CITY OF LAFAYETTE

ORDINANCE NO. 17, SERIES 2021

INTRODUCED BY: COUNCILOR BRIGGS

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF LAFAYETTE, COLORADO, AMENDING ARTICLE VIII, ENERGY CONSERVATION, OF CHAPTER 30 OF THE CODE OF ORDINANCES OF LAFAYETTE, COLORADO, REGARDING SOLAR-READY AND ELECTRIC-VEHICLE READY CONSTRUCTION REQUIREMENTS

WHEREAS, the City Council of the City of Lafayette ("City Council") strongly supports the scientific consensus that the earth's climate is warming as a result of human activities which are releasing unprecedented quantities of carbon dioxide, methane and other greenhouse gases into the atmosphere; and

WHEREAS, City Council desires that the City increase its effort to reduce reliance on fossil fuels and dramatically increase its use of renewable energy derived from sources such as wind, solar, biomass, hydro-electrical and geothermal; and

WHEREAS, as further evidence of its commitment to depart from the use of fossil fuels, City Council supports the electrification of the transportation sector and zero carbon emission fuel standards; and

WHEREAS, to fulfill its goal of having all electricity within the City being generated from renewable energy sources and transportation moving towards zero carbon, building practices must facilitate installation of solar systems and electric vehicle charging systems; and

WHEREAS, the City Council finds that requiring new residential and commercial construction and major commercial alterations to be solar ready and electric vehicle ready supports the City's sustainability goals; and

WHEREAS, City Council desires to amend the International Energy Conservation Code, adopted in Section 30-221 of the Lafayette Code of Ordinances, to adopt the appendices requiring new residential and commercial construction and major commercial alterations to be solar ready and add new appendices that the same buildings be electric vehicle ready.

NOW THEREFORE BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LAFAYETTE, COLORADO, AS FOLLOWS:

<u>Section 1.</u> Section 30-221, Adoption, of the Code of Ordinances, City of Lafayette, Colorado, is hereby amended to read as follows:

Pursuant to Title 31, Article 16, Part 2, Colorado Revised Statutes, as amended, there is hereby adopted as the energy code of the City of Lafayette, Colorado, by reference thereto, the International Energy Conservation Code, 2015 edition, published by the International Code Council, Inc., 5360 Workman Mill Road, Whittier, California 90601, all to have the same force and effect as if set-forth

herein in every particular fully set out in this codification with, however, the amendments indicated in the following sections of this article. The subject matter of the adopted code includes the regulation of the design of building envelopes for adequate thermal resistance and low air leakage and the design and selection of mechanical, electrical service, water heating and illumination systems and equipment which will enable effective use of energy in new building construction in the City of Lafayette, Colorado.

<u>Section 2</u>. Section 30-224, Amendments, of the Code of Ordinances, City of Lafayette, Colorado, is hereby repealed in its entirety and reenacted to read as follows:

Sec. 30-224. IECC Section R402.1.2.

Section R402.1.2 of the International Energy Conservation Code ("Testing") is hereby deleted in its entirety and replaced as follows:

Attached multifamily buildings or dwelling units shall be tested and verified as having an air leakage rate of less than five air changes per hours in Climate Zones 1 through 8, or 0.30 cubic feet per minute at 50 Pascals/square feet of dwelling unit enclosure area.

<u>Section 3</u>. Article VIII, Energy Conservation, of the Code of Ordinances, City of Lafayette, Colorado, is hereby amended by the addition of a new section 30-225, to read as follows:

Sec. 30-225. Appendix CB (Solar-Ready Zone-Commercial) of the IECC.

A new Appendix CB of the IECC, entitled SOLAR-READY ZONE-COMMERCIAL, is hereby added to read as follows:

APPENDIX CB SOLAR-READY ZONE—COMMERCIAL

SECTION CB101 SCOPE

CB101.1 General. These provisions shall be applicable for new construction, and *major commercial alterations* as defined herein, where solar-ready provisions are required.

SECTION CB102 GENERAL DEFINITION

Major commercial alteration. Any commercial building as defined by the IECC, where the work area exceeds 50 percent of the aggregate area of the building.

Solar-Ready Zone. A section or sections of the roof or building overhang designated and reserved for the future installation of a solar photovoltaic or solar thermal system.

SECTION CB103 SOLAR-READY ZONE

CB103.1 General. A solar-ready zone shall be located on the roof of buildings that are five stories or less in height above grade plane and are oriented between 110 degrees and 270 degrees of true north or have low-slope roofs. Solar-ready zones shall comply with Sections CB103.2 through CB103.9.

Exceptions:

- 1. A building with a permanently installed, on-site renewable energy system.
- 2. A building with a solar-ready zone that is shaded for more than 70 percent of daylight hours annually.
- 3. A building where the licensed design professional certifies that the incident solar radiation available to the building is not suitable for a solar-ready zone.
- 4. A building where the licensed design professional certifies that the solar zone area required by Section CB103.3 cannot be met because of extensive rooftop equipment, skylights, vegetative roofareas or other obstructions.
- CB103.2 Construction document requirements for a solar-ready zone. Construction documents shall indicate the solar-ready zone.
- **CB103.3 Solar-ready zone area**. The total solar-ready zone area shall be not less than 40 percent of the roof area calculated as the horizontally projected gross roof area less the area covered by skylights, occupied roof decks, vegetative roof areas and mandatory access or set back areas as required by the International Fire Code or City of Lafayette Zoning Code. The solar-ready zone shall be a single area or smaller, separated sub-zone areas. Each sub-zone shall be not less than 5 feet (1524 mm) in width in the narrowest dimension.
- **CB103.4 Obstructions**. Solar ready zones shall be free from obstructions, including pipes, vents, ducts, HVAC equipment, skylights, and roof-mounted equipment.
- **CB103.5** Roof loads and documentation. A collateral dead load of not less than 5 pounds per square foot (5 psf) (24.41 kg/m 2) shall be included in the gravity and lateral design calculations for the solar-ready zone. The structural design loads for roof dead load and roof live load shall be indicated on the construction documents.
- **CB103.6 Interconnection pathway**. Construction documents shall indicate pathways for routing of conduit or piping from the solar-ready zone to the electrical service panel and electrical energy storage system area or service hot water system.
- **CB103.7 Electrical energy storage system-ready area**. The floor area of the electrical energy storage system-ready area shall be not less than 2 feet (610 mm) in one dimension and 4 feet (1219 mm) in another dimension and located in accordance with Section 1207 of the

International Fire Code. The location and layout diagram of the electrical energy storage system-ready area shall be indicated on the construction documents.

CB103.8 Electrical service reserved space. The main electrical service panel shall have a reserved space to allow installation of a dual-pole circuit breaker for future solar electric and a dual-pole circuit breaker for future electrical energy storage system installation. These spaces shall be labeled "For Future Solar Electric and Storage." The reserved spaces shall be positioned at the end of the panel that is opposite from the panel supply conductor connection.

CB103.9 Construction documentation certificate. A permanent certificate, indicating the solar-ready zone and other requirements of this section, shall be posted near the electrical distribution panel, water heater or other conspicuous location by the builder or registered design professional.

<u>Section 4.</u> Article VIII, Energy Conservation, of the Code of Ordinances, City of Lafayette, Colorado, is hereby amended by the addition of a new section 30-226, to read as follows:

Sec. 30-226. Appendix RB (Solar-Ready Zone Provisions-Detached One- And Two-Family Dwellings, and Townhouses) of the IECC.

A new Appendix RB of the IECC, entitled SOLAR-READY ZONE PROVISIONS-DETACHED ONE- AND TWO-FAMILY DWELLINGS, AND TOWNHOUSES, is hereby added to read as follows:

APPENDIX RB SOLAR-READY PROVISIONS—DETACHED ONE- AND TWO-FAMILY DWELLINGS, AND TOWNHOUSES

SECTION RB101 SCOPE

RB101.1 General. These provisions shall be applicable for new construction where solar-ready provisions are required.

SECTION RB102 GENERAL DEFINITION

SOLAR-READY ZONE. A section or sections of the roof or building overhang designated and reserved for the future installation of a solar photovoltaic or solar thermal system.

SECTION RB103 SOLAR-READY ZONE

RB103.1 General. New detached one- and two-family dwellings, and townhouses with not less than 600 square feet (55.74 m 2) of roof area oriented between 110 degrees and 270 degrees of true north shall comply with Sections RB103.2 through RB103.8.

Exceptions:

- 1. New residential buildings with a permanently installed on-site renewable energy system.
- 2. A building where all areas of the roof that would otherwise meet the requirements of Section RB103 are in full or partial shade for more than 70 percent of daylight hours annually.
- **RB103.2** Construction document requirements for solar-ready zone. Construction documents shall indicate the solar-ready zone.
- **RB103.3** Solar-ready zone area. The total solar-ready zone area shall be not less than 300 square feet (27.87 m 2) exclusive of mandatory access or setback areas as required by the International Fire Code. New townhouses three stories or less in height above grade plane and with a total floor area less than or equal to 2,000 square feet (185.8 m 2) per dwelling shall have a solar-ready zone area of not less than 150 square feet (13.94 m 2). The solar-ready zone shall be composed of areas not less than 5 feet (1524 mm) in width and not less than 80 square feet (7.44 m 2) exclusive of access or setback areas as required by the International Fire Code.
- **RB103.4 Obstructions**. Solar-ready zones shall be free from obstructions, including but not limited to vents, chimneys, and roof-mounted equipment.
- **RB103.5 Shading**. The solar-ready zone shall be set back from any existing or new permanently affixed object on the building or site that is located south, east, or west of the solar zone a distance not less than two times the object's height above the nearest point on the roof surface. Such objects include, but are not limited to, taller portions of the building itself, parapets, chimneys, antennas, signage, rooftop equipment, trees, and roof plantings.
- **RB103.6** Capped roof penetration sleeve. A capped roof penetration sleeve shall be provided adjacent to a solar-ready zone located on a roof slope of not greater than 1 unit vertical in 12 units horizontal (8-percent slope). The capped roof penetration sleeve shall be sized to accommodate the future photovoltaic system conduit but shall have an inside diameter of not less than 1 1/4 inches (32 mm).
- **RB103.7** Roof load documentation. The structural design loads for roof dead load and roof live load shall be clearly indicated on the construction documents.

- **RB103.8** Interconnection pathway. Construction documents shall indicate pathways for routing of conduit or plumbing from the solar-ready zone to the electrical service panel or service hot water system.
- **RB103.9** Electrical service reserved space. The main electrical service panel shall have a reserved space to allow installation of a dual pole circuit breaker for future solar electric installation and shall be labeled "For Future Solar Electric." The reserved space shall be positioned at the opposite (load) end from the input feeder location or main circuit location.
- **RB103.10** Construction documentation certificate. A permanent certificate, indicating the solar-ready zone and other requirements of this section, shall be posted near the electrical distribution panel, water heater or other conspicuous location by the builder or registered design professional.
- <u>Section 5</u>. Article VIII, Energy Conservation, of the Code of Ordinances, City of Lafayette, Colorado, is hereby amended by the addition of a new section 30-227, to read as follows:

Sec. 30-227. Appendix CD (Electric Vehicle Readiness-Commercial) of the IECC.

A new Appendix CD of the IECC, entitled ELECTRIC VEHICLE READINESS - COMMERCIAL, is hereby added to read as follows:

APPENDIX CD ELECTRIC VEHICLE READINESS - COMMERCIAL SECTION CD100 INTENT

CD100.1 Purpose and intent. The purpose and intent of this Appendix CD is to amend the International Energy Conservation Code commercial provisions, as adopted in section 30-221 of this Code, to advance the installation of electric vehicle charging infrastructure. Including these measures during initial commercial construction and major commercial alterations substantially reduces the costs and difficulty of installing electric vehicle infrastructure at a later date.

SECTION CD101 SCOPE

CD101.1 General. These provisions shall be applicable for new construction, and *major commercial alterations* as defined herein, where solar-ready provisions are required.

SECTION CD102 GENERAL DEFINITIONS

Electric vehicle (EV): A vehicle registered for on-road use, primarily powered by an electric motor that draws current from a rechargeable storage source that is charged by being plugged into an electrical current source.

Electric vehicle supply equipment (EVSE): The electrical conductors and associated equipment external to the electric vehicle that provide a connection between the premises wiring and the electric vehicle to provide electric vehicle charging.

Electric vehicle fast charger: Any electric vehicle supply equipment with a minimum power output of 20 kW.

Electric vehicle load management system: A system designed to allocate charging capacity among multiple electric vehicle supply equipment at a minimum of 8 amps per charger.

Electric vehicle (EV) capable space: A designated parking space that is provided with conduit sized for a 40-amp, 208/240-Volt dedicated branch circuit from a building electrical panelboard to the parking space and with sufficient physical space in the same building electrical panelboard to accommodate a 40-amp, dual-pole circuit breaker.

Electric vehicle (EV) ready space: A parking space that is provided with one 40-amp, 208/240-Volt dedicated branch circuit for electric vehicle supply equipment that is terminated at a receptacle, junction box, or electric vehicle supply equipment within the parking space.

Electric vehicle supply equipment (EVSE) installed space: A parking space with electric vehicle supply equipment capable of supplying a 40-amp dedicated branch circuit rated at 208/240 Volt from a building electrical panelboard.

Major commercial alteration. Any commercial building as defined by the IECC, where the work area exceeds 50 percent of the aggregate area of the building.

SECTION CD103 ELECTRIC VEHICLE READINESS

CD103.1 Electric vehicle (EV) charging for new construction and major commercial alterations. The building shall be provided with electric vehicle charging in accordance with this section, the *National Electrical Code (NFPA 70)* as adopted in the Lafayette Code of Ordinances, and Table CD103.1. When the calculation of percent served results in a fractional parking space, the applicant shall round up to the next whole number. When parking spaces are added or modified without an increase in building size or a major commercial alteration, only the new parking spaces are subject to this requirement.

Table CD103.1 Minimum Number Spaces Required

		Minimum number of EV Capable Spaces ²	EVSE Installed Space ¹
1 or more	5%	10%	2%

- 1. The number of electric vehicle supply equipment installed spaces may be reduced by up to five provided that the building includes not less than one parking space equipped with an electric vehicle fast charger (level 3 charger) and not less than one electric vehicle ready space.
- 2. The number of EV Capable Spaces can be reduced by up to four spaces for each additional one EV Ready Space provided.

CD103.1.1 Multiple-family dwellings (meeting IECC Commercial Building definition). EV ready spaces and EV capable spaces shall be provided in accordance with Table CD103.1.1. When the calculation of percent served results in a fractional parking space, the applicant shall round up to the next whole number. The service panel or subpanel circuit directory shall identify the space(s) reserved to support EV charging as "EV Capable" or "EV Ready". The raceway location shall be permanently and visibly marked as "EV Capable".

Table CD103.1.1
Minimum Number Spaces Required- Multi-Family Commercial

Total Number of Parking Spaces	Minimum number of EV Ready Spaces	Minimum number of EV Capable Spaces
1 or more	2 spaces or 10%, whichever is greater	20% of total parking spaces

- 1. The number of EV Capable Spaces can be reduced by up to four spaces for each additional one EV Ready Space provided.
- **CD103.1.1.2 Disbursement**. Required EV ready spaces and EV capable spaces shall be disbursed throughout parking areas in Commercial Multi-Family (R-2) complexes that contain multiple buildings so that each building has access to roughly the same number of spaces.
- **CD103.2 Identification.** Construction documents shall designate all electric vehicle capable spaces, electric vehicle ready spaces and electric vehicle supply equipment installed spaces and indicate the locations of conduit and termination points serving them. The circuit breakers or circuit breaker spaces reserved for the electric vehicle capable spaces, electric vehicle ready spaces, and electric vehicle supply equipment installed spaces shall be clearly identified in the panelboard directory. The conduit for electric vehicle capable spaces shall be clearly identified at both the panelboard and the termination point at the parking space.
- **CD103.3** Accessible parking. Where new EVSE installed spaces or new EV ready spaces and new accessible parking are both provided, parking facilities shall be designed so that at least one accessible parking space shall be an EV ready space or EVSE installed space.
- **CD103.5 Electric Vehicle System Protection.** All EV equipment shall be listed, as applicable, and installed in accordance with **NEC Article 625 Electric Vehicle Power Transfer System**, to ensure safety of individuals and to the equipment. The Construction Drawings shall illustrate how receptacles are protected from damage by vehicles, lawn and other equipment. Equipment shall also be placed to avid trip hazards and obstruction of sidewalks and pedestrian access.

<u>Section 6</u>. Article VIII, Energy Conservation, of the Code of Ordinances, City of Lafayette, Colorado, is hereby amended by the addition of a new section 30-228, to read as follows:

Sec. 30-228. Appendix RD (Electric Vehicle Readiness-Residential Construction) of the IECC.

A new Appendix RD of the IECC, entitled ELECTRIC VEHICLE READINESS REQUIREMENTS FOR RESIDENTIAL CONSTRUCTION, is hereby added to read as follows:

APPENDIX RD ELECTRIC VEHICLE READINESS - RESIDENTIAL SECTION RD100 INTENT

RD100.1 Purpose and intent. The purpose and intent of this Appendix RD is to amend the International Energy Conservation Code residential provisions, as adopted in section 30-221 of this Code, to advance the installation of electric vehicle charging infrastructure. Including these measures during initial residential construction substantially reduces the costs and difficulty of installing electric vehicle infrastructure at a later date.

SECTION RD101 SCOPE

RD101.1 General. These provisions shall be applicable for new construction where solar-ready provisions are required.

SECTION RD102 GENERAL DEFINITIONS

Electric vehicle (EV): A vehicle registered for on-road use, primarily powered by an electric motor that draws current from a rechargeable storage source that is charged by being plugged into an electrical current source.

Electric vehicle supply equipment (EVSE): The electrical conductors and associated equipment external to the electric vehicle that provide a connection between the premises wiring and the electric vehicle to provide electric vehicle charging.

Electric vehicle fast charger: Any electric vehicle supply equipment with a minimum power output of 20 kW.

Electric vehicle load management system: A system designed to allocate charging capacity among multiple electric vehicle supply equipment at a minimum of 8 amps per charger.

Electric vehicle (EV) capable space: A designated parking space that is provided with conduit sized for a 40-amp, 208/240-Volt dedicated branch circuit from a building electrical panelboard to the parking space and with sufficient physical space in the same building electrical panelboard to accommodate a 40-amp, dual-pole circuit breaker.

Electric vehicle (EV) ready space: A parking space that is provided with one 40-amp, 208/240-Volt dedicated branch circuit for electric vehicle supply equipment that is terminated at a receptacle, junction box, or electric vehicle supply equipment within the parking space.

Electric vehicle supply equipment (EVSE) installed space: A parking space with electric vehicle supply equipment capable of supplying a 40-amp dedicated branch circuit rated at 208/240 Volt from a building electrical panelboard.

SECTION RD103 ELECTRIC VEHICLE READINESS

RD103.1 Electric Vehicle (EV) charging for new construction. New construction shall facilitate future installation and use of Electric Vehicle Supply Equipment (EVSE) in accordance with the National Electrical Code (NFPA 70).

RD103.1.1 One- to two-family dwellings and townhouses. For each dwelling unit, provide at least one EV ready space. The branch circuit shall be identified as "EV Ready" in the service panel or subpanel directory, and the termination location shall be marked as "EV Ready".

Exception. EV ready spaces are not required where no parking spaces are required.

RD103.1.2 Multiple-family dwellings (*Meeting IECC Residential Building definition*). EV ready spaces and EV capable spaces shall be provided in accordance with Table RD103.1.2. When the calculation of percent served results in a fractional parking space, the applicant shall round up to the next whole number. The service panel or subpanel circuit directory shall identify the space(s) reserved to support EV charging as "EV Capable" or "EV Ready". The raceway location shall be permanently and visibly marked as "EV Capable".

Table RD103.1.2 Minimum Number Spaces Required – Multi-Family Residential

Total Number of Parking Spaces	Minimum number of EV Ready Spaces	Minimum number of EV Capable Spaces
1 or more	2 spaces or 10%, whichever is greater	20% of total parking spaces

^{1.} The number of EV Capable Spaces can be reduced by up to four spaces for each additional one EV Ready Space provided.

- **RD103.1.2.1 Disbursement.** Required EV ready spaces and EV capable spaces shall be disbursed throughout parking areas in Residential Multi-Family (R-2) complexes that contain multiple buildings so that each building has access to roughly the same number of spaces.
- **RD103.2 Identification**. Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have su cient capacity to simultaneously charge all EVs at all required EV spaces at the full rated amperage of the EVSE.
- **RD103.3** Accessible parking. Where new EVSE installed spaces or new EV ready spaces and new accessible parking are both provided, parking facilities shall be designed so that at least one accessible parking space shall be an EV ready space or EVSE installed space.
- **RD103.5** Electric Vehicle System Protection. All EV equipment shall be listed, as applicable, and installed in accordance with NEC Article 625 Electric Vehicle Power Transfer System, to ensure safety of individuals and to the equipment. The Construction Drawings shall illustrate how receptacles are protected from damage by vehicles, lawn and other equipment. Equipment shall also be placed to avid trip hazards and obstruction of sidewalks and pedestrian access.
- Section 7. The building regulations herein provided and established by this ordinance shall not apply to:
 - (a) A completed application for building permit for new commercial construction or major commercial alterations that has been submitted on or before the effective date of this ordinance, so long as the permit is issued within 180 days after the application was filed with the City or within an additional period of time authorized by the building official, and the building permit application is not otherwise deemed abandoned at any time after the effective date of this ordinance;
 - (b) A commercial development that, as of the effective date of this ordinance, has a valid building permit in effect, so long as all applicable building permit fees have been paid, such development project is confined to the limits, provisions, and conditions of its existing City approvals, and that such building permit does not expire or is not otherwise invalidated after the effective date of this ordinance;
 - (c) A completed application for building permit for new construction of, or major alteration to, a single-family, two-family or multi-family residential dwelling that has been submitted on or before the effective date of this ordinance, so long as the permit is issued within 180 days after the application was filed with the City or within an additional period of time authorized by the building official, and the building permit application is not otherwise deemed abandoned at any time after the effective date of this ordinance;

- (d) A residential development that, as of the effective date of this ordinance, has a valid building permit in effect, so long as all applicable building permit fees have been paid, such development project is confined to the limits, provisions, and conditions of its existing City approvals, and that such building permit does not expire or is not otherwise invalidated after the effective date of this ordinance; and
- (e) Plans for production housing receiving final approval on or before the effective date of this ordinance, through and including a period of one (1) year from the effective date of this ordinance; provided, however, that any such production housing model approved plans shall expire after January 1, 2023. Upon expiration, production housing model plans shall be subject to the regulations established by this ordinance and must be re-submitted and re-approved by the City.
- Section 8. If any article, section, paragraph, sentence, clause, or phrase of this ordinance is held to be unconstitutional or invalid for any reason, such decision shall not affect the validity or constitutionality of the remaining portions of this ordinance. The City Council hereby declares that it would have passed this ordinance and each part or parts hereof irrespective of the fact that any one part or parts be declared unconstitutional or invalid.
- <u>Section 9</u>. All other ordinances or portions thereof inconsistent or conflicting with this ordinance or any portion hereof is hereby repealed to the extent of such inconsistency or conflict.
- Section 10. The repeal or modification of any provision of the Code of Ordinances, City of Lafayette, Colorado, by this ordinance shall not release, extinguish, alter, modify or change in whole or in part any penalty, forfeiture or liability, either civil or criminal, which shall have been incurred under such provision. Each provision shall be treated and held as still remaining in force for the purpose of sustaining any and all proper actions, suits, proceedings and prosecutions for enforcement of the penalty, forfeiture or liability, as well as for the purpose of sustaining any judgment, decree or order which can or may be rendered, entered or made in such actions, suits, proceedings or prosecutions.
- <u>Section 11</u>. This ordinance is deemed necessary for the protection of the health, welfare and safety of the community.
- <u>Section 12</u>. Violations of this ordinance shall be punishable in accordance with Section 30-223 of the Code of Ordinances, City of Lafayette, Colorado.

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