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Statewide Screening for Potential Lane Reconfiguration

Photo Credit: Keith Knapp Iowa LTAP

IOWA DOT
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Statewide Analysis to Identify Sites with the Potential for Lane Reconfiguration

What is a 4- to 3-Lane Conversion?

In general, a 4- to 3-lane conversion can simply be described as the removal of a travel lane to increase the utilization and efficiency of the roadway for the traveling public. Reallocating this space in the right locations has been shown to increase the safety and operation of the corridor.[1] In many cases the reallocation of space has provided municipalities an opportunity to grow their network of bike and pedestrian infrastructure and/or align with existing complete streets.

How to Determine Feasibility

The Iowa Department of Transportation's Office of Traffic and Safety (TAS) has expressed interest in developing a list of potential candidate sites for 4- to 3-lane conversion. A number of factors are usually considered to determine the feasibility of converting a four-lane roadway to a three-lane roadway. These factors include[2]:

- Roadway function and environment
- Overall traffic volume
- Level of operational service
- Turning volumes and patterns
- Frequent-stop and/ or slow-moving vehicles
- Weaving, speed, and queues
- Crash types and patterns
- Pedestrian and bike activity
- Right-of-way availability, cost and acquisition impacts
- General characteristics: parallel roadways, offset minor street intersections, parallel parking, corner radii, and at-grade railroad crossings

The above factors are typically analyzed at a corridor level and require significant data gathering and analysis to determine feasibility. A statewide analysis to screen the system for potential candidate sites will only be viable if the factors or data elements are easily accessible. Many of the factors above would require extensive data collection and local knowledge of the candidate locations. Therefore, such a comprehensive analysis would be impractical to perform at a statewide level. In the face of such limitations, it's important to adjust the complexity and scope of the analysis to ensure that potential candidate sites are identified with the understanding that conversion feasibility cannot be determined at such a high level of study.

[1] FHWA, "Road Diet Informational Guide: FHWA Safety Program." FHWA Report No. FHWA-SAT-14-028". (Washington, D.C:2014).

[2] Knapp, Keith, et. al. Guidelines for the Conversion of Urban Four-Lane Undivided Roadways to Three-Lane Two-Way Left-Turn Lane Facilities. Center for Transportation Research and Education, 2001

It was determined by TAS and the Office of Systems Planning (OSP) that a more streamlined approach would be taken to identify potential candidate sites. This approach would lean heavily on the use of existing roadway databases and geographic Information systems (GIS) for the screening. The following is a description of the data elements used and analysis performed to identify potential candidate sites.

Objective of Analysis

The objective of this analysis was to identify four-lane roadway segments, ½ mile or greater in length, that had the potential to be reconfigured to three-lane cross sections. As the analysis progressed, a secondary objective was established to also identify existing three-lane cross sections. It is envisioned that information collected in this effort could support future analyses and studies.

Possible Network Screening Data Elements

The data elements used for the network screening analysis are presented in Table 1 below. Other considerations included total crashes and the presence of signalized intersections.

Table 1: Possible Network Screening Data Elements for Road Diets

Data Element	Field Name/ Table	Source
Major Intersection	INTMAJOR/ ROAD_INV	GIMS
Minor Intersection	INTMINOR/ ROAD_INV	GIMS
Business Entrances	ENTBUSINESS/ ROAD_INV	GIMS
Private Entrances	ENTPRIVATE/ ROAD_INV	GIMS
Median Type	MEDTYPE/ ROAD_INFO	GIMS
Federal Functional Class	FEDFUNC/ ROAD_INFO	GIMS
Number of Lanes	NUMLANES/ ROAD_INFO	GIMS
Average Annual Daily Traffic (AADT)	AADT/ TRAFFIC	GIMS

GIMS stands for Geographic Information Management System

Scope of Analysis

The scope of this analysis included both urban and rural segments. It also included all jurisdictions from local to state-owned roads. In order to identify potential candidate sites, it was decided that an iterative process of filtering locations by attribute information and analyzing the selection for further filtering was the best approach. This process was continued until an optimal number of locations was identified that was neither too broad nor too restrictive. In order to screen the network, a combination of roadway data elements was used. This data was mostly obtained from the Iowa DOT's GIS REST services, but other crucial data elements were utilized, including five-year crash data from TAS and signalized intersection locations from the DOT's intersection database (developed by Iowa State University's Institute for Transportation (InTrans)).

Analysis Structure

This analysis was composed of five different phases. In the sections below, each phase of the analysis is described in summary level detail, which largely excludes the technical aspects of Phases 1-3 of the analysis.

First Phase: Querying of Data

The first phase of this analysis was a high level screening of the network utilizing Iowa DOT's roadway data. The goal of this phase was to simply identify all roadway segments within the state that had four through lanes, no median, and were open to two-way traffic. No other restrictions were made in terms of the roadway. This resulted in identifying segments of both varying lengths and annual average daily traffic (AADT).

Second Phase: Filtering and Calculations

In order to provide a more manageable pool of candidate locations, the segments were filtered by traffic volume. Since it was unlikely that conversion projects would occur on very high volume 4-lane roadways, segments with an AADT above 18,000 were excluded from the analysis. The remaining segments were classified into three traffic volume tiers: low AADT, medium AADT, and high AADT. Those tiers are defined below in Table 2.

Table 2: Road Diet Candidate List AADT Breakouts

AADT	Tier
0–6,000	Low AADT
6,000–12,000	Medium AADT
12,000–18,000	High AADT

As part of the second phase, access density was calculated for each segment using a summation of two roadway elements (business entrances and private entrances) divided by the functional length of the segment. Further, all signalized intersections within 1/8th of a mile of each other were identified through a buffer analysis and spatially joined to the candidate data set.

Third Phase: Geoprocessing and Aggregation

In the third phase of this analysis the segments identified within the previous two phases were aggregated so as to have continuous corridors. Since it was unlikely that conversion projects would take place on short corridors, a minimum corridor length of ½ mile was established. Those corridors less than ½ mile in length were excluded from the analysis. It should be noted that it is possible to consider a lane configuration outside of the thresholds established in this report. These thresholds were developed to manage the scope and number of listings identified through the screening process, but do not limit what could be considered. Finally, segment level crash data was spatially selected and aggregated to each corridor in order to calculate a crash rate and obtain the total number of severe injuries for each potential candidate site.

Fourth Phase: Identification of Existing Three-Lane Configurations (Secondary Screening)

It was determined during the screening process that it would also be helpful to identify and provide a listing of current three-lane roadways. This would give TAS a listing of all known three-lane roadways within the state. In order to identify existing three-lane configurations, the first three phases of analysis described above were repeated, with the only notable difference being in the initial query of the roadway data. Instead of querying the data set for four through lanes, it was queried for three lanes with two of the lanes being coded as through and the middle being coded as two-way left-turn lane (TWLTL).

The query for existing three-lane roadways was supplemented by two sources provided by TAS. The first source was an inventory of three-lane roadways that had been maintained by TAS in spreadsheet form. The second source was from a study titled "Iowa's Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates." In Table 2 of that study (titled: Site Descriptive Information) there is a listing of three-lane roadways.[3] Both lists were combined and the corridors that still existed in that configuration were included in the final listings of this report.

Screening the network for existing three-lane sites was a secondary effort to the original scope of this project. Because of this, the results of that analysis are not included in the main body of this report. However, existing three-lane corridors are listed in Appendix 1, and also appear in some of the maps in Appendix 2.

Fifth Phase: Quality Control

Although Iowa has a very robust roadway database, like many other states, Iowa is not immune to inaccuracies within its database. For this reason, it was important to review the corridors that had been identified to ensure that they accurately represented either potential candidate or existing sites as intended. Each corridor that had been identified through the initial network screening and then filtered through to aggregation was visually inspected using a combination of aerial photography and street-level imagery. Each corridor was inspected to ensure that the number of lanes, approximate length, existence of curbs, etc. was correct. In some instances, aggregation of the segments resulted in discontinuous corridors. This was largely due to the original screening of the roadway data. For example, at an intersection, a four-lane roadway may either experience an increase in the number of lanes (usually turn lanes) or have medians. To resolve this issue and to ensure continuous corridors, segments at intersections where the cross section changed were manually selected and aggregated.[4] After the visual inspection and necessary resolutions were completed, a final listing of corridors was created which consisted of 223 potential candidate sites and 78 existing three-lane sites.

Results of Analysis

In summary, 223 potential candidate sites were identified through the statewide analysis. Of the sites identified, 52 fell within the Low AADT tier, 99 fell within the Medium AADT tier, and 72 fell within the High AADT tier.

Potential Candidates and Existing Three-Lane Sites

In Appendix 1, both the potential candidates and existing three-lane sites are listed. Table 3 presents the breakdown of sites by DOT district and AADT. In summary, both District 1 and District 6 are well represented in number of potential candidate sites. This is likely due to the larger metropolitan areas within both of these districts (notably Des Moines, Ames, Cedar Rapids, Davenport, Dubuque, and Iowa City). Similarly, District 1 had the largest number of existing three-lane sites while the district with the second-highest number came from District 5. Interestingly, District 5 is one of the more rural districts in the state, having no metropolitan areas (population >50,000).

[3] Pawlovich, M., Wen, L., Carriquiry, A., and Welch, T. (2006). "Iowa's Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates," *Transportation Research Record 1953*, 163-171.

[4] In some instances, this manual selection of the segments and aggregation of corridors resulted in corridors with maximum AADT ranges above the originally defined threshold of 18,000 AADT. These corridors were retained in the table listings because the majority of their length was originally identified in the network screening query.

Table 3: Potential Candidates			
DOT District	AADT	Number of Sites	Total Number of Sites
District 1	0–6,000	4	50
	6,000–12,000	16	
	12,000–18,000	30	
District 2	0–6,000	14	44
	6,000–12,000	23	
	12,000–18,000	7	
District 3	0–6,000	11	30
	6,000–12,000	10	
	12,000–18,000	9	
District 4	0–6,000	8	16
	6,000–12,000	8	
	12,000–18,000	0	
District 5	0–6,000	8	34
	6,000–12,000	23	
	12,000–18,000	3	
District 6	0–6,000	6	49
	6,000–12,000	22	
	12,000–18,000	21	

Table Listings and Descriptions

For each district, a separate table has been created for the potential candidates and the existing three-lane sites. Each table is first sorted alphabetically by city and then by ascending AADT. These tables can be found in the next section. Some of the fields contained in the tables are self-explanatory, however, others need a brief description as to how they were calculated. Figure 1 shows the fields contained in the table listings, followed by a short description for the fields that were calculated.

Potential Candidates: District 6										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density	Traffic Signal	Crash Rate
6	BETTENDORF	BSRC	GREAT RIVER RD	.1 MILES W OF 244TH AVE	S BLUFF BLVD	8,600	2.32	3	NO	124
6	BETTENDORF	BSRC	18TH ST	HEATHER GLEN AVE	LINCOLN HWY	12,100	2.00	36	YES	501

Figure 1: Fields contained in table listing. Please note that the boxes for the District field may be represented in either grey or red. Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.

AADT

During the process of identifying the potential candidate sites and existing three-lane sites, segment-level AADT values were aggregated and calculations were performed on that field. Four different calculations were used during the process of aggregation including mean, range, min, and max. However, in order to have concise information in the table listing, only the maximum AADT value is presented. This value represents the highest segment AADT value for the corridor.

Access Density

The density of access points along a corridor can have an impact on traffic operations and safety. Four-lane corridors with higher access densities stand to benefit the most from a conversion to three lanes. A greater number of accesses results in a greater number of left turns. The addition of a continuous center turn-lane provides a safer means of accommodating left-turning vehicles by separating them from the through traffic.

Access density was calculated for each site within the analysis by summing the number of private and business entrances for each segment and dividing it by the segment's length. In the tables, access density is presented as the number of access points per mile

Signalized Intersections

The presence of traffic signals can affect the operational efficiency of a converted corridor. While the effects may be minimal at lower traffic volumes, they can be evident at higher traffic volumes. However, these effects can usually be overcome—and operations improved—by re-timing the signals or by removing those signals that are no longer warranted. A spatial analysis was performed on all signalized intersections within the state to identify those corridors having signalized intersections. In the tables below, the traffic signal field is populated by either a "Yes" or a "No". "Yes" indicates that at least one signalized intersection is located within the corridor, and that traffic flow in the three-lane configuration may be enhanced through a more in-depth analysis of signal operations.

Crash Rate

Reducing the number of lanes from four to three can have a substantial effect on the number of crashes on a roadway. Previous studies have indicated a 19 to 47 percent reduction in overall crashes when a roadway is reconfigured from four lanes to three lanes.[5] Including crash rates into this analysis increases the ability for candidate sites with the greatest potential for crash reductions to be identified. Figure 2 presents the equation used to calculate crash rates for sites. It should be noted that five years (2011-2015) of Iowa DOT crash data were used in this analysis. In the equation below, "Total Crashes" represents the aggregate number of crashes that occurred along a corridor. In the bottom of the equation, vehicle miles traveled (VMT) represents the aggregate volume of the corridor. Finally, "Years of crash history" represents total number of years of crash data. Crash Rate is presented in terms of crashes per 100 million vehicle miles traveled (HMVMT).

$$\left(\frac{\text{Total Crashes}}{\text{VMT*365*Years of crash history}}\right) * 100{,}000{,}000$$

Figure 2 : Equation used to calculate crash rate

[5] FHWA, "Evaluation of Lane Reduction 'Road Diet' Measures on Crashes." FHWA Report No. FHWA-HRT-10-053". (Washington, D.C:2010).

Limitations of Analysis

Data

As mentioned earlier, the completeness and accuracy of the data included in this report rely heavily on the geospatial data obtained through the Iowa DOT's REST services. There were a few instances where the data used was not representative of the current roadway environment, probably due to lags in reporting. Because of this, an extensive effort of visually inspecting the roadway was carried out to ensure the listing was as accurate as possible. However, due to the scope of the analysis, it is possible that errors still exist.

Statistical evaluation

Although a number of attributes aggregated for the sites could be utilized for further statistical analysis, it was not the intention of this effort to perform such analyses. Future efforts might leverage the additional attribute information that was included in the raw aggregate data. This information, if used properly, could lead to case study evaluations or cohort analysis.

Table Listings

Potential Candidates: District 1										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
1	ALTOONA	DMAMPO	ADVENTURELAND DR	34th AVE NW	PRARIE MEADOWS DRIVE	10,100	0.53	36	YES	1,140
1	AMES	AAMPO	24TH ST	STANGE RD	HAYES AVE	9,300	0.57	10	YES	162
1	AMES	AAMPO	N DAKOTA AVE	LINCOLN WAY	RELIABLE ST	9,800	0.98	18	YES	551
1	AMES	AAMPO	UNIVERSITY BLVD	LINCOLN WAY	STANGE RD	12,100	0.96	2	YES	174
1	AMES	AAMPO	S 4TH ST	BEACH AVE	S GRAND AVE	12,500	1.12	6	YES	652
1	AMES	AAMPO	DUFF AVE	E 2ND ST	20TH ST	13,600	1.26	70	YES	499
1	AMES	AAMPO	13TH ST	.12 MILES W OF HABER RD	DAYTON AVE	13,800	2.84	28	YES	331
1	AMES	AAMPO	STANGE RD	UNIVERSITY BLVD	24TH ST	17,200	1.03	2	YES	554
1	AMES	AAMPO	GRAND AVE/ US 69	LINCOLN WAY	.15 MILES N OF 20TH ST	17,500	1.37	64	YES	467
1	AMES	AAMPO	LINCOLN WAY/ US 30	.1 MILES W OF MARSHALL AVE	.2 MILES W OF FREEL DR	20,400	3.82	36	YES	891
1	ANKENY	DMAMPO	NW STATE ST	W 1ST ST	NW 18TH ST	7,500	1.03	49	YES	852
1	ANKENY	DMAMPO	W 1ST ST	NW GREENWOOD ST	N ANKENY BLVD	14,200	1.58	37	YES	360
1	ANKENY	DMAMPO	E 1ST ST	N ANKENY BLVD	NE HAYES DRIVE	18,000	0.76	18	YES	308
1	DES MOINES	DMAMPO	E GRAND AVE	E 5TH ST	E 18TH ST	12,400	1.28	34	YES	1,439
1	DES MOINES	DMAMPO	E 30TH ST	.15 MILES S OF DEAN AVE	STATE AVE	12,800	0.83	25	YES	1,131
1	DES MOINES	DMAMPO	FOREST AVE	BEAVER AVE	19TH ST	14,100	1.11	28	YES	1,204
1	DES MOINES	DMAMPO	HUBBELL AVE/ US 6	E 38TH ST	.15 MILES E OF NE 46TH ST	14,400	1.45	27	YES	495
1	DES MOINES	DMAMPO	E EUCLID AVE/ US 6	1ST ST	E 13TH ST	14,500	0.81	49	YES	1,001
1	DES MOINES	DMAMPO	HICKMAN RD	30TH ST	PROSPECT RD	14,500	1.45	44	YES	830
1	DES MOINES	DMAMPO	UNIVERSITY AVE	24TH ST	7TH ST	15,600	1.18	33	YES	1,102
1	DES MOINES	DMAMPO	SW 9TH ST	LALLY ST	SW MCKINLEY AVE	15,700	0.87	57	YES	494
1	DES MOINES	DMAMPO	DOUGLAS AVE/ US 6	MERLE HAY RD	LOWER BEAVER RD	16,500	1.79	113	YES	687

**District field: Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.*

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
1	DES MOINES	DMAMPO	ASHWORTH RD	.1 MILES E OF 72ND ST	63RD ST	16,700	5.23	44	YES	292
1	DES MOINES	DMAMPO	E 14TH ST/ US 69	GARFIELD AVE	ALPHA AVE	17,100	0.85	121	YES	689
1	DES MOINES	DMAMPO	GRAND AVE	.15 MILES N OF FULLER RD	18TH ST	17,200	5.83	50	YES	367
1	DES MOINES	DMAMPO	INDIANOLA AVE	SE 9TH ST	HILLSIDE AVE	17,300	1.19	58	YES	340
1	DES MOINES	DMAMPO	EUCLID AVE/ US 6	.1 MILES W OF 16TH ST	6TH AVE	18,700	0.87	74	YES	701
1	DES MOINES	DMAMPO	2ND AVE/ IOWA 415	INDIANA AVE	NW 43RD AVE	19,500	2.60	62	YES	622
1	FORT DODGE	RPA 5	N 15TH ST	CENTRAL AVE	20TH AVE N	10,900	1.40	37	YES	677
1	FORT DODGE	RPA 5	KENYON RD	US 169	AVE C	13,800	0.96	2	YES	447
1	FORT DODGE	RPA 5	5TH AVE S	S 12TH ST	S 25TH ST	15,400	0.89	61	YES	680
1	GRINNELL	RPA 6	6TH AVE/ US 6	PRINCE ST	PENROSE ST	7,200	1.51	31	YES	306
1	GRINNELL	RPA 6	WEST ST/ IOWA 146	.15 MILES N OF OGAN AVE	6TH AVE	11,900	1.43	42	YES	438
1	GRUNDY CENTER	RPA 7	G AVE/ IOWA 14	M AVE	5TH ST	6,300	0.91	42	YES	252
1	JEFFERSON	RPA 12	S ELM ST/ IOWA 4	250TH ST	E LINCOLN WAY	4,390	1.35	33	YES	153
1	JEFFERSON	RPA 12	N ELM ST/ IOWA 4	E LINCOLN WAY	US 30	7,000	1.25	30	NO	318
1	JOHNSTON	DMAMPO	NW 86TH ST	.1 MILES N OF NW 62ND AVE	NW 70TH AVE	5,400	0.86	4	NO	162
1	JOHNSTON	DMAMPO	MERLE HAY RD	NW 63RD PL	NW 70TH AVE	13,800	0.90	30	YES	123
1	MARSHALLTOWN	RPA 6	E OLIVE ST	S CENTER ST	S 18TH AVE	5,600	1.48	33	YES	642
1	MARSHALLTOWN	RPA 6	S 18TH AVE	E OLIVE ST	E MAIN ST	7,800	1.44	10	NO	140
1	MARSHALLTOWN	RPA 6	N 3RD AVE/ IOWA 14	E MAIN ST	.1 MILES N WOODLAND ST	10,600	1.04	53	YES	709
1	MARSHALLTOWN	RPA 6	S CENTER ST/ IOWA 14	CHERRY ST	E ANSON ST	17,600	0.53	74	YES	629
1	NEWTON	RPA 11	1ST AVE E/ US 6	E 17TH ST S	EAST 31ST ST N	9,700	0.91	49	YES	322
1	TAMA	RPA 6	STATE ST/ US 63	W 5TH ST	W 13TH ST	5,300	0.54	46	NO	103
1	TOLEDO	RPA 6	S COUNTY ROAD/ US 63	LINCOLN HWY	W HIGH ST	6,600	0.59	27	YES	300
1	TRAER	RPA 6	S MAIN ST/ US 63	TOLEDO ST	1ST ST	3,920	0.65	28	YES	305

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
1	URBANDALE	DMAMPO	70TH ST	PALM DR	MEREDITH DR	9,600	1.37	79	YES	442
1	URBANDALE	DMAMPO	MEREDITH DR	84TH ST	59TH ST	14,300	1.82	15	YES	276
1	WEBSTER CITY	RPA 5	SUPERIOR ST	FAIR MEADOW DR	3RD ST	7,900	1.09	40	YES	338
1	WEST DES MOINES	DMAMPO	E P TRUE PKWY	60TH ST	GRAND AVE	16,200	3.21	7	YES	258

**District field: Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.*

Potential Candidates: District 2										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
2	ALGONA	RPA 2	US 18	COUNTRY CLUB RD	N FINN DR	6,600	2.51	8	NO	268
2	ALGONA	RPA 2	S PHILLIPS ST/ US 169	S MINNESOTA ST	E STATE ST	7,000	0.84	37	YES	415
2	ALGONA	RPA 2	N JONES ST/ US 169	E STATE ST	US 18	8,700	0.96	21	YES	343
2	ALLISON	RPA 7	IOWA 3	.25 MILES W OF S MAIN ST	OAK ST	3,520	0.58	19	NO	106
2	APLINGTON	RPA 7	PARRIOTT ST/ IOWA 57	12TH ST	4TH ST	2,970	0.72	61	NO	141
2	BELMOND	RPA 5	RIVER AVE S/ US 69	.25 MILES S OF 5TH ST SE	MAIN ST W	3,640	0.57	32	YES	437
2	CEDAR FALLS	INRCOG	W VIKING RD	HUDSON RD	NORDIC DR	7,800	0.90	10	YES	600
2	CEDAR FALLS	INRCOG	MAIN ST	SEERLEY BLVD	E 6TH ST	10,200	1.19	37	YES	419
2	CEDAR FALLS	INRCOG	GREENHILL RD	HUDSON RD	KATOSKI DR	10,300	3.47	1	YES	320
2	CEDAR FALLS	INRCOG	WATERLOO RD	STATE ST	UNIVERSITY AVE	11,900	1.28	37	YES	293
2	CEDAR FALLS	INRCOG	1ST ST/ IOWA 57	HUDSON RD	TREMONT ST	14,600	0.74	61	YES	399
2	CHARLES CITY	RPA 2	S GRAND AVE/ US 18	US 218	ALLISON ST	8,000	1.76	18	NO	275
2	CLARION	RPA 5	CENTRAL AVE/ IOWA 3	4TH ST NW	14TH AVE	5,600	1.23	49	YES	409
2	CLEAR LAKE	RPA 2	4TH AVE S	S 8TH ST	US 35	5,900	1.35	18	YES	323
2	DECORAH	RPA 1	IOWA 9	US 52	TROUT RUN RD	13,900	2.77	2	YES	285
2	EAGLE GROVE	RPA 5	COMMERCIAL AVE/ IOWA 17	SW 10TH ST	BROADWAY ST	4,410	0.71	56	YES	353
2	EAGLE GROVE	RPA 5	N COMMERCIAL AVE/ IOWA 17	BROADWAY ST	12TH ST	4,410	0.87	30	YES	313

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
2	EVANSDALE	INRCOG	RIVER FOREST RD	DEERWOOD PARK RD	CENTRAL AVE	8,500	0.53	47	NO	158
2	FOREST CITY	RPA 2	350TH ST/ IOWA 9	NE HWY 69	.25 MILES E OF 180TH AVE	3,690	1.03	8	NO	141
2	FOREST CITY	RPA 2	170TH AVE/ US 69	.2 MILES S 350TH ST	SUNRISE DR	6,100	0.77	27	YES	196
2	HAMPTON	RPA 2	CENTRAL AVE W/ IOWA 3	OLIVE AVE	FEDERAL ST N	6,300	0.74	28	YES	554
2	HAMPTON	RPA 2	CENTRAL AVE E/ IOWA 3	FEDERAL ST N	8TH ST NE	6,400	0.50	18	YES	580
2	HUMBOLDT	RPA 5	10TH AVE N/ IOWA 3	13TH ST N	5TH ST N	6,100	0.69	3	YES	431
2	HUMBOLDT	RPA 5	13TH ST S/ US 169	.1 MILES N OR 240TH ST	HICKORY LN	8,100	1.21	9	NO	200
2	HUMBOLDT	RPA 5	13TH ST N/ US 169	HICKORY LN	10TH AVE N	8,200	0.72	79	NO	408
2	MASON CITY	RPA 2	S PIERCE AVE	19TH ST SW	9TH ST SW	4,450	0.65	23	YES	544
2	MASON CITY	RPA 2	N FEDERAL AVE/ US 65	6TH ST NE	NATURE CENTER RD	7,000	1.41	38	YES	450
2	MASON CITY	RPA 2	19TH ST SW	S HARDING AVE	S FEDERAL AVE	8,300	2.01	11	YES	240
2	MASON CITY	RPA 2	4TH ST SE/ IOWA 122	S VIRGINIA AVE	.1 MILES E OF S ILLINOIS AVE	10,300	0.89	51	YES	375
2	MASON CITY	RPA 2	S MONROE AVE	15TH ST SW	5TH ST SW	10,400	0.57	21	YES	672
2	MASON CITY	RPA 2	S FEDERAL AVE/ US 65	35TH ST SE	4TH ST SW	12,000	1.98	33	YES	682
2	NEW HAMPTON	RPA 7	S LINN AVE	.1 MILES S OF E CLEVELAND ST	W MAIN ST	3,500	0.74	80	YES	148
2	NEW HAMPTON	RPA 7	N LINN AVE/ IOWA 24	W MAIN ST	SARA LEE DR	5,300	0.69	52	YES	668
2	OELWEIN	RPA 1	FREDERICK AVE N/ IOWA 150	.1 MILES N OF 9TH ST NE	2ND ST NW	3,900	0.69	73	NO	234
2	OELWEIN	RPA 1	CHARLES ST E/ IOWA 3	1ST AVE NE	9TH AVE SE	4,460	0.58	35	YES	510
2	OELWEIN	RPA 1	PALACE RD/ IOWA 150	COUNTY LINE RD	3RD ST SE	6,300	2.20	2	YES	207
2	OSAGE	RPA 2	MAIN ST/ IOWA 9	N 1ST ST	S 14TH ST	6,300	1.14	39	YES	282
2	SUMNER	RPA 7	W 1ST ST/ IOWA 93	HOWARD ST	N GUILFORD ST	4,270	0.63	63	NO	62
2	WATERLOO	INRCOG	W CONGER ST	RIVER RD	BURTON AVE	9,900	0.60	8	NO	219
2	WATERLOO	INRCOG	W RIDGEWAY AVE	SERGEANT RD	KIMBALL AVE	11,700	1.92	21	YES	397
2	WATERLOO	INRCOG	FRANKLIN ST	E 1ST ST	NEVADA ST	12,800	1.39	35	YES	639

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
2	WATERLOO	INRCOG	KIMBALL AVE	US 20	ACADIA ST	13,200	1.47	13	YES	586
2	WATERLOO	INRCOG	ANSBOROUGH AVE	E SAN MARNAN DR	MAYNARD AVE	18,400	3.40	25	YES	334
2	WAVERLY	RPA 7	BREMER AVE/ IOWA 3	20TH ST NW	8TH ST SE	12,800	1.71	25	YES	575

**District field: Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.*

Potential Candidates: District 3										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
3	CARROLL	RPA 12	US 30	INDUSTRIAL PARK RD	.1 MILES S OF HEIRES AVE	10,400	1.29	8	YES	198
3	CARROLL	RPA 12	6TH ST/ US 30	N CARROLL ST	MONTEREY DR	13,500	2.07	40	YES	519
3	CHEROKEE	RPA 4	S 2ND ST/ US 59	LINDEN ST	W LOCUST ST	5,300	0.84	25	YES	154
3	CHEROKEE	RPA 4	N 2ND ST/ US 59	MAIN ST	INDIAN ST	9,500	1.01	33	YES	492
3	DENISON	RPA 12	4TH AVE S/ US 30	S 7TH ST	S 20TH ST	9,400	1.00	50	YES	630
3	EMMETSBURG	RPA 3	BROADWAY ST/ IOWA 4	23RD ST	MAIN ST	5,500	0.87	27	YES	263
3	EMMETSBURG	RPA 3	MAIN ST/ US 18	ADAMS ST	N HURON ST	8,400	1.29	38	YES	377
3	HARTLEY	RPA 3	3RD ST NE/ US 18	N CENTRAL AVE	N 8TH AVE E	4,590	0.50	40	NO	120
3	HOLSTEIN	RPA 4	S MAIN ST/ US 59	US 20	E 2ND ST	3,350	0.91	40	YES	119
3	HOLSTEIN	RPA 4	N MAIN ST/ US 59	E 2ND ST	INDUSTRIAL PARK	3,630	0.50	36	YES	143
3	IDA GROVE	RPA 4	OHIO ST/ IOWA 175	OAK GROVE DR	FATHER DAILEY DR	4,790	0.80	50	YES	245
3	LE MARS	RPA 4	HAWKEYE AVE	24TH ST	4TH ST SW	9,600	2.15	13	YES	266
3	MAPLETON	RPA 4	S 4TH ST/ IOWA 14	OAK ST	MAIN ST	2,640	0.59	39	YES	373
3	MILFORD	RPA 3	OKOBOJI AVE/ US 71	4TH ST	IOWA 86	12,900	1.69	44	YES	214
3	ONAWA	RPA 4	IOWA AVE/ IOWA 175	15TH ST	4TH ST	5,800	0.74	27	YES	574
3	POCAHONTAS	RPA 5	ELM AVE/ IOWA 3	SW 2ND ST	SE 6TH ST	3,820	0.68	25	NO	116
3	ROCK RAPIDS	RPA 3	1ST AVE/ IOWA 9	.25 MILES W OF S FAIRLAMB ST	S GREENE ST	5,100	0.76	38	YES	469
3	SAC CITY	RPA 12	MAIN ST	N 16TH ST	2ND ST	2,570	0.85	34	YES	483

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
3	SIOUX CITY	SIMPCO	RIVERSIDE BLVD/ IOWA 12	WAR EAGLE DR	MILITARY RD	7,700	1.75	50	YES	354
3	SIOUX CITY	SIMPCO	6TH ST	IOWA ST	LEWIS BLVD	11,400	0.77	8	YES	403
3	SIOUX CITY	SIMPCO	S LAKEPORT ST	LINCOLN WAY	4TH AVE	13,300	1.25	83	YES	499
3	SIOUX CITY	SIMPCO	LEWIS BLVD/ IOWA 376	7TH ST	OUTER DR N	15,100	2.42	26	YES	281
3	SIOUX CITY	SIMPCO	W 7TH ST	PANOAH ST	PEARL ST	16,540	0.64	30	YES	838
3	SIOUX CITY	SIMPCO	FLOYD BLVD	14TH ST	.1 MILES S OF 33RD ST	16,700	1.69	11	YES	329
3	SPENCER	RPA 3	HIGHWAY BLVD/ US 18	E 17TH ST	.25 MILES S OF E 30TH ST	11,400	0.78	40	YES	232
3	SPENCER	RPA 3	N GRAND AVE/ US 18	.15 MILES N OF 4TH ST SE	E 8TH ST	15,500	0.65	23	YES	743
3	SPIRIT LAKE	RPA 3	US 71	CHICAGO AVE	.25 MILES E OF 252ND AVE	7,900	0.78	15	NO	198
3	SPIRIT LAKE	RPA 3	18TH ST/ US 71	MEMPHIS AVE	CHICAGO AVE	11,100	0.77	50	YES	499
3	STORM LAKE	RPA 3	LAKE AVE	W 5TH ST	590TH ST	12,900	1.21	43	YES	652
3	WEST OKOBOJI	RPA 3	US 71	IOWA 86	LAKE ST	13,600	1.74	2	YES	61

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Potential Candidates: District 4										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
4	ATLANTIC	RPA 13	7TH ST/ US 71	E 6TH ST	635TH ST	11,000	1.00	10	YES	364
4	AUDUBON	RPA 12	US 71	POPLAR ST	.5 MILES N OF 190TH ST	4,130	0.67	15	NO	80
4	AUDUBON	RPA 12	MARKET ST/US 71 US 71	MANTZ AVE	POPLAR ST	5,500	1.01	49	YES	254
4	BEDFORD	RPA 14	IOWA 148	JACKSON ST	POLLOCK BLVD	3,410	0.79	40	YES	74
4	CRESTON	RPA 14	W TOWNLINE ST/ IOWA 25	COTTONWOOD RD	N SPRUCE ST	5,400	0.82	15	YES	263
4	CRESTON	RPA 14	NEW YORK AVE/ US 34	CROMWELL RD	LAUREL ST	5,900	0.65	23	YES	134
4	CRESTON	RPA 14	N SUMNER AVE/ IOWA 25	W ADAMS ST	W TOWNLINE ST	6,900	0.95	39	YES	432
4	CRESTON	RPA 14	E TAYLOR ST/ US 34	S VINE ST	COMMERCE RD	8,500	0.78	18	NO	69

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
4	CRESTON	RPA 14	W TAYLOR ST/ US 34	LAUREL ST	S VINE ST	9,700	0.86	35	NO	449
4	GUTHRIE CENTER	RPA 12	STATE ST/ IOWA 44	N 12TH ST	.15 MILES E OF BLUFF ST	3,450	0.71	31	NO	140
4	HARLAN	RPA 18	CHATBURN AVE/ IOWA 44	23RD ST	6TH ST	6,600	1.10	39	YES	470
4	PERRY	RPA 11	1ST AVE/ IOWA 144	IOWA 141	GRACELAND AVE	8,500	1.81	49	YES	474
4	SHENANDOAH	RPA 13	FREMONT ST/ US 59	W NISHNA RD	FERGUSON RD	8,900	1.03	31	YES	323
4	WEST DES MOINES	DMAMPO	VISTA DR	JORDAN CREEK PKWY	60TH ST	1,370	0.80	19	YES	1,286
4	WEST DES MOINES	DMAMPO	WESTOWN PKWY	71ST ST	60TH ST	7,100	0.74	8	NO	91
4	WINTERSET	RPA 11	W SUMMIT ST	.15 MILES W OF S 8TH AVE	CLARK TOWER RD	3,890	0.65	59	NO	418

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Potential Candidates: District 5										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
5	ALBIA	RPA 17	IOWA 5	CO RD. T35	14TH AVE W	6,700	0.51	6	NO	91
5	BLOOMFIELD	RPA 17	US 63	E ARKANSAS AVE	MADISON ST	5,500	0.57	24	NO	128
5	BLOOMFIELD	RPA 17	WASHINGTON ST/ US 63	E SOUTH ST	E ARKANSAS AVE	6,700	0.55	42	YES	666
5	BURLINGTON	RPA 16	MAIN ST	ANGULAR ST	US 34	6,400	0.78	29	YES	518
5	BURLINGTON	RPA 16	DIVISION ST	S ROOSEVELT AVE	N/S MAIN ST	8,000	2.05	46	YES	632
5	BURLINGTON	RPA 16	AGENCY ST	COLUMBUS DR	CURRAN ST	9,300	0.62	21	YES	874
5	BURLINGTON	RPA 16	CENTRAL AVE	MAPLE ST	COLUMBIA ST	10,700	0.64	39	YES	1,186
5	CORYDON	RPA 17	JEFFERSON ST/ IOWA 2	.1 MILES W OF N LINCOLN ST	.1 MILES E OF S EAST ST	4,540	0.88	38	NO	354
5	FORT MADISON	RPA 16	2ND ST	GREAT RIVER RD	335TH AVE	5,100	1.53	8	NO	514
5	FORT MADISON	RPA 16	AVE O	270TH AVE	AVENUE L	10,200	1.91	21	YES	565
5	FORT MADISON	RPA 16	AVE H	20TH ST	GREAT RIVER RD	10,900	1.73	24	YES	689
5	FORT MADISON	RPA 16	AVE L	39TH ST	20TH ST	11,600	1.31	49	YES	754

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
5	INDIANOLA	RPA 11	E 2ND AVE/ IOWA 92	S JEFFERSON WAY	.1 MILES W OF E 1ST	6,500	1.15	34	YES	747
5	KALONA	RPA 10	E AVE/ IOWA 22	1ST ST	9TH ST	6,500	0.63	35	YES	483
5	KEOKUK	RPA 16	7TH ST/ US 136	TWIN RIVERS DR	B ST	4,120	1.74	25	NO	57
5	KEOKUK	RPA 16	7TH ST S/ US 136	B ST	MAIN ST	4,120	0.67	15	YES	250
5	KEOKUK	RPA 16	N MAIN ST/ US 218	NAVAHO DR	US 61	11,300	0.95	30	NO	116
5	KEOKUK	RPA 16	S MAIN ST/ US 218	S 3RD ST	N 13TH ST	12,800	0.70	32	YES	278
5	KNOXVILLE	RPA 11	LINCOLN ST/ IOWA 14	ERIC DR	KERMIT DR	10,200	1.90	41	YES	559
5	MOUNT PLEASANT	RPA 16	235TH ST	OLD HWY 34	.15 MILES E OF N J AND J LN	4,370	0.93	15	NO	205
5	MOUNT PLEASANT	RPA 16	W WASHINGTON ST	.15 MILES E OF N J AND J LN	S MAIN ST	8,800	0.69	52	YES	495
5	MOUNT PLEASANT	RPA 16	E WASHINGTON ST	S MAIN ST	US 218	11,900	1.66	36	YES	373
5	MUSCATINE	RPA 9	OREGON ST	MILES AVE	GRANDVIEW AVE	5,100	0.50	40	NO	164
5	MUSCATINE	RPA 9	GRANDVIEW AVE	ROBY AVE	HERSHEY AVE	8,400	0.64	40	YES	363
5	MUSCATINE	RPA 9	ISETT AVE	WOODLAWN AVE	LAKE PARK BLVD	10,600	0.58	36	YES	312
5	MUSCATINE	RPA 9	E 2ND ST/ IOWA 38	MULBERRY AVE	PARK AVE	10,700	0.66	41	YES	264
5	MUSCATINE	RPA 9	PARK AVE/ IOWA 38	E 4TH ST	CLAY ST	10,800	0.88	29	YES	325
5	OSKALOOSA	RPA 15	S MARKET ST/ US 63	18TH AVE	ROCK ISLAND AVE	7,700	0.69	56	NO	427
5	OSKALOOSA	RPA 15	A AVE E IOWA 92	N MARKET ST	SOLAR DR	10,900	1.44	35	YES	411
5	OSKALOOSA	RPA 15	A AVE W/ IOWA 92	.1 MILES E OF HWY 432	N MARKET ST	13,400	0.94	48	YES	981
5	RICHLAND	RPA 15	OAK ST	IOWA 78	W DIVISION ST	2,080	0.86	30	NO	181
5	WASHINGTON	RPA 10	E WASHINGTON ST/ IOWA 92	N 2ND AVE	.1 MILES W OF WILEY AVE	9,600	1.31	53	YES	279
5	WEST BURLINGTON	RPA 16	MT PLEASANT ST	N GEAR AVE	N ROOSEVELT AVE	10,700	1.51	42	YES	388
5	WEST BURLINGTON	RPA 16	W AGENCY RD	WASHINGTON RD	DEREK LINCOLN DR	12,000	1.42	18	YES	814

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Potential Candidates: District 6										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
6	BELLE PLAINE	RPA 10	13TH ST/ IOWA 21	1ST AVE	7th AVE	3,110	0.51	41	NO	73
6	BELLE PLAINE	RPA 10	7TH AVE/ IOWA 21	5th ST	13th ST	4,640	0.62	60	YES	292
6	BETTENDORF	BSRC	GREAT RIVER RD/ US 67	24TH AVE	.25 MILES W OF W CANAL SHORE DR	8,600	2.32	3	NO	124
6	BETTENDORF	BSRC	18TH ST	SPRUCE HILLS DR	HEATHER GLEN AVE	12,100	2.00	36	YES	501
6	BETTENDORF	BSRC	SPRUCE HILLS DR	UTICA RIDGE RD	MIDDLE RD	14,400	1.25	48	YES	441
6	BETTENDORF	BSRC	DEVILS GLEN RD	STATE ST	SUMMERTREE AVE	17,900	2.95	27	YES	298
6	BETTENDORF	BSRC	MIDDLE RD	.2 MILES W OF OAKBROOK DR	BELMONT RD	22,700	2.28	29	YES	347
6	CASCADE	RPA 8	1ST AVE W	CLEVELAND ST NW	PIERCE ST SW	4,650	0.52	45	YES	294
6	CEDAR RAPIDS	CMPO	42ND ST NE	RIVER RIDGE DR NE	WENIG RD NE	8,600	0.94	20	YES	189
6	CEDAR RAPIDS	CMPO	JOHNSON AVE NW	1ST AVE SW	18TH ST NW	9,200	2.09	27	YES	490
6	CEDAR RAPIDS	CMPO	CENTER POINT RD NE	32ND ST NE	TEXAS AVE NE	11,300	0.46	68	NO	133
6	CEDAR RAPIDS	CMPO	BOWLING ST SW	US 30	WILSON AVE SW	11,900	2.00	20	YES	203
6	CEDAR RAPIDS	CMPO	WILEY BLVD SW	EDGEWOOD RD SW	WILLAMS BLVD SW	13,800	0.72	6	YES	545
6	CEDAR RAPIDS	CMPO	6TH ST SW	63RD AVE SW	2ND AVE SW	14,400	3.90	16	YES	270
6	CEDAR RAPIDS	CMPO	WILLIAMS BLVD/ IOWA 922	16TH AVE SW	18TH ST SW	15,200	0.79	108	YES	303
6	CEDAR RAPIDS	CMPO	1ST AVE E/ IOWA 922	1ST ST NE	13TH ST SE	16,400	0.97	39	YES	867
6	CEDAR RAPIDS	CMPO	MOUNT VERNON RD SE	MEMORIAL DR SE	EAST POST RD SE	16,500	1.09	75	YES	316
6	CLINTON	RPA 8	2ND AVE S	S 14TH ST	S 10TH ST	4,140	0.58	50	YES	682
6	CLINTON	RPA 8	S 14TH ST	US 30	S BLUFF BLVD	5,200	1.14	42	YES	767
6	CLINTON	RPA 8	S 2ND ST/ US 67	7TH AVE S	1ST AVE	8,000	0.43	30	YES	1,388
6	CLINTON	RPA 8	N BLUFF BLVD	IKES PEAK RD	7TH AVE N	9,200	0.64	39	NO	362
6	CLINTON	RPA 8	N 3RD ST	17TH AVE N	MAIN AVE	10,100	0.66	30	YES	1,101
6	CLINTON	RPA 8	13TH AVE N	16TH ST NW	N 2ND ST/ US 67	10,600	2.00	39	YES	489

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
6	CLINTON	RPA 8	S BLUFF BLVD	TERRACE DR	IKES PEAK RD	11,600	0.94	21	YES	549
6	CLINTON	RPA 8	N 2ND ST/ US 67	1ST AVE	18TH AVE N	12,700	1.41	44	YES	860
6	CORALVILLE	MPOJC	1ST AVE	5TH ST	9TH ST	17,600	0.54	45	YES	452
6	DAVENPORT	BSRC	W 35TH ST	N MARQUETTE ST	FAIR AVE	6,100	0.94	13	YES	489
6	DAVENPORT	BSRC	E 46TH ST	N BRADY ST/ BUS US 61	DEAD END	6,500	0.74	12	YES	569
6	DAVENPORT	BSRC	HICKORY GROVE RD	N THORNWOOD AVE	N DIVISION ST	9,500	1.24	51	YES	336
6	DAVENPORT	BSRC	N PINE ST	W 49TH ST	W 63RD ST	9,600	1.03	31	YES	295
6	DAVENPORT	BSRC	JERSEY RIDGE RD	KIMBERLY RD	BELLE CT	10,100	1.37	43	YES	954
6	DAVENPORT	BSRC	W 2ND ST/ US 67	N GAINES ST	IOWA ST	11,100	0.71	20	YES	1,093
6	DAVENPORT	BSRC	KIMBERLY RD	SHADY LN	E 32ND ST	12,500	1.07	27	NO	244
6	DAVENPORT	BSRC	MARQUETTE ST	W CENTRAL PARK AVE	W KIMBERLY RD/US 6	12,700	1.01	26	YES	672
6	DAVENPORT	BSRC	W CENTRAL PARK AVE	EMEIS PARK AVE	BRADY ST/BUS US 61	13,400	3.48	31	YES	734
6	DAVENPORT	BSRC	W 53RD ST	N PINE ST	N RIPLEY ST	14,600	1.70	39	YES	488
6	DAVENPORT	BSRC	EASTERN AVE	E 29TH ST	E 46TH ST	16,000	1.25	52	YES	848
6	DAVENPORT	BSRC	N DIVISION ST	W 3RD ST	W 53RD ST	20,000	3.60	30	YES	701
6	DE WITT	RPA 8	11TH ST	WESTWOOD DR	HUMESTON RD	8,700	1.85	51	YES	430
6	DUBUQUE	DMATS	CHAVENELLE RD	RADFORD RD	NW ARTERIAL/ IOWA 32	4,550	0.73	23	NO	165
6	DUBUQUE	DMATS	CENTRAL AVE/ US 52	RUBY ST	.5 MILES N OF RUBY ST/ CITY LIMITS	9,500	0.51	16	NO	189
6	HIAWATHA	CMPO	CENTER POINT RD	BLAIRS FERRY RD NE	BOYSON RD	12,200	1.11	26	YES	752
6	IOWA CITY	MPOJC	OAK CREST HILL RD SE	OAK CREST HILL RD SE	MORMON TREK BLVD	10,100	0.84	5	NO	96
6	IOWA CITY	MPOJC	HAWKINS DR	MELROSE AVE	2ND ST/ US 6	11,000	0.99	2	YES	2,377
6	IOWA CITY	MPOJC	OLD HIGHWAY 218	MORMON TREK BLVD	RUPPERT RD	11,300	1.04	11	NO	160
6	IOWA CITY	MPOJC	MORMON TREK BLVD	HWY 1/ IOWA 1	MELROSE AVE	14,100	1.71	7	YES	592
6	IOWA CITY	MPOJC	S GILBERT ST	MCCOLLISTER BLVD	IOWA AVE	17,300	2.37	29	YES	841

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
6	MARION	CMPO	7TH AVE	14TH ST	31ST ST	16,600	0.74	44	NO	525
6	SAGEVILLE	DMATS	US 52	.5 MILES N OF RUBY ST	W JOHN DEERE RD	10,000	1.86	5	YES	224

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Appendix 1: Secondary Analysis

As the original scope of project grew it was decided by TAS that a secondary effort to identify existing three-lane sites would benefit the results of the original project. By identifying existing three-lane sites this secondary screening will not only supplement the original project but also reduce any future efforts to identify such locations. The hope is that in future efforts, this information could be used as a starting point for future analysis.

Existing 3-Lane: District 1										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
1	ALTOONA	DMAMPO	1ST AVE S	NE 27th AVE	8th ST SW	7,800	1.74	2	YES	263
1	DES MOINES	DMAMPO	AURORA AVE	MERLE HAY RD	BEAVER AVE	7,400	1.02	50	YES	474
1	DES MOINES	DMAMPO	BEAVER AVE	URBANDALE AVE	AURORA AVE	15,200	1.20	69	YES	395
1	DES MOINES	DMAMPO	HUBBELL AVE	.3 MILES NE OF EASTON BLVD	E 29th ST	15,300	0.73	40	YES	575
1	DES MOINES	DMAMPO	INGERSOLL AVE	POLK BLVD	MARTIN LUTHER KING JR PKWY	16,400	1.91	57	YES	559
1	DIKE	RPA 7	160TH ST	U AVENUE	.2 MILES EAST OF 7TH ST	2,290	0.77	13	NO	193
1	FORT DODGE	RPA 5	S 29TH ST	5TH AVE S	2ND AVE N	7,700	0.50	20	YES	1,438
1	FORT DODGE	RPA 5	1ST AVE S	E 23RD ST	.3 MILES E OF S 32ND ST	9,900	0.81	74	YES	782
1	GRIMES	DMAMPO	1ST ST/ IOWA 44	NW MAPLEWOOD DR	NE LITTLE BEAVER ST	12,200	0.87	31	YES	346
1	IOWA FALLS	RPA 6	WASHINGTON AVE	SLAYTON AVE	HIGH ST	6,400	0.54	43	YES	134
1	IOWA FALLS	RPA 6	OAK ST/ US 65	.3 S OF MILES 140TH ST	.1 MILES N OF INDUSTRIAL RD	10,400	0.73	54	YES	131
1	JOHNSTON	DMAMPO	NW BEAVER DR	.112MI N OF NW FROST WAY	NW 66TH AVE	9,800	1.81	23	YES	141
1	MARSHALLTOWN	RPA 6	E NEVADA ST	3RD AVE	LENNOX DR	5,700	0.53	40	NO	88
1	MARSHALLTOWN	RPA 6	MADISON ST	S 9TH ST	3RD AVE	9,800	1.19	55	NO	400
1	MARSHALLTOWN	RPA 6	S 6TH ST	WESTWOOD DR	S 6TH ST	10,200	1.23	41	YES	230
1	NEVADA	RPA 11	LINCOLN HWY	1ST ST	15TH ST	5,500	0.99	31	YES	429
1	NEWTON	RPA 11	1ST AVE E/ US 6	1ST ST N	E 17TH ST S	10,100	1.07	60	YES	524
1	WEBSTER CITY	RPA 5	2ND ST	GROVE ST	PROSPECT ST	6,900	0.26	66	NO	377

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Existing 3-Lane: District 2										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
2	CEDAR FALLS	INRCOG	BRANDILYNN BLVD	ANDREA DR	GOLDENROD WAY	805	0.59	20	NO	366
2	CEDAR FALLS	INRCOG	CEDAR HEIGHTS DR	E GREENHILL RD	UNIVERSITY AVE	9,400	0.62	29	YES	635
2	CLEAR LAKE	RPA 2	US 18	N 16TH ST SW	N 6TH ST	13,300	1.32	15	YES	201
2	CRESCO	RPA 1	2ND AVE SE/ IOWA 9	S ELM ST	YORK ST	6,600	0.84	33	YES	86
2	CRESCO	RPA 1	2ND AVE SW/ IOWA 9	STOCK AVE	S ELM ST	7,100	0.67	52	YES	289
2	DECORAH	RPA 1	MONTGOMERY ST	IOWA 9	E BROADWAY ST	9,500	0.81	28	NO	152
2	ELKADER	RPA 1	IOWA 13	250TH ST	.2 MILES S OF FAWN HALLOW RD	4,520	0.66	12	NO	101
2	MASON CITY	RPA 2	4TH ST SE/ IOWA 22	S ILLINOIS AVE	THRUSH AVE	6,800	2.45	3	NO	153
2	OELWEIN	RPA 1	FREDERICK AVE S	12TH ST SW	4TH ST SW	3,550	0.87	68	NO	94
2	WATERLOO	INRCOG	W COMMERCIAL ST	WESTFIELD AVE	W MULLAN AVE	2,220	0.63	5	YES	2,116
2	WATERLOO	INRCOG	LAFAYETTE ST	E 11TH ST	FAY ST	10,000	1.42	48	YES	433

**District field: Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.*

Existing 3-Lane: District 3										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
3	ARNOLDS PARK	RPA 3	OKOBOJI GROVE RD/ US 71	LAKE ST	178TH ST	15,500	1.80	36	YES	161
3	SHELDON	RPA 3	PARK ST/ US 18	N 2ND AVE	IOWA 60	9,200	2.03	21	YES	497
3	SIBLEY	RPA 3	2ND AVE	12TH ST	4TH ST	3,860	0.76	42	YES	468
3	SIOUX CENTER	RPA 3	MAIN AVE/ US 75	12TH ST SW	.1 MILES N OF 9TH ST CIR NE	12,200	1.53	45	YES	346
3	SIOUX CITY	SIMPCO	TRANSIT AVE	GIBSON ST	S CECELIA ST	7,700	0.67	5	NO	345
3	STORM LAKE	RPA 3	MILWAUKEE AVE/ IOWA 7	NORTHWESTERN DR	E LAKESHORE DR	8,300	2.45	35	YES	381

**District field: Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.*

Existing 3-Lane: District 4										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
4	ATLANTIC	RPA 13	7TH ST/ US 6	W 10TH ST	.15 MILES E OF PLUM ST	11,000	1.90	40	YES	415
4	COUNCIL BLUFFS	MAPA	MID AMERICA DR	S 35TH ST	MARC BLVD	3,540	0.63	3	NO	104
4	COUNCIL BLUFFS	MAPA	9TH AVE	S 28TH ST	21ST ST	6,800	0.72	40	NO	279
4	COUNCIL BLUFFS	MAPA	BENNETT AVE	MADISON AVE	OLD HWY 6	11,700	1.27	45	YES	253
4	GLENWOOD	RPA 18	N LOCUST ST	.2 MILES S OF HAZEL ST	SHARP ST	7,900	0.51	55	YES	360
4	GLENWOOD	RPA 18	S LOCUST ST	SHARP ST	.1 MILES E OF HAZEL ST	8,800	0.69	51	YES	335
4	HARLAN	RPA 18	CYCLONE AVE	US 59	6TH ST	2,900	1.19	44	NO	84
4	HARLAN	RPA 18	US 59	INDUSTRIAL PKWY	CYCLONE AVE	4,960	1.79	2	NO	106
4	RED OAK	RPA 13	BROADWAY ST/ IOWA 48	OHIO AVE	ALIX ST	7,600	1.76	33	YES	245

**District field: Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.*

Existing 3-Lane: District 5										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
5	BURLINGTON	RPA 16	MT PLEASANT ST	COTTONWOOD CT	RHEIN ST	11,100	1.38	49	NO	378
5	CENTERVILLE	RPA 17	W MAPLE ST/ IOWA 2	A ST	S MAIN ST	5,000	1.04	45	YES	224
5	CENTERVILLE	RPA 17	E MAPLE ST/ IOWA 2	S MAIN ST	S 18TH ST	7,000	0.37	58	YES	267
5	CENTERVILLE	RPA 17	S 18TH ST/ IOWA 5	E PRAIRIE ST	E MAPLE ST	9,200	0.13	95	YES	679
5	CENTERVILLE	RPA 17	N 18TH ST/ IOWA 5	E MAPLE ST	N 18TH DR	10,000	0.76	35	YES	335
5	FAIRFIELD	RPA 15	E BURLINGTON AVE	S MAIN ST	N MORGAN ST	7,700	0.75	44	YES	374
5	FAIRFIELD	RPA 15	W BURLINGTON AVE/ IOWA 1	N 28TH ST	S MAIN ST	13,200	1.63	36	YES	392
5	INDIANOLA	RPA 11	2ND AVE/ IOWA 92	CO RD R63	S JEFFERSON WAY	12,400	2.52	27	YES	288
5	MEDIAPOLIS	RPA 16	US 61	MEADOW ST	COLUMBIA ST	6,900	0.27	44	NO	480
5	MUSCATINE	RPA 9	CLAY ST	GOBBLE ST	PARK AVE	1,590	0.44	34	YES	1,222

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
5	OSCEOLA	RPA 17	E MC LANE ST/ US 34	S MAIN ST	HARKEN HILLS DR	6,300	0.71	67	YES	517
5	OSCEOLA	RPA 17	W MC LANE ST/ US 34	.1 W OF S RIDGE RD	S MAIN ST	10,000	0.77	47	YES	298
5	OSKALOOSA	RPA 15	N MARKET ST/ US 63	A AVE W	E GLENDALE RD	7,600	1.13	54	YES	732
5	OTTUMWA	RPA 15	DAHLONEGA RD	INDIAN HILLS DR	US 63	2,810	1.19	10	NO	90
5	PELLA	RPA 11	OSKALOOSA ST	MAIN ST	E 8TH ST	8,000	0.64	41	YES	211
5	PELLA	RPA 11	E OSKALOOSA ST	E 8TH ST	SE 16TH ST	8,300	0.57	28	NO	150
5	PELLA	RPA 11	WASHINGTON ST	.15 MILES E OF OLD HWY 163	BROADWAY ST	10,460	1.31	36	YES	311
5	WASHINGTON	RPA 10	E MADISON ST/ IOWA 92	S IOWA AVE	S 3RD AVE	5,600	0.15	39	YES	1,436
5	WASHINGTON	RPA 10	W MADISON ST/ IOWA 92	250TH ST	S IOWA AVE	7,200	0.91	43	YES	339

**District field: Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.*

Existing 3-Lane: District 6										
District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
6	BLUE GRASS	RPA 9	W MAYNE ST	65TH AVE	N MISSISSIPPI ST	3,080	0.50	24	YES	0
6	BLUE GRASS	RPA 9	E MAYNE ST	N MISSISSIPPI	.1 E OF TERRACE DR	3,490	0.32	38	YES	53
6	CEDAR RAPIDS	CMPO	60TH AVE SW	EDGEWOOD RD SW	LOCUST RD SW	2,690	1.51	2	NO	216
6	CEDAR RAPIDS	CMPO	C ST RD SW	US 30	41ST AVE DR SW	12,500	0.80	8	YES	179
6	DAVENPORT	BSRC	MARQUETTE ST	W RIVER DR	W LOCUST ST	9,600	1.31	47	YES	1,279
6	DUBUQUE	DMATS	PENNSYLVANIA AVE	NW ARTERIAL	JOHN F KENNEDY RD	14,600	1.02	19	YES	970
6	HIAWATHA	CMPO	CENTER POINT RD	DINA DR	TOWER TERRACE RD	12,200	0.91	13	NO	169
6	IOWA CITY	MPOJC	420TH ST	US 6	.2 MILES W OF TAFT AVE SE	1,340	0.71	3	NO	60
6	IOWA CITY	MPOJC	MORMON TREK BLVD	HWY 1	OAK CREST HILL RD SE	6,400	1.32	1	YES	817
6	MANCHESTER	RPA 8	S FRANKLIN ST	E MARION ST	E MAIN ST	4,210	0.13	16	YES	2,288
6	MANCHESTER	RPA 8	N FRANKLIN ST/ IOWA 13	E MAIN ST	.1 MILES N OF W BUTLER ST	8,900	0.15	13	YES	494

District	City	MPO/RPA	Route	Begin	End	AADT	Length(Mi.)	Access Density (per MI.)	Traffic Signal	Crash Rate (HMVMT)
6	MAQUOKETA	RPA 8	W PLATT ST/ IOWA 13	MCKINSEY AVE	S NIAGARA ST	8,800	0.66	53	YES	309
6	MARION	CMPO	35TH ST	7TH AVE	TOWER TERRACE RD	7,800	1.80	9	YES	565
6	MONTICELLO	RPA 10	S MAIN ST/ IOWA 38	CO RD E16	E WASHINGTON ST	8,000	0.68	42	YES	145

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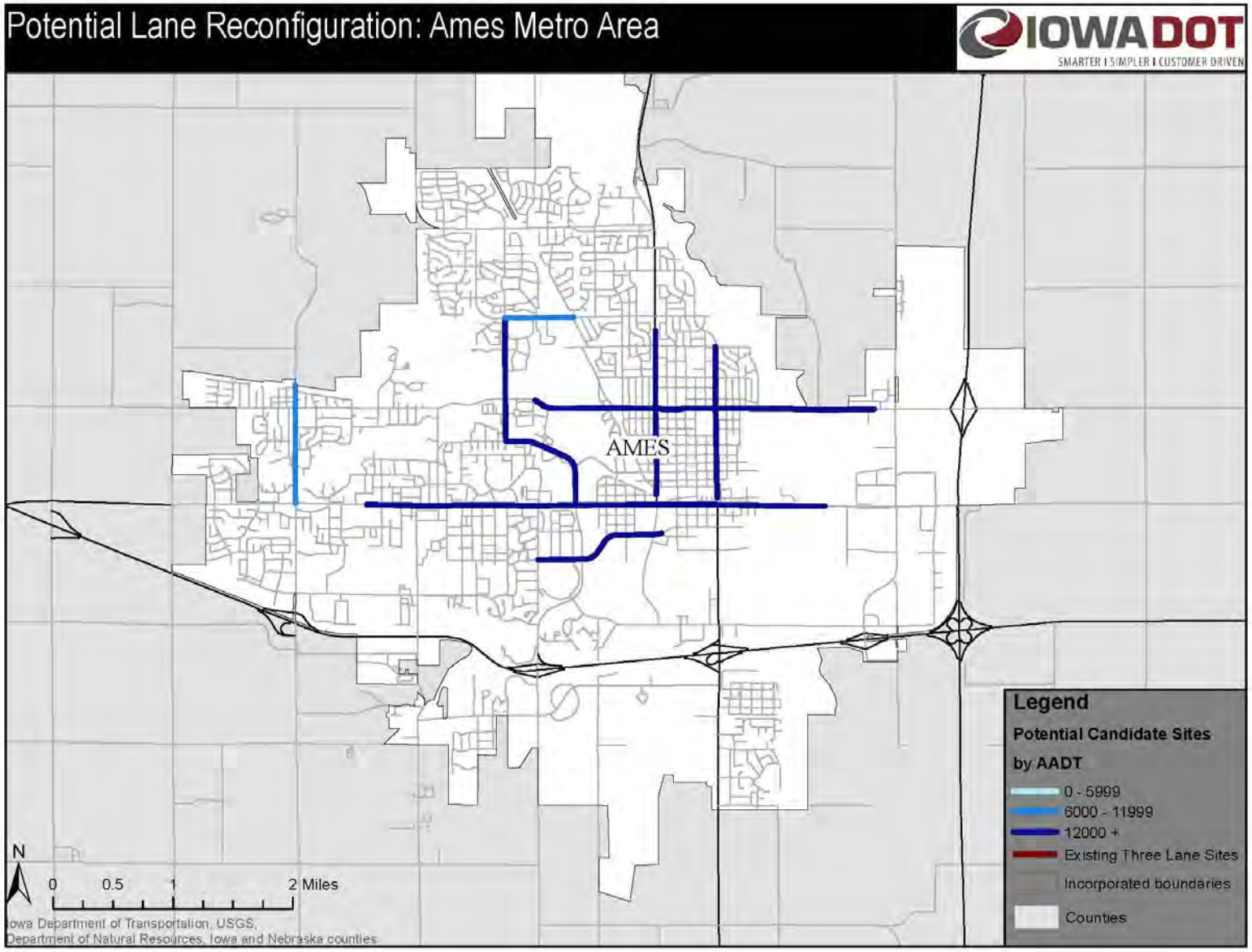
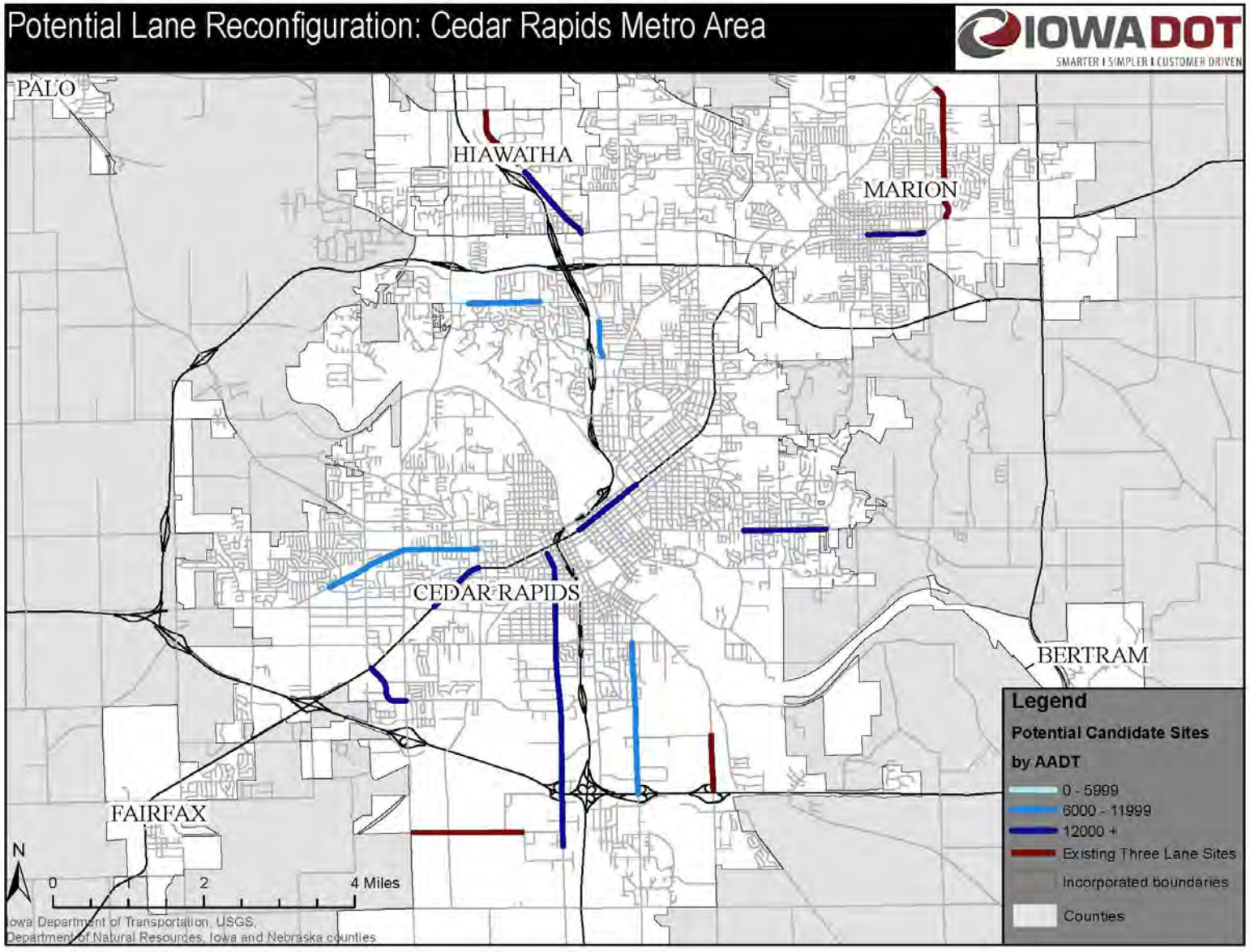
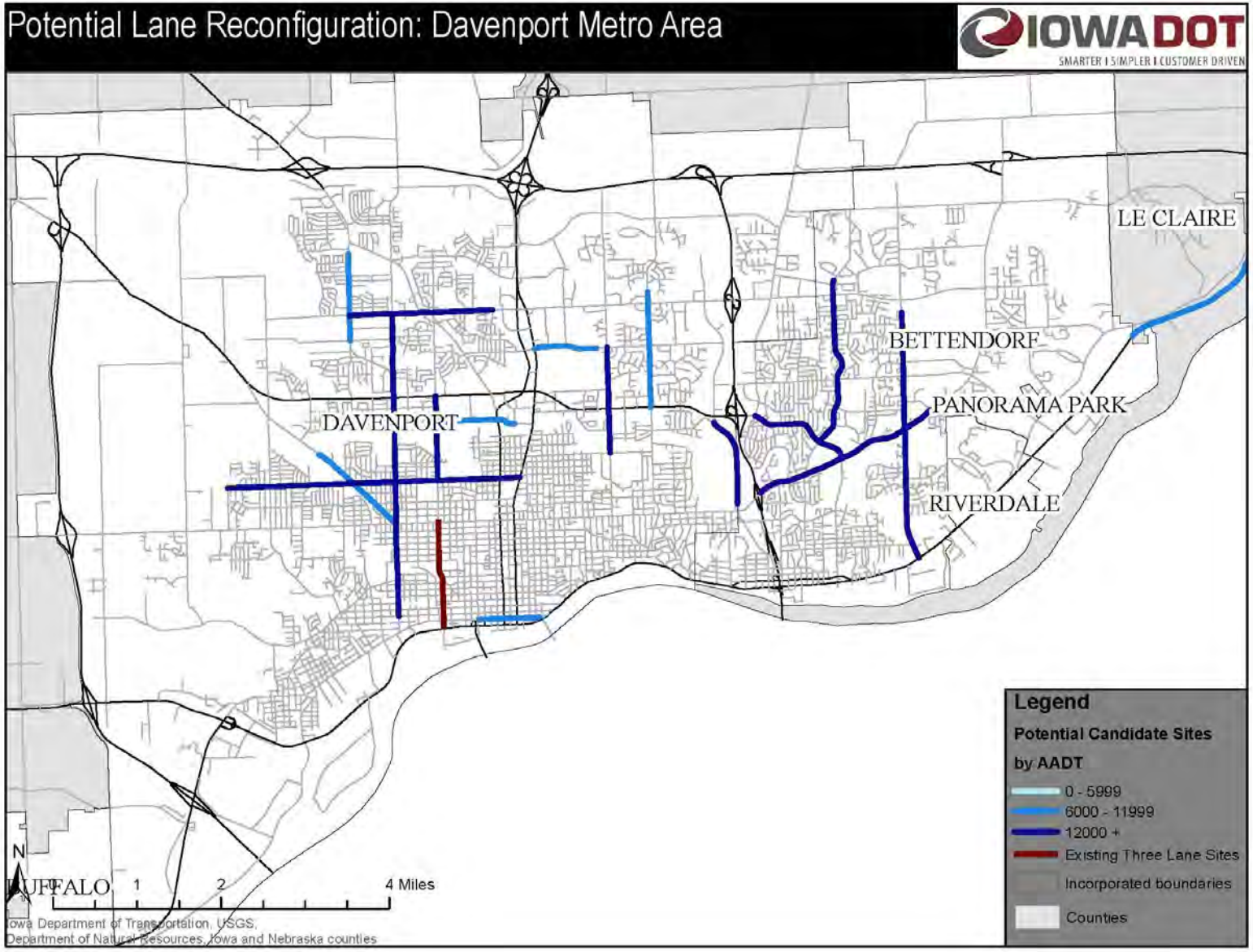
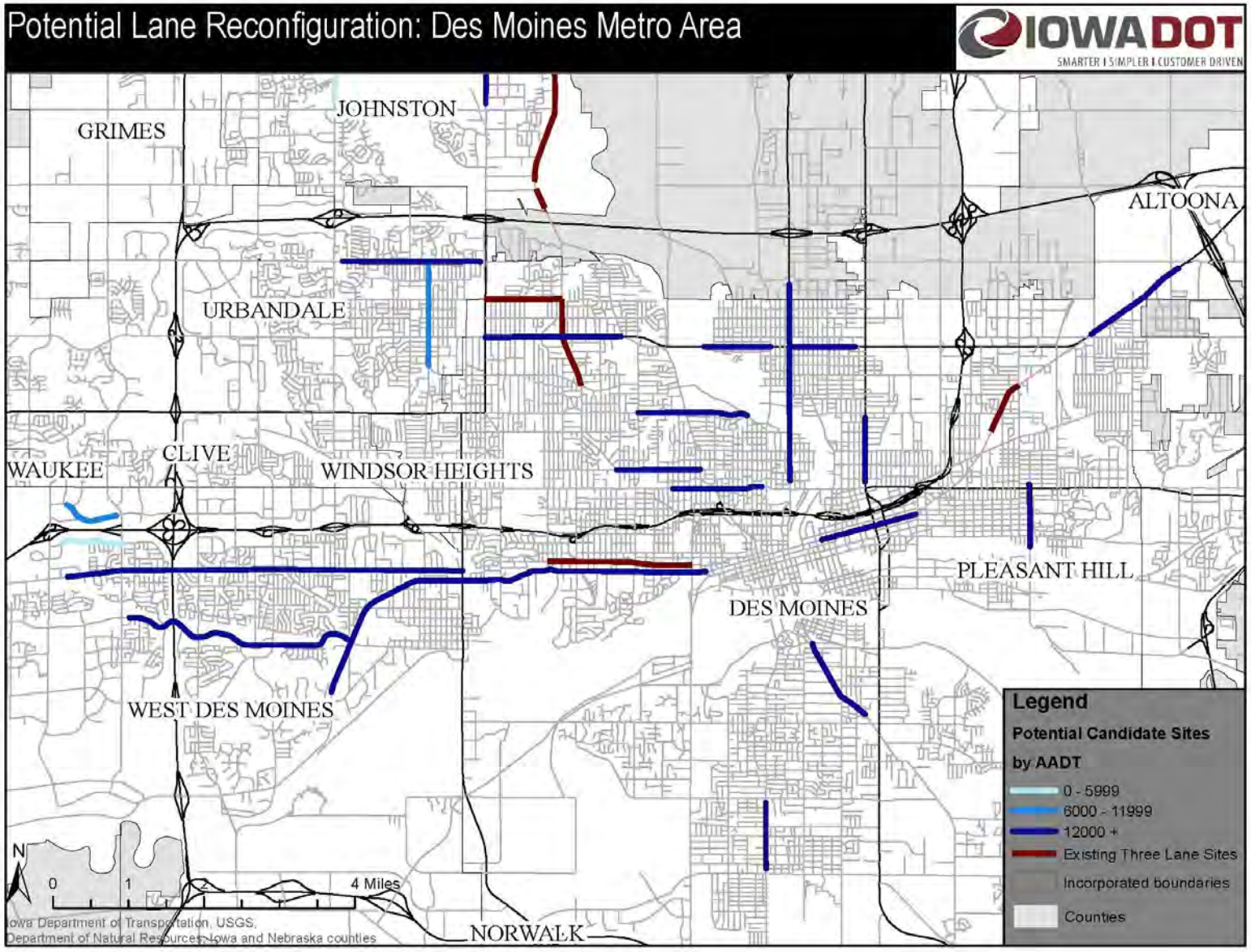
Appendix 2: Maps

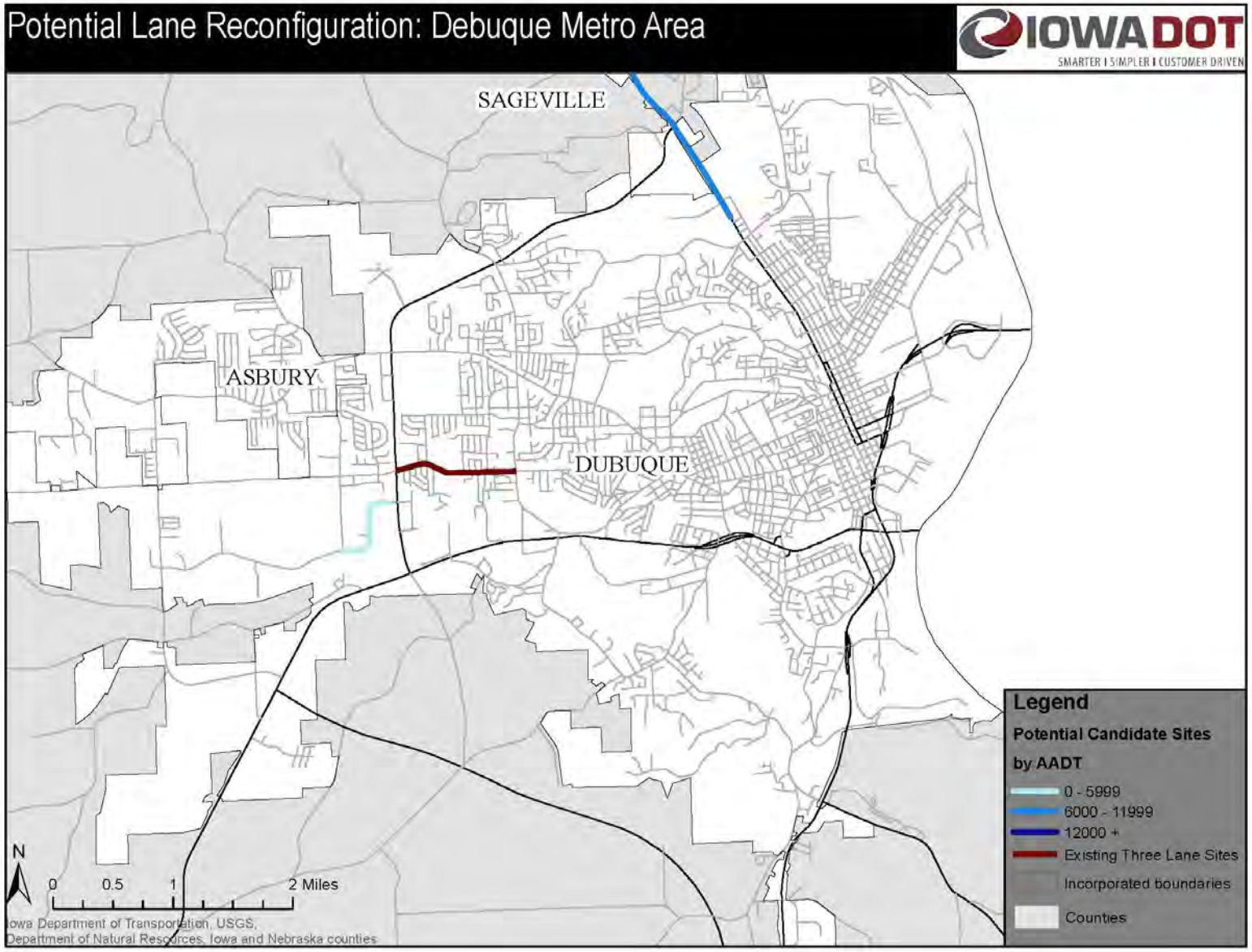
In the following pages the potential candidate sites and existing three-lane sites are presented in maps. The maps only include sites within the metro areas of Iowa. By focusing in on only this area it limits the number of maps that needed to be created. It should be noted that the Council Bluffs area was excluded from the maps because of a limited number of both potential candidate and existing three-lane sites.

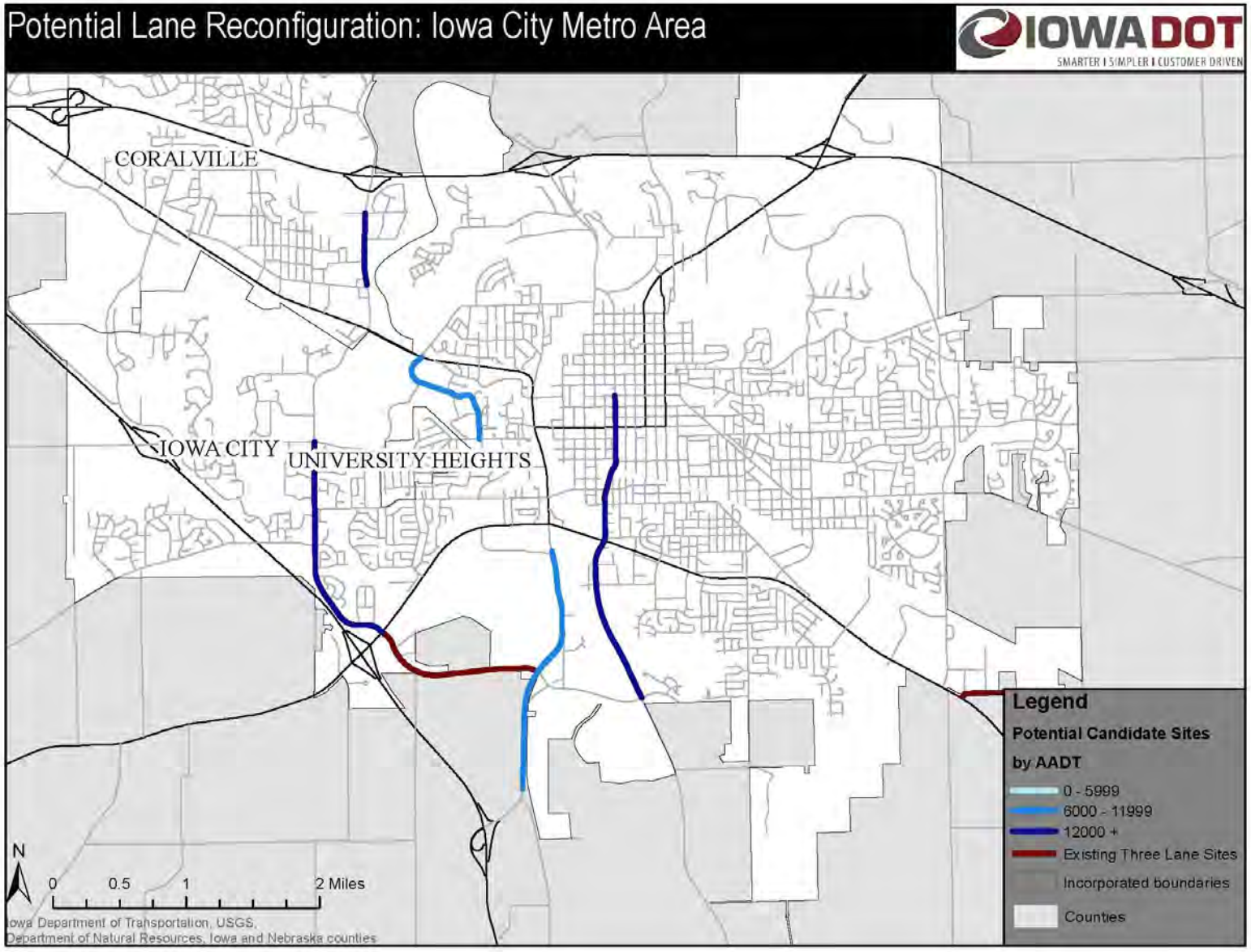

Potential Lane Reconfiguration: Ames Metro Area
IOWA DOT
SMARTER I SIMPLER I CUSTOMER DRIVEN
AMES
Legend
Potential Candidate Sites
by AADT
0 - 5999
6000 - 11999
12000 +
Existing Three Lane Sites
Incorporated boundaries
Counties
N
0
0.5
1
2 Miles
Iowa Department of Transportation, USGS,
Department of Natural Resources, Iowa and Nebraska counties

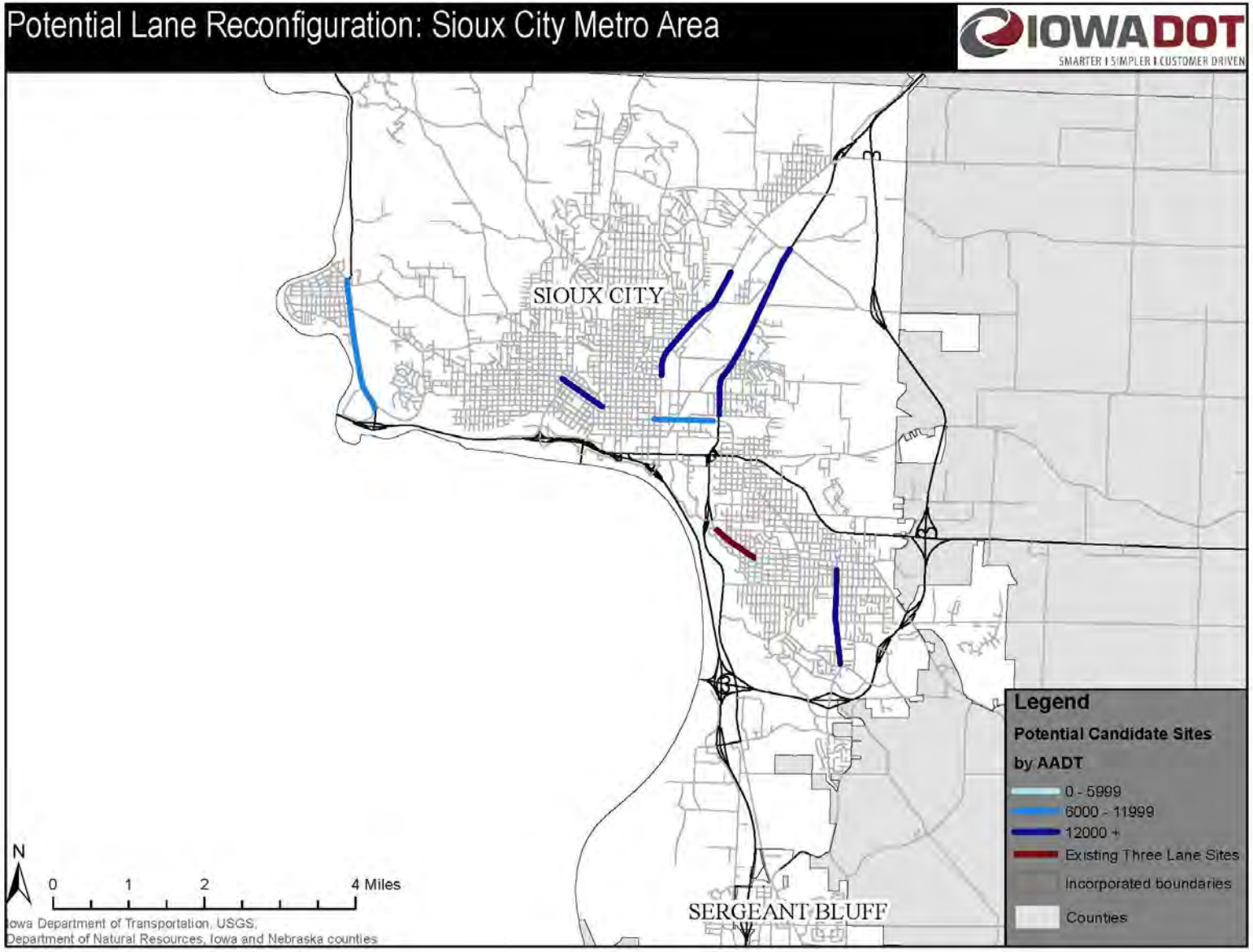

Potential Lane Reconfiguration: Cedar Rapids Metro Area
IOWADOT
SMARTER I SIMPLER I CUSTOMER DRIVEN
PALO
HIAWATHA
MARION
CEDAR RAPIDS
BERTRAM
FAIRFAX
N
0
2
4 Miles
Iowa Department of Transportation, USGS,
Department of Natural Resources, Iowa and Nebraska counties
Legend
Potential Candidate Sites
by AADT
0 - 5999
6000 - 11999
12000 +
Existing Three Lane Sites
Incorporated boundaries
Counties

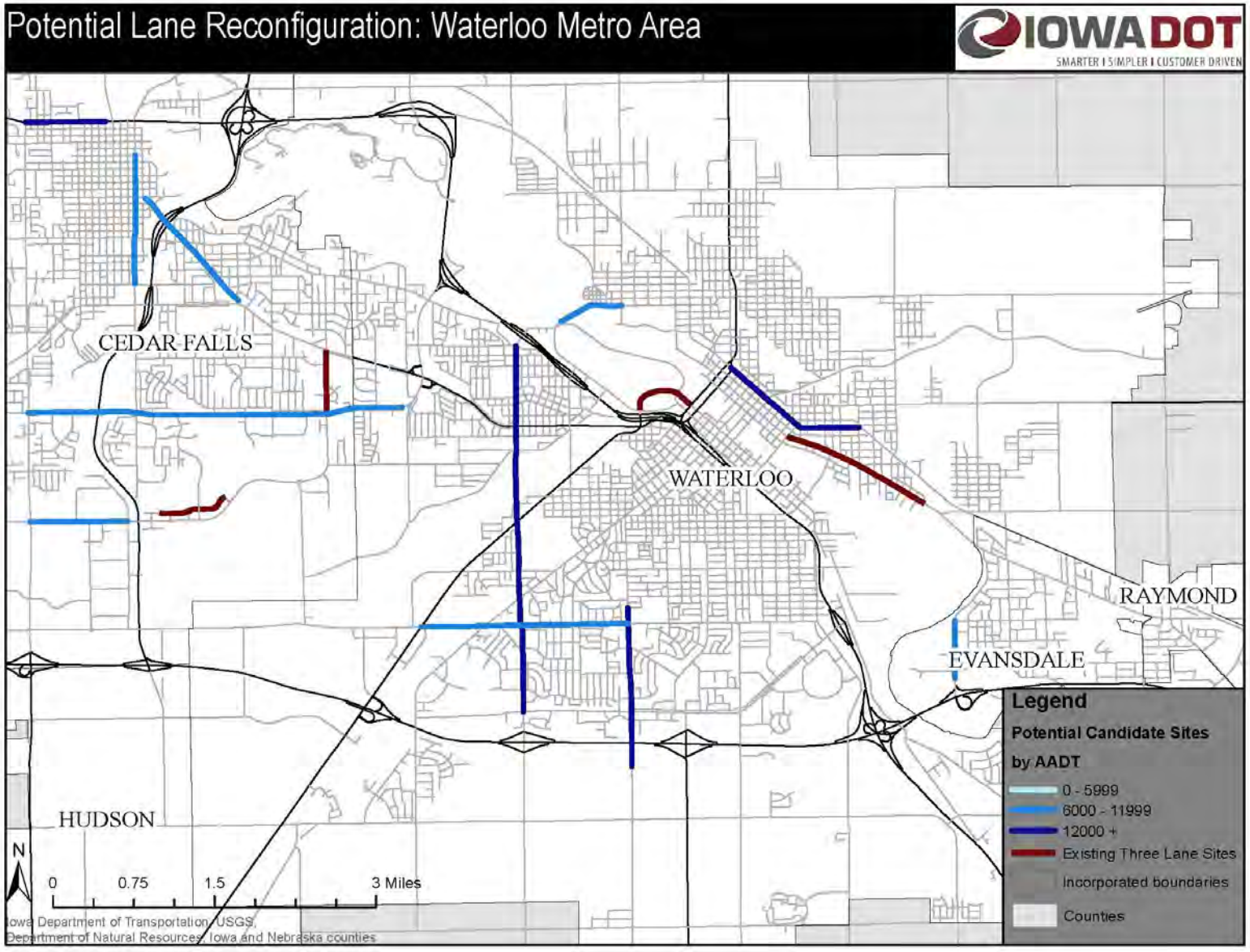

Potential Lane Reconfiguration: Davenport Metro Area
IOWA DOT
SMARTER I SIMPLER I CUSTOMER DRIVEN
LE CLAIRE
BETTENDORF
PANORAMA PARK
DAVENPORT
RIVERDALE
BUFFALO
N
1
2
4 Miles
Iowa Department of Transportation, USGS,
Department of Natural Resources, Iowa and Nebraska counties
Legend
Potential Candidate Sites
by AADT
0 - 5999
6000 - 11999
12000 +
Existing Three Lane Sites
Incorporated boundaries
Counties


Potential Lane Reconfiguration: Des Moines Metro Area
IOWA DOT
SMARTER I SIMPLER I CUSTOMER DRIVEN
GRIMES
JOHNSTON
ALTOONA
URBANDALE
WAUKEE
CLIVE
WINDSOR HEIGHTS
PLEASANT HILL
DES MOINES
WEST DES MOINES
NORWALK
N
0
1
4 Miles
Iowa Department of Transportation, USGS,
Department of Natural Resources, Iowa and Nebraska counties
Legend
Potential Candidate Sites
by AADT
0 - 5999
6000 - 11999
12000 +
Existing Three Lane Sites
Incorporated boundaries
Counties


Potential Lane Reconfiguration: Debuque Metro Area
IOWA DOT
SMARTER I SIMPLER I CUSTOMER DRIVEN
SAGEVILLE
ASBURY
DUBUQUE
N
0
0.5
1
2 Miles
Iowa Department of Transportation, USGS,
Department of Natural Resources, Iowa and Nebraska counties
Legend
Potential Candidate Sites
by AADT
0 - 5999
6000 - 11999
12000 +
Existing Three Lane Sites
Incorporated boundaries
Counties


Potential Lane Reconfiguration: Iowa City Metro Area
IOWA DOT
SMARTER I SIMPLER I CUSTOMER DRIVEN
CORALVILLE
IOWA CITY
UNIVERSITY HEIGHTS
Legend
Potential Candidate Sites
by AADT
0 - 5999
6000 - 11999
12000 +
Existing Three Lane Sites
Incorporated boundaries
Counties
N
0
0.5
1
2 Miles
Iowa Department of Transportation, USGS,
Department of Natural Resources, Iowa and Nebraska counties


Potential Lane Reconfiguration: Sioux City Metro Area
IOWADOT
SMARTER I SIMPLER I CUSTOMER DRIVEN
SIOUX CITY
SERGEANT BLUFF
N
0
1
2
4 Miles
Iowa Department of Transportation, USGS,
Department of Natural Resources, Iowa and Nebraska counties
Legend
Potential Candidate Sites
by AADT
0 - 5999
6000 - 11999
12000 +
Existing Three Lane Sites
Incorporated boundaries
Counties


Potential Lane Reconfiguration: Waterloo Metro Area
IOWADOT
SMARTER I SIMPLER I CUSTOMER DRIVEN
CEDAR FALLS
WATERLOO
RAYMOND
EVANSDALE
HUDSON
N
0
0.75
1.5
3 Miles
Iowa Department of Transportation, USGS,
Department of Natural Resources, Iowa and Nebraska counties
Legend
Potential Candidate Sites
by AADT
0 - 5999
6000 - 11999
12000 +
Existing Three Lane Sites
Incorporated boundaries
Counties