, including parking facilities that add or alter 0 to 9 spaces. Staff ran two analyses, one without the installation of DCFCs and one with the installation of DCFCs. For existing buildings that undergo a qualifying addition or alteration, staff estimate for locations without DCFCs, the cost ranges from $6,111 to $181,323 per site and for locations with DCFCs the cost ranges from $6,111 to $194,428 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The DCFC alternative compliance allowance will remain applicable. A developer would have the option of installing 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not perform an analysis on the DCFC compliance pathway. Staff cannot estimate the number of DCFCs that will be installed under the pathway or the power level of the installed DCFCs.

- Existing Office and Retail Buildings

BSC proposing for existing office and retail buildings that undergo a qualifying addition or alteration, that 30% of the added or altered spaces must be EV Capable and 75% of those added or altered EV Capable space must have Level 2 EVSE installed. The table below presents the total number of spaces, and the construction cost over the 3-year lifetime of the amendment. Further, the table presents an annual estimate of the greenhouse gas emission reduction potential benefit. The totals presented in the table have been rounded to the nearest whole number.

Staff will present the low power level 2 charging receptacle allowance. To estimate the total number of spaces, construction cost and total potential greenhouse gas emissions reduction benefit, staff assumed that every developer elected to replace all EV Capable spaces with low power level 2 charging receptacles. The true number of spaces, construction cost and potential greenhouse gas emissions reduction depend on the number of property owners or managers that elect to use this allowance and the number of low power level 2 charging receptacles installed. The total number of spaces and total construction costs were calculated over the 3-year lifetime of the proposed amendment.

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential Benefit (metric tons of CO_2e)
EV Capable	20,794 to 25,834	$16.2 million to $28.4 million	16,000 to 25,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	41,589 to 51,669	$74.7 million to $114.5 million	51,000 to 81,000
Level 2 EVSE	62,383 to77,503	$157.3 million to $305.9 million	153,000 to 243,000
Total (EV Capable + Level 2 EVSE)	83,177 to 103,337	$173.5 million to $334.3 million	169,000 to 268,000

The Power Allocation Method (Table A5.106.5.3.2) will apply to existing office and retail buildings that undergo a qualifying addition or alteration. This alternative would apply to all existing office and retail parking facilities, including parking facilities that add or alter 0 to 9 spaces. Staff ran two analyses, one without the installation of DCFCs and one with the installation of DCFCs. For existing buildings that undergo a qualifying addition or alteration, staff estimate for locations without DCFCs, the cost ranges from $3,300 to $151,821 per site and for locations with DCFCs the cost ranges from $6,111 to $194,428 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The DCFC alternative compliance allowance will remain applicable. A developer would have the option of installing 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not perform an analysis on the DCFC compliance pathway. Staff cannot estimate the number of DCFCs that will be installed under the pathway or the power level of the installed DCFCs.

Summary Costs Alternative 3: Total statewide costs and benefits from this regulation for Tier 1 existing facilities considered.

Low-end range: $186.0 million + $173.5 million=$359.5 million
High-end range: $353.2 million + $334.3 million=$687.5 million

Alternative 4, Tier 2 Existing Facilities: BSC is proposing for existing buildings that undergo a qualifying addition or alteration that 45% of parking spaces to be EV Capable and 50% of those EV Capable spaces to have Level 2 EVSE installed. BSC is proposing for existing office and retail buildings that undergo a qualifying addition or alteration that 45% of the added or altered spaces be EV Capable and 75% of those added or altered EV Capable spaces must have Level 2 EVSE. BSC also proposes that the low power level 2 charging receptacle alternative compliance, the DCFC alternative compliance, and the Power Allocation Method (Table A5.106.5.3.4) will be applicable to existing nonresidential buildings, including office and retail buildings.

- Existing Buildings, excluding Office and Retail Buildings

BSC proposing for all existing nonresidential buildings excluding office and retail buildings, that undergo a qualifying addition or alteration, that 45% of the added or altered spaces must be EV Capable and 50% of those added or altered EV Capable space must have Level 2

EVSE installed. The table below presents the total number of spaces and total construction costs estimated over the 3-year lifetime of the proposed amendment. The totals presented in the table have been rounded to the nearest whole number.

Staff will present the low power level 2 charging receptacle allowance. To estimate the total number of spaces, construction cost and total potential greenhouse gas emissions reduction benefit, staff assumed that every developer elected to replace all EV Capable spaces with low power level 2 charging receptacles. The true number of spaces, construction cost and potential greenhouse gas emissions reduction depend on the number of property owners or managers that elect to use this allowance and the number of low power level 2 charging receptacles installed.

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
EV Capable	84,571 to 104,968	$65.9 million to $115.5 million	63,000 to 99,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	169,142 to 209,935	$303.6 million to $465.2 million	207,000 to 328,000
Level 2 EVSE	84,571 to 104,968	$213.2 million to $414.3 million	207,000 to 328,000
Total (EV Capable + Level 2 EVSE)	169,142 to 209,536	$278.2 million to $528.8 million	270,000 to 427,000

The Power Allocation Method (Table A5.106.5.3.4) would apply to all existing buildings excluding office and retail buildings, that undergo a qualifying addition or alternation. This alternative would apply to all existing parking facilities, including parking facilities that add or alter 0 to 9 spaces. Staff ran two analyses, one without the installation of DCFCs and one with the installation of DCFCs. For existing buildings that undergo a qualifying addition or alteration, staff estimate for locations without DCFCs, the cost ranges from $11,933 to $353,559 per site and for locations with DCFCs the cost ranges from $14,744 to $345,893. per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The DCFC alternative compliance allowance will remain applicable. A developer would have the option of installing 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not perform an analysis on the DCFC compliance pathway. Staff cannot estimate the number of DCFCs that will be installed under the pathway or the power level of the installed DCFCs.

- Existing Office and Retail Buildings

BSC proposing for existing office and retail buildings that undergo a qualifying addition or alteration, that 45% of the added or altered spaces must be EV Capable and 75% of those added or altered EV Capable space must have Level 2 EVSE installed. The table

below presents the total number of spaces and total construction costs estimated over the 3-year lifetime of the proposed amendment. The totals presented in the table have been rounded to the nearest whole number.

Staff will present the low power level 2 charging receptacle allowance. To estimate the total number of spaces, construction cost and total potential greenhouse gas emissions reduction benefit, staff assumed that every developer elected to replace all EV Capable spaces with low power level 2 charging receptacles. The true number of spaces, construction cost and potential greenhouse gas emissions reduction depend on the number of property owners or managers that elect to use this allowance and the number of low power level 2 charging receptacles installed.

	Total Number of Spaces	Total Construction Costs ($)	Annual Greenhouse Gas Emissions Reduction Potential benefit (metric tons of CO_2e)
EV Capable	31,191 to 38,752	$24.3 million to $42.6 million	23,000 to 37,000
Optional Replacement for EV Capable Spaces: Low Power Level 2 Charging receptacle	62,383 to 73,503	$112.0 million to $171.7 million	77,000 to 122,000
Level 2 EVSE	93,574 to 116,255	$235.9 million to $458.8 million	229,000 to 341,000
Total (EV Capable + Level 2 EVSE)	124,766 to 155,006	$260.2 million to $501.5 million	252,000 to 378,000

The Power Allocation Method (Table A5.106.5.3.4) would apply to existing office and retail buildings that undergo a qualifying addition or alternation. This includes office and retail parking facilities that add or alter 0 to 9 spaces. Staff ran two analyses, one without the installation of DCFCs and one with the installation of DCFCs. This alternative would apply to all existing parking facilities, including parking facilities that add or alter 0 to 9 spaces. For existing buildings that undergo a qualifying addition or alteration, staff estimate for locations without DCFCs, the cost ranges from $13,675 to $383,384 per site and for locations with DCFCs the cost ranges from $15,812 to $344,923 per site. However, the actual costs are highly dependent on the site developer, the building's function, and the and the charging level distribution (number of EV capable, low power Level 2 receptacles, Level 2 EVSE and DCFC).

The DCFC alternative compliance allowance will remain applicable. A developer would have the option of installing 1 DCFC to replace 5 EV Capable spaces or 5 Level 2 EVSE. Staff could not perform an analysis on the DCFC compliance pathway. Staff cannot estimate the number of DCFCs that will be installed under the pathway or the power level of the installed DCFCs.

Summary Costs Alternative 4: Total statewide costs and benefits from this regulation for Tier 2 existing facilities considered.

Low-end range: $278.2 million +$260.2 million=$538.4 million
High-end range: $528.8 million +$501.5 million=$1,030.3 million

FISCAL IMPACT STATEMENT
Items:

A. FISCAL EFFECT ON LOCAL GOVERNMENT
A.6. Other. Explain.

Currently, local government building departments are responsible for enforcing the California Green Building Standards Code, Title 24, Part 11. There should not be any major fiscal effect on local governments to enforce a mandatory EV charging infrastructure installation during additions or alterations to existing parking facilities. However, if there is a minor increase of costs to local governments to review and check plans for compliance, any increase in costs can be recovered from increases in permit fees.

Some local governments may incur additional costs when they perform additions or alterations to their own facilities. Staff assumes that these buildings fall under the office building type. There is very limited data on the number of buildings that undergo a qualifying addition or alteration. However, most local government buildings fall in the 0 to 5,000 square feet category. BSC estimated that if and when a local government may perform an addition or alternation to an existing building subject to these amendments, they would need to install between 0 and 1 EV capable spaces and 0 to 3 Level 2 EVSE, with an estimated cost ranging from $0 to $12,940. Developers could install 0 to 2 low power level 2 charging receptacles and 0 to 3 Level 2 EVSE, with a construction cost of $0 to $16,272.

Some local governments may incur additional costs when they construct new buildings. Staff assumes that newly constructed local government buildings are considered office buildings. There is no data available on how many total new buildings will be constructed by local governments on an annual basis. However, most local government buildings are 0 to 5,000 square feet. BSC estimated that if and when a local government may construct a new building subject to these amendments, they would need to install between 0 and 1 EV capable spaces, and 0 to 2 Level 2 EVSE, with an estimated cost ranging from $0 to $8,994. Developers could elect to install low power level 2 charging receptacles instead of EV capable spaces. Staff estimates that developers could install a maximum of 0 to 2 low power level 2 charging receptacles and 0 to 2 Level 2 EVSE, for an estimated cost ranging from $0 to $12,325.

FISCAL EFFECT ON STATE GOVERNMENT

B.4:
All existing buildings will be subject to the proposed amendments. Staff assumes that all existing state buildings would be considered office buildings. BSC cannot identify the number of buildings that will be impacted by the proposed amendments during the effective date. BSC assumes a typical business is in a 5,001 to 100,000 square foot building. Staff estimates that the State would install 1 to 20 EV Capable spaces and 2 to 59 Level 2 EVSE, for a construction cost ranging from $5,821 to $254,859. The state could elect to install 2 to 40 low power level 2 charging receptacles to replace all EV capable spaces. Staff estimates the total cost for 2 to 40 low power level 2 charging receptacles and 2 to 59 Level 2 EVSE to range from $8,632 to $321,496.

All new state buildings are subject to these requirements. Staff assumed that state buildings would fall under the office building type. BSC cannot identify the number buildings that will be impacted by the proposed amendments during the effective date. Staff assumed that these new buildings would fall in the same size range as a typical business. A typical business of 5,001 to 100,000 square feet may install 1 to 14 EV capable spaces and 2 to 41 Level 2 EVSE. Staff estimates for a newly constructed state building, the total cost ranges

from $5,822 to $177,217. Developers could install low power level 2 chargers instead of EV capable spaces. Staff estimates that a developer could install a maximum of 2 to 28 low power level 2 charging receptacles and 2 to 41 Level 2 EVSE, with an estimated cost ranging from $8,632 to $223,863.