

4. PUBLIC FACILITIES AND INFRASTRUCTURE POLICIES AND PRINCIPLES

The vision for Ko'olau Loa will be implemented in part through application of the general policies and principles for public facilities and infrastructure which are presented in the following sections.

4.1 TRANSPORTATION SYSTEMS

This section describes the existing road, transit, and bikeway network in Ko'olau Loa as well as plans for future improvements. These elements are shown on the Public Facilities Map in Appendix A. The section concludes with general policies and planning principles to guide future transportation system development in Ko'olau Loa.

4.1.1 OVERVIEW

4.1.1.1 Roadway System

The only arterial highway in Ko'olau Loa is Kamehameha Highway (State Highway 83). It is also the only roadway linking the northerly windward O'ahu coastline communities to North Shore to the west and Ko'olau Poko to the southeast. Kamehameha Highway is a scenic highway, passing directly along the shoreline in several sections, providing dramatic ocean and coastal vistas and *mauka* views of the Ko'olau Mountains.

Kamehameha Highway is a two-lane highway for its entire length in Ko'olau Loa. In recent years, modest improvements have been made along this 19-mile section of coast highway, including paved shoulders, drainage improvements, lighting, bus turn-outs and left-turn lanes at busy intersections. While others are being planned, the one existing traffic signal in Ko'olau Loa is located at the entrance to Kahuku High School.

Other significant roadways in Ko'olau Loa are generally *mauka-makai* serving the inland residential areas of Ka'a'awa, Punalu'u, Hau'ula, Lā'ie and Kahuku. Key intersections along this coast highway include Polinalina Road in Ka'a'awa, Kanaka Niāo Road in Kahana Valley, Haleaha Road and Punalu'u Valley Road in Punalu'u, Kukuna and Hau'ula Homestead Roads in Hau'ula, Naniloa Loop and Hale La'a Boulevard in Lā'ie, Pualalea Road in Kahuku, and Kuilima Drive in Kawela. There are few parallel connector roads within the communities.

Planning and development of major roadways is the shared responsibility of the State Department of Transportation and the City Department of Transportation Services. Planning and use of federal transportation funds is coordinated through the O'ahu Metropolitan Planning Organization (OMPO), a joint City-State agency.

In November 1995, OMPO prepared the 2020 O'ahu Regional Transportation Plan (ORTP). According to the ORTP, there are no major improvement projects which would involve increasing the capacity of Kamehameha Highway. Planned improvements involve a long-term bridge replacement program and coastline reinforcement in areas such as Ka'a'awa, Punalu'u and Hau'ula where coastal erosion has impacted Kamehameha Highway. The community has expressed a need for emergency escape routes, which should be developed without adversely impacting the community.

The community has stated a priority need for safety improvements to the narrow, winding Kamehameha Highway through Ko'olau Loa. These improvements would include widening travel surface and shoulder pavement in critical areas where it would not adversely impact private property rights and cultural and historical sites, lighting and drainage. A left-turn stacking lane is needed at the traffic signal light at Kahuku High School. In addition, driver education and signage are important components for highway safety.

4.1.1.2 TRANSIT SYSTEM

TheBus provides bus service islandwide, including the Ko'olau Loa community. On a normal weekday, nearly 40 percent of transit trips on TheBus are between home and work. More than 40 percent of the weekday trips are for other home-based trips, such as to school or shopping. The remainder are non-home based trips and trips made by visitors.

Two bus routes serve the Ko'olau Loa region:

- No. 55 Kāne'ohe/Wahiawā Circle Island
- No. 88A North Shore Express

There are no formal park and ride facilities serving Ko'olau Loa as a central access point for buses and autos. Kuilima Resort serves as a collection point for commuters that take TheBus to work in Honolulu. The State operates a vanpool program where federal tax credits are made available to participating employers and employees. Vanpools work like an express bus on a smaller scale providing door to door service, and they can be effective for outlying areas, particularly when vanpools are arranged by groups with the same employer.

There are no plans to extend or expand the number of bus routes, but the frequency and capacity of transit service will be increased by additions to the islandwide bus fleet. It is anticipated that the number of buses assigned to the Windward Coast will be increased over the next 10 years from 72 to 97, Comprehensive Bus Facility and Equipment Requirements Study (1994). Service will also be enhanced by making roadway and bus facility improvements (i.e., bus turn-outs, bus stop shelters) designed to make bus travel more efficient, convenient and comfortable.

4.1.1.3 BIKEWAY SYSTEM

The island of O'ahu has 55.4 miles of existing bikeways. A State master plan for bikeways, Bike Plan Hawai'i (1994), proposes another 293 miles islandwide. The timetable for development will depend upon construction feasibility, including right-of-way acquisition

and funding. Bike Plan Hawai'i defines the various types of bikeways:

- ***Bicycle Route.*** Any street or highway so designated for the shared use of bicycles and motor vehicles or pedestrians or both. Bike routes are of two types: a) a widened curb lane in an urban-type area; and b) a paved right shoulder in a rural-type area.
- ***Bicycle Lane.*** A portion of a roadway designated by striping, signing, and pavement markings for the preferential or exclusive use of bicycles. Through travel by motor vehicles or pedestrians is not allowed unless specified by law, rule, or ordinance; however, vehicle parking may be allowed for emergencies. Crossflow by motorists to gain access to driveways or parking facilities, and pedestrian crossflows to gain access to parked facilities, bus stops, or associated land use, are allowed.
- ***Bicycle Path.*** A completely separated right-of-way normally designated for the exclusive or semi-exclusive use of bicycles. Through travel by motor vehicles is not allowed unless specified by law, rule or ordinance. Where such a facility is adjacent to a roadway, it is separated from the roadway by a significant amount of open space and/or a major physical barrier (such as trees or a considerable change in ground elevation.)

The State's bikeway master plan proposes a bike route along Kamehameha Highway in Ko'olau Loa. A bikeway plan for bicycle routes along private streets throughout the community of Lā'ie has also been proposed by the Lā'ie Community Advisory Group.

4.1.2 GENERAL POLICIES

The following general policies support the vision for a multimodal transportation system for Ko'olau Loa:

- To retain Ko'olau Loa as a predominantly rural area with limited future growth, its transportation system should provide:
 1. Adequate access for all communities, shopping and recreation areas in Ko'olau Loa.
 2. Roadway improvements, developed in consultation with Ko'olau Loa communities, which emphasize highway safety as the highest priority while providing efficient, pleasant travel experiences.
 3. Adequate capacity for peak travel to and from community centers.
- Reduce reliance on the private passenger vehicle by promoting travel demand management measures (e.g., carpool and vanpool programs) for both commuting and local trips.
- Provide an integrated system of bikeways for work, school, shopping trips, and recreation, including rides to playgrounds, beach parks, and other recreational areas.

4.1.3 PLANNING PRINCIPLES AND GUIDELINES

Commuter Travel. For commuter trips, the objective is to ensure that travel time and peak periods do not lengthen commensurate with growth in population.

1. Provide improved services and facilities for express buses, such as more frequent, larger-capacity and more comfortable vehicles and park-and-ride facilities.
2. Promote ridesharing such as carpooling and vanpooling.

Local Travel. For local trips, the objective is to promote alternative modes of travel and less automobile travel.

1. Modify right-of-way design in selected areas, particularly along principal pedestrian routes and street crossings, and near bus stops – e.g., change travelway widths, pavement widths or texture, introduce appropriate signage, and more generous landscape planting.
2. Provide more convenient pedestrian paths within commercial and other high-activity areas to encourage people to walk short distances for multi-purpose trips instead of moving the vehicle to another parking facility.
3. Implement traffic calming measures appropriate for residential areas to reduce speeding in excess of posted limits and discourage use of local streets for bypass or shortcut, thereby sustaining overall safety and enjoyment for pedestrians and bicyclists.
4. Design off-street parking facilities more efficiently to encourage joint use of parking and less pavement area dedicated to parking.
5. Provide safe pedestrian walkways on bridges.

4.2 WATER ALLOCATION AND SYSTEM DEVELOPMENT

In keeping with the rural character of Ko‘olau Loa, allocation of water is an important issue. Water management strategies include water conservation, groundwater development, surface water development, desalination, and effluent water reuse, without adversely impacting stream flow or nearshore water quality. In the development of water resources, it is important that the needs of Ko‘olau Loa be met first, and that the transmission of water out of Ko‘olau Loa will not be detrimental to Ko‘olau Loa. Hence, the availability of Ko‘olau Loa water for the islandwide water supply needs will first account for all in-district agricultural and urban needs, while balancing the environmental and cultural value of the area’s stream systems.

The State enacted the Water Code (HRS Chapter 174C) in 1987 to protect, control and regulate the use of the State’s water resources. This Code is implemented through the Hawai‘i Water Plan which addresses water conservation and supply issues on a statewide level by incorporating county water plans and water-related project plans.

The O'ahu Water Management Plan (OWMP), signed into law in 1990, is the City and County of Honolulu's component of the Hawai'i Water Plan. The OWMP sets forth strategies to guide the State Commission on Water Resource Management (CWRM) in planning, management, water development, use and allocation of O'ahu's water resources. These strategies support the land use policies set forth in the City and County's development plans.

Based on CWRM's 1996 basal permitted uses on O'ahu of about 340 million gallons per day (mgd), there is approximately 75 mgd of untapped *sustainable* yield remaining in the islandwide groundwater supply that could be developed. (This estimate accounts for interim instream flow standards.)

In Ko'olau Loa, municipal water is supplied by the Board of Water Supply (BWS) and the Lā'ie Water Company (LWC). The BWS supplies water to most of Ko'olau Loa, while the LWC provides water to approximately 8,000 residences as well as commercial and agricultural uses in Lā'ie, BYU-Hawai'i, and the Polynesian Cultural Center (PCC). In 1990, BWS and LWC water systems consumed approximately 3.0 mgd of potable water. By the year 2020, it is projected that potable water demand from both the BWS and LWC will double to approximately 6.0 mgd. This estimate does not include military, agricultural and other non-municipal uses that are supplied by private groundwater sources or surface water diversion, but they should be factored in when the OWMP is updated.

Agricultural water, in Ko'olau Loa, is supplied by stream diversions and groundwater wells. Existing and future agricultural water needs will be accounted for in the water management plan for Ko'olau Loa.

The BWS is undertaking an integrated water resources planning process, utilizing community involvement, to provide the next update of the OWMP.

4.2.1 GENERAL POLICIES

The following general policies seek to maintain an adequate supply of good quality water, retain sufficient acreage in watersheds to insure infiltration into groundwater aquifers, and strengthen the protection of watersheds.

- Protect and preserve streams, wetlands' natural drainage systems, watershed areas and the shoreline and coastal areas. The high quality of the region's nearshore and coastal water should be maintained to benefit recreation, the economy, and the region's natural biological systems. Buffer zones around streams and wetlands should be provided to protect the ecological integrity of these features.
- Retain existing acreage in the State Conservation or the City Preservation Districts to protect watersheds. In addition, important watershed areas which are in designated but unused Agricultural or Urban Districts should be reclassified to the State Conservation or City Preservation Districts, in consultation with affected landowners, community and pertinent resource agencies.

- Integrate management of all potable and nonpotable water sources, including groundwater, stream water, storm water and effluent, following State and City legislative mandates.
- Adopt and implement water conservation practices in the design of new development and the modification of existing uses, including landscaped areas.
- Where feasible and appropriate, encourage use of nonpotable water for irrigation of landscaping and agricultural lands to conserve the supply of potable water. Consider the use of dual water lines to allow conservation of potable water and the use of nonpotable water for irrigation and other appropriate uses, where practical.

4.2.2 PLANNING PRINCIPLES AND GUIDELINES

- *Development and Allocation of Potable Water.* While the State CWRM has final authority in all matters regarding administration of the State Water Code, the BWS should coordinate development of potable water sources intended for urban use on O’ahu. The BWS and other public utilities should certify that adequate potable and nonpotable water is available for a new residential or commercial development to be approved. State and private well development projects should be coordinated and made consistent with City water source development plans.
- *Water Conservation Measures.* Conserve the use of potable water by implementing the following measures, as feasible and appropriate:
 1. Low flush toilets, flow constrictors and other water conserving devices in commercial and residential developments.
 2. Indigenous, drought-tolerant plant material and drip irrigation systems in landscaped areas, and use drip irrigation systems.
 3. The reuse of treated wastewater effluent for the irrigation of golf courses and other landscaped areas where this would not adversely affect potable groundwater supply.
 4. Future water development should not adversely impact stream flow or nearshore water quality.

4.3 WASTEWATER TREATMENT

The majority of development in Ko’olau Loa is served by individual wastewater treatment systems. Parts of Ko’olau Loa are served by wastewater service areas, including the County wastewater service area in Kahuku and two private wastewater service areas at Kuilima Resort and Lā’ie.

Kahuku Wastewater Treatment Plant. The Kahuku Wastewater Treatment Plant (WWTP) is the only municipal wastewater treatment facility in the Ko’olau Loa region. The facility is located to the north of Kahuku town, beyond the former sugar mill, near the Ki’i Pond

Wildlife Refuge. The facility has a design capacity of 0.4 mgd average flow and is operating at approximately 30 to 40 percent of capacity. The plant receives residential wastewater from Kahuku Villages and the other residential and commercial uses in Kahuku town. Wastewater flow to the facility is projected to increase once the Kahuku Villages Phase IV development comes on line. The Kahuku WWTP system is designed as a gravity flow collection system from the mauka development areas. Disposal is via an injection well system into the brackish groundwater.

Kuilima Wastewater Treatment Plant. Kuilima Resort is served by a private wastewater treatment facility, involving a natural oxidation ponds treatment process. The Kuilima WWTP was designed for initial average flows of 0.66 mgd and can be expanded to 1.3 mgd. The resort currently uses less than half of the existing capacity. Reclaimed water from Kuilima Resort is used for golf course irrigation.

Lā'ie Water Reclamation Facility. The Lā'ie Water Reclamation Facility (WRF) is located in the mauka portion of the community behind the BYU-H campus. The Lā'ie WRF was recently upgraded to provide 0.9 mgd of treatment capacity utilizing an activated sludge aeration/clarifier treatment process. Disposal of the treated effluent is through a combination of water reuse for irrigation (agriculture and landscaping) and subsurface disposal. The expansion of the wastewater collection system is planned for existing un-sewered Lā'ie residential and proposed new Lā'ie housing areas. The capacity of the Lā'ie WRF can accommodate the existing and proposed development in Lā'ie.

4.3.1 GENERAL POLICIES

The following general policies apply to wastewater treatment in Ko'olau Loa:

- Encourage coordination between public agencies and private landowners in addressing adequacy of wastewater treatment within the region. The planned expansion of the Lā'ie Water Reclamation Facility proposed for existing and future homes in Lā'ie should proceed in accordance with applicable State and Federal regulations and conditions of existing land use approvals.
- Provide collection systems, where practical, to eliminate individual cesspools, and to protect aquifers, streams, estuaries and nearshore waters from contamination.
- Replace outdated individual cesspools with septic tanks and leaching fields.
- Encourage water recycling at Kahuku Wastewater Treatment Plant.
- Treat and beneficially use, where feasible, reclaimed water for irrigation as a water conservation measure.

4.3.2 PLANNING PRINCIPLES AND GUIDELINES

- ***Water Reclamation*** As feasible and appropriate, beneficially use reclaimed water for agriculture and landscaping irrigation, as well as other non-potable water uses.

- *Use of Buffer Zones and Landscape Elements.* Establish and maintain a sufficient separation between wastewater treatment plants and any nearby urban uses to avoid significant adverse odor impacts, and provide sufficient screening which substantially block views of such plants from developed areas, parks and public rights-of-way.
- *Adjacent Uses.* Discourage new residential, commercial, resort, or school uses in close proximity to wastewater treatment plants where odors are present.

4.4 ELECTRICAL POWER DEVELOPMENT

The Hawaiian Electric Company forecasts that increased demand will create a need for additional islandwide power generation capacity by 2020. Growth policies in the General Plan of the City and County of Honolulu direct significant residential growth to the Primary Urban Center, ʻEwa and Central Oʻahu Development Plan Areas. Koʻolau Loa is designated as a rural area and is projected to have limited future population growth. As such, Koʻolau Loa will not be a major source of future islandwide power demand. There is the possibility that the wind farm located in Kahuku may be modernized or expanded.

4.4.1 GENERAL POLICIES

The following general policy pertains to electrical power development in Koʻolau Loa.

- Locate and design system elements such as renewable electrical power facilities, substations, communication sites, and transmission lines, including consideration of underground transmission lines, to mitigate any potential adverse impacts on scenic and natural resources, as well as public safety considerations.

4.4.2 PLANNING PRINCIPLES AND GUIDELINES

- *Facility Routing and Siting Analysis.* If any new or relocated electrical power facilities, substations, communication sites, or transmission lines or communication towers are necessary, the selection of the route or site of such facilities should be supported by an analysis demonstrating how potential adverse impacts on scenic and natural resources have been mitigated. Although these facilities are not shown on the Public Facilities Map, their routes and sites are reviewed and permitted by administrative agencies of the City when they are within the Special Management Areas.

4.5 SOLID WASTE HANDLING AND DISPOSAL

Solid waste collection, transport and disposal operations on the island are a consolidated responsibility of the City Department of Environmental Services, Refuse Division (for domestic curbside pickup) and private haulers (for commercial and multi-family pickup). In addition, individuals can haul their own trash to one of six convenience centers around Oʻahu. The collected refuse is ultimately recycled or disposed of either in a waste incineration facility or sanitary landfill.

Incineration at the H-POWER plant in 'Ewa, accounts for approximately 50 percent of the island's waste disposal. The City's sanitary landfill is at Waimānalo Gulch, also in the 'Ewa region, and has a remaining site life of less than five years under existing load levels. The City has instituted recycling and other waste diversion programs in an effort to extend the useful life of this landfill, but at some point within the next decade a new or expanded landfill site will be necessary.

In Ko'olau Loa, there is one convenience center at Lā'ie where residents can dispose of household rubbish, green waste, and large items. The Lā'ie Water Reclamation Facility has a green waste composting facility. The next closest facilities are at Kawailoa Transfer Station north of Hale'iwa and Kapa'a Transfer Station in Kailua. There are no plans to create an additional convenience center, transfer station or landfill operation in Ko'olau Loa.

4.5.1 GENERAL POLICIES

The following general policies apply to solid waste handling and disposal in Ko'olau Loa:

- Support implementation of the Solid Waste Management Plan.
- While the region is not expected to contribute significantly to future increases in O'ahu's solid waste management demands and does not contain sites suitable for the processing or disposal of solid waste on an islandwide scale, Ko'olau Loa can and should play a part in the City's efforts toward recycling, waste diversion and more efficient solid waste collection.

4.5.2 PLANNING PRINCIPLES AND GUIDELINES

- *Recycling Programs and Facilities.* Promote the recycling of waste materials by providing expanded collection facilities and services, and public outreach and education programs. Encourage recycling of regional green waste at the City facility and the Lā'ie Water Reclamation Facility composting operation.
- *Efficient Solid Waste Collection.* Expand the use of automated refuse collection in residential areas.

4.6 DRAINAGE SYSTEMS

The major streams that drain the valleys of Ko'olau Loa include: Ka'a'awa Stream, Ma'akuo Stream, Kawa Stream, Waiono Stream, Kaluanui Stream, Kaipapau Stream, Lā'iemaloo Stream, Wailele Stream, Kahawainui Stream in Kahana and Lā'ie, Mālaekahana Stream, Ōhia Stream, Kawela Stream, Oio Stream, "Hospital Ditch," and other drainageways. These streams originate in the Ko'olau Range and eventually discharge into the ocean along the Ko'olau Loa coast. The drainage basins vary in size, some being long and narrow, and others including significant collection areas in the agricultural lowlands.

Several drainageways have been prone to flooding during the more intense rainfall events. In particular, lands surrounding Punalu'u Stream, Wailele Stream and Mālaekahana Stream

have experienced severe flooding during recent years. Kahawainui Stream channel improvements were made in the mid-1990's, which helped alleviate flooding problems in this part of Lā'ie. Heavy rainfall at the head of the valleys, combined with debris clogging the lowland channels, has on occasion overwhelmed the capacity of these drainageways. In many areas of Ko'olau Loa, the pavement of Kamehameha Highway diverts or detains the overland flow of stormwater runoff toward the ocean. This condition can cause localized flooding of the highway and *mauka* side properties.

A federal reconnaissance study examined options for flood control along the Waiale Stream. Construction of flood control improvements including a berm is being considered, with the design of the project being jointly funded by the federal government, City and County of Honolulu, and Hawai'i Reserves, Inc.

Drainage problems exist in Kahuku in the lowland floodplains of Ōhia, Kalaeo Kahipa, and Mālaekahana Streams. As existing drainage facilities are inadequate during major storm events, the runoff from *mauka* areas floods the campus of Kahuku High and Intermediate School, as well as portions of the commercial area and the Walkerville residential area. Agencies from the City, State Department of Land and Natural Resources, the U.S. Army Corps of Engineers and the Estate of James Campbell are coordinating their efforts in a regional drainage assessment that provides alternative solutions.

Mālaekahana Stream flooding affects Kamehameha Highway and downstream areas. The State Department of Transportation has scheduled bridge improvements at Mālaekahana Stream to alleviate highway flooding conditions.

4.6.1 GENERAL POLICIES

General policies pertaining to Ko'olau Loa's drainage areas are:

- Emphasize control and minimization of non-point source pollution and the retention of storm water on-site and in wetlands in the design of drainage systems in accordance with existing City, State and Federal regulations while maintaining the existing habitat capability and water quality of streams and nearshore waters.
- View storm water, where appropriate, as a potential irregular source of water for recharge of the aquifer that should be retained for absorption rather than quickly moved to coastal waters.
- When drainageways must be modified for flood control purposes, select approaches and solutions which:
 1. Improve existing habitat capability;
 2. Maintain existing rural and aesthetic qualities;
 3. Avoid degradation of existing coastline and estuarine areas or nearshore water quality;
 4. Avoid degradation of the quality of water entering nearshore waters; and

5. Avoid increase in the volume or rate of freshwater intrusion into nearshore waters.
- Design drainageways for flood control to accommodate a 100-year flood.
 - Encourage abutting property owners along streams and/or drainageways to stabilize the banks with vegetation where erosion potential is high.
 - Encourage coordination between public agencies and private landowners on needed drainage improvements with community input, and develop a phased plan for improvements.
 - Keep drainageways clear of debris to avoid flooding problems.
 - The State should assess areas of Kamehameha Highway where the pavement diverts or detains overland flow of stormwater runoff causing localized flooding of the highway and *mauka* properties.

4.6.2 PLANNING PRINCIPLES AND GUIDELINES

Principles to guide the maintenance and improvement of Ko'olau Loa's drainage systems include:

- ***Retention and Detention.*** Emphasize retaining or detaining storm water for gradual release into the ground as an alternative strategy for management of storm water.
- ***Stream Channel Improvements.*** Integrate planned improvements to the drainage system into a regional open space network by creating retention basins, passive recreation areas and recreational access for pedestrians and bicycles. Drainage system design should emphasize control and minimization of non-point source pollution. Where the hardening of stream channels is unavoidable, make the improvements in a manner which maintains and protects natural resources and aesthetic values of the stream, and avoid degradation of coastline and of stream and near-shore water quality, consistent with guidelines expressed in Section 3.1.3.4.
- ***Floodplain Management.*** Any future work performed within the 100-year floodplain will have to adhere to the requirements of the Federal Emergency Management Agency (FEMA) and meet all flood-proofing requirements.
- ***Systematic Approach.*** Use a comprehensive, systemic approach to addressing local flooding and drainage problems.

4.7 SCHOOL FACILITIES

Public schools in Ko'olau Loa are part of the State Department of Education's (DOE) Windward District. There are five elementary schools, and one intermediate/high school within DOE's Kahuku Complex. (One of the five elementary schools is Sunset Elementary School which, although in the North Shore Development Plan area, contributes to the enrollment of Kahuku High and Intermediate School.)

Recent enrollment figures for these schools show that some are operating below capacity while some are operating at or near capacity, as shown in Table 4-1. School facilities planning must account for existing and additional demand that could be generated by future residential developments, particularly at Lā'ie and Kahuku.

Proposed new housing development in Lā'ie and Kahuku will have an impact on Lā'ie Elementary School, Kahuku Elementary School, and Kahuku Intermediate and High School. The previous Lā'ie Master Plan approved by the City Council in 1992 included an 8-acre site for an elementary school. Current Lā'ie master plan proposals have recommended expansion and improvement of the existing Lā'ie Elementary School as an alternative to building a new school; but the DOE has recommended that a new school should still be included in the plan. It is expected that prior to zone change approval, the developer will need to work closely with the DOE to ensure that adequate school facilities will be in place to meet the demand generated by new residential development in Lā'ie. Developers of new residential development in Kahuku will also need to coordinate with the DOE on the adequacy of school facilities to meet the additional demand generated by new residential development.

Kahuku Intermediate and High School is near capacity, below DOE standards in terms of existing facilities and land area, and has serious drainage problems affecting the existing campus, including the athletic facilities. A master plan was completed in November 1997, pending a number of unresolved issues, including drainage impacts in portions of the proposed expansion area. The master plan is intended to bring the campus to DOE Educational Specification Standards, correct adverse building and site (drainage) conditions, provide facilities for new and existing activities and curricula, and expand the school's capacity for a design enrollment of 2,200 students.

Facility	1997 Enrollment	1998 Capacity
Elementary		
Sunset	297	511
Ka'a'awa	182	178
Hau'ula	355	530
Lā'ie	821	909
Kahuku	544	534
Intermediate & High School		
Kahuku	1,977	2,019

Source: Department of Education, Facilities and Support Services Branch, 1998.

The union representing operators of heavy equipment, known as Operating Engineers Local 3, is proposing to establish a permanent vocational training facility in Kahuku *mauka* of Kamehameha Highway across from Turtle Bay Golf Course. The union proposes to relocate its existing field training activities from a nearby 15-acre site to a 190-acre site it plans to buy from Campbell Estate. Of the 190 acres, the union proposes to use approximately 30 to 35 acres as follows: 10 to 15 acres for a classroom and office facility, and up to five 4- to 5-acre sites for practical field training. The remainder of the site would be retained in its current "natural" condition. Since the entire site is typified by rolling terrain, the portions of it left undeveloped could buffer its facilities, field training, and other activity areas from adjacent or nearby uses. The proposed use may be appropriate if it does not create erosion or adverse offsite drainage patterns, or adversely impact agricultural policy, coastal waters, natural or cultural resources, adjacent agricultural activity, or other nearby land uses.

4.7.1 GENERAL POLICIES

General policies relating to school facilities are:

- Approve new residential development only after the DOE certifies that adequate school facilities, either at existing schools or at new school sites, will be available when the development is completed.
- Have developers pay their fair share of all costs needed to ensure provision of adequate school facilities for the children living in their developments.
- Support the implementation of the Kahuku High School Master Plan.

4.7.2 PLANNING PRINCIPLES AND GUIDELINES

The following principles and guidelines should be followed in planning and operating schools in Ko'olau Loa.

- *Shared Facilities.* Coordinate the development and use of athletic facilities such as playgrounds, playfields and courts, swimming pools, and gymnasiums with the DOE where the joint use of such facilities would maximize utilization and reduce duplication of functions without compromising the schools' athletic programs. (See also Section 3.3.4.2.)
- *Fair Share Contribution.* Support the DOE's requests for fair share contributions from developers of residential projects to ensure that adequate school facilities are in place at existing schools to meet the needs of residents.

4.8 CIVIC AND PUBLIC SAFETY FACILITIES

The City and County of Honolulu operates 19 Satellite City Halls islandwide. These facilities offer many basic services for residents, including bus pass sales, bicycle

registration, and driver's license renewals. There are no permanent Satellite City Hall facilities in Ko'olau Loa. The Satellite City Hall located in Hau'ula was closed as a full-time facility in April of 1996, and it has since been replaced by a mobile Satellite City Hall. The City has no plans to build a permanent facility in Ko'olau Loa, but should a permanent facility be considered, the City should examine appropriate alternative locations, including the existing facility at Hau'ula, or a new one in Lā'ie.

The Honolulu Police Department (HPD) services Ko'olau Loa out of the Kahuku Police Substation. Currently, 27 staff and officers (over three watches) are assigned to the area from Ka'a'awa to Waiale'e Stream.

The Honolulu Fire Department (HFD) operates fire stations in Ka'a'awa, Hau'ula and Kahuku. The Ka'a'awa Fire Station #21 is a new two-story facility equipped with a five-person engine company, an inflatable rescue boat, and two bays that could accommodate an ambulance or other needed equipment in the future. The Hau'ula Station #15 is equipped with a five-person engine company and a one-person tanker truck. The Kahuku station is equipped with a five-person engine. The HFD has previously proposed a new fire station in Kawela as a long-range project, if and when additional growth in the area justifies construction of a new facility. HFD has no other plans for new stations in Ko'olau Loa nor do they anticipate increasing personnel at either of the existing stations.

Emergency care is provided from Kahuku Hospital. The Kahuku Hospital is a non-profit, civic and public safety facility which provides emergency services and a physician base for primary medical services to the Ko'olau Loa community. The hospital is outfitted with modern equipment and facilities, and a medical staff of 15 physicians and 60 employees. The community-owned hospital has received state subsidies and broad community support.

Ko'olau Loa is susceptible to natural hazards such as flooding, tsunami, tropical storms, hurricanes and high surf conditions. In the event of these hazardous conditions, residents need to evacuate to shelter facilities. There are three shelter facilities in the Ko'olau Loa area, located at Brigham Young University, Kahuku Elementary, and Kahuku High/Intermediate School. Flooding is the most common and recurring hazard. Under heavy, continuous rain and flooding conditions, OCDA plans are in place to evacuate endangered residents as required, and include additional evacuation options in the event of other emergencies.

There are presently 12 civil defense sirens within Ko'olau Loa, of which seven have been upgraded to new solar powered public address capable sirens. The remaining five will be upgraded as funds become available. There are other areas that need siren coverage which will be installed in the future by either the State or developers of new projects as appropriate.

4.8.1 GENERAL POLICIES

The following general policy pertains to public safety facilities:

- Support adequate staffing and facilities to ensure effective and efficient delivery of basic governmental service, emergency and primary medical services, and protection of public safety.
- Support the development of a regional library for Ko‘olau Loa.
- Provide emergency shelters in Ko‘olau Loa.

4.8.2 PLANNING PRINCIPLES AND GUIDELINES

- *Satellite City Hall.* Consider the establishment of a permanent Satellite City Hall in Ko‘olau Loa, using the existing facility in Hau‘ula or a new facility in Lā‘ie, either of which could serve as a gathering place for activities and services.
- *Better Utilization of Facilities.* Support the planning and programming of public facilities to create maximum usage flexibility. In addition, encourage interagency coordination in better utilization of existing facilities to provide a more integrated approach to delivering services in the region. Examples could include using school facilities as emergency shelters, requiring that all new public buildings serve a secondary function as an emergency shelter, and establishing satellite city halls as multi-purpose facilities with expanded hours and services for area residents.
- *Maintain Police and Fire/Ambulance Stations.* There is no anticipated need for new locations for either police or fire stations. Accommodate any necessary improvements through renovation or minor expansion of existing facilities for fire/ambulance and police protection. There is a need for a new ambulance facility in Ka‘a‘awa.
- *Adequate Police and Fire/Ambulance Protection.* Provide adequate staffing and facilities for fire/ambulance and police protection as required to support new developments.
- *Emergency and Primary Medical Services.* Support adequate staffing and facilities to ensure the continued operation and maintenance of Kahuku Hospital. Allow for the possible development of other health related facilities that will support the continued viability of Kahuku Hospital and provide critical complimentary health services for the community.
- *Creation of Safe Environments.* Promote the creation of safe, crime-deterrent public and private environments by encouraging the use of crime-preventive principles in the planning and design of communities, open spaces, circulation networks, and buildings.
- *Civil Defense Sirens.* Install civil defense sirens as needed to provide advance warning systems for the people residing and working in Ko‘olau Loa communities.