

Table of Contents

1.	OPEN SPACE.....	2
	CONNECTIVITY AND ECOLOGY	2
	ACCESS AND RECREATION	3
	NATURAL CHARACTER OF FOOTHILLS	4
	EXPANSION OF PARKS AND OPEN SPACE	5
2.	URBAN FOREST AND UNDERSTORY.....	6
	ROLE OF THE URBAN FOREST.....	6
	PROTECTION AND EXPANSION.....	7
	PARTNERSHIPS FOR THE URBAN FOREST	8
3.	CREEKS AND RIPARIAN AREAS.....	9
	CREEK SETBACKS	10
	MANAGEMENT AND ENHANCEMENT.....	11
4.	WATER RESOURCES.....	13
	WATER SUPPLY AND SAFETY	13
	DROUGHT	13
	GROUNDWATER.....	14
	WATER QUALITY AND STORMWATER MANAGEMENT	15
	WASTEWATER TREATMENT	17
	RECYCLED WATER	18
5.	AIR QUALITY.....	19
6.	NOISE.....	21
	AMBIENT NOISE AND PROJECT DESIGN	21
	NEW PERMANENT NOISE SOURCES	22
	CONSTRUCTION NOISE.....	23
	AIRPORTS AND AIRCRAFT	24
	RAIL	24
7.	ENERGY.....	25
8.	CLIMATE CHANGE AND CLIMATE ADAPTATION.....	28

Vision

Palo Alto will meet today's needs without compromising the needs of future generations. Palo Alto will respect and manage natural resources in a way that sustains the natural environment and protects our foothills, baylands, creeks, parks, wildlife and open space legacy. A substantial portion of the City will remain as open space. Even in built-up areas, the network of parks will provide access to nature and an urban forest will provide ecological benefits and a source of beauty for residents. Palo Alto will strive for clean air and clean water. Policies and programs will foster energy and water conservation. Finally, the City will maintain a sustainable water supply for the future, and facilitate the implementation of climate change adaptation strategies.

Introduction

The Natural Environment Element addresses the management of open land and natural resources in Palo Alto, as well as responding to environmental risks such as air pollution and climate change. . It is one of the broadest elements of the Comprehensive Plan, encompassing three of the seven elements mandated by the State: Open Space, Conservation, and Noise.

The text is organized into eight topics, each with a corresponding goal, policies, and programs:

- Open Space
- Urban Forest and Understory
- Creeks and Riparian Areas
- Water Resources
- Air Quality
- Noise
- Energy
- Climate Change

The Natural Environment Element does not include policies relating to mineral resources because Palo Alto does not contain any mineral deposits of regional significance.

1. OPEN SPACE

GOAL N-1. Protect, Conserve and Enhance Palo Alto's Citywide System of Open Spaces, Including Connected and Accessible Natural and Urban Habitats, Ecosystems, and Natural Resources, Providing a Source of Beauty and Enjoyment for Palo Alto Residents.

CONNECTIVITY AND ECOLOGY

POLICY N1.1 Preserve, protect and enhance public and private open space and ecosystems of Palo Alto from the foothills to the baylands, respecting the role that natural and landscaped areas within the urbanized part of the City play in a resilient, interconnected ecological continuum. [Previous Policy N-4] [N1]

Program N1.1.1 Develop Comprehensive Resource Conservation Plans for the Baylands, Pearson Arastradero Preserve, Esther Clark Preserve, and Foothills Park to steward the protection of local ecosystems. [PTC] [NEW PROGRAM] [N2]

Program N1.1.2 Promote and support ecosystem protection and environmental education programs in Palo Alto. [PTC] [NEW PROGRAM] [N4]

POLICY N1.2 Maintain a network of parks and urban forest from the urban center to the foothills that provides ecological benefits and access to nature for all residents. [NEW POLICY] [N5]

POLICY N1.3 Encourage the management of private open space areas, including agricultural land, golf courses, private residential yards, and other land that provides habitat for wildlife in a manner that protects and enhances habitat and wildlife and reinforces natural corridors, consistent with the Parks, Trails, Open Space and Recreation Master Plan, as periodically amended. [Previous Policy N-1, per PTC] [N10]

Program N1.3.1 Work to maintain Williamson Act agricultural preserve contracts within the City. [Previously Program N-5] [N11]

Program N1.3.2 Support programs that encourage residents to enhance their private yards with native plant species and low impact landscaping. [NEW PROGRAM] [N9]

- POLICY N1.4 Protect special-status species and plant communities, including those listed by State and federal agencies and recognized organizations from the impacts of development and incompatible activities. [Previous Policy N-3] [N12]
- Program N1.4.1 Maintain a list of special status species in Palo Alto based on the California Natural Diversity Database and updated in accordance with federally- and State-recognized organizations, including the United States Fish and Wildlife Service, California Department of Fish and Wildlife, the California Native Plant Society and Audubon California. [NEW PROGRAM][N13]*
- Program N1.4.2 Explore the feasibility of expanding the use of the Site and Design (D) Review Combining District or similar development review and restriction tools to protect special-status species and their habitats from development. [NEW PROGRAM][N14]*
- Program N1.4.3 Assess opportunities to expand habitats of special –status species within publicly-owned open spaces.*

- POLICY N1.5 Preserve and protect the Bay, marshlands, salt ponds, sloughs, creeks, and other natural water or wetland areas as open space, functioning habitats, and elements of a larger, interconnected wildlife corridor, consistent with the Baylands Master Plan, as periodically amended. [Previous Policy N-8] [N16]
- Program N1.5.1 Maintain the value of local wetlands as habitats by ensuring adequate flow from the Bay and minimizing effluent. [PTC] [NEW PROGRAM] [N17]*

- POLICY N1.6 Preserve and protect the foothills and hillside areas, recognizing their unique value as natural ecosystems and interconnected wildlife corridors. [NEW POLICY] [N18]

ACCESS AND RECREATION

- POLICY N1.7 Carefully manage access and recreational use of environmentally sensitive areas, including the baylands, foothills and riparian corridors, in order to protect habitats and wildlife from the impacts of humans and domesticated animals. . [previous Program N-3, per PTC] [N6]
- Program N1.7.1 Examine and improve existing management practices including the provision of access to open space for City*

NATURAL ENVIRONMENT ELEMENT

vehicles and equipment, to ensure that natural resources are protected. [Previous Program N-2] [N7]

Program N1.7.2 Protect wildlife in public open space areas by improving litter collection, restricting the use of non-recyclable plastics, prohibiting the feeding of wild and domestic animals in this open space, and enforcing dog leash laws. [PTC] [NEW PROGRAM] [N3]

Program N1.7.3 Provide information about responsible behavior in environmentally-sensitive areas through signage, pamphlets and documents on the City's website. [NEW PROGRAM] [N9]

Program N1.7.4 Review and map existing easements and maintenance roads for potential trails and trail connections. [PTC] [NEW PROGRAM] [N9]

NATURAL CHARACTER OF FOOTHILLS

POLICY N1.8 Minimize impacts of any new development on the character of public open space and the natural ecology of the hillsides. [Previous Policy N-6] [N15]

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POLICY N1.9 All development in the foothill portion of the Planning Area (i.e., above Junipero Serra Boulevard) should visually blend in with its surroundings and minimize impacts to the natural environment. As such, development projects should:

- Be sited so as to be hidden from view. Be Located away from hilltops. Be clustered, or closely grouped, in relation to the area surrounding to reduce conspicuousness minimize access roads, and reduce fragmentation of natural habitats. Include built forms and landscape forms that mimic the natural topography. Utilize natural materials and earth tone or subdued colors. Include landscaping composed of native species that require little or no irrigation. Include exterior lighting that is low-intensity and shielded from view. Include access roads of a rural rather than urban character. [Previous Policy N-7] [N24]

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EXPANSION OF PARKS AND OPEN SPACE

POLICY N1.10 Support regional and sub-regional efforts to acquire, develop, operate, and maintain a seamless open space system, including habitat linkages and trail connections extending north-south and east-west from Skyline Ridge to San Francisco Bay. [Previous Policy N-2] [N19]

Program N1.10.1 Use City funds and seek additional sources of funding, including State and Federal programs, to finance open space acquisition, maintenance or conservation. [Previous Program N-4] [N20]

Program N1.10.2 Pursue dedication of undedicated publicly-owned recreation, open space and conservation areas, such as Renzel Wetlands and the Gamble House and Gardens as public parks. [NEW PROGRAM] [N17]

Program N1.10.3 Explore the creation of a mechanism to monitor, assess and respond quickly to land acquisition opportunities that would expand or connect the City's system of parks and open spaces. [NEW PROGRAM][N21]

POLICY N1.11 Work with Stanford University, Santa Clara County, Santa Clara Valley Water District and regional organizations to create multi-use trail connections between urban areas and open space, including creeks and rights-of-way, while ensuring that the natural environment is protected. [PTC] [NEW PROGRAM] [N22]

POLICY N1.12 Work with Stanford and Santa Clara County to preserve Stanford's foothill property northeast of Highway 280., Act as an advocate to Santa Clara County to preserve open space links between Stanford, the urban area, and the foothills. [Previous Policy N-5] [N23]

2. URBAN FOREST AND UNDERSTORY

GOAL N-2. A Thriving Urban Forest That Provides Public Health, Ecological, Economic, and Aesthetic Benefits for Palo Alto.

ROLE OF THE URBAN FOREST

POLICY N2.1 Use the Urban Forest Master Plan, as periodically amended, to guide City decisions related to all elements of Palo Alto’s urban forest, from its understory habitat to canopy cover. [PTC] [NEW POLICY] [N42]

Program N2.1.1 Periodically update the Urban Forest Master Plan and Tree Protection Ordinance to ensure policies and regulations remain relevant. [PTC] [NEW PROGRAM] [N43]

POLICY N2.2 Recognize the importance of the urban forest as a vital part of the City’s green infrastructure network that contributes to public health, resiliency, habitat values, appreciation of natural systems and an attractive visual character and must be protected. [NEW POLICY] [N44]

Program N2.2.1 Explore ways to prevent and ameliorate damage to trees and tree roots by above and below ground infrastructure and buildings. [NEW PROGRAM] [N45]

POLICY N2.3 Enhance the ecological resilience of the urban forest by increasing and diversifying native species in the public right-of-way, protecting the health of soils and understory vegetation, encouraging property owners to do the same, and discouraging the planting of invasive species. [PTC] [NEW POLICY] [N46]

POLICY N2.4 Protect soils in both urban and natural areas as the foundation of a healthy urban forest. Recognize that healthy soils are necessary to filter air and water, sustain plants and animals, and support buildings and infrastructure. [NEW PROGRAM] [N66]

Program N2.4.1 Promote landscape design that optimizes soil volume, porosity, structure and health, as well the location, shape and configuration of soil beds. [NEW PROGRAM] [N76]

PROTECTION AND EXPANSION

- POLICY N2.5 Improve the overall distribution of Citywide canopy cover, so that neighborhoods in all areas of Palo Alto enjoy the benefits of a healthy urban canopy.
- POLICY N2.6 Strive toward the aspirational, long-term goal of achieving a 50 percent tree canopy cover across the City. [NEW POLICY] [N46]
- Program N2.6.1 Maintain and irrigate healthy trees and canopy size targets in parks, open space, parking lots, and City rights-of-way, while identifying and replacing unhealthy trees in those areas. [Previous Program N-17] [N52]*
- Program N2.6.2 Continue to invest in the care, irrigation and monitoring of street trees during drought conditions. [NEW PROGRAM] [N55]*
- Program N2.6.3 Actively pursue funding for tree planting to increase canopy cover significantly across the city. [Previous Program N-18] [N53]*
- POLICY N2.7 Require new commercial, multi-unit, and single family housing projects to provide street trees and related irrigation systems. [Previous Policy N-15][N57]
- POLICY N2.8 Minimize removal of, and damage to, trees due to construction-related activities such as trenching, excavation, soil compacting, and release of toxins. [NEW POLICY] [N58]
- Program N2.8.1 Increase awareness, severity and enforcement of penalties for tree damage. [NEW PROGRAM] [N59]*
- Program N2.8.2 Develop a program for using the City's Urban Forestry Fund to replace trees lost to public improvement and infrastructure projects, with replanting occurring onsite or as close to the original site as is ecologically appropriate. [NEW PROGRAM] [N65]*
- POLICY N2.9 Preserve and protect Regulated Trees, such as native oaks and other significant trees, on public and private property, including landscape trees approved as part of a development review process and consider strategies for expanding tree protection in Palo Alto. [Previous Policy N-17] [N60].

NATURAL ENVIRONMENT ELEMENT

Program N2.9.1 As part of the update the Tree and Landscape Technical Manual, consider expanding tree protections to include additional mature trees and provide criteria for making site-specific determinations of trees that should be protected. [NEW PROGRAM] [N61]

Program N2.9.2 Revise the appeals process to consider expanded rights for community members to appeal the removal of protected trees. [NEW PROGRAM] [N61]

POLICY N2.10 Coordinate City review, particularly by the Planning, Utilities, and Public Works Departments, of projects that might impact the urban forest. [Previous Program N-20][N62]

POLICY N2.11 Continue to require replacement of trees, including street trees lost to new development, recognizing the particular value of mature trees. [NEW POLICY, adapted from previous Program N-16][N64]

Program N2.11.1 Develop a transparent and publicly accessible street tree removal and replacement schedule. [NEW PROGRAM] [N2]

Program N2.11.2 Develop a program to replace unhealthy public trees over time. [NEW PROGRAM] [N61]

PARTNERSHIPS FOR THE URBAN FOREST

POLICY N2.12 Protect, revitalize, and expand Palo Alto's urban forest through public education, sensitive regulation and a long-term financial commitment that is adequate to protect this resource. [Previous Policy N-14] [N51]

Program N2.12.1 Explore ways to leverage the fact that Palo Alto's urban forest alleviates climate change by capturing and storing carbon dioxide. [NEW PROGRAM] [N54]

POLICY N2.13 Partner and coordinate with organizations and individuals dedicated to the health of Palo Alto's urban forest.[NEW POLICY, ADPATED FROM PTC PROGRAM N3.3.7] [N47]

Program N2.13.1 Work with local non-profits to establish tree planting programs that are consistent with the UFMP, and rely on

locally native, resilient species. Review existing tree planting guidelines to ensure they achieve this objective. [Previous Program N-19] [N48]

Program N2.13.2 Provide on-going education for City staff, residents, and developers regarding landscape, maintenance, and irrigation practices that protect the urban forest and wildlife species. [PTC] [Previous Policy N-16] [N49]

Program N2.13.3 Cooperate with the Palo Alto Unified School District, Stanford University, Caltrain, Caltrans, PG&E, and other public and private entities to ensure that their tree planting, tree removal, and maintenance practices are consistent with City guidelines. [NEW PROGRAM] [N50]

POLICY N2.14 In order to protect, enhance and augment the urban forest along El Camino Real, Page Mill Road and Oregon Expressway, periodically revisit existing maintenance agreements with Caltrans and the County of Santa Clara. [PTC] [NEW POLICY] [N63]

3. CREEKS AND RIPARIAN AREAS

GOAL N-3. Conservation of Both Natural and Channelized Creeks and Riparian Areas as Open Space Amenities, Natural Habitat Areas, and Elements of Community Design.

POLICY N3.1 All creeks are valuable resources that need different conservation and enhancement strategies. Recognize the different characteristics along creeks in Palo Alto, including natural creek segments in the City's open space and rural areas, primarily west of Foothill Expressway; creek segments in developed areas that retain some natural characteristics; and creek segments that have been channelized . [NEW POLICY] [N25]

POLICY N3.2 Prevent the further channelization and degradation of Palo Alto's creeks, which are potential habitat areas, storm drain and flood control facilities, elements of community design and connective natural corridors. [NEW POLICY] [N25]

CREEK SETBACKS

POLICY N3.3 Protect the City’s creeks from the impacts of future buildings, structures, impervious surfaces and ornamental landscaping and preserve their function as habitat connectivity corridors by establishing a range of setback requirements that account for existing creek conditions, land use characteristics, property ownership, and flood control potential. [NEW POLICY] [N26]

Program N3.3.1 Update the Stream Corridor Protection Ordinance to adopt a setback along natural creeks in open space and rural areas west of Foothill Expressway that prohibits the siting of buildings and other structures, impervious surfaces, outdoor activity areas, and ornamental landscaped areas within 100 feet of the top of a creek bank. Allow passive or intermittent outdoor activities and pedestrian, equestrian, and bicycle pathways along natural creeks where there are adequate setbacks to protect the natural riparian environment. Within the setback area, provide a border of native riparian vegetation at least 25 feet along the creek bank.

Exceptions to the 100-foot setback are as follows:

- *Single family property is exempt from the 100-foot setback, except that undeveloped parcels southwest of Highway 280 are not exempt. Update the Steam Corridor Protection ordinance to address appropriate setbacks and creek conservation measure for these parcels.*
- *Existing development within the 100-foot setback will be considered legal and nonconforming. With the 100-foot setback as a goal where feasible, redevelopment of such sites must be designed consistent with basic creek habitat objectives and make a significant net improvement in the condition of the creek.[Previous Program N-7] [N35]*

Program N3.3.2 Examine the development regulations of the Stream Corridor Protection Ordinance, with stakeholder involvement to establish appropriate setback requirements that reflect the varying natural and

channelized conditions along creeks east of Foothill Expressway. [NEW PROGRAM] [N27]

- Program N3.3.3* For all creeks, update the Stream Corridor Protection Ordinance to minimize impacts on wildlife by:
- *Limiting the development of recreational trails to one side of natural riparian corridors*
 - *Requiring careful design of any lighting surrounding natural riparian corridors to maximize the distance between nighttime lighting and riparian corridors and direct lighting away from the riparian corridor.*
 - *Addressing the use of mulch to minimize impacts on ground-nesting species.*[NEW PROGRAM] [N27]

MANAGEMENT AND ENHANCEMENT

POLICY N3.4 Recognize that riparian corridors are valued environmental resources whose integrity provides vital habitat for fish, birds, plants and other wildlife, and carefully monitor and preserve these corridors. [NEW POLICY] [N28]

Program N3.4.1 *Develop a community creek stewardship program to promote existing creek clean-up days, organize new events, and increase appreciation of riparian corridors.* [NEW PROGRAM] [N29]

POLICY N3.5 Preserve Maximize the ecological value of creek corridors through the preservation of native plants and the replacement of invasive, non-native plants with native plants. [Previous Policy N-12][N30]

POLICY N3.6 Discourage bank instability, erosion, downstream sedimentation, and flooding by minimizing site disturbance and nearby native vegetation removal on or near creeks and by reviewing grading and drainage plans for development near creeks and elsewhere in their watersheds. [Previous Policy N-13] [N31]

Program N3.6.1 Review and update the Grading Ordinance to ensure that it adequately protects creeks from the erosion and sedimentation impacts of grading.[Previous Program N-12] [N33]

NATURAL ENVIRONMENT ELEMENT

- POLICY N3.7 Avoid fencing, piping, and channelization of creeks when flood control and public safety can be achieved through measures that preserve the natural environment and habitat of the creek. [Previous Policy N-9] [N34]
- POLICY N3.8 Work with the Santa Clara Valley Water District, San Francisquito Creek Joint Powers Authority and other relevant regional and non-governmental agencies to enhance riparian corridors, provide compatible low-impact recreation, and ensure adequate flood control.. [Previous Policy N-10] [N36]
- Program N3.8.1* Work with the Santa Clara Valley Water District to develop a maintenance, restoration and enhancement improvement program that preserves flood protection while preserving riparian habitat, and identifies specific stretches of corridor to be restored, standards to be achieved, and sources of funding. Include provisions for tree and vegetation planting to enhance natural habitat and shade cover. [Previous Program N-10 and N-11, combined] [N39]
- Program N3.8.2* Participate cooperatively in the San Francisquito Creek Joint Powers Authority (JPA) to achieve increased flood protection, habitat preservation, enhancement and improved recreational opportunities along San Francisquito Creek. [Previous Program N-9] [N37]

4. WATER RESOURCES

GOAL N-4. Water Resources and Infrastructure that are Managed to Sustain Plant and Animal Life, Support Urban Activities, and Protect Public Health and Safety.

WATER SUPPLY AND SAFETY

- POLICY N4.1 Maintain a safe, clean, and reliable long-term supply of water for Palo Alto. [Previous Policy N-19] [N87]
- POLICY N4.2 Maintain cost-effective citywide water conservation and efficiency programs for all customers, including low income customers, through education, rebates, assistance programs, and building requirements. [Previous Program N-24] [PTC] [N88]
- Program N4.2.1 Educate customers on efficient water use (indoor and outdoor), tree care, and landscaping options. [NEW PROGRAM] [N89]*
- POLICY N4.3 Encourage owners of existing residential and commercial property to conserve water by modeling best practices including replacing inefficient plumbing fixtures in buildings, installing drought tolerant landscape and harvesting rainwater. [NEW POLICY] [N90]
- POLICY N4.4 Manage water supply and water quality to reflect not only human use but also the water needed to sustain plant and animal life. [NEW POLICY] [N88]

DROUGHT

- POLICY N4.5 Support the development a multi-faceted approach to ensure resilient supply and management of water in Palo Alto, during significant periods of drought. [NEW POLICY] [N93]
- Program N4.5.1 Study the supply and quality of local groundwater aquifers to better understand their utility as natural water storage. [NEW PROGRAM] [N94]*
- Program N4.5.2 Work with local public agencies to educate residents regarding the public health, fire and overall quality of life*

NATURAL ENVIRONMENT ELEMENT

risks associated with long-term drought. [NEW PROGRAM] [N95]

POLICY N4.6 Retain and utilize rainwater on site to the extent possible. Use native or simulated natural drainage systems for buffers and filtration to the extent possible. [NEW POLICY] [PTC] [N84]

Program N4.6.1 Encourage residents to use rain barrels or other rainwater reuse systems. [NEW PROGRAM] [N84]

GROUNDWATER

POLICY N4.7 Regulate groundwater use to protect it as a natural resource and to preserve it as a potential water supply in the event of water scarcity due to climate change and increased demand due to population growth. [NEW POLICY] [N91]

Program N4.7.1 Prepare a groundwater management plan that will address groundwater supply and quality, including, as appropriate:

- An understanding of the subsurface ecosystem.
- Strategies to reduce depletion.
- Opportunities to recharge groundwater, including through use of recycled water and extracted groundwater.
- Methods to ensure that uncontaminated, toxin-free groundwater is used in a manner that benefits the community, for example in irrigation of parks, street cleaning, and dust suppression.
- An approach to metering extracted groundwater. [NEW PROGRAM] [N92]

POLICY N4.8 Conserve and maintain subsurface water resources by reducing residential basement dewatering and other excavation activities. [NEW POLICY] [N82]

Program N4.8.1 Research and allow, as appropriate, new construction techniques and recharge strategies developed to reduce subsurface and surface water impacts. [NEW PROGRAM] [N83]

- Program N4.8.2 Explore appropriate ways to monitor dewatering for all dewatering and excavation projects and to determine fees based on the amount of water that is not recharged into the aquifer. [NEW PROGRAM] [N83]*
- Program N4.8.3 Work with neighboring jurisdictions and regional agencies to protect ground water. [PTC] [NEW PROGRAM] [N79]*
- Program N4.8.4 Support the Santa Clara Valley Water District and the Regional Water Quality Control Board to implement their mandate to protect groundwater from the adverse impacts of urban uses. [PTC] [Previous Policy N-18] [N80]*
- Program N4.8.5 Work with the Santa Clara Valley Water District and Regional Water Quality Control Board and the Regional Water Quality Control Board to identify and map key groundwater recharge and stormwater management areas for use in land use planning and permitting and the protection of groundwater resources. [Previous Program N-22] [N81]*

WATER QUALITY AND STORMWATER MANAGEMENT

- POLICY N4.9** Reduce pollution in urban runoff from residential, commercial, industrial, municipal, and transportation land uses and activities. [Previous Policy N-21] [N67]
- Program N4.9.1 Work with regulatory agencies, environmental groups, affected businesses, and other stakeholders to monitor and implement practices for reducing water pollution. Examples include state-of-the-art best management practices (BMPs), land use planning approaches, and construction of modern stormwater management facilities. [Previous Program N-27] [N68]*
- Program N4.9.2 Continue public education programs on water quality issues, including best management practices for residents, businesses, contractors, and City employees. [Previous Program N-28] [N69]*
- Program N4.9.3 Implement swift and rigorous spill response, cleanup, and follow-up investigation procedures to reduce the impacts*

NATURAL ENVIRONMENT ELEMENT

of toxic spills on the City's creeks and San Francisco Bay. [Previous Program N-31] [N70]

Program N4.9.4 Increase monitoring and enforcement of existing prohibitions on materials and practices known to impact local water quality, such as use of copper, in the design and construction industries. [NEW PROGRAM] [N71]

POLICY N4.10 Conduct regular street-sweeping to collect trash and road surface pollutants before they enter stormwater runoff. [Previous Program N-30] [N77]

Program N4.10.1 Evaluate neighborhoods where parking controls may hinder street sweeping and recommend any changes that are needed. [NEW PROGRAM] [N78]

POLICY N4.11 Promote sustainable low water and pesticide landscaping practices on both public and private property. [PTC] [NEW PROGRAM]

Program N4.11.1 Implement the City's Integrated Pest Management Policy with periodic assessments of pesticide use and use of Best Management Practices to reduce pesticide applications and toxicity, and maximize non-chemical control. [PTC] [NEW PROGRAM] [N113]

Program N4.11.2 Revise the City's Tree and Landscape Technical Manual to include stronger requirements for least-toxic practices in the landscape permitting process. [NEW PROGRAM] [N72]

Program N4.11.3 Promote the value of toxin-free landscape management, and educate residents about the impacts of common fertilizers, herbicides, and pesticides on local water quality. [NEW PROGRAM] [N73]

POLICY N4.12 Encourage Low Impact Development (LID) measures to limit the amount of impervious surface in new development and increase the retention, treatment and infiltration of urban stormwater runoff. Include LID measures in major remodels, public projects and recreation projects where practical. [Previous Policy N-22] [N74]

Program N4.12.1 Promote the use of permeable paving materials or other design solutions that allow for natural percolation and site drainage through a Storm Water Rebate Program and other incentives.[Previous Program N-34] [N75]

- POLICY N4.13 Promote the capture and reuse of stormwater for irrigation and other purposes, and improved public safety. [NEW POLICY] [N107]
- Program N4.13.1 Develop and implement a green stormwater infrastructure plan with the goal to treat and infiltrate stormwater. [NEW PROGRAM] [N108]*
- Program N4.13.2 Mitigate flooding through improved surface permeability or paved areas, and stormwater capture and storage. [NEW PROGRAM] [N109]*
- POLICY N4.14 Improve storm drainage performance by constructing new system improvements where necessary and replacing undersized or otherwise inadequate lines with larger lines or parallel lines. [Previous Policy N-24] [N110]
- Program N4.14.1 Establish a standardized process for evaluating the impacts of development on the storm drainage system, including point source discharge, base flow and peak flow.[Previous Program N-75] [N111]*
- Program N4.14.2 Complete improvements to the storm drainage system consistent with the priorities outlined in the City's 1993 Storm Drainage Master Plan, as amended. . [Previous Program N-36] [N112]*

WASTEWATER TREATMENT

- POLICY N4.15 Reduce the discharge of toxic materials into the City's sanitary sewer collection system by promoting the use of Best Management Practices and reducing pollutant levels in City wastewater discharges. [Previous Policy N-25] [N97]
- Program N4.15.1 Work with commercial and industrial dischargers to identify and implement pollution prevention measures and Best Management Practices to eliminate or reduce the discharge of metals and other pollutants of concern. [Previous Program N-35] [N98]*
- Program N4.15.2 Encourage commercial dischargers to consistently go beyond minimum requirements of the Clean Bay Business Program. [PTC] [NEW PROGRAM] [N99]*
- POLICY N4.16 Provide, maintain, and operate wastewater treatment facilities, including maintaining adequate capacity at the Regional Water Quality Control Plant

NATURAL ENVIRONMENT ELEMENT

located in Palo Alto, to accommodate projected economic and population growth. Ensure that the plant operates in compliance with applicable local, State, and federal clean water, clean air, and health and safety regulatory requirements. [PTC] [NEW POLICY] [N100]

Program N4.16.1 Implement approved recommendations based on the Long-Term Facilities Plan prepared for the Regional Water Quality Control Plant. [PTC] [NEW PROGRAM] [N101]

Program N4.16.2 Develop a plan to address ongoing operations of the Regional Water Quality Control Plant taking potential sea level rise and growth in surrounding communities into account. [NEW PROGRAM] [N102]

RECYCLED WATER

POLICY N4.17 Improve source control, treatment, and distribution of recycled water, including reducing the salinity of recycled water, to maximize its use. [PTC] [NEW POLICY] [N103]

Program N4.17.1 Expand existing recycled water infrastructure to serve a larger area. Develop a plan to install “purple pipe” when streets are opened for other infrastructure work. [NEW PROGRAM] [N104]

Program N4.17.2 Evaluate the possibility of using recycled water as an emergency water supply. [NEW PROGRAM] [N104]

Program N4.17.3 Investigate ways to reuse non-traditional water sources including recycled, gray, black and stormwater. [NEW PROGRAM] [N105]

POLICY N4.18 Require separate irrigation systems that can accept recycled water for landscape irrigation for larger developments. [PTC] [Previous Program N-26] [N106]

5. AIR QUALITY

GOAL N-5. Clean, Healthful Air for Palo Alto and the San Francisco Bay Area.

POLICY N5.1 Support regional, state, and federal programs that improve air quality in the Bay Area because of its critical importance to a healthy Palo Alto [Previous Policy N-26] [N3]

Program N5.1.1 Provide City input on significant proposals for air quality legislation and state implementation plans. [Previous Program N-38] [N4]

Program N5.1.2 Support the Bay Area Air Quality Management District (BAAQMD) in its efforts to achieve compliance with existing air quality regulations by continuing to require development applicants to comply with current BAAQMD construction emissions control measures and health risk assessment requirements or incorporate appropriate mitigation [Previous Program N-40] [N5]

Program N5.1.3 Explore adopting new standards that target the reduction of very fine particulate matter (PM_{2.5}), which is associated with increased impacts on respiratory health. [NEW PROGRAM] [N6]

POLICY N5.2 Support behavior changes to reduce emissions of particulates from automobiles. [NEW POLICY] [N7]

Program N5.2.1 Recommend revisions to proposed projects as needed to reduce air quality impacts [Previous Program N-45] [N8]

Program N5.2.2 Educate residents and auto-dependent businesses on the impacts of extended idling on air quality. [NEW PROGRAM] [N9]

Program N5.2.3 Consider adopting and enforcing penalties for drivers that idle for longer than 3-5 minutes. [NEW PROGRAM] [N10]

NATURAL ENVIRONMENT ELEMENT

Program N5.2.4 Implement BAAQMD recommended standards for the design of buildings near heavily traveled roads, in order to minimize exposure to auto-related emissions. [NEW PROGRAM] [N11]

POLICY N5.3 Reduce emissions of particulates from manufacturing, dry cleaning, construction activity, grading, wood burning , , landscape maintenance, including leaf blowers, and other sources. [Previous Policy N-27] [N12]

Program N5.3.1 Cooperatively work with Santa Clara County and the Bay Area Air Quality Management District to ensure that mining and industrial operations mitigate environmental and health impacts. [NEW PROGRAM][N13]

Program N5.3.2 Monitor particulate emissions at local California Air Resources Board monitoring stations and make the information easily available to citizens. [NEW PROGRAM][N14]

Program N5.3.3 Promote understanding of the health impacts of particulate emissions and provide information to residents and businesses about steps they can take to reduce particulate emissions, such as reducing or eliminating wood burning.[NEW PROGRAM] [N15]

Program N5.3.4 Provide homeowners with information outlining low emission alternatives to wood-burning stoves and fireplaces. [Previous Program N-43] [N16]

Program N5.3.5 Explore feasible and cost-effective opportunities to reduce concrete and asphalt use by the City, in parks and other public projects [NEW PROGRAM] [N17]

Program N5.3.6 All potential sources of odor and/or toxic air contaminants should be adequately buffered, or mechanically or otherwise mitigated to avoid odor and toxic impacts that violate relevant human health standards. [Previous Policy N-29] [N18]

6. NOISE

GOAL N-6. An Environment That Minimizes the Adverse Impacts of Noise.

AMBIENT NOISE AND PROJECT DESIGN

- POLICY N6.1 Encourage the location of land uses in areas with compatible noise environments. Use the guidelines in Table “N-XX” to evaluate the compatibility of proposed land uses with existing noise environments when preparing, revising, or reviewing development proposals. Acceptable exterior, interior and ways to discern noise exposure include:
- The guideline for maximum outdoor noise levels in residential areas is an Ldn of 60 dB. This level is a guideline for the design and location of future development and a goal for the reduction of noise in existing development. However, 60 Ldn is a guideline which cannot necessarily be reached in all residential areas within the constraints of economic or aesthetic feasibility. This guideline will be primarily applied where outdoor use is a major consideration (e.g., backyards in single family housing developments, and recreational areas in multiple family housing projects). Where the City determines that providing an Ldn of 60 dB or lower outdoors is not feasible, the noise level in outdoor areas intended for recreational use should be reduced to as close to the standard as feasible through project design.
 - Interior noise, per the requirements of the State of California Building Standards Code (Title 24) and Noise Insulation Standards (Title 25), must not exceed an Ldn of 45 dB in all habitable rooms of all new dwelling units.
 - Noise exposure(s) can be determined from (a) the noise contour map included in this plan, (b) more detailed noise exposure studies, or (c) on area-specific or project-specific noise measurements, as appropriate.
[Previous Policy N-39] [N19]
- POLICY N6.2 Protect the overall community and especially sensitive noise receptors, including schools, hospitals, convalescent homes, senior and child care facilities, and publicly owned conservation land from unacceptable noise levels from both existing and future noise sources, including construction noise.
[Previous Policy N-43] [N20]

NATURAL ENVIRONMENT ELEMENT

Program N6.2.1 Continue working to reduce noise impacts created by events and activities taking place in communities adjoining Palo Alto. [Previous Program N-58] [N21]

Program N6.2.2

Program N6.2.3 Evaluate and update the Noise Ordinance, as needed, to provide for clear interpretation of the regulations, to review the appropriateness of existing standards, and to ensure that regulations address contemporary issues [N22]

POLICY N6.3 Minimize roadway noise through prudent street, flow, and right-of-way design. [PTC] [NEW POLICY] [N23]

NEW PERMANENT NOISE SOURCES

POLICY N6.4 Protect residential and residentially-zoned properties from excessive and unnecessary noise from any sources on adjacent commercial or industrial properties. [NEW POLICY] [N24]

POLICY N6.5 Apply site planning and architectural design techniques that reduce overall noise pollution and reduce noise impacts on proposed and existing projects within Palo Alto and surrounding communities. [Previous Policy N-40] [N25]

When a proposed project is subject to CEQA, the noise impact of the project on existing residential land uses and public open spaces and public conservation land should be evaluated in terms of the increase in existing noise levels and potential for adverse community impact, regardless of existing background noise levels. If an area is below the applicable maximum noise guideline, an increase in noise up to the maximum should not necessarily be allowed. [Previous Policy N-41] [N26]

Program N6.5.1 Update noise impact review procedures to address appropriate requirements for analysis and thresholds for impacts on residential land uses. [NEW PROGRAM][N13]

POLICY N6.6 The City may require measures to reduce noise impacts of new development on adjacent properties through appropriate means including, but not limited to, the following:

- Orient buildings to shield noise sensitive outdoor spaces from sources of noise.

- Construct noise walls when other methods to reduce noise are not practical and when these walls will not shift similar noise impacts to another adjacent property..
- Screen and control noise sources such as parking lots, outdoor activities and mechanical equipment, including HVAC equipment..
- Increase setbacks to serve as a buffer between noise sources and adjacent dwellings.
- Whenever possible, retain fences, walls or landscaping that serve as noise buffers while considering design, safety and other impacts.
- Use soundproofing materials, noise reduction construction techniques, and/or acoustically rated windows/doors.
- Include auxiliary power sources at loading docks to minimize truck engine idling.
- Control hours of operation, including deliveries and trash pickup, to minimize noise impacts. [Previous Policy N-42] [N27]

POLICY N6.7 Continue to require applicants to submit an acoustical analysis for new projects or new mechanical equipment in the Multifamily, Commercial, Manufacturing, or Planned Community districts to submit an acoustical analysis demonstrating compliance with the Noise Ordinance prior to receiving a building permit. [NEW POLICY] [N28]

POLICY N6.8 Continue to regulate noise from leaf blowers and residential power equipment.

Program N6.8.1 Evaluate changes to the Noise Ordinance to further reduce the impacts of noise from leaf blowers and residential power equipment. [Previous Program N-60] [N29]

CONSTRUCTION NOISE

POLICY N6.9 Continue to prioritize construction noise limits around sensitive receptors, including through limiting construction hours and individual and cumulative noise from construction equipment. [PTC] [NEW POLICY] [N30]

Program N6.9.1 Amend the Noise Ordinance to strengthen limits on construction noise, identify a range of appropriate noise control measures to mitigate construction noise, and establish limits on vibration from construction equipment. [NEW POLICY] [N31]

NATURAL ENVIRONMENT ELEMENT

POLICY N6.10 For larger development projects that demand intensive construction periods and/or use equipment that could create vibration impacts, such as the Stanford University Medical Center or major grade separation projects, require formal, ongoing monitoring and reporting of noise levels throughout the entire construction process. The monitoring plan should identify hours of operation and could include information on the monitoring locations, durations and regularity, the instrumentation to be used, and appropriate noise control measures to ensure compliance with the noise ordinance. [NEW PROGRAM] [N32]

AIRPORTS AND AIRCRAFT

POLICY N6.11 Ensure compliance with the airport related land use compatibility standards for community noise environments, shown in Table N-[XX], by prohibiting incompatible land use development within the 60 dBA CNEL noise contours of the Palo Alto airport. [NEW POLICY] [N33]

Program N6.11.1 Continue working to reduce noise associated with operations of the Palo Alto Airport. Ensure compliance with the land use compatibility standards for community noise environments, shown in Table N-XX, by prohibiting incompatible land use development within the 60 dBA CNEL noise contours of the airport. [PTC] [NEW PROGRAM] [N34]

Program N6.11.2 Participate in appropriate public forums to ensure that future activities at large commercial airports in the region do not negatively affect noise levels in Palo Alto. [Previous Program N-56] [N35]

RAIL

POLICY N6.12 Minimize noise spillover from rail related activities into adjacent residential or noise-sensitive areas. [NEW POLICY] [N36]

Program N6.12.1 Encourage the Peninsula Corridors Joint Powers Board to pursue technologies and grade separations that would reduce or eliminate the need for train horns/whistles in communities served by rail service. [Previous Program N-57] [N37]

Program N6.12.2 Evaluate changing at-grade rail crossings so that they qualify as Quiet Zones based on Federal Railroad Administration (FRA) rules and guidelines in order to mitigate the effects of train horn noise without adversely affecting safety at railroad crossings. [PTC] [Previous Program N-57] [N38]

Program N6.12.3 Participate in future environmental review of the California High-Speed Rail (HSR) Project, planned to utilize existing Caltrain track through Palo Alto, to ensure that it adheres to noise and vibration mitigation measures. [NEW PROGRAM] [N39]

POLICY N6.13 Reduce impacts from noise and ground borne vibrations associated with rail operations by requiring that future habitable buildings use necessary design elements such as setbacks, landscaped berms and soundwalls to keep interior noise levels below 45 dBA Ldn and ground-borne vibration levels below 72 VdB. [NEW POLICY] [N40]

7. ENERGY

GOAL N-7. A Clean, Efficient Energy Supply That Makes Use of Cost-effective Renewable Resources.

POLICY N7.1 Continue to procure carbon neutral energy, including renewable and hydroelectric resources, while investing in cost-effective energy efficiency and energy conservation programs. [Previous Policy N-44] [N41]

Program N7.1.1 Meet customer electricity needs with least total cost resources after careful assessment of environmental cost and benefits . [NEW PROGRAM] [N42]

Program N7.1.2 Phase out the use of renewable energy credits during the transition to carbon free electricity, recognizing that they are an interim step on the path to a sustainable energy program. [NEW PROGRAM] [N43]

POLICY N7.2 Encourage public infrastructure and private development projects to use life cycle analysis to minimize the consumption of energy and the production of greenhouse gases over the life of the project. [PTC] [NEW POLICY] [N44]

NATURAL ENVIRONMENT ELEMENT

Program N7.2.1 Advance the development of a “smart” energy grid, a diverse energy resource portfolio, and technologically advanced public utilities as a key part of a smart and connected city. (S/CAP Strategy) [NEW POLICY] [N45]

Program N7.2.2 Implement incentives for the adoption of cost-effective, alternative energy technologies from diverse renewable fuel sources by all customers. [PTC] [NEW PROGRAM] [N46]

Program N7.2.3

POLICY N7.3 [Previous Policy N-45] [N47]

POLICY N7.4 . Prioritize the identification of cost-effective, reliable and feasible energy efficiency and demand reduction opportunities. [Previous Policy N 46] [N48]

POLICY N7.5 Maximize the conservation and efficient use of energy in new and existing residences and businesses in Palo Alto. [(Previous Policy N-47) (PTC Edits)] [N49]

Program N7.5.1 Implement gas and electric rates that encourage efficient use of resources while meeting State law requirements that rates be based on the cost of service. [Previous Program N-62]

Program N7.5.2 Continue to provide public education programs addressing energy conservation and efficiency. [Previous Program N-64] [N50]

Program N7.5.3 Incorporate cost-effective energy conservation measures into construction, maintenance, and City operation and procurement practices.[Previous Program N-65] [N51]

Program N7.5.4 Continue timely incorporation of State and federal energy efficiency standards and policies in relevant City codes, regulations, and procedures. [(Previous Program N-66) (PTC Edits)] [N52]

Program N7.5.5 Implement cost effective energy efficiency programs for all customers, including low income customers. [NEW PROGRAM] [N51]

- POLICY N7.6 Encourage energy efficient lighting that protects dark skies and promotes energy conservation by minimizing light and glare from development while ensuring public health and safety. [NEW POLICY] [N52]
- Program N7.6.1 Monitor professional and medically-sound research and studies on light-emitting diodes (LEDs). [NEW PROGRAM] [N52]*
- POLICY N7.7 Support the maximum economic use of solar electric (photovoltaic) and solar thermal energy, both as renewable supply resources for the Electric Utility Portfolio and as alternative forms of local power generation. [PTC] [NEW POLICY] [N53]
- Program N7.7.1 Explore changes to building and zoning codes to incorporate solar energy and other energy efficiency measures into major development projects, including City owned projects. [PTC] [NEW PROGRAM] [N54]*
- Program N7.7.2 Promote use of the top floors of new and existing structured automobile garages for installation of photovoltaic panels and green roofs. [PTC] [NEW PROGRAM] [N55]*
- Program N7.7.3 Promote solar energy in individual private projects. [NEW PROGRAM] [N56]*
- POLICY N7.8 Explore a variety of cost-effective ways to reduce natural gas usage in Palo Alto in order to reduce associated greenhouse gas emissions. (S/CAP Strategy NG-GAS-1) [NEW POLICY] [N57]
- Program N7.8.1 Evaluate the potential for a cost-effective plan for transitioning to a completely carbon-neutral natural gas supply. [NEW PROGRAM][PTC] [N58]*
- POLICY N7.9 Support opportunities to maximize energy recovery from organic materials such as food scraps, yard trimmings and residual solids from sewage treatment. [PTC] [NEW POLICY] [N59]
- Program N7.9.1 Evaluate energy efficient approaches for the treatment and reuse of organic waste that maximize resource recovery and reduce greenhouse gas generation at the*

Regional Water Quality Control Plant located in Palo Alto and the Palo Alto Landfill. [PTC] [NEW PROGRAM] [N60]

8. CLIMATE CHANGE AND CLIMATE ADAPTATION

GOAL N-8. ACTIVELY SUPPORT REGIONAL EFFORTS TO REDUCE OUR CONTRIBUTION TO CLIMATE CHANGE WHILE ADAPTING TO THE EFFECTS OF CLIMATE CHANGE ON LAND USES AND CITY SERVICES.

POLICY N8.1 Take action to achieve target reductions in greenhouse gas emission levels from City operations and the community activity of 80% below 1990 levels by 2030. [NEW POLICY] [N61]

POLICY N8.2 Participate in cooperative planning with regional and local public agencies, including on the Sustainable Communities Strategy, on issues related to climate change, such as greenhouse gas reduction, water supply reliability, sea level rise, fire protection services, emergency medical services, and emergency response planning. [NEW POLICY] [N62]

Program N8.2.1 Pursue the goal of achieving zero net carbon buildings by 2025, while monitoring and mitigating their potential impacts on the urban forest. [PTC] [NEW POLICY] [N63]

POLICY N8.3 With guidance from the City's Sustainability and Climate Action Plan (S/CAP) and its subsequent updates and other future planning efforts, seek to reduce greenhouse gas emissions from City operations and from the community. [PTC] [NEW POLICY] [N64]

Program N8.3.1 Periodically update the Sustainability and Climate Action Plan (S/CAP); this update shall include an updated greenhouse gas inventory and updated short, medium, and long-term emissions reduction goals. [PTC] [NEW PROGRAM] [N65]

POLICY N8.4 Prioritize infrastructure improvements that address adaptation of critical facilities to climate change in the Capital Improvement Program (CIP) five-year plan. [PTC] [NEW POLICY] [N66]

POLICY N8.5 Protect the Municipal Services Center, Utility Control Center, and Regional Water Quality Control Plant from the impacts of sea level rise. (S/CAP Strategy) [NEW POLICY] [N67]

POLICY N8.6 Continue to work with regional partners to build resiliency policy into City planning and capital projects, especially near the San Francisco Bay shoreline. (S/CAP Strategy) [NEW POLICY] [N68]

Program N8.6.1 Prepare response strategies that address sea level rise, increased flooding, landslides, soil erosion, storm events and other events related to climate change. Include strategies to respond to the impacts of sea level rise on Palo Alto's levee system. [NEW PROGRAM] [N69]

Program N8.6.2 Wherever feasible, apply sea level rise adaptation approaches as recommended in the San Francisco Bay Plan adopted by San Francisco Bay Conservation and Development Commission as it is amended. [PTC] [NEW PROGRAM] [N70]