SD City Planning

Public Facilities, Services and Safety Element

Draft 2027 General Plan Amendment

City of San Diego

Fall 2026

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Purpose

To provide the public facilities and services needed to serve the people that live in and visit San Diego.

Introduction

The City of San Diego has a comprehensive network of public spaces and facilities that provide important services to the City. Expanding public spaces and facilities to meet the growing needs of the city is critical to providing a high quality of life. These facilities include those owned and managed by the City, such as police and fire facilities, parks and recreational spaces, libraries, stormwater and wastewater infrastructure, information infrastructure, disaster preparedness and infrastructure related to seismic safety. Other facilities are ones that the City funds or supports, such as schools and healthcare facilities. The policies within the Public Facilities Element also apply to transportation improvements and park and recreation facilities and services with additional guidance from the Mobility Element and the Recreation Element. The Conservation Element addresses the management, preservation, and utilization of natural resources. The Public Facilities and Conservation Element together provide policy on both facility infrastructure and management of vital resources such as water and energy.

Although publicly or privately managed by organizations other than the City of San Diego (City), regulated Public Utilities, Regional Facilities, and Healthcare Facilities are also included, as they too affect land uses and public health and safety. The Public Facilities Element also provides policies for public facilities financing, prioritization, developer, and City funding responsibilities.

The 1979 Progress Guide and General Plan (1979 General Plan) established a growth management program to address the rapid growth on the periphery of the City, and the declining growth in the central areas of the City. The plan sought to redirect growth into the central business district and established neighborhoods and phase growth and development in outlying areas in accordance with the availability of public facilities and services.

Under the 1979 General Plan, the City was divided into three "tiers" of growth: "urbanized," "planned urbanizing," and "future urbanizing." The "future urbanizing" areas were largely vacant and ultimately required voter approval to shift to "planned urbanizing" in order to develop. The "planned urbanizing" areas consisted of newly planned and developing communities. The "urbanized" areas were the established and developed neighborhoods and the Downtown core.

The planned urbanizing areas required development to "pay its own way," in terms of public facilities and services, through the use of Facilities Benefit Assessments (FBA), or other financing mechanisms such as Mello-Roos Districts. At the time, the pattern of growth was focused in undeveloped "greenfield" areas and, FBAs were used to assure adequate and timely development of public facilities, such as police, fire, parks, recreation, library, and transportation for this type of development. While FBAs were largely understood to allow for full cost recovery from developers for new infrastructure in these communities, recognizing that FBAs were subject to the same legal requirements applicable to all other development impact fees (DIF), the separate procedures related to FBA were repealed from the San Diego Municipal Code in 2016 and since that time all FBAs have been subject to the requirements set forth in the Municipal Code related to DIF. In the urbanized areas, General Fund revenue was generally presumed to be available to fund needed capital investments, and it was not until 1987 that the City Council adopted a Development Impact Fee (DIF) resolution. The fee resolution allowed for the establishment of DIFs in urbanized communities to collect what was - at the time– considered to be a proportional fair-share of capital improvements needed to offset the impact of any new development. Because these communities were largely considered to be built-out at the time, the methodology used to establish the DIF amounts often did not keep pace with the full cost needed to provide adequate public facilities for any new development that occurred within the urbanized areas. Additionally, DIF could not - and cannot - be used to fund existing deficiencies in infrastructure attributable to new development.

As discussed in Section J of the Land Use Element, as of 2006, the communities formerly known as planned urbanizing were largely completed according to the adopted community plans. With the adoption of the City's Climate Action Plan in 2022, most new development is anticipated to occur within the urbanized areas as urban infill, representing a significant shift away from a more suburban model of development. Our City has also grown to be more connected – people that live in one community spend significant amounts of time in other communities across the City, whether it be for work or play, and the facilities that are needed to serve new development are not limited to those in their immediate community boundary. The facilities needed to serve new development are needed across the City, and should be prioritized where they will be used by the most people and where the needs are the greatest. A move to a Citywide approach to infrastructure is what is needed to recognize and plan for the development – and the City – of today.

The previous lack of funding tools focused on urbanized communities has resulted in significant disparities across the City in funding for parks, libraries, public streets, and other public spaces. This has often resulted in relatively newer (and more affluent) communities benefitting from greater infrastructure investments, while urbanized communities – once considered to be built-out, but now experiencing more infill development, and often occurring in areas with the greatest needs, have received significantly less funding for these types of investments. Addressing inequitable investments of the past, by prioritizing investments where they are the most needed, is critical to a thriving City with infrastructure that not only supports new development, but improves the lives of all of the people that live in and visit San Diego. This model is also critical to the City's success in achieving its climate goals in the Climate Action Plan which identifies the need to focus development in areas located closest to transit. These investments must also be relevant, useful, and usable to meet the people's needs. The City aims to ensure that the City's infrastructure and public spaces:

- are equitably distributed across the City and prioritized where they will serve the most people;
- provide services that are relevant to communities throughout the City;
- provide space for the City's growing population to gather, connect and play;
- respond to the needs of shifting demographics and changing technology; and
- are resilient to the effects of natural and man-made disasters.

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A. Infrastructure and Public Spaces

Goal

- Develop and maintain financially sustainable, quality infrastructure and public spaces for all San Diegans across the City.

Discussion

Goal Develop and maintain financially sustainable, quality infrastructure and public spaces for all San Diegans across the City. Infrastructure and public spaces play a critical role in ensuring that the needs of a city's changing demographic's are met and in facilitating inclusiveness of people of all income levels, abilities, races, genders, and cultures. Infrastructure and public spaces can provide pathways for public transport and street lighting; centers for cultural exchange and recreation and social interaction. People in areas with the greatest needs largely depend on access to public spaces for day-today activities as well as sociocultural and political events and job creation. Good quality infrastructure and public spaces, therefore, are a critical part of empowering areas with the greatest needs and inclusive green growth strategies. Infrastructure and public spaces are also potential testing grounds for innovative solutions to the city's needs. Infrastructure and public spaces can also adopt technology to integrate with green building design and green infrastructure which not only results in operational cost savings in the long-term but also increases urban resiliency and reduces overall carbon footprints.

Policies

PF-A.1 Plan for infrastructure and public spaces that are models of environmental, economic, and social stewardship and that serve as examples for private development.

PF-A.2 Plan for public spaces such as libraries, public markets, and parks that will be attractive to families with children.

PF-A.3 Consider the potential impacts of changing demographics, conditions and other events – such as climate change, technological changes, and natural and manmade disasters – to ensure resilient infrastructure and public spaces.

PF-A.4 Encourage the protection, enhancement, and adaptive reuse of City-owned historic facilities.

PF-A.5 Identify a variety of facilities required to efficiently and effectively meet the needs of diverse communities.

PF-A.6 Plan for safe and enjoyable recreational opportunities in public spaces.

PF-A.7 Incentivize the provision of public infrastructure by developers to ensure the efficient provision of needed infrastructure that serves community members and neighborhood employees.

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B. Public Facilities Financing and Evaluation of Growth, Facilities and Services

Goal

- Develop and maintain financially sustainable, quality infrastructure and public spaces for all San Diegans across the City.

Discussion

Providing high-quality public spaces that prioritize people across the City requires dedicated funding to address the costs associated with developing and managing public spaces. Regulatory frameworks that facilitate joint undertaking between the City and private sector or between the City and community-based organizations while ensuring public benefit at all times are vital to develop and maintain successful public spaces. In accordance with the Climate Action Plan, the majority of the City's new growth will consist of infill development and increase joint use efficiencies to achieve progress in remedying existing public facilities shortfalls and to provide high quality public facilities and services in the future. In 2021, the City estimated a $3.02 billion shortfall in funding for the provision of all identified capital improvements necessary to serve existing and future development anticipated in the FY 2022-2026 Five Year Capital Improvement Infrastructure Planning Outlook. Adequate resources for capital and operational should be secured, operational efficiencies need to be maximized, and facilities and services should be better tailored to meet the needs of diverse communities. To meet current and future facilities needs, development patterns that can be served efficiently are also critical. Limited, and often restricted existing funds must be targeted to support desired growth patterns (see also Land Use Element, Section A) and new or expanded funding sources must be considered alongside enhanced efficiencies and effective management of resources. Attention should also be directed to the maintenance and operational requirements of all public facilities.

The comprehensive evaluation of development proposals will be critical to ensure any impacts to public facilities and services are identified and addressed. While development impact fees (DIF) and other capital funding sources are critical to funding infrastructure needed to serve new development throughout the City, private development should ensure that existing needs are not compounded by new development. Future development should not only ensure that the infrastructure to meet its needs is provided, but that these investments contribute positively to the community. DIFs are a core source of funds to ensure that new development will contribute its fair share toward needed infrastructure and public spaces. In lieu of the payment of DIFs, new development is also encouraged to provide needed infrastructure investments, where feasible. Other public facilities financing strategies, independent of impact fees, are available to bring infrastructure up to the City's current standards. These alternatives can include general taxes, special taxes, special assessments, fees and exactions, leasing, and other methods, as follows:

- General taxes refer to any tax imposed for general government purposes.
- Special taxes consist of any tax imposed for specific purposes, including a tax imposed for special purposes, which is placed into a General Fund. Special taxes include community facilities districts (CFD/ Mello-Roos).
- Special assessments fund a specific benefit that exceeds what is typically provided. An example of a special assessment in San Diego is a Maintenance Assessment District (MAD). Tax increment financing through the creation of Enhanced Infrastructure Financing Districts (EIFDs) to fund economic development projects within a geographic boundary.
- Fees and exactions are one-time charges or dedications collected by local government as a condition of a map approval or building permit. The purpose of the fee or exaction must relate to the development being

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charged. Fees can be categorized into four major classes: (1) development impact fees, which are levied on new development to cover the cost of infrastructure or facilities needed by that development; (2) permit and application fees which cover the cost of processing permits and development plans; (3) regulatory fees; and (4) "property related fees and charges," as defined by Proposition 218.

- Leasing is a financing alternative to outright purchasing property. Common lease financing arrangements include lease-purchase agreements, sale-leaseback agreements, certificates of participation, and lease revenue bonds.
- Other methods can include general obligation bonds, which are still a common financing mechanism, but they are difficult to issue because of the two-thirds voter approval requirement. Nevertheless, these bonds are used to acquire and construct public capital facilities and real property. A jurisdiction can levy an ad valorem property tax at the rate necessary to repay the principal and interest of the bonds. Other alternatives are public enterprise revenue bonds issued to finance facilities for revenue-producing public enterprises, such as sewer systems that can pay for themselves through service charges. The use of tax increment financing by redevelopment agencies is another method regularly used by jurisdictions to issue tax allocation bonds for major improvements in project areas.

Policies

PF-B.1 Develop a centralized citywide monitoring system, accessible to the public, to document and report on the following:

- New Development - development applications, fiscal impacts, operations and maintenance requirements, required plan amendments, exactions, service level and capacity impacts;
- Capital Improvements Program (CIP) - funding sources, project and funding schedules, project amendments, project costs, project locations, project status; and
- Existing Conditions of Public Facilities - facility inventory, service and capacity levels, repair and replacement schedules, facility records (size, age, location, useful life, value, etc.).

PF-B.2 Invest in citywide public facilities that meet the current and future needs of the growing population.

a. Prioritize investments in projects that improve connectivity between communities and enable safe access to citywide infrastructure.
b. Prioritize investments in projects that connect communities and positively influence the life of all San Diegans.
c. Prioritize investments in projects that serve the greatest amount of people and where the needs are the greatest.

PF-B.3 Address current and future public facility needs by pursuing, adopting, implementing, and maintaining a diverse funding and management strategy.

a. Ensure effective management and optimal allocation of all financial resources for both capital and operational needs.
b. Maximize operational and capital efficiencies.
c. Continue to develop, evaluate, and apply innovative public infrastructure and facility financing mechanisms and strategies. Employ a public infrastructure financing strategy for on or off-site public improvements that includes a variety of financing mechanisms such as:
    - Supporting state and local government fiscal reform efforts which provide an equitable redistribution of property tax

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proceeds or other revenues to the City from the state;

- Assuming an active leadership role in planning and implementing infrastructure investments on a collaborative regional basis and apportion, as applicable and appropriate, eligible infrastructure expenses to support regionally beneficial capital improvements projects;
- Coordinating with all appropriate authorities and agencies for a more efficient use of shared resources, and increased joint use of facilities and services;
- Adopting new, or increase existing, CIP funding sources for needed public facilities and infrastructure;
- Working in partnership with stakeholders to design a bond measure to address the City's unfunded needs for capital improvements projects to support development;
- Adopting facilities, infrastructure, improvements and/or maintenance districts, and other special assessments for locally prioritized facilities and/or services;
- Pursuing Regional Comprehensive Plan and Smart Growth Incentive Program funding for transportation projects that have been prioritized consistent with Section B, Public Facilities and Services Prioritization, of this element;
- Continuing to use and seek a broad range of funding sources to finance public facilities and infrastructure;
- Continue to support methods for land value recapture as a strategy to provide revenue for public facilities and community benefits;
- Evaluating City real estate assets for opportunities to address public facility needs;
- Partnering with other agencies and organizations to leverage public financing and resources with private funds and assets;
- Utilizing development, reimbursement, and other agreements to provide timely public facilities to area of benefit;
- Incentivize onsite improvements and private delivery of public infrastructure to ensure infrastructure and public spaces are delivered in a timely manner;
- Maximizing the extraordinary and other benefits of development-related agreements to address needs in areas of benefit;
- Coordinating with redevelopment agencies to effectively utilize tax increment and other agency financing to leverage additional funds, initiate public and private investment, and address needs; and
- Maximizing the procurement of grants, endowments, and private donations for public facility and services needs.

PF-B.4 Require development proposals to fully address impacts to public facilities and services.

a. Identify the demand for public facilities and services resulting from new development.
b. Identify specific improvements and financing which would be provided by the project, including but not limited to sewer, water, storm drain, solid waste, fire, police, libraries, parks, open space, and transportation projects.
c. Subject projects to exactions that are reasonably related and in rough proportionality to the impacts resulting from the proposed development.

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d. Provide public facilities and services to assure that current levels of service are maintained or improved by new development within a reasonable time period.

PF-B.5 Require a fiscal impact analysis to identify operations and maintenance costs with a community plan amendment proposal.

PF-B.6 Incentivize physical improvements that fully address impacts to public facilities and services, when a nexus exists, that will benefit the affected community planning area.

PF-B.7 Integrate all planning and development policies and strategies into the annual development of the CIP to ensure projects are programmed in a cost efficient manner.

a. Review all capital projects for consistency with adopted planning documents, including the General Plan, Climate Action Plan, and community plans.
b. Evaluate the fiscal impact and timing of needed capital improvements to minimize the burden on operations and maintenance budgets.

PF-B.8 Conduct periodic review of the fiscal impacts of private development throughout the City to assist in land use and capital planning decisions by providing data regarding the amount, intensity, location, and timing of new development.

PF-B.9 Maintain an infrastructure and public spaces program to ensure the impact of new development is mitigated through appropriate fees adopted by the City Council.

a. Ensure new development pays its proportional fair-share of public facilities costs through applicable DIFs pursuant to the California Government Code.
b. Ensure DIFs are updated frequently and evaluated periodically to ensure the fees are sufficient to provide the infrastructure needed to serve new development.
c. Identify priorities for needed infrastructure in consultation with interested stakeholders, including community planning groups.
    - Incorporate community specific criteria in community plans to define and describe the desired character and location of needed facilities.
    - Apply public facility and service guidelines which consider varied constraints and needs, while providing an equivalent level of service and maintaining consistency with sustainable development policies (see also Conservation Element, Section A).
d. Encourage community participation in the identification of infrastructure needs throughout the City to ensure the delivery of infrastructure that will be most useful and enjoyable to the City's community members.

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C. Public Facilities and Services Prioritization

Goals

- Public facilities and services that are equitably and effectively provided through application of prioritization guidelines.
- Maximum efficiency in the annual allocation of capital resources for the Capital Improvements Program (CIP).
- Public facilities expenditures that are linked to implementation of the General Plan.
- Public investments that prioritize public facilities in areas that serve the most people and that have the greatest need.

Discussion

Prioritization guidelines for public facilities and services are needed to efficiently and effectively allocate available resources. Policies within this section call for a formally structured approach to evaluate potential capital improvements projects by identifying appropriate criteria for each facility type. The system will be designed to weigh a project's contribution to the protection of health and safety. Consideration will also be given to areas with existing or planned village characteristics and existing facilities deficits. Funds should also be targeted to foster village attributes citywide, through implementation of projects that support greater transit use, walkability/rollability, housing opportunities and inviting public spaces. Attention to community-level priorities will also be given during this process.

Upon complete assessment of criteria and ranking, projects will then be proposed for inclusion in the annual CIP which is ultimately adopted by the City Council as a part of the budget process. To maximize the optimal allocation of resources and implementation of the General Plan, citywide coordination and evaluation of proposed projects and available funding will be a critical step in finalizing the annual CIP. The City's annual budget documents contain additional information about the annual capital budget and CIP. The following policies apply to all public facilities and services discussed in the General Plan.

Policies

Capital Programming and Financing

PF-C.1 Guide the annual programming of capital projects to optimize the appropriation of resources and to implement the General Plan. a. Ensure the annual CIP is coordinated and developed in a timely manner to allow for required consistency and prioritization reviews.

PF-C.2 Coordinate the allocation of public resources for priorities across the City organization, to maximize operational and capital investment efficiencies.

Facility Type Prioritization

PF-C.3 Create an organization-wide method for identifying and ranking capital improvement projects for proposed inclusion in the annual CIP and to guide the City's applications for regional, state, federal, or other funds.

a. Establish an objective rating system which includes criteria that are appropriate for each facility type (bridges, roadways, traffic signals, pedestrian, drainage, water, sewer, parks, libraries, fire, police, etc.). Examples of potential criteria include, as applicable, but not limited to: funding, percent of project complete, health and safety, capacity and level of service, planning consistency, legal mandates, and cost-benefit relationship. Establish an objective rating system which includes criteria that addresses equity, sustainability, efficiency, and conformance with land use plans. Evaluate and assign values to projects based on the following:
    - Conformance with community plans. Additionally consider community priorities, when preferences are expressed in the community plan, or

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by recommendation of interested stakeholders, including community planning groups.

- Projects that further the achievement of General Plan or other Council-adopted standards for public facilities, such as the Parks Master Plan, Library Master Plan, and Mobility Master Plan.
- Projects that will serve the greatest numbers of people, and that will be delivered in areas with the greatest needs.
- Project can immediately connect multiple communities.
- Project is located within a community where there are opportunities to leverage other resources and partnerships with other public, private, and not-for-profit entities.
- Project creates sustainable and high-quality public facilities.
- Project delivers facilities that are models of environmental stewardship, are energy and stormwater efficient, align with City's Climate Action Plan and Climate Resilient SD goals, and prioritize local and environmentally preferable products and limit waste.
- Project prioritizes and designs Complete Streets for safe mobility and non- motorized transportation.
- Project prioritizes and reclaims streets for pedestrians and creatively repurposes existing, old or vacant public infrastructure.

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D. Fire-Rescue

Goals

- Protection of life, property, and environment by delivering the highest level of emergency and fire-rescue services, hazard prevention, and safety education.
- Minimize fire hazards resulting from structural or wildland fires.
- Manage fuel loads in wildland areas.

Discussion

The Fire-Rescue Department's mission is to serve the City by providing the highest level of emergency/rescue services, hazard prevention and safety education ensuring the protection of life, property and the environment. This includes the delivery of medical advanced life support services through a comprehensive first-responder paramedic system. The Fire-Rescue Department provides paramedics on first responder apparatus as well as ambulances.

The Fire-Rescue Department coordinates with other local city and fire district departments, the San Diego County Fire Authority, California Department of Forestry and Fire Protection, and the federal fire departments from local military installations to provide structural, airport, marine, and plants, fire suppression, water rescue, confined space rescue, cliff rescue, and high angle rescue; response to hazardous material, mass casualty incidents, terrorism and weapons of mass destruction; fire and hazard mitigation and disaster preparedness training; and fire prevention and safety education. Figure PF-1, Fire and Lifeguard Facilities, illustrates the location of fire stations and permanent lifeguard towers and local, state and federal responsibility areas. The Fire-Rescue Department has local responsibility within the City except for within military installations.

The Fire-Rescue Department has automatic aid agreements with other local city and fire district departments adjoining the City. These agreements assure that the closest engine company responds to a given incident regardless of which jurisdiction it represents. Mutual aid agreements with county, state, and federal agencies further allow the City, and any other participating agencies, to request additional resources depending on the complexity and needs of a given incident, such as wildfires.

Service & Infrastructure

Building new or expanded fire and rescue facilities requires significant planning and coordination to address facility location, funding and the timing of development. Typically, a three-mile distance between fire stations is sufficient to achieve response time objectives. The topography and terrain throughout the City present considerable demands on fire-rescue services under various conditions and can also affect response times. Future infill development will place an increasing demand on the capabilities of fire-rescue resources to deliver an acceptable level of emergency service.

The City Council adopted response time objectives included in the 2017 Fire Service Standards of Response Coverage study as a framework to guide the Fire-Rescue Department's progress toward meeting the desired level of emergency service standards. This includes additional proposed fire stations and service enhancements in underserved communities. Full implementation is expected to take multiple years and is dependent on identifying revenues for operating and capital costs. The performance measures are provided in Tables PFD.1 and PF-D.2, and in Policies PF-D.1 and D.2.

The Fire-Rescue Department commissions a Standards of Response Coverage review every five years, or as needed. This report is used to determine the need for additional fire stations by reviewing the adequacy of the current fire station resource deployment system, the risks to be protected and the emergency incident outcomes desired by the community. Service delivery depends on the availability of adequate equipment, sufficient numbers of qualified personnel, effective alarm/monitoring systems, and proper siting of fire stations and lifeguard towers. As fire-rescue facilities and equipment continue to age, new investments must be made to support growth patterns and maintain levels of service to ensure public safety. Evaluation of the need for additional new or expanded fire stations will occur through the Standards of Response Cover Review, community plan updates and amendments as needed.

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Fire Hazard Planning

Fire hazard and mitigation are an important component to fire safety and enhances the effectiveness of f ire protection. The General Plan addresses wildland fire risk reduction and prevention, and hazard mitigation efforts within Public Facilities, Services, & Safety Element as well as Conservation and Urban Design elements.

San Diego Fire-Rescue supports fire hazard planning and mitigation through comprehensive community-risk-reduction programs that focus on reducing ignition sources, improving defensible-space compliance, and advancing public education on wildfire readiness. The department conducts ongoing assessments of local fire-hazard conditions, implements vegetation-management and fuel-reduction initiatives, and provides guidance to strengthen community resilience. San Diego Fire-Rescue also works closely with California Department of Forestry and Fire Protection to coordinate prevention strategies, share risk-assessment information, and align local efforts with statewide wildfire-mitigation practices.

~~The National Interagency Fire Center provides an internet-based mapping application that allows public access to online maps of current fire locations and perimeters using standard web browsers. Fire perimeter data is updated daily based upon input from incident intelligence sources, GPS data, and infrared imagery from fixed wing and satellite platforms. The National Interagency Fire Center web site allows users to display fire information at various scales and detail and print hard copy maps.~~

Climate, Vegetation, and Topography

Due to climate, vegetation, and topography, the City is subject to both wildland and urban fires. The region's climate and increasingly severe dry periods result in large areas of dry vegetation that provides fuel for wildland fires. Late summer and fall are the most critical seasons for wildland fires when Santa Ana winds bring hot, dry desert air from the east into the region. When the high air temperature, low humidity, and powerful winds combine with dry vegetation, the result can be largescale fire events. Since these winds push wildland fires westward toward denser development, Santa Ana wind-driven fires have the potential to result in a greater risk of property damage. The City contains over 900 linear miles of wildland/urban interface due to established development along the open space areas and canyons within urban and suburban areas.

Climate, Vegetation, and Topography

In 2003 and 2007, the City experienced two major Santa Ana wind-driven wildland fires. The 2003 Cedar Fire was one of the largest wildland fire in California history and burned 280,278 acres countywide of which 28,676 acres were within the City of San Diego. The Cedar fire destroyed 335 structures in Scripps Miramar Ranch and Tierrasanta. The 2007 Witch Creek-Guejito Fires burned more than 197,990 acres countywide of which 9,250 acres were within the City of San Diego. The Witch Creek-Guejito Fires destroyed 365 structures in the Rancho Bernardo community. The City is a participating jurisdiction in the San Diego County's Multi-Jurisdictional Hazard Mitigation Plan. Additional historical data on San Diego wildfires can be found the countywide plan.

Plans, Programs, and Regulations

General Plan. The General Plan provides policies for protecting communities from unreasonable risk of wildfire. The following policies provide the foundation and support for implementing fire-wise and fire-safe development regulations:

1. Land Use Element: Policy LU-C.2.a.5 addresses the consideration of land uses to hazard areas.
2. Conservation Element: Policy CE-B.6 addresses the management of the urban/ wildland interface;
3. Urban Design Element:
    - Policy UD-A.3.h balances the need to clear natural vegetation for fire protection to ensure public safety in some areas.
    - Policy UD-A.3.p addresses the design of structures adjacent to open space.

San Diego Municipal Code. The City's Building Regulations regulate the construction of structures and encompass (and formally adopts) associated elements of the California Building Code. Specifically, this includes guidelines regulating the "construction, alteration, replacement, repair, maintenance, moving, removal, demolition,

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occupancy, and use of any privately owned building or structure or any appurtenances connected or attached to such buildings or structures within this jurisdiction, except work located primarily in a public right-of-way, public utility towers and poles, mechanical equipment not specifically regulated in the California Building Code, and hydraulic flood control structures". The City's Building Regulations also establish acceptable construction materials for development near open space to minimize fire risk through adoption of "Fire Resistance-Rated Construction," and "Materials and Construction Methods for Exterior Wildfire Exposure," of the California Building Code.

Very High Fire Hazard Severity Zone Map.

In accordance with state law, the City has identified areas subject to extreme wildfire risk. The Very High Fire Hazard Severity Zone Map designates these areas to help implement targeted fire-prevention measures, which include strategic vegetation management and enhanced building standards designed to retard fire spread, lower burn intensity, and protect lives, property, and natural resources.

~~The Fire-Rescue Department maintains the fire hazard severity zone map. The map identifies the Very High Fire Hazard Severity Zone and local agency Very High Fire Hazard Severity Zone for the Local Responsibility Area. The Fire Hazard Severity Zone Map from the Department of Forestry and Fire Protection are codified in the Municipal Code.~~

The Very High Fire Hazard Severity Zones are located throughout the City. Inclusion within these zones is based on five factors: density of vegetation; slope severity; five-minute fire department response time; road class/proximity~~;~~, and proximity to fire hydrants and the California Department of Forestry and Fire Protection's vegetation cover and fire behavior/fuel spread model. Based on these factors, the zone encompasses a large portion of the City including most land use designations, major freeways and roads, various structures and major utilities and essential public facilities

Appendix D, PF-1 includes maps of critical infrastructure and adopted land use designations overlaid with Very High Fire Hazard Severity Zones and State Responsibility Area within the City of San Diego.

Emergency Evacuation Procedures. The City's Emergency Operations Plan, San Diego Police Department Policy and Procedures, Operational Area Emergency Plan, and the California Master Mutual Aid Agreement dictate who is responsible for an evacuation effort and how regional resources will be requested and coordinated. The City actively coordinates with the San Diego County Office of Emergency Services and participates in the Evacuation Working Group, a collaboration of public and private sector stakeholders from the region and the state.

The San Diego Police Department coordinates with other agencies to identify transportation and evacuation points for the relocation of people to safe areas during major disasters that would require emergency evacuation. Major ground transportation corridors provide primary evacuation routes during an evacuation effort; primary evacuation routes consist of the major interstates, highways, and prime arterials within San Diego County.

Evacuation / Shelter Locations: The City maintains a list of available shelter locations within the San Diego Operational Area in coordination with the San Diego County Chapter of the American Red Cross (ARC). The selection of specific shelter sites for any incident will depend upon the specific circumstances of the incident, and generally cannot be determined prior to the emergency or disaster. The agency that will lead the management, organization and operation of the shelter will select the shelter location, in coordination with the Incident Commander as addressed in the City Emergency Operations Plan.

Constrained Parcels. Every 5 years, the Fire-Rescue Department, in coordination with the California Board of Forestry and Fire Protection, conducts a survey of subdivisions of more than 30 dwelling units located in a State Responsibility Area or Local Responsibility Area Very High Fire Hazard Severity Zone without a secondary egress route that are at significant fire risk. ~~A constrained parcel includes a residential development within a hazard area that does not have at least two emergency evacuation routes which could affect the ability of emergency~~

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~~personnel to access an area and to evacuate community members safely and efficiently in the event of an emergency.~~

Limited Access Residential Areas. Residential areas that are constrained to one point of access on dead-end roads that are 800 feet or more are considered Limited Access Residential Areas. These areas lack a secondary access route which could affect the ability of emergency personnel to access an area and to evacuate community members safely and efficiently in the event of an emergency. These areas are mapped in Appendix D (refer to Figure PF-3 to Figure PF-7).

Brush Management. The City's Wildland Management and Enforcement program provides information and guidelines on brush management and weed abatement in wildlands. The City's Brush Management Guide summarizes guidelines for brush management in canyon areas and landscape standards. The Municipal Code regulates brush management and requires 100 foot defensible space between structures and native wildlands.

The City's landscape requirements acknowledge fire safety is achieved by reducing flammable fuel adjacent to structures. Requirements are included for pruning and thinning native and naturalized plants, and replants with low fuel volume plantings.

Fire Access Roadway Policy. Fire-Rescue Department's Fire Access Roadways Policy address the design and need for fire access roadways for new and existing buildings. Both public streets and private roadways fall under the scope of this policy.

Emergency Preparedness Education. The Fire-Rescue Department provides wildland fire public education for fire safety advance planning. The City's Office of Emergency Services also provides public resources for emergency preparedness planning.

Hazard Mitigation & Emergency Preparedness Plans. The San Diego Fire-Rescue Department is responsible for the preparation, maintenance, and execution of Fire Preparedness and Management Plans and participates in multijurisdictional disaster preparedness efforts. The San Diego County Multi-Jurisdictional Hazard Mitigation Plan identifies risks posed by natural and manmade disasters including wildfires, earthquakes, landslides, and floods and ways to minimize damage from those disasters. In the event of a large wildfire within or threatening City limits, the City could be assisted by state and federal agencies, or other jurisdictions.

The San Diego County Multi-Jurisdictional Hazard Mitigation Plan was developed in accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and follows FEMA's Local Hazard Mitigation Plan guidance. The San Diego County Multi-Jurisdictional Hazard Mitigation Plan incorporates a process where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. The implementation of these mitigation actions, which include both short and long-term strategies, involve planning, policy changes, programs, projects, and other activities.

Section P (Hazard Mitigation & Disaster Preparedness) provides additional information and policies related to disaster preparedness and County-wide efforts for emergency service coordination.

Fire Service Standards of Response Coverage Study. The 2017 study reviews the Fire-Rescue Department's standards of response coverage provides recommendations that take into account the challenges posed by San Diego's topography and road network, and the wide range of firefighting, other emergency response, and risks that are present in the City including wildland fires for existing and future needs.

Policies

Fire Service & Infrastructure

PF-D.1 Locate, staff, and equip fire stations to meet established response times as follows:

a. To treat medical patients and control small fires, the first-due unit should arrive within 7.5 minutes, 90 percent of the time from the receipt of the 911 call in fire dispatch. This equates to 1-minute dispatch time, 1.5 minutes company turnout time and 5 minutes drive time in the most populated areas.

b. To provide an effective response force for serious emergencies, a multiple-unit

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response of at least 17 personnel should arrive within 10.5 minutes from the time of 911-call receipt in fire dispatch, 90 percent of the time.

c. • This response is designed to confine fires near the room of origin, to stop wildland fires to under 3 acres when noticed promptly, and to treat up to 5 medical patients at once.

d. • This equates to 1-minute dispatch time, 1.5 minutes company turnout time and 8 minutes drive time spacing for multiple units in the most populated areas.

PF-D.2 Determine fire station needs, location, crew size and timing of implementation as the community grows.

a. Use the fire unit development performance measures (based on population density per square mile) shown in Table PF-D.1 to plan for needed facilities. Where more than one square mile is not populated at similar densities, and/or a contiguous area with different density types aggregates into a population cluster area, use the measures provided in Table PF-D.2.

b. Reflect needed fire-rescue facilities in community plans and associated facilities financing plans as a part of community plan updates and amendments.

PF-D.3 Monitor, and maintain adopted service delivery objectives based on time standards for all fire, rescue, emergency response, and lifeguard services.

PF-D.4 Provide adequate fire station site area (typical site is approximately 0.75 acre) and allow room for station expansion with additional considerations:

(1) • Consider the inclusion of fire station facilities in villages or development projects as an alternative method to the acreage guideline;

(2) • Where density and development constrain site size consider a multistory station;

(3) • Acquire adjacent sites that would allow for station expansion as opportunities allow; and

(4) • Gain greater utility of fire facilities by pursuing joint use opportunities such as community meeting rooms or collocating with police, libraries, or parks where appropriate.

PF-D.5 Maintain service levels to meet the demands of continued growth and development, tourism, and other events requiring fire-rescue services.

a. Provide additional response units, and related capital improvements as necessary, whenever the yearly emergency incident volume of a single unit providing coverage for an area increases to the extent that availability of that unit for additional emergency responses and/or non-emergency training and maintenance activities is compromised. An excess of 2,500 responses annually requires analysis to determine the need for additional services or facilities.

PF-D.6 Provide public safety related facilities and services to assure that adequate levels of service are provided to existing and future development.

PF-D.7 Evaluate fire-rescue infrastructure for adherence to public safety standards and sustainable development policies (see also Conservation Element, Section A).

PF-D.8 Invest in technological advances that enhance the City's ability to deliver emergency and fire-rescue services more efficiently and cost-effectively.

PF-D.9 Provide and maintain a training facility and program to ensure fire-rescue personnel are properly trained.

PF-D.10 Buffer or incorporate design elements to minimize impacts from fire stations to adjacent sensitive land uses, when feasible.

PF-D.11 Space oceanfront seasonal lifeguard towers every 1/10 of a mile or ten towers per mile.

Wildfire Planning

PF-D.12 Protect communities from unreasonable risk of wildfire within very high f ire hazard severity zones.

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a. Assess site constraints when considering land use designations near wildlands to avoid or minimize wildfire hazards as part of a community plan update or amendment. (see also LU-C.2.a.4)
b. Identify building and site design methods or other methods to minimize damage if new structures are located in very high fire hazard severity zones on undeveloped land and when rebuilding after a fire.
c. Require ongoing brush management to minimize the risk of structural damage or loss due to wildfires.
d. Provide and maintain water supply systems to supplies for fire suppression.
e. Provide adequate fire protection. (see also PF-D.1 and PF-D.2)

PF-D.13 Incorporate fire safe design into development within very high fire hazard severity zones to have fire-resistant building and site design, materials, and landscaping as part of the development review process.
a. Ensure consistency with local and state building regulations for fire safety and defensible space.
b. Locate, design and construct development to provide adequate defensibility and minimize the risk of structural loss from wildland fires.
c. Design development on hillsides and canyons to reduce the increased risk of fires from topography features (i.e., steep slopes, ridge saddles).
d. Minimize flammable vegetation and implement brush management best practices in accordance with the Land Development Code.
e. Design and maintain public and private streets for adequate fire apparatus vehicles access (ingress and egress), and install visible street signs and necessary water supply and flow for structural fire suppression.
f. Provide and maintain adequate fire breaks where feasible, or identify other methods to slow the movement of a wildfire in very high fire hazard severity zones in coordination with Fire-Rescue Department and other applicable local, state, and federal fire protection agencies.

PF-D.14 Implement brush management along City maintained roads in very high fire hazard severity zones adjacent to open space and canyon areas.

PF-D.15 Maintain access for fire apparatus vehicles along public streets in very high fire hazard severity zones for emergency equipment and evacuation.

PF-D.16 Provide wildland fire preparedness education for fire safety advance planning.

PF-D.17 Coordinate with local, state, and federal fire protection agencies with respect to fire suppression, rescue, mitigation, training and education.

PF-D.18 Coordinate with local, state, and federal agencies to update emergency, evacuation, and hazard mitigation plans, as necessary (also see section PF-P. Hazard Mitigation & Disaster Preparedness).

PF-D.19 Support city-wide emergency and disaster preparedness education programs. (Also see Section PF-P. Hazard Mitigation & Disaster Preparedness)

PF-D.20 Locate, when feasible, new essential public facilities outside of very high f ire hazard severity zones, including but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communication facilities, or identify construction methods or other methods to minimize damage if these facilities are in very high fire hazard severity zones.

PF-D.21 ~~Identify existing areas that have inadequate access for fire apparatus vehicles and evacuation routes.~~ Consider access-related needs for fire vehicles and rapid evacuation as a part of community plan updates, community plan amendments, and development project reviews.
a. Identify improvements for existing residential areas that do not have two or

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more access routes available (refer to Appendix D Figures PF-3 to PF-7).

b. ~~Provide updates and programs to minimize~~ Minimize risks to existing residential areas that do not have two or more access routes available.

~~b.~~c. Encourage home hardening, fire-resistant building materials, fire-smart landscaping practices, and brush management for existing homes and new construction to strengthen neighborhood resilience, reduce wildfire risk, and support defensible space.

~~c.~~d. Consider improvements to primary access routes and designated evacuation roadways.

~~d.~~e. Consider identifying temporary refuge areas.

PF-D.22 Seek grant funding to create a plan to identify existing developments that do not conform with fire safety, including road standards and vegetative hazard, and identify steps needed to update those developments to current fire safe standards where feasible.

PF-D.23 Seek grant funding to create a plan to identify existing developments that do not conform with fire safety, including road standards and vegetative hazard, and identify steps needed to update those developments to current fire safe standards where feasible.

PF-D.24 Amend the Public Facilities, Services & Safety Element to be consistent with state guidance and regulations pertaining to fire safety.

PF-D.25 Encourage undergrounding existing overhead power lines or replacing wooden poles with metal poles near high-risk settings, such as open space canyon rimes, to reduce ignition sources and improve community safety.

PF-D.26 Encourage and support the formation and ongoing activities of Local Fire-Safe Councils, Firewise Communities, and Fire Adapted Communities to strengthen community-based wildfire resilience.

PF-D.27 Ensure that locked or gated entrances, bollards, or other devices do not physically limit emergency access and rapid evacuation for developments with residential uses within the Very High Fire Hazard Severity Zone.

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Figure PF-1 Fire and Lifeguard Stations

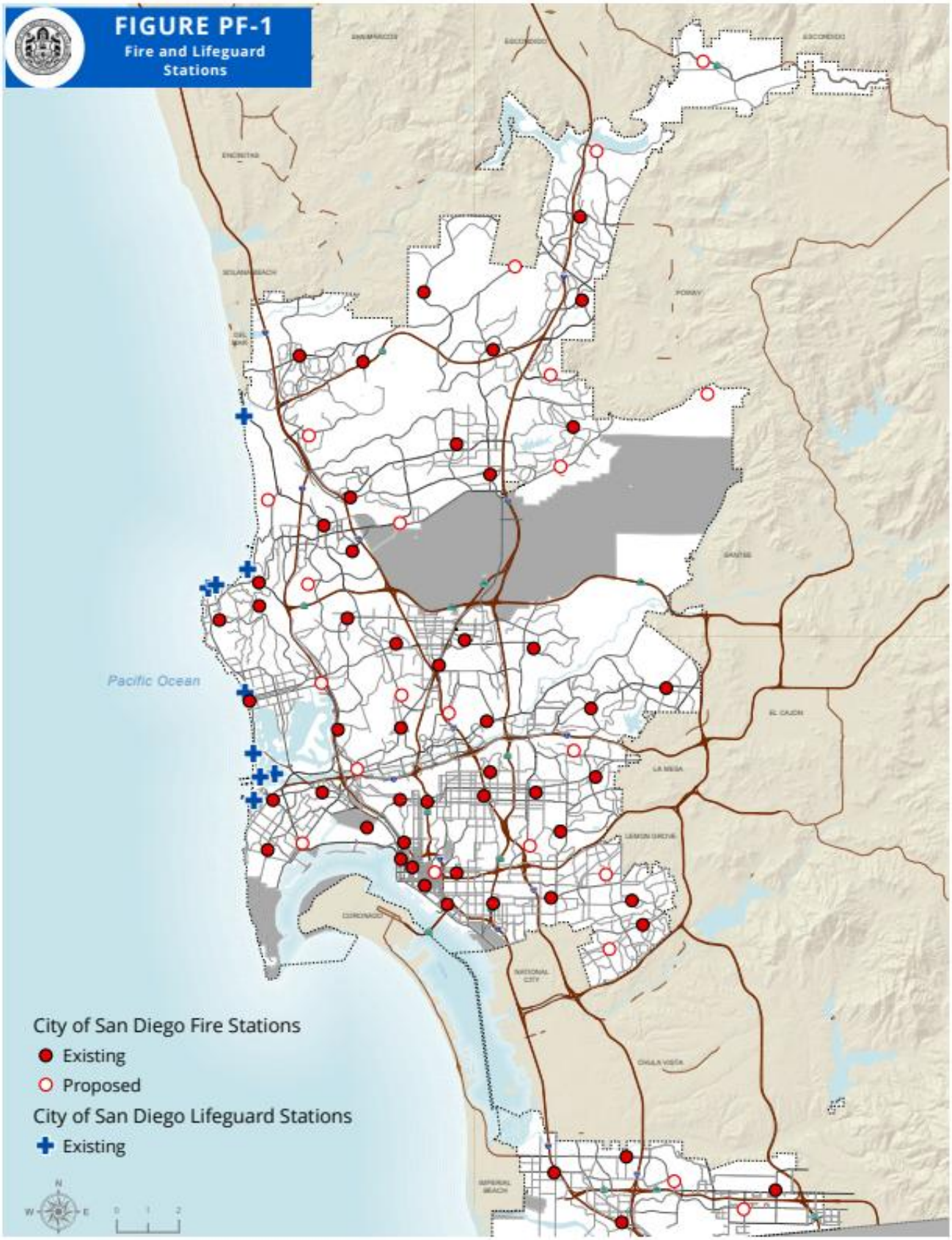


Table PF-D.1 Deployment Measures to Address Future Growth by Population Density per Square Mile

	>1,000-people/sq. mi.	1,000 to 500 people/sq. mi.	500 to 50 people/sq. mi. *	Permanent open space areas
1st Due Travel Time	5 minutes	12 minutes	20 minutes	10 minutes
Total Reflex* Time	7.5 minutes	14.5 minutes	22.5 minutes	12.5 minutes
1st Alarm Travel Time	8 minutes	16 minutes	24 minutes	15 minutes
1st Alarm Total Reflex*	10.5 minutes	18.5 minutes	26.5 minutes	17.5 minutes

*Reflex time is the total time from receipt of a 9-1-1 call to arrival of the required number of emergency units.

Table PF-D.2 Deployment Measures to Address Future Growth by Population Clusters

Area	Aggregate Population	First-Due Unit Travel Time Goal
Metropolitan	> 200,000 people	4 minutes
Urban-Suburban	< 200,000 people	5 minutes
Rural	500 - 1,000 people	12 minutes
Remote	< 500	> 15 minutes

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E. Police

Goals

- Safe, peaceful, and orderly communities.
- Police services that respond to community needs, respect individuals, develop partnerships, manage emergencies, and apprehend criminals with the highest quality of service.

Discussion

The City police services include patrol, traffic, investigative, records, laboratory, and support services. The City works toward accomplishing its police and public safety goals by embracing the Neighborhood Policing philosophy and practice. Neighborhood Policing requires shared responsibility between the City and community members in order to address underlying problems contributing to crime and the fear of crime. The City engages in a problem solving partnership with community groups, government agencies, private groups, and individuals to fight crime and improve the quality of life for the community members of San Diego. The City also strives to reduce crime and the perception of safety risks through application of Crime Prevention Through Environmental Design (CPTED) concepts to build safer environments (see also Urban Design Element, Policy UD-A.17).

Until the 1980s, the City provided its police services citywide, primarily from a single centralized facility. Several in-house and consultant studies were conducted during the 1970s to evaluate the benefits of decentralizing police functions. As a result of these studies, it was determined that several area stations were to be established throughout the City to better serve individual communities. To accomplish this, a twenty-year plan was developed to establish four new area police stations (Southeastern, Western, Eastern, and Northeastern), replace the existing Southern Division station, construct a new Administrative and Technical Center to replace the existing police headquarters, and relocate the Central Division. Developing needs also led to the construction of a Mid-City Division facility and a centralized Traffic Division facility.

Figure PF-2, Police Facilities, illustrates the location of existing police stations. With the exception of the Northern Division area station (circa 1970), all major facilities now occupied by City police services were constructed during the twenty-year plan period.

The demographics and population growth projections for the City have changed since the last studies were conducted, as have the needs and technologies employed by the City in providing police services. Advances in laboratory services, information technology, and specialized units have presented a challenge to those trying to accommodate them. Furthermore, several of the area stations built during the 1980s are already crowded and in need of improvement. As redevelopment and growth continue in the City, additional infrastructure, including additional police facilities, will be required to maintain the City's established police response time goals to ensure public safety.

Policies

PF-E.1 Provide a sufficient level of police services to all areas of the City by enforcing the law, investigating crimes, and working with the community to prevent crime.

PF-E.2 Maintain average response time goals as development and population growth occurs. Average response time guidelines are as follows: Priority E Calls (imminent threat to life) within seven minutes. • Priority 1 Calls (serious crimes in progress) within 12 minutes. • Priority 2 Calls (less serious crimes with no threat to life) within 30 minutes. • Priority 3 Calls (minor crimes/requests that are not urgent) within 90 minutes. • Priority 4 Calls (minor requests for police service) within 90 minutes.

PF-E.3 Buffer or incorporate design elements to minimize impacts from police stations to adjacent sensitive land uses, when feasible.

PF-E.4 Plan for new facilities, including new police substations and other support facilities that will adequately support additional sworn and civilian staff.

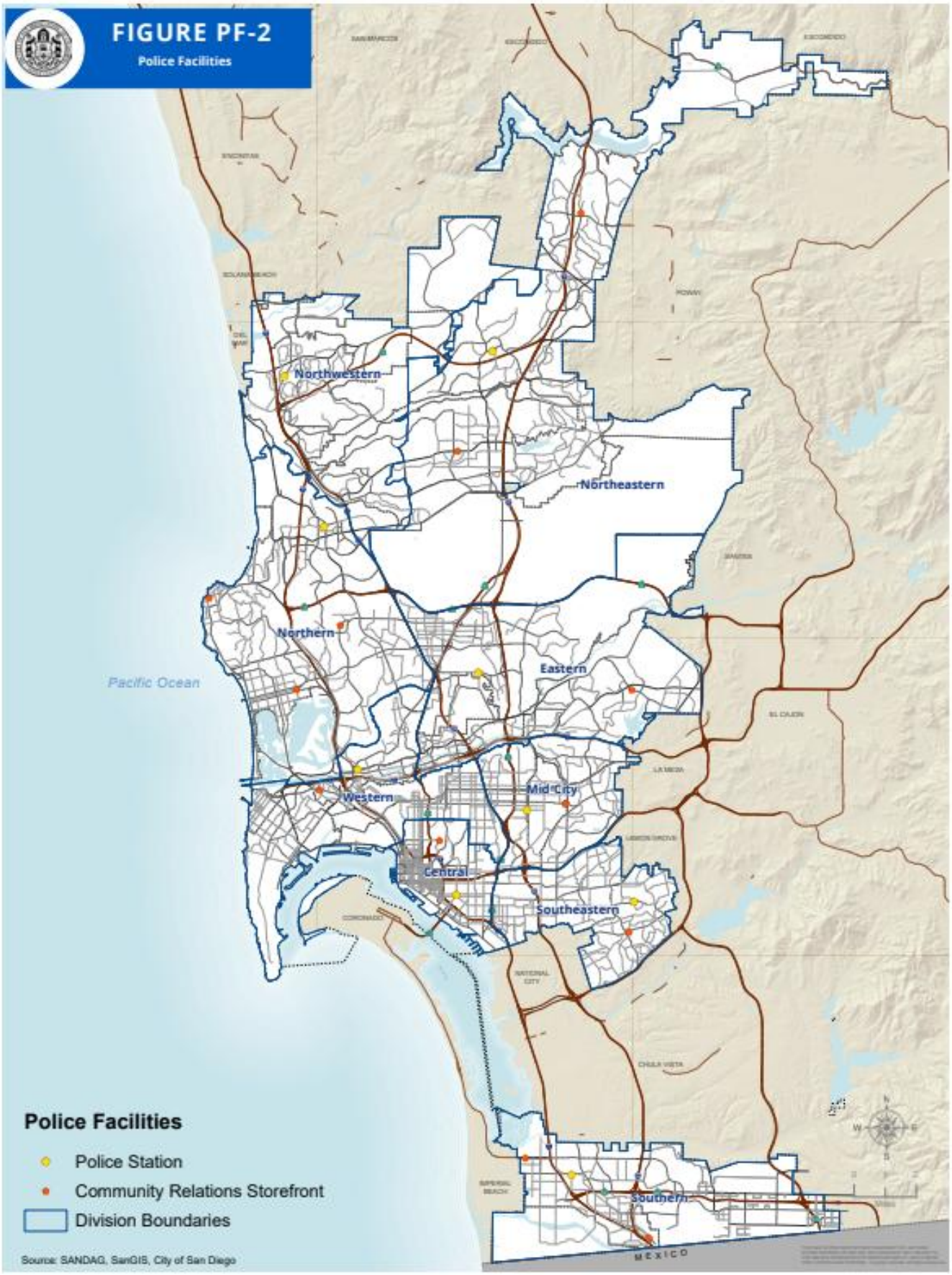
PF-E.5 Design and construct new police facilities consistent with sustainable development policies (see also Conservation Element, Section A).

PF-E.6 Monitor how development affects average police response time goals and facilities needs (see also PF-C.5).

PF-E.7 Maintain service levels to meet demands of continued growth and development, tourism, and other events requiring police services. a. Analyze the need for additional resources and related capital improvements when total annual police force out-of-service time incrementally increases by 125,000 hours over the baseline of 740,000 in a given year. Out-of- service time is defined as the time it takes a police unit to resolve a call for service after it has been dispatched to an officer.

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Figure PF-2 Police Facilities



F. Wastewater

Goals

- Environmentally sound collection, treatment, re-use, disposal, and monitoring of wastewater.
- Increased use of reclaimed water to supplement the region's limited water supply.

Discussion

The City's wastewater system provides regional wastewater treatment and disposal services for the City and 15 other cities and districts in a 450 square mile service area that stretches from Del Mar in the north, to Alpine and Lakeside in the east, and south to the Mexican border. The system serves a population of more than 2.4 million, and is designed to accommodate regional growth. The City also operates and maintains the 3,000-mile Municipal Sewerage Collection System in the City. The City's wastewater system protects ocean water quality and the environment, supplements a limited water supply, and meets all federal and state standards.

In the 1990s, the City constructed two water reclamation plants, a biosolids treatment facility, several pump stations and made major upgrades to the Point Loma Wastewater Treatment Plant. The treatment plant and two reclamation plants provide a functional treatment system capacity of 285 million gallons per day. The two water reclamation plants produce reclaimed water for appropriate uses (including plant operation and irrigation) and support the City's water service strategy of diversifying water supply sources to reduce future reliance on imported water. Reclaimed water is sold and distributed by the City. Figure PF-3, Wastewater Facilities, identifies the location of these facilities.

An aggressive Sewer Spill Reduction Program, started in 2001, is designed to minimize sewer spills, especially spills to public waters, and subsequent beach closures and postings. The entire 3,000-mile municipal sewer system is on a regular, tailored cleaning and maintenance schedule created to address specific needs and conditions. The oldest and most problematic lines are inspected by closed circuit televising (CCTV) equipment and assessed for rehabilitation or replacement to provide sustained system reliability on a cost-beneficial basis.

As part of its wastewater treatment operation, the City operates an ocean monitoring program. This program is designed to measure the effects of discharging treated wastewater from two ocean outfalls, as well as overall ocean water quality from Del Mar to below the Mexican border and from onshore to more than five miles out to sea. An industrial pretreatment program permits and inspects businesses throughout the City to ensure that any harmful toxins, chemicals or heavy metals are removed from the wastewater flow before entering the City's sewer system.

Meeting evolving regulatory pressures is a nationwide challenge for the wastewater treatment industry. The City maintains an active dialogue with state and federal regulators as well as other key stakeholders. These efforts are aimed at developing and implementing the solutions that best balance the needs of all concerned Unlike many cities in the eastern United States, San Diego's storm water infrastructure is not combined with the City's sewerage system. During rainfalls, storm runoff moves untreated from streets and hillsides to channels and pipes that empty into creeks, streams and rivers, eventually reaching the ocean. However, the City has installed a number of dry weather interceptors around Mission Bay and along the coast that catch dry weather runoff from watered lawns, outdoor washing, or construction sites and route it into the sewer system. This small amount of runoff can be handled safely by the sewage treatment system and its removal before reaching the Bay and ocean helps to keep San Diego's waters clean.

Policies

PF-F.1	Meet or exceed federal and state regulatory mandates cost effectively.
PF-F.2	Produce quality reclaimed water.
PF-F.3	Minimize sewer spills by best practice infrastructure asset management practices.
PF-F.4	Maintain conveyance and treatment capacity.
PF-F.5	Construct and maintain facilities to accommodate regional growth projections that are consistent with

sustainable development policies (see also Conservation Element, Section A).

PF-F.6 Coordinate land use planning and wastewater infrastructure planning to provide for future development and maintain adequate service levels.

PF-F.7 Ensure facilities meet business, safety, and life-cycle cost concerns.

PF-F.8 Manage infrastructure assets optimally through efficient repair and replacement.

PF-F.9 Support informed and timely resource allocation decisions.

PF-F.10 Develop and execute a financing plan to satisfy requirements validated through the public participation process.

PF-F.11 Explore entrepreneurial and environmental initiatives (such as the cogeneration of power) and pursue as appropriate.

PF-F.12 Maximize the beneficial use of sludge.

PF-F.13 Maintain a cost-effective system of meeting or, preferably, exceeding regulatory standards related to wastewater collection and treatment and storm water pollution prevention.

PF-F.14 Incorporate new technologies and scientific advancements in the optimal provision of wastewater services.

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Figure PF-3 Wastewater Facilities



G. Storm Water Infrastructure

Goals

- Protection of beneficial water resources through pollution prevention and interception efforts.
- A storm water conveyance system that effectively reduces pollutants in urban runoff and storm water to the maximum extent practicable.

Discussion

The City's storm water pollution prevention efforts and conveyance system strive to protect the quality of our recreational waters and potable water resources as mandated by the federal Clean Water Act of 1972 and the San Diego Regional Water Quality Control Board. The City also maintains compliance with the Water Quality Control Plan for the San Diego Region 9 also referred to as the Basin Plan, and with storm water permits.

These functions require a multifaceted approach that couples infrastructure improvements and maintenance, water quality monitoring, source identification of pollutants, land use planning policies and regulations, and pollution prevention activities such as education, code enforcement, outreach, public advocacy, and training. Additional discussion on Urban Runoff Management, Section E, is included in the Conservation Element.

The City has more than 39,000 storm drain structures and over 900 miles of storm drain pipes and channels serving approximately 237 square miles of urbanized development. Many storm water infrastructure projects do not have the opportunity to affect site design or implement other means to keep pollutants from entering storm drain flows. Therefore, prevention through education, outreach, code enforcement, and other efforts continues to be the most effective method of protecting water resources. Secondly, capital improvement investments in storm water structures (curbs, gutters, inlets, catch basins, pipes, and others) determined through Best Management Practices (BMP) are critical in order to reduce pollutant loading to acceptable levels. Public projects should be evaluated for their impact on the storm drain conveyance system and incorporate storm water quality and conveyance structures during the design process. Similarly, private development will mitigate the impacts of its development on the storm water conveyance system while overall system monitoring including the identification of needs is also performed by the City.

In addition to capital investments in storm water structures, operations and maintenance are equally critical to ensure governmental compliance and clean water resources. Furthermore, state regulations require that the City keep track of storm water structure locations and maintenance via inspections, and in some cases, collection and/or reporting of storm water quality monitoring data. The storm drain fee and other sources of funds are instrumental in ensuring compliance with legal mandates and maintaining storm water prevention and conveyance functions.

The Municipal Storm Sewer System Permit (MS4 Permit), issued by the San Diego Regional Water Quality Control Board (RWQCB), requires all development and redevelopment projects to implement storm water source control and site design practices to minimize the generation of pollutants. Additionally, the MS4 Permit requires new development and significant redevelopment projects that exceed certain size threshold to implement Structural Storm Water Best Management Practices (Structural BMPs) to reduce pollutant in storm water runoff and control runoff volume.

The MS4 Permit is re-issued every five years, typically imposing more stringent requirements on a wider range of development. These requirements are adopted in the City's Land development Manual; Storm Water Standards Manual and apply to both private development and public improvements. There is an increased reliance on Low Impact Development (LID) strategies to meet the MS4 Permit requirements and TMDL as well. Examples of LID techniques are bioretention cells, green roofs, porous pavement, infiltration basins and biofiltration planters.

Policies

PF-G.1 Ensure that all storm water conveyance systems, structures, and maintenance practices are consistent with the federal

Clean Water Act and California Regional Water Quality Control Board NPDES Permit standards.

PF-G.2 Install infrastructure that includes components to capture, minimize, and/or prevent pollutants in urban runoff from reaching receiving waters and potable water supplies.

PF-G.3 Meet and preferably exceed regulatory mandates to protect water quality in a cost-effective manner monitored through performance measures.

PF-G.4 Develop and employ a strategic plan for the City's watersheds to foster a comprehensive approach to storm water infrastructure improvements.

PF-G.5 Identify and implement BMPs for projects that repair, replace, extend or otherwise affect the storm water conveyance system. These projects should also include design considerations for maintenance, inspection, and, as applicable, water quality monitoring.

PF-G.6 Identify partnerships and collaborative efforts to sponsor and coordinate pollution prevention BMPs that benefit storm water infrastructure maintenance and improvements.

PF-G.7 Design and locate nature-based storm water facilities to allow safe, practical, and cost-effective long-term maintenance.

PF-G.8 Design and locate nature-based storm water facilities to maintain safe access for inspection, cleaning, and repair.

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H. Water Infrastructure

Goals

- A safe, reliable, and cost-effective water supply for San Diego.
- Water supply infrastructure that provides for the efficient and sustainable distribution of water.

Discussion

The City treats and delivers more than 200,000 AF (acre feet) per year of water to nearly 1.4 million people. Its service area is generally located within the south central portion of San Diego County and is approximately 330 square miles. The City's potable water system serves the City and certain surrounding areas, including both retail and wholesale customers. San Diego has a semi-arid coastal climate with coastal areas receiving an average of ten inches of rain annually. The City's historically reliable water supply is credited to its ability to import and store water supplies from the Colorado River and Northern California. The City has no direct control over the imported water supply, but is a member agency of the San Diego County Water Authority (SDCWA), which is responsible for securing the San Diego region's water supply from the Metropolitan Water District of Southern California (MWD).

In addition to delivering potable water, the City has a recycled water use program to optimize the use of local water supplies, lessen the reliance on imported water, and free up capacity in the potable system. Recycled water gives the City a dependable, year round, locally produced and controlled water resource. It also comprises the water supply imported from the Colorado River. Like most rivers that pass through or near major cities, the Colorado River receives treated municipal wastewater and industrial inflows from 360 upstream dischargers which blend with the river supply of downstream cities. Additional discussion on Water Resources Management, Section D is included in the Conservation Element.

The water system consists primarily of nine surface water reservoirs, three water treatment plants, and 32 treated water storage facilities and more than 3,460 miles of transmission and distribution lines.

The City maintains and operates three water treatment plants with a combined total rated capacity of 297 Million Gallons per Day (MGD).

The City also maintains and operates 32 treated water storage facilities, including steel tanks, standpipes, concrete tanks, and rectangular concrete reservoirs, with capacities varying from less than one million gallons to 35 million gallons. The water system consists of approximately 3,460 miles of pipelines, including transmission lines up to 84 inches in diameter and distribution lines as small as four inches in diameter.

In addition, the City maintains and operates over 50 water pump stations that deliver treated water from the water treatment plants to over 268,000 metered service connections in over 90 different pressure zones. The City also maintains several emergency connections to and from neighboring water agencies. The City built the North City Water Reclamation Plant (NCWRP) and the South Bay Water Reclamation Plant (SBWRP) to treat wastewater to a level that is approved for irrigation, manufacturing and other non-drinking, or non-potable purposes. The NCWRP has the capability to treat 30 MGD of sewage and the SBWRP can treat 15 MGD. The recycled water distribution system consists of 66 miles of recycled water pipeline, a nine MGD reservoir and two pump stations. The Conservation Element, Figure CE-4, San Diego County Watersheds, includes the locations of water reservoirs and water reclamation projects.

As imported water supplies become scarce because of population increases, economic growth, and competing regional demands, San Diego must develop additional water resources to ensure an adequate supply for present and future generations.

The Pure Water program is the City of San Diego's initiative to provide nearly half of San Diego's water supply locally by the end of 2035. This phased, multi-year program will use water purification technology to clean recycled water to produce safe, high-quality drinking water. Phase 1 will provide 30 MGD of drinking water to North City by 2025. Phase 2 will provide an additional 53 MGD to the City's Central Area.

Between 2025 and 2045, the City's water demands are projected to increase by approximately 25,000

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AFY. The rate of demand has slowed compared to previous estimations, attributable to a combination of factors including rainfall, continuing conservation efforts, a growing water use efficiency ethic, and consumer price response to the cost of water.

The Conservation Element, Section D, Water Resources Management addresses conservation and water resources planning. The City maintains an Urban Water Management Plan as required by the Urban Water Management Planning Act. The Urban Water Management Plan serves as the long-term planning document that will help to ensure a reliable water supply for the region. The Plan addresses water demand, water supply, resource management, water quality, improvements needed to accommodate a 25-year demand growth projection, scenario planning, and a water shortage contingency plan. The plan is updated every five years.

Policies

PF-H.1 Optimize the use of imported supplies and improve reliability by increasing alternative water sources to: provide adequate water supplies for present uses, accommodate future growth, attract and support commercial and industrial development, and supply local agriculture.

a. Prepare, implement, and maintain, long-term, comprehensive water supply plans and options in cooperation with the appropriate state and federal agencies, regional authorities, water utilities, and local governments.
b. Develop, coordinate, facilitate, and implement water conservation plans and projects that are sustainable in reducing water demands.
c. Develop potential groundwater resources and storage capacity, combined with management of surface water in groundwater basins to meet overall water supply and resource management objectives.
d. Participate in advanced water treatment processes and non-traditional water production techniques such as brackish groundwater and seawater desalination programs.
e. Continue to develop the recycled water customer base, and expand the distribution system to meet current and future demands.
f. Consider and evaluate water transfers.
g. Optimize storage, treatment and distribution capacity of potable water systems.

PF-H.2 Provide and maintain essential water storage, treatment, supply facilities and infrastructure to serve existing and future development.

PF-H.3 Coordinate land use planning and water infrastructure planning with local, state, and regional agencies to provide for future development, maintain adequate service levels, and develop water supply options during emergency situations.

a. Plan for a water supply and emergency reserves to meet peak load demand during a natural disaster such as a fire or earthquake.
b. Plan for water supply and emergency reserves recognizing anticipated climate change impacts.
c. Recognize the water/energy nexus. Plan and implement water projects after consideration of their energy demands in coordination with energy suppliers to minimize and optimize the energy impact of projects.

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Table PF-2 Water Storage and Capacity

Water Storage Facility	Total 2023 Capacity (in acre feet)[1]	Connection
Lower Otay Reservoir	47,067AF	Otay Water Treatment Plant
Barrett Reservoir	34,806 AF	Otay Water Treatment Plant
Morena Reservoir	50,694 AF	Otay Water Treatment Plant
El Capitan Reservoir	112,807 AF	Alvarado Water Treatment Plant
San Vicente Reservoir	249,358 AF	Alvarado Water Treatment Plant
Sutherland Reservoir	29,508 AF	Alvarado Water Treatment Plant
Lake Murray Reservoir	4,684 AF	Alvarado Water Treatment Plant
Miramar Reservoir	6,682 AF	Miramar Water Treatment Plant
Lake Hodges Reservoir	30,632 AF	Unconnected to City water treatment operations

Total potential capacity shown at dam spillway crest. El Capitan, Hodges, and Morena reservoirs operating with water level restrictions per Division of Safety of Dams.Source: City of San Diego – Public Utilities Department, Water Production Division (2022).

Table PF-3 Water Treatment and Capacity

Water Treatment Plant	Year Built	Rated 2023 Capacity (in million gallons per day)	Service Area
Miramar Water Treatment Plant	1962	143 MGD	North San Diego (north of San Diego River)
Alvarado Water Treatment Plant	1951	120 MGD	Central San Diego (National City to the San Diego River)
Otay Water Treatment Plant	1940	34 MGD	South San Diego (Border area)

I. Waste Management

Goals

- Efficient, economical, environmentally-sound waste collection, management, and disposal.
- Maximum diversion of materials from disposal through the reduction, reuse, and recycling of wastes to the highest and best use.

Discussion

Managing the refuse of society is an essential government function. Waste materials that are not effectively managed, collected, and disposed of, pose a health threat. Solid waste management requires an integrated approach focusing first on health and safety. The City is required to comply with California Public Resources Code requirements for integrated waste management practices. It is also necessary for the City to plan for the current and future disposal needs of San Diego's community members.

A primary component of any integrated solid waste management strategy is waste reduction. As emphasized in state, county, and City laws and planning documents, the less waste material that is produced in the first place, the better, both from an economic and an environmental perspective. Waste reduction is essential in all facets of society, including the home, government and private offices, farms, manufacturing facilities, and entertainment establishments. Wasted materials cause environmental impacts at each stage of their life cycle. There are impacts associated with the initial manufacture of the material, the transport of the material for sale, and the transport of the material for disposal or recycling. For waste materials that cannot be reduced at the source, local government must take steps to ensure efficient collection, maximum recycling/composting, and safe and environmentally sound disposal. If not recycled or composted, the material takes up space in a landfill.

Local government must continue to take an active role in educating the public about the economic and environmental benefits of waste reduction. For example, consumable items should be as durable as possible, with a long and efficient life that prevents wasting of resources. In addition, the City must also continue to provide litter prevention and abatement services.

Even with expanded waste processing requirements and opportunities, such as mixed construction and demolition debris recycling facilities, residual materials from these recycling operations will require safe disposal. The San Diego County Integrated Waste Management Plan, Countywide Siting Element shows that existing disposal facilities do not have the necessary permitted throughput rates (amount of and rate at which waste material can enter the disposal facility) to accommodate projected waste disposal needs in the region. The majority of waste (that is not diverted to beneficial use) is disposed of at the Miramar Landfill, which is expected to be in operation through 2030. The remaining San Diego waste goes to other landfills, including two privately-operated landfills: the Sycamore Landfill, and the Otay Landfill. Depending on how much waste is accepted, the Otay Landfill is projected to last through 2030, and the Sycamore Landfill through 2054.

Therefore, although waste diversion is the first priority, disposal must also be planned for. As the City's and the region's landfills near capacity, they must be evaluated for potential expansion, or new disposal sites must be identified to accept the residuals from collection programs and from current and expanded waste processing facilities. The Land Use Element, Figure LU-2, General Plan Land Use and Street System Map, displays the landfills. The City is currently evaluating methods to extend the life of its Miramar Landfill. The City is also reevaluating older facility siting studies and planning for long-term waste management needs, including increased diversion and processing facilities, and continued capacity for disposal of residual materials.

It is the City's responsibility to manage the collection, recycling/composting, and disposal of waste materials. Environmental, economic and regulatory principles should guide the provision of the waste management services necessary to protect public health and safety whether the City provides the service directly or manages it through franchises, land use controls, or other methods.

Policies

PF-I.1 Provide efficient and effective waste collection services.

a. Route City and private fleets to minimize truck trip distances and use fuel- efficient vehicles producing low emissions.
b. Design or retrofit City and private operation stations consistent with sustainable development policies (see also Conservation Element, Section A).
c. Encourage waste reduction and recycling with source-separated collection of materials.
d. Provide space for recycling containers and efficient collection.
e. Identify additional funding sources for all waste management services.

PF-I.2 Maximize waste reduction and diversion (see also Conservation Element, Policy CE.A.9).

a. Conveniently locate facilities and informational guidelines to encourage waste reduction, diversion, and recycling practices.
b. Operate public and private facilities that collect and transport waste and recyclable materials in accordance with the highest environmental standards.
c. Support resource recovery programs that produce soil additives, mulch, or compost from yard debris and organic waste.
d. Maximize the separation of recyclable and compostable materials
e. Collaborate with public and private entities to support the development of facilities that recycle materials into usable products or that compost organic materials.
f. Reduce and recycle Construction and Demolition debris.
g. Strive for recycling of 100 percent of inert Construction and Demolition materials and a minimum of 50 percent by weight of all other material
h. Use recycled, composted, and post-consumer materials in manufacturing, construction, public facilities and in other identified uses whenever appropriate.
i. Encourage advance disposal fees to prevent the disposal of materials that cause handling problems or hazards at landfills.
j. Provide sufficient information on the movement of waste and recyclable materials to meet regulatory requirements at public and private transfer stations and materials recovery facilities to allow adequate planning.
k. Reduce subsidies to disposal and encourage incentives for waste diversion.
l. Promote manufacturer and retailer responsibility to divert harmful, reusable, and recyclable products upon expiration from the waste stream.
m. Encourage the private sector to build a mixed construction and demolition waste materials recycling facility.
n. Expand and stabilize the economic base for recycling in the local and regional economy by encouraging and purchasing products made from recycled materials.
o. Continuously assess new technologies for recycling, composting, cogeneration, and disposal to maximize efficient use of City resources and environmental protection.
p. Activate programs requiring food businesses to minimize and prevent food waste, including donation and recycling plans.

PF-I.3 Provide environmentally sound waste disposal facilities and alternatives.

a. Design and operate disposal facilities located within the City, or that serve as a destination for City waste, to meet or exceed the highest applicable environmental standards.
b. Identify and investigate alternatives to standard disposal practices as fiscally- and environmentally-sound technologies become available.
c. Ensure efficient, environmentally-sound refuse and recyclable materials collection and handling through appropriate infrastructure, alternative fuel use, trip coordination, and other alternatives.

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d. Ensure environmentally and economically sound disposal options for materials that cannot be effectively reduced, reused, recycled, or composted.
e. Plan for disposal needs considering factors such as trip distance and environmentally sound disposal capacity.
f. Cooperate on a regional basis with local governments, state agencies, and private solid waste companies to find the best practicable, environmentally safe, and equitable solutions to solid and hazardous waste management.
g. Maximize environmental benefit in landfill-based waste diversion and effective load check programs by ensuring that recyclable or hazardous materials do not end up in the landfill.
h. Use closed and inactive landfill sites for public benefits, such as provision of energy from waste generated methane, creation of wildlife habitat upon proper remediation or other land uses such as parks determined to be appropriate.

PF-I.4 Promote litter prevention efforts and practices.

a. Provide conveniently located public litter containers on public streets and in large public venues and strategically located recyclable materials containers.
b. Encourage partnerships and collaborative efforts to sponsor and coordinate neighborhood pride/cleanup events.
c. Promote anti-litter education campaign and encourage point of purchase and other funding options to support education and cleanup efforts.

PF-I.5 Plan for sufficient waste handling and disposal capacity to meet existing and future needs. Evaluate existing waste disposal facilities for potential expansion of sites for new disposal facilities.

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J. Libraries

Goals

- A library system that contributes to the quality of life through quality library collections, technologically improved services, and welcoming environments.
- A library system that is responsive to the specialized needs and desires of individual communities.

Discussion

The library system is a primary steward of the diverse cultural heritage of the San Diego community and of the enduring elements of world civilization; it is a portal to the world around us. It is a vital learning presence in the community, providing information objectively and offering lifelong learning opportunities to every citizen through the system's Central Library and 35 branches (see also Figure PF-4, Library Facilities). The Central Library functions as the hub of the library system, and all branches are vitally linked to it for the delivery of their services. Not only does the Central Library serve as the headquarters for the system, but it also supplements the limited collections which branch libraries can offer. The staff, collections, services, physical facilities, and programs exist to provide the best library service possible to all San Diegans. Each library strives to be a welcoming place.

The library system conducts regular evaluations of services to adapt to service demands, take advantage of constantly evolving technology, and to provide for facility construction and maintenance costs. Such assessments contribute to the provision of adequate collections that are responsive to community needs. Technological advances will continue to redefine what and how information and materials are provided and other library services. Some of the City's strategic library goals entail enhancing the system's information infrastructure and customers' access to digital information and the internet. While available and applied technologies continue to influence the modern evolution of the library system, the need for physical library facilities will remain an integral aspect of the City's public services. For guidance on the design of libraries (see also Urban Design Element, Section E).

Policies

PF-J.1 Develop and maintain a Central Library to adequately support the branch libraries and serve as a major resource library for the region and beyond.

PF-J.2 Design all new libraries with a minimum of 25,000 square feet of dedicated library space, with adjustments for community-specific needs. Library design should incorporate public input to address the needs of the intended service area.

PF-J.3 Plan for larger library facilities that can serve multiple communities and accommodate sufficient space to serve the larger service area and maximize operational and capital efficiencies.

PF-J.4 Build new library facilities to meet energy efficiency and environmental requirements consistent with sustainable development policies (see also Conservation Element, Section A).

PF-J.5 Plan new library facilities to maximize accessibility to village centers, public transit, or schools.

PF-J.6 Design libraries to provide consistent and equitable services as communities grow in order to maintain service levels which consider operational costs and are based on established guidelines.

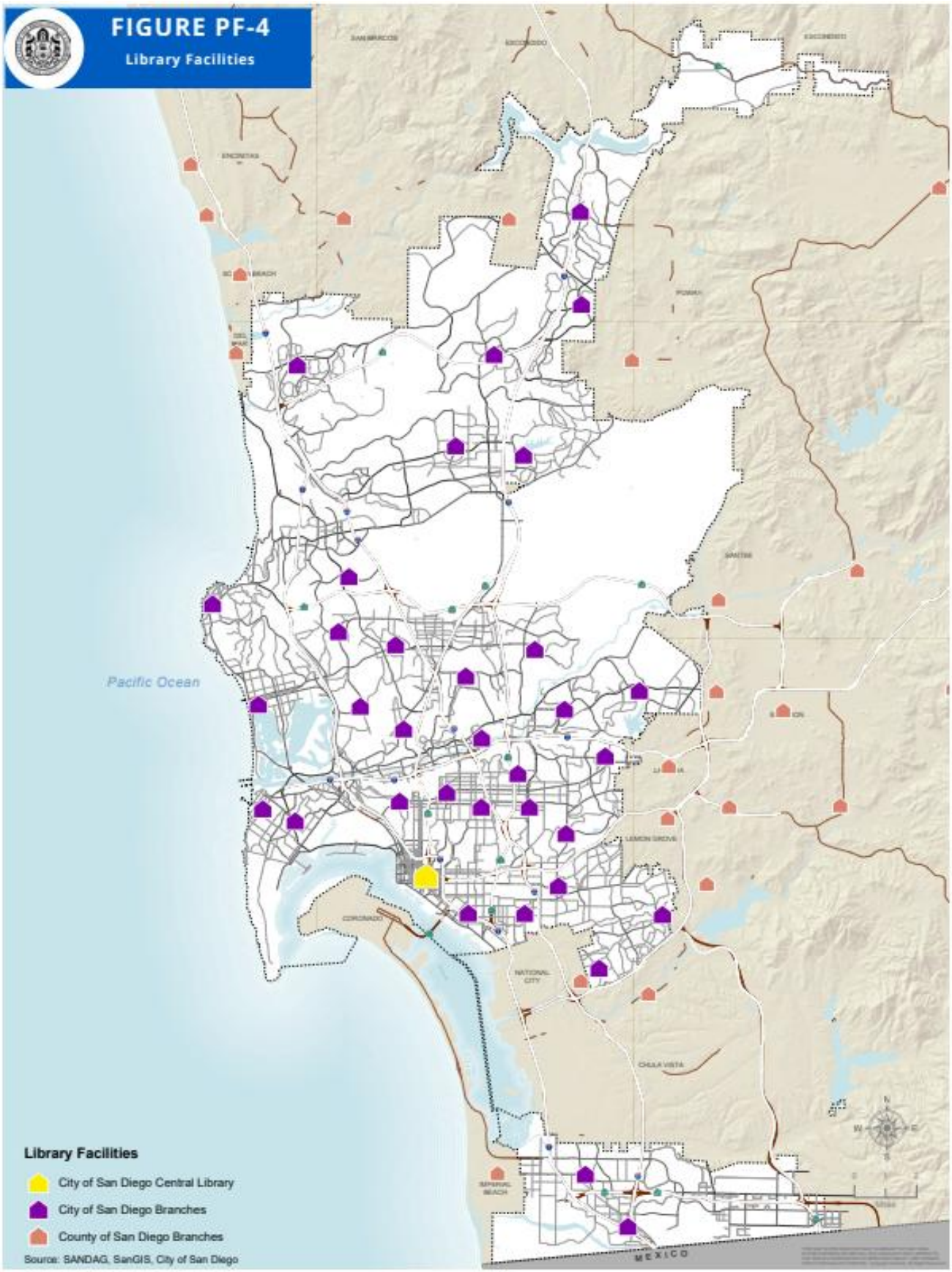
PF-J.7 Pursue joint use of libraries with other compatible community facilities and services including other City operations.

PF-J.8 Build and maintain a library system that adapts to technological changes, enhances library services, expands access to digital information and the internet, and meets community and library system needs.

PF-J.9 Adopt an equitable method for securing contributions from those agencies and organizations which benefit from the Central Library's services.

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Figure PF-4 Library Facilities



K. Schools

Goal

- A multi-level public and private school system that enables all students to realize their highest potential as individuals and as members of society.
- Educational facilities that are equitable, safe, healthy, technologically equipped, aesthetically pleasing, sustainable, and supportive of optimal teaching and learning for all students, and welcoming to parents and community members.
- A public school system that provides opportunities for students to attend schools within their residential neighborhoods as well as choices in educational settings outside their neighborhoods.

Discussion

One of the most important public services is the provision of schools and the offering of quality education to the community members of the City. San Diego has many levels of public and private educational institutions available: universities and colleges; adult education; numerous junior colleges; and the elementary and secondary school system. Figure PF-5 identifies many of these school facilities. This section addresses the K-12 educational level and presents policies calling for cooperation among the various independent educational authorities within the City.

School districts make construction and reconstruction investments in school facilities to accommodate the K-12 educational demand of existing and planned housing, as well as adjust school facilities with demographic shifts over time. Similarly, to meet the demands of a diverse and competitive economy, other educational institutions must invest in expanding opportunities to accommodate growth, demographic shifts, and increased competition (see also Economic Prosperity Element, Section D).The development of housing, and the expansion of existing schools or construction of new schools, both require land. Effective planning will balance these two necessary land uses in an urban area. It is possible that some land that may have been anticipated for new home development may instead be used for as school sites. Fewer homes may in turn alter the expected demand for school facilities in that particular location. Additionally, the type of housing is an important determinant of the expected demand for school facilities, such as single or multiple home development, and income - or age - restricted or market rate homes. School siting analysis considers these many factors, as well as others.

School siting and design can also help strengthen communities by providing a center for community activities that extend beyond the school day. Joint use of school facilities can result in a more efficient use of scarce public resources and provide neighborhood/ community amenities such as shared use of playing fields, auditoriums that double as community theaters, and libraries, health clinics and other community services incorporated into schools while also designed for greater community access. For additional guidelines on the planning and design of more neighborhood-centered schools, see also Mobility Element, Policy ME-A.2.

Policies

PF-K.1 Assist the school districts and other education authorities in resolving problems arising over the availability of schools and educational facilities in all areas of the City.

PF-K.2 Encourage the design of schools as community learning centers, recognize schools as an integral part of San Diego's neighborhoods, and encourage equitable access to quality schools and other educational institutions.

PF-K.3 Encourage school districts to explore the feasibility of school sites of various sizes and styles, such as multi-story buildings and smaller school sites.

PF-K.4 Collaborate with school districts and other education authorities in the siting of schools and educational facilities to avoid areas with: fault zones; high-voltage power lines; major underground fuel lines; landslides and flooding susceptibility; high-risk aircraft accident

susceptibility; excessive noise (see also Noise Element, Table NE-3, Noise Compatibility Guidelines); industrial uses; hazardous material sites, and significant motorized emissions.

PF-K.5 Work with school districts and other education authorities to better utilize land through development of multi-story school buildings and educational facilities.

PF-K.6 Expand and continue joint use of schools with adult education, civic, recreational (see also Recreation Element, Section E) and community programs, and also for public facility opportunities.

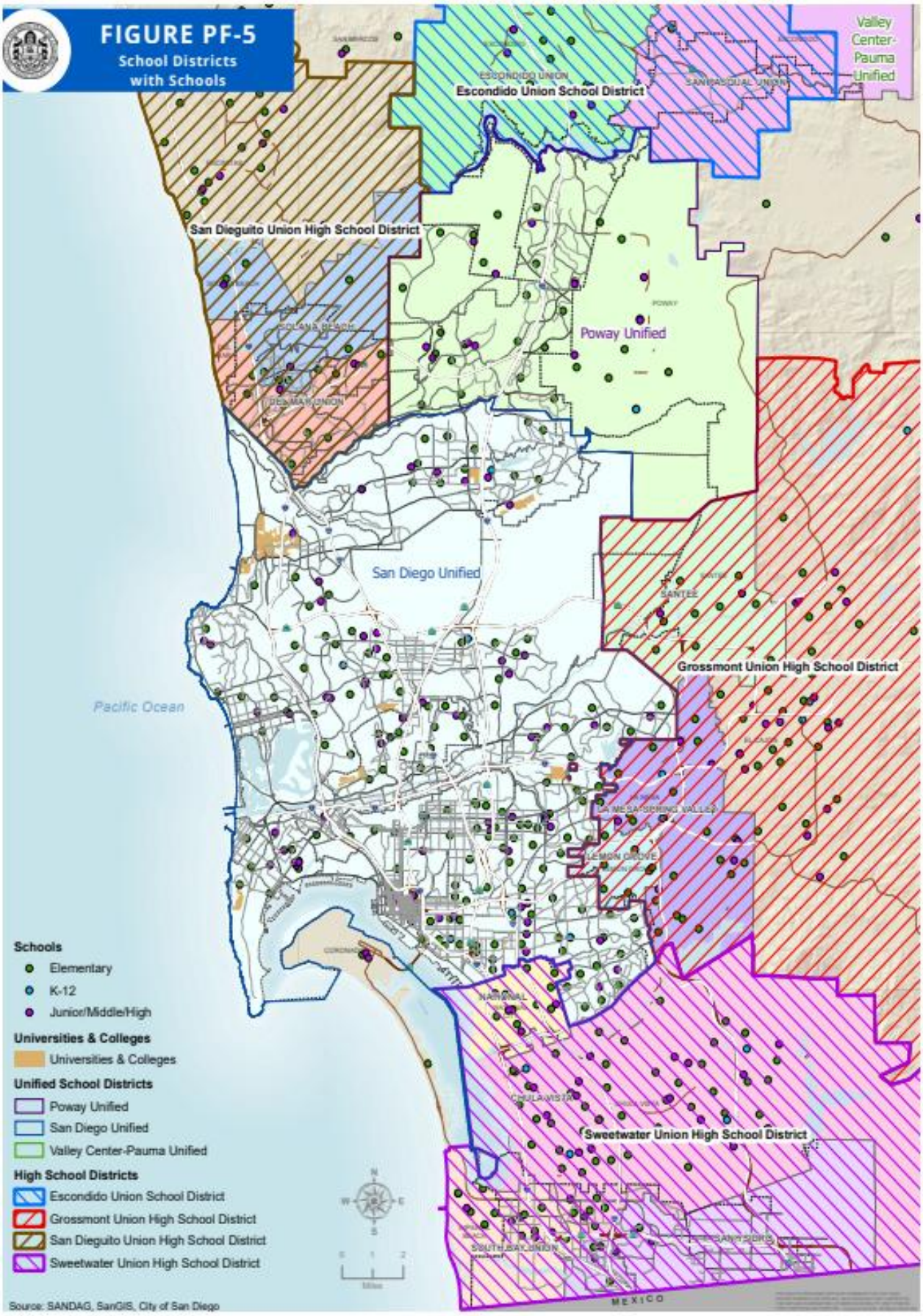
PF-K.7 Encourage the design and construction of school facilities that e; that are pedestrian and bike-friendly; and that are consistent with sustainable development policies.

PF-K.8 Work with school districts to avoid environmentally protected and sensitive lands in the siting of schools and educational facilities.

PF-K.9 Support school districts in their evaluations of school site utilization and potential opportunities for public acquisition, joint use, or other opportunities.

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Figure PF-5 School Districts with Schools



L. Information Infrastructure

Goals

- Increased opportunities for connectivity in the information infrastructure system.
- An information infrastructure system that meets existing and future communication, access, and technology needs.
- An integrated information infrastructure system that enhances economic viability, governmental efficiency, and equitable universal access.
- A city that regulates and coordinates telecommunications to ensure and safeguard the public interest.

Discussion

In January 2000, the City developed its first Information Technology Strategic Plan (ITSP). The ITSP is intended to define the City's vision of the future for information technology and key strategies for achieving this vision. The plan also serves to provide citywide guidance and direction for the management and development of information technology.

The City recognizes that information technology can enable it to achieve its business goals and meet its challenges, including development of more efficient and cost-effective City services. Additionally, the City recognizes the need to develop and maintain the necessary information infrastructure in order to achieve the desired levels of communication, service, business, and access, internally and externally, for all public and private entities.

In addition to internal strategies, the City will continue to pursue and encourage the proper planning and provision of information infrastructure. Unlike planning for traditional infrastructure such as water and sewer lines, planning for high-tech infrastructure has materialized in the new century in the wake of rapidly evolving technologies. The continuous evolution and coalescence of data, telephones, cellular telephones, televisions, video, satellites, personal digital assistants, internet, personal computers, and other technical devices has created a new era of unlimited interactive communications possibilities. Planning, providing, and supporting communication and information infrastructure will provide a vital framework for economic growth, educational opportunities, integrated development patterns, and quality of life issues in San Diego.

Policies

PF-L.1 Incorporate appropriate information infrastructure requirements into all relevant local policies, ordinances, and plans.

PF-L.2 Coordinate with all agencies and programmed project schedules to minimize disruptions to community members and public rights-of-way, and incorporate information infrastructure needs and opportunities.

PF-L.3 Provide infrastructure to ensure seamless communications and universally available access to data for all internal and external groups.

PF-L.4 Facilitate economic development citywide, with consideration of the City's status in the border region of Mexico, with adequate provision of an information infrastructure system.

PF-L.5 Work with private telecommunication service providers to develop and maintain an integrated information infrastructure system.

PF-L.6 Promote internally and externally cost-efficient delivery of services and exchange of information using telecommunication systems, including "hot zone" designations and other similar strategies.

PF-L.7 Encourage City departments and other employers to adopt telecommuting, wherever practical, to mitigate traffic congestion, air pollution, environmental concerns, and quality of life issues.

PF-L.8 Provide incentives for developers to pre-wire new and remodeled residential and non-residential structures to accommodate emerging technologies (fiber optic, wireless, Ethernet, digital subscriber line, voice over internet protocol, internet control panels, and

many others) to allow seamless communications citywide.

PF-L.9 Improve the City's existing emergency telecommunication system so that it can better respond to and mitigate the impacts of various emergency situations.

PF-L.10 Provide public access workstations in all communities within the City.

PF-L.11 Support efforts to provide those with disabilities access to the most current technologies.

PF-L.12 Monitor emerging technologies to develop and maintain an effective information infrastructure system and strategy citywide.

PF-L.13 Ensure proper reuse, recycling and waste diversion efforts of communications equipment and other technologies upon expiration of use.

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M. Public Utilities

Goals

- Public utility services provided in the most cost-effective and environmentally sensitive way.
- Public utilities that sufficiently meet existing and future demand with facilities and maintenance practices that are sensible, efficient, and well-integrated into the natural and urban landscape.

Discussion

The California Constitution vests in the California Public Utilities Commission (CPUC), the exclusive power and sole authority to regulate privately-owned or investor-owned public utilities such as San Diego Gas & Electric (SDG&E). This exclusive power extends to all aspects of the location, design, construction, maintenance, and operation of public utility facilities. Nevertheless, the CPUC has provisions for regulated utilities to work closely with local governments and give due consideration to their concerns. The state also regulates energy consumption under Title 24 of the California Code of Regulations. The Title 24 Building Energy Efficiency Standards apply to energy consumed for heating, cooling, ventilation, water heating, and lighting in new residential and non-residential structures.

The primary public utility in the region is SDG&E. This utility provides energy service to 3.3 million consumers through 1.3 million electric meters and more than 800,000 natural gas meters in San Diego and southern Orange counties. The utility's area spans 4,100 square miles. In addition to the major energy utility, there are other prominent utilities serving the City and region. AT&T is the nation's largest telecommunications company providing local community members with integrated communications and entertainment services including IP (Internet Protocol)-based network capabilities which integrate voice, data and video. The dominant providers of communications networks and cable television programs are Cox Communications and Time Warner Cable. In addition to providing high quality cable, high-speed internet, and digital telephone services, they offer the latest technologies to improve economic opportunities and quality of life.

The City also serves as a major public utility provider offering water, sewer, and solid waste management (collection, recycling, and disposal) services. Additional discussion and policies related to these services are provided in the respective sections of this element. The City Public Utilities Advisory Commission provides advice and recommendation to the City's elected officials and executive management on matters related to public utilities operations which impact ratepayers and community members of the City.

City Council Policy 600-08 addresses the undergrounding of overhead utility lines by utility companies to protect public health, safety, and general welfare. The Utilities Underground Program Master Plan is a comprehensive plan to underground all overhead utilities within the City. As of the end of Fiscal Year 2016, 406 miles of overhead utilities have been converted to underground, with approximately 1,000 miles of overhead utility lines remaining. The Utilities Underground Program has a target of undergrounding approximately 15 miles of overhead utility lines underground throughout the City each year.

Providing and planning for adequate public utilities and the means to transmit, convey, or provide the service is essential to ensuring that services and utilities keep pace with anticipated growth. The scarcity of suitable facility sites and the sensitivity of conserved resource areas, especially in urbanized areas where many facilities are located, make planning for sufficient public utilities challenging. Given the increasingly urban nature of southern California, and as the City becomes fully urbanized, it is essential to fully integrate the design and space requirements for public utilities into all planning efforts.

Policies

PF-M.1 Ensure that public utilities are provided, maintained, and operated in a cost-effective manner that protects community members and enhances the environment.

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PF-M.2 Coordinate with all public and private utilities to focus utility capital investments and design projects to help implement the City of Villages strategy.

PF-M.3 Integrate the design and siting of safe and efficient public utilities and associated facilities into the early stages of the long-range planning and development process, especially in redevelopment/urban areas where land constraints exist.

PF-M.4 Cooperatively plan for and design new or expanded public utilities and associated facilities (e.g., telecommunications infrastructure, planned energy generation facilities, gas compressor stations, gas transmission lines, electrical substations and other large-scale gas and electrical facilities) to maximize environmental and community benefits.

a. Use transmission corridors to enhance and complement wildlife movement areas and preserved open space habitat as identified in the City's Multiple Species Conservation Program (MSCP).
b. Provide adequate buffering and maintained landscaping between utility facilities and residential and non-residential uses, including the use of non-building areas and/or rear setbacks.
c. Maximize land use and community benefit by locating compatible/appropriate uses within utility easements/right-of-ways (e.g., passive parkland, natural open space, wildlife movement, urban gardens, plant nurseries, parking, access roads, and trails). Trails can be allowed in these easement/right-of-ways, provided proper indemnification, funding and maintenance is set forth in a written agreement between the public utility, the City, and project developer.
d. For projects, in particular large-scale developments (such as those requiring redevelopment plans, community plan updates, general plan amendments), consult and coordinate with all appropriate public utilities early on to determine the type, size, and location of facilities that are needed to accommodate the project's increased demand.
e. Incorporate public art with public utility facilities, especially in urban areas.
f. Ensure utility projects account for maintenance of community streetscape elements and street trees.
g. Coordinate projects in the public right-of-way with all utility providers.

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N. Regional Facilities

Goal

- Regional facilities that promote and support smart growth and improve quality of life.

Discussion

San Diego has a number of facilities serving regional needs which directly affect land use decisions and quality of life. Some of these facilities include: freeways, highways, transit systems, parks, open space, stadiums, convention centers, solid waste, water, sewer, damns, detention, airports, healthcare, port, energy, education, military, and international border facilities. The Mobility Element, Figure ME-4 Intermodal Freight Facilities, identifies several of the region's major facilities and infrastructure. The region also has an equal or greater number of agencies involved in the provision, regulation, and management of such facilities.

Planning, maintaining, expanding, or constructing new regional facilities requires great coordination and cooperation among participating agencies. The San Diego Association of Governments (SANDAG) is the chief agency responsible for regional planning and transportation issues. While other agencies may be responsible for a particular regional serving facility, SANDAG provides the forum for regional decision-making. SANDAG is accredited with building consensus, making strategic plans, obtaining and allocating resources, plans, engineers, and building public transportation, and providing information on a broad range of topics pertinent to the region's quality of life.

Expansion or construction of new regional facilities will have an impact on all City community members. The City must make efforts to align these capital investments so that they help to implement the City of Villages strategy.

Policies

PF-N.1 Assume an active leadership role in planning and implementing regional facility and infrastructure investments through collaborative efforts.

PF-N.2 Collaborate with public, private, and non-profit agencies to implement alternative investment policies and strategies that support growth in urban locations.

PF-N.3 Encourage infrastructure investments in regional capital facilities that provide a positive economic impact and leverage for competitive advantages.

PF-N.4 Coordinate the timing and development of new or expanded regional serving facilities to precede the development they will support.

PF-N.5 Adopt an equitable mechanism to secure fair-share contributions for both regional infrastructure and regional-serving public facilities within the City which benefit other agencies, organizations, and private parties in the region.

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O. Healthcare Services and Facilities

Goal

- Public and private healthcare services and facilities that are easily accessible and meet the needs of all community members.

Discussion

Healthcare services and facilities are essential to protect and improve health, safety, and quality of life for all community members. Numerous healthcare facilities such as hospitals, emergency centers, clinics, treatment centers, and other similar offices and facilities are located throughout the City and region. The county of San Diego provides a number of healthcare facilities and services for community members. Overall, public, private, and non-profit agencies, provide, a wide range of environmental, mental, physical, public health, and alcohol and drug abuse services.

The City should continue to coordinate with public, private, and non-profit healthcare facility and service providers to help ensure that healthcare services and facilities are available to community members and that siting decisions are integrated with the City's growth strategy. For example, equitably and carefully locating these facilities and services in communities with village characteristics can help meet the healthcare needs of a growing population in a manner that increases accessibility, reduces driving trips, and provides for educational, employment, and training opportunities. For additional guidance on the siting of healthcare facilities and services see also Land Use Element, Section I.

Policies

PF-O.1 Encourage the provision of diverse, adequate, and easily accessible healthcare facilities and services to meet the needs of all community members.

a. Strive to locate healthcare facilities and services near public transit.

PF-O.2 Coordinate with providers so that the expansion or construction of new healthcare facilities addresses General Plan and community plan goals.

PF-O.3 Encourage the collocation and joint use of healthcare facilities and services among providers, and as appropriate with any City services.

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P. Hazard Mitigation & Disaster Preparedness

Goals

- A city and region that, through diligent planning, organizing, and training is able to prevent, respond to, and recover from man-made and natural disasters.
- Reduced disruptions in the delivery of vital public and private services during and following a disaster.
- Prompt and efficient restoration of normal City functions and activities following a disaster.
- A resilient and sustainable community achieved through equity, environment, economy, and governance.

Discussion

Many natural and man-made events and processes carry the risk of hazard to life and property. Natural hazards arise from a community's many physical relationships to the natural environment. Hazard risk also results from human-caused intentional acts and disruption or failure of technology. A resilient community has the capacity to maintain critical functions during hazard events as well as adapt to and reduce future hazard risks.

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to life and property from hazard events. An effective response to natural and human-caused disasters requires planning, education, coordination and training by multiple government agencies and the public.

San Diego's location within a seismically active coastal region with a semi-arid climate creates potential sources of natural environmental hazards. Significant hazard risks occur due to earthquakes, landslides, wildland fires, and flooding. Climate variability, such as periodic droughts, extreme heat events, and high-volume rain events, increase hazard risks. The San Diego region, as like the state of California, relies on relatively vast infrastructure and higher technological inputs to sustain daily life and the region's economy. Failure of this infrastructure can therefore cause significant disruption and disconnection of necessary public and private services.

Climate Adaptation

The Climate Action Plan provides measures to reduce human-caused greenhouse gas emissions and enhance carbon storage, or sequestration, as a local response to mitigate global climate change and comply with state and federal legislation (also see the Conservation Element Discussion on Climate Change).

Some degree of climate change will occur regardless of the City's effort to reduce and mitigate greenhouse gas emissions. Extreme heat, extreme rainfall and drought, wildfires, and sea level rise are the four primary climate change related hazards that are projected to impact the City and intensify over time. Exposure to these hazards can potentially result in multiple negative effects on public health and safety, such as reduced air quality or flood risk. To address these climate change related hazards, the City has completed three vulnerability assessments: a State Lands Sea Level Rise Vulnerability Assessment, Sea Level Rise Vulnerability Assessment, and Citywide Climate Change Hazard Vulnerability Assessment. The City conducted these vulnerability assessments to guide responsible and safe development in the face of climate change. The vulnerability assessments reference hazard maps and take stock of climate-related threats. These vulnerability assessments identify the risks that the four primary climate change hazards pose to the City, including the geographic extent of the hazard, based on best available science. They identify at-risk locations, inventory assets and resources exposed to the climate change hazards and determine the ability of the asset or resource to withstand the impacts of the climate change hazard.

Based upon the findings of the vulnerability assessments, the City developed Climate Resilient SD, a comprehensive adaptation and resilience plan, which includes a set of adaptation and resilience goals, policies, and objectives to:

- Protect communities, especially those most vulnerable to climate change hazards,

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- Avoid or minimize the impacts of climate change hazards associated with new land uses,
- Locate, when feasible, new essential public facilities outside of at-risk areas,
- Designate adequate and feasible infrastructure located in at risk areas,
- Work cooperatively with relevant local, regional, state, and federal agencies, and
- Identify the use and prioritization of natural infrastructure for adaptation projects when feasible.

Climate Resilient SD includes a set of adaptation and resilience strategies to carry out and implement the above goals and polices. Climate Resilient SD sets out the associated adaptation strategies by creating policies and action items for current and future development in at-risk areas. The Municipal Code further outlines requirements for development, such as stipulations for development in flood hazard zones.

Climate Resilient SD is a plan not only to prepare for climate change but also to improve the lives of people that live in the City. To this end, the plan identifies core benefits, or additional benefits realized by strategy implementation beyond risk mitigation, such as water quality improvement, social equity, and natural resource protection.

Flood Mitigation

Flooding research completed by the U. S. Army Corps of Engineers (USACE) outlines historic flooding impacts in Southern California, including mudslides, coastal erosion, and property damage. The USACE built levees along the San Diego River and Tijuana River that were turned over to the City to monitor and maintain as the designated Local Sponsor. Levees provide a specific level of protection against flooding in some special flood hazard areas.

In addition, development in Special Flood Hazard Areas (SFHAs) is held to high standards to help protect communities vulnerable to flooding. The City ensures projects within or fringing on a floodway or floodplain comply with FEMA regulations and requirements. Floodplain and levee maps are available through the San Diego Geographic Information Source (SanGIS).

Hazard Mitigation Planning

The City participates in the San Diego County's Multi-Jurisdictional Hazard Mitigation Plan. The countywide plan identifies risks posed by natural and manmade disasters including fires, earthquakes, landslides, and floods and ways to minimize damage from those disasters. The plan serves many purposes, including enhancing public awareness and understanding, creating a decision tool for management, promoting compliance with state and federal program requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination. The federal government requires all local governments to create such a disaster plan in order to qualify for disaster relief funding.

The State requires local jurisdictions to integrate climate adaptation into the general plan to support the State's overall climate adaptation strategy. The City has developed the Climate Resilient SD plan to meet State requirements and to provide a comprehensive framework for climate adaptation and resilience action. The City will continue to work with stakeholders on amendments to San Diego County's Multi- Jurisdictional Hazard Mitigation Plan to address this issue.

Land use planning, implemented through the City's Municipal Code, is an important component of hazard mitigation. Site selection that avoids proximity to natural hazards or hazardous facilities, and building construction techniques designed for fire protection, life safety and temporary systems failure, can reduce hazard risks within buildings.

Disaster Preparedness

The City's disaster preparedness program emphasizes the prevention of, response to, and recovery from natural, technological, and man-made disasters including acts of terrorism. The program is designed to improve the City's ability to protect employees, the community, and the environment; and to enhance its ability to recover from financial losses, regulatory fines, damages to facilities or equipment, and other impacts on service delivery or business continuity.

Prevention of disasters addresses prevention, mitigation, and educational activities which reduce

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or eliminate a threat, or reduce its impact on life, health, and property. The response efforts incorporate the functions of planning, training, exercising, and execution and are conducted in accordance with U.S. Department of Homeland Security Office of Domestic Preparedness requirements. In the event of a disaster, recovery efforts, including Local Assistance Center (LAC) operations, are generally oriented toward activities that focus on returning to normalcy after an event. Key to recovery is the process of identifying critical services and their dependencies on infrastructures such as buildings, power, communications, and data systems.

The City's disaster preparedness efforts also include oversight of the City's Emergency Operations Center (EOC). The effort is responsible for maintaining the EOC in a continued state of readiness, training City staff and outside agency representatives in their roles and responsibilities, and coordinating EOC operations when activated in response to an emergency or major event/incident. Additionally, the City is responsible for the development and maintenance of emergency operational documents and guides for City facilities, Petco Park, and potential major events or incidents.

National and international events continue to focus attention on homeland security and public safety issues. The City is coordinating efforts to improve staff's ability to manage vital information and limited resources during a major emergency such as an earthquake, chemical spill, or act of terrorism, through the use of technology. The City is also responsible for securing and managing homeland security and other grant funds to enhance its, and the region's, security and overall preparedness to prevent, respond to, and recover from any hazard whether natural or man-made.

Policies

PF-P.1 Ensure operational readiness of the City's Emergency Operations Center (EOC).

PF-P.2 Establish communications with all City elected officials and managers regarding Office of Emergency Services issues.

PF-P.3 Develop and maintain current, integrated, and comprehensive Emergency Operations and Disaster Plans on an annual basis (see also PF-H.3)

~~a. Prepare and maintain a comprehensive multi-modal evacuation plan.~~

PF-P.4 Coordinate the development and implementation of a City business continuity plan to ensure the continuity of operations and government in the event of a major disaster or emergency.

PF-P.5 Ensure that citywide guidelines for Operational Conditions (OPCON) are aligned with the U.S. Department of Homeland Security and integrated into each City department's procedures and Emergency Operations Plans.

PF-P.6 Coordinate citywide emergency management and disaster planning and response through the integration of key City departments into the preparedness and decision-making process.

PF-P.7 Develop a comprehensive exercise program consistent with the U.S. Department of Homeland Security Office of Domestic Preparedness requirements.

PF-P.8 Coordinate with other urban area jurisdictions to execute a variety of exercises to test operational and emergency plans.

PF-P.9 Collaborate with other local, regional, state, and/or federal jurisdictions, local tribal nations and intertribal organizations, and private entities to plan and promote the integration and improvement of regional response capabilities.

PF-P.10 Facilitate the execution of the City's Community Emergency Response Team (CERT) program to meet the requirements set forth by the Emergency Preparedness and Response directorate of the U.S. Department of Homeland Security and the San Diego Citizen's Corps Council.

PF-P.11 Ensure that disaster recovery efforts involving the disposal of materials adhere to the policies in Section I of this element.

PF-P.12 Develop, implement, and sustain a robust disaster preparedness community outreach and education program.

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PF-P.13 As part of the community plan update process, update plans and zoning to limit future development in hazard areas.

PF-P.14 Continue to participate in and implement the San Diego County Multi- Jurisdictional Hazard Mitigation Plan to further coordinate hazard mitigation planning on a regional level.

PF-P.15 Collaborate with local, regional, state and/or federal jurisdictions and agencies, local tribal nations and/or intertribal organizations on climate resilience and adaptation policies and programs.

PF-P.16 Continue to address the effects of climate change and implement the strategies within Climate Resilient SD, a comprehensive climate adaptation and resilience plan that integrates and builds upon the applicable strategies identified in the General Plan and Climate Action Plan.

PF-P.17 Monitor climate change-related impacts with local, regional, state, federal, and/or local tribal partners to provide information about the effectiveness of existing infrastructure and programs.

PF-P.18 Prepare and maintain an extreme heat action plan to evaluate heat risk and identify cooling strategies to build public health, safety, infrastructure and community resilience to extreme heat.

PF-P.19 Coordinate with the County of San Diego Office of Emergency Services to integrate multi-modal evacuation strategies as a part of hazard mitigation planning.

a. Consider all modes of transportation
b. Encourage collaboration with public agencies, transit operators, and other partners to provide a multi-modal evacuation response.
c. Consider the transportation needs of individuals with disabilities and others with access and functional needs.
d. Consider the transportation needs of transit-dependent populations and households without vehicles.
e. Consider the transportation needs of service animals, household pets, and large animal rescue.

PF-P.20 Implement evacuation preparedness measures during red flag warnings, high fire danger conditions, or other hazardous conditions in all hazard areas.

PF-P.21 Evaluate emergency vehicle access and evacuation needs as a part of the project review process

PF-P.22 Discourage new development that increases residential density in areas that are limited to one point of access within hazard areas, unless secondary access is also provided or shown not to be necessary for emergency evacuation (refer to Appendix D Figures PF-3 to PF-7).

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Q. Seismic Safety

Goals

- Protection of public health and safety through abated structural hazards and mitigated risks posed by seismic conditions.
- Development that avoids inappropriate land uses in identified seismic risk areas.

Discussion

The fundamental objective of the seismic safety policies is to reduce the risk of hazard resulting from future seismic and related events. The seriousness of seismic risk to public safety is a function not only of local seismic conditions, but also a public awareness of the seismic hazards present, and the effectiveness of mitigation policies and practices utilized to reduce the risk resulting from the hazards. This section identifies existing and potential land use planning efforts which are instrumental in planning for seismic safety.

Southern California is considered one of the most seismically active regions in the United States, with numerous active faults and a history of destructive earthquakes. San Diego is located approximately 100 miles west of the San Andreas Fault, the predominate earthquake hazard in the state, and is close to several large active faults capable of producing intense ground shaking. Faults influencing local seismicity include the Elsinore, San Jacinto, Coronado Bank, San Diego Trough, San Clemente, and La Nación. In addition, the downtown area of the City is underlain by the active Rose Canyon Fault. Local geologic maps show that most neighborhoods in San Diego are underlain by numerous smaller faults (see also Figure PF-6 Geo-Technical Relative Risk Areas).

Situated in such proximity to large faults creates a significant seismic risk to the City. Damage to structures and improvements caused by a major earthquake will depend on the distance to the epicenter, the magnitude of the event, the underlying soil, and the quality of construction. The severity of an earthquake can be expressed in terms of both intensity and magnitude. The magnitude of an earthquake is measured by the amount of energy released at the source of the quake. The Richter scale, developed in the 1930s for Southern California, is used to rapidly define earthquake size and estimate damage.

The City uses the San Diego Seismic Safety Study, a set of geologic hazard maps and associated tables, as a guideline to correlate acceptable risk of various land uses with seismic (and geologic) conditions identified for the site. Large and complex structures, and places attracting large numbers of people, are most restricted as to geographic location based on site conditions. These facilities include dams, bridges, emergency facilities, hospitals, schools, churches, and multi- story, high-density residential structures. Low and medium residential development is considered land use of a lesser sensitivity and is therefore “suitable” or “provisionally suitable” (requiring mitigation) under most geologic conditions. Uses with only minor or accessory structures can be located on sites with relatively greater risk due to lower user-intensity associated with activities such as parks and open space, agriculture, and most industrial land uses. Geotechnical investigations are required to be performed prior to site development. The scope of investigations can range from feasibility surveys to extensive field exploration and engineering/ geologic/seismic analyses depending upon the complexity of site conditions and the intensity of the proposed land use.

San Diego has been required to enforce the State Earthquake Protection Law (Riley Act of 1933) since its enactment in 1933. However, the seismic resistance requirements of the law were minimal for many years and San Diego did not embrace more restrictive seismic design standards until the adoption of the 1952 Uniform Building Code. Other applicable state regulations include the Alquist-Priolo Earthquake Fault Zoning Act, the Seismic Hazards Mapping Act, and the Unreinforced Masonry Law. The California Earthquake Loss Reduction Plan was developed by the California Seismic Safety Commission in fulfillment of a mandate enacted by the Legislature in the California Earthquake Hazards Reduction Act of 1986. The plan is a comprehensive strategic document that sets forth the vision for a safer California and provides guiding policies. Incorporating lessons learned from all previous earthquakes, the plan is periodically updated for

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approximately five-year timeframes to continue to support new and ongoing efforts to protect California community members and buildings. Such efforts are effective in reducing damage and injury from succeeding earthquakes. The City's development guidelines are consistent with state regulations and requirements.

Policies

PF-Q.1 Protect public health and safety through the application of effective seismic, geologic and structural considerations.

a. Ensure that current and future community planning and other specific land use planning studies continue to include consideration of seismic and other geologic hazards. This information should be disclosed, when applicable, in the California Environmental Quality Act (CEQA) document accompanying a discretionary action.
b. Maintain updated citywide maps showing faults, geologic hazards, and land use capabilities, and related studies used to determine suitable land uses.
c. Require the submission of geologic and seismic reports, as well as soils engineering reports, in relation to applications for land development permits whenever seismic or geologic problems are suspected.
d. Utilize the findings of a beach and bluff erosion survey to determine the appropriate rate and amount of coastline modification permissible in the City.
e. Coordinate with other jurisdictions to establish and maintain a geologic "data bank" for the San Diego area.
f. Regularly review local lifeline utility systems to ascertain their vulnerability to disruption caused by seismic or geologic hazards and implement measures to reduce any vulnerability.
g. Adhere to state laws pertaining to seismic and geologic hazards.

PF-Q.2 Maintain or improve integrity of structures to protect community members and preserve communities.

a. Abate structures that present seismic or structural hazards with consideration of the desirability of preserving historical and unique structures and their architectural appendages, special geologic and soils hazards, and the socio-economic consequences of the attendant relocation and housing programs.
b. Continue to consult with qualified geologists and seismologists to review geologic and seismic studies submitted to the City as project requirements.
c. Support legislation that would empower local governing bodies to require structural inspections for all existing pre-Riley Act (1933) buildings, and any necessary remedial work to be completed within a reasonable time.

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Figure PF-6 Geo-Technical Relative Risk Areas

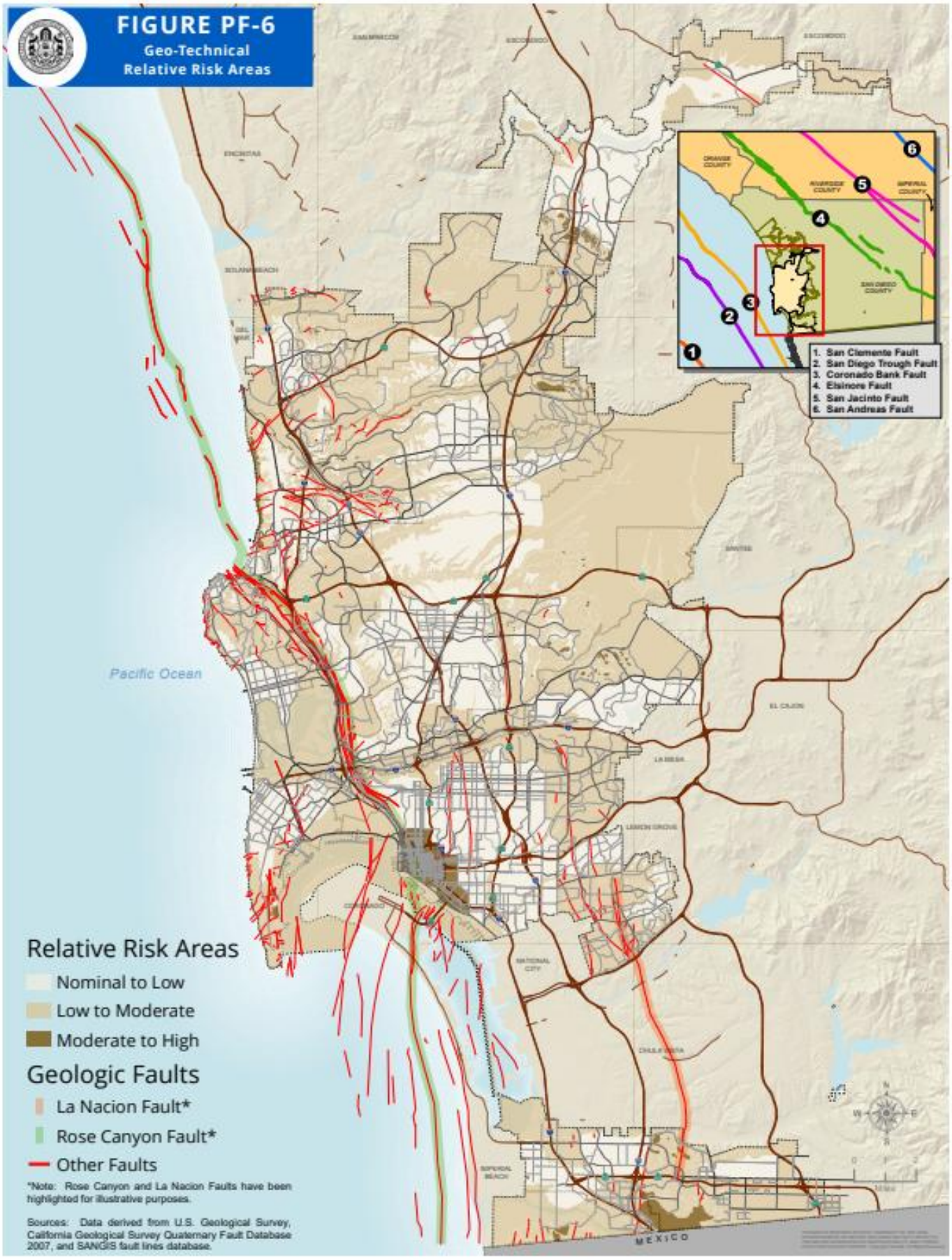


Table PF-4 Seismic, Geologic, and Structural Hazards

Table PF-3 identifies those seismic, geologic, and structural hazards which the City must consider in all planning and development efforts.

Table PF-3 Seismic, Geologic, and Structural Hazards

Seismic Hazards	
Ground Shaking	When a break or rapid relative displacement occurs along the two sides of a fault, the tearing and snapping of the earth's crust creates seismic waves which are felt as a shaking motion at the ground surfaces. The most useful measure of severity of ground shaking for planning purposes is the Modified Mercalli Intensity scale. This scale, ranging from Intensities I to XII, judges shaking severity by the amount of damage it produces. Intensity VII marks the point at which damage becomes significant. Intensity VIII and above correspond to severe damage and problems that are of great community concern. For comparison, the Rose Canyon Fault, capable of producing a 6.9 magnitude earthquake, would have an intensity of VII-IX. Intensity IX earthquakes are characterized by great damage to structures including collapse.
Ground Displacement	Ground displacement is characterized by slippage along the fault, or by surface soil rupture resulting from displacement in the underlying bedrock. Such displacement may be in any direction and can range from a fraction of an inch to tens of feet. In San Diego, exposures are generally poor, and most faults are either potentially active or inactive. However, if ground displacement were to occur locally, it would most likely be on an existing fault. Failure of the ground beneath structures during an earthquake is a major contributor to damage and loss of life. Many structures would experience severe damage from foundation failures resulting from the loss of supporting soils during the earthquake.
Seismically Induced Settlement / Subsidence	Settlement of the ground may come from fault movement, slope instability, and liquefaction and compaction of the soil at the site. Settlement is not necessarily destructive. It is usually differential settlement that damages structures. Differential or uneven settlement occurs when the subsoil at a site is of non-uniform depth, density, or character, and when the severity of shaking varies from one place to another.
Liquefaction	Liquefaction is a process by which water-saturated granular soils transform from a solid to a liquid state during strong ground shaking.
Soil Lurching	Soil lurching is the movement of land at right angles to a cliff, stream bank, or embankment due to the rolling motion produced by the passage of surface waves. It can cause severe damage to buildings because of the formation of cracks in the ground surface. The effects of lurching are likely to be most significant near the edge of alluvial valleys or shores where the thickness of soft sediments varies appreciably under a structure.

Tsunamis and Seiches	A tsunami is a sea wave generated by a submarine earthquake, landslide, or volcanic action. A major tsunami from either of the latter two events is considered to be remote for the San Diego area. However, submarine earthquakes are common along the edge of the Pacific Ocean, and all of the Pacific coastal areas are therefore exposed to the potential hazard of tsunamis to a greater or lesser degree. A seiche is an earthquake-induced wave in a confined body of water, such as a lake, reservoir, or bay.)
Geologic Hazards	
Landslide and Slope Stability	Old landslides and landslide-prone formations are the principal non-seismic geologic hazards with the City. Conditions which should be considered in regard to slope instability include inclination, characteristics of the soil and rock orientation of the bedding, and the presence of groundwater. The causes of classic landslides start with the preexisting condition inherent within the rock body itself that can lead to failure. The actuators of landslides can be both natural events such as earthquakes, rainfall and erosion and human activities such as grading and filling. Some of the areas where landslides have occurred are: Otay Mesa; the east side of Point Loma; the vicinities of Mount Soledad, Rose Canyon, Sorrento Valley, and Torrey Pines; portions of Rancho Bernardo and Los Peñasquitos; and along Mission Gorge in the vicinity of the second San Diego Aqueduct.
Coastal Bluffs	Coastal bluffs are land features that have resulted from the actions of sea wave forces on geologic formations and soil deposits. Geologic factors that affect the stability of bluffs include rock type, jointing and fracturing, faulting and shear zones, and base erosion. Where bluffs are eroding quickly, measures to reduce bluff degradation may be necessary in order to preserve the bluff line. In the Torrey Pines area, the coastal bluffs have experienced sizeable landslides where oversteepening of the sea cliff has resulted in unstable conditions. In addition, rock falls have occurred in the Sunset Cliffs area due to undermining of the sandstone.
Debris Flows or Mudslides	A debris flow or mudslide is a form of shallow landslide involving soils, rock, plants, and water forming a slurry that flows downhill. This type of earth movement can be very destructive to property and cause significant loss during periods of heavy rainfall. The City is susceptible to mudslides due to abundant natural, hilly terrain and steep manufactured slopes. Steeply graded slopes tend to be difficult to landscape and are often planted with shallow-rooted plants on a thin veneer of topsoil. When saturated, these loose soils behave like a liquid and fail.

Buildings	It is roughly estimated that about 800 (mainly nonresidential) masonry buildings within the City may constitute structural hazards. The majority of these are located in the downtown area; however, appreciable numbers are also found in the older sections of the Hillcrest, North Park, and La Jolla business districts, among others. Policies regulating the rehabilitation of such structures, and construction of new structures, are addressed in the City's Land Development Code.
Utility Systems	Utility systems are peculiarly subject to failure in earthquakes because of their largely underground location, and the inevitability that some lines will cross faults. Major transmission lines crossing fault zones should be carefully designed and constructed so that ground movement can be accommodated. In general, this suggests the use of flexible pipe and rubber ring joints rather than rigid lengths of pipe that are welded or glued. Frequent valving to permit the isolation of broken mains is also indicated, along with provision for utilizing redundant routes or systems.

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