

Organization (MPO), which for this region is SCAG, from supporting or approving any activity that does not conform to the AQMP. If a project is consistent with the AQMP regarding air pollution, then the project is considered to be in "conformity" with the Federal Clean Air Act.

The South Coast Air Basin and the Los Angeles County Sub-area exceeds the National Ambient Air Quality Standards (NAAQS), and are designated as "non-attainment areas" for ozone, carbon monoxide, nitrogen dioxide, and fine particulate matter. The EPA has required a regional AQMP to address the non-attainment areas. The SCAQMD and SCAG adopted an Air Quality Management Plan (AQMP) in March 1989. The AQMP was later updated and revised in 1991 and in 1994, to comply with the California Clean Air Act (CCAA).

The District's existing rules and regulations apply to all stationary (non-vehicular) sources of pollution to reduce emissions from that source. Each regulation is broken down into a number of rules, detailing a specific topic. For instance, Regulation II deals with permits, while Rules 201 through 221 pertain to specific types of permits, how they are granted and administered, and their impact on emissions reductions.

#### *Carbon Monoxide Plan*

The South Coast Air Quality Management District developed a Carbon Monoxide federal clean air standards attainment plan in 1992. The plan focuses on the removal of 264 daily tons of carbon monoxide by the year 2000. Since ninety-six percent of carbon monoxide emissions originate from mobile sources, and eighty-seven percent from on-road vehicles, the core of the plan was the reduction of vehicle trips, including the local adoption of Trip Reduction Ordinances. Trip Reduction Ordinances were adopted by of the 143 cities and four counties in the South Coast Air Basin, with a total target goal of reducing 365,000 daily trips.

#### *Local Government Requirements and Options Under the AQMP*

Local governments are in a unique position to promote clean air though the use of comprehensive planning and land use regulation. The optional *Air Quality Element* of a city's *General Plan* can be used to promote Transportation Demand Management strategies, encourage the reduction of energy use in public buildings, and encourage land use planning strategies that contribute to the reduction of air pollution. Implementing ordinances can be used to codify certain measures, such as transportation demand measures for new, large-scale developments, incentives for mixed use and high density development near rail stations, and specific operating procedures for the local government that set an example for citizens in the area of energy conservation.

Other steps that local governments can take to improve air quality include:

- Participate in regional and sub-regional planning efforts.
- Set an example as an employer, operators of equipment, and vehicle fleet managers.
- Provide incentives to the private sector through grants and business license tax credits.
- Work with other governmental agencies on the regional, state and federal level to promote activities and legislation to address key air quality concerns.
- Increase awareness of air quality issues through public outreach efforts.
- Set an example for other cities through pro-active emission reduction programs.
- Review and update the *Air Quality Element* to reflect changing conditions, technologies, and programs.

### C. General Plan Consistency

The City of Long Beach adopted its most recent *Land Use Element* of the *General Plan* in 1989, and the *Transportation Element* in 1991. The *Air Quality Element* has been found to be consistent with the goals and policies of both the *Land Use Element* and *Transportation Element*.

Specifically, the *Air Quality Element* is congruous with the following goals of the *Land Use Element*:

- Managed Growth: Long Beach accepts the population and economic growth anticipated through the Year 2000, and intends to guide that growth to have an overall beneficial impact upon the city's quality of life.
- Economic Development: Long Beach will pursue economic development focusing on international trade, while maintaining and expanding its historic economic strengths in aerospace, bio-medicine, and tourism.
- Functional Transportation: Long Beach will maintain or improve the current ability to move people and goods to and from development centers while preserving and protecting residential neighborhoods.
- Citizen Participation: Long Beach will pursue increased opportunities for citizen participation in public decision-making, and will encourage voluntary efforts to provide and improve local facilities and services.

### Growth Management

Managed growth is the key to balancing the benefits of increased population and economic activity while preserving the unique quality of life in Southern California. In particular, the enjoyment of the outdoors in Long Beach is enhanced by its coastal location which provides both recreational opportunities and cleaner air as a result of coastal breezes. On clear days, residents enjoy ocean views of Catalina Island and mountain views of the San Gabriel and San Bernardino Mountains. Reduced emissions in the Long Beach area not only improve visibility in the inland areas, but help to improve basin-wide air quality and restore regional views.

### Economic Development

The primary reasons for fostering economic development are to create employment opportunities for our population and tax revenues for our city. These ends should not be realized at the expense of environmental quality with regard to air and water pollution, industrial hazards, and unmitigated traffic impacts.

As an operational goal, the *Land Use Element* seeks to provide at least 1.35 jobs for every household in the City. This favorable balance of jobs to households will assure residents a reasonable opportunity to find employment within Long Beach, thereby minimizing long commutes. Reduced home to work travel will also have regional benefits in terms of reduced air pollution, freeway congestion, and energy consumption.

### Functional Transportation

It is the goal of the *General Plan* that arterial streets should continue to operate in peak hours at Level of Service D or better. Reduced congestion and the more efficient flow of traffic reduces emissions overall.

### Citizen Participation

Three public meetings on the new *Air Quality Element*, combined with input from the Business Advisory Committee and the Interdepartmental Air Quality Committee, have provided staff with valuable input from citizens. Public hearings before the Planning Commission and the City Council were noticed in accordance with state and local Codes.

The goal statement for the *Transportation Element* is:

The City of Long Beach is to maintain or improve our current ability to move people and goods to and from activity centers while reinforcing the quality of life in our neighborhoods.

## *Air Quality Element*

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The recommendations of the *Air Quality Element* support the goal statement of the *Transportation Element*, and the recommendations in the *Air Quality Element* incorporate appropriate policies from the *Transportation Element*.

The *Air Quality Element* is also consistent with, or will further the goals of, other City Council-adopted policies and ordinances, such as the Local Implementation Report of the Congestion Management Plan, and the Trip Reduction and Travel Demand Measures Ordinance. Furthermore, City policies and operations with regard to energy savings, the Trip Reduction Incentive Program, and telecommuting policies, reinforce the goals of the *Air Quality Element*.



# AIR QUALITY PLANNING





## AIR QUALITY PLANNING

### A. Air Quality Planning in Long Beach

#### *Multi-Jurisdictional Context*

A multi-level partnership of governmental agencies at the federal, state, regional, and local levels has responsibility for implementing control measures identified in the AQMP. The EPA and other agencies at the federal level are charged with reducing emissions from federally controlled sources such as airplanes, ships and trains, establishing federal standards for air quality, and setting targets for improvement in non-attainment areas. At the state level is principally the Air Resources Board (ARB) which is responsible for motor vehicle emissions and fuels. The SCAQMD works at the regional level towards the overall development and implementation of the AQMP, as well as reducing emissions from industries, and some mobile sources and consumer products. The Southern California Association of Government (SCAG) contributes to the development of the AQMP and the implementation of the Regional Transportation Improvement Plan (RTIP). Local governments are responsible for implementing the transportation and land use measures in the AQMP, retaining local authority for these areas. SCAG provides assessments for conformity of regionally significant projects with the AQMP and adopts the annual Regional Transportation Improvement Program.

Each government agency is empowered with unique authority, and, as such may be the only feasible party to implement a measure. A summary of responsibilities for implementing control measures is provided in Table 7. The breakdown of emission reduction responsibility is provided below for the four primary agencies: EPA, ARB, SCAQMD and local governments. Local government actions account for eight percent of the emissions reductions identified in the 1991 AQMP. To meet the NAAQS at the earliest date feasible, all agencies will need to meet the identified reduction targets.

Local governments are primarily responsible for reducing emissions in the areas of energy conservation, dust control, and trip reduction. The AQMP requires local governments to implement new regulatory ordinances, administer changes to the project review process, assist with enforcement and data collection for monitoring effectiveness, forge new partnerships with other governmental agencies to develop energy conservation standards, and seek administrative changes in the way they operate. The burden of successful implementation of most land use and transportation control strategies is also on local government.

**TABLE 6**  
**IMPLEMENTING CONTROL MEASURE RESPONSIBILITIES**

AGENCY	RESPONSIBILITIES
EPA	<ul style="list-style-type: none"> <li>• Forty-nine state mobile vehicle emission standards;</li> <li>• Airplanes, trains, and ships;</li> <li>• Construction &amp; farm equipment; and</li> <li>• Off-shore oil development.</li> </ul>
ARB	<ul style="list-style-type: none"> <li>• On-road/Off-road vehicles;</li> <li>• Motor vehicle fuels; and</li> <li>• Consumer Products.</li> </ul>
SCAQMD	<ul style="list-style-type: none"> <li>• Stationary (industry/commerce) &amp; area sources;</li> <li>• Some mobile sources;</li> <li>• Some consumer products; and</li> <li>• Indirect sources &amp; TCM's.</li> </ul>
SCAG/Local Government/ CTCs	<ul style="list-style-type: none"> <li>• AQMP conformity assessment;</li> <li>• Adoption of Regional Transportation Improvement Program;</li> <li>• Transportation and land use measures; and</li> <li>• Transportation facilities.</li> </ul>

Source: Final 1991 Air Quality Management Plan.

### *Congestion Management*

The Congestion Management Program (CMP) is a state-mandated program enacted by the state legislature in order to address the negative impacts of increasing urban congestion on the state's economic vitality and quality of life. The CMP statute became effective with voter approval of Proposition 111 in June, 1990, which increased the state gas tax by nine cents per gallon. The CMP requires that cities address increased traffic and air pollution created as a result of new development, before receiving their share of the Proposition 111 statewide gas tax funds. In order to demonstrate compliance with the CMP, each city prepares an annual Local Implementation Report. Compliance is required for continued receipt of gas tax revenue from the state and for Federal Intermodal Surface Transportation Efficiency Act (ISTEA) allocations, as well as other state congestion and traffic funds.

The Metropolitan Transportation Authority (MTA) is the designated Congestion Management Agency for Los Angeles County, and has the responsibility of preparing and updating the CMP. By utilizing a regional approach, the Congestion Management Program seeks to maximize the effectiveness of local efforts to reduce congestion and air pollution. In addition to the quality of life issues, the region's economy may suffer increasingly severe federal sanctions unless air quality targets are achieved.

The goals of the CMP are to:

1. Link land use, transportation and air quality decisions;
2. Develop a partnership among transportation decision makers to devise appropriate transportation solutions that include all modes of travel; and
3. Propose transportation projects which are eligible to compete for state gas tax funds.

The CMP is one of many important tools used to address transportation needs throughout Los Angeles County. Other planning efforts include the Long Range Transportation Plan (MTA), the Congested Corridor Progress Report (MTA), the Regional Mobility Element of the Regional Comprehensive Plan and Guidelines (SCAG), the Air Quality Management Plan (SCAQMD), and the Long Beach Transit Short Range Transit Plan.

The City of Long Beach has been active in the Congestion Management Program since its inception. In 1992, the City submitted traffic counts and Level of Service (LOS) determinations for selected arterial intersections on the CMP system. In 1993, the Trip Reduction and Travel Demand Measures Ordinance was adopted to encourage carpooling, vanpooling, transit ridership, and non-motorized transportation. A Land Use Analysis Program (LUAP) was also submitted in 1993, which analyzes the impacts of new development on the CMP system. And finally, the City of Long Beach submitted its first Local Implementation Report in 1994.

The 1995 Local Implementation Report was the first under the 1993 CMP to include a "deficiency plan," prepared by tracking new development activity and reporting mitigation efforts implemented. Under the deficiency plan, local jurisdictions accrue "debits" when they issue new building permits, and earn "credits" for implementing projects, programs and strategies that improve transportation. The CMP contains standard debit values for 12 land use categories, and standard credit values for over 50 transportation improvement strategies.

The City of Long Beach established a large credit bank of 212,974 credits, as a result of a five year report submitted last year and approved by the Metropolitan Transportation Authority this year. These credits result from a five-year compilation of congestion reducing projects including traffic signal synchronization, grade separations, parking

restrictions, and increased transit frequency, and vanpool programs, among others. These credits establish a substantial "credit bank" for the City to draw upon for future development projects.

Long Beach is in the enviable position of having substantially more CMP credits than we expect to need over the immediate future. The City has been able to maintain a balance of over 200,000 credits; a large number of credits compared to most other cities in Southern California. For reference purposes, major planned development projects, such as the 605 Power Retail Center and the Queensway Bay Plan, have been estimated to result in approximately 10,000 to 15,000 debits after mitigation measures have been implemented.

#### *Southern California Economic Partnership*

The Southern California Economic Partnership (The Partnership) is a six county regional, non-profit organization with a 26 member Board of Directors representing both the public and private sectors. The mission of The Partnership is to accelerate the use of advanced transportation technologies (ATT), including zero-emission vehicles and infrastructure, alternative fuel vehicles and infrastructure, intelligent transportation systems, advance (smart) shuttle transit, and TeleCommute/TeleServices.

Since mobile source exhaust emissions are the largest contributor to air pollution within the South Coast Air District, The Partnership has focused much of its efforts on promoting electric vehicles. Electric vehicles (EVs) emit no tailpipe pollutants. In addition to air quality benefits, the electricity needed to charge EVs is abundant if off-peak charging is utilized. The nation's current use of petroleum products requires large oil imports that add \$40 to \$50 billion annually to the trade deficit.

Electric vehicles are considered consumer friendly for several reasons. The majority of the electric battery charging is expected to occur at the location where the vehicle is routinely used, such as the residential garage, parking areas of shopping malls, theater complexes, and some Metrolink stations. Residential customers would charge a vehicle during the night, which would be more appealing than making trips to a service station. In the long-term future, it is expected that commercial stations will provide convenient, fast-charging service.

Persistent research to advance the battery technology should provide improved range of approximately 150-200 miles. General Motors, for example, has invested in a joint manufacturing venture with Delco Battery Company to produce a nickel-metal hydride battery, which can drive small cars twice the distance of lead-acid batteries before recharging. Currently it costs two cents per mile at offpeak rates to "fuel" a car with electricity as compared to gasoline which costs four cents per mile. When EVs are mass produced, they may have lower life cycle costs than gasoline cars, requiring fewer tune-ups and less maintenance.

An added benefit for the Southern California region is the opportunity to stake out and to retain a leadership role in the new technology needed to produce electric vehicles. Job creation would include the areas of research and development, components manufacturing, and vehicle assembly, and export.

Opportunities for local involvement in the promotion of electric vehicles include modifications to building codes to require that every new residential building provide for a future electric vehicle charging unit by providing a  $\frac{3}{4}$ -inch raceway from the service panel to a 2-gang box located in the garage, and by participating in EV corridor planning for the I-405 Freeway, whereby a public charging infrastructure would be installed.

## B. Previous City Efforts

### *Clean Cities*

Long Beach was the first California city to achieve a "Clean Cities" designation under a program sponsored by the U.S. Department of Energy. Clean Cities is a voluntary program designed to accelerate and expand the use of alternative fuel vehicles (AFV) in communities throughout the country, and to provide refueling and maintenance facilities for their operation. The program encourages local governments and organizations to form public/private partnerships in developing markets for AFVs. A Clean Cities community brings fleet owners, fuel suppliers, local utilities, auto manufacturers and government together to make commitments to the creation of a viable alternative fuels market.

The Clean Cities program focuses on transportation fuels and the City's aggressive commitment to Compressed Natural Gas fueled vehicles has been the cornerstone of its Clean Cities program. Recent growth in the number of vehicles and miles driven in the U.S. has resulted in transportation's share of carbon emissions rising to approximately one-third of all carbon emissions in the country. In compliance with several federal legislative and executive directives, the Clean Cities program objectives are: to displace conventional transportation fuels with domestically produced alternative fuels; increase the acquisition of AFVs; develop the alternative fuel supply infrastructure; develop AFV conversion, maintenance and service industries; and improve air quality.

#### *- CNG Conversions*

The City of Long Beach reduces air pollution and the cost to operate its motor vehicles by converting existing and buying new, dedicated natural gas vehicles. Since natural gas burns cleaner than other fuels, it provides longer engine life and lower maintenance costs. Natural gas fuel typically costs 40 cents to 65 cents per equivalent gallon less than gasoline.

In 1996, there are 317 vehicles in the City's fleet that are either dual Compressed Natural Gas (CNG) and gasoline fueled, or dedicated CNG vehicles. The fleet includes eight



trash trucks, one street sweeper, several dump trucks, and a large number of pick-up trucks, light duty trucks automobiles, and police cruisers. There are four existing CNG fueling stations, located at the Gas Department, the Police Department, at the Southeast Resource Recovery Facility (S.E.R.R.F.), and at El Dorado Park on Studebaker Road. The City plans to increase the number of dedicated CNG fueled vehicles over time as a wider variety of models become available. The Gas Department also sells fuel to companies with CNG fueled fleets, including a major Airport shuttle company.

#### *Air Quality Monitoring*

The current SCAQMD monitoring station for Long Beach is located near the Airport. The City Council has supported an increased number of monitoring stations in the future, located throughout the City, to obtain better information regarding local air quality. The Downtown, Westside, and North Long Beach experience Port-related impacts, including rail, truck, and (for Downtown) ship emissions. Fugitive dust and larger airborne particulates consist mainly of roadway dust, rubber tire fragments, and coke dust. Other areas of the City may also be experiencing high levels of pollutants as a result of proximity to freeways or other sources.

On August 13, 1996, the City Council unanimously voted to request that the South Coast Air Quality Management District evaluate air quality in Long Beach. The discussion preceding the vote focused on numerous examples of black soot, or "fall out," in the air in the Downtown area. Banners flown at the Convention Center are supposed to last for five to eight years, yet are replaced every 18 months. Other speakers living in the downtown spoke of being exposed to a dirty film covering furniture both outdoors and indoors on a regular basis. Boat owners had similar experiences with their boats in the Downtown marina.

The Council will pursue additional monitoring locations in Long Beach, analyses of particulate samples, and risk assessment studies from the AQMD. The Council has requested that the AQMD conduct a study that will identify the composition of the particulate matter, determine its nature, and determine if it constitutes a health hazard and/or property nuisance. The study should also determine the sources of the particulate pollution, so that mitigation can be effectively sought.

#### *City Council Efforts to Mitigate Effects of New Port of Los Angeles LAXT-Pier 300*

In 1993 the Port of Los Angeles released a draft Environmental Impact Report (EIR) for the construction and operation of the Los Angeles Export Terminal (LAXT) dry bulk material facility at Pier 300. The new facility was planned for based in the increase in demand for coal and petroleum coke in Pacific Rim countries, and will consolidate existing petroleum coke storage facilities while allowing for better train staging. The draft EIR identified internal combustion engines, including ships, trucks, trains and mobile equipment, and the single largest source of Particulate Matter pollution as a result of the project. The draft EIR did not include, however, mitigation measures for

fugitive dust emissions which would be generated through the receiving, handling, storage and ship loading of dry bulk products, including coal and petroleum coke, for export.

The City Council of Long Beach challenged the EIR and ultimately reached a settlement agreement to address these issues. The 1994 agreement included the provision that control measures would be utilized to limit emissions, and that a comprehensive perimeter monitoring system would be implemented to ensure that no visible fugitive dust from the project shall enter into Long Beach. Construction of the dry bulk facility began in August 1995, and is expected to be completed in the Summer of 1997.

The control measures include, but are not limited to, the following:

- Trucks will be bottom dumped inside an enclosed facility.
- Dust control sheeting will be placed at the entrance and exit of the building.
- Fog sprays will be installed at the entrance and exit of the building. Water sprays will also be used during actual dumping to control fugitive dust.
- The transfer point for truck and train unloading will be located below ground.
- All trucks leaving the facility will be required to pass through a truck wash station.
- Access and exit roads will be swept and vacuumed.
- Wherever possible conveyor systems shall be completely enclosed. Where the conveyor system must interact with stacking equipment, the conveyor will be protected by wind covers and/or gallery enclosures.
- Water sprays will be used at all transfer points along the conveyor system.
- The ship loader will be capable of directional telescoping during ship loading operations. This will eliminate the need for on-board equipment (i.e. bulldozers) to distribute product in the holds.
- All mobile equipment within the storage area will maintain speeds at or below fifteen miles per hour.
- If visible dust emissions are observed, the volume of water to the sprays will be increased. If appropriate, wetting agent will be added to the sprays and additional dust control sheeting will be employed. If none of these measures eliminate emissions of visible fugitive dust beyond the property boundary, the operations will be stopped until the problem can be corrected.

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LAXT agreed to request approval by SCAQMD of an emissions control plan pursuant to Rule 403(e), and agreed that each and every emissions control plan submitted to

SCAQMD for the project will include perimeter PM10 and other emissions monitoring. It was agreed that the emissions control plan submitted for the project shall include perimeter upwind and downwind PM10 at the project site, and the use of perimeter samples to be conducted regularly during all three operational phases of the project.

All monitoring results submitted to SCAQMD will also be sent to the City of Long Beach. In addition, the emissions control plan must be resubmitted annually by LAXT to SCAQMD, and a copy of each control plan filed with SCAQMD will be sent to Long Beach. Control measures and monitoring requirements in the emissions control plan may be made more stringent during the annual review by SCAQMD to insure that emissions from the project will meet all applicable air quality rules and regulations.

LAXT agreed that each emission control plan submitted to SCAQMD will include the operation of a meteorological monitoring station at the project to record wind speed and direction, temperature, humidity, and precipitation, which will assist SCAQMD staff to compile meteorological conditions for use in air quality modeling. In the event complaints are received regarding fugitive dust from the project or visible airborne dust is observed beyond the project boundaries, the SCAQMD may require LAXT to collect and analyze simultaneous upwind and downwind PM10 samples.

The monitoring plan for the LAXT terminal will include both upwind and downwind monitoring locations. The comprehensive monitoring will provide accurate data with regard to the contribution made by the operation of this facility towards the total particulate environment. Increased monitoring is an important tool for gathering detailed information which can be used to ensure compliance.

#### *Rideshare*

The City of Long Beach promotes ridesharing as a major employer through its Trip Reduction Program (TRIP), using an on-line access to Southern California Rideshare's database. This program provides match lists for potential commuters based on their home location, work destination, and work schedule. Bi-monthly luncheons and prize drawings are held for participants who rideshare a minimum of twelve days per month. Employees walking, jogging, or bicycling to work a minimum of eight days per month are also eligible for an additional bi-monthly prize drawing. The City also provides bicycles from the Police Department's recovered property section for employees committing to cycling to work a minimum of eight days per month. The TRIP program also provides a vanpool program for City employees and other individuals employed within the City of Long Beach. In 1996, the vanpool program had eighty-five participants and operated thirteen dedicated CNG vehicles.

Other elements of the program include rideshare and transit incentives such as preferred parking for pool vehicles; bicycle storage, locker and shower facilities; and free bus passes.

### *Planning and Zoning*

The *Transportation Element* of the *General Plan* was revised in December, 1991, and reflects many of the recommendations in the 1991 Air Quality Management Plan (AQMP). Trip reduction and other related policies in the *Transportation Element* are incorporated into the *Air Quality Element*.

The City of Long Beach adopted a Transportation Demand and Trip Reduction Ordinance in 1993 (Ordinance No. C-7092). The ordinance requires a variety of transportation demand management measures at new development projects of 25,000 square feet or more, ranging from the availability of ridesharing materials and bicycle route information, to preferential carpool/vanpool parking, and bus stop improvements.

A Transportation Impact Fee Ordinance was adopted by City Council in November, 1990. The ordinance requires every new development to pay a fee to mitigate the proposed project's effect on the traffic level of service standard. The fees are collected and used for future traffic improvements.

The Community and Environmental Planning Division of the Department of Planning and Building performs virtually all of the required environmental reviews for development within the City. The Environmental Planners evaluate potential conflicts between emission sources and sensitive receptors in all non-exempt reviews. Land use impacts on air quality will continue to be a critical factor in the evaluation of new development proposals.

The Department of Planning and Building and the Department of Community Development are currently working together to create a specific Planned Development ordinance for the Downtown area. The Downtown area contains the most diverse mix of land uses in the City, and offers a number of opportunities for alternative modes of transportation. The Planning Bureau is also rewriting the *Open Space Element* of the *General Plan*, which provides an opportunity to identify "green" corridors where it would be beneficial to emphasize the planting of broadleaf trees, which help to purify the air.

Other efforts include amendments to the Zoning Code to include requirements for pedestrian and bicycle-friendly access, and generous provisions for reasonable home occupations. The Building Bureau will evaluate new efforts in construction regulations and renovation methods which could help to minimize harmful emissions. Building Bureau staff also monitor changes in the State building codes, particularly with regard to the standards for residential retrofit for electrical vehicle charging.

### *Transportation Demand Measures*

Parking and transportation management are concepts which are promoted by the City through a number of efforts. In 1993, the Downtown Parking Management Plan was

adopted by the Redevelopment Agency and the Planning Commission. It effectively reduces the parking requirement for participating businesses by using a shared parking arrangement managed by the Redevelopment Bureau. Participation in the plan is voluntary, but has proven popular since the spaces are provided at a fraction of the development costs needed to create new parking spaces. The Long Beach Airport Area Transportation Management Association (LBA2TRA) serves employers in the Airport area, pooling resources to provide alternative transportation options for area users, as well as needed transportation improvements.

#### *Long Beach Airport*

Commercial airliners operating at the Long Beach Airport are required to be the quieter, most fuel efficient Stage III aircraft. The fleet of General Aviation planes is also becoming cleaner and more efficient over time. Recent changes in laws concerning insurance and liability have led to a resurgence in the manufacturing of General Aviation aircraft and new advances in engine technology. There are a number of ground vehicles which are dual fuel, Compressed Natural Gas (CNG) and gasoline powered, and a street sweeper which is a dedicated CNG vehicle. Continued conversion of ground vehicles, including the use of electric vehicles, will be pursued in the coming years.

The restoration of the number of daily airline flights to forty-one will significantly reduce vehicle miles traveled by local origin and destination trips to other, more distant airports in the region.

The Long Beach Airport Area Transportation Management Association (LBA2TRA) received funding for over \$20 million in improvements during 1991-1992, to improve the level-of-service and to reduce dwell times.

#### *Alternative Modes*

The Long Beach Transit Company provides bus service throughout the city, connecting schools, shopping centers, hotels, hospitals, major employers and major entertainment attractions. In fiscal year 1995-1996, the Transit Company served over 23.5 million passengers. In addition to providing intra- and inter-city bus service, Long Beach Transit operates a "Runabout" shuttle in the downtown area which links the Long Beach Plaza mall, the transit mall, the Queen Mary, and a number of hotels. The Runabout runs every six minutes during its operating hours seven days a week. The City has introduced a similar shuttle to the Belmont Shore/Second Street area.

Public bus transportation is provided by Long Beach Transit over thirty-six routes and via the downtown circulator shuttle, the Runabout. Over ninety percent of the City's residents live within one-quarter mile of a Long Beach Transit route.

### *Air Quality Element*

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Long Beach Transit covers a ninety-six square mile service area with some 574,000 residents in the southeast portion of Los Angeles County. A 1996 passenger survey indicated that approximately forty-eight percent of the bus passengers did not own a car and listed Long Beach Transit as their main mode of travel.

Additional public transit services are provided by the Los Angeles County Metropolitan Transportation Authority (LACMTA or MTA), Torrance Transit, Orange County Transportation Authority (OCTA), and the Los Angeles City Department of Transportation. The MTA operates the "Blue Line" light rail service from downtown Los Angeles. Long Beach Transit currently acts as a direct support to regional rail on the Blue Line, and also has plans for supporting service on the Green Line when additional funds become available.

The Capital Improvement Program calls for the annual improvement of bike routes through reconstruction, and striping and signing techniques at locations determined by the *Transportation Element* of the *General Plan*. The City currently has an extensive bike route system of fifty-two completed miles. Bicycles can also be accommodated on the Blue Line light rail transit system, which links downtown Los Angeles with downtown Long Beach. The First Street Transit Center provides for easy transit access, transfers, and information. A bicycle rental, storage, and repair demonstration project has been built at the Transit Center later this year at First Street and the Promenade, to serve both commuters and tourists. Bikestations, Inc. and LBA2TRA are currently developing an electronic Advance Traveler Information kiosk to be installed at the Bike Station. Features such as personalized transit itineraries, bicycle routes, carpool and vanpool matching, and other information about the City and its businesses will be included in the system.

Traffic flow in Long Beach has been improved through the comprehensive Traffic System Management Program. This program calls for the installation of a traffic signal coordination system to automatically alter timing and sequencing of signals to move traffic as smoothly as possible through the City. The program also includes signing, striping, intersection channelization, parking control, bike paths, and bus pull-out bays for roadway improvements and the better utilization of City streets.

### *The Port of Long Beach*

The Port of Long Beach is one of the busiest port complexes in the United States, and is the largest with regard to number of containers processed. Located in the South Coast Air Basin, the port complex is also a source of motor vehicle activity, including trains, trucks, automobiles, ocean vessels, and mobile equipment for the movement of heavy lift cargoes.

The Port is an administrative department of the City of Long Beach. Under the authority vested in the Board of Harbor Commissioners, the Port of Long Beach has the responsibility of managing the public resources within the Long Beach Harbor District.

The Port of Long Beach, as a landlord port, has some input in determining how private companies must operate facilities that are leased from the Port.

Under the responsibility of the Port's Planning Division, the goals and objectives of environmental management and master planning ensure that Port operations conform to the highest standards of local, state, and federal regulatory agencies. Many of the development projects within the Port of Long Beach require a commentary review by the South Coast Air Quality Management District, as well as the issuance of a Harbor Development Permit by the Long Beach Harbor Department. The Harbor Development Permit ensures that air emissions from both mobile and stationary sources are in compliance with the Air Quality Management Plan (AQMP).

#### Cargo handling equipment

Various types of diesel-powered cargo handling equipment are currently in operation at the Port of Long Beach. Several of these types of equipment were considered for alternative fuel operation. These include the following: yard hostlers, a type of semi-tractor used for moving containerized cargo within the marine terminal, typically between the ocean vessel and the container stacks; rubber-tired gantry cranes, mobile equipment used for repositioning stacked containers; and side loaders, a type of motorized fork lift vehicle used to lift 40-foot containers from the yard hostlers and container stacks.

Among the various types of diesel-powered cargo handling equipment, the yard hostlers offer the best potential for substantial reductions in criteria pollutants. There are about 175 to 200 of the yard hostlers, which have an average useful life of twelve years. At the Port of Long Beach, the average age of this equipment is about seven years. The equipment inventory for Port tenants also includes approximately thirty-five to forty rubber-tired gantry cranes and about forty to forty-five side loaders.

In October 1993, Associated Diesel in San Bernardino, California began repowering three diesel-fueled Ottawa Model 30 yard hostlers by replacing their existing diesel engines with methanol engines. The three methanol yard hostlers went into service at the Maersk terminal at the beginning of 1994. In addition to monitoring the operation of the methanol vehicles, Acurex Environmental Corporation is recording data for a diesel yard hostler selected as a control vehicle.

This project resulted in a net reduction of air emissions due to lower net emissions from methanol-fueled yard hostlers compared to their diesel counterparts. Over a one-year period, the methanol hostlers prevented the emission of 101 pounds of NO<sub>x</sub>, 70 pounds of CO, 17 pounds of PM10, and 29 pounds of HC.

**Ships**

The marine vessel fleet is powered by diesel engines, steam turbines, or gas turbines. The emissions inventory for the 1990 State Implementation Plan represents twenty-four tons per day of NO<sub>x</sub> from ocean-going marine vessels and six tons per day of NO<sub>x</sub> from other vessels. The ARB and the U.S. EPA currently have no emission standards or operational control measures for these sources, although some operational controls have been implemented by local districts.

Many ocean-going vessels are registered in foreign countries, and most use engines produced outside the U.S. Emissions from new engines used in these vessels can be most effectively reduced by establishing international emission standards, and the U.S. EPA and the International Maritime Organization have begun to address appropriate requirements. The proposed control measures would reduce NO<sub>x</sub> emissions from new diesel engines in ocean-going vessels by 30 percent. Assuming a 30-year life span for ocean-going ships, the proposed international standards would result in an overall NO<sub>x</sub> emission reduction of 10 percent for ocean-going ships in 2010.

Commercial ship traffic control measures can be utilized to further reduce ocean-going ship emissions. Relocation of the Southern California shipping channel to outside the Channel Islands would reduce the impact of ship emissions in both the Ventura and South Coast Basins. A reduction in ship speeds may also reduce ship emissions.

**Surface Transportation**

Trucks and trains provide the link between the ships at the ports of Los Angeles and Long Beach with the network of American shippers and destinations. Railroad companies provide the power, the right-of-way and the space for the transportation of goods. Railroad cars may be owned by the railroad or by the individual shippers. Air pollution issues relating to trains include the emission of diesel exhaust, the additional impact of emissions from trains which idle on sidings adjacent to west side neighborhoods, and particulates from the products the trains carry such as coal, often in uncovered cars.

Section 213 of the federal Clean Air Act directs the EPA to adopt emission standards applicable to new locomotives and new engines used in locomotives. A proposed rulemaking is expected to be published in 1997. The ARB, as reported in the Draft 1997 AQMP, expects that the national emission standards adopted by EPA will be the most stringent standards feasible, and that the emission reductions will be met primarily through the use of diesel fuel and the transfer of emission control technologies from clean truck engines. The control technology needed to achieve these reductions has not yet been developed commercially. The technology may include diesel engine modifications, electronic fuel injection, improved cooling, and/or aftertreatment.