East Bay EDA

Leading the Next Generation of Industrial Buildings & Districts: Design Guidelines

October 2026

METROPOLITAN TRANSPORTATION COMMISSION















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Prepared by:

PLACEWORKS

2040 Bancroft Way, Suite 400
Berkeley, California 94704
t 510.848.3815

In Association with:

HPA Architecture
600 Grand Avenue, Suite 302
Oakland, CA 94610

Offices in:

ORANGE COUNTY • BAY AREA • SACRAMENTO • CENTRAL COAST • LOS ANGELES • INLAND EMPIRE

PlaceWorks.com

Foreword

Funded by the Metropolitan Transportation Commission's Priority Production Area (PPA) Technical Assistance and Planning Grant, these industrial design guidelines were developed in collaboration with the East Bay Economic Development Alliance to support a strong and resilient economy.

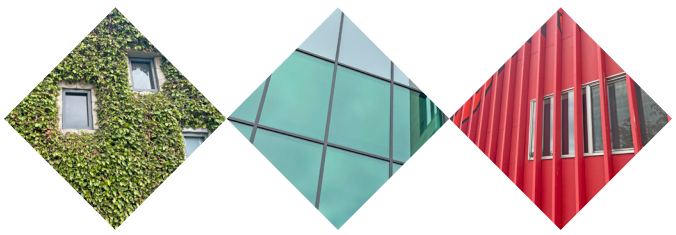
To sustain a vibrant and evolving industrial economy, local jurisdictions need a supply of industrially designated land that meets the needs of businesses and investors while also conforming to land use regulations and contributing to community goals for complete communities.

High-quality building and site design can attract top-tier businesses and high-paying jobs, but overly prescriptive and ambitious design guidelines can impact project cost and feasibility, putting investments and jobs at risk. Industrial uses near established commercial and residential areas can benefit jobs-housing balance and reduce vehicle traffic but may impact established neighborhoods and nearby community uses such as schools and open spaces.

Recognizing these tensions, professionals with varied, and sometimes conflicting, perspectives were engaged in developing and reviewing the guidelines. This included urban designers, economists, industrial architects, staff from participating cities' planning and economic development departments, and members of the development community. The Next Generation Industrial Design Guidelines seek to reflect these competing priorities and balance high-quality design with economic development and community livability.

Each local jurisdiction can apply or modify these design guidelines to best match their needs. Regardless of specific guidelines, each city should understand the following best practices for attracting and securing investments in local industrial properties.

- Adopt clear land use policies that support economic development goals
- Encourage planning and economic development staff to partner and work with prospective project representatives
- Establish and clearly communicate objective, "bright-line" approval processes
- Clearly delineate ministerial and discretionary pathways and processes
- Consider completing a Specific Plan and EIR to support and accelerate industrial development



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Donovan Lazaro, Economic Development Director
Vanessa Ware, Economic Development Coordinator
Joel Pullen, Community Development Director
Winnie Mui, Associate Planner

City of Livermore
Brandon Cardwell, Economic Development & Innovation Director
Andy Ross, Principal Planner
Jake Potter, Economic Development Manager

City of Oakland
Eric Simundza, Urban Economic Analyst IV
Khalilha Haynes, Planner IV

Port of Oakland
Colleen Liang, Director of Environmental Programs and Planning
Ayaka Habu, Port Associate Strategic Planner

City of San Leandro
Katie Bowman, Economic Development Manager
Wayland Li, Planning Division Manager

City of Union City
Gloria Ortega, Economic Development Manager
Kyle Weddington, Economic Development Specialist

Consultant Team

PlaceWorks
Ellie Fiore, Urban Planning and Design Principal
Jia Xu, Associate

HPA
Hannah Lehman, Architectural Designer
Tyneise Beyer, Senior Project Manager
Teresa Goodwin, Regional Director

Table of Contents

Foreword 4

Acknowledgements 5

I. Introduction 9

Background 9

Purpose and Use 9

Contents 9

Industrial Development and Market Trends 10

Building and Place Type Guidance 11

II. Design Guidelines 12

1. Site Design 12

1.1 Building Placement and Orientation 12

1.2 Access and Circulation 13

1.3 Street Frontage and Perimeter Design 15

1.4 Multi-building Campuses 17

2. Loading and Services 18

2.1 Loading Dock Location and Orientation 18

2.2 Service and Storage Areas 18

2.3 Mechanical and Utility Equipment 18

2.4 Outdoor Activity 20

3. Building Design 20

3.1 Building Elements 20

3.2 Height 21

3.3 Corner Sites 22

4. Landscaping, Lighting, and Signage 24

4.1 General Landscape Guidelines 24

4.2 Street Frontage Landscaping 25

4.3 Internal Site Landscaping 26

4.4 Lighting 26

4.5 Signage Standards 26

4.6 Artistic Elements 27

5. Sustainability 28

5.1 Energy Infrastructure 28

5.2 Other Sustainability Measures 29

III. Special Considerations 31

6. Building Renovations, Additions, Historic Structures, and Adaptive Reuse 31

6.1 Renovations, Additions and Adaptive Reuse 31

6.2 Historic Buildings 33

7. Site Security and Crime Prevention 34

7.1 Crime Prevention through Environmental Design 34

7.2 Natural Surveillance 35

7.3 Natural Access Control 36

7.4 Territorial Reinforcement 38

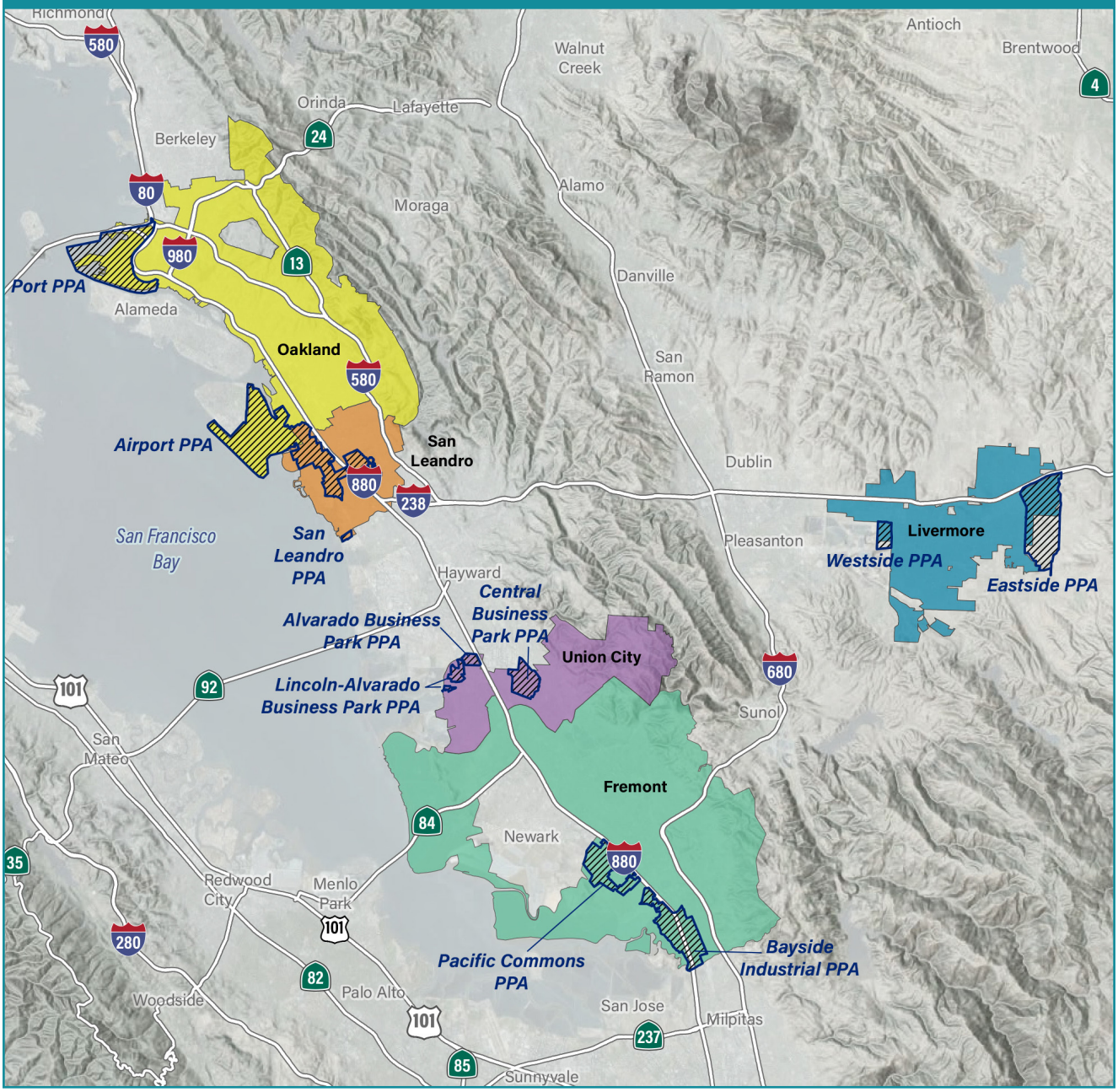
7.5 Maintenance 39

Appendix 1 Industrial Development Case Studies 41

Appendix 2 Public Policy Analysis and Recommendations for Industrial Energy Efficiency 74

Appendix 3 AB98 and SB415 Overview 95

Participating East Bay Jurisdictions and Priority Production Areas



Source: PlaceWorks, 2025.

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Priority Production Areas (PPAs)

East Bay EDA Project Jurisdictions

- Fremont
- Livermore
- Oakland
- San Leandro
- Union City

I. Introduction

Background

These industrial design guidelines were developed as part of the MTC / East Bay Economic Development Alliance (EDA) Priority Production Areas (PPAs) Technical Assistance and Planning Project.

Part of the Metropolitan Transportation Commission (MTC)'s Plan Bay Area regional growth framework, PPAs are locally designated economic-development zones strategically located along the region's goods-movement network, making them ideal locations for employment-generating uses.

In 2019, the Alameda County cities of Fremont, Livermore, Oakland, San Leandro, and Union City nominated PPAs to be prioritized for economic development uses and protection from competing land uses. In 2024, MTC awarded technical-assistance funding to Alameda County's PPA jurisdictions to support land use planning best practices.

Purpose and Use

Industrial guidelines are an adaptable resource for local jurisdictions that can use them to best meet local needs. They provide direction for property owners, developers, designers, contractors, and architects to meet the intent of jurisdiction goals and policies. Guidelines can be integrated into existing or new design guidelines; be used as a template to develop more tailored local guidance; help navigate conversations with industrial clients, developers, designers; and support staff project review.

They are prescriptive but flexible, allowing for context-sensitive solutions while ensuring a baseline of thoughtful design. They are written to encourage, but not require, specific design elements. Each site has distinct conditions and constraints that will inform project design and the recommendations in these guidelines may not be appropriate for every property.

Contents

The design guidelines describe elements of functional, well-designed sites and buildings that improve the economic viability and visual character of properties, organized into the following chapters:

- Site Design
- Loading and Services
- Building Design
- Landscaping, Lighting, and Signage
- Sustainability

There are two sections that were developed to respond to specific local needs and ideas: **Building Renovations, Additions, and Adaptive Reuse; and Site Security and Crime Prevention.**

This document also includes a **summary of industrial trends shaping site and building design**, and a high-level overview of industrial development construction and place types.

The Guidelines are intended to complement (and not supersede) siting, design, operations, safety and energy-efficiency requirements from California Code of Regulations Title 24,Part 6 (Energy Code) and Part 11 (CALGreen), jurisdiction zoning requirements, and other relevant regulations including SB415 (2025).



Related Resources

The **Industrial Case Studies** and **Energy Efficiency Reports** developed as part of the technical assistance program are additional related resources, and are included as appendices to this document.

Industrial Development and Market Trends

The Next Generation Industrial Design Guidelines were developed in 2025 and 2026. While they were written to be adaptable and flexible and have a long lifespan, the following market and design trends shaped many of the recommendations.

- Tenants are seeking maximum flexibility in building design to accommodate growth, changes in uses, and evolving technology and equipment. High clear heights, wide column spacing, and flexible floor plans are desirable features.
- In built-out communities, there is a need for renovation and reuse of existing structures, such as converting heavy industrial facilities or offices into advanced manufacturing, R&D spaces, and warehouses.
- There is an increasing emphasis on a mix of uses at the building, site, and campus or neighborhood level.
- The presence of nearby support systems, including R&D, supply chains, and logistics and warehousing, are driving location decisions.
- Providing amenities and placemaking is increasingly emphasized alongside site utility.
- Access to power and grid reliability is paramount to providing stability to avoid disrupting operations.
- Minimizing and mitigating air pollution, noise, and traffic-related disturbances to neighboring uses and the public realm is a top community priority and state legislative focus.

Building and Place Type Guidance

New construction and renovation/alteration projects face different challenges, and certain guidelines are tailored to these different construction types. Below is a summary of the opportunities, key constraints, design requirements, and implementation considerations for each type, along with an index of relevant sections.

Table 1 Building and Place Type Guidance

Type	Opportunities	Key Constraints	Design Requirements	Implementation Considerations
New / Ground-up	Optimize site plan and building layout (1.1, 1.2); modern clear heights (3.2); efficient and sustainable design (5.1, 5.2)	Higher capital cost; longer permitting and California Environmental Quality Act process; potential community concerns about traffic, noise (1.4)	Efficient loading layouts (2.1); stormwater management and landscape buffers (4.1-4.3); sufficient power supply facilities (5.1)	Phasing of infrastructure; construction mitigation strategies
Renovation, Alteration and Addition, Including Adaptive Reuse (6.1)	Lower cost than ground-up; quicker delivery; extends life of existing structures (6.1.3); activate underused sites; reduces embodied carbon (6.1.5)	Structural limitations; low clear heights (3.2); older systems; may require hazardous materials remediation (6.1.4); constrained circulation (6.1.2); more complex design for loading and fire access; limited parking	Accessibility and safety upgrades (6.1.2), sustainability and seismic upgrades (6.1.4, 6.1.5); add screened loading, trash and mechanical areas (2.1-2.3)	Managing work with existing tenants; structural assessments
Historic Properties (6.2)	Unique identity and sense of place (6.2); eligibility for historic tax credits and grants	Strict preservation/ design review; limited exterior changes (3.1, 6.2)	Maintaining character-defining features (6.1.1, 6.2); thoughtful integration of new systems	Close coordination with historic agencies; potential for visitor-oriented uses

II. Design Guidelines

1. Site Design

The strategic placement of industrial buildings, parking lots, landscaping, and pedestrian pathways is essential for creating sites that are efficient, safe, and adaptable to future needs. Guidelines in this section aim to promote an optimal site layout that accommodates functional performance, maintains a coherent relationship to the public realm, and supports long-term flexibility.

1.1 Building Placement and Orientation

1.1.1 Building Placement

The placement and orientation of all elements on the site should be designed to provide visual clues to the functional organization of the site.

- Orient active uses (e.g., offices, lobbies) to face the primary street.
- Ensure the building entrance is easily seen from the street and site entryways.
- Where multiple buildings are located on a site, design buildings to create a cohesive visual relationship (See Section 1.4 for multi-building campus guidelines).
- On corner sites, place the building on the corner.

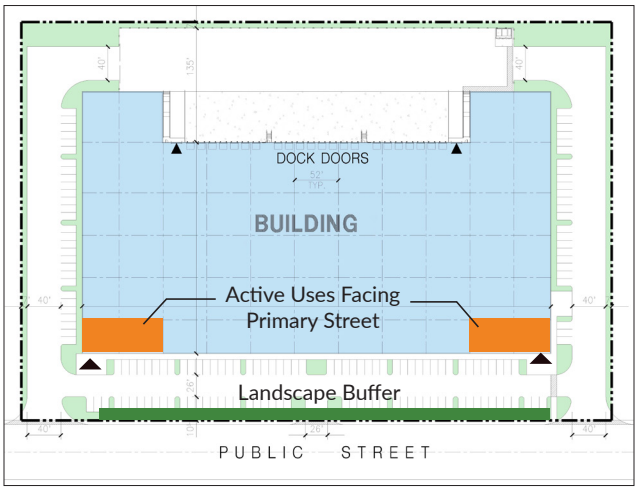
1.1.2 Setbacks

Buildings should be located to give good spatial definition to the pedestrian realm on public streets.

- Minimize the distance between the public street and building frontage (setback) as allowed by building operations and local codes.
- Where possible, locate new buildings as close to the front property line as the closest neighboring building to contribute to a safe, pleasant pedestrian environment with a consistent street wall.
- When parking areas are located between the public street and the building, provide landscape buffers as specified in Section 1.2.5 *Vehicle Parking*.



Building entrance should be easily seen from the street and site entryways.



Place active uses along public streets.

1.1.3 Amenity Areas

Amenity areas are places for employees and/or visitors to relax, enjoy lunch, exercise, and informally meet. They may include patios and seating areas, as well as walking paths or fitness stations.

- Locate employee outdoor break areas near indoor break areas for easy access.
- Design outdoor employee amenity areas to have sunlight during at least part of the day.
- In wind-prone areas such as locations close to the Bay, protect outdoor break areas from wind with denser landscaping or screen walls. Use trees and berms along the windward side of outdoor employee areas as windbreaks.
- Incorporate unique paving treatments, such as stamped or colored concrete, pavers, or tile to enhance the appearance of outdoor amenity areas.
- Where practical, locate amenity areas to be visible from public streets, sidewalks, and trail networks.



Amenity areas may include patios and seating areas, walking paths, or fitness stations, and can be integrated with landscape features.

1.2 Access and Circulation

1.2.1 Site Entrance

Highlight site entrances with driveway entry treatments such as accent landscaping and signage to facilitate navigation and enhance the overall project design.

1.2.2 Driveways

- Provide sufficient driveway widths for safe and efficient movement of truck traffic to and from public streets.
- Minimize the number of driveways and curb cuts to reduce the potential for conflicts with pedestrian and bicycle circulation.

1.2.3 On-Site Pedestrian Pathways

- Provide easily identifiable pedestrian pathways that connect buildings to parking areas, and from the site to public sidewalks, trails, open spaces, transit stops, and other amenities.
- Minimize conflicts between walkways and driveways, loading and other site operations.
- Design main pedestrian paths with special paving or other unique surface materials, subject to accessibility requirements, and include amenities including building canopies, landscaping, pedestrian-scaled lighting, seating, and trash receptacles.
- Ensure visibility to pedestrian paths from adjacent areas and connections to enhance safety and security. Avoid dense hedges, dark corners, and other elements that can obstruct visibility.

- Provide connections to the city's sidewalk network to support walking, biking, and transit use.
- Provide pathway lighting or pedestrian-scaled lighting along all pathways.

1.2.4 Off-Site Pedestrian Infrastructure

- Coordinate with Public Works, Planning, and/or other jurisdiction staff to improve the pedestrian realm in the public right-of-way.
- Ensure sidewalks meet Americans with Disabilities Act (ADA) standards and, where possible, match the width of adjacent sidewalks.
- Add landscaping between the sidewalk and roadway where space allows, using trees, shrubs, and groundcovers that are drought-tolerant and appropriate for the local climate. Bioswales and low berms are encouraged.

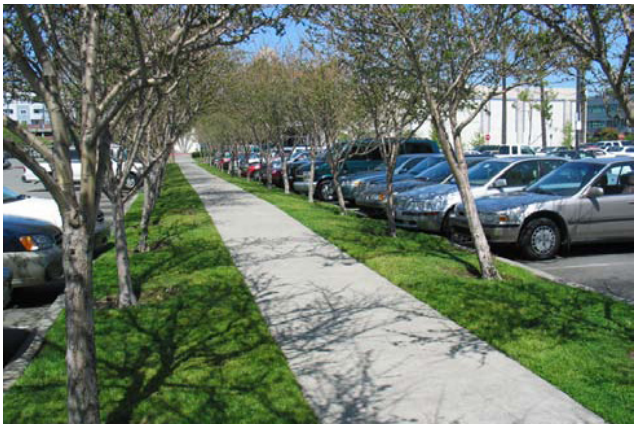
1.2.5 Vehicle Parking

Minimizing or replacing parking between the building and primary street frontage helps define a cohesive public realm and accommodate multi-modal access with reduced parking needs.

- To reduce public views of parking areas, locate all or most of the development's parking next to or behind the building, as feasible given site design and operations.
- Divide outdoor parking areas visible from public streets into smaller sections to decrease visual impacts associated with large expanses of pavement and vehicles, and to facilitate safe and efficient pedestrian movement between parking and structures.



Include outdoor bike racks near primary building entrances.



Incorporate tree lined landscape medians with pedestrian path in parking areas.



Include a landscaped median "finger" for every eight stalls.

- Consider shared parking agreements with nearby uses to reduce space dedicated to parking on-site.
- Include a landscaped "finger" for every eight stalls, where feasible given operational constraints. Exceptions can be made for parking areas that also function as operational yard.
- Consider adding additional landscaped medians between parking bays where there are three or more bays. These landscaped medians can include pedestrian paths.
- Buffer surface parking areas facing a public street by a minimum width of 10 feet landscaped frontage.

1.2.6 Bicycle Parking

- Locate long-term bicycle parking spaces in secure locations with protection from weather.
- Locate outdoor bike racks near primary building entrances.
- Coordinate rack and storage design and materials with the site and building design.

1.3 Street Frontage and Perimeter Design

The frontage between a building and the public street is an essential element in creating a cohesive and visually appealing streetscape. A well-designed frontage enhances the pedestrian experience, strengthens neighborhood character, and establishes continuity along the street.

1.3.1 Street Frontage

- Discourage long-term parking, encampments, and illegal dumping along rights-of-way by avoiding large expanses of pavement along street frontages.
- Use landscaping to break up large areas of pavement, including bioswales, trees, and planted buffers.
- Include pedestrian-scaled lighting every 15 feet along street frontages to illuminate sidewalks.
- Provide pedestrian-scaled waste receptacles along street frontages to minimize litter.

1.3.2 Walls, Fences and Visual Screening

Design walls and fencing as an integrated part of the site and ensure fencing design and material selection is consistent across the overall development.

- Avoid solid screening walls exceeding four feet in height or creating continuous opaque segments longer than 20 feet along public street frontages.
- Allow visibility through fences by including no more than 50 percent solid material.
- Decorative steel or aluminum fencing is encouraged. Visible barbed wire, chain link, electrical wire, or coiled razor wire are not allowed.
- Where fences are used along public street frontages, complement them with landscaping to soften their appearance and reduce visual impact on the streetscape.

- Avoid fences within the setback area along arterial streets (generally four lanes or more). Fences should be set back to the line of the building closest to the street.
- Fences may be located within the front setback area along collector streets (generally two-lane streets) if they are set back a minimum of 10 feet from the property line, with landscaping between the streets and the fence.

1.3.3 Perimeter Standards

- When adjacent or near sensitive uses like residential areas, schools, or open spaces, enhanced treatments such as landscape barriers and fencing should be applied to ensure privacy, safety, and visual quality, consistent with the requirements of SB 415 (2025).
- Solid walls and fences are allowed adjacent to other industrial or commercial properties.
- Use landscaping, fencing, walls or a combination of these or other treatments to buffer sites when located adjacent to residential, civic, or public open space uses.



Complement fences with landscaping to soften their appearance.



Avoid fences types including barbed wire, chain link, electrical wire, or coiled razor wire.



Avoid fences along the public streets without setback and landscape buffer.

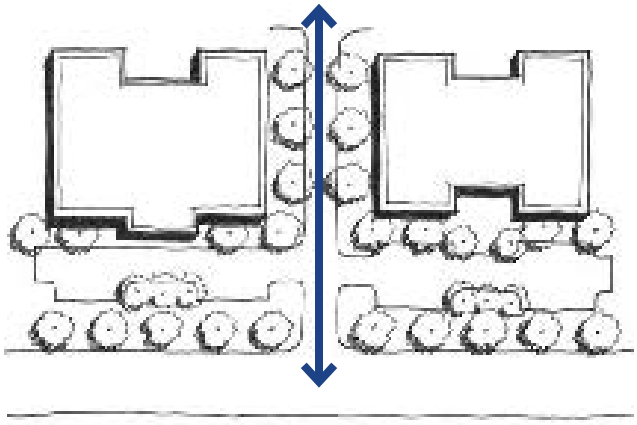
1.4 Multi-building Campuses

For developments consisting of multiple buildings, organize building placement and site circulation to prioritize pedestrian paths, shared landscape and open space areas, and employee amenity areas.

- Organize the site so that spaces with higher activity, such as office spaces and collaborative work areas, are located closer to the public street entrance, transitioning to warehouse or lower-activity areas.
- Avoid the creation of excessively large blocks by continuing or creating an internal street grid with human-scaled buildings to support a vibrant campus and encourage walking.
- Use consistent architectural styles, materials, and signage across multiple buildings to create a cohesive identity.
- Provide accessible shared plazas, courtyards, and pathways that connect buildings and encourage social interaction. Integrate shared employee amenity spaces into the overall open spaces.
- Where possible, provide shared access driveways between buildings to reduce curb cuts on public streets and improve site circulation efficiency.
- Locate landscaping and stormwater management features (e.g., swales) to be shared among buildings.



Coordinate multiple buildings, landscape buffers, open spaces and employee amenities spaces into the overall master plan.



Provide shared access driveways between buildings to reduce curb cuts and increase efficiency.

2. Loading and Services

This section provides guidelines for the placement and design of loading facilities, service areas, and mechanical equipment to ensure operational efficiency while preserving the visual quality of the site and public realm. The intent is to minimize the impact of these functional elements on streetscapes and pedestrian environments, reduce conflicts with circulation, and maintain a cohesive and attractive site appearance through appropriate screening and integration with overall building design.

2.1 Loading Dock Location and Orientation

- Locate loading facilities at the rear of buildings wherever possible.
- Avoid placing loading docks between a building and a public street.
- When loading facilities must be located at the front of the site, provide a 10-foot landscaped buffer to ensure that docks and doors do not dominate the frontage and are screened from the public street.
- Ensure that loading areas do not interfere with on-site pedestrian and vehicular circulation by separating loading areas and larger commercial vehicles from areas that are used for public parking and public entrances.
- Locate truck loading areas away from the side of a building abutting a residential use or other sensitive uses to the extent feasible.

2.2 Service and Storage Areas

2.2.1 Storage Areas

Any outdoor storage areas containing materials, supplies or equipment, including heavy trucks and trailers, should be screened from public view with landscaping or other elements.

2.2.2 Trash Containment

- Locate trash enclosures to minimize visibility from any public right-of-way through placement, landscaping, and/or other screening.
- Construct trash enclosures with durable materials, ensure that the color, texture and architectural detailing is consistent with the overall site and building design.
- Illuminate trash enclosures for safety and nuisance prevention by dedicated or adjacent site lights. Locate light fixtures as low as possible and shielded for spillover into neighboring properties.
- Include a pedestrian entrance to trash and recycling enclosures to minimize the need for opening larger access gates.

2.3 Mechanical and Utility Equipment

2.3.1 Mechanical Equipment

- Industrial uses and materials not associated with the permanent structure should be located away from perimeter walls or properly screened.

- Place mechanical equipment inside of a building, on rooftops, or screened at ground level with landscaping or other materials.
- Use parapets or other building screening elements to screen roof-mounted equipment from view.

2.3.2 Utility Equipment

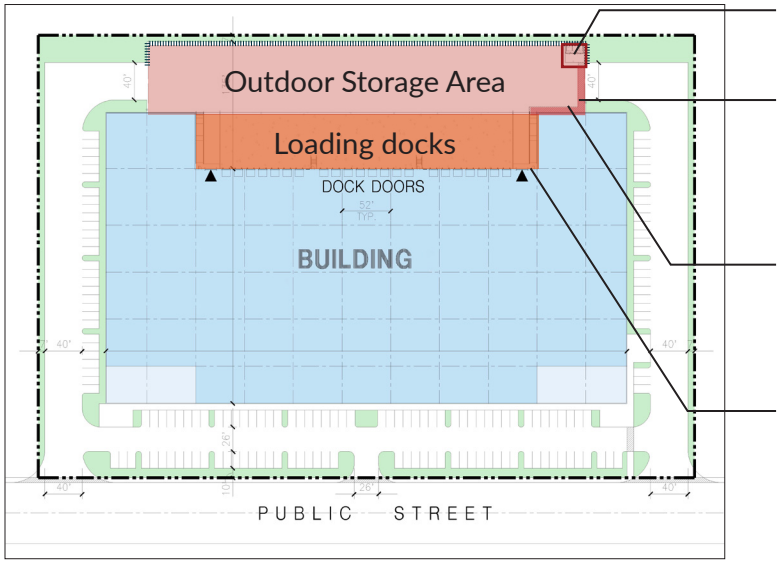
- Utility cabinets and meters shall be inside the building or fully screened if outdoors.
- Screen backflow prevention devices from public view through landscaping, berms, low walls, or other screening techniques.



Screen roof-mounted equipment with parapet walls that complement building design.



Connect trash enclosure to pedestrian path.



Locate trash enclosures to minimize visibility from any public right-of-way.

Include a pedestrian path to trash and recycling enclosures.

Locate outdoor storage areas away from public streets and screened from public views.

Locate loading docks at the rear of buildings and away from public streets.

Locate loading and service areas away from public view.

2.4 Outdoor Activity

- Ensure stacked materials and large equipment such as storage containers do not exceed the height of perimeter or interior walls or fences.
- Locate outdoor noise-generating uses at the greatest distance possible from adjacent residential or sensitive uses.
- Locate outdoor noise-generating uses such that existing buildings and walls can serve as sound buffers.
- Install sound-absorbing barriers, panels, and enclosures around noise-generating outdoor uses.
- Use earth berms and dense vegetation to screen and mitigate noise from outdoor uses.
- Use perimeter wall materials that reduce sound, such as precast concrete, masonry, or composite acoustic panels.
- If space allows, consider clustering outdoor uses together and applying a combination of screening and buffering tools.
- Ensure perimeter walls do not have gaps.

3. Building Design

The guidelines in this section promote high-quality, visually engaging, and functional industrial building designs that enhance the character of public streets and surrounding areas. The intent is to reduce the visual impact of large industrial building masses and heights, establish a sense of scale and rhythm, and encourage architectural features that create a welcoming public realm. Thoughtful articulation, varied materials, and design elements such as corner features are strongly encouraged to avoid long expanses of blank walls along public frontages.

3.1 Building Elements

3.1.1 Architectural Features

- The building design should highlight the primary entryway and building corners through architectural features that reflect and complement building functions.
- Design features may include varying roof heights, windows, or storefronts, and a mix of materials to create depth, texture, and a sense of scale along the façade.
- Maximize transparency through the use of doors and windows, especially on the ground floor, where consistent with interior uses, including lobbies, office space, and other active uses.

3.1.2 Building Massing and Wall Articulation

- Include architectural features that create visual interest and minimize the impact of building mass on building wall planes adjacent to a public street.

- In general, building walls adjacent to a public street should not continue for more than 100 feet without a change in the building wall plane or other elements.
- Spaces created by varied building plane offsets can accommodate landscaping.
- Include treatments on all elevations such as variation in wall plane or height, and articulation of wall surfaces through elements like recesses, form liners, reveals, canopies, windows, and material or color changes.
- On street-facing façades, incorporate structural or design elements (wall articulation, windows, doors, and/or other elements) in a consistent rhythm to break wall expanses into smaller parts.
- Use paint patterns or other external wall treatments to mimic building and wall plane variation.
- Consider the use of public art installations, e.g., murals, on walls facing public streets or open space.

3.1.3 Entryways

- Design entries so that they are clearly defined and visible from a public street.
- Incorporate architectural features such as awnings, canopies, and/or other treatments such as vertical architectural features or unique building colors or materials to highlight primary building entries.
- Incorporate unique ground-floor paving treatments, such as scored, stamped or colored concrete at primary building entry to enhance its appearance.
- Doors at building entrances should be part of larger window systems that permit views into the establishment.

3.2 Height

3.2.1 Overall Building Height

- New buildings should generally provide a clear height of 32 -50 feet to accommodate modern industrial and production uses, mechanical systems, and flexible mezzanine opportunities.
- Buildings should not exceed 75 feet unless a taller bay is required for specialized production. This allows for a potential second floor and flexible mezzanine opportunities.
- Ensure tall bays are proportionate to the building width so they do not excessively dominate the façade.

3.2.2 Multi-story Buildings

- For multi-story buildings, the building should appear firmly grounded and not top-heavy.
- Design dynamic building and roof forms to create greater visual interest and variety, helping structures appear less tall. Cornices, parapets, and eaves can denote the top of a building and provide greater visual interest on tall façades.

3.3 Corner Sites

New buildings at the intersection of two public streets occupy highly visible positions and often act as gateways to industrial districts. Thoughtful design on corner sites can help strengthen the identity and compatibility of the area with adjacent neighborhoods.

Provide one or more of the following in the design of corner buildings:

- A shorter or taller mass at the corner, extending at least 20 feet in both directions
- Material change
- Roof feature
- Special window patterns
- Public space leading to a building entry with integrated seating and landscaping
- Generous landscape beds with large trees
- Public art





Incorporate murals as a design feature to break up large wall expanses and enhance the character of corner buildings.



Add architectural elements, including awnings and canopies, to emphasize primary building entrances and provide shade.



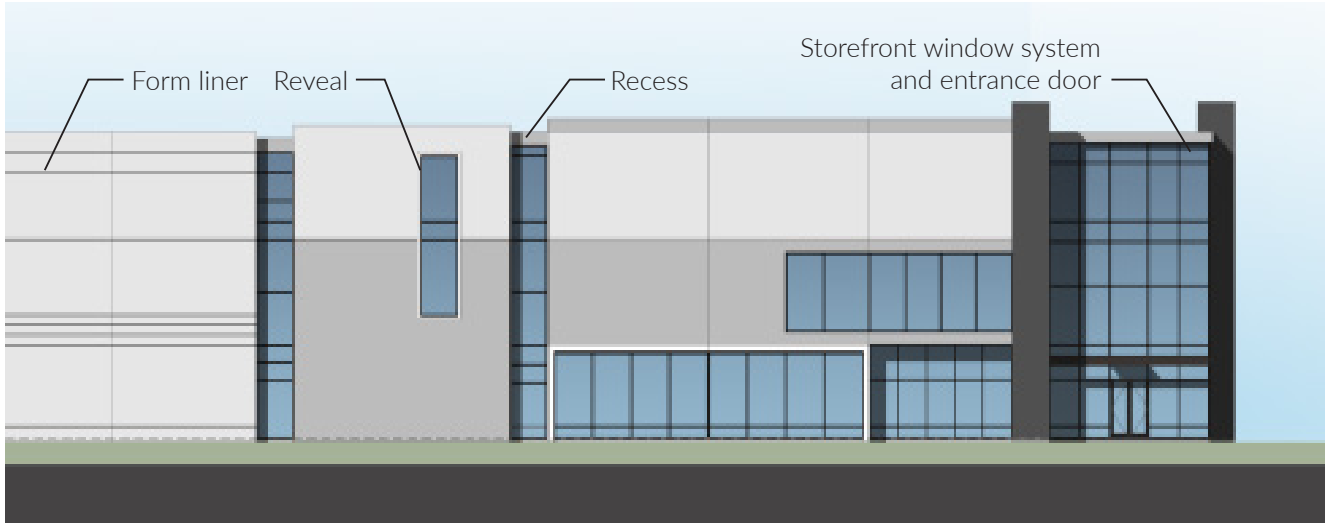
Maximize transparency through the use of doors and windows, where consistent with active uses such as lobbies and office space.



Use design features such as a change of materials and color to create depth, texture, and a sense of scale along the façade.



Vary roof heights to create visual interest and reduce appearance of building height.



Incorporate structural or design elements (wall articulation, windows, doors and/or other elements) in a consistent rhythm to break wall expanses into smaller parts.

4. Landscaping, Lighting, and Signage

Guidelines in this section provide landscaping strategies, including general public frontages, arterial street frontages, and collector street frontages, to ensure each frontage treatment provides adequate landscaping buffers between industrial uses and the public realm.

The overall design should integrate stormwater management features such as swales and infiltration areas to improve sustainability and comply with local environmental standards. Lighting should minimize glare and complement architectural design, and signage is expected to be coordinated with building materials for clear visibility and aesthetic consistency.

4.1 General Landscape Guidelines

Use landscaping to complement and enhance the overall project design. Well-designed landscaping should:

- Provide attractive frontage and frame building entrances or special design features.
- Screen or buffer adjacent sensitive land uses.
- Provide relief and shade to users of the sites using plants, trellises, green walls, and other landscape elements.
- Incorporate low-maintenance, water-efficient plantings that support the long-term health and visual quality of the landscape.

4.1.1 Maintenance and Water Management

- Comply with water efficiency requirements of the jurisdiction.
- Select drought-tolerant species that are native or well-adapted to local climatic conditions.



Select drought-tolerant plants for buffer zones.



Provide swales to treat parking lot run-off.



Integrate amenity areas with site landscaping.

- Design and locate landscaping to provide stormwater treatment. Direct rooftop drainage and parking lot runoff into landscaped areas designed as swales and infiltration areas.

4.2 Street Frontage Landscaping

- Landscaping is essential for creating an attractive streetscape, providing shade, and establishing visual connections with neighboring properties. Landscaping configuration and plant selections within this frontage area must comply with California fire code requirements.
- Where neighboring streetscapes present an attractive appearance, use a similar landscape palette to establish a coherent and consistent streetscape to create a continuous street and landscape frontage.
- Where a continuous tree and landscape street frontage is not present, develop a landscape palette that can be continued along the street frontage by future developments in adjacent properties.
- Use landscaping to mediate the transition between setback areas and adjacent building façades.
- Include a combination of trees, shrubs, and groundcovers that are drought-tolerant and appropriate for the local climate, with proper spacing to create a resilient and durable streetscape.
- Walls and fences that extend out from the main structure for purposes of screening service, storage, loading, or mechanical areas shall have a 10-foot minimum landscape strip along the exterior-facing side.
- Landscaping close to the sidewalk should include trees to provide shade on the sidewalk, while also allowing views into the site. Denser plant material should be located closer to the building.

4.2.1 Arterial Streets

Projects along an arterial street should provide a minimum 15-foot landscaped planting strip adjacent to the building façade or parking area facing the street. The depth of the landscape area may be varied to provide visual interest or to accommodate specific site needs as long as the total area is equal to or greater than a continuous 15-foot depth and the minimum depth is not less than 10 feet.

4.2.2 Collector Streets

Projects along a collector street should provide a minimum 10-foot strip between the building or parking area and the street. The depth of the landscape area may be varied to provide visual interest or to accommodate specific site needs as long as the total area is equal to or greater than a continuous 10-foot depth and the minimum depth is not less than 5 feet.

4.2.3 Frontages Adjacent to or Visible from Residential Uses

- Projects adjacent to or visible from residential uses should provide a 10- to 20-foot landscaped planting strip adjacent to the building façade or parking area facing the street. The depth of the landscape area may be varied to provide visual interest or to accommodate specific site needs as long as the minimum depth is not less than 10 feet.

- Landscaped areas should thoughtfully screen industrial activities and parking areas while allowing some site transparency in support of site security (See Section 7, *Site Security and Crime Prevention*).

4.2.4 Driveway and Entryway Landscaping

Use accent landscaping to distinguish driveway entries and primary building entrances. Landscaping adjacent to driveways shall be designed so that it does not interfere with sight distance requirements for oncoming vehicles.

4.3 Internal Site Landscaping

4.3.1 Parking Lot Landscaping

- Landscape parking lots with broad-branching shade trees at a minimum ratio of one tree per eight parking spaces, excluding outdoor yard areas.
- Locate trees to maximize shade coverage over parking areas.
- Include stormwater features like vegetated swales to capture and infiltrate runoff, reduce pollutants, and improve aesthetics.

4.4 Lighting

4.4.1 Lighting Design

- Integrate exterior lighting fixtures that are architecturally compatible with the building style, materials, and colors.
- Design exterior lighting to be shielded downward to ensure light does not overflow onto adjacent sites.
- Use visually appealing and well-detailed raised light pole bases that are compatible with the overall project design.
- Mount light fixtures at a height appropriate to the setting and project design. Use lower mounting heights for settings adjacent to sensitive land uses (residential, bay lands, or trails).

4.4.2 Building Lighting

Night lighting of building façades should articulate the building's architectural features and should be used sparingly and in key locations. Such lighting should highlight points of visual interest.

4.5 Signage Standards

4.5.1 Sign Coordination

- Coordinate project signage with the overall project colors and materials palette.
- Locate primary business signage prominently in relation to the primary building entry to be visible from the public right-of-way.
- Display information on the sign limited to site/district identification and not advertising.

4.5.2 Monument Signage

- Include no more than one detached monument sign per property.
- Locate monument signs near the street entrance to each industrial park district or subdivision.
- Ensure the design and dimensions of the monument sign do not impair visibility into or on the site.
- Avoid interference with entryway visibility for cars, pedestrians, and cyclists.
- Incorporate the materials and design features of the building which the sign serves.



Select monument sign that complements building design and landscaping.

4.5.3 Wall Signs

Attach signs to vertical surfaces of the building or walls. The sign should be an integral component of the overall building and site design, including the scale of the sign and the materials and colors employed.

4.6 Artistic Elements

Incorporate unique design elements (such as murals, decorative fencing, sculptures, creative bicycle racks, benches and tables) as project features that complement building design.

5. Sustainability

The following guidelines aim to promote sustainable development practices that address energy efficiency, enhance energy stability, minimize environmental impact, and protect ecological resources. By adhering to these principles and applicable regulations, projects will contribute to long-term environmental sustainability and help reduce carbon emissions.

5.1 Energy Infrastructure

5.1.1 Energy-Efficient Design

- Ensure that building design and operations minimize energy consumption, reduce greenhouse gas emissions, and comply with California Code of Regulations Title 24, Part 11 CALGreen Tier 1 or Tier 2 standards.
- Maximize the use of daylight, natural ventilation, and passive solar control to reduce energy demand, provided that these strategies are consistent with the building's use and operational needs.
- Include skylights and/or clerestory windows for natural daylight and to reduce reliance on artificial lighting.
- Consider energy efficiency and lifecycle costs when installing or replacing mechanical equipment.
- Install dock seals or shelters for exterior loading dock doors adjacent to conditioned or indirectly conditioned indoor spaces.

5.1.2 On-Site Renewable Energy and Microgrids

- Where compatible with building uses and insurance requirements, include rooftop solar photovoltaic panels.
- Provide a battery storage system with a rated energy and power capacity per the current California Building Energy Efficiency Standards (Title 24 Part 6).
- Consider making projects microgrid-ready to improve power reliability and power quality and increase delivery efficiency by reducing energy lost in the process of transmission at distances.
  - Preserve indoor and outdoor space for installation of a microgrid, including controllers, battery storage, and on-site energy generation.
  - On-site energy generation may include solar panels and other renewable sources including hydrogen fuel cells.



Use rooftop solar panels to improve power reliability and power quality.

5.1.3 Electric-Ready Infrastructure

- Design for excess demand capacity and accommodate the potential need for additional electrical panels by providing a secondary electrical room in each building, or oversizing the room.
- Plan space for future electrification adaptation for projects that use natural gas equipment such as heat pumps.
- Provide dedicated charging infrastructure to support electric-powered on-site equipment, such as forklifts, yard tractors, and maintenance vehicles.
- Provide conduits and electrical hookups at all loading bays per SB 415 (2025) that are designed to serve or have the capacity to serve cold storage in the future to reduce truck idling time.
- For medium and heavy-duty vehicles, comply with electric vehicle charging readiness requirements for warehouse and manufacturing facilities in CALGreen Nonresidential Mandatory Measures. To achieve higher performance, meet or exceed Nonresidential Voluntary Tier 1 or Tier 2 Standards.



Provide electric vehicle charging stations and electric vehicle capable spaces.

- For employee parking spaces, provide Electric Vehicle Charging Stations (EVCS) and Electric Vehicle Capable spaces per CALGreen Nonresidential Voluntary Tier 1 or Tier 2 Standards.

5.2 Other Sustainability Measures

5.2.1 Urban Heat Island Measures

- Add cool surface treatments to drive aisles and parking areas or use a solar-reflective cool pavement such as concrete.
- Design frontage, perimeter, and parking area landscaping to provide shade cover to outdoor areas.
- Use white or light-colored roofing materials with a high Solar Reflective Index (SRI) per CALGreen Nonresidential Voluntary Tier 1 or Tier 2 Standards.
- Use awnings and trellises on the ground floor to increase shade, reduce glare, and reduce solar heat gain.

5.2.2 Bird-friendly Design

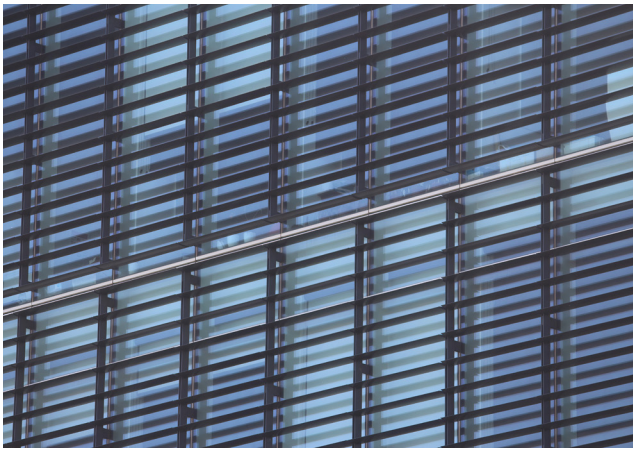
- Avoid the use of large areas of reflective or transparent glass in the building design, specifically in areas adjacent to landscaping.
- Add architectural devices, such as louvers, awnings, sunshades, or light shelves, to the building design to reduce massing of glass.
- Use bird safety treatments on reflective glazing. Treatments could include patterned or fritted glass, lasered patterns, decals, or adhesive films (often in a spacing of 2–4 inches vertically or 4 inches horizontally), to help birds see the glass as a barrier.

- Do not use uplighting or spotlights on-site; ensure all site lighting uses shielded fixtures. See Section 4.4.1 for lighting design guidelines.

5.2.3 Development Adjacent to Shoreline

Developments abutting Open Space and Floodplain Districts are visually and environmentally sensitive and warrant additional site, architectural, and environmental considerations.

- Incorporate landscaping to frame and integrate the development into the surrounding area and provide sensitive, natural screening where appropriate.
- Use building surfaces, materials, and colors to minimize reflectivity and integrate into the natural surroundings.
- Where relevant, incorporate pedestrian connections to the Bay Trail using pathways, landscaping, and interpretive signage.
- Minimize visibility of truck loading bays and dock doors from shoreline.
- For buildings in areas susceptible to sea level rise, incorporate adaptive site and landscape design strategies, such as elevated critical building components, elevated pathways, floodable open spaces, and resilient planting palettes.



Use shades, louvers, or treated glass for bird-safe design.



Incorporate pedestrian connections to the Bay Trail along the shoreline.

III. Special Considerations

6. Building Renovations, Additions, Historic Structures, and Adaptive Reuse

East Bay cities have a large stock of aging buildings that need to be updated to meet the evolving needs of current industrial growth trends and sustainability requirements. Renovation, additions, and adaptive reuse projects face unique challenges, and this section provides guidelines tailored to these type of projects, as well as buildings with local or state historic designation.

6.1 Renovations, Additions and Adaptive Reuse

6.1.1 Building Character and Context

- Retain key defining architectural elements that shape the district's industrial character, such as overall massing, façade rhythm, and key material expressions. New additions should help reinforce and improve the visual identity of the area.
- Focus on improving building performance, durability, and functionality while maintaining a cohesive street presence.
- Avoid blank walls along visible frontages by incorporating glazing, articulated façades, and architectural features that contribute to the public realm (see 3.1).
- When new architectural articulation is not feasible due to structural limitations, use paint, landscaping, and public art elements to reduce inactive façade along the public frontage.
- Ensure adaptive reuse projects are compatible with surrounding properties and do not introduce noise, odor, vibration, or other nuisances to adjacent sites, particularly where residential, open space, office, or public-facing uses are nearby.
- Include flexible spaces to accommodate various types of industrial uses, including configurations suitable for smaller tenants.
- Projects should also incorporate on-site amenity areas such as break rooms, outdoor seating, or wellness spaces to improve working conditions for employees (see 1.1.3).



Include amenity spaces to improve work conditions for employees.

6.1.2 Accessibility and Safety

- Provide continuous accessible routes from sidewalks and parking spaces to building entries that meet current ADA standards and California's Building Standards Codes for accessibility, and integrate ramps, lifts, and handrails into the overall design.
- Wherever site conditions allow, clearly separate pedestrian paths, vehicle traffic, and truck movements through thoughtful site design.
- Provide clearly marked pedestrian crossings, and/or protective bollards to reduce conflicts and improve safety for workers and visitors. When full separation is not feasible, use strategic placement of landscaping or fencing to guide movement and minimize conflicts.
- Provide shared common access driveways or roads for adjacent lots to reduce the number of access points onto the main roadway, especially for sites with limited internal space for adequate circulation.
- Incorporate seismic, fire, and life-safety upgrades as part of renovation work, including structural retrofits, fire suppression systems, and clearly marked egress paths.

6.1.3 Structure and Material Reuse

- Evaluate existing buildings for structural integrity and reuse opportunities, retaining foundations, framing, and envelope components where they meet current safety and functional standards.



Integrate ramps, lifts, and handrails into the overall design.

- Organize renovations and additions to allow multiple tenants and industrial processes over time —for example through modular bays, open floor plates, and adequate electrical room space for potential microgrid system installation.
- Prioritize the reuse of building components and incorporate materials with low-embodied carbon to reduce demolition waste and divert materials from landfill.

6.1.4 Demolition and Reconstruction

- When demolition is necessary, hazardous materials such as asbestos, lead-based paint, and contaminated soils should be identified and handled in accordance with all applicable regulations to protect workers and nearby communities.
- Follow a construction and demolition waste management plan that maximizes reuse and recycling of building materials and meets or exceeds local diversion requirements.

- New buildings constructed after demolition should meet or exceed current standards for seismic resilience, energy efficiency, and material performance, and should achieve substantially better building envelope performance than the structures they replace.

6.1.5 Energy Efficiency and Building Systems

- Renovation projects should improve the energy performance of the building envelope through added insulation, air sealing, upgraded glazing, and shading where compatible with industrial operations.
- Outdated mechanical and lighting systems should be replaced with high-efficiency heating, ventilation, and cooling (HVAC) controls that support industrial loads while improving indoor comfort for workers.

6.2 Historic Buildings

Cities with a rich inventory of historic industrial buildings face unique challenges when accommodating modern functionality while preserving historic character. These guidelines aim to ensure that additions and renovations respect the architectural character and cultural significance of historic resources, while allowing for contemporary operational needs.

- Ensure that any additions, alterations, or improvements to buildings designated as Historic Resources comply with local standards or processes, the California Office of Historic Preservation (OHP), and/or US Department of the Interior's Standards for the Treatment of Historic Properties.
- Preserve original building materials, building elements, and architectural features, if possible. Retain the original building continuity, rhythm, and form created by these features.
- Design building additions on historic buildings to be compatible with the massing, size, scale, and architectural features of a historic structure or site while clearly reflecting the modern origin of the addition.
- Within historic districts, new infill structures should harmonize in style and scale with the surrounding historic structures.

7. Site Security and Crime Prevention

Industrial properties in East Bay Priority Production Areas (PPAs) often face security challenges, including theft, trespassing, and vandalism. While industrial sites and infrastructure facilities typically have limited public access, they require strong safety and security measures to protect the property and operations.

7.1 Crime Prevention through Environmental Design

Crime Prevention Through Environmental Design (CPTED) is a design approach based on the principle of defensible space, which suggests that places that appear well-defined, visible, and actively managed are less vulnerable to criminal activity. For industrial areas, CPTED strategies should support secure and efficient operations while reducing risks related to intrusion and unwanted activity.

The table below summarizes the four key CPTED strategies: natural surveillance, natural access control, territorial reinforcement, and maintenance, as well as site and building design elements related to each strategy. Many of these guidelines are similar or complementary to the items in Sections 1 through 6 in this document.

Table 2 CPTED Principles and Design Elements

CPTED Principle	Purpose	Supporting Design Elements
Natural Surveillance	Increase visibility and legitimate observation to deter unwanted behavior and enhance perceived safety.	Active uses, sightlines, lighting
Natural Access Control	Guide movement into, through, and out of spaces to discourage unauthorized access while maintaining openness and usability.	Site layout and circulation, pedestrian access, parking, utility and service area design
Territorial Reinforcement	Establish ownership, responsibility, and clear distinctions between public, semi-public, and private space.	Prominent entry and signage, activity and ownership, transition zones
Maintenance	Reinforce care and establish ongoing oversight to discourage disorder and sustain safety over time.	Site design and material selection, site evaluation, site management

7.2 Natural Surveillance

Natural surveillance is a CPTED principle that uses site and building design to increase visibility and passive observation of industrial properties. Natural surveillance can help deter trespassing, vandalism, theft, and other inappropriate activity by making unwanted behavior more visible and easier to report.

In industrial areas, this principle in practice includes designing buildings, access points, public frontages, parking areas, yards, and loading areas so that employees, visitors, truck drivers, security personnel, and passersby can more easily observe activity on and around the site. Design features such as well-placed windows, transparent fencing, adequate lighting, clear sightlines, and well-maintained landscaping can help improve visibility between industrial operations and surrounding public areas, including streets, sidewalks, and common access areas.

Natural surveillance should be balanced with the need for security, screening, and operational efficiency. The goal is not to expose industrial operations but to create clear visual connections in key public-facing and high-activity areas while avoiding hidden corners, blank frontages, poorly lit edges, and isolated spaces.

The following guidelines can enhance natural surveillance.

7.2.1 Active Uses

- Place active uses—including primary entrances, administrative offices, reception area, employee amenity areas, and showrooms—along public streets, with windows designed to provide clear visibility from inside the building to the street and sidewalk.
- Place theft- or vandalism-prone site features, such as electric vehicle (EV) charging stations, in highly visible areas near main entrances, windows, security offices, or other regularly occupied areas.

7.2.2 Sightlines

- Avoid placing landscaping, signs, utility equipment, or architectural projections where they would block visibility to entrances, gates, parking areas, loading zones, or other security-sensitive areas.
- Avoid creating blind spots or potential hiding spots with landscaping or berms.
- Maintain clear sightlines for security cameras and on-site surveillance.
- Avoid solid screening walls along public frontages and allow visibility through fences by including no more than 50 percent solid material.
- Where mezzanine-level or second-story administrative areas are provided, orient them to overlook parking areas, public streets, site entrances, or other high-activity areas.



Provide windows in areas with active uses.



Avoid solid screening walls along public frontages that block sightlines.

7.2.3 Lighting

- Provide appropriately scaled and strategically located lighting throughout the property.
- Prioritize lighting in high-risk and high-activity areas, including site perimeters, **streetfacing frontages,** gates, building entrances, parking areas, loading zones, outdoor storage areas, service yards, **pedestrian pathways,** and employee access routes.
- Use shielded lighting, which is more difficult to vandalize and reduces blinding glare.



Provide adequate and appropriately scaled lighting throughout the site.

- Avoid overly bright or poorly directed lighting, which can reduce visibility for employees, drivers, security personnel, and cameras and make adjacent darker areas harder to see.

7.3 Natural Access Control

Natural access control is a CPTED principle that uses site design, physical elements, and clear wayfinding to guide movement and clearly indicate where people and vehicles are permitted to go. Natural access control can be implemented by the placement of entrances, exits, fencing, landscaping, and lighting to provide physical guidance to people coming and going from one space to another and to discourage unwanted activity.

In industrial areas, this principle in practice includes designating and marking public-facing entrances, employee areas, truck circulation routes, loading zones, outdoor storage yards, and restricted operational areas. Clear access routes and boundaries facilitate site navigation, monitoring, and management.

The following guidelines support natural access control.

7.3.1 Site Layout and Circulation

- Provide clear and visible circulation routes. Ensure all paths, driveways, and entrances are clearly marked through pavement markings, wayfinding signage, landscaping, and lighting.
- Clearly distinguish service routes, employee access points, visitor entries, truck circulation, and loading areas to reduce confusion and discourage trespass.
- Use landscaping, low fencing, bollards, gates, and other site elements to guide movement without creating an overly fortified appearance.
- Where fencing is necessary, select fencing types that are difficult to climb (e.g., palisade fencing).

7.3.2 Pedestrian Access

- Limit the number of pedestrian entries into the property along each street frontage.
- to control access and improve observation of individuals who are entering and exiting.
- Provide separated and well-marked pedestrian pathways through parking lots and outdoor spaces, creating a safer path of travel and a visible presence of pedestrians.
- Use pedestrian-scale lighting to support visibility.



Provide clear pedestrian pathways through parking lots.

7.3.3 Parking

- Separate employee parking from warehouse operations where feasible. Clear separation of private transport from operational zones prevents inventory theft and strengthens facility security.
- Designate visitor parking near primary entrances. Clearly marked visitor parking helps direct visitors to appropriate areas and reduces unnecessary circulation through secure or operational zones.

7.3.4 Utility and Service Area Design

- Locate outdoor storage areas for pallets, crates, or trash receptacles where they cannot easily be used as ladders to scale perimeter fences.
- Place utility equipment and trash enclosures so they do not obstruct natural surveillance of common-space areas.

7.4 Territorial Reinforcement

Territorial reinforcement is a CPTED principle based on the idea that people are more likely to protect and monitor spaces that seem owned, managed, and cared for. Similarly, people are also less likely to intrude into spaces where ownership and active management are clearly demonstrated. The underlying principle of territorial reinforcement is that the transition between public and private spaces should be clearly delineated.

Territorial reinforcement uses physical design elements to define boundaries between public, semi-public, private, and restricted areas, indicating who is expected to use each space, as described below.

- *Public zones* are areas accessible to the public, such as sidewalks, public streets, visitor entrances, or customer-facing areas. These areas should be designed to support visibility, wayfinding, and natural surveillance.
- *Semi-public* or semi-private zones are transition areas between public and restricted spaces. On industrial sites, these may include visitor parking areas, employee amenity areas, shared drive aisles, or landscaped front setbacks. These areas should be clearly defined through landscaping, paving, signage, lighting, or low fencing.
- *Private zones* are areas intended for employees, visitors, and other authorized users. These may include employee parking areas, administrative offices, internal circulation routes, and controlled building entrances.
- *Restricted operational zones* should be limited for safety, security, or operational reasons. These may include loading docks, truck courts, service yards, outdoor storage areas, and utility areas. These spaces should be clearly marked and separated from public and visitor areas through signage, pavement markings, gates, fencing, or other access control measures.

The following are additional design guidelines and tools to strengthen territorial reinforcement.

7.4.1 Prominent Entry and Signage

- Use gateway structures and treatments to emphasize entry into a semi-public or private space.
- Ensure entries are prominent, well-lit, and easy to see from the street and convey a sense of oversight.
- Use consistent site design elements, including branding, landscaping, and lighting, to define business territory.

7.4.2 Activity and Ownership

- Use property numbering and outdoor signage that communicates ownership and use of the property.
- Mix or co-locate active uses on the ground floor to create activity and "eyes on the street."
- Incorporate public art, monuments, or community signage to foster a sense of ownership and identity and attract positive activity.



Use landscaping and public art at the main entry to foster ownership and identity.



Incorporate murals on large surfaces to discourage graffiti.

7.4.3 Transition Zones

- Use landscaping, pavement treatment, signage, and other design cues to signal transitions from public to semi-private and private spaces.
- Provide controlled access points or edge treatment such as hedges, planters, low walls or fencing to clearly delineate secure areas.

7.5 Maintenance

Maintenance allows for the continued use of a space as intended over time. Deterioration and blight signal a lack of concern and control by site users and indicate a greater tolerance of disorder. The more dilapidated an area, the more likely it is to attract unwanted activity. Proper maintenance helps ensure that buildings, site features, and operational areas remain safe, functional, and orderly.

Maintenance and management need to be considered at the design stage, as the selection of materials, landscaping, and other site features will impact maintenance needs and treatments that should be sustained over time.

The following guidelines support site and building maintenance.

7.5.1 Site Design and Material Selection

- Avoid large, smooth surfaces without windows or articulation to discourage graffiti or other vandalism.
- Where large blank exterior surfaces are unavoidable, incorporate high-quality murals to establish site identity, reinforce ownership, and discourage uninvited graffiti.
- Use graffiti-resistant paint and/or coatings to quickly remove any unwanted markings.
- Use textured surfaces, defensive planting with thorny plants, or green walls with clinging vines to prevent climbing.
- Minimize leftover spaces or blind corners that are difficult to maintain or monitor.

7.5.2 Site Evaluation

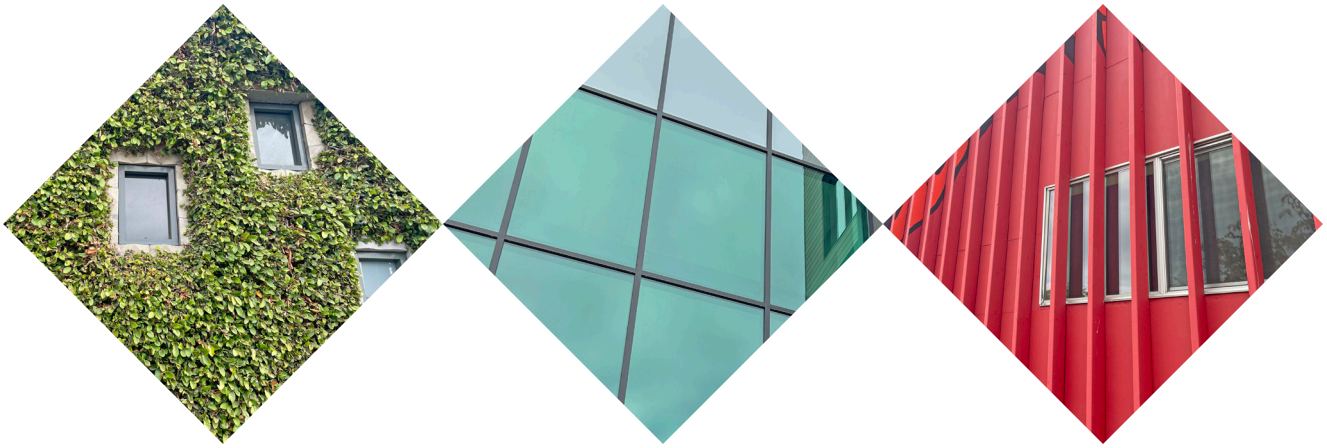
- Measure CPTED effectiveness over time through both qualitative and quantitative indicators. Evaluation can help determine whether design and management strategies are reducing opportunities for crime and improving perception of safety.
- Conduct periodic post-occupancy reviews at six months, one year, and three years following completion.
- Conduct regular maintenance audits to confirm that lighting, landscaping, fencing, signage, access control measures, and security features remain functional and effective.
- Adjust site design, maintenance practices, or operational procedures based on evaluation results, observed issues, and new information.

7.5.3 Site Management

- Establish ongoing maintenance practices and appropriate staff or security presence to reinforce active oversight of the site.
- Incorporate routine inspections, clearly defined maintenance responsibilities, and coordination with local law enforcement or public safety staff where appropriate.
- Maintain landscaping to preserve clear sightlines, prevent overgrowth, and eliminate hiding places or blind spots.
- Screen or properly store broken equipment, inoperable vehicles, outdoor materials, and other items that may create a neglected appearance or attract unwanted activity.
- Encourage timely reporting of burned-out, damaged, or vandalized lights to ensure that lighting remains functional and effective.
- Respond promptly to vandalism, graffiti, litter, broken windows, debris, and other signs of deterioration.
- Equip common areas with limited visibility with appropriate surveillance measures, such as security cameras.

Appendix 1

Industrial Development Case Studies



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Leading the Next Generation of Industrial Buildings & Districts: Industrial Development Case Studies

January 2026

Prepared for:
Metropolitan Transportation Commission
Bay Area Metro Center
375 Beale Street, Suite 800
San Francisco, CA 94105
Phone: 415-778-6700

Prepared by:
PlaceWorks
2040 Bancroft Way, Suite 400
Berkeley, CA 94704
Phone: 510-848-3815

Table of Contents

Industrial Project Case Studies 1
Key Findings 1
Case Study #1: Prologis Nexus, San Leandro 4
Case Study #2: Prescott Project, West Oakland 8
Case Study #3: Palisade Fremont Innovation Center, Fremont 12
Case Study #4: Pacific Commons South, Fremont 15
Case Study #5: Duke Richmond Industrial Project Design Review Richmond 18
Case Study #6: CenterPoint Properties warehouse project, Richmond 21
Case Study #7: Building 9, Alameda Point, ALAMEDA 25
Case Study #8: EV Truck Charging Depot, Port of Los Angeles and Port of Long Beach 28
Conclusion and Recommendations 29

TABLES

Table 1. Industrial Development Case Studies Overview 3

INDUSTRIAL PROJECT CASE STUDIES

This memo presents eight industrial development case studies selected to illustrate a range of project types, scales, and design approaches relevant to East Bay Priority Production Areas (PPAs). The examples include adaptive reuse, infill, redevelopment, and large campus projects that highlight emerging trends in industrial developments, site planning, building and landscape design, and sustainability practices. Together, the key findings from these case studies provide insights and lessons to inform future industrial design guidelines for the five jurisdictions in the East Bay Priority Production Areas, including Oakland, Fremont, San Leandro, Livermore, and Union City.

KEY FINDINGS

Development

- Lot size and zoning designations directly influence the type of industrial buildings that can be developed, ranging from compact developments to large multibuilding campuses.
- There is an increasing demand for flexible-use industrial spaces, and some of the case studies emphasize this to meet evolving tenant needs and market demands.
- With a limited supply of available land in the region, higher-density forms of industrial development through re-development of existing underutilized sites are crucial in facilitating new growth.
- New construction is pushing towards higher clear height and added second or mezzanine levels to improve site utilization efficiency.
- Multibuilding campuses and large sites often include employee amenity areas, pedestrian/bicycle trails, and shuttle services that connect to public transportation.
- Conversion from heavy industrial or offices to light industrial, R&D, and warehousing is a common theme among the case studies. This occurs more on lots larger than four acres, to provide ample space for business functions.
- Mixed-use developments with industrial use on the ground floor and multiple floors of office spaces above were also seen around the Bay Area. This allows for higher density and brings offices, R&D, and light industrial uses together. This allows on-site coordination and collaboration, and promotes more compact developments.

Site, Building, and Landscape Design

- While older buildings typically have lower clear height (13 to 20 feet), some newer buildings have higher clear height (40 feet), which results in building heights of up to 50 feet or even higher for buildings with a mezzanine level.
- Flexible building height limits can accommodate the intensification of underdeveloped lots.
- Large expanses (more than 100 feet in length) of industrial façade can create a monotonous and visually unappealing streetscape. This can be alleviated by introducing rhythm, depth, and human-scale elements on public-facing building façades, and a landscape buffer along the public frontage.
- Generally, businesses need both an industrial component (such as warehouse), along with an associated office component (about 5 to 10 percent of square footage) at the same site. The office component is an opportunity to include more window lines, entry features, and other elements to deliver buildings with engaging building design.
- Most industrial buildings have extensive ground-level parking spaces required by zoning ordinances, and rooftop and underground parking are very uncommon in the Bay Area. With parking on at least two sides of the building, it creates a challenge in maintaining an active, pedestrian-friendly street frontage. Strategic site layout and screening strategies should be implemented in site design.

Sustainability, Energy-efficiency, and Electrification

- Innovative and sustainable solutions are seen implemented in recent industrial projects, for example, the use of low-carbon concrete, recycled steel, and modular prefabricated components to reduce embodied emissions. Some projects are designed with rooftop solar systems to expand renewable energy access.
- Microgrid-enabled EV charging hubs are emerging with up to 9 MW capacity in California. They are equipped with advanced battery storage solutions to enhance grid resilience and enable vehicle-to-grid capabilities. According to the case studies, micro-grid charging hubs can be constructed as fast as within 6 months.
- Site electrification, beyond EV charging, includes upgrading HVAC systems through electric heat pumps, replacing natural gas heating, and reducing operational emissions.

The eight development cases are summarized in Table 1 on the next page.

Table 1. Industrial Development Case Studies Overview

Project	Location	Project Size	Project Type	Building Area	Building Height	Best Practice Feature
Prologis Nexus	San Leandro	Approx. 12 acres	Infill, Retrofit	266,000 sf	40’ clear height	Sustainability (LEED Platinum)
Prescott Project	West Oakland	N/A	Adaptive Re-use, Renovation	150,000 sf	13’2” – 19’2” clear height	Adaptive Reuse
Palisade	Fremont	4.2 acres	Redevelopment of Office Space	69,872 sf	Approx. 40’ (44’ including parapets), 36’ Clear Height	Site Design, Landscape Design
Pacific Commons South	Fremont	Approx. 90 acres	Multi-building (10) Campus	1,718,490 sf	Approx. 37’ to 45’ (28’ to 36’ of clear height)	Outdoor Amenity Areas
Duke Richmond	Richmond	7.94 acres	Infill, Redevelopment of Heavy Industrial Buildings	154,000 sf	43’ top of parapet, Clear Height 36’	Landscape Design, Building Design
CenterPoint properties	Richmond	31.48 acres	Multi-building (3) Campus	555,537 sf	approximately 42’	Construction and Operation Best Practices
Building 9	Alameda Point	Approx. 4.11 acres	Adaptive Re-use, Restoration	96,000 sf	42’ Clear Height	Historic Restoration
Denker charging depot	Los Angeles and Long Beach	N/A	Microgrid Charging Depot	N/A	N/A	Microgrid with hydrogen generators

CASE STUDY #1: PROLOGIS NEXUS, SAN LEANDRO

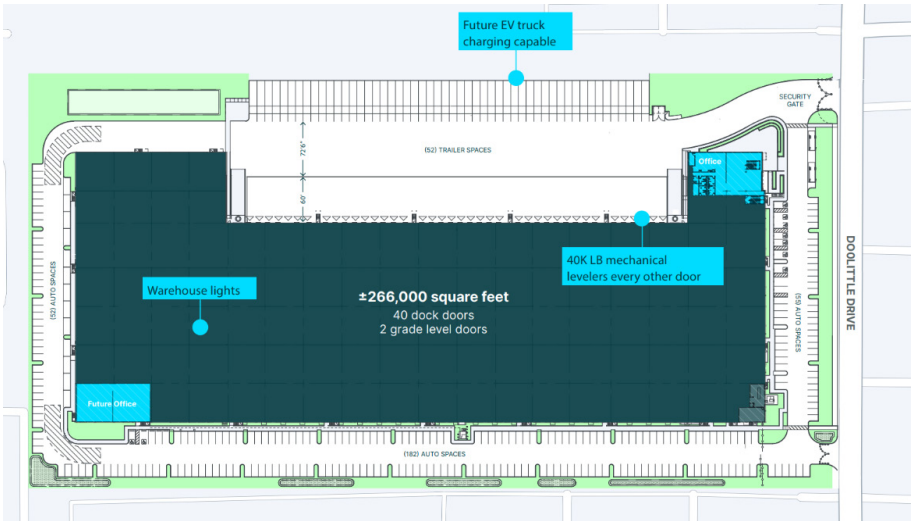
Development Type and Location

Prologis Nexus (1345 Doolittle Drive, San Leandro) is a medium-sized, single-building industrial campus that exemplifies sustainable development. The project reuses an existing building structure, reducing environmental impact while meeting modern logistics requirements. Located within the San Leandro Priority Production Area, the site offers local access to the Port of Oakland, Oakland International Airport, and the Interstate (I-) 880 corridor, making it ideal for distribution and supply chain operations.

- Parcel Size: Approx. 12 acres (approx. 1,000 feet deep x 530 feet wide)
- Development Type: Infill, reuse of existing structure

Site Design

The site is accessed from a primary driveway on Doolittle Drive. Parking is arranged with one aisle along the building façade facing Doolittle Drive and the rest of the parking along the side and back of the building. A landscape buffer sits between the parking row and street sidewalk, with fencing along the buffer.



Prologis Nexus Site Plan. Source: Prologis Nexus Project Brochure

Parking Area

- 289 automobile parking stalls (with landscape division every 10 stalls)
- 52 trailer parking stalls (no landscape division)

Loading Area

- 185-foot truck court designed for truck maneuvering and staging
- 40 dock doors, 2 grade-level doors
- 20 pit levelers to support loading and unloading operations

Building Design

This project has more than 266,000 square feet of industrial space and over 9,500 square feet of office space. The building floor plans are designed to provide flexibility and can be tailored for various business needs and tenants.

The building has corner elements with variation in window patterns, façade materials, wall plane variation, and landscape at the corner entry. The wall plane along the public façade is articulated with different elements at intervals to break the visual effect of the long blank industrial building façade.

Key Features:

- 40 feet clear height (max building height 35 feet allowed, max 50 feet with approval from Zoning Enforcement Official)
- Typical column spacing 50 x 50 feet
- Early Suppression Fast Response (ESFR) Sprinkler system
- Power supply of 5,200 amps, 480 volts
- Natural lighting in the building
- Outdoor patio space

Landscape Design

There is decorative metal fencing along the street. Between the fence and the public sidewalk, a landscaped buffer provides layers of greenery that soften the visual massing of the building and partially screen parking areas. This buffer enhances curb appeal and contributes to a pedestrian-friendly streetscape. There are landscape swales at various locations of the campus to help with stormwater management and biodiversity. Screened trash enclosures maintain a clean and orderly appearance, while bike racks encourage sustainable transportation options. A network of pedestrian pathways ensures safe and convenient circulation, enhancing connectivity across the campus.

Sustainability

This project integrates a range of sustainable design features. It is designed to achieve a LEED Platinum rating and aims to provide a 45 percent reduction in embodied carbon emissions and features.

Sustainability Features:

- 14 electric vehicle (EV) car chargers included, with the potential to add 100+ additional chargers
- EV truck charging capable
- Solar-ready
- LED lighting with dynamic controls
- Low-carbon concrete throughout
- Optimized slab: less concrete, more strength
- Cross-laminated timber (CLT) mezzanine

Other Prologis Innovative solutions in sustainability:

The 2023 Prologis Environmental, Social, and Governance (ESG) Report highlights some of the key goals and the range of solutions that Prologis offers to customers. Prologis aims to achieve net-zero emissions by 2040 and offers a variety of sustainable features in development projects. Prologis promotes and incorporates the following sustainable features in industrial projects like distribution centers:

- Support for biodiversity
- Geothermal energy
- Lower-carbon construction materials (e.g., recyclable modular building materials, mass timber, and stronger lower-carbon concrete)
- Sustainable building certificates
- Construction circularity (reuse and recycling of construction waste)
- Electrification

Other innovative solutions for projects include Falkbuilt prefabricated walls made from recycled aluminum, and MDF that are easily reconfigurable and have been installed in 10 projects. OptiPave is a fiber-reinforced paving system that reduces embodied carbon by 20 to 40 percent and concrete thickness, tested in three projects. Pozzotive uses recycled glass to create a cement replacement powder, achieving about 50 percent reduction in embodied carbon.

Summary

Designed to achieve a LEED Platinum rating, Prologis Nexus sets a strong example for integrating sustainability into an industrial building, elevating building design, and including office on-site. The building uses varied articulations to break up its massing, which is an important consideration for large-scale industrial sites. This also sets an example for adding modern industrial structures in areas with existing industrial buildings.



Prologis Nexus Project Building Design and EV Charging Spaces

CASE STUDY #2: PRESCOTT PROJECT, WEST OAKLAND

Development Type and Location

The Prescott industrial development in West Oakland is an example of renovation and adaptive reuse in a mixed-use neighborhood. It includes a group of buildings designed for advanced manufacturing and flexible uses, including life science, food technology, and green technology. The innovative campus contains approximately 100,000 square feet of building area equipped with vibrant gathering spaces, office, industrial workspaces, loading areas, and parking. The campus is conveniently located near the intersection of major freeways, the Port of Oakland, and the Bay Bridge.

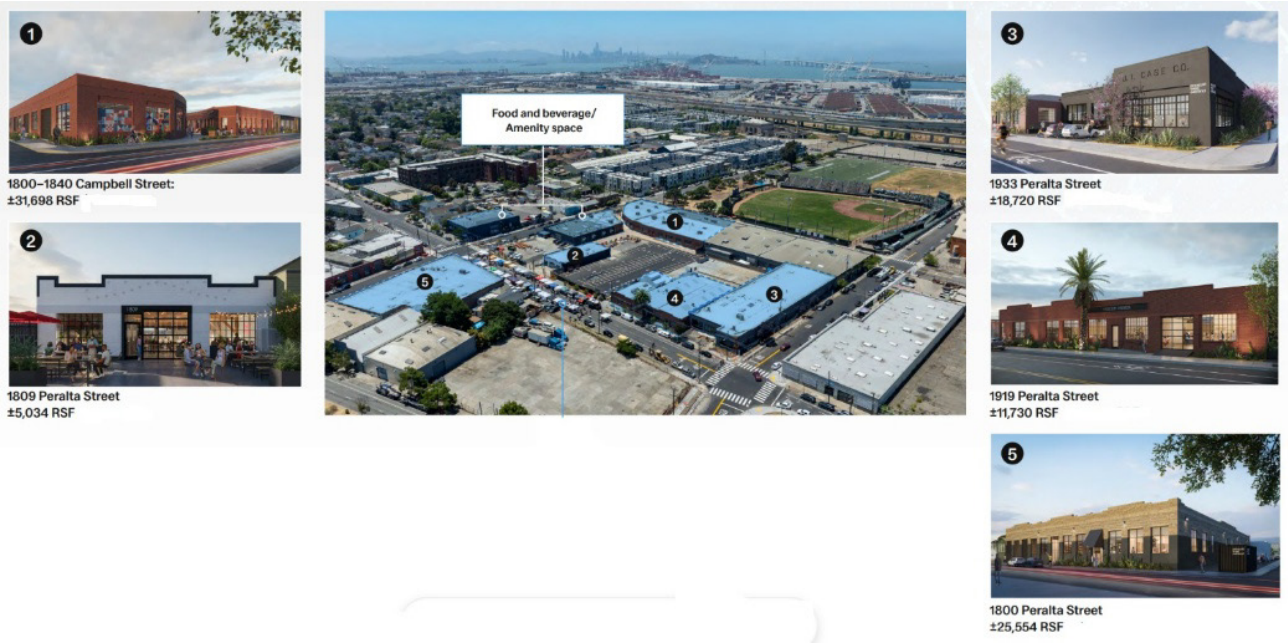
Site and Building Design



Prescott Project Site Plan Source: SrmERNST

The site is integrated into the existing urban fabric, with circulation connected to the city's road network, along with some internal circulation and internal on-site parking.
The individual industrial buildings vary in size between 5,000 to 31,700 square feet and include several amenities, including new conditioned office space; new restrooms; refurbished or new window systems; new mechanical, plumbing, and lighting systems; new roof and building slab; new HVAC; partial or full seismic upgrades; fire alarm systems; and fresh finishes and landscaping.

- Total Building Area: Over 150,000 square feet
- Project Use Type: Early Stage R&D, Advanced Manufacturing, Food Market



Prescott West Oakland Overview. Source: Prescott West Oakland Portfolio Brochure

Design features and power requirements vary slightly based on the floor area of buildings, as described below.

1800 Peralta Street, with floor area of approximately 25,500 square feet, has the following design features:

- About 6,900 square feet of office space
- 17 feet, 3 inches – 19 feet, 2 inches clear height
- Power upgraded to 2,000 Amps at 480 volts; 65 Watts per square feet
- ADA compliance
- Dock-high and grade-level loading
- Parking

1933 Peralta Street, with floor area of approximately 18,700 square feet, has the following design features:

- 5,775 square feet of office space
- 13 feet, 2 inches – 17 feet, 4 inches clear height
- Power upgraded to 800 Amps; 3 phase 277/480V; 36 Watts per square feet
- ADA compliance
- Grade-level loading
- Parking at rear of building

1919 Peralta Street, with floor area of approximately 11,700 square feet, has the following design features:

- 3,000 square feet of office space
- 18 feet, 6 inches clear height
- Power upgraded to 1,000 Amps at 56 Watts per square feet
- ADA compliance
- Grade-level loading
- Parking at rear of building

Landscape Design

A diverse selection of plant species is integrated throughout the area, creating visual interest and ecological value. Certain sections of the site include commercial spaces, including a food market, with outdoor seating areas, encouraging social interaction and relaxation. Additionally, placemaking elements are included to create a vibrant, attractive environment that fosters a sense of community and engagement.

Summary

This is a successful example of adaptive reuse, bringing activity and modern uses into an older industrial neighborhood. The overall design balances functional needs with features that make the site welcoming and accessible for both visitors and employees. Each building retains its own unique historic features, while the renovations brought in modern elements that are compatible yet also distinguishable. Public art is used throughout the site to improve site character.



Prescott Industrial Project in West Oakland

CASE STUDY #3: PALISADE FREMONT INNOVATION CENTER, FREMONT

Development Type and Location

The Palisade Fremont Innovation Center in Fremont is an infill project with a Class-A advanced manufacturing facility. The facility, which replaces a 5,000-square-foot office building, is under construction and is expected to be completed by 2026. The building is designed with seven dock-high doors, one grade-level door, skylights, 135-foot secured truck court, EV charging infrastructure, and power supply of 4,000 Amps at 277-480 volts. The column grid varies between 52 feet and 60 to 70 feet.

- Site size: 4.2 acres
- Floor-area ratio (FAR): 0.38 (max allowed 0.45)
- Rezoning: From Regional Commercial (C-R) to Tech Industrial (I-T)
- Previous Use: A single building that provides approximately 5,000 sf of office space, which would be demolished.

Site and Building Design

- Site Access: Provided through one right-in/right-out only driveway on Fremont Boulevard and two full-access driveways on Ice House Terrace, which is shared with the adjacent parcel. In addition, the project can also be accessed through a driveway on Hugo Terrace via the adjacent parcel to the east.
- Parking spaces:
    - 107 automobile parking spaces
    - 8 long-term bicycle parking spaces
    - 10 short-term bicycle parking spaces
- Building Height: Approximately 40 feet (44 feet including parapets), 36 feet Clear Height (Max Height Allowed 75 feet)
- Total Building Floor Area: 69,872 square feet (including 4,990 square feet office space)



Palisade Innovation Center Site Plan Source: https://northpalisade.com

Landscape Design

The project will include approximately 21,186 square feet of new landscaped area across the project site, including 50 trees. All landscaping will be drought-tolerant to minimize water demand. The project will also include four landscaped bioretention basins and two flowthrough planters, as well as curb slots from paved areas to direct stormwater to bioretention areas. Roof drains along the north and south of the proposed structure would direct stormwater runoff through 8- to 12-inch storm drainpipes to biotreatment ponds along the north, east, and west property lines.

For lighting, there would be 24 light fixtures affixed to the exterior of the building. Additionally, six light fixtures would be placed around the parking lot. For screening purposes, plants will be installed around aboveground utilities to screen utilities from public streets and parking areas.

- Total Landscape Area provided: 21,186 square feet (9,538 square feet required)
- Total Trees Provided Including Existing: 120
- Temporarily irrigated native bio-swale area: 5,385 square feet
- Drought-tolerant irrigated landscape: 15,801 square feet

Summary

The Palisade Fremont Boulevard Project is an industrial infill development that has very efficient site layout, providing clear internal circulation for trucks and employees. It integrates sustainable infrastructure, including bioretention basins and flow-through planters that manage on-site stormwater and improve water quality. All plantings are drought-tolerant, reducing long-term maintenance and irrigation needs.

During the design review process, City staff appreciated the quality of the project, which emphasized key design features to help resolve concerns and expedite the review process. Overall, the project supports Fremont's vision for high-quality, technology-oriented industrial growth, and is a good example of a sustainable industrial infill project on a previous office use site.



Palisade Fremont Innovation Center by North Palisade Partners, https://northpalisade.com/portfolio/palisade-fremont-innovation-center/, accessed July 29, 2025.

CASE STUDY #4: PACIFIC COMMONS SOUTH, FREMONT

Development Type and Location

The Pacific Commons South complex is a master-planned business park in Fremont, about three miles from the Warm Springs BART Station. The complex contains a group of 10 freestanding, Class A flexible industrial buildings with access to several amenities, including EV charging stations, outdoor break areas for employees, access to retail and entertainment facilities at Pacific Commons Shopping Center, access to bike and pedestrian trails, and parking. The complex is also well-connected to the freeway and provides shuttle service to public transportation for employees. The buildings are suitable for advanced manufacturing, biotech, food production, offices, and warehouse use.

- Development Type: 10-building industrial complex
- Project Site Size: Approximately 90 acres
- Project Use: Advanced manufacturing, biotech, food production, industrial and warehouse uses

Site and Building Design



Pacific Commons South Campus Plan Source: https://pacific-commons-south.cbre-properties.com/

- Total Building Area: 1,718,490 square feet
- Height: Approximately 37 to 45 feet (28 to 36 feet of clear height)
- 120-185 feet truck courts and optimal truck circulation
- 2.5 percent skylight ratio
- 100 percent solar roof capability
- Abundant trailer parking
- EV charging stations
- ESFR sprinkler system
- Power: 1,000-4,000 Amps, 277/480 Volt Power, expandable
- Employee Amenities: Pedestrian and bike trails, open-air break areas, shuttle service to public transportation

Summary

Pacific Commons South Industrial Park represents a large, master-planned industrial campus development. Although an opportunity for industrial development at this scale is not currently common in the Priority Production Areas (PPAs), this shows the viability and market needs for this type of development. The project emphasized outdoor amenity spaces for employees and proximity to retail, restaurants, and entertainment. The outdoor amenity spaces have some potential to add shading structures to improve the experience.



Pacific Commons South Campus Amenities (https://pacific-commons-south.cbre-properties.com/campus-amenities/)

CASE STUDY #5: DUKE RICHMOND INDUSTRIAL PROJECT DESIGN REVIEW RICHMOND

Development Type and Location

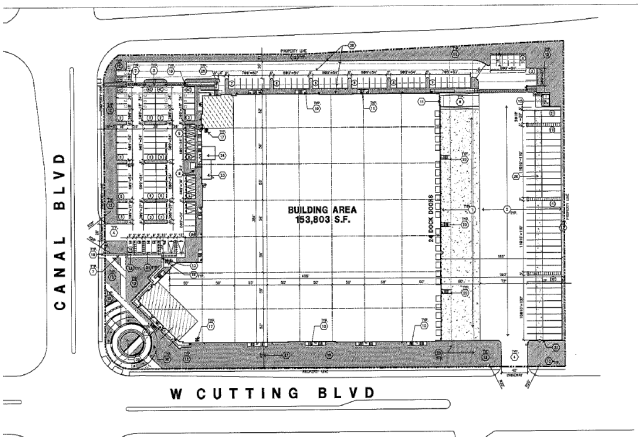
The Duke Richmond project by Duke Realty will be along West Cutting Boulevard in Richmond. The existing zoning and General Plan Land Use Designation is Light Industrial, and the former use of the site was a nonconforming heavy industrial use. According to the Design Review Board Report, the proposed project complies with building height requirements, FAR, parking, and landscaping (percentage of lot area and number of parking lot trees provided) requirements.

- Site Size: 7.94 acres
- FAR: 0.44 (0.65 permitted)

Site and Building Design

All loading docks, roll-up doors, and utilities are in the rear of the property, which will be accessible by a driveway at the eastern corner of the property on West Cutting Boulevard. Overall, the building is characterized by a clean profile with simple forms and is primarily designed for functional use. Other design features include concrete tilt-up panels, application of decorative brick accent panels on the façade to mark entry, and large windows with blue glazing and black mullions.

- Parking Spaces: 79
- Building Height: 43 feet top of parapet, Clear Height 36 feet (55 feet permitted)
- Building area: Approximately 154,000 square feet light industrial facility containing 144,802 square feet warehouse space, 9,000 square feet office space, including a mezzanine.
- Loading area: 24 dock-high doors and 65 trailer parking stalls.





Duke Richmond Industrial Project Site Plan and Building Design

Issues raised and suggestions from the Review Board included the following:

- Site's prominent location near the Point Richmond Historic District and at a busy freeway entrance.
- Street intersection of West Cutting and Canal Boulevard should incorporate some aspects of a Node, such as a more welcoming corner for the building's entry.
- The south elevation on West Cutting Boulevard appears more generic. The applicant may consider adding a mural or other enhancement that breaks the long, street-facing wall.

The following Conditions of Approval were attached to this project:

- Lighting installed throughout the site shall consist of pedestrian-friendly lighting at a human-scale height. Lighting shall also be consistent with International Dark-Sky Association guidelines and include any shielding necessary to limit the amount of light spillover to residential areas. LEDs shall be 3,000 K maximum with warm light.
- The applicant shall implement the Mitigation Monitoring and Reporting Program (MMRP) as required by the California Environmental Quality Act (CEQA).

In 2025, the project has been built to Design Review conditions.

Landscape Design

The proposed project would include bioretention areas in the landscaped open space at the frontage along West Cutting Boulevard, and shade trees would be planted in the open space frontages along West Cutting Boulevard and Canal Boulevard. Various drought-tolerant and native shrubs and grasses, with flowering perennials for accents, would also be planted around the building, the bioretention area, and the perimeter of the site.

- Landscape Area: ±45,815 square feet (13 percent of total site)
- Parking Area Trees: 39

Summary

For an industrial site, the Duke Realty project emphasizes design quality at the street edge. The corner entry plaza at Canal and West Cutting Boulevards features landscaping, seating, and decorative brick façade treatments, creating a visually appealing and welcoming gateway to Point Richmond. The varied façade colors, glazing, and canopy detailing reduce the building's perceived mass and provide architectural rhythm along the frontage. Overall, this project is a good example of a well-designed industrial site by combining functional logistics and visual quality. It turns a formerly underutilized heavy-industrial parcel into a clean, modern, and contextually sensitive light-industrial facility.



Duke Richmond Industrial Project Landscape Feature and Building Corner Design

CASE STUDY #6: CENTERPOINT PROPERTIES WAREHOUSE PROJECT, RICHMOND

The CenterPoint Properties Warehouse project site is on the southeastern corner of Brookside Drive and Fred Jackson Way, in North Richmond, Contra Costa County. The project was approved in May 2022 and involves consolidating 19 parcels into 3, demolishing existing structures, and installing landscaped areas, including bioretention zones. This project contains several amenities and off-site improvements, such as roadway upgrades, bicycle and pedestrian facilities, and utility connections. Additionally, the project will remove seven protected trees, and the site will be annexed into the West County Wastewater District upon project approval and CEQA certification.

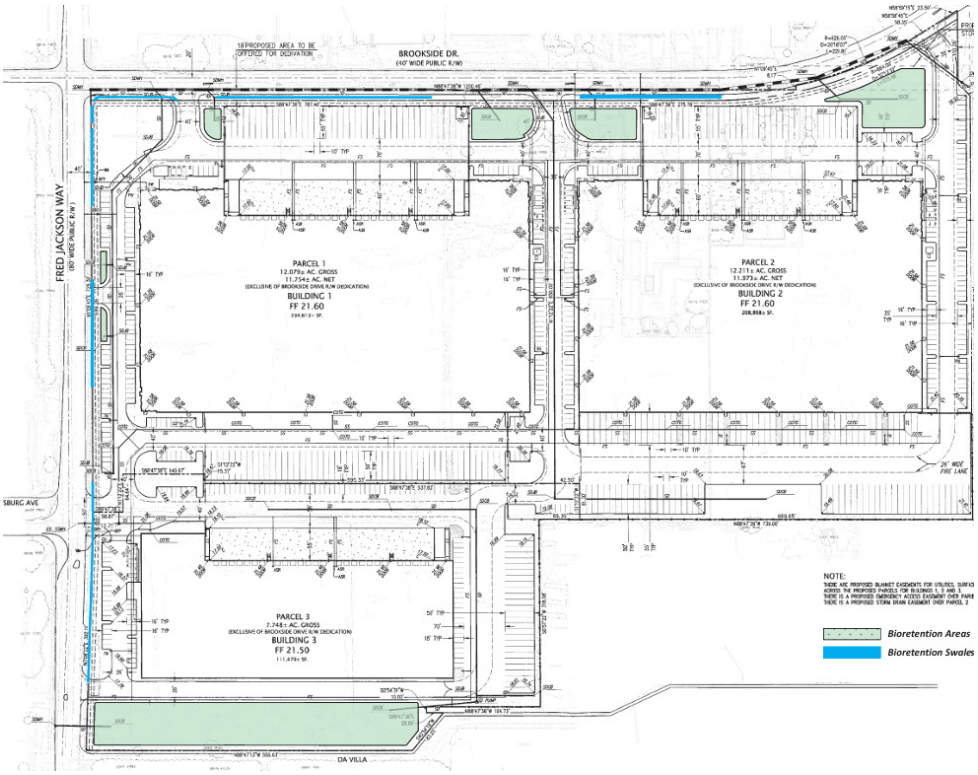
- Project Site Size: 31.48 acres (consists of 19 parcels)
- Land Use Designation: Light Industry (LI) and Heavy Industry (HI)



CenterPoint Properties Warehouse Birdseye View Source: https://www.contracosta.ca.gov/8443/CenterPoint-Properties-Warehouse-Project

- Zoning: P-1 Zoning District Large-scale Integrated Development
- Project Use: Warehousing, research and development, or similar light-industrial uses consistent with the P-1 Zoning District.
- Development Type: Multi-building (3) Campus, Light or Heavy Industrial Use, Warehousing

Site and Building Design



CenterPoint Project Site Plan Source: https://www.contracosta.ca.gov/8443/CenterPoint-Properties-Warehouse-Project

The project consists of three concrete tilt-up warehouse buildings, with additional building materials consisting of metal, aluminum, and glass. Parking spaces surround the north, west, and east sides of the project. Tubular metal fences will be included on all sides of the project. For sustainability features, the project has committed to the installation of rooftop solar to provide up to 8,083,000 kilowatt-hours per year (kWh/year) of renewable energy, which is anticipated to cover the electricity demand of the proposed project, and the commitment to pursue carbon-free electricity service if on-site renewables do not meet the full electricity demand.

- Site Access: Primary access to the project site would be available via three driveways along Brookside Drive and three driveways along Fred Jackson Way.
- Building Height: 1-story tall, approximately 42 feet (Zoning Max 40’(HI) – 50’(LI))
- Total Building Area: 555,537 square feet (3 warehouse buildings)
- Parking Spaces: Approximately 438 auto and 266 trailer parking spaces.
- Bicycle Facilities: A new bicycle lane along the Brookside Drive project site frontage, 30 bike parking spaces inside 3 buildings
- Sustainability features: LEED standards, photovoltaic panels on the roof

Landscape Design

Landscaping would include a mix of trees, shrubs, groundcover, and grasses. The proposed project would include bioretention treatment areas along Brookside Drive, Fred Jackson Way, and along the southern portion of the site directly south of Building 3 to capture stormwater runoff. A monument sign is proposed at the corner of Brookside Drive and Fred Jackson Way. Future tenants may use wall-mounted signs. Proposed lighting would include exterior lighting for the buildings and pole-mounted lighting throughout the parking areas.

- Landscaped Areas: Approximately 129,719 square feet (including bioretention areas)

Construction and Operation Practice

OPERATIONAL BEST PRACTICES

- Use of zero-emission equipment on the project site from the start of operations.
- For vehicles, delivery vans, and trucks (Class 2 through 6) domiciled at the project site: 33 percent of the fleet will be zero-emission vehicles at the start of operations, 100 percent of the fleet will be zero-emission vehicles by December 31, 2027.
- For heavy-duty trucks (Class 7 and 8) domiciled at the project site, use model year 2014 or later from start of operations, with a transition of all such heavy-duty trucks (Class 7 and 8) domiciled at the project site to be zero-emission by December 31, 2025, or when commercially available for the intended application, whichever date is later.
- EV charging stations.

CONSTRUCTION BEST PRACTICES

- Compliance with the Bay Area Air Quality Management District (BAAQMD) and Contra Costa County required best management practices (BMPs) for construction to reduce emissions and dust.
- Implementation of dust-suppression measures, including wetting surfaces and slowing truck speeds.
- Proper handling of demolition debris and recycled materials to control particulate matter.
- The project includes a set of General Minimization Measures (MM BIO-1b) and measures to reduce disturbance to nesting birds (MM BIO-1a) to prevent harm to wildlife during construction. Construction work shall take place outside of the February 1 to August 31 breeding window for nesting birds.

Summary

County CenterPoint Properties Project demonstrates an industrial redevelopment that incorporates construction best practices and operational best practices to minimize dust, air pollution, noise, and habitat disturbance. Its sustainable operations align with California's climate goals and represent a forward-looking model for industrial development in reducing carbon footprints. It also shows a successful example of consolidating parcels into larger sites for multiple-building campus industrial development.

CASE STUDY #7: BUILDING 9, ALAMEDA POINT, ALAMEDA

Development Type and Location

West Tower 9 (707 West Tower Avenue) is a 1940s warehouse/manufacturing building that has undergone a full refurbishment on the former Naval Air Station at Alameda Point. The building is 15 minutes to San Francisco, less than 10 minutes to Oakland, and has immediate access to major transit corridors, the Port of Oakland, intermodal rail, and Oakland International Airport.

The building is a contributor to the Historic District, and this adaptive reuse project successfully retains the building's historic character while meeting today's demand for contemporary uses. The owners spent approximately $24 million dollars refurbishing Building 9, and an additional $10 million of tenant improvements for Kairos Power, providing a combination of office, labs, and advanced manufacturing space for their 150 employees.

- Development Type: Light Industrial and Manufacturing; Adaptive Re-use, Renovation
- Parcel Size: Approximately 4.11 acres
- Zoning: Adaptive Reuse (AP-AR). Zoning provides flexibility for Office/R&D/Retail/Manufacturing/Industrial. The City of Alameda had also pre-approved zoning for Brewery, Distillery and Bar/Restaurant concepts.
- Utility Services: including up to 2,000 AMP 3-phase power.



West Tower 9 Source: https://www.forge-arch.com/projects/kairos-power/

Site and Building Design

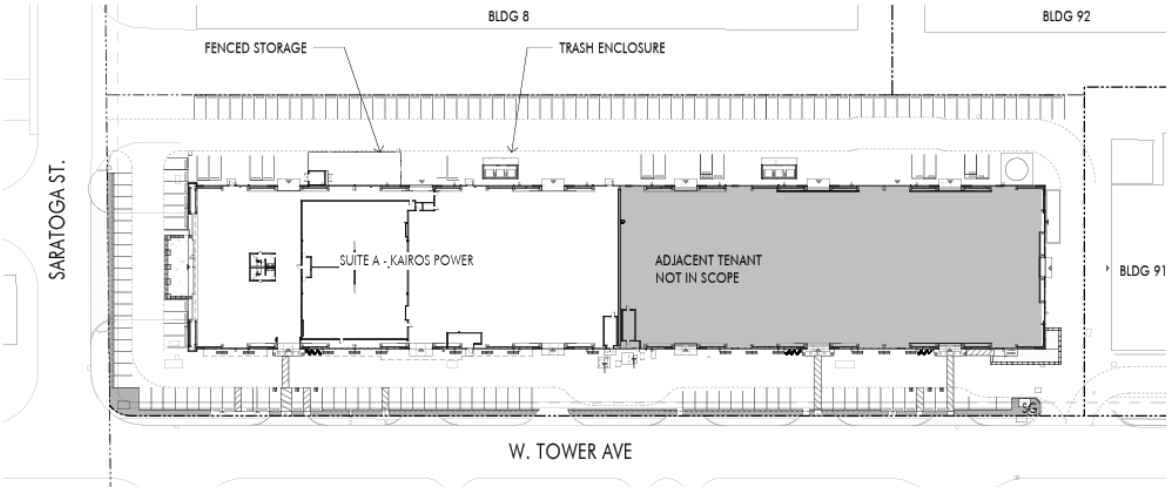
The building encompasses approximately 96,000 square feet. This included restoring the complete shell of the building, a partial second floor, a new concrete slab floor, new utilities, as well as landscape amenities, including a deck on one end and a patio on the other with planters in between. A water retention system was installed for the interior tenants. Overflow water is contained in a bio-filtration planter.

According to Alameda's Preservation Guide for the NAS Historic District, the most important character-defining element of this stucco building was its industrial sash, steel windows. The upper clerestory windows were simply cleaned, repaired, and painted, but the lower windows had been covered with opaque film. The restoration work included replacing about 70 percent of the lower 9,200 panes with Solarban glazing to mitigate solar gain. The lowest operable sashes within the large units were also restored to operation.

All the historic door openings are preserved and many of the industrial sliding doors have been restored. The building's restored central steel canopy is original and remains the most dominant feature of the front façade. In general, the original historic building has been meticulously preserved. The interior space accentuates the natural light via the walls of glass on all four sides of the building.

Building Height: 42 feet Clear Height

Loading Area: Five existing grade-level doors provide building access on all sides. Two recessed dock loading positions can be delivered on the north side of the building.



Building 9 Project Site Plan Source: https://alameda.legistar.com/

Summary

Building 9 exemplifies high-quality industrial site adaptive reuse and renovation. From a physical design perspective, the project successfully transforms a historic warehouse through its structural and infrastructural upgrades into a modern high-performing industrial facility.

The adaptive reuse and renovation respected the original features of the building, including windows on all sides that provide natural light. This infusion of daylight supports sustainable design goals and enhances the user experience, reflecting a contemporary reinterpretation of industrial aesthetics that values human comfort as much as functionality.

Building 9 illustrates how historic industrial buildings can be reimagined as platforms for innovation and have their lifecycle renewed to meet the needs of a contemporary economy.

CASE STUDY #8: EV TRUCK CHARGING DEPOT, PORT OF LOS ANGELES AND PORT OF LONG BEACH

Prologis and Performance Team- A Maersk Company launched an EV charging depot (Denker charging depot) in 2024 that is located near Ports of Los Angeles and Long Beach. The facility is powered by the nation's largest EV truck microgrid. The Denker Hub consists of six independent microgrids, each with its own battery, generators, and charging stalls. Collectively, the six microgrids deliver considerable benefits to the Performance Team and the local community. The depot delivers about 27,000 miles of heavy-duty truck charging daily and can serve over 300 medium- and heavy-duty electric trucks each day. The Prologis Denker microgrid can operate independently of the local grid and uses 2.75 megawatts (MW) of fuel-flexible, hydrogen-ready linear generators paired with 18 MWh batteries to provide up to 9 MW of charging capacity. The charging depot will have the ability to charge up to 96 EV trucks.



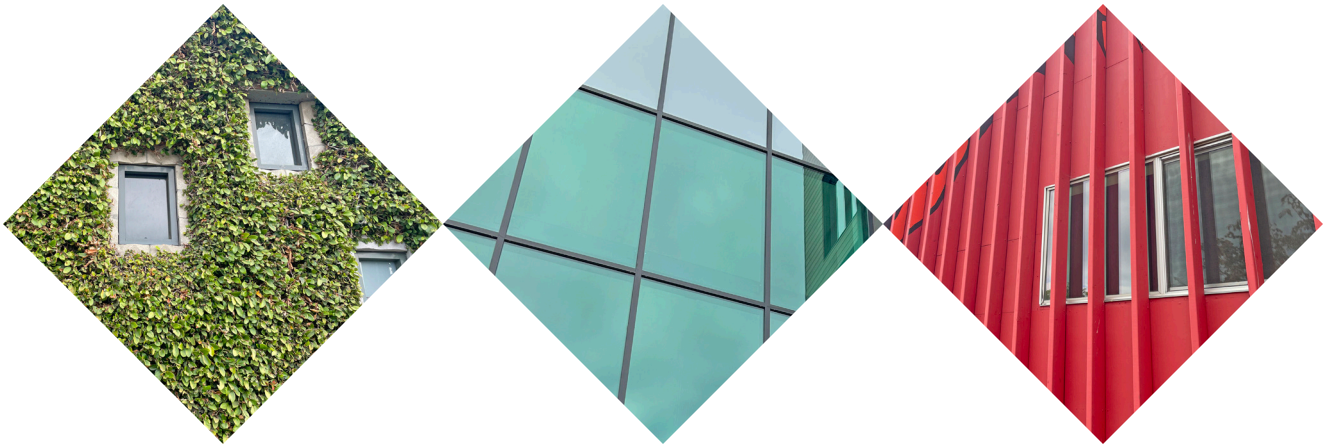
View EV Charging Depot, https://www.maersk.com/news/articles/2024/05/23/maersk-and-prologis-launch-new-ev-truck-charging-depot, accessed July 29, 2025.

CONCLUSION AND RECOMMENDATIONS

- With a limited supply of available lands in the region, intensification of industrial lands is increasingly important and necessary to foster economic growth.
- Design guidance is needed for infill projects that occur in existing neighborhoods, retrofit, renovation and adaptive-reuse projects that redevelop obsolete properties.
- Design standards and guidelines should aim at promoting site efficiency, minimizing environmental impacts, improving employee benefits, promoting energy-efficient development and operation, and contributing to a high-quality public realm.
- Special design guidelines should address sites adjacent to sensitive uses (e.g., residential, open spaces), and for different types of street frontages.
- Other best management practices for construction and operation, including supporting EV trucks, such as charging stations and designated access routes, and measures to minimize noise and air pollutants, should be implemented. Continuous monitoring and compliance protocols should be established to ensure sustainable and community-friendly operations.

Appendix 2

Public Policy Analysis and Recommendations for Industrial Energy Efficiency



Leading the Next Generation of Industrial Buildings & Districts: Public Policy Analysis and Recommendations for Industrial Energy Efficiency

January 2026

Prepared for:
Metropolitan Transportation Commission
Bay Area Metro Center
375 Beale Street, Suite 800
San Francisco, CA 94105
Phone: 415-778-6700

Prepared by:
PlaceWorks
2040 Bancroft Way, Suite 400
Berkeley, CA 94704
Phone: 510-848-3815

Table of Contents

Public Policy Analysis and Recommendations for Industrial Energy Efficiency 1

Introduction 1

Key Takeaways 1

Goal and Policy Review 3

1. State of California 3

2. Bay Area Region 7

3. Local Jurisdictions 11

4. Findings and Recommendations 17

TABLES

Table 1. Challenges and Opportunities 2

Table 2. Legislation 4

Table 3. California State Programs and Incentives 6

Table 4. Regional Programs and Incentives 10

PUBLIC POLICY ANALYSIS AND RECOMMENDATIONS FOR INDUSTRIAL ENERGY EFFICIENCY

INTRODUCTION

To complement the industrial design guidelines and case studies developed for the East Bay Priority Production Area (PPA) Technical Assistance and Planning project, this memo analyzes goals and policies related to energy efficiency for new and renovated industrial buildings and sites as well as hazard mitigation for industrial sites. It provides a brief overview of relevant state, regional, and local policies and a summary of available programs and incentives. The local jurisdictions covered are Oakland, Fremont, San Leandro, Livermore, and Union City. Based on identified gaps in existing policies, strategies, and incentives, the memo offers recommendations for potential policy and programmatic improvements.

Best practices for integrating energy efficiency, hazard mitigation, and other sustainability considerations are included in the Draft Industrial Building Design Guidelines.

KEY TAKEAWAYS

The following table highlights key findings from the policy and program analysis, including existing challenges for industrial development and operations, accompanied by potential policies, strategies, or incentives to address these gaps. There are limited custom, process-specific incentive pathways focused on industrial facility optimization, and a corresponding need to scale up third-party energy assessments, ongoing energy tracking, and operator training to ensure durable, grid-supportive efficiency gains, particularly in older or underutilized industrial buildings.

More detail can be found in Section 4 of this document.

Table 1. Challenges and Opportunities

Challenge	Opportunity
Currently, efficiency retrofit requirements are primarily tied to renovation permits and don't apply to many older buildings.	Jurisdictions could introduce mandatory energy or emissions performance standards that set carbon caps for large buildings. Realistic timelines and category caps should be included to avoid interruption of industrial uses.
Title 24 regulates industrial buildings under the broad nonresidential category. However, industrial facilities face unique energy challenges, including energy-intensive process equipment and O&M inefficiencies that are not fully addressed by current standards.	Local jurisdictions can adopt nonresidential reach codes or CALGreen Tier 1/2 measures tailored to industrial and warehouse uses. Flexible compliance frameworks could reduce burdens by allowing project teams to select from energy efficiency, electrification, and electric-readiness measures suited to specialized industrial operations. Industrial building design guidelines should be provided for developers and architects at the local or regional level to encourage early planning for electrical capacity, positioning buildings for future electrification as grid conditions and regulations evolve.
Reliance on regional energy production and delivery through PG&E and Ava Community exposes industrial users to high energy costs, grid instability, and power fluctuations.	Energy efficiency policies should promote on-site solar and battery storage and microgrid-ready design to enhance resilience against seismic, flood, and heat risks.

GOAL AND POLICY REVIEW

The following is a high-level overview of the policy framework influencing energy efficiency, sustainability, and hazard mitigation at the state, regional, and local levels.

- **State policies, legislation, and requirements** established through the California Building Code and CALGreen.
- **Regional strategies, programs, and initiatives** from MTC, the Association of Bay Area Governments, and the Bay Area Air District and other relevant programs and incentives.
- **Local energy standards, green building standards, and climate and hazard mitigation strategies** of each participating jurisdiction.

1. STATE OF CALIFORNIA

California has established a comprehensive statutory framework to advance energy efficiency, clean energy deployment, and emissions reduction across sectors, including industrial buildings. State-level goals are established and regulated through assembly and senate bills (AB and SB). SB 415 provides the most current and relevant direction for jurisdictions regarding logistics and warehousing uses, clarifying and updating 2024's AB 98. It was effective as of January 1, 2026, and establishes standards for building design and location, parking, truck loading bays, landscape buffers, circulation, and signage as well as compatibility with adjacent and nearby land uses. It is summarized in Table 2 with other relevant legislation and should be consulted for the design or expansion of relevant uses.

1.1 State Legislation

Table 2. Legislation

	Year	Description
SB 415	2025	SB 415, signed into law on October 3, 2025, refines AB 98 (see below) by introducing clearer, enforceable standards for development of logistics of use, truck routes, and environmental protections. It defines "21st century warehouses" with specific requirements, including compliance with California's latest green building codes, solar and EV readiness, efficient lighting and HVAC, and a transition to zero-emission equipment.
AB 98	2024	AB 98 regulates new and expanded logistics (warehouse) developments, mandating stricter building and design standards, including requirements for energy efficiency, electric vehicle infrastructure, and emissions reductions as well as stringent setbacks and buffering requirements to protect sensitive receptors. Key energy-efficiency measures include installing solar panels and battery storage, using high-efficiency HVAC systems, and equipping facilities with EV charging infrastructure.
AB 205	2022	AB 205 reduces regulatory obstacles and streamlines the approval process for new electric power and storage projects. It includes the Distributed Electricity Backup Assets Program and Demand Side Grid Support Program to incentivize the construction of cleaner and more efficient distributed energy assets, load reduction, and backup generation.
AB 1279 (California Climate Crisis Act)	2022	AB 1279 requires the state to reach net-zero emissions by 2045 and establishes a framework for reducing emissions by 85% below 1990 levels by 2045.
SB 1339	2018	SB 1339 directs the California Public Utilities Commission (CPUC) to evaluate the potential role of microgrids in strengthening the electrical grid and improving community energy resilience. The bill aims to reduce some of the regulatory impediments to microgrid development that have impeded planned projects. The CPUC was directed to create separate rates and tariffs for microgrids to produce a revenue stream and lower other barriers to deployment.
SB 100	2018	SB 100 requires the transition in California to 100% clean energy by 2045, with a goal of 60% renewable energy by 2030. The bill prioritizes energy efficiency and load flexibility to minimize total implementation costs.
AB 802	2015	AB 802 is California's Building Energy Benchmarking Program. It requires owners of commercial buildings and multi-family buildings (with 17+ residential units) over 50,000 square feet to report energy use to the California Energy Commission by June 1 annually.
AB 811	2008	AB 811 amended the state's existing laws to allow PACE financing for renewable-energy and energy-efficiency improvements to homes and businesses.

1.2 California Building Standards Code, California Code of Regulations Title 24

Title 24 establishes statewide minimum requirements for the design, construction, and energy performance of buildings. It applies to new construction, additions, and alterations, with requirements varying by building type, climate zone, and project scope, including industrial and warehouse facilities, which are regulated under nonresidential standards. Part 6 (Building Energy Efficiency Standards) and Part 11 (CALGreen) play a central role in advancing energy efficiency and other sustainability measures, reducing greenhouse gas emissions, and improving overall building performance.

The code is updated every three years and, effective January 1, 2026, the 2025 California Building Standards Code includes more standards for electrification, wildfire resilience, seismic safety, and sustainable construction practices.

PART 6: CALIFORNIA ENERGY CODE

The California Energy Code contains energy conservation standards applicable to all residential and non-residential buildings throughout California. For industrial and warehouse uses, Part 6 primarily regulates building envelope performance, lighting power density and controls, HVAC system efficiency, and electrical infrastructure readiness. The 2025 standards place increased emphasis on high-efficiency lighting, advanced controls, and electrification-ready design.

PART 11: CALIFORNIA GREEN BUILDING STANDARDS

Part 11, known as CALGreen, is the state-mandated green building code that regulates energy efficiency, water efficiency and conservation, material conservation, resource efficiency, environmental quality, and more. Some local jurisdictions adopt CALGreen Tier 1 or Tier 2 measures or additional local amendments that include additional requirements. Jurisdictions can also voluntarily adopt “reach codes” that are more stringent than the state’s energy requirements in Title 24. A reach code can stand alone or be combined with water efficiency, electric vehicle charging, or green materials requirements as part of a green building ordinance. These local measures can impose enhanced sustainability, energy, and resilience requirements beyond the state baseline for industrial and logistics facilities.

1.3 California State Programs

Table 3. California State Programs and Incentives

GoGreen Business Energy Financing program	GoGreen Business (formerly the Small Business Financing program) helps California's small businesses and nonprofits access attractive financing for clean energy generation and storage upgrades, EV charging upgrades, and energy efficiency retrofits. GoGreen Business allows finance companies to offer traditional equipment leases and loans, as well as several variations of service agreements, in which customers either receive guaranteed functionality or savings for a fixed monthly price or make payments based on actual energy savings.
Electric Program Investment Charge (EPIC)	Under the California Energy Commission (CEC), EPIC incentivizes development and commercialization of energy solutions to decarbonize electricity, including projects centered around clean, community-based microgrids.
Building Energy Benchmarking Program (under AB 802)	The Building Energy Benchmarking Program requires owners of large commercial and multifamily buildings (over 50,000 sq ft) to report energy use data every year to the CEC. This information is shared on the CEC website for building owners and operators to compare their building's energy use to similar buildings and take action to improve the energy efficiency of their building, reduce greenhouse gas (GHG) emissions, and lower their utility bills. Public access to building energy information helps markets operate more effectively.
Commercial Property Assessed Clean Energy (C-PACE)	C-PACE is a financing method letting commercial building owners fund energy efficiency, renewable energy, and resilience upgrades (like solar, HVAC, windows, water conservation, seismic retrofits) through a voluntary assessment on their property tax bill; repayment stays with the property, not the owner, even if the property is sold. This allows for 100% financing, long terms (25–30+ years), and lower payments, encouraging major building performance improvements that benefit tenants and the environment.

2. BAY AREA REGION

This section includes regional strategies, programs, and initiatives from MTC, the Association of Bay Area Governments, the Bay Area Air District, and other relevant programs and incentives.

2.1 Regional Policy

PLAN BAY AREA 2050 / 2050+

Plan Bay Area 2050, adopted in 2021, is the region's visionary long-range plan for transportation, housing, the environment, and the economy, led by MTC and the Association of Bay Area Governments. A recent, targeted update, known as Plan Bay Area 2050+, is planned for adoption in early 2026. Plan Bay Area provides overarching strategy and support for projects, but does not override local land use decisions.

Plan Bay Area 2050+ includes Strategy EC-6: Retain and invest in key industrial lands (i.e., PPAs) that are important to the regional economy and middle-wage job growth. It also expands infrastructure improvement categories for renewable energy and building retrofits.

Plan Bay Area 2050+ includes EN1 to EN3 that focus on adapting to sea level rise; providing means-based financial support for seismic, wildfire, and accessibility home retrofits; and providing means-based financial support for energy decarbonization and water efficiency upgrades in all buildings.

OTHER REGIONAL GUIDANCE

2017 Clean Air Plan: Spare the Air, Cool the Climate is Bay Area Air District's strategic blueprint for protecting public health and combating climate change across the Bay Area. It combines traditional air quality planning with a regional climate protection strategy and lays out concrete control measures for emissions reduction.

Planning Healthy Places 1.0 is a guidebook by the Bay Area Air District for addressing local sources of air pollutants in community planning. It includes a set of recommended best practices for local sources of air pollutants and urban heat island effects in community planning. The Air District is currently working on Planning Healthy Places 2.0, which will include more recent examples and strategies and best practices.

Regional Shoreline Adaptation Plan is a regionwide plan for the Bay shoreline that guides the creation of coordinated, locally planned sea level rise adaptation actions that work together to meet regional goals. This project began in January 2023 and concluded with its adoption by the Bay Conservation and Development Commission in December 2024. As part of the project, the RSAP Atlas was released in summer 2025. It is an online mapping tool to support local

governments, communities, and consultants in creating plans. The Atlas provides access to regionally consistent datasets on existing conditions, coastal hazards, strategic regional priorities, assets at risk of flood exposure, and support for adaptation strategies.

2.2 Regional Initiatives

This section highlights MTC's and its partners' initiatives in transportation decarbonization, sea level rise resilience, and energy efficiency. These initiatives address climate mitigation and adaptation through coordinated regional efforts.

TRANSPORTATION

MTC's Climate Initiatives Program has the goal to reduce the transportation sector's carbon footprint to help the Bay Area meet emissions reduction consistent with state law and Plan Bay Area 2050+. MTC's climate initiatives program promotes innovative ways to reduce greenhouse gas emissions in the Bay Area and use federal funding to help achieve regional air quality goals.

MTC Transportation Electrification Initiatives provide grant funding (total investment $65M) and direct technical assistance to local agencies looking to invest in electrification of transportation. Offerings include capital grants to install public charging stations for electric vehicles as well as support for micromobility options like electric bikes or scooters.

California's Active Transportation Program draws both state and federal funds to provide a total of about $320 million each year for bike and pedestrian projects across California to shift trips from cars to walking and biking and reduce greenhouse gas emissions.

SEA LEVEL RISE

The Regional Sea Level Rise Resilience Project List is MTC's effort to identify key projects to adapt Bay Area shoreline to protect against the harms of sea level rise. The Resilience Project List catalogs projects that adapt the nine-county Bay Area shoreline to sea level rise in the decades ahead. The list includes the specific scope of proposed adaptation work as well as the current status, expected timeline, counties affected, and estimated cost for each project. Locally developed projects account for over 50 percent of projects on the list, and the projects are divided into two bins according to the expected amount of sea level rise and timeline. It also includes placeholder projects to recognize adaptation needs for segments of shoreline that have not yet planned for sea level rise. Developed in partnership with the San Francisco Bay Conservation and Development Commission, the Resilience Project List is fiscally unconstrained and can serve as a future advocacy resource.

Some of the key projects identified in the Resilience Project List include:

- Oakland-Alameda Estuary Adaptation Project
- Bay Farm Island Project
- Long Beach Restoration Project Design
- South Bay Salt Ponds: Eden Landing - Southern Eden Landing (Phase 2)
- Alviso Wetland Railroad Adaptation Alternative

The estimated cost to adapt the shoreline in Plan Bay Area 2050+ is $96 billion, but only $6.5 billion in funding is anticipated through 2050. This nearly $90 billion funding gap will need to be addressed through regional coordination.

BAY ADAPT Joint Platform: **Regional Strategy for a Rising Bay** is a regional roadmap for how the Bay Area will adapt faster, better, and more equitably to a rising Bay. In 2019, the Bay Conservation and Development Commission convened a Leadership Advisory Group made up of a diverse group of Bay Area leaders from public agencies, interest groups, community-based organizations, and academia. The Bay Adapt Joint Platform is a consensus-based strategy comprising 9 actions and 21 tasks that will protect people and the natural and built environment from rising sea levels.

ENERGY EFFICIENCY

Bay Area Regional Energy Network (BayREN) is the primary regional initiative for energy efficiency, decarbonization, and electrification across the nine-county San Francisco Bay Area. It's a collaboration of local governments and the Association of Bay Area Governments to reduce energy use, promote efficiency, and lower emissions. BayREN prioritizes support for moderate-income households, renters, and small businesses with aging infrastructure while helping local governments achieve their climate goals.

2.3 Regional Programs and Incentives

The common hazards among the participating East Bay jurisdictions include issues such as sea level rise, climate equity, seismic safety, and wildfire smoke. Many hazards are regional, across multiple individual jurisdictions, and require the cooperation of multiple agencies and local governments.

- **San Leandro Bay/Alameda-Oakland Estuary Adaptation Working Group:** The Working Group coordinates San Leandro Bay/Oakland-Alameda Estuary flood and adaptation projects to protect and restore water quality, habitat, and adjacent community vitality. The interagency group is coordinated by the City of Alameda. Some of the key projects include:
    - North Field Vulnerability Study Project (Port of Oakland)
    - Airport Perimeter Dike Phase II Project

  - Oakland-Alameda Estuary Adaptation Project
  - Bay Farm Island Adaptation Project
  - Doolittle Drive Sea Level Rise (SLR) Adaptation and Bay Trail Gap Closure
- **Bay Climate Adaptation Network (BayCAN)** is a collaborative network of local government staff and partnering organizations working to help the Bay Area respond effectively and equitably to the impacts of climate change on human health, infrastructure, and natural systems. The cities of Fremont, San Leandro, and Livermore are members of the BayCAN.

Table 4. Regional Programs and Incentives

		Description
BayREN Programs	**BayREN Business Program**	BayREN Business is a publicly funded energy-efficiency program that offers free energy-efficiency assessments, financial incentives, and expert technical support to small and medium businesses in all Bay Area counties. It helps property owners afford efficiency upgrades/remodels. Bay Area businesses can benefit from incentives available for energy-efficient HVAC, refrigeration, LED lighting, water heating, envelope improvements, and more.
	BayREN Existing Buildings Study	Provides local governments with data about the existing buildings in their jurisdictions, their energy use and greenhouse gas emissions, and the impacts of energy efficiency and electrification measures that can be used to decarbonize the buildings. Tools and services include Existing Buildings Dashboard and Bay Area Energy Atlas.
	BayREN Public Buildings Assistance	Offers assistance to develop and adopt local energy policies and building codes. Provides training and resources for implementation and enforcement of the California Energy Code and local reach codes.
Industrial Assessment Center, San José State University		The Industrial Assessment Center at San José State helps manufacturing businesses in Central and Northern California with energy assessment. Twenty energy assessments are performed each year for factories, water and wastewater treatment facilities, and other types of manufacturing businesses. The program is funded by the U.S. Department of Energy.
Industrial Assessment Center, San Francisco State University		SFSU-IAC is another Industrial Assessment Center in the Bay Area. It offers no-cost assessments to manufacturing and water/wastewater treatment facilities within a 150-mile radius of San Francisco to examine energy use, waste generation, and water consumption. The annual budget for each center is about $250,000. The participating university contributes about 20% matching funds, and each center serves about 20 plants per year.

	Description
Ava Community Energy and Pacific Gas & Electric Company (PG&E) Programs and Incentives	Ava provides rebates to support holistic electrification, including battery storage, induction stoves, and commercial kitchen electrification. PG&E provides the Generator and Battery Rebate Program, Clean Energy Incentives that support the installation of solar panels, wind and fuel cell technologies, and credit for surplus energy. PG&E also provides programs, rebates, and incentives for businesses, including food processing, biotech, and industrial businesses. Through partnerships, it offers the Industrial Systems Optimization Program and Business Energy Performance Program to help industrial buildings retrofit existing equipment and optimize industrial systems.

3. LOCAL JURISDICTIONS

Jurisdiction-specific guidance for energy efficiency, hazard mitigation, and other sustainability considerations is in multiple documents, including general plans, climate action plans, and local hazard mitigation plans (LHMPs). LHMPs identify natural and human-caused hazards such as floods, wildfires, severe storms, and cybersecurity attacks and include actions that can reduce the threats these hazards pose to the city.

These documents should be consulted for general information and mitigation measures for local risks. Each city may also have supplemental goals or requirements above and beyond the state building codes.

Key aspects of local policies and requirements are briefly highlighted in the remainder of this section.

3.1 City of Fremont

Electrification and Energy-Efficiency Policies
The California Energy Code is adopted without amendments as the energy code of the City of Fremont. The city has a few local amendments on EV readiness/charging requirements from CALGreen.

Fremont's updated Climate Action Plan, "Climate Ready Fremont," was adopted by the Fremont City Council in October 2023. A few strategies relevant to energy efficiency are noted in the plan:

- Adopt electrification and green building reach codes for new residential and nonresidential construction and retrofits.

- Evaluate development incentives (including development fee reductions) and other technical assistance for nonresidential developments and businesses installing zero net energy facilities and other qualifying low-carbon/green features.

Some strategies directly affect industrial sites in the city:

- Adopt a city reach code that requires electric-ready design in new industrial construction and that requires non-core industrial operations—such as space heating and cooling and domestic hot water—to be all electric.
- Consider providing development incentives such as reduced fees for industrial sites that achieve green certifications.
- Electrification retrofit requirements for nonresidential buildings at the time of building retrofit/renovation or equipment replacement (excluding core industrial equipment); design requirements to be proportional to the level of proposed building.
- Expand the city's Green Manufacturing program to encourage zero net energy retrofits of manufacturing buildings; promote emerging low energy, low carbon industrial technologies (such as combustion melting, low-carbon cements, etc.)

Hazard Mitigation Policies

Fremont faces the following potential natural hazards. The Local Hazard Mitigation Plan assesses the risk these hazards pose and sets goals and strategies to reduce long-term risk.

- Earthquake
- Flooding
- Landslides
- Sea Level Rise
- Severe Weather
- Tsunami
- Wildland/Urban Interface Fires

In 2024, the Federal Emergency Management Agency (FEMA) approved a new Tri-City Multi-jurisdictional Local Hazard Mitigation Plan prepared in partnership with the Cities of Newark and Union City, the Alameda County Water District, and Union Sanitary District. The plan is a combined update of Fremont's 2016 Local Hazard Mitigation Plan and the 2017 Union City/Newark Multi-Jurisdiction Local Hazard Mitigation Plan. Annex A of the plan is pertinent to Fremont. The plan is incorporated by reference into Fremont’s General Plan Safety Element and is included in the General Plan's Appendix C.

3.2 City of Livermore

ELECTRIFICATION AND ENERGY-EFFICIENCY POLICIES

The City of Livermore has a reach code, effective January 2023, that focuses on requiring all-electric construction and increased EV charger infrastructure in most new buildings, including industrial, with specific exemptions for existing building renovations. The climate action plan also includes incentivizing electric retrofits in existing buildings, conducting a cost analysis and feasibility study for existing building electrification requirements, and expanding microgrid deployment in the city.

Livermore's energy infrastructure and services are especially vulnerable to extreme heat, wildfire, and landslides. Extreme heat can regularly cause power outages due to a combination of mechanical failure of electrical grid equipment, heat damage to the wires themselves, and high demand for electricity as a result of cooling equipment, all of which cause stress on the grid.

HAZARD MITIGATION POLICIES

Extreme heat, wildfire, and poor air quality, and flooding are projected to pose the greatest risks to the Livermore community. The climate action plan includes hazard prevention, programs, and measures for wildfire, extreme heat, flooding, and drought.

Dublin, Livermore, Pleasanton, and the Dublin San Ramon Services District have partnered to establish the Tri-Valley Local Hazard Mitigation Plan, which was updated and adopted by Livermore in 2024. The plan identifies natural hazards that could impact the Tri-Valley region and establishes policies to mitigate each hazard. Mitigation can include a range of actions, like large capital improvement projects to improve stormwater systems or smaller changes to a local jurisdiction's hazard mapping software. The plan increases the Tri-Valley's competitiveness for FEMA grants.

3.3 City of Oakland

ELECTRIFICATION AND ENERGY-EFFICIENCY POLICIES

The Oakland amendments to the 2025 California Building Codes were approved by City Council in September 2025. The latest amendments emphasize seismic resilience and fire safety, critical for a city situated near major fault lines and vulnerable to climate-driven hazards. Oakland also passed FlexPath and Electric Readiness Reach Codes.

- FlexPath codes require building owners and contractors to choose from a "menu" of energy efficiency, electrification, or electric readiness measures when altering or adding to an existing building.

- Electric readiness codes require building owners to take steps to prepare for full electrification when making additions or alterations to an existing building, setting them up for the lowest possible cost compliance with Bay Area Air District regulations. These steps include adding wiring for electric vehicle charging and electric stoves and, when necessary, upgrading electrical panels.

HAZARD MITIGATION POLICIES

On June 15, 2021, the City of Oakland adopted the 2021-2026 Local Hazard Mitigation Plan (LHMP). As of 2026, the City is developing the 2026 LHMP, a requirement to maintain eligibility for certain types of recovery funding if a disaster were to occur. The Oakland Fire Department Emergency Management Services Division is managing the plan update process.

The LHMP will create a detailed profile for the following identified natural hazards impacting the City of Oakland:

- Dam Failure
- Drought
- Earthquake
- Flood
- Landslide
- Sea-Level Rise
- Severe Weather
- Tsunami/Seiche (water movement caused by shaking such as an earthquake)
- Wildfire

3.4 City of San Leandro

ELECTRIFICATION AND ENERGY-EFFICIENCY POLICIES

City of San Leandro has adopted local reach codes as of January 2023. In San Leandro, these codes generally require newly constructed residential and non-residential buildings to be all-electric and increase electric vehicle charging requirements. Industrial buildings with certain occupancy classifications are exempt from all-electrical requirements and may use combustion equipment. For these buildings, electrical infrastructure and physical space accommodating the future installation of an electrical heating appliance must be included in construction drawings.

Other than local building codes, San Leandro's climate action plan was adopted in 2021 and provides some policy direction on energy efficiency. The nonresidential energy retrofits section, including warehousing and manufacturing centers, has the following strategies:

- Apply benchmarking ordinance to smaller commercial buildings, below the minimum 50,000 sf size threshold for mandatory benchmarking under AB 802, and require commercial buildings to receive an energy assessment every five to ten years depending on size.
- Educate property owners and tenants about energy-efficiency retrofit programs and financing options.
- Work with property owners to offer green leases for tenants, and promote a green lease addendum template that can be used by non-residential property owners to incorporate green lease language into future leases.
- Offer low-cost energy audits for business or office parks.
- Offer reduced fee permitting to project applicants undergoing specifically defined energy retrofit measures, such as a retrofit to achieve zero net energy in an existing building.
- Educate property owners about the benefits of installing cool roofs when reroofing buildings; help interested property owners connect with qualified contractors; and provide educational materials for training resources to local contractors.

HAZARD MITIGATION POLICIES

The General Plan Environmental Hazards Element (adopted in 2016 and updated in 2025) is San Leandro's foundational policy document for addressing natural and man-made hazards, including earthquakes, landslides, floods, sea level rise, wildfire, air and water pollution, hazardous materials, aviation accidents, and climate change. The overall purpose of the Environmental Hazards Element is to minimize the potential for damage and injury resulting from environmental hazards.

Updates are made to comply with changes in state law pertaining to wildfire and climate adaptation, including:

- Evacuation Planning: Recent legislation requires the city to assess the capacity of emergency evacuation routes (AB 747), identify residential areas with less than two evacuation routes (SB 99), and identify evacuation locations (AB 1409).
- Climate Change: Recent legislation requires the city to assess climate risks and identify goals, objectives, and policies that support its adaptation and resilience.
- Wildfire: The Board of Forestry and Fire Protection is now required to review the safety elements of local jurisdictions that contain Very High Fire Hazard Severity Zones as defined by the California Department of Forestry and Fire Protection. Pursuant to Gov. Code § 65302, subd. (g)(3)., CAL FIRE has developed a checklist of safety element requirements that the amendments address.

As of the beginning of 2026, San Leandro is updating its local hazard mitigation plan to help the city's infrastructure build resilience and reduce vulnerabilities.

3.5 City of Union City

ELECTRIFICATION AND ENERGY-EFFICIENCY POLICIES

Union City enforces the California Building Standards Codes, including the Energy Code (Title 24, Part 6) and CALGreen (Title 24, Part 11). The city requires city-sponsored and public partnership buildings that are covered projects to meet a minimum LEED™ Silver rating and be so certified by the U.S. Green Building Council. These projects shall also have a LEED-Accredited Professional as a principal member of the design team.

Union City is actively working on climate planning updates. The City Council voted in May 2025 to establish a Climate Action Plan Task Force as part of updating its climate action plan.

HAZARD MITIGATION POLICIES

Like Fremont, Union City is part of the Tri-City Multi-jurisdictional Local Hazard Mitigation Plan jurisdictions. The goal of LHMP is to reduce long-term risk and loss to people and property in the Tri-City area and to bolster community resilience in the face of future natural disasters. Annex C of the plan is pertinent to Union City.

The following hazards were considered a priority for purposes of mitigation action planning:

- Climate Change
- Coastal Flooding and Sea Level Rise
- Dam Failure
- Drought & Water Shortage
- Earthquake
- Floods: 1%/0.2% annual chance
- Floods: Localized Stormwater
- Landslides
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rains and Storms
- Wildfire

4. FINDINGS AND RECOMMENDATIONS

Based on the review of state, regional, and local energy-efficiency goals, policies, incentive programs, and requirements, the following gaps have been identified.

- **Lack of energy performance mandates** (carbon caps) that inherently force energy efficiency, electrification, and cleaner energy sources. Benchmarking helps measure, but doesn't require energy-saving action. Efficiency retrofit requirements are only tied to renovation permits and don't apply to many old buildings in the existing inventory.
- **Lack of building codes tailored for industrial buildings.** Title 24 categorizes industrial buildings in the broad non-residential category and provides requirements on general building envelope, HVAC system efficiency, etc. But industrial buildings often have their own challenges regarding energy efficiency, such as inefficient equipment setup and O&M efficiency issues.
- **Lack of rebates, financing, and tax credits for industrial building owners, developers and contractors.** Compared to multifamily and single-family buildings, which have many programs to help those buildings with an upgrade in energy efficiency and hazard protection, there are very limited programs aimed at industrial buildings.
- **Insufficient third-party energy assessment services for existing industrial businesses.** The existing subsidized services, such as IAC, only cover a small share of industrial buildings across the Bay Area, with a focus on wastewater treatment facilities, which are the most energy-demanding. Most buildings don't have an energy analytical matrix to track energy consumption and keep energy savings, nor education on energy efficiency for operating staff.
- **Reliance on regional energy production and delivery** through PG&E and Ava Community. This reliance exposes industrial users to high energy costs, grid instability, and power fluctuations. Service interruptions can disrupt industrial operations, and poor power quality can contribute to long-term damage to industrial equipment and building systems.
- **Funding gap in sea level rise adaptation** has been identified, and regional coordination is needed to help advocate for these adaptations.

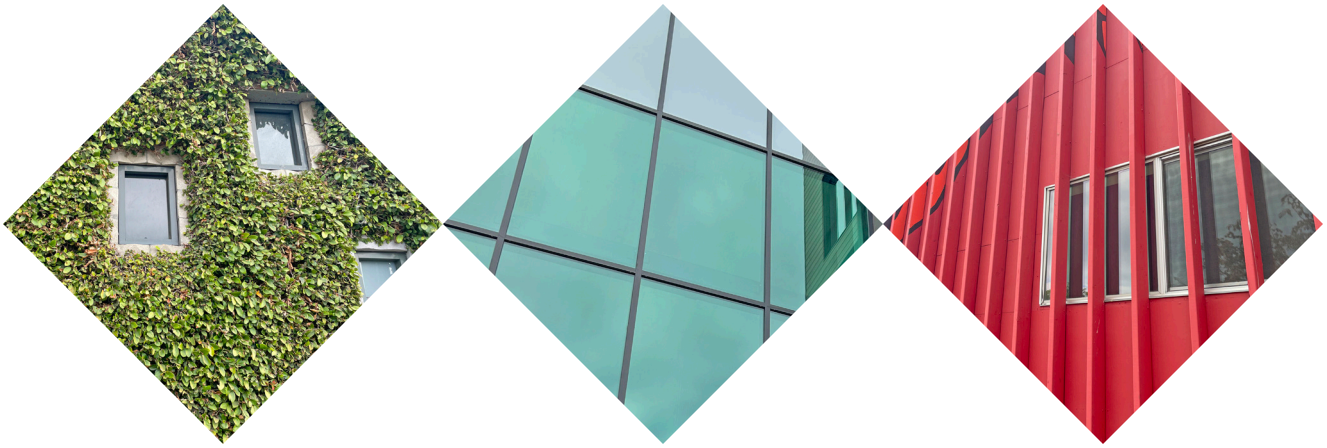
To address the identified gaps, the following strategies are recommended.

- Jurisdictions could introduce **mandatory energy or emissions performance standards** that set carbon caps for large buildings over 25,000 square feet. This can expand retrofit triggers beyond renovation permits. Realistic timelines and category caps should be included to avoid interruption of industrial uses. As an example, New York City's Local Law 97 set carbon emissions caps for energy use in large buildings starting in 2024.

- Local jurisdictions should adopt **nonresidential reach codes or CALGreen Tier 1/2 measures tailored for industrial and warehouse buildings**, emphasizing high-efficiency process equipment, lighting, HVAC systems, and electric-ready infrastructure. Other than building standards codes, jurisdictions can implement frameworks that allow industrial project teams to select from energy efficiency, electrification, and electric-readiness measures, reducing compliance burdens for specialized industrial uses.
- **Industrial-related rebates, grants, and financing tools** should be created and expanded, supported by partnerships with utilities and energy providers, to facilitate the adoption of high-efficiency equipment and renewable-ready infrastructure. Industrial buildings can particularly benefit from **custom, process-specific incentive pathways focused on facility-level optimization,** including process heat integration, compressed air systems, system-level motor and pump improvements, and advanced controls and monitoring, rather than prescriptive component swaps.
- At the same time, states and regions should scale up **third-party energy assessments, ongoing energy tracking, and operator training** to ensure durable, grid-supportive efficiency gains, particularly in older or underutilized industrial buildings.
- **Industrial building design guidelines** can be provided for developers and architects at the local or regional level to encourage early planning for electrical capacity, positioning buildings for future electrification as grid conditions and regulations evolve.
- To align with local climate action plans, **energy efficiency policies should be coordinated with hazard mitigation strategies**, promoting on-site solar and battery storage, and microgrid-ready design to enhance resilience against seismic, flood, and heat risks. Grid reliability is essential to industrial uses, and encouraging on-site clean energy and microgrids will not only help with peak demand reduction but also serve as a measure for hazard preparedness.

Appendix 3

AB98 and SB415 Overview



Assembly Bill (AB) 98 and Senate Bill (SB) 415

The following is a brief summary of AB 98 (2024) and SB 415 (2026) that addresses key definition and features of the two bills, which are applicable to certain industrial uses and seek to address potential community impacts through design, buffering, and truck routing.

Applications and Exceptions

- Establishes statewide warehouse design and build standards for new or expanded logistics/warehouses.
- Targets facilities that generate significant heavyduty truck activity and are within 900 feet of the property line of sensitive receptors (residences, schools, nursing homes, hospitals, playgrounds, etc.)
- Requires that projects meet or exceed meet or exceed the most current standards of Title 24, Part 6 (Energy Code) and Part 11 (CALGreen)
- Exemptions:
  - Facilities where goods sold directly to public, that are primarily served by rail, are a strategic intermodal facility, or are ag use operated <90 days/yr
  - Projects that "commenced the local entitlement process" before 9/30/24
  - "Logistics Projects" with an approval before Jan. 1, 2025
  - Existing facility expansions of less than 20% floor area, exclusive of office space.
  - New mixed-use development provided that no sensitive receptors are within 900 feet of a loading bay

Tier 1 21st Century Warehouses

Facilities over 250,000 square feet must additionally provide:

- Microgrid-ready switchgear system capable of supporting distributed energy resources.
- Advanced smart metering readiness.
- 50% of passenger parking must be EV ready and 10% must have charging stations installed.

21st Century Warehouses

Facilities 250,000 square feet or less must meet the current building energy code and provide:

- PV systems and associated battery storage.
- Cool roofing.
- Medium- and heavy-duty vehicle charging readiness, light-duty electric vehicle charging readiness and installed charging stations.
- Skylights in at least 1% of roof area or equivalent LED efficient lighting.
- Conduits and electrical hookups at all loading bays serving cold storage.
- High-efficiency heating, ventilation, and air-conditioning.

Requirements

Truck Access

- **Roadway Access:** Strategic roadway access via arterial, collector, or commercial/industrial roads (not primarily residential streets)
- **Truck Routes:** Designated truck routes to minimize impacts on residential areas and sensitive receptors
- **Buffers, setbacks, and screening:** Measured from property line of all sensitive receptors: 50 feet if existing industrial zone/entitlement started prior to 9/30/24; 100 feet for projects rezoning to industrial
- **Loading Bays and Circulation:** Truck loading bays and circulation oriented away from sensitive receptors, where feasible
- **Entrances:** Separate heavy-duty truck entrances and on-site truck queuing/ stacking required

Operational and Environmental Protections

- Truck-route signage, wayfinding, and mapping to enforce approved circulation patterns
- Compliance with energy efficiency, electrification, and clean-equipment standards
- Mitigation measures, including idling measures, housing replacement or community protections, when residential impacts occur

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DESIGNATED
SMOKING
AREA

East Bay EDA

METROPOLITAN TRANSPORTATION COMMISSION

