Supporting the Lewes Fire Department Strategic Plan (2010–2030)

December 2009

Authors: Andrew Homsey and Nicole Minni
Institute for Public Administration
College of Education & Public Policy
www.ipa.udel.edu

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College of Earth, Ocean & Environment
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Preface

As Director of the Institute for Public Administration (IPA) at the University of Delaware, I am pleased to provide this report, *Supporting the Lewes Fire Department Strategic Plan (2010–2030)*. This report represents data collection, mapping, analysis, and training support for the development of a strategic plan for the Lewes Fire Department. The work has been funded through a grant from the Coastal Community Enhancement Initiative (CCEI), a multi-college program that seeks to focus scientific and policy-related research on Delaware’s southernmost county.

The report summarizes the efforts of IPA to catalog GIS-compatible data and analysis to assist in the production of a capacity plan for the Lewes Fire Department, which will help it address the challenges of a rapidly changing county and a tightened fiscal reality. Their strategic plan will ultimately ensure provision of timely fire and emergency services for this coastal community, a service that bears directly on the welfare of the inhabitants, both physically and economically.

Jerome R. Lewis, Ph.D.
Director, Institute for Public Administration
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Institute for Public Administration

The Institute for Public Administration prepared this report. A unit within the College of Education & Public Policy at the University of Delaware, IPA provides planning and policy assistance to governments and organizations in Delaware, the Delaware Valley, and along the Eastern Seaboard through direct staff support, research projects, and training programs and policy forums. This support is provided as an outgrowth of the University’s land grant mission of public service, education, and research across the state of Delaware.

Andrew Homsey performed much of the data analysis for the report and was largely responsible for its drafting. Nicole Minni collected the data, created and prepared the map atlas, provided training for the contractor and the Lewes Fire Department, and assisted in the drafting of the report.

Institute Director
Jerome R. Lewis, Ph.D.

Project Team
Nicole Minni, GISP, Policy Specialist II
Andrew Homsey, Associate Policy Scientist
James Richmann, Consultant for the Lewes Fire Department

Editorial Review and Report Production
Mark Deshon, Assistant Policy Scientist

Acknowledgments

Sincere appreciation is extended to the coordinators of the University of Delaware’s Coastal Community Enhancement Initiative (CCEI)—Bill McGowan from the College of Agriculture & Natural Resources, Jim Falk from the College of Earth, Ocean & Environment, and Bernie Dworsky from the College of Education & Public Policy—for supporting the efforts that went into the development of this project summary. Additional thanks go to Jim Richmann, who authored the strategic plan for the Lewes Fire Department and with whom the authors of this report have worked closely in the course of this project. The collaboration that went into this study produced information useful to the Lewes Fire Department’s comprehensive-planning efforts and will assuredly have a positive impact on all those living in the Lewes fire district and beyond.

The Coastal Community Enhancement Initiative is funded through a grant from the state of Delaware to the University of Delaware to work with coastal communities and jurisdictions on growth and development issues. The program is a University of Delaware joint partnership among three colleges—the College of Earth, Ocean & Environment, the College of Agriculture & Natural Resources, and the College of Education & Public Policy—and their affiliated outreach, extension, and public service programs.
Introduction

Sussex County in Transition

Sussex County is a vibrant, dynamic coastal region in Delaware that has undergone dramatic changes in recent years. The county lies completely within the sandy coastal plain physiographic region, but it varies geographically east to west. The eastern portion is characterized by environmentally sensitive wetlands and estuaries, as well as densely developed resort communities. The central portion of the county has been traditionally agrarian and less developed, while the west includes farmland and many of the county’s larger towns, positioned along the US Route 13 and main north-south railways. The west has also been traditionally the county’s agricultural and industrial core.

The population in the county has in recent years been increasing dramatically, and projections indicate that this trend will increase (see Figure 2). Concomitantly, there has been a population shift toward the eastern portion of the county, as the number of seasonal visitors and permanent residents there has soared. There has also been a demographic shift toward a more elderly population. The relaxed way of life, low property taxes, and abundance of cultural and recreational amenities in Sussex County have contributed to these trends.

Figure 1. NASA Landsat imagery of Sussex County, Del.

Figure 2. Population projections for Sussex County. Source: U.S. Census Bureau and Delaware Population Consortium.
the eastern portion of the county has attracted people from outside as well as from within
the state, particularly retirees. Figure 3 presents the projected changes in population age
characteristics through 2030.

As more people have moved to
the coastal portion of Sussex
County over the past several
decades, property values have
increased dramatically. One of
the results of this has been a
westward movement of middle-
and lower-income families,
particularly young people.
Increasingly scattered suburban
development has been
encroaching on the traditionally
rural, agrarian, and sparsely
populated countryside of central and western Sussex County.

**Effects on Infrastructure and Provision of Services**

The growth of the eastern, coastal portion of the county has reinforced the area’s
economic importance to the
state. After poultry
production, tourism is the
county’s largest industry,
and the resort areas of
Sussex County are the
predominant source of
tourism revenue and jobs
within the state (see Figure
4). The recent boom in
population has coincided

![Figure 3. Population projections by age group for the years 2000–2030.](image)

![Figure 4. Tourism Expenditures throughout Delaware.](image)
with an economic boom driven by marked, dense residential and commercial development, particularly in the eastern section of the county. Economic development and growth, however, come at a cost. As more people live in and visit the area strains on the provision of public services also increase. With more people come more demands on services such as public roads (see Figure 5, a busy intersection near Lewes), utilities (e.g., water, sewer, and electric service), schools, and fire and ambulance services. These services typically are not expanded gradually, but rather periodically require large inputs of capital expenditure. For instance, when a school is pushed beyond its capacity, a new school must be built to meet the community’s needs, a prospect that can cost in the tens of millions of dollars. Similar levels of investment are likewise required to upgrade most public utilities and services when a threshold of demand is exceeded. Like schools, roads, and utilities, fire and emergency medical services (EMS) are not optional, but required, to fulfill the needs of the health and welfare of the community.

Some services, such as schools and EMS are also influenced by the age characteristics of the populace, and are, therefore, sensitive to demographic changes such as shifting age patterns. Therefore, it is important for those responsible for the provision of these various services to be aware of likely short- and long-term changes and trends, so that they may ensure that provision of the services is not impaired. By analyzing trends and planning for future needs, the financial, physical, and political groundwork can be prepared, and valuable services can avoid future disruptions.
The Lewes Fire Department

Since the provision of fire, rescue, and EMS is so critical to the welfare of the community it serves, the Lewes Fire Department (LFD), Inc., has undertaken the development of a strategic plan to assist in anticipating current and future needs and expenditures.

This report summarizes the findings associated with the development of this plan by the University of Delaware’s Institute for Public Administration (IPA), under contract through the University’s Coastal Community Enhancement Initiative, in support of these strategic-planning efforts. Using GIS mapping and analysis, IPA has compiled a series of base-layer information that can help inform planning decisions by the Lewes Fire Department. IPA has also analyzed current and future demographic trends, from 2000 to 2030, within Sussex County, which will have a profound impact on the provision of service by LFD (see Figure 6 for the district boundaries and fire station locations). The

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Figure 6. Map showing Lewes Fire Stations, 1, 2 and 3, in relation to natural resources that encompass the area.
homes of all LFD volunteers were also geo-coded and mapped. Additionally, an analysis of recent incidents, their locations, and the associated response times was undertaken. Such mapping and analysis help determine where potential issues such as limitations on service provision or other problems may occur. This information can assist LFD in decision-making related to the allocation of resources (e.g., purchase of fire, rescue, and EMS equipment). In this way LFD’s core mission will be advanced: “[t]he overarching need of the Department, now and in the future, is to continue to meet its public safety mission of protecting lives, property and natural resources.”

To ensure that fire departments meet the needs of the public, the National Fire Protection Association (NFPA) has issues standards relating to response times. For instance, NFPA standard 1720 requires that, for places of densities greater than 1,000 people per square mile, 90 percent of all response times must be nine minutes or less. The strategic plan identifies several challenges LFD faces in its effort to meet this requirement in the coming years through 2030. Such challenges include the need to ensure adequate service to a growing and aging population with an all-volunteer force, the fact that demographic trends indicate an increasingly urbanized service area, and the outreach and education that will be required to inform the public, politicians, and policymakers about future financing demands. The plan provides specific recommendations to help address these challenges, including the identification of specific capital expenditures on fire and EMS equipment, personnel, and improvements to fire stations. Based on the GIS and demographic analysis, it was determined that it is unlikely that a new fire station will be needed before 2030.

**Study Area**

The Lewes Fire Department’s district encompasses the City of Lewes and environs, including Cape Henlopen and the Cape May–Lewes Ferry terminal, extending westward along State Route 9, and north and south along State Route 1, approximately halfway to Milton and Rehoboth Beach, respectively. The district centers around the “Five Points” intersection, which roughly divides the district into several sections, and which represents a common transportation nexus in the area. The district is diverse, with areas of historic,
high-density residential and commercial use, areas of institutional, industrial, and heavy marine uses, beach communities, areas of extensive wetland and dune complexes, retirement and vacation communities, suburban subdivisions, and agricultural land. The map in Figure 7 depicts the district boundaries.

**Scope of Work**

The focus of effort undertaken by IPA for the Lewes Fire Department (LFD) has been the production of maps and data relevant to the creation of a strategic plan for LFD. Data layers—building footprints, roads, environmental features, land use, and other cultural features—are a key component of these data sets. Additional data, including demographic projections and models, incident mapping, and geo-location of LFD volunteers are also of critical importance to planning efforts. Additionally, a series of meetings with LFD and its representatives was undertaken to present the data, demonstrate its use, and address questions and concerns. Six-hours-worth of hands-on training was conducted to enable ongoing maintenance and proper use of the data and maps.

**Methods and Results**

**Data Compilation**

The following is a list of the data compiled to assist LFD in its strategic planning efforts.

- Framework data (municipal boundaries, communities, parcel boundaries, hydrology, protected lands, roads, and railroads, geographic names, elevation, aerial imagery, geodetic control points)
- Fire districts (county-wide)
- County-wide demographic information
- Age and other demographic information for the years 2010-2030
- Building footprints
- 100-acre grid
• Modified grid (based on DelDOT’s Traffic Analysis Zones)
• Fire station locations
• Sussex County’s future land use
• 2007 land use/land cover
• Environmentally sensitive areas
• 2004 Strategies for State Policies and Spending investment zones
• Response-time curves, as provided by LFD

**Demographic Projections**

To determine the demographic characteristics within the Lewes Fire District, several datasets were used. Census information from the U.S. Census Department was used as the “baseline” for age-categorized data at the census-block level. The Delaware Population Consortium (DPC) demographic data based on Modified Grid geography was also used to determine predicted population densities across the District. Each Modified Grid unit comprises one or more block units as defined by the U.S. Census Department. DPC tabular information from 2008, which predicts county-wide population by age category for each year from 2000 to 2030, was used as a basis to model projected age characteristics, based on the baseline census data. The Modified Grid geographic layer was altered for the purposes of this investigation by removing uninhabited areas, which include public lands, wetlands, and open water. This was done so that all subsequent density calculations would be based on habitable areas only. An initial investigation was also made using a 100-acre grid as the basis for demographic analysis. This layer was generated for use with this project, and the population values were calculated on a prorated basis. It was decided that the Modified Grid geographic unit was preferable to the 100-acre grid, since the data were originally compiled at the former geography and, further, Modified Grids relate to existing standardized census-block units. Therefore, analysis based on the 100-acre geographic unit is not considered in this investigation.

**Gross Population Estimates**

Initially, population across the District was depicted using the Modified Grid data, for which projected total population values had been provided through the year 2030. The four maps in the Figure 8 depict the population densities for four years—2000, 2010,

Population projections indicate that there will be a moderate increase across the area, with particular development occurring along the western edge of the District, and in the areas along State Route 1 (SR1), to the northwest of fire station #2 (represented by a dot near the center of the district). Figure 9 summarizes the population changes within the Lewes Fire District. From a population of 13,376 in 2000, it is projected that the 2030 population will be 23,039, an increase of 72 percent.
Supporting the Lewes Fire Department Strategic Plan (2010–2030)

Figure 9. Projected population change within the Lewes Fire District, 2000 to 2030. Source: Delaware Population Consortium, small-area projections

**Age-Profile Modeling**

DPC population projections for the years 2000 to 2030 are based on the Modified Grid geographic unit; however, detailed age characteristics are given only at larger units of aggregation. For Sussex County, age-profile data are compiled at the county-wide level. Since provision of fire and EMS services, in particular, are highly dependent on age of the target population (with those 65 years old and above requiring many more emergency service calls), detailed age characteristics at the Modified Grid scale were modeled. Age categories were based on the following ranges: 0 to 4 years, 5 to 9 years, 10 to 14 years, 15 to 19 years, 20 to 24 years, 25 to 29 years, 30 to 34 years, 35 to 39 years, 40 to 44 years, 45 to 49 years, 50 to 54 years, 55 to 59 years, 60 to 64 years, 65 to 69 years, 70 to 74 years, 75 to 79 years, 80 to 84 years, and 85 and up.

An initial (“time 0”) age distribution was calculated using block-level census data from the 2000 decennial census, which were then aggregated to the Modified Grid mapping level. This aggregation is possible since Modified Grids are conterminous with one or several census blocks. The relative distribution among age categories for year 2000
census-block data was calculated based on normalized Z-score (or standard score), which assigns a value equal to the number of standard deviations above or below the county-wide mean for a given age category, for each block group.\(^1\)

The following formula is used for calculating the Z-Score (\(z\)) for a given age category.

\[
z = \frac{x - \mu}{s}
\]

where:
- \(x\) is the total number of people of a given age category in a census block, within Sussex County.
- \(\mu\) is the mean of all census blocks within Sussex County for that age category.
- \(s\) is the standard deviation within an age category for all census blocks within Sussex County.

Using the Z-score, and assuming a relatively consistent distribution over time, it is then possible to estimate the pro-rated populations within an age group for any year that has projected population data (yearly from 2000 to 2030, in this case). It is necessary to know the standard deviation to back-calculate the population from the Z-score; since the distribution of population for projected years is unknown, the standard deviation from the year 2000 data for each age category was used as an approximation.

Using projected data obviously limits the accuracy of the population’s age distribution within the Lewes Fire District, which results in less accurate numbers and values derived from those projections. The assumption is that the relative distributions within each Modified Grid unit remain static over the study period. Thus, to apportion the projected population into age categories, a consistent distribution is applied to the total projected population to determine the number of people in each age category. Since the age-distribution curve will not remain constant, there is a discrepancy between the total population as predicted by the DPC and the total population calculated in the age-

\(^1\) Note that calculation of the Z-score assumes a near-normal distribution within age groups across the county’s blocks.
distribution model. This discrepancy results in an over-prediction of population, relative to the DPC values, of approximately five percent in 2030, across Sussex County.

Using information at the Modified Grid level, projected to the year 2030, it is possible to determine where populations at particular risk and that may require a high level of emergency-service provision are likely to reside in future years. Figure 10 summarizes the number and proportion of those of age 65 and above residing within the Lewes Fire District. Between 2000 and 2030, it is expected that the population of those 65 and older will increase from 3,312 to 6,483, or from 24 to 28 percent of the total projected population. The Appendix presents a map series of projected percentages of those aged 65 and older, based on Modified Grid mapping unit.

![Figure 10. Proportion of those aged 65 and older within the Lewes Fire District, based on DPC population projections and U.S. Census data.](image)

**Incidents and Volunteers**

A critical component of capacity planning for LFD’s future needs is an understanding of the geographic distribution of the incidents to which it responds, the nature of each emergency call, the location of the responding station, and the locations of the homes of the volunteers who respond to the call. Potential logistical problems can thus be
identified and addressed when planning for capital expenditures, staffing needs, and asset allocation. This information, in conjunction with an understanding of the likely demographic trends within the district, enhances the likelihood that LFD will be able to meet current and future demands and fulfill the requirements set forth by the NFPA.

**Incident Mapping**

Using a spreadsheet of incidents to which the LFD responded in the year 2007, a GIS layer of points was created from the latitude and longitude of each incident.\(^2\) To determine how long it took responders to arrive at the scene, the time elapsed between the point at which the 911 dispatcher contacts the fire station ("first unit assigned") and the point at which the first vehicle arrives on the scene ("first unit arrived") was calculated. For the purposes of NFPA regulations, this is defined as the response time.

LFD maintains three separate fire stations—Station 1 (headquarters) is in downtown Lewes, Station 2 is near “Five Points” (the intersection of State Route 1 and State Route 9), and Station 3 lies at the boundary with the Rehoboth Beach Fire Department, and is shared by both departments. Using information about which vehicle, or unit, responded to an incident, the station that responded was determined. Also, incidents that involved EMS response were separated from those that entailed fire-equipment response. The figures in this section illustrate the locations incidents from 2007, color-coded based on response times for each station, as well as EMS-related calls requiring

\(^2\) A spreadsheet for incident data from 2008 was not used, as it was determined to be incomplete.
Supporting the Lewes Fire Department Strategic Plan (2010–2030)

ambulance service (these are not specific to one particular station). Figure 11 illustrates fire-equipment response times for Stations 1, 2, and 3, for the year 2007. Figure 12 illustrates response times for incidents requiring EMS units only.

**Volunteer mapping**

For a volunteer fire department such as LFD, the mapping of incident locations represents only part of the picture. In order to plan comprehensively for adequate capacity, the location of volunteers who respond to calls is also an important consideration. The time required for responders to arrive at the fire station is an additional factor in determining the total time of response. Knowing where volunteers currently reside and are likely to reside, has a profound impact on LFD’s ability to continue to provide service to the district. Factors such as planned changes in infrastructure, additional traffic loads, trends in housing prices and age structures, among others, will affect who volunteers, where those volunteers live in relation to their corresponding stations, and how quickly the volunteers can travel from home to station.

To gain an understanding of current patterns, the addresses of current volunteers were geo-coded using DelDOT street information to create a map layer of LFD’s volunteer force. Figure 13 illustrates the locations of current volunteers in the LFD.
Note that volunteers tend to be clustered in residential areas surrounding each station. Changes in residential development patterns, and the availability of affordable housing will likely have an effect on future locations of volunteers. Another concern for LFD will be the age profile of the volunteer corps, recruitment of younger volunteers, and the issue of significant increases in population, particularly in those over the age of 65. The recent dramatic increase in housing costs in the coastal areas of Sussex County, in conjunction with the likelihood of fewer active volunteers among the increasingly elderly population could precipitate a shortage of volunteers who can locate close enough to the existing fire stations to allow for continued provision of service at current funding levels.

**Implications and Future Directions**

Several implications are suggested by the current study. First, it is clear that significant changes have been, and will probably continue, occurring in Sussex County. Many of these changes will have impacts on the Lewes Fire Department and its ability to provide continued service at present levels to the district as a whole. Demographic, economic, and structural changes in the district and the region represent challenges to LDF’s core mission. Even as funding for fire and emergency services is becoming scarcer, a growing and aging population, increased development, particularly of large residential communities outside the traditional zones of growth, a significant and growing seasonal
population, and increased traffic flows will put more pressure on the LFD and others in the county and region to increase and enhance their level of service.

Second, a capacity-planning effort must be comprehensive, addressing all issues related to continued provision of service. Therefore, such a study must recognize the need for communication and collaboration among all fire districts in the region. Changes that affect all of Sussex County will necessarily require a coordinated response among districts, many of which are facing similar challenges. It is recommended that communication among fire departments in Sussex County be enhanced, so that planning efforts such as that being undertaken by LFD may assist others in addressing their own, and the region’s, evolving issues.

IPA has gathered and analyzed much of the data presented in this report for the entire county. Making best use of this information requires a commitment from individual departments to use it in comprehensive capacity-planning efforts. The strategic plan for LFD identifies specific challenges faced in coming years, including identification of funding sources, likely future demands, impending capital investments, and retention and recruitment of volunteers. These concerns will be best addressed at the county and regional level to enable coordination of service, minimize duplication, and avoid wasteful spending. By doing so, the fire and emergency-services community can best ensure adequate coverage to the area now and in the future. Below are some additional tasks and considerations that may be worth pursuing in the future.

- Map the incident locations based on the seasonal changes of the Lewes/Rehoboth Beach area.
- Develop procedures for updating the data once the 2010 census data is available.
- Coordinate the reporting and gathering of incident-location data, so it can easily be mapped and analyzed within a GIS, or other, application.
- Develop data standards and practices for LFD that could then be replicated for other departments in the state.
Appendix. Maps

- Base Map
- Firefighter Members Close-up View
- Firefighter Members
- State Strategies for Policies & Spending
- Preliminary Land Use Service (PLUS) Projects
- 2007 Land Use / Land Cover
- Groundwater-Recharge Potential and Wellhead-Protection Areas
- Floodplains
- Historic Resources
- Protected Lands
- Wetlands and Watersheds
- Sussex County Fire Districts and Stations
Lewes Fire District Planning Map Series

Fire Fighter Members Closeup View

Members
- Active
- Career
- Life
- Fire Stations
- Roads
- Communities
- Municipal Boundaries

Sources:
- Fire Station Members - created by geocoding home address locations with the TeleAtlas Roads, May 2009.
- Municipal Boundaries - Office of State Planning Coordination (OMB), 2009.
- Parcel Boundaries - Sussex County Mapping & Addressing Department, 2009.
- Major Routes - Delaware Department of Transportation (DelDOT).

Note:
- This map is provided by the Institute for Public Administration, University of Delaware, solely for display and reference purposes and is subject to change without notice. No claims, either real or assumed, as to the absolute accuracy or precision of any data contained herein are made by Institute for Public Administration, University of Delaware, nor will the Institute for Public Administration, University of Delaware be held responsible for any use of the document other than which it was intended.
Lewes Fire District Planning Map Series

Fire Fighter Members

Member Status
- Active
- Career
- Life
- Fire Stations

Lewes Fire District
- Roads
- Communities
- Municipal Boundaries

Sources:
- Fire Station Members: created by geocoding home address locations with the TeleAtlas Roads, May 2009.
- Municipal Boundaries: Office of State Planning Coordination (OMB), 2009.
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Lewes Fire District Planning Map Series

State Strategies for Policies & Spending

- Fire Stations
- Sussex County Fire Districts
- Parcel Boundaries
- Out of Play

Overlays
- Area of Dispute
- Area of Study
- Env. Sens. Dev. (Sussex)

Strategy Level
- Level 1
- Level 2
- Level 3
- Level 4

Sources:
- Fire Districts - Census.
- Municipal Boundaries - Office of State Planning Coordination (OMB), 2009.
- Parcel Boundaries - Sussex County Mapping and Addressing Department, March 2009.
- Major Routes - Delaware Department of Transportation (DelDOT).

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Lewes Fire District Planning Map Series

2007 Land Use / Land Cover

Single Family Dwellings
Multi-Family Dwellings
Mobile Home Parks/Courts
Commercial
Industrial
Transportation/Communication/Utilities
Mixed Urban/Built-up
Institutional/Governmental
Recreational
Farms, Pasture, Cropland
Confined Animal Feeding Operations
Rangeland
Orchards/Nurseries/Horticulture
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrub/Brush Rangeland
Clear-cut
Man-made Reservoirs and Impoundments
Marinas/Port Facilities/Docks
Open Water
Emergent Wetlands - Tidal and Non-tidal
Forested Wetlands - Tidal and Non-tidal
Scrub/Shrub Wetlands - Tidal and Non-tidal
Sandy Areas and Shoreline
Extraction and Transitional

December 2009

Sources:
2007 Land Use / Land Cover - derived from the 2007 Aerial Photography.
Municipal Boundaries - Office of State Planning Coordination (OMB), 2009.
Major Routes - Delaware Department of Transportation (DelDOT).

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Groundwater Recharge Potential and Wellhead Protection Areas

Groundwater Recharge Potential
- excellent
- good
- fair
- poor

Wellhead Protection Areas

Sources:
- Wellhead Protection Areas - DNREC, Division of Water Resources.
- Municipal Boundaries - Office of State Planning Coordination (OMB), 2009.
- Major Routes - Delaware Department of Transportation (DelDOT).

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Delaware Bay
Lewes
Indian River
Millsboro
Milton
Rehoboth Beach

Lewes Fire District Planning Map Series

Historic Resources
- Historic Markers
- NR of Historic Places
- Buildings over 50 yrs old
- NR of Historic Districts
- Fire Stations
- Sussex County Fire Districts
- Major Roads
- Rivers and Streams
- Minor Roads
- Communities
- Streams, Rivers and Ponds

Sources:
- Historic Markers - Delaware Public Archives, Division of Historical and Cultural Affairs.
- Buildings over 50 years old - compiled by the Center for Historic Architecture and Design (CHAD), UD.
- Communities - Sussex County Mapping and Addressing Dept., 11/04/09.
- Fire Stations - Sussex County Fire Districts, 2008.
- Major Roads - Delaware Department of Transportation (DelDOT), 2009.
- Minor Roads - Delaware Department of Transportation (DelDOT).

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Scale: 0 0.6 1.2 1.8 2.4 Miles

Sources:
- Historic Markers - Delaware Public Archives, Division of Historical and Cultural Affairs.
- Buildings over 50 years old - compiled by the Center for Historic Architecture and Design (CHAD), UD.
- Communities - Sussex County Mapping and Addressing Dept., 11/04/09.
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Sussex County
Fire Districts and Stations

Delaware Bay
Atlantic Ocean

Carlisle
Memorial
Milton
Ellendale
Dagsboro
Indian River
Rehoboth Beach
Lewes
Millsboro
Selbyville
Frankford
Gumboro
Delmar
Laurel
Seaford
Bridgeville
Blades
Greenwood
Georgetown

Fire Stations
Lewes Fire District
Sussex County Fire Districts
Municipal Boundaries
Major Roads
Minor Roads

Sources:
- Fire Station Locations - Water Resources Agency, University of Delaware, 2008
- Municipal Boundaries - Office of State Planning Coordination (OMB), 2009
- Major Routes - Delaware Department of Transportation (DelDOT)

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