

2.6 Air Quality

Dennis, as with all of Eastern Massachusetts, continues to be non-compliant for summer ozone levels. While the town generally enjoys good air quality, at several points during the last ten years, including numerous occasions during the summer of 2001, the Cape and state experienced problems with ozone levels that exceed health-based standards during the summer months. Ozone is a serious summer health problem and is formed from the tailpipe emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x). Its principle contributing factor is automobile exhaust. Ozone is a pollutant that can travel many miles, therefore, the problems experienced on Cape Cod are often caused by automobile travel in points south and west of the region. Likewise, travel on the Cape exacerbates air quality problems downwind, such as in southern New Hampshire and Maine. For this reason the Clean Air Act and its many amendments have created the Ozone Transport Commission (OTC). The OTC is charged with addressing, on a multi-state basis, the problems associated with ozone and its pre-cursors.

The Federal Clear Air Act established national ambient air quality stands for five priority air pollutants: sulfur dioxide, carbon monoxide, particulate matter of ten microns or less, nitrogen dioxide and volatile organic compounds. Massachusetts is classified as being in serious non-attainment for ozone and was required under the Clean Air Act to achieve the national ambient air quality standards for ozone by 1999. The 1999 goal entailed that the state reduce pollution emissions of volatile organic compounds (VOC) by 15% between 1990 and 1996, and an additional 3% per year between of ozone precursor emissions (VOC and NO_x) between 1996 and 1999. In addition, the Clean Air Act required that any emissions resulting from growth must be reduced.

The Massachusetts Department of Environmental Protection (DEP), the Massachusetts Highway Department and the 13 regional planning commissions in Massachusetts all worked to develop Air Quality Attainment Plans during the 1990's and continuously updated these plans. These plans illustrated, on paper, that the state could comply with the Clean Air Act emission reduction requirements within the stated time frame --- but based upon computer modeling would not attain Clean Air without drastic emission cuts in the upstream air current. These emission reduction plans were constantly updated along with the annual updates to the Regional Transportation Improvement Programs. As attainment projects slipped (i.e. the implementation of a requirement that 12,000 automobiles on the road be zero emission vehicles by the year 2000, Old Colony Line Greenbush Extension, etc.) other projects were substituted. The State Implementation Plan for Air Quality (SIP) includes a variety of measures designed to reduce emissions from stationary, mobile and area sources. Examples include: cutting back on VOC emissions from industrial sources; reducing the VOC content of certain products (paints, hairspray, spray-on deodorant); requiring annual inspection and maintenance of cars and trucks; reducing excessive idling of engines; reducing vehicle miles traveled by encouraging employee ridesharing; improving mass transit systems and adding more high-occupancy vehicle lanes to highways.

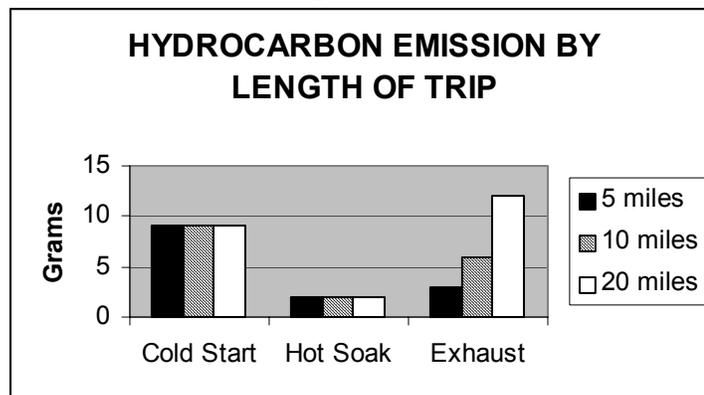
DEP estimates that stationary point sources (such as industries and utilities) are not the major contributor of VOC emissions. Only 6% of VOC emissions come from these sources.

Stationary area sources (such as residential heating systems, gasoline stations, auto body shops and dry cleaners) contribute 45% of VOC emissions. On-road mobile sources (such as cars, trucks and buses) contribute 26% and off-road mobile sources (such as boats, trains, recreational vehicles, construction and lawn/garden equipment) contribute 22% of the VOC emission inventory.

While Dennis has very few stationary point sources of emissions, both stationary area sources and mobile sources are significant. Although new automobiles are getting cleaner, with increasing growth and development, Dennis and the entire Cape can expect to experience worsening air quality. Each new home that is built in Dennis and throughout the Cape adds significantly to vehicle miles traveled on the roads and thus, to air emissions. Each new home brings more population, which in turn means more lawn mowers, more boats, and more recreational vehicles (such as all-terrain vehicles, snowmobiles, and jet-skis). All of these things contribute to air pollution emissions.

It is extremely important that the Town and the Cape seek ways to eliminate automobile trips. Air quality emissions data illustrate that shorter trips, i.e. grocery shopping and similar "errands around town," are significant sources of air pollution, in that they are made in an automobile that is 1) not operating at peak efficiency; 2) emit significant emissions at start up due to cold starts and 3) have significant evaporative emissions (i.e. hot soak). It has been illustrated that for vehicle trips of less than twenty miles the cold start and hot soak emissions exceed the actual VOC emissions associated with the miles driven (*The Relationship Between AIR QUALITY, TRANSPORTATION and FUTURE GROWTH How Will We Meet the Mandates?* April 1992 Metropolitan Area Planning Council) (Figure 2.6.1). This same study illustrated that eliminating the automobile trip that is less than five miles in length will have greater air quality benefit than shortening a twenty mile trip that continues to rely on the automobile for a portion of the trip (Figure 2.6.2).

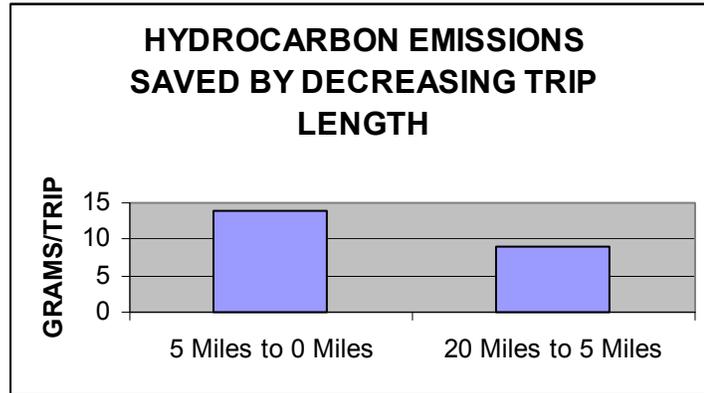
Figure 2.6.1



In 1992 the Statewide Transportation Improvement Program programmed in excess of \$9 billion in transportation investments, these investments included the Central Artery project and several new rail extensions, such as the Old Colony, Worcester, the Newburyport extensions. Combined, these investments were only going to reduce air pollution emissions by 1.67% (ibid.). This minimal return on the transportation investment dollar illustrates the need for land use

measures to weigh in on achieving and maintaining clean air. A jobs/housing balance and development in growth centers of adequate density to promote alternatives to the automobile is not only important, but mandatory if the state, Cape and Town of Dennis are to achieve Clean Air.

Figure 2.6.2



The land use patterns of future development can make an important difference in air quality. Compact forms of development with mixed uses, which promotes pedestrian activities and the use of public transportation, can reduce the need for private automobile trips. Dennis’ policies of concentrating growth, protecting open space, and encouraging alternatives to private automobile travel all will help to reduce air emissions.

The Massachusetts DEP is responsible for regulating emissions from stationary point sources. DEP also manages a number of other programs to reduce air emissions such as enhanced inspection and maintenance of motor vehicles, reformulated gasoline, vapor recovery at gasoline stations, architectural coating controls, auto body refinishing controls and the low emission vehicle (LEV) program. Dennis’ role in managing air quality should be focused on managing future land use and transportation so as to minimize air emissions.

Goals and Policies

2.6.1 Goal: To maintain and improve Dennis’ air quality so as to ensure a safe, healthful, and attractive environment for present and future residents and visitors.

Minimum Performance Standard

2.6.1.1 Developments of Regional Impact shall be in compliance with the Massachusetts State Implementation Plan (SIP) and DEP’s Air Pollution Control Regulations, 310 CMR 7.00.

Other Development Review Policies

2.6.1.2 Mixed-use development, which results in a net decrease in automobile mileage and air emissions, should be encouraged.

2.6.1.3 Development and redevelopment should use energy-efficient means of construction, operation, and maintenance in order to reduce air emissions from stationary area sources.

2.6.1.4 Drive-through facilities should be discouraged in order to decrease emissions from engine idling.

IMPLEMENTATION

1. The town of Dennis shall examine existing land use patterns and identify suitable locations for mixed-use development to reduce automobile travel and air emissions.
Responsible Parties: PB
Priority: H
Time Frame: 2002
2. The Town shall examine its existing land use patterns and zoning to determine the viability of "neighborhood" oriented businesses that can serve the needs of residents, but not through traffic, and make revisions that are consistent with this objective.
Responsible Parties: PB
Priority: H
Time Frame: 2003
3. The Town shall review its transportation network to determine where improvements can be undertaken to improve bicycle and pedestrian facilities.
Responsible Parties: DPW
Priority: H
Time Frame: On-going
4. The Town shall design pedestrian facilities into all future transportation network improvements.
Responsible Parties: DPW
Priority: H
Time Frame: On-going
5. The Town shall review and revise its subdivision regulations to ensure that adequate provisions are made to allow for pedestrian facilities in all subdivisions.
Responsible Parties: PB
Priority: H
Time Frame: 2002
6. The town of Dennis shall work with transportation agencies and the Cape Cod Commission to promote alternative modes of travel to the Cape and the Islands as a means of addressing the regional air quality transport issues affecting the Cape ozone levels. In particular, the Town will encourage the state transportation agencies, and the Cape Cod Commission to support all economically feasible methods to reduce summer automobile travel to the Cape and Islands, in particular the use of off-cape transportation services such as shuttle buses, ferries and rail.
Responsible Parties: BOS, PB, Engineering, DPW
Priority: H
Time Frame: On-going

7. The town of Dennis shall continue to work with transportation agencies to promote alternative modes of travel within Dennis such as bicycling and pedestrian facilities, transit systems, air and water transportation, and ride-sharing programs in order to reduce air emissions.

Responsible Parties: BOS, PB, Engineering, DPW

Priority: H

Time Frame: On-going

8. The town of Dennis shall work with the Cape Cod Commission and DEP to provide public education about ways that residents and businesses can improve air quality.

Responsible Parties: BOS, PB, Engineering, DPW

Priority: H

Time Frame: On-going