City of Sun Prairie Annex

Community Profile

The City of Sun Prairie, is located northeast of the City of Madison. The City is located on several major transportation corridors, including US Highway 151. The predominant land uses within Sun Prairie's borders are residential and commercial. As of the 2010 Census, there are 29,364 people, 11,636 households, and 7,641 families residing in the City of Sun Prairie. The population density is 2401.4 people per square mile. There are 12,413 housing units at an average density of 1015.1 units per square mile. The population age profile as of 2010 is shown in Table 1.

Table 1 Population Age Profile

Category	Number	Percent
Total population	29,364	100.0
Under 5 years	2,498	8.5
5 to 9 years	2,370	8.1
10 to 14 years	2,129	7.3
15 to 19 years	1,765	6.0
20 to 24 years	1,603	5.5
25 to 29 years	2,562	8.7
30 to 34 years	2,566	8.7
35 to 39 years	2,376	8.1
40 to 44 years	2,145	7.3
45 to 49 years	2,070	7.0
50 to 54 years	1,836	6.3
55 to 59 years	1,594	5.4
60 to 64 years	1,242	4.2
65 to 69 years	804	2.7
70 to 74 years	546	1.9
75 to 79 years	448	1.5
80 to 84 years	374	1.3
85 years and over	436	1.5

Data Source: 2010 U.S. Census

According to the 2014 American Community Survey, the median income for a household in the City of Sun Prairie is $66,956 and the median income for a family is $76,909. The per capita income for the City of Sun Prairie is $30,905. 95.2% of the population has at least a high school degree, while 42.5% of the population holds at least a bachelor's level degree.

Hazard Identification and Risk Assessment

A hazard identification and vulnerability analysis was completed for the City of Sun Prairie using the same methodology in the base plan. The information to support the hazard identification and risk assessment for this Annex was collected through a Data Collection Guide, which was distributed to each participating municipality to complete.

The first step in a hazard analysis is to identify which hazards the community is vulnerable to. Table 2 outlines the hazard identification for the City of Sun Prairie based on the Data Collection Guide. The Data Collection Guide listed all of the hazards that could impact anywhere in Dane County. The purpose of this worksheet was to identify and rank the hazards and vulnerabilities specific to the jurisdiction. The City of Sun Prairie's planning team members were asked to complete the matrix by ranking each category on a scale of 0 to 5 based on the experience and perspective of each planning team member. A ranking of 0 indicated "no concern" while a ranking of 5 indicated "highest concern."

This matrix reflects that the City of Sun Prairie has the highest vulnerability to flood, tornado, and winter storm. The vulnerability established here is a qualitative assumption based on the impacts, geographic extent, probability of future occurrence, and magnitude/severity.

Table 2 Vulnerability Assessment Matrix for the City of Sun Prairie

Hazard	Hazard Attributes			Impact Attributes						
				Primary Impact (Short Term - Life and Property)			Secondary Impact (Long Term – Community Impacts)			
	Area of Impact	Past History, Probability of Future Occurrence	Short Term Time Factors	Impact on General Structures	Impact on Critical Facilities	Impact on At-Risk Populations	Social Impact	Economic Impact	Severity Of Other Associated Secondary Hazards	
	(1-5)	(1-5)	(1-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	(0-5)	**Total**
Dam Failure	1	1	1	0	0	0	0	0	0	3
Extreme Cold	5	3	3	1	3	4	2	2	2	25
Extreme Heat	5	3	3	1	3	4	2	2	2	***25***
Drought	5	2	2	1	1	3	2	3	2	***21***
Flood	5	3	4	4	5	4	2	4	4	***35***
Fog	5	3	3	0	0	0	1	1	0	***13***
Hail Storm	3	3	4	4	2	1	2	3	2	***24***
Landslide	1	1	1	0	0	0	0	0	0	***3***
Lightning	1	4	4	3	3	1	1	2	1	***20***
Tornado	3	2	4	5	5	4	4	5	4	***36***
Wildfire	1	1	5	5	4	0	1	2	2	***21***
Windstorm	5	4	4	4	4	2	3	4	3	***33***
Winter Storm	5	5	4	3	4	3	5	4	4	***37***

Data Source: City of Sun Prairie Data Collection Guide, 2015

Previous Hazard Events

Through the Data Collection Guide, the City of Sun Prairie noted specific historic hazard events to include in the community profile. These events have been incorporated into the appropriate hazard chapters in the base plan. These events had a particular impact on the community beyond the impacts and events recorded in the Dane County Hazard Mitigation Plan. This is not a comprehensive summary of past incidents, as the hazard profiles collected in the main Mitigation Plan include other events that may have historically impacted the jurisdiction. The events noted by this jurisdiction in the Data Collection Guide include:

Windstorm: June 1, 2013

Fences, crops, and powerlines were all damaged when a strong windstorm struck the area near County Highway C and State Highway 19. The damage was substantia enough to cause road closures for a short amount of time.

Windstorm: June 18, 2014

A windstorm impacted the entire City of Sun Prairie causing widespread roof and tree damage. Powerlines were also damaged. Disaster relief funding was used as part of the recovery and mutual aid agreements were used to aid in the cleanup effort.

Windstorm: July 13, 2015

The north side of Sun Prairie was struck by a windstorm that damaged trees. The storm caused minimal economic impact.

Asset Inventory

Assets include the people, property, and critical facilities within the City of Sun Prairie that are exposed to hazards in general. Inventories of property, essential infrastructure, and natural, cultural or historic resources help provide a comprehensive picture of the community and provide a method of assessing exposure to hazards by establishing the improved and total values, capacities and populations for these assets. It also forms the basis for estimating potential losses, where possible.

Population

Table 3 Vulnerable Population Summary

Disability Status from the 2014 American Community Survey	Number	Percent of Group with Disability
Population Under 5 years old with a Disability	0	0%
Population 5-17 years old with a Disability	267	4,5
Population 18-64 with a Disability	1,743	9.1
Population Over 65 years old with a Disability	876	31.2
Total Population with Disability	2,886	9.5

Other Vulnerable Populations	Estimate	Percentage
Families Below Poverty Level	503	6.2
Individuals Below Poverty Level	2,729	9.0
Of those poverty: Individuals Under 18	1,125	13.6
Of those poverty: Individuals Over 65	186	6.6
Total Population Over 5 who Speak English less than "very well"	734	2.6
2014 ACS Total Population Estimate	30,601	100%

Data Source: 2014 American Community Survey

General Property

Table 4 Property Exposure Summary

Property Type	Total Parcel Count	Improved Parcel Count	Improved Values ($)	Content ($)	Total Value ($)
Totals	**9,339**	**7,704**	**1,598,253,600**	**799,126,800**	**2,397,380,400**
Agriculture	25	1	141,300	70,650	211,950
Commercial	244	235	161,874,700	80,937,350	242,812,050
Utilities	62	2	339,100	169,550	508,650
Industrial	66	62	61,371,300	30,685,650	92,056,950
Institutional/ Governmental	64	16	5,629,900	2,814,950	8,444,850
Other	1,802	415	117,759,700	58,879,850	176,639,550
Residential	7,076	6,973	1,251,137,600	625,568,800	1,876,706,400

Data Source: Dane County Land Information Office

Critical Facilities

The City of Sun Prairie has identified the following critical facilities important to protect from disaster impacts. These are collected in Tables 5.These are based on the Data Collection Guide and information submitted by the City.

Table 5 Critical Facility Summary/Essential Infrastructure

Name of Asset	Type (See Below)	Replacement Value
Business Park	VF - Vulnerable Facilities	$3,072.00
Chase House	VF - Vulnerable Facilities	$22,449.00
Chase House	VF - Vulnerable Facilities	$218,142.00
Family Aquatic Center	VF - Vulnerable Facilities	$23,703.00
Family Aquatic Center	VF - Vulnerable Facilities	$423,703.00
Family Aquatic Center	VF - Vulnerable Facilities	$127,113.00
Family Aquatic Center	VF - Vulnerable Facilities	$161,778.00
Fleet Maintenance Facility	EI - Essential Infrastructure	$140,624.00
Fleet Maintenance Facility	EI - Essential Infrastructure	$2,234,045.00

Name of Asset	Type (See Below)	Replacement Value
Lift Station – Village	EI - Essential Infrastructure	$120,000
Lift Station – Columbus	EI - Essential Infrastructure	$30,000
Lift Station – Business Park	EI - Essential Infrastructure	$40,000
Lift Station – Shonas	EI - Essential Infrastructure	$70,000
Lift Station – Hickory Grove	EI - Essential Infrastructure	$80,000
Lift Station – Patrick Marsh	EI - Essential Infrastructure	$70,000
Lift Station – Wyndham	EI - Essential Infrastructure	$80,000
Lift Station – Meadows	EI - Essential Infrastructure	$90,000
Lift Station – Wilburn	EI - Essential Infrastructure	$90,000
Lift Station – Creekview	EI - Essential Infrastructure	$100,000
Municipal Building	EI - Essential Infrastructure	$13,311,543.00
Municipal Building	EI - Essential Infrastructure	$276,053.00
Museum	VF - Vulnerable Facilities	$691,109.00
Orfan Community Park	NA - Natural Assets	$194,219.00
Parks Facilities	VF - Vulnerable Facilities	$710,031.00
Pole Storage	VF - Vulnerable Facilities	$142,169.00
Pole Storage	VF - Vulnerable Facilities	$140,511.00
Public Library	VF - Vulnerable Facilities	$6,716,893.00
Public Safety Building	EI - Essential Infrastructure	$19,499.00
Public Safety Building	EI - Essential Infrastructure	$19,499.00
Public Safety Building	EI - Essential Infrastructure	$3,809,334.00
Public Works (DPW)	EI - Essential Infrastructure	$204,650.00
Public Works (DPW)	EI - Essential Infrastructure	$99,430.00
Public Works (DPW)	EI - Essential Infrastructure	$248,689.00
Public Works (DPW)	EI - Essential Infrastructure	$2,219,975.00
Public Works (DPW)	EI - Essential Infrastructure	$763,308.00
Recycle Center	VF - Vulnerable Facilities	$230,644.00
Sheehan Park	NA - Natural Assets	$36,722.00
Sheehan Park	NA - Natural Assets	$128,526.00
Sheehan Park	NA - Natural Assets	$83,651.00
Sheehan Park	NA - Natural Assets	$116,590.00
South Substation	EI - Essential Infrastructure	$9,031.00
Stoneridge Estates	NA - Natural Assets	$87,926.00
Substation-1731 Science Drive	EI - Essential Infrastructure	
Substation-2228 Colorado Ave.	EI - Essential Infrastructure	
Substation-326 Linnerud Drive	EI - Essential Infrastructure	
Substation-646 S. Thompson Road	EI - Essential Infrastructure	
Substation-991 N. Bird Street	EI - Essential Infrastructure	

Name of Asset	Type (See Below)	Replacement Value
Wastewater Treatment Plant	EI - Essential Infrastructure	$930,574.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$359,850.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$497,923.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$1,938,648.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$1,275,537.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$433,535.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$715,919.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$241,185.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$1,459,689.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$824,170.00
Wastewater Treatment Plant	EI - Essential Infrastructure	$348,240.00
Water & Light	EI - Essential Infrastructure	$845,548.00
Water & Light	EI - Essential Infrastructure	$3,712,583.00
Water & Light	EI - Essential Infrastructure	$1,733,727.00
Water Tower-910 Linnerud Drive	EI - Essential Infrastructure	
Water Tower-991 N. Bird Street	EI - Essential Infrastructure	
Well House #3	EI - Essential Infrastructure	$48,023.00
Well House #3	EI - Essential Infrastructure	$47,463.00
Well House #4	EI - Essential Infrastructure	$52,345.00
Well House #4	EI - Essential Infrastructure	$51,735.00
Well House #5, Colorado Sub Station	EI - Essential Infrastructure	$169,976.00
Well House #5, Colorado Sub Station	EI - Essential Infrastructure	$80,193.00
Well House #5, Colorado Sub Station	EI - Essential Infrastructure	$79,258.00
Well House #6	EI - Essential Infrastructure	$54,574.00
Well House #6	EI - Essential Infrastructure	$53,938.00
Well House #7	EI - Essential Infrastructure	$118,490.00
Well House #7	EI - Essential Infrastructure	$117,108.00
Well House #8	EI - Essential Infrastructure	$179,984.00
Well House #8	EI - Essential Infrastructure	$177,885.00
Well House #9	EI - Essential Infrastructure	$83,411.00
Westside Facility	EI - Essential Infrastructure	$19,788.00
Westside Facility	EI - Essential Infrastructure	$12,936,266.00
Wetmore Park	NA - Natural Assets	$36,722.00
Wetmore Park	NA - Natural Assets	$63,629.00
Wetmore Park	NA - Natural Assets	$73,440.00
		$63,375,987.00

Data Source: City of Sun Prairie Data Collection Guide, City of Sun Prairie

*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities; NA: Natural Assets

Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, and where it differs from that of the overall County. The previous inventory tables quantify what is exposed to the various hazards within City of Sun Prairie. Table 6 cross-references the hazards with the various tables where exposure or vulnerability specifics are found. The intent of Table 6 is to quantify, where possible, future impacts of each hazard on the jurisdiction. In many cases it is difficult to estimate potential losses, so the overall exposure of populations, structures, and critical facilities is referenced.

Table 6 Hazard Vulnerability Specifics

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Dam Failure	None	None	None	Specifics unknown; See hazard profile in County Plan
Drought	Minimal	None	Minimal	Specifics unknown; See hazard profile in County Plan
Flooding	See section below	See section below	See section below	See section below
Fog	Minimal	None	None	Specifics unknown; See hazard profile in County Plan
Hailstorm	Minimal	See Property Exposure table 3	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Landslide/ Sinkholes/ Erosion	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan
Lightning	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Cold	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Severe Heat	See Table 2 Population	None	Minimal	Specifics unknown; See hazard profile in County Plan
Severe Winter Storm	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan
Tornado	See Table 2 Population	See section below	See Critical Facility Inventory Table(s)	See section below
Wildfire	Minimal	Minimal	Minimal	Specifics unknown; See hazard profile in County Plan

Hazard	Populations	Structures	Critical Facilities	Future Damage Potential
Windstorm	See Table 2 Population	See Table 3 Property Exposure	See Critical Facility Inventory Table(s)	Specifics unknown; See hazard profile in County Plan

Flood

Structures and Properties in the Floodplain

Refer to the flood profile in the County plan for a description of the methodology used to identify potentially flood-prone properties. Tables 7 and 8 outline the primary structures and properties with primary structures on them within the City of Sun Prairie. Potential number of individuals at risk figures are based on primary residential structures and the average household size within Dane County.

Table 7 Primary Structures in the Floodplain

Total Floodway Structures	Floodway Residential Structures	Total Structures in 100 year Floodplain	Residential Structures in 100 year Floodplain	Potential Number of Individuals at Risk in 100 year Flood	Total Structures in 500 year Floodplain	Residential Structures in 500 year Floodplain	Potential Number of Individuals at Risk in 500 year Flood
0	0	1	1	2.33	6	5	11.65

Source: Analysis based on Dane County Land Information Office Data

Table 8 Properties with Primary Structures in the Floodplain

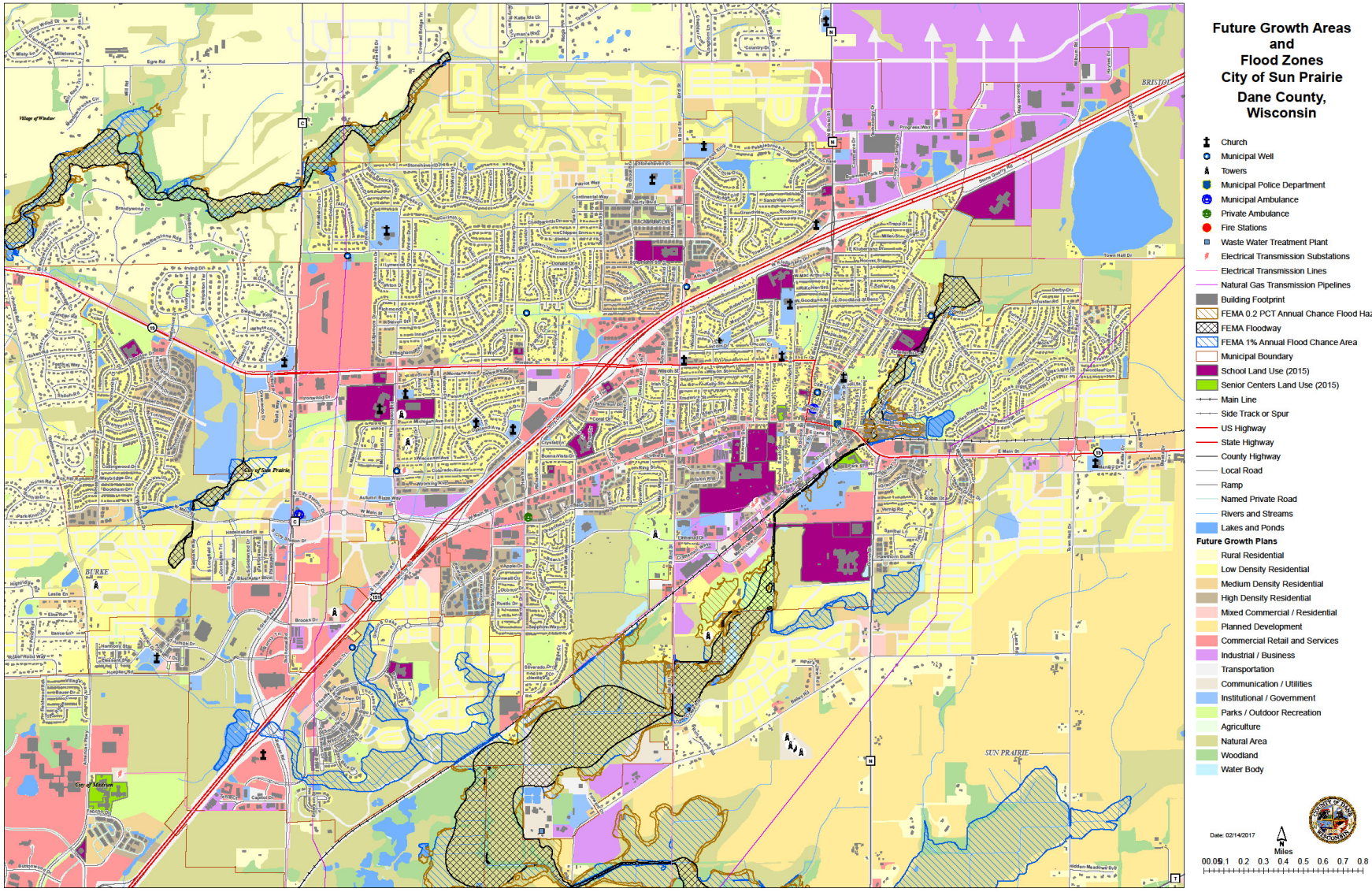
Total Floodway Properties	Floodway Improved Values	Floodway Residential Properties	Total Properties in 100 year Floodplain	Total Improved Value of Properties in 100 year Floodplain	Residential Properties in 100 year Floodplain	Total Properties in 500 year Floodplain	Total Improved Value of Properties in 500 year Floodplain	Residential Properties in 500 year Floodplain
0	$0	0	1	$832,200	1	6	$1,534,000	5

Source: Analysis based on Dane County Land Information Office Data

Repetitive Loss Properties and Flood Insurance Polices

There are no repetitive loss properties within the City of Sun Prairie. According to FEMA Policy and Claim Statistics for Flood Insurance, the community has 17 flood insurance polices, with a total coverage amount of $5,349,000. There have been 2 claims and $2,964 in losses paid in flood insurance claims since 1978.

Figure 1 Flood Hazards and Future Land Use Map



Tornado

While it is difficult to estimate specific losses to a tornado due to the random nature of the event, a methodology was developed that was applied to each jurisdiction during the 2015 update. The table below estimates the percent area of the jurisdiction that could be impacted based on the average sized tornado (F2) in Dane County. High value exposure is based on 100% loss, medium 50% loss, and low is 25% loss to the property potentially impacted. The loss ratio, which is the ratio of the damaged building value to total exposed building value, is a measure of the impact to the jurisdiction as a whole. Communities with loss ratios 10% or more may have difficulty recovering from a disaster. Refer to the tornado hazard profile in the main mitigation plan for more details on this methodology.

Table 9 Tornado Loss Estimate

% Area of Impact	Improved Parcel Count	Affected Structure Estimate	Total Exposed Value	Estimated Loss $ - High Damage Range	Estimated Loss $ -Moderate Damage Range	Estimated Loss $ - Low Damage Range	Loss Ratio for Moderate Damage Range
7.00%	12,613	882	$12,313,821,300	$861,492,027	$430,746,013	$215,373,006	3.5%

Source: Analysis based on Dane County Land Information Office's data

Growth and Development Trends

Planned land use is shown in Figure 1, in relation to the flood hazard. Table 10 illustrates how the City of Sun Prairie has grown in terms of population and number of housing units between 2010 and 2014-15. Housing data is to 2014 due to data availability. Table 11, drawn from the Demographics Services Center at the Wisconsin Department of Administration, shows population projections through 2035.

Table 10 City of Sun Prairie Change in Population and Housing Units, 2010-2014/15

2010 Population	2015 Population	Percent Change (%) 2010-2015	2010 # of Housing Units	2014 # of Housing Units	Percent Change (%) 2010-2014
29,364	31810	8.33%	12,413	12,756	2.8%

Data Source: Dane County and the City of Sun Prairie Comprehensive Plan.

Table 11 City of Sun Prairie Population Projections, 2010-2035

Population Change	5 year Growth %	2015	2020	2025	2030	2035
Increase by same percentage each year	0.22%	2,352	2,378	2,405	2,431	2,458

Data Source: Demographic Services Center, Wisconsin Department of Administration

Problems or Additional Vulnerability issues

The City of Sun Prairie over the last 4 years has experienced significant commercial growth on the west side of the city limits. This commercial growth is principally comprised of large retail outlets that during any given time have a substantial volume of customers. As such, this creates a challenge for the City in any type of crisis or disaster situation for shelter, adequate resources, and evacuation. As additional large-volume retail space is being planned in the same area within the next 2 years, this challenge will only become more prevalent.

Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment summarizes regulatory mitigation capabilities, administrative and technical mitigation capabilities, and fiscal mitigation capabilities for the City of Sun Prairie.

Mitigation Capabilities Summary

Table 12 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, or by themselves contribute to reducing hazard losses. The table also indicates which of these tools are currently utilized in the City of Sun Prairie.

Table 12 City of Sun Prairie Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
General or Comprehensive plan	Yes	
Zoning ordinance	Yes	In the process of updating
Subdivision ordinance	Yes	
Growth management ordinance	Yes	
Floodplain ordinance	Yes	Part of Zoning Ordinance
Other special purpose ordinance (stormwater, steep slope, wildfire)	Yes	Part of Zoning Ordinance
Building code	Yes	1 & 2 family dwelllings - Wisconsin Uniform Dwelling Code (SPS 320-325) 3+ Unit Residential, Public Building & Places of Employment - Wisconsin Commercial Building Code (2015 International Codes w/Wisconsin Amendments SPS 361-366) Plumbing - Wisconsin Uniform Plumbing Code (SPS 380-387) Electrical - 2017 National Electrical Code w/Wisconsin Amendments (SPS 316) Fire Prevention - Current Edition NFPA, SPS 307, SPS 314, SPS 328, SPS 330, SPS 340, SPS 343, SPS 375-379
Fire department ISO rating	Yes	ISO Rating 3
Erosion or sediment control program	Yes	Run through Engineering
Stormwater management program	Yes	Stormwater Utility
Site plan review requirements	Yes	Part of Zoning Ordinance
Capital improvements plan	Yes	
Economic development plan	Yes	Part of Comprehensive Plan
Local emergency operations plan	Yes	
Other special plans		Parks and Open Space

Flood insurance study or other engineering study for streams	Yes	FIRM/FEMA
Elevation certificates (for floodplain development)	Yes	Structures not allowed in the floodplain

Data Source: City of Sun Prairie Data Collection Guide

Table 13 identifies the personnel responsible for mitigation and loss prevention activities as well as related data and systems in the City of Sun Prairie.

Table 13 Responsible Personnel and Departments for the City of Sun Prairie

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	Yes	Planning	
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Engineering and Building Inspection	
Planner/engineer/scientist with an understanding of natural hazards	Yes		
Personnel skilled in GIS	Yes	Engineering	
Full-time Building Official	Yes	Building inspection	
Floodplain Manager	Yes	Planning	
Emergency Manager	Yes	Police Department	
Grant Writer	No		
GIS Data Resources – (land use, building footprints, etc.)	Yes	IT, Engineering, Planning	
Other Personnel	Yes	Public Works, IT	Director of Public Works, IT System Administrator

Data Source: City of Sun Prairie Data Collection Guide

Table 14 identifies financial tools or resources that the City of Sun Prairie could potentially use to help fund mitigation activities.

Table 14 Financial Resources for the City of Sun Prairie

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Community Development Block Grants	Yes	Eligible but distributed by County
Capital improvements project funding	Yes	City Council
Authority to levy taxes for specific purposes	Yes	City Council
Fees for water, sewer, gas, or electric services	Yes	City Council
Impact fees for new development	Yes	City Council and Utility Boards- Sewer, Water and Light, Stormwater
Incur debt through general obligation bonds	Yes	Parks and Traffic
Incur debt through special tax bonds	Yes	
Incur debt through private activities	No	

Additional Capabilities

The Data Collection Guide identified the following additional capabilities for the City of Sun Prairie:

- Fire safety trainings that include Station Tours / Education, On-Site Tours / Education, Annual Open House, National Night Out / Safety Picnics, Fire Truck Ride to School, Citizens Academy, Leadership Group, Government Day, Live Burns, Web/Facebook Safety Campaigns, Firewatch Newspaper Column, Car Seat Install / Education, Fire Extinguisher Training, OSHA Compliant Smoke Alarm Installation, Senior Citizen Safety

National Flood Insurance Program Participation

The City of Sun Prairie participates in the National Flood Insurance Program. Refer to information provided in Table 15.

Table 15 Floodplain Regulatory Program Status as of 5/2016

Floodplain Ordinance	Dane County FIRM Panels	NFIP Partici-pation	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date
Yes	Numerous – See index	Yes	11/04/1973	01/17/1991	09/17/2014	12/11/1995

Data Source: FEMA Community Status Book Report

Public Involvement Activities

The City of Sun Prairie community participated in the County public outreach process. This was a series of public workshops held around the County in which an overview of natural hazard mitigation was given and the County plan was discussed. Residents were then given the opportunity to give their input on mitigation actions that could be taken, and filled out informational surveys that assessed the level of risk the perceived within their own community. More information on these meetings can be found in the County base plan.

Mitigation Actions

Completed Mitigation Actions

This is the first Natural Hazard Mitigation Plan completed by the City of Sun Prairie as part of the Dane County process. However, past local natural hazard mitigation plans have been made locally, and action has been taken to implement these plans Those actions have revolved around the mitigation of flooding in the wastewater treatment plant and associated infrastructure. The City of Sun Prairie submitted the following summary of these actions:

1. The City's wastewater treatment plant has never flooded as a result of a significant rainfall event. One of these significant events occurred in June, 2008 where a total of 9.57 inches of rainfall was recorded from June 5-13 with 2.32 inches recorded on June 8 and 4.25 inches recorded on June 9th. We did have one subdivision that did experience sewer backups. This problem was addressed in 2009 when 10,570 feet of clay sewer was lined, 179 wyes grouted and approximately 2,770 clay sewer joints were grouted along with 131 wyes. Since this was done, had no more problems with sewer backups in this area.

2. Sewer Capital Projects Plan. Over 32 miles of clay sanitary sewer pipe was televised from 2007-2011. Based on the television inspection reports, a 10 year Sewer Capital Projects Plan was developed with an annual budget of around $450,000. Repairs to the sewers were started in 2012 and are projected to be completed by 2022.

3. The City continues to do flow monitoring looking for sources of inflow and infiltration (I/I). Starting in April, 2015 flows were monitored in all of the City's major sewer Basins. From there, plan was to focus on Basin(s) that exhibited the highest flow after a major rain event. Unfortunately, we have not had any major rain events (as of 8/26) in 2015. However, we did relocate flow monitors to Basin serviced by the Bird Street Interceptor as flows did increase more in this Basin after rain events. In late July, the Bird Street Basin was divided up into five smaller Sub-Basins with monitoring continuing. Trying to find Sub-Basin(s) that shows highest increase in flow after major storm event. Next step would to develop cost effective plan for reducing I/I.

4. After a significant rain event in June 2000, 35 homes reported sewer backups. In 2001, the City received a $30,000 Hazard Mitigation Grant for installing back water valves. Letters were sent to 93 homeowners, included the 35 homes that did experience a sewer backup, along with an additional 58 homes that were in areas that had experienced a backup in the past or may

experience a backup in the future due to location. Homeowners were asked if they wanted to participate in the Sewer Back Water Valve Rebate Program. Only 39 homeowners participated in the Program. Homeowners contracted with licensed plumbers to have back water valve installed and then submitted invoice to City for reimbursement. Total cost for installing back water valves was $21,933.15

5. Since 1988, the City has required all new construction to install a back water valve.

6. Over the past 5-7 years, the City has done much work related to upgrading and installing new storm sewers and storm water detention basins. This work has reduced street flooding and has also helped reduce inflow into the sanitary sewer system. Additional storm water projects have been scheduled for 2016-2020 as part of the City's Capital Improvement Plan.

Proposed Mitigation Actions

Objective 1: Continue to implement sound floodplain management practices through continued compliance with the National Flood Insurance Program, to include floodplain ordinance enforcement and periodic review, promoting the benefits of flood insurance, and continued staff training and development in floodplain management.

Steps:

1) Evaluate through the existing staff, County planning staff, and additional DNR staff if necessary, the regulatory deficiencies and enforcement shortcomings in flood-related ordinances and programs (see related County objective).
2) Periodically update ordinances as necessary.
3) Ensure that stop work orders and other means of compliance are being used as authorized by each ordinance.
4) Suggest changes to improve enforcement of and compliance with regulations and programs.
5) Encourage floodplain management staff to become Certified Floodplain Managers (CFM) or maintain their CFM status.
6) Participate in Flood Insurance Rate Map updates by adopting new maps or amendments to maps
7) Utilize recently completed Digital Flood Insurance Rate maps in conjunction with GIS to improve floodplain management, such as improved risk assessment and tracking of floodplain permits.
8) Promote and disperse information on the benefits of flood insurance, with assistance from partners such as the County, WDNR, or ASFPM.
9) Evaluate the potential costs and benefits of becoming a participant in the Community Rating System.

Lead Implementing Agency: Public Works Department

Supporting Agencies:

- Dane County Planning and Development
- Lakes and Watershed Commission
- Land Conservation Department
- Association of State Floodplain Managers
- Wisconsin Department of Natural Resources

Possible Funding and Technical Assistance:

- Staff Time

Timeline: On going

Priority: High

Estimated Costs: Low; can be accomplished with existing staff and within existing department budget.

Objective 2: NW Koshkonong Watershed – Phase 1: NW Koshkonong Basin Construction

Problem Statement: Several "pinch points" within the conveyance system exist that serve this watershed. These pinch points cause flooding in several areas within the watershed.

Issue/Background: The proposed basin would serve more than 700-acres of development that occurred prior to 1985. The lack of stormwater improvements have caused several areas to experience flooding during larger storm events.

Solution/Remediation Plan: The acquisition of property and construction of the basin are the initial steps in addressing stormwater problems within this watershed.

Other Alternatives: Alternative locations for the NW Koshkonong Facility have been analyzed

Responsible Office: Stormwater Utility, City Engineer

Priority: High

Cost Estimate: $1.0 M estimated land cost and $1.0 M construction cost.

Benefits (Avoided Losses): Flooding of residential neighborhoods and the overtopping of W. Main Street would be significantly reduced.

Potential Funding: Stormwater Utility Fund

Schedule: Land purchase and design in 2016-2017 and construction in 2017.

Objective 3: NW Koshkonong Watershed - Phase 2: Thompson Road Culvert Installations

Problem Statement: The lack of stormwater conveyance capacity downstream from W. Main Street has caused flooding problems in several areas between USH 151 and north of STH 19.

Issue/Background: The construction of a stormwater basin, and providing additional conveyance capacity is needed in order to account for the current flow rates; as well as the proposed increased discharge rates from Batz Pond.

Solution/Remediation Plan: Upon completion of Phase 1, additional conveyance capacity could be provided by adding culverts between W. Main Street and the NW Koshkonong basin, allowing for additional discharge from Batz Pond and reduced flooding at W. Main Street.

Other Alternatives: Alternative locations for the NW Koshkonong Facility have been analyzed, some of which could have eliminated the need for the additional conveyance capacity. Unfortunately another suitable basin location has not been identified.
Responsible Office:

Priority: Low - until NW Koshkonong facility is constructed

Cost Estimate: $500,000

Benefits (Avoided Losses): Ultimately residential neighborhoods would experience a reduction in flood elevations in large storm events. In addition, additional conveyance capacity could be opened under W. Main Street; reducing the frequency for overtopping the street.

Potential Funding: Stormwater Utility Fund

Schedule: Upon construction of NW Koshkonong Facility (2018+/-)

Objective 4: **NW Koshkonong Watershed - Phase 3: W. Main Street Culvert Opening**

Problem Statement: A second box culvert was recently installed under W. Main Street, however it remains blocked until Phase 1 and Phase 2 improvements are completed.

Issue/Background: The construction of a stormwater basin, and providing additional conveyance capacity is needed in order to account for the current flow rates; as well as the proposed increased discharge rates from Batz Pond.

Solution/Remediation Plan: Once the proposed Phase 1 and Phase 2 projects are completed the second box culvert can be opened which presents relief at W. Main Street and provides opportunities for additional benefits upstream.

Other Alternatives: Unless sufficient detention is located upstream from W. Main Street; there are no other alternatives.

Responsible Office: Stormwater Utility, City Engineer

Priority: Low - until NW Koshkonong basin is constructed and additional conveyance between the basin and W. Main Street is provided

Cost Estimate: Minimal; remove the concrete cap

Benefits (Avoided Losses): Once the second culvert is opened, the frequency in which W. Main Street is flooded is greatly reduced; providing assurance the street is passable in case of an emergency during storm events.

Potential Funding: Stormwater Utility Fund

Schedule: Upon completion of Phases 1-2; 2018+/-

Objective 5: NW Koshkonong Watershed - Phase 4: Batz Pond Discharge & Grading SW Corner USH 151/STH 19

Problem Statement: Large storm events cause flood waters from Batz Pond to backup onto adjacent properties. Groundwater tables become elevated causing backups in basements.

Issue/Background: Batz Pond is historic wetland that received stormwater runoff from an older portion of the City. Because of the limited discharge capacity, flood water encroach onto adjacent properties; subsiding very slowly.

Solution/Remediation Plan: Once Phases 1-3 are completed, the Batz Pond discharge pipes can be replaced; shortening the time it takes for the Pond to return to its normal water elevation. Grading operations would also take place in the swales located in the SW quadrant of USH 151 & STH 19.

Other Alternatives: Batz Pond's classification as a wetland limits the work allowed in this area. Lowering the water elevation is not an option.

Responsible Office: Stormwater Utility, City Engineer

Priority: Low until Phase 1-3 are completed.

Cost Estimate: $500,000

Benefits (Avoided Losses): Safe passage of passenger vehicles and emergency vehicles

Potential Funding: Stormwater Utility. Potential funding should the vacant parcel develop in this quadrant of the intersection.

Schedule: Upon completion of Phases 1-3; 2019+/-

Objective 6: Replace S. Bird Street Culverts

Problem Statement: Large storm events result in flooding across S. Bird Street and the temporary closing of this minor arterial street.

Issue/Background: Under sized metal culverts under S. Bird Street cause flood waters to overtop the street, requiring the street to be closed. The City has an agreement with the Town to reconstruct the street and replace the existing culverts.

Solution/Remediation Plan: Design for upsizing the existing culverts and raise the existing roadbed to reduce the frequency in which the flood waters overtop the street.

Other Alternatives: Unless property upstream could be acquired for detention; there are no alternatives. At that, old metal culverts would still require replacement in the street. Property has been acquired downstream with the intention of providing some level of stormwater management.

Responsible Office: Stormwater Utility, City Engineer

Priority: High

Cost Estimate: 250,000

Benefits (Avoided Losses): This minor arterial roadway would be subject to less frequent flooding and closure.

Potential Funding: Stormwater Utility and $20,000 from the City/Town agreement.

Schedule: Proposed as part of the City's 2016 budget.

Objective 7: Liberty Square Detention Expansion

Problem Statement: An undersized detention basin causes the flooding of the street located downstream from the basin.

Issue/Background: Localized flooding of a low point in Liberty Boulevard required that additional conveyance capacity be added. This results in a more frequent overtopping of the detention basin and flooding of Stonehaven Drive.

Solution/Remediation Plan: Storm sewer upgrades were made to Liberty Boulevard to add pipe capacity between the low point and existing basin. Design for a reconstructed basin are underway to reduce new flooding on Stonehaven Drive.

Other Alternatives: Alternative locations for the detention basin have been analyzed

Responsible Office: Stormwater Utility, City Engineer

Priority: Medium

Cost Estimate: $350,000 for possible land acquisition and construction.

Benefits (Avoided Losses): The expanded basin will result in less frequent flooding of Stonehaven Drive; a collector classified street; and provide enhanced stormwater treatment prior to the runoff being discharged downstream.

Potential Funding: Stormwater Utility Fund

Schedule: Proposed as part of the City's 2016 budget.

Objective 8: Sewer Capital Projects Plan

Problem Statement: The City has around 40 miles of clay and concrete sanitary sewer pipes. Records show that some of this pipe was installed around 1920. The City had concerns related to physcial condition of pipe as well infiltration of water from leaking joints. Same concerns related to sanitary sewer manholes.

Issue/Background: From 2007-2011, over 32 miles of clay saniary sewer pipe was televised.

Solution/Remediation Plan: Based on television inspection reports, a 10 Year Sewer Capital Projects Plan as developed with an annual budget of around $450,000. Repairs to sewers started in 2012 and are scheduled to be completed by 2022.

Other Alternatives: N/A

Responsible Office: John Krug, Superintendent Wastewater Treatment Plant

Priority: High

Cost Estimate: $4.5 million.

Benefits (Avoided Losses): Protect the health and safety of customers by reducing sewer backups. Also extend the useful life of the sanitary sewer collection system and wastewater treatment plant.

Potential Funding: Funded through sewer user charges.

Schedule: Start in 2012 and complete in 2022.

Objective 9: Flow Monitoring - Inflow & Infiltration

Problem Statement: The City has experience some significant increases in flow at the treatment plant during and after some heavy rainfall events. Have also experience sewer backups in one subdivision as a result of the heavy rainfall events.

Issue/Background: In June 2008 after receiving over 9.57 inches of rainfall from June 5-13, did have some sewer backups that did occur in one subdivision. During this period, recorded 2.32 inches on June 8 and 4.25 inches on June 9.

Solution/Remediation Plan: This problem was addressed in 2009 when 10,570 feet of clay sewer pipe was lined, 310 sewer wyes grouted along with approximately 2,770 clay pipe sewer joints. We also constructed a new 15" sewer line that provided a more direct route to the interceptor sewer and reduced surcharging in the existing 12" sewer line. Since this was done, we have not had any problems with sewer backups in this subdivsion.

Other Alternatives: Over the past 5-7 years, the City has done much work related to upgrading and installing new storm sewers and storm water detention basins. This work has reduced street flooding and has also helped reduce inflow into the sanitary sewer system. Additional storm water projects have been scheduled for 2016-2020 as part of the City's Capital Improvement Plan.

Responsible Office: John Krug, Superintendent Wastewater Treatment Plant

Priority: High

Cost Estimate: Cost for project completed in 2009 was around $1.4 million.

Benefits (Avoided Losses): Protect the health and saftey of customers by reducing sewer backups. Also extend the useful life of the sanitary sewer collection system and wastewater treatment plant.

Potential Funding: Funded through sewer user charges and borrowing.

Schedule: Is ongoing.

Objective 10: Back Water Flow Prevention Valves

Problem Statement: After a significant rain event in 2000, 35 homes reported sewer backups.

Issue/Background: Back in the late 80's, the City put in place an ordinance that required that all newly constructed buildings install a back water valve. This was done mainly to protect buildings from sewer backups that many occur if sewer main was plugged.

Solution/Remediation Plan: Install back water valves in 35 homes that were impacted along with 58 homes that were in areas that had experienced a backip in the past or may experience a backup in the future due to location. City received $30,000 Hazard Mitigation Grant for installing back water valves. Letters sent to 93 homes asking if they wanted to participate in Sewer Back Water Valve Rebate Program. Only 39 homeowners participated. Homeowners contracted with licensed plumber to have valve installed and then submitted invoice to City for reimbursement. Total amount reimbursed was $21,933.15.

Other Alternatives: Per City ordinance, all newly constructed buildings shall be required to install a back water valve.

Responsible Office: John Krug, Supertintendent Wastewater Treatment Plant and Dennis Allen, Building Inspection Department

Priority: Medium

Cost Estimate: Cost of 2001 back water rebate program was $21,933.15.

Benefits (Avoided Losses):

Potential Funding: In 2001, City received a $30,000 Hazard Mitigation Grant.

Schedule: Started and completed in 2001.

Objective 11: Stormwater & Retention Basins - Installations and Upgrades

Problem Statement: The City of Sun Prairie contains an intricate system of stormwater facilities including storm sewer, dentention basins, conveyances, water quality features etc. New development paired with older parts of the city that were developed prior to current ordinance and may carry small to large localized stormwater flooding concerns.

Issue/Background: This becomes a large task of trying to compile these locations and severity of the localized flooding. In addition, adding a ranking of importance which leads to a priority list of projects becomes vital to addressing the issues.

Solution/Remediation Plan: In 2009, the City hired a private contractor to analzye the city drainage on the whole and identify problem areas and propose stormwater solutions/projects to help alleviate

flooding concerns. Since 2009, the City has performed numerous projects as described with the 2009 report.

In 2016, the City hired a private contractor to re-evaluate the City's drainage plan and provide updates on flooding issues and identify problem areas.

Other Alternatives: Rather that being proactive, the city could be reactive and wait to handle issues after they become a problem.

Responsible Office: Stormwater Utility, City Engineer

Priority: High

Cost Estimate: Varies based on particular project

Benefits (Avoided Losses): Less frequent flooding of residential neighborhoods and city streets, Safe passage of passenger and emergency vehicles

Potential Funding: Stormwater Utility Fund

Schedule: Continuous progress since 2009. Use 2016 study to continue to plan future projects to address flooding issues.

Objective 12: Wind Storms & Tornadoes (Trees and Power Lines)

Problem Statement: Trees are inherently problematic to overhead electric distribution lines during weather instances involving high winds

Issue/Background: A majority of the overhead distribution lines in Sun Prairie are located in backyards accompanied by mature trees.

Solution/Remediation Plan: SPU annually spends $50K on tree trimming to best alleviate tree contact issues with overhead lines. Over the past 9 years, SPU has focused on clearing trees adequately away from lines, to the point where we now annually cyclically trim areas achieving 20%-25% of the City's total electric line clearance.

Other Alternatives: N/A

Responsible Office: Sun Prairie Utilities

Priority: High

Cost Estimate: $50K annually

Benefits (Avoided Losses): Tree clearance drastically reduces outages during high wind events where trees/limbs would historically fall into the overhead wires. In conjunction, trimming also far reduces the number of animal caused outages (squirrels primarily). Outages from windstorms can take hours and even days to restore, potentially resulting in high costs to both the utility and its customers.

Potential Funding: Tree Trimming is an annually budgeted maintenance expense.

Schedule: Clearance is performed starting in the fourth quarter each year and continuing until sometime in the first quarter of the following year.

Objective 13: Infrared Inspections

Problem Statement: The electric distribution system must be robust and reliable enough to adequately pick up additional load, in case a disaster or emergency situation takes out one or two of the five substations.

Issue/Background: As equipment ages and experiences a great deal of heating and cooling, components sometimes loosen and reduce the contact area by which electricity flows, essentially creating a "hot spot". In addition, lightning is another element that can degrade electric equipment.

Solution/Remediation Plan: Annually, SPU contracts a firm to perform infrared inspections on all substations and every major piece of 3-phase electric equipment. It is proven to be a proactive approach to finding and repairing potential equipment problems prior to failure.

Other Alternatives: N/A

Responsible Office: Sun Prairie Utilities

Priority: High

Cost Estimate: $10K annually

Benefits (Avoided Losses): There are multiple benefits, as all system equipment works to maintain a system with superior reliability. SPU is able to reduce equipment failure outages, as well as reduce emergency outage times by best switching load around to unaffected substations.

Potential Funding: Annually budgeted maintenance expense

Schedule: WPPI bids and awards infrared inspection services, after which they schedule/coordinate with each of the 51 municipal electric utilities.

Objective 14: Pole Testing

Problem Statement: The area most vulnerable to a disaster, such as a tornado or ice storm, is the overhead electric distribution system. Sun Prairie's distribution system is approximately 25% overhead, much of which is older than its useful fully depreciated life of 40 years.

Issue/Background: With the constant and significant growth in Sun Prairie, maintaining the older downtown (overhead) area is difficult to keep up with. Crews spend a majority of their time doing underground new business. Unless tested and sampled, pole condition is difficult to evaluate.

Solution/Remediation Plan: Although the utility does not currently participate in a pole testing program, options are available. There are numerous companies that will both test and treat poles, proactively eliminating potential weaknesses to the overhead system and lengthening the life of the poles.

Other Alternatives: N/A

Responsible Office: Sun Prairie Utilities

Priority: High

Cost Estimate: $10K Annually

Benefits (Avoided Losses): Improve reliability and the ability to better withstand winds, thus reducing outages and restoration times.

Potential Funding: Annually budgeted maintenance expense

Schedule: WPPI bids and awards pole testing services, after which they schedule/coordinate with those utilities that elect the service.

Objective 15: Wildfire

Problem Statement: High fuel load in marsh with homes and businesses bordering the marsh with limited access area.

Issue/Background: Area from S. Bird St. to Reiner Road, north of Nelson Road and primarily south of the railroad tracks.

Although this area has not been an issue in the recent past, other marsh areas have been. This is identified as one of the SPFD's target hazards and with the border of this marsh at City limits, the potential for loss is significant. This marsh is adjacent to residential and commercial structures in the City.

Solution/Remediation Plan: Perform annual prescribed burns, annual mowing of area to create a buffer and removal of dead vegetation

Other Alternatives: N/A

Responsible Office: Sun Prairie Fire, City of Sun Prairie, Town of Burke, Town of Sun Prairie

Priority: Medium

Cost Estimate: Unknown

Benefits (Avoided Losses): Property damage, utility lines, railroad transportation stoppage, wildlife preservation

Potential Funding: WI DNR, Grant, Training

Schedule: To be determined/ongoing