Are existing buildings, infrastructure, and critical facilities vulnerable to tornadoes?

Yes. All existing buildings, infrastructure, and critical facilities located within the County and participating municipalities are vulnerable to tornado damage. Buildings, infrastructure, and critical facilities located in the path of a tornado usually suffer extensive damage, if not complete destruction.

While some buildings adjacent to a tornado's path may remain standing with little or no damage, all are vulnerable to damage from flying debris. It is common for flying debris to cause damage to roofs, siding, and windows. In addition, mobile homes, homes on crawlspaces, and buildings with large spans (i.e., schools, barns, airport hangers, factories, etc.) are more likely to suffer damage. Most workplaces and many residential units do not provide sufficient protection from tornadoes.

The damages sustained by infrastructure and critical facilities during a tornado are similar to those experienced during a severe storm. There is a high probability that power, communication, and transportation will be disrupted in and around the affected area.

Assessing the Vulnerability of Existing Residential Structures
One way to assess the vulnerability of existing residential structures is to estimate the number of housing units that may be potentially damaged if a tornado were to touch down or pass through any of the participating municipalities or the County. In order to accomplish this, a set of decisions/assumptions must be made regarding:

➤ the size (area impacted) of the tornado;
➤ the method used to estimate the area impacted by the tornado within each jurisdiction; and
➤ the method used to estimate the number of potentially-damaged housing units.

The following provides a brief discussion of each decision/assumption.

Assumption #1: Size of Tornado. To calculate the number of existing residential structures vulnerable to a tornado, the size (area

Assumption #1
Size of Tornado = 0.15 sq. miles

impacted) of the tornado must first be determined. There are several scenarios that can be used to calculate the size, including the worst case and the average. For this analysis, the area impacted by an average-sized tornado in Woodford County will be used since it has a higher probability of recurring. In Woodford County, the area impacted by an average-sized tornado has changed from 0.17 square miles in the 2019 Plan Update to 0.15 square miles, for this update. This average is based on more than 70 years of data.

Assumption #2: Method for Estimating the Area Impacted. Next, a method for determining the area within each jurisdiction impacted by the average-sized tornado needs to be chosen. There are several methods that can be used including creating an outline of the area

Assumption #2
The entire area impacted by the average-sized tornado falls within the limits of each participating jurisdiction.

impacted by the average-sized tornado and overlaying it on a map of each jurisdiction (most

notably the municipalities) to see if any portion of the area falls outside of the corporate limits (which would require additional calculations) or just assume that the entire area of the average-sized tornado falls within the limits of each jurisdiction. For this discussion, it is assumed that the entire area of the average-sized tornado will fall within the limits of the participating jurisdictions.

This method is quicker, easier, and more likely to produce consistent results when the Plan is updated again. There is, however, a greater likelihood that the number of potentially-damaged housing units will be overestimated for those municipalities that have irregular shaped boundaries or occupy less than one square mile.

Assumption #3: Method for Estimating Potentially-Damaged Housing Units. With the size of the tornado selected and a method for estimating the area impacted chosen, a decision must be made on an approach for estimating the number of potentially-damaged

> **Assumption #3**
>
> The average housing unit density for each jurisdiction will be used to determine the number of potentially-damaged housing units.

housing units. There are several methods that can be used including overlaying the average-sized tornado on a map of each jurisdiction and counting the impacted housing units or calculating the average housing unit density to estimate the number of potentially-damaged housing units.

For this analysis, the average housing unit density will be used since it provides a realistic perspective on potential residential damages without conducting extensive counts. Using the average housing unit density also allows future updates to the Plan to be easily recalculated and provides an exact comparison to previous estimates.

Calculating Average Housing Unit Density
The average housing unit density can be calculated by taking the number of housing units in a jurisdiction and dividing that by the land area within the jurisdiction. **Figure T-__** provides a sample calculation.
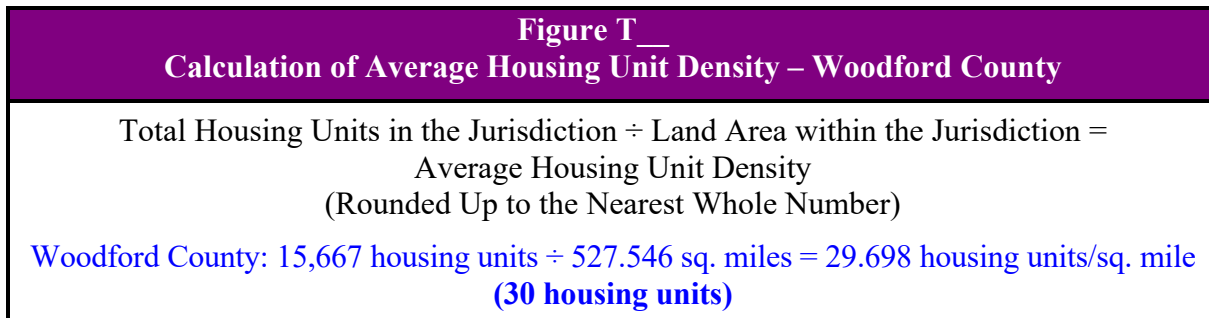
Figure T__ **Calculation of Average Housing Unit Density – Woodford County**
Total Housing Units in the Jurisdiction ÷ Land Area within the Jurisdiction = Average Housing Unit Density (Rounded Up to the Nearest Whole Number)
Woodford County: 15,667 housing units ÷ 527.546 sq. miles = 29.698 housing units/sq. mile **(30 housing units)**

Figure T-__ provides a breakdown of housing unit densities by participating municipality as well as for the unincorporated areas of the County and the County as a whole.

Figure T-__ Average Housing Unit Density by Participating Jurisdiction					
Participating Jurisdiction	**Township Location**	**Total Housing Units (2017-2021)**	**Mobile Homes (2017-2021)**	**Land Area (Sq. Miles) (2020)**	**Average Housing Unit Density (Units/Sq. Mi.) (Raw)**
El Paso	El Paso, Panola	1,063	68	2.085	509.832
Eureka	Cruger, Olio	2,267	75	2.684	844.635
Germantown Hills	Worth	1,238	57	1.636	756.724
Minonk	Clayton, Minonk	933	54	2.400	388.750
Roanoke	Roanoke	762	0	0.939	---
Unincorp. County		5,856	140	509.943	11.484
County		15,667	438	527.546	29.698

Source: U.S. Census Bureau, American Community Survey, 5-Year Data Profile.

While the average housing unit density provides an adequate assessment of the number of housing units in areas where the housing density is fairly constant, such as municipalities, it does not provide a realistic assessment for those counties with large, sparsely populated rural areas such as Woodford County.

In Woodford County, as well as many other central Illinois counties, there are pronounced differences in housing unit densities. A majority of all housing units (69%) are still located in six of the County's 17 townships (El Paso, Metamora, Minonk, Olio, Spring Bay, and Worth), while approximately 73% of all mobile homes still are located in four townships (El Paso, Olio, Spring Bay, and Worth). **Figure I-x**, located in Section 1.2, identifies the township boundaries. Tornado damage to buildings (especially mobile homes), infrastructure and critical facilities in these more densely populated townships is likely to be greater than in the rest of the County. While El Paso and Minonk have ordinances that require anchoring systems for mobile homes that would help limit the damage from lower rated tornadoes, the County and the remaining three participating municipalities do not.

This substantial difference in density skews the average *county* housing unit density in Woodford County and is readily apparent when compared to the average housing unit densities for each of the townships within the County. **Figure T-__** provides a breakdown of housing unit densities by township and illustrates the differences between the various townships and the County as a whole.

For 11 of the 17 townships, the *average county* housing unit density is greater (in most cases considerably greater) than the *average township* housing unit densities. However, the *average county* housing unit density is considerably less than the housing unit densities for the six most populated townships.

Township	Incorporated Municipalities Located in Township	Total Housing Units (2017-2021)	Mobile Homes (2017-2021)	Land Area (Sq. Miles) (2020)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)
Figure T-__ **Average Housing Unit Density by Township**					
Cazenovia	Washburn	805	0	36.144	22.272
Clayton	Benson, Minonk	270	0	35.848	7.532
Cruger	Eureka	737	0	17.110	43.074
El Paso	El Paso, Kappa	1,370	80	24.217	56.572
Greene		170	0	35.777	4.752
Kansas		211	0	18.030	11.703
Linn		86	0	36.633	2.348
Metamora	Metamora	1,956	0	36.436	53.683
Minonk	Minonk	1,021	54	36.632	27.872
Montgomery	Congerville, Deer Creek, Goodfield	899	47	36.189	24.842
Olio	Eureka	1,971	75	31.433	62.705
Palestine	Secor	403	12	37.457	10.759
Panola	El Paso, Panola	137	0	36.444	3.759
Partridge		230	7	26.153	8.794
Roanoke	Roanoke	868	0	36.757	23.615
Spring Bay	Bay View Gardens, Peoria Heights, Spring Bay	1,181	65	10.099	116.942
Worth	Germantown Hills, Metamora	3,362	98	36.186	92.909
Townships - 6 most populated		10,861	419	175	62.062
Townships - 11 least populated		4,816	19	352.542	13.661

Source: U.S. Census Bureau, American Community Survey, 5-Year Data Profile.

Estimating the Number of Potentially-Damaged Housing Units

Before an estimate of the number of potentially-damaged housing units can be calculated for the participating municipalities, an additional factor needs to be taken into consideration: the presence of commercial/industrial developments and/or large tracts of undeveloped land. Occasionally villages and cities will annex large tracts of undeveloped land or have commercial/industrial parks/developments located within their corporate limits. In many cases these large tracts of land include very few residential structures. Consequently, including these tracts of land in the calculations to determine the number of potentially-damaged housing units skews the results, especially for very small municipalities. Therefore, to provide a more realistic assessment of the number of potentially-damaged housing units, these areas were subtracted from the land area figures obtained from the U.S. Census Bureau for the analysis for this update.

In Woodford County, all of the participating municipalities have large commercial/industrial and/or undeveloped land areas within their municipal boundaries. These areas account for approximately one-fourth to one-half of the land area in these municipalities. If these areas are subtracted from the U.S. Census Bureau land area figures, then the remaining land areas

have fairly consistent housing unit densities and contain a majority of the housing units. **Figure T-__** provides a breakdown of the refined land area figures for the municipalities. These refined land area figures will be used to update the average housing unit density calculations for these municipalities.
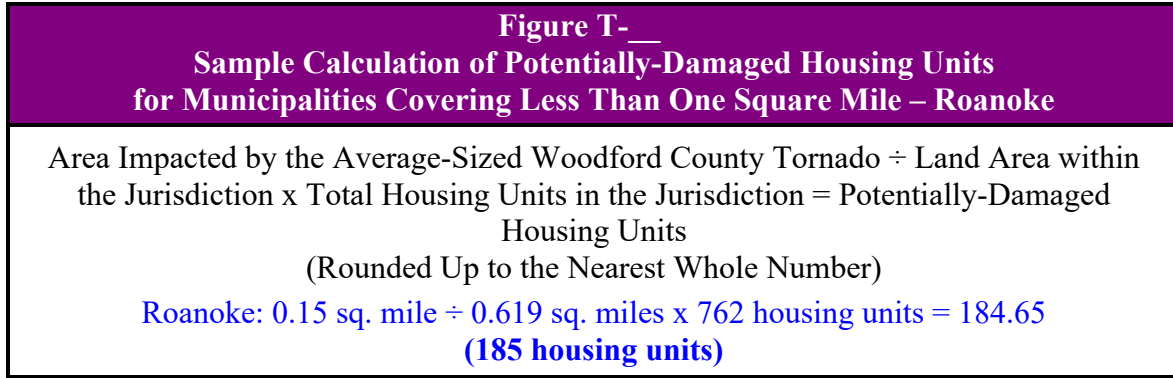
Figure T-__ **Refined Land Area Figures for Participating Municipalities with Large Tracts of Commercial/Industrial and Undeveloped Land Areas**			
Participating Jurisdiction	**Land Area (Sq. Miles) (2020)**	**Estimated Open Land Area & Commercial/ Industrial Tracts (Sq. Miles)**	**Refined Land Area (Sq. Miles)**
El Paso	2.085	1.070	1.015
Eureka	2.684	0.670	2.014
Germantown Hills	1.636	0.500	1.136
Minonk	2.400	0.680	1.720
Roanoke	0.939	0.320	0.619

With updated average housing unit densities calculated it is relatively simple to provide an estimate of the number of existing potentially-damaged housing units. This can be done by multiplying the average housing unit density by the area impacted by the average-sized Woodford County tornado. **Figure T- __** provides a sample calculation.

Figure T-__   **Sample Calculation of Potentially-Damaged Housing Units – Woodford County**
Average Housing Unit Density x Area Impacted by the Average-Sized Woodford County Tornado = Potentially-Damaged Housing Units (Rounded Up to the Nearest Whole Number)
Woodford County: 29.698 housing units/sq. mile x 0.15 sq. miles = 4.45 housing units **(5 housing units)**

For those municipalities that cover less than one square mile, the average housing unit density cannot be used to calculate the number of potentially-damaged housing units. The average housing unit density assumes that the land area within the municipality is at least one square mile and as a result distorts the number of potentially-damaged housing units for very small municipalities.

To calculate the number of potentially-damaged housing units for these municipalities, the area impacted by the averaged-sized Woodford County tornado is divided by the land area within the municipality to get the impacted land area. The impacted land area is then multiplied by the total number of housing units within the municipality to get the number of potentially-damaged housing units. **Figure T- __** provides a sample calculation.

Figure T-__
Sample Calculation of Potentially-Damaged Housing Units for Municipalities Covering Less Than One Square Mile – Roanoke
Area Impacted by the Average-Sized Woodford County Tornado ÷ Land Area within the Jurisdiction x Total Housing Units in the Jurisdiction = Potentially-Damaged Housing Units (Rounded Up to the Nearest Whole Number) Roanoke: 0.15 sq. mile ÷ 0.619 sq. miles x 762 housing units = 184.65 **(185 housing units)**

Figures T-__ and **T-__** provide a breakdown of the number of potentially-damaged housing units by participating municipality, as well as by township and for the unincorporated areas of the County and the County as a whole. It is important to note that for the most densely populated townships, the estimated number of potentially-damaged housing units would only be reached if a tornado's pathway included the major municipality within the township. If the tornado remained in the rural portion of the township, then the number of potentially-damaged housing units would be considerably lower.

Figure T-__					
Estimated Number of Housing Units by Participating Jurisdiction Potentially Damaged by a Tornado					
Participating Jurisdiction	**Total Housing Units (2017-2021)**	**Land Area/Refined Land Area (Sq. Miles) (2020)**	**Average Housing Unit Density (Units/Sq. Mi.) (Raw)**	**Potentially-Damaged Housing Units (Units/0.15 Sq. Mi.) (Raw)**	**Potentially-Damaged Housing Units (Units/0.15 Sq. Mi.) (Rounded Up)**
El Paso	1,063	1.015	1047.291	329.00	329
Eureka	2,267	2.014	1125.621	168.84	169
Germantown Hills	1,238	1.136	1089.789	163.47	164
Minonk	933	1.720	542.442	81.37	82
Roanoke	762	0.619	---	184.65	185
Unincorp. County	5,856	509.943	11.484	1.72	2
County	15,667	527.546	29.698	4.45	5

What is the level of risk/vulnerability to existing buildings, infrastructure, and critical facilities vulnerable from tornadoes?

There are several factors that must be examined when assessing the vulnerability of existing buildings, infrastructure, and critical facilities to tornadoes. These factors include tornado frequency, population distribution and density, the ratings and pathways of previously recorded tornadoes, and the presence of high-risk living accommodations (such as high-rise buildings, mobile homes, etc.).

	Figure T-__				
Estimated Number of Housing Units by Township Potentially Damaged by a Tornado					
Township	**Total Housing Units (2017-2021)**	**Land Area (Sq. Miles) (2020)**	**Average Housing Unit Density (Units/Sq. Mi.) (Raw)**	**Potentially-Damaged Housing Units (Units/0.15 Sq. Mi.) (Raw)**	**Potentially-Damaged Housing Units (Units/0.15 Sq. Mi.) (Rounded Up)**
Cazenovia	805	36.144	22.272	3.34	4
Clayton	270	35.848	7.532	1.13	2
Cruger	737	17.110	43.074	6.46	7
El Paso	1,370	24.217	56.572	8.49	9
Greene	170	35.777	4.752	0.71	1
Kansas	211	18.030	11.703	1.76	2
Linn	86	36.633	2.348	0.35	1
Metamora	1,956	36.436	53.683	8.05	9
Minonk	1,021	36.632	27.872	4.18	5
Montgomery	899	36.189	24.842	3.73	4
Olio	1,971	31.433	62.705	9.41	10
Palestine	403	37.457	10.759	1.61	2
Panola	137	36.444	3.759	0.56	1
Partridge	230	26.153	8.794	1.32	2
Roanoke	868	36.757	23.615	3.54	4
Spring Bay	1,181	10.099	116.942	17.54	18
Worth	3,362	36.186	92.909	13.94	14
Townships - 6 most populated	10,861	175.003	62.062	9.31	10
Townships - 11 least populated	4,816	352.542	13.661	2.05	3

Unincorporated Woodford County

For unincorporated Woodford County, the level of risk or vulnerability posed by tornadoes to existing buildings, infrastructure and critical facilities is considered to be *low*. This assessment is based on the frequency with which tornadoes have occurred in the County, as well as the amount of damage that has been sustained tempered by the low population density throughout most the County and the relative absence of high risk living accommodations. While previously recorded tornadoes have followed largely rural pathways, they have caused significant damage on several occasions.

Participating Municipalities

In general, if a tornado were to touch down or pass through any of the participating municipalities the risk to existing buildings, infrastructure, and critical facilities would be considered *high*. This assessment is based on the population and housing unit distribution within the municipalities where wide expanses of open spaces do not generally exist. As a result, if a tornado were to touch down within any of the municipalities it would have a greater likelihood of causing substantial property damage.

Are future buildings, infrastructure, and critical facilities vulnerable to tornadoes?

Yes and No. While Eureka and Minonk have building codes in place that will likely lessen the vulnerability of new buildings and critical facilities to damage from tornadoes, the County and three remaining municipalities do not. However, even new buildings and critical facilities built to code are vulnerable to the risks posed by a higher rated tornado.

Infrastructure such as new communication and power lines will continue to be vulnerable to tornadoes as long as they are located above ground. Flying debris can disrupt power and communication lines even if they are not directly in the path of the tornado. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from tornadoes?

Unlike other hazards, such as flooding, there are no standard loss estimation models or methodologies for tornadoes. However, a rough estimate of potential dollar losses to the *potentially-damaged housing units* determined previously can be calculated if several additional decisions/assumptions are made regarding:

➢ the value of the potentially-damaged housing units; and
➢ the percent damage sustained by the potentially-damaged housing units (i.e., damage scenario).
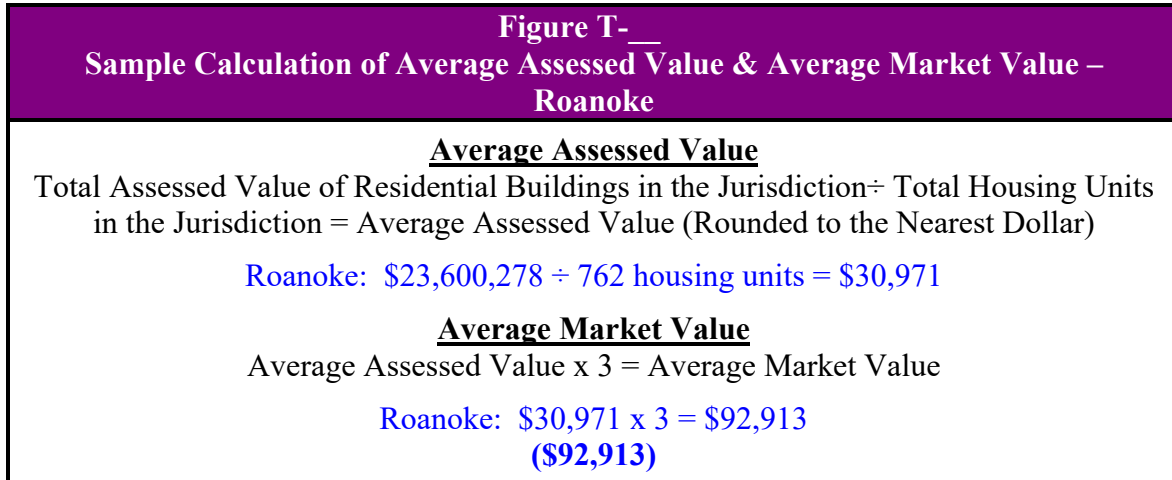
These assumptions represent a ***probable scenario*** based on the reported historical occurrences of tornadoes in Woodford County. The purpose of providing a rough estimate is to help residents and government officials make informed decisions to better protect themselves and their communities. These estimates are meant to provide a ***general idea*** of the magnitude of the potential damage that could occur. The following provides a brief discussion of each decision/assumption.

Assumption #4: Value of Potentially-Damaged Housing Units. In order to determine the potential dollar losses to the potentially-damaged housing units, the monetary value of the units must first be calculated. Typically, when damage

> **Assumption #4**
>
> The average market value for residential structures in each participating jurisdiction will be used to determine the value of potentially-damaged housing units.

estimates are prepared after a natural disaster such as a tornado, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value of residential structures in each municipality will be used.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is calculated by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. The average market value is then determined by taking the average assessed value and multiplying that number by three (the assessed value of a structure in Woodford County is approximately one-third of the market value). **Figure __** provides a

sample calculation. The total assessed value is based on 2022 tax assessment information obtained from the Woodford County Clerk.

Figure T-__
Sample Calculation of Average Assessed Value & Average Market Value – Roanoke
Average Assessed Value   Total Assessed Value of Residential Buildings in the Jurisdiction ÷ Total Housing Units in the Jurisdiction = Average Assessed Value (Rounded to the Nearest Dollar)   Roanoke: $23,600,278 ÷ 762 housing units = $30,971   **Average Market Value**   Average Assessed Value x 3 = Average Market Value   Roanoke: $30,971 x 3 = $92,913   **($92,913)**

Figures T-__ and **T-__** provide the average assessed value and average market value for each participating municipality as well as by township and for the unincorporated areas of the County and the County as a whole.

Figure T-__				
Average Market Value of Housing Units by Participating Jurisdiction				
Participating Jurisdiction	**Total Assessed Value of Residential Buildings (2022)**	**Total Housing Units (2017-2021)**	**Average Assessed Values**	**Average Market Value (2022)**
El Paso	$34,436,555	1,063	$32,396	$97,188
Eureka	$64,709,906	2,267	$28,544	$85,632
Germantown Hills	$85,361,453	1,238	$68,951	$206,853
Minonk	$22,541,737	933	$24,160	$72,480
Roanoke	$23,600,278	762	$30,971	$92,913
Unincorp. County	$296,644,817	5,856	$50,657	$151,971
County	$640,578,335	15,667	$40,887	$122,661

Source: Woodford County Clerk.

Assumption #5: Damage Scenario. Finally, a decision must be made regarding the percent damage sustained by the potentially-damaged housing units and their contents. For this scenario, the expected percent damage sustained by the structure and its contents is 100%; in other words, all of the potentially-

Assumption #5
The tornado would completely destroy the potentially-damaged housing units.   Structural Damage = 100%   Content Damage = 100%

damaged housing units would be completely destroyed. While it is highly unlikely that each and every housing unit would sustain the maximum percent damage, identifying and

calculating different degrees of damage within the average area impacted is complex and provides an additional complication when updating the Plan.

Figure T-__ Average Market Value of Housing Units by Township				
Participating Jurisdiction	**Total Assessed Value of Residential Buildings (2022)**	**Total Housing Units (2017-2021)**	**Average Assessed Values**	**Average Market Value (2022)**
Cazenovia	$13,737,813	805	$17,066	$51,197
Clayton	$8,196,242	270	$30,356	$91,069
Cruger	$34,945,654	737	$47,416	$142,248
El Paso	$50,580,909	1,370	$36,920	$110,761
Greene	$6,166,642	170	$36,274	$108,823
Kansas	$10,124,767	211	$47,985	$143,954
Linn	$2,216,603	86	$25,774	$77,323
Metamora	$70,531,455	1,956	$36,059	$108,177
Minonk	$24,923,610	1,021	$24,411	$73,233
Montgomery	$47,636,729	899	$52,989	$158,966
Olio	$52,367,685	1,971	$26,569	$79,707
Palestine	$15,044,013	403	$37,330	$111,990
Panola	$4,388,559	137	$32,033	$96,100
Partridge	$11,162,087	230	$48,531	$145,592
Roanoke	$28,613,789	868	$32,965	$98,896
Spring Bay	$44,058,160	1,181	$37,306	$111,917
Worth	$215,883,618	3,362	$64,213	$192,639
Townships - 6 most populated	$458,345,437	10,861	$42,201	$126,603
Townships - 11 least populated	$182,232,898	4,816	$37,839	$113,517

Source: Woodford County Clerk.

Calculating Potential Dollar Losses

With all the decisions and assumptions made, the potential dollar losses can now be calculated. First, the potential dollar losses to the ***structure*** of a potentially-damaged housing unit must be determined. This is done by taking the average market value for a residential structure and multiplying it by the percent damage (100%) to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure T-__** provides a sample calculation.

Next, the potential dollar losses to the ***content*** of a potentially-damaged housing unit must be determined. Based on FEMA guidance, the average value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply by the percent damage (100%) to get the average content damage per unit. Next the average content damage per unit is multiplied by the number of potentially-damaged housing units. **Figure T-__** provides a sample calculation.

Figure T-__
***Structure:* Potential Dollar Loss Sample Calculation – Roanoke**
Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage = Average Structural Damage per Housing Unit Roanoke: $92,913 x 100% = $92,913 per housing unit
Average Structural Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Structure* Potential Dollar Losses Roanoke: $92,913 per housing unit x 185 housing units = $17,188,905 **($17,188,905)**

Figure T- __
***Content:* Potential Dollar Loss Sample Calculation – Roanoke**
½ (Average Market Value of a Housing Unit) with the Jurisdiction x Percent Damage = Average Content Damage per Housing Unit Roanoke: ½ ($92,913) x 100% =$46,456.50 per housing unit
Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Content* Potential Dollar Losses Roanoke: $46,456.50 per housing unit x 185 housing units = $8,594,452.50 **($8,594,453)**

Finally, the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and content. **Figures T-__** and **T-__** give a breakdown of the total potential dollar losses by municipality and township. For comparison, an estimate of potential dollar losses was calculated for the entire County, the unincorporated portions of the County, the six most populated townships and the 11 least populated townships.

Figure T- __ **Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Tornado by Participating Jurisdiction**					
Participating Jurisdiction	**Average Market Value (2022)**	**Potentially-Damaged Housing Units (Rounded Up)**	**Potential Dollar Losses**		**Total Potential Dollar Losses**
			Structure	**Content**	
El Paso	$97,188	329	$31,974,852	$15,987,426	$47,962,278
Eureka	$85,632	169	$14,471,808	$7,235,904	$21,707,712
Germantown Hills	$206,853	164	$33,923,892	$16,961,946	$50,885,838
Minonk	$72,480	82	$5,943,360	$2,971,680	$8,915,040
Roanoke	$92,913	185	$17,188,905	$8,594,453	$25,783,358
Unincorp. County	$151,971	2	$303,942	$151,971	$455,913
County	$122,661	5	$613,305	$306,653	$919,958

Participating Jurisdiction	Average Market Value (2022)	Potentially-Damaged Housing Units (Rounded Up)	Potential Dollar Losses		Total Potential Dollar Losses
Figure T-__ **Estimated Potential Dollar Losses to Potentially-Damaged** **Housing Units from a Tornado by Township**					
			Structure	Content	
Cazenovia	$51,197	4	$204,788	$102,394	$307,182
Clayton	$91,069	2	$182,138	$91,069	$273,207
Cruger	$142,248	7	$995,736	$497,868	$1,493,604
El Paso	$110,761	9	$996,849	$498,425	$1,495,274
Greene	$108,823	1	$108,823	$54,412	$163,235
Kansas	$143,954	2	$287,908	$143,954	$431,862
Linn	$77,323	1	$77,323	$38,662	$115,985
Metamora	$108,177	9	$973,593	$486,797	$1,460,390
Minonk	$73,233	5	$366,165	$183,083	$549,248
Montgomery	$158,966	4	$635,864	$317,932	$953,796
Olio	$79,707	10	$797,070	$398,535	$1,195,605
Palestine	$111,990	2	$223,980	$111,990	$335,970
Panola	$96,100	1	$96,100	$48,050	$144,150
Partridge	$145,592	2	$291,184	$145,592	$436,776
Roanoke	$98,896	4	$395,584	$197,792	$593,376
Spring Bay	$111,917	18	$2,014,506	$1,007,253	$3,021,759
Worth	$192,639	14	$2,696,946	$1,348,473	$4,045,419
Townships - 6 most populated	$126,603	10	$1,266,030	$633,015	$1,899,045
Townships - 11 least populated	$113,517	3	$340,551	$170,276	$510,827

This assessment illustrates why potential residential dollar losses should be considered when jurisdictions are deciding which mitigation projects to pursue. ***Potential dollar losses caused by an average tornado in Woodford County would be expected to exceed at least $8.9 million in any of the participating municipalities.***

Potential dollar losses caused by an average tornado in Woodford County townships would be expected to range from $115,985 in Linn Township to $4.0 million in Worth Township. As discussed previously, the estimate for the entire County is skewed because it does not take into consideration the differences in the housing density.

Vulnerability of Commercial/Industrial Businesses and Infrastructure/Critical Facilities
The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of an average-sized tornado in term of residential dollar losses. These calculations do not include damages sustained by businesses or other infrastructure and critical facilities within the participating jurisdictions.

In terms of businesses, the impacts from an average-sized tornado event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through

temporary closure or loss of critical services (i.e., power, drinking water, and sewer). Depending on the magnitude of the event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. As a result, the cumulative monetary impacts to businesses and infrastructure can exceed the cumulative monetary impacts to residences. ***While average dollar amounts cannot be supplied for these items at this time, they should be taken into account*** when discussing the impacts that an average-sized tornado could have on the participating jurisdictions.