**Windsor**

Windsor is a suburban community just north of Hartford. It has a land area of 31 square miles and an estimated population of about 29,044. Windsor’s elevation ranges from about 32 feet on the eastern side to about 200 feet in the western edge. Its land area drains to two regional basins: the main stem of the Connecticut River Watershed and the Farmington River Watershed in the southeast area. The Town also encompasses several sub-regional drainage basins. The Connecticut River flows the length of the eastern town boundary. The Farmington River runs from west to east and joins the Connecticut River in Windsor. Other watercourses that run through town include Deckers, Meadow, Mill, Phelps, and Rainbow Brooks. Interstates 91 and 291 run through and intersect in Windsor. In addition, the highway connector between Interstate 91 and Bradley International Airport (Route 20) runs along the northern boundary of Windsor. An active railroad parallels Route 91, running north-south through Windsor. Other major transportation routes through town include state routes 75, 159, 178, 187, 218 and 305. Power generation, aerospace, insurance, computer aided design and manufacturing software development, medical technology, financial services, manufacturing of computer components, electronics, machine tools, adhesives, measuring devices, automotive parts, air movement equipment, and shade grown tobacco are the principal industries in Windsor.

Windsor is a growing center of employment within the region, and as such, experiences an increase in daytime population. According to the Connecticut Department of Labor, the average annual employment for 2010 was 23,809 jobs. There is a particular concentration of employment in the Day Hill Road area. This area is also planned to grow as an employment and residential center as the mixed-use Great Pond Village is developed. Great Pond Village proposes to add approximately 4,000 residential units, 85,000 square feet of retail space, and 820,000 square feet of commercial office and hospitality space. This additional population and areas with concentrated employment must be factored into disaster planning.

**Challenges**

Challenges the community faces regarding responding to natural disasters include areas within town that may become inaccessible due to flooding, the need for emergency generators at locations that provide life safety services to parts of the community, and the difficulty of retrieving real time data regarding the status of upstream dams to anticipate flooding impacts.

The National Flood Insurance Program (NFIP) has paid out 25 claims in Windsor totaling $90,399.44 to-date. Repetitive losses are also a challenge for the town. Two properties adjacent to Meadow Brook in the southern end of town have been identified as repetitive loss structures. The NFIP has paid out $31,638.42 in claims on these properties. Improvements were made in both 2007 and 2011 to address this area. In 2007, the town replaced the culvert beneath the roadway, which improved the hydraulic capacity of the brook in the area. Additionally, in 2011, slope stabilization work on the upstream banks of the channel was completed to reduce the potential for erosion that could impact the hydraulic capacity of the channel, and help maintain long term functionality of the improvements completed in 2007. Since the adoption of the 2008 Plan, there have been no changes in land use or housing development in the special flood hazard area or that would affect the Town’s vulnerability to natural hazards.
A significant flood event could result in much damage. CRCOG used FEMA’s Hazus-MH model to analyze the risks that the community might face from flooding. The model estimates that economic losses to the town including residential and commercial damage and business interruptions due to a flood having a 1% chance of occurring any given year (the 100-year flood) would be over $132 million. The impacts of such a flood are summarized below:

<table>
<thead>
<tr>
<th>Estimated Damages from 100-Year Flood</th>
<th>Households Displaced</th>
<th>614</th>
</tr>
</thead>
<tbody>
<tr>
<td>People Needing Shelter</td>
<td>1,575</td>
<td></td>
</tr>
<tr>
<td>Buildings at Least Moderately Damaged</td>
<td>292</td>
<td></td>
</tr>
<tr>
<td>Total Estimated Economic Losses</td>
<td>$132,710,000</td>
<td></td>
</tr>
<tr>
<td>Total Residential Building &amp; Content Losses</td>
<td>$89,300,000</td>
<td></td>
</tr>
<tr>
<td>Total Commercial, Industrial &amp; Other Building &amp; Content Losses</td>
<td>$43,170,000</td>
<td></td>
</tr>
<tr>
<td>Total Business Interruption Losses</td>
<td>$240,000</td>
<td></td>
</tr>
</tbody>
</table>

CRCOG also used FEMA’s Hazus-MH model to analyze the risks that the Town of Windsor might face from a hurricane as powerful as the 1938 hurricane. The model estimates that economic losses to the town including residential and commercial damage and business interruptions due to such a Category 3 hurricane would be over $135 million. The impacts of such a storm are summarized below:

<table>
<thead>
<tr>
<th>Estimated Damages from a 1938 Strength Hurricane</th>
<th>Households Displaced</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>People Needing Shelter</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Buildings at Least Moderately Damaged</td>
<td>978</td>
<td></td>
</tr>
<tr>
<td>Buildings Completely Damaged</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>Total Estimated Economic Losses</td>
<td>$135,530,000</td>
<td></td>
</tr>
<tr>
<td>Total Residential Building Losses</td>
<td>$97,120,000</td>
<td></td>
</tr>
<tr>
<td>Total Commercial, Industrial &amp; Other Building Losses</td>
<td>$23,750,000</td>
<td></td>
</tr>
<tr>
<td>Total Business Interruption Losses</td>
<td>$14,660,000</td>
<td></td>
</tr>
<tr>
<td>Total Debris Generated</td>
<td>44,721 tons</td>
<td></td>
</tr>
<tr>
<td>Truckloads (at 25 tons/truck) of building debris</td>
<td>492</td>
<td></td>
</tr>
</tbody>
</table>

According to information from the Connecticut Department of Emergency Management and Homeland Security, the three federally declared natural disasters of 2011 resulted in total expenses to the municipality and other local agencies of over $1.2 million. These expenses include debris and snow removal, emergency protective measures and repairs to damaged infrastructure and buildings but do not include damages experienced by private citizens and businesses.

<table>
<thead>
<tr>
<th>2011 Disasters Damage Amounts Eligible for 75% Reimbursement Under FEMA Public Assistance Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicant: Municipality and Other Agencies (i.e., Fire Districts, Schools, and Private Non-Profit Agencies)</td>
</tr>
<tr>
<td>Town of Windsor</td>
</tr>
<tr>
<td>Windsor Other</td>
</tr>
<tr>
<td>Windsor Total</td>
</tr>
</tbody>
</table>
Goals, Objectives and Strategies

GOAL: REDUCE THE IMPACT OF FLOODING ON PROPERTY, TRANSPORTATION AND TOWN INFRASTRUCTURE

Objective 1:
Review and analyze (Mill, Meadow and Deckers Brooks) watersheds.

Strategic Actions:

   Lead: Planning
   Priority: Medium
   Status: Deferred: No Activity
   Potential Funding Source: General Fund
   Timeframe: 2014-2019

1.2 Prioritize watersheds based on historic negative impact.
   Lead: Planning, Public Works, Engineering
   Priority: Medium
   Status: Deferred: No Activity
   Potential Funding Source: General Fund
   Timeframe: 2014-2019

1.3 Implement identified improvements.
   Lead: Engineering, Public Works, Planning
   Priority: Medium
   Status: Ongoing
   Update: Improvements to Meadow Brook were completed in 2007 and 2011. An engineering evaluation of Decker’s Brook was completed in 2010. The report included both recommended maintenance and structural improvements. These activities are scheduled to begin in 2013. Watershed analyses of the Mill Brook and Meadow Brook have also been identified as projects in the town’s 6-year Capital Improvement Program.
   Potential Funding Source: municipal bonds
   Timeframe: 2014-2019

Objective 2:
Ensure emergency service accessibility through transportation infrastructure improvements.

Strategic Actions:

2.1 Develop and implement maintenance plan for River Street retaining wall.
   Lead: Engineering, Public Works
   Priority: Medium
Status: Upcoming
Update: The reconstruction of River Street has been scheduled for design in the town’s currently adopted Capital Improvement Program for FY2018. The structural integrity of the retaining wall will be evaluated at that time to develop a maintenance program.
Potential Funding Source: General Fund and municipal bonds
Timeframe: 2018-2019

2.2 Identify, prioritize and implement local road improvements.
Lead: Public Works
Priority: Medium
Status: Deferred: No Activity
Potential Funding Source: General Fund, State and Federal aid, municipal bonds
Timeframe: 2014-2019

2.3 Pursue improvements of state roads with the CT Department of Transportation.
Lead: Administration, Public Works
Priority: Medium
Status: Deferred: No Activity
Potential Funding Source: State and Federal funding
Timeframe: 2014-2019

Objective 3:
Reduce flooding impacts through infrastructure enhancements.

Strategic Actions:

3.1 Increase stormwater retention capacity.
Lead: Engineering, Public Works
Priority: Medium
Status: Improvements to the town’s drainage system are made on a yearly basis. Detention basins are cleaned to remove deposited silt and restore capacity. New development and redevelopment is required to review stormwater management and design facilities such that there is no increase in runoff as a result of the development. Potential municipal projects are evaluated annually during the budget review process; private development is evaluated during the development review process.
Potential Funding Source: General Fund
Timeframe: 2014-2019

3.2 Develop and implement maintenance plan for stormwater facilities.
Lead: Engineering, Public Works
Priority: Medium
Status: An inventory of town-owned facilities has been completed and is updated on an annual basis. Maintenance on town-owned facilities is regularly scheduled with additional maintenance performed on an as-needed basis. Additionally, in
2009, the town adopted an ordinance that requires private developments to record an “Inspection & Maintenance Agreement” on land records, which outlines regular maintenance of the on-site stormwater facilities to ensure long term functionality and reduce risks of downstream flooding. Potential municipal projects are evaluated annually; private development is subject to schedules required as a result of the development approval process.

Potential Funding Source: General Fund
Timeframe: 2014-2019

3.3 Support Metropolitan District Commission efforts to prevent flood water infiltration of sewer system.
Lead: Public Works, Administration
Priority: Medium
Status: Underway: The Town will continue to work with the MDC on addressing infiltration issues throughout the town.
Potential Funding Source: MDC, State and Federal aid
Timeframe: 2014-2019

3.4 Conduct public information campaign on property maintenance with respect to flooding, wind, freezing and other hazards.
Lead: Emergency Management, Administration
Priority: Medium
Status: Although no concerted public information campaign was conducted, the Emergency Management, Public Works and Building & Fire Safety Departments maintain advice for residents on their web pages.
Potential Funding Source: General Fund
Timeframe: Annual or more frequent updates are anticipated during 2014-2019

Objective 4:
Ensure adequate flood insurance coverage for residents.

Strategic Actions:

4.1 Pursue Community Rating System designation from FEMA.
Lead: Planning, Administration, Emergency Management
Priority: Medium
Status: Deferred: No activity
Potential Funding Source: General Fund
Timeframe: 2014-2019
GOAL: REDUCE THE IMPACT OF WINTER STORMS AND HIGH WIND EVENTS ON POWER DISRUPTION, EMERGENCY ACCESS, AND BUSINESS DISRUPTION

Objective 1:
Ensure adequate and timely removal of snow and ice from transportation network.

Strategic Actions:

1.1 Evaluate alternative technologies for snow and ice removal.
   Lead: Public Works
   Priority: High
   Status: Ongoing
   Update: The Public Works department reviews on a yearly basis the methods and materials used for snow and ice removal.
   Potential Funding Source: General Fund

1.2 Review and install roadway management system to determine optimal time for liquid ice control application.
   Lead: Public Works
   Priority: Medium
   Status: Deferred: No activity
   Potential Funding Source: General Fund, State and Federal aid
   Timeframe: 2014-2019

Objective 2:
Enhance capacity of emergency response.

Strategic Actions:

2.1 Increase sheltering capacity.
   Lead: Emergency Management, Administration
   Priority: Medium
   Status: Ongoing
   Update: A team has been created to finalize a document for the use of shelters in Windsor. As part of this team’s efforts they are in the process of identifying additional facilities for use as both day and overnight sheltering.
   Potential Funding Source: General Fund

2.2 Work with local hotels to ensure adequate emergency generating equipment to reduce reliance on municipal emergency shelters.
   Lead: Emergency Management, Building
   Priority: Medium
2.3 Increase training for hazard response, e.g. National Incident Management System (NIMS).
Lead: Emergency Management, Police, Fire
Priority: Medium
Status: Deferred: No activity
Potential Funding Source: General Fund, State and Federal aid
Timeframe: 2014-2019

2.4 Consider and develop a secondary Emergency Operations Center.
Lead: Emergency Management, Police, Fire
Priority: Medium
Status: Deferred: No activity
Potential Funding Source: General fund, State and Federal aid

Objective 3:
Minimize access disruptions at public safety buildings.

Strategic Actions:

3.1 Bury power lines at public safety buildings.
Lead: Emergency Management, Administration
Priority: Medium
Status: Deferred: No activity
Potential Funding Source: State and Federal aid
Timeframe: 2014-2019
Map 66: Windsor Population Density, Dams and Flood Zones
Map 67: Windsor Flood Plains, Repetitive Loss Areas, Dams and Important Facilities