



MANITOU SPRINGS MOBILITY AND PARKING BOARD REGULAR MEETING AGENDA

All upcoming MAP meetings are scheduled to be hybrid,
Zoom (remote) or in-person at Memorial Hall.

In Person: Memorial Hall

606 Manitou Avenue

Manitou Springs, CO 80829

Remote: A link is provided on the City's Official Website at

<https://www.manitouspringsgov.com/544/All-Boards-and-Commissions>

January 22, 2025

5:00 PM

I. CALL TO ORDER and INTRODUCTIONS

II. APPROVAL OF AGENDA

III. APPROVAL OF MINUTES

1. October 2024 MAP Board Minutes

IV. PUBLIC COMMENT ON NON-AGENDA ITEMS

V. REPORTS

2. City Council Liaison Report - Natalie Johnson

3. Staff Reports - James Kelemen and Juan Alvarez

- Pike Ride Usage Statistics
- SeeClickFix Report
- Mountain Metro Ridership

4. Improvement Updates - Juan Alvarez

- Black Canyon Open Space
- Crosswalks, Signage, and other Improvements
- Dillon Mobility Hub
- Dillion Shuttle Plan (Short and Long Term)

VI. PRESENTATIONS

VII. NEW BUSINESS

5. Creekwalk 6 - Roy Chaney

6. 2045 Pikes Peak Area Council of Governments (PPACG) Long Range Transportation Plan - Cory Sutela & Karl Stang

7. Removal of References to Jaywalking in City Ordinances - Cory Sutela & Karl Stang

VIII. OLD BUSINESS

8. Review MAP Board 2024 Accomplishments and 2025 Goals - Cory Sutela

IX. BOARD CORRESPONDENCE/FUTURE AGENDA ITEMS

X. ADJOURNMENT

9. Next MAP Board Meeting is February 26, 2025

Board Members:

Cory Sutela, Chair (12/31/2025)
Karl Stang, Vice Chair (12/31/2025)
Rolf Jacobson (12/31/2026)
Bill Koerner (12/31/2025)
Joy Porter (12/31/2026)
Luke Harper Prince (12/31/2025)
Pamela Smith (12/31/2028)

Staff and Liaisons:

Natalie Johnson, City Council Liaison
Roy Chaney, Deputy City Administrator/Public Services Director
Juan Alvarez, Mobility and Parking Director

3 alternate positions available

The City of Manitou Springs does not discriminate on the basis of disability in the admission to, access to, or operations of programs, services or activities. Reasonable accommodation will be provided to ensure equal access to all. Individuals who would like to request auxiliary aids or services should contact the ADA Coordinator at (719) 685-5481 or jfryer@manitouspringsco.gov. You may also contact the City Clerk's Office at cityclerk@manitouspringsco.gov or (719) 685-2554. Please provide a minimum of 3-5 days advance notice.

Interested citizens are invited to serve on any of the City's Boards or Commissions. Please contact the City Clerk's Office for more information or visit our website at: www.manitouspringsgov.com.

Meeting: Manitou Springs Mobility and Parking Board

Date: October 23, 2024

Call to Order: 5:06PM

Attendees:

- Board Members
 - Cory Sutela
 - Carl Stang
 - Luke Harper Prince
 - Rolf Jacobson
 - Joy Porter
 - Susan Presti
 - Pam Smith - Alternate (Mic was not working)
- Staff Members
 - James Kelemen
 - Juan Alvarez

Absent:

- Bill Kerner
- Natalie Johnson

Key Points:

1. Agenda and Minutes:

- Cory led the meeting, with approval of the agenda and minutes.
 - Agenda approved unanimously 6-0
 - Minutes approved unanimously 6-0

2. Council City Council Liaison Report:

- Natalie Johnson was not able to attend.

3. Staff Reports:

- **Advanced Mobility Playbook Grant:**
 - Juan explained that the grant was not recommended due to the significant time investment required.
- **Pike Ride Report:**
 - Juan provided an update, highlighting the installation of new hubs and the initial data gathering.

- **September Click Fix Report:**
 - The team reviewed the report, with James detailing the number of resolved requests and ongoing work orders.
- **Mountain Metro Ridership:**
 - Karl suggested considering increased weekend service frequency based on ridership trends.
 - The team discussed potential changes, with Karl suggesting a 7-day-a-week service.
 - City suggested this question be directed to Roy, who is more involved with Mountain Metro.
 - Juan shared that they are considering running the operation internally for route 36, but the council is not ready for this in 2025.
 - Cory asked about the process and timing for making recommendations to Mountain Metro.
 - Juan explained the process of making requests to Mountain Metro twice a year and how decisions are made.
 - Cory suggested getting Mountain Metro to give a presentation prior to the April meeting and to notify the board when such discussions happen.
 - Luke asked about reporting suggestions or problems to Mountain Metro as a citizen, and Juan confirmed he could send an email with the complaint process.
 - Cory asked about the best way to report illegal parking in an RPP, with City suggesting the parking hotline number for more immediate response.
- **Ruxton Improvement Projects:**
 - Juan shared that they are still working with CSU and improvements probably won't start until late 2025 or even 2026.
- **Tram Status:**
 - Juan shared that the trams are on consignment and they are hoping to get 75% back but have no takers yet.
- **Missing Documents on City Site:**
 - City is working on uploading them, and James is looking into getting access to the documents on demand site.
- **Black Canyon Open Space Development:**
 - Cory and Juan discussed the development, with Cory expressing excitement about the new amenity for the community.

- They discussed the need for safe crossing from the creek walk side up into the open space, with Cory suggesting the implementation of bike racks.
- Joy expressed concern about making specific recommendations without having all the necessary information.
- Luke argued that their voice should be heard as early as possible.
- Cory asked for motion to make a general statement of intent to be involved in the project, without making specific recommendations. No motion was made.
- **Crosswalk Improvements:**
 - Juan provided updates on crosswalk improvements throughout town.
- Dillon Mobility Hub
 - Juan informed the Board of the upcoming presentation for City Council on November 19th at 6:00PM and a public engagement meeting on November 21st at 5 PM.

4. **Board's Goals for 2025:**

- Juan had sent an email with six potential goals, which were discussed and considered for adoption.
- The Board discussed expanding the walkability inventory to include residential areas and safe routes to school.
- Cory led a discussion focusing on three main areas: updating and streamlining the RPP program, conducting a bikeability master plan, and analyzing data for actionable recommendations.
- The Board agreed to roll over the RPP goal to 2025, with the aim to identify people to help work on it.
- The Board discussed the book study, acknowledging progress made and agreeing to pull out two goals from the book for 2025.
- The idea of a pilot project was discussed, with Cory expressing belief in the strength of pilot projects and the agility of Manitou to try new things.
- The Board agreed to replace the "Bikeability Master Plan" with a "Micro Mobility Master Plan" to include pedestrian infrastructure.
- The Board discussed the need for an onboarding manual for the board and providing constructive feedback on Mountain Metro transit route improvements.
- Joy expressed confusion about the pilot goal, questioning its vagueness. Luke suggested the goal should develop from more project-specific goals.

- Cory argued for the importance of piloting micro mobility infrastructure, while Joy suggested the pilot goal should be developed from a need or goal.
- The board decided to remove the pilot goal from their list but agreed to discuss and support pilot projects as they arise from other goals.
- The Board discussed the need for positive confirmation of attendance at meetings to ensure quorum, with a response deadline of close of business on the Monday before the meeting.
- Susan announced she would be unable to continue participating on the board unless rules were changed to allow her participation.

5. Meeting Conclusion:

- Susan announced she would be unable to continue participating on the board.
- The meeting adjourned at 7:47PM



MAP Board Meeting

January 2025

PRESENTATION BY:

JUAN ALVAREZ | MOBILITY AND PARKING DIRECTOR

JAMES KELEMEN | MOBILITY AND PARKING SUPERVISOR

PikeRide Report 2024



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Canon Ave/ Lovers Ln					25/19	39/50	52/46	50/50	22/25	32/34	2/2	3/1
Fields Park											11/11	5/5
Hiawatha Gardens	18/11	17/15	33/34	18/8	43/44	59/51	22/16	44/43	33/31	38/28	15/13	11/7
Manitou/Beckers	7/2	11/6	11/9	20/14	37/37	63/46	46/40	34/27	30/23	40/38	9/7	14/9
Manitou/Park										7/7	3/4	5/5
Prospect/Roca									0/0	6/3	0/0	3/6
Ruxton Ave								0/0	24/24	32/24	3/3	2/2
Schryver Park	2/2	4/5	10/8	23/27	28/19	56/48	34/36	41/45	27/18	35/34	4/6	6/7
Total Trips	27/15	32/26	54/51	61/49	133/119	217/195	154/138	169/165	136/121	190/168	47/46	49/42

PikeRide Report



Starts/Ends

	2023	2024
January	10/3	27/15
February	49/22	32/26
March	26/20	54/51
April	67/36	61/49
May	84/54	133/19
June	93/43	217/195
July	160/59	154/138
August	151/73	169/165
September	192/105	136/121
October	153/105	19/168
November	57/26	47/46
December	37/16	49/42

2023 Total
Starts/Ends

1079/562

2024 Total
Starts/Ends

1358/1137



-
- SeeClickFix
 - Mountain Metro Ridership



Improvements & Updates

- Black Canyon Open Space
- Crosswalks, Signage, and Other Improvements
- Dillon Mobility Hub
- Dillon Shuttle Plan (Short/Long Term)

January 2024	Rt 3	Rt 33	Daily total
Monday, January 1, 2024	No Service - New Years Day		
Tuesday, January 2, 2024	553	239	792
Wednesday, January 3, 2024	579	161	740
Thursday, January 4, 2024	495	422	917
Friday, January 5, 2024	502	77	579
Saturday, January 6, 2024	405	276	681
Sunday, January 7, 2024	284	207	491
Monday, January 8, 2024	480	51	531
Tuesday, January 9, 2024	532	83	615
Wednesday, January 10, 2024	562	86	648
Thursday, January 11, 2024	538	93	631
Friday, January 12, 2024	531	199	730
Saturday, January 13, 2024	265	158	423
Sunday, January 14, 2024	153	116	269
Monday, January 15, 2024	237	44	281
Tuesday, January 16, 2024	496	31	527
Wednesday, January 17, 2024	615	118	733
Thursday, January 18, 2024	595	95	690
Friday, January 19, 2024	435	230	665
Saturday, January 20, 2024	262	378	640
Sunday, January 21, 2024	235	253	488
Monday, January 22, 2024	576	133	709
Tuesday, January 23, 2024	539	49	588
Wednesday, January 24, 2024	557	86	643
Thursday, January 25, 2024	506	186	692
Friday, January 26, 2024	434	61	495
Saturday, January 27, 2024	359	241	600
Sunday, January 28, 2024	273	334	607
Monday, January 29, 2024	541	116	657
Tuesday, January 30, 2024	594	138	732
Wednesday, January 31, 2024	612	129	741
Route Totals	13,745	4,790	18,535

February 2024	Rt 3	Rt 33	Daily total
Thursday, February 1, 2024	638	207	845
Friday, February 2, 2024	624	273	897
Saturday, February 3, 2024	331	65	396
Sunday, February 4, 2024	266	71	337
Monday, February 5, 2024	655	106	761
Tuesday, February 6, 2024	575	104	679
Wednesday, February 7, 2024	568	97	665
Thursday, February 8, 2024	578	133	711
Friday, February 9, 2024	454	104	558
Saturday, February 10, 2024	198	50	248
Sunday, February 11, 2024	294	125	419
Monday, February 12, 2024	593	146	739
Tuesday, February 13, 2024	584	94	678
Wednesday, February 14, 2024	654	95	749
Thursday, February 15, 2024	559	336	895
Friday, February 16, 2024	496	283	779
Saturday, February 17, 2024	312	113	425
Sunday, February 18, 2024	284	401	685
Monday, February 19, 2024	487	289	776
Tuesday, February 20, 2024	590	118	708
Wednesday, February 21, 2024	644	137	781
Thursday, February 22, 2024	636	329	965
Friday, February 23, 2024	607	537	1,144
Saturday, February 24, 2024	419	906	1,325
Sunday, February 25, 2024	279	630	909
Monday, February 26, 2024	569	202	771
Tuesday, February 27, 2024	453	76	529
Wednesday, February 28, 2024	636	65	701
Thursday, February 29, 2024	634	418	1,052
Route Totals	14,617	6,510	21,127

March 2024	Rt 3	Rt 33	Daily total
Friday, March 1, 2024	730	599	1,329
Saturday, March 2, 2024	576	513	1,089
Sunday, March 3, 2024	342	430	772
Monday, March 4, 2024	557	231	788
Tuesday, March 5, 2024	559	145	704
Wednesday, March 6, 2024	632	232	864
Thursday, March 7, 2024	532	226	758
Friday, March 8, 2024	505	61	566
Saturday, March 9, 2024	444	703	1,147
Sunday, March 10, 2024	319	919	1,238
Monday, March 11, 2024	600	724	1,324
Tuesday, March 12, 2024	551	802	1,353
Wednesday, March 13, 2024	574	572	1,146
Thursday, March 14, 2024	14		14
Friday, March 15, 2024	268	58	326
Saturday, March 16, 2024	413	102	515
Sunday, March 17, 2024	286	145	431
Monday, March 18, 2024	615	72	687
Tuesday, March 19, 2024	554	177	731
Wednesday, March 20, 2024	658	234	892
Thursday, March 21, 2024	597	452	1,049
Friday, March 22, 2024	630	758	1,388
Saturday, March 23, 2024	426	848	1,274
Sunday, March 24, 2024	299	545	844
Monday, March 25, 2024	407	127	534
Tuesday, March 26, 2024	505	230	735
Wednesday, March 27, 2024	542	339	881
Thursday, March 28, 2024	599	1,227	1,826
Friday, March 29, 2024	585	1,501	2,086
Saturday, March 30, 2024	408	145	553
Sunday, March 31, 2024	329	694	1,023
Route Totals	15,056	13,811	28,867

3/14 - Services cancelled at 10 AM
3/15 - Service delayed due to heav

I due to heavy snow. No passengers on Route 33 during short time buses were running.
ry snowfall. Late start at 11 AM.

April 2024	Rt 3	Rt 33	Rt 36	Daily total	
Monday, April 1, 2024	539	244		783	
Tuesday, April 2, 2024	588	240		828	
Wednesday, April 3, 2024	702	399		1,101	
Thursday, April 4, 2024	671	848		1,519	
Friday, April 5, 2024	562	1,038		1,600	
Saturday, April 6, 2024	354	495		849	
Sunday, April 7, 2024	340	1		341	4/7 - There was a glitch
Monday, April 8, 2024	566	301		867	
Tuesday, April 9, 2024	553	222		775	
Wednesday, April 10, 2024	642	238		880	
Thursday, April 11, 2024	593	584		1,177	
Friday, April 12, 2024	614	1,550		2,164	
Saturday, April 13, 2024	453	1,472		1,925	
Sunday, April 14, 2024	310	1,026		1,336	
Monday, April 15, 2024	601	385		986	
Tuesday, April 16, 2024	666	281		947	
Wednesday, April 17, 2024	653	421		1,074	
Thursday, April 18, 2024	516	313		829	
Friday, April 19, 2024	494	850		1,344	
Saturday, April 20, 2024	375	448		823	
Sunday, April 21, 2024	302	419		721	
Monday, April 22, 2024	508	422		930	
Tuesday, April 23, 2024	546	296		842	
Wednesday, April 24, 2024	644	350		994	
Thursday, April 25, 2024	599	728		1,327	
Friday, April 26, 2024	584	1,453		2,037	
Saturday, April 27, 2024	328	89		417	
Sunday, April 28, 2024	344	412	29	785	4/28 - Spring Service Cl
Monday, April 29, 2024	624	420	26	1,070	
Tuesday, April 30, 2024	526	358	7	891	
Route Totals	15,797	16,303	62	32,162	

1 with the farebox ridership collection on Route 33, so ridership for this day was not captured.

change begins, including seasonal service on Route 36.

May 2024	Rt 3	Rt 33	Rt 36	Daily total
Wednesday, May 1, 2024	576	363	13	952
Thursday, May 2, 2024	572	391	30	993
Friday, May 3, 2024	669	285	23	977
Saturday, May 4, 2024	453	1029	26	1508
Sunday, May 5, 2024	360	1181	53	1594
Monday, May 6, 2024	504	321	15	840
Tuesday, May 7, 2024	571	391	37	999
Wednesday, May 8, 2024	574	455	31	1060
Thursday, May 9, 2024	558	324	11	893
Friday, May 10, 2024	552	470	23	1045
Saturday, May 11, 2024	461	1037	30	1528
Sunday, May 12, 2024	322	493	26	841
Monday, May 13, 2024	564	691	21	1276
Tuesday, May 14, 2024	508	468	20	996
Wednesday, May 15, 2024	592	399	12	1003
Thursday, May 16, 2024	592	638	24	1254
Friday, May 17, 2024	654	1137	50	1841
Saturday, May 18, 2024	389	1123	20	1532
Sunday, May 19, 2024	342	674	61	1077
Monday, May 20, 2024	610	768	31	1409
Tuesday, May 21, 2024	500	609	41	1150
Wednesday, May 22, 2024	571	529	29	1129
Thursday, May 23, 2024	604	886	81	1571
Friday, May 24, 2024	464	1370	48	1882
Saturday, May 25, 2024	518	1689	113	2320
Sunday, May 26, 2024	400	2308	95	2803
Monday, May 27, 2024	496	1410	81	1987
Tuesday, May 28, 2024	517	1156	70	1743
Wednesday, May 29, 2024	484	850	67	1401
Thursday, May 30, 2024	614	1008	62	1684
Friday, May 31, 2024	680	1225	54	1959
Route Totals	16271	25678	1298	43247

June 2024	Rt 3	Rt 33	Rt 36	Daily total
Saturday, June 1, 2024	501	860	51	1412
Sunday, June 2, 2024	376	2620	43	3039
Monday, June 3, 2024	727	1364	60	2151
Tuesday, June 4, 2024	615	1188	79	1882
Wednesday, June 5, 2024	574	1140	83	1797
Thursday, June 6, 2024	665	1239	68	1972
Friday, June 7, 2024	621	1386	90	2097
Saturday, June 8, 2024	443	1340	83	1866
Sunday, June 9, 2024	350	1513	93	1956
Monday, June 10, 2024	583	1090	53	1726
Tuesday, June 11, 2024	530	1481	77	2088
Wednesday, June 12, 2024	591	1130	119	1840
Thursday, June 13, 2024	594	1063	56	1713
Friday, June 14, 2024	550	1465	85	2100
Saturday, June 15, 2024	562	2315	34	2911
Sunday, June 16, 2024	282	1742	91	2115
Monday, June 17, 2024	664	1393	84	2141
Tuesday, June 18, 2024	666	1514	86	2266
Wednesday, June 19, 2024	533	1489	81	2103
Thursday, June 20, 2024	633	1340	93	2066
Friday, June 21, 2024	549	1373	98	2020
Saturday, June 22, 2024	543	1491	84	2118
Sunday, June 23, 2024	389	1638	46	2073
Monday, June 24, 2024	587	1489	98	2174
Tuesday, June 25, 2024	567	1487	145	2199
Wednesday, June 26, 2024	564	981	73	1618
Thursday, June 27, 2024	621	1376	79	2076
Friday, June 28, 2024	578	1154	102	1834
Saturday, June 29, 2024	498	1005	124	1627
Sunday, June 30, 2024	389	1823	107	2319
Route Totals	16345	42489	2465	61299

July 2024 Ridership on Routes Serving Manitou Springs

July 2024	Ridership				Missed Passengers (SF)	
	Rt 3	Rt 33	Rt 36	Daily total	Rt 33	Rt 36
Monday, July 1, 2024	822	1736	77	2635		
Tuesday, July 2, 2024	765	1456	78	2299		
Wednesday, July 3, 2024	1059	1515	100	2674	15	
Thursday, July 4, 2024	737	2176	121	3034		
Friday, July 5, 2024	748	1711	137	2596	30	3
Saturday, July 6, 2024	724	1555	116	2395		
Sunday, July 7, 2024	498	1823	96	2417		
Monday, July 8, 2024	1013	1673	127	2813		
Tuesday, July 9, 2024	837	1352	92	2281		
Wednesday, July 10, 2024	800	1238	147	2185		
Thursday, July 11, 2024	984	1375	99	2458		
Friday, July 12, 2024	825	1405	124	2354	10	
Saturday, July 13, 2024	755	2005	97	2857	20	
Sunday, July 14, 2024	551	1555	95	2201		
Monday, July 15, 2024	840	1474	101	2415		
Tuesday, July 16, 2024	882	1215	86	2183		
Wednesday, July 17, 2024	969	884	75	1928		
Thursday, July 18, 2024	968	1497	109	2574		
Friday, July 19, 2024	897	1503	97	2497		
Saturday, July 20, 2024	744	1405	39	2188	6	
Sunday, July 21, 2024	542	1078	109	1729		
Monday, July 22, 2024	989	1151	139	2279		
Tuesday, July 23, 2024	828	1590	125	2543		
Wednesday, July 24, 2024	761	1283	132	2176		
Thursday, July 25, 2024	981	1491	167	2639		
Friday, July 26, 2024	832	1569	96	2497		
Saturday, July 27, 2024	792	2199	119	3110	37	
Sunday, July 28, 2024	717	1965	28	2710		
Monday, July 29, 2024	891	1453	86	2430		
Tuesday, July 30, 2024	912	1112	58	2082		
Wednesday, July 31, 2024	884	1336	80	2300		
Route Totals	25547	46780	3152	75479	118	3

30)

Daily total

15

33

10

20

6

37

121

August 2024 Ridership on Routes Serving Manitou Springs

August 2024	Ridership				Missed
	Rt 3	Rt 33	Rt 36	Daily total	Rt 33
Thursday, August 1, 2024	1152	1284	111	2547	9
Friday, August 2, 2024	980	1347	76	2403	
Saturday, August 3, 2024	743	2060	115	2918	
Sunday, August 4, 2024	554	1364	82	2000	
Monday, August 5, 2024	917	1299	77	2293	
Tuesday, August 6, 2024	832	1433	112	2377	
Wednesday, August 7, 2024	957	1118	68	2143	
Thursday, August 8, 2024	891	1143	57	2091	
Friday, August 9, 2024	800	820	70	1690	
Saturday, August 10, 2024	712	1654	47	2413	
Sunday, August 11, 2024	524	1827	103	2454	
Monday, August 12, 2024	1166	1106	64	2336	
Tuesday, August 13, 2024	927	469	80	1476	
Wednesday, August 14, 2024	915	422	79	1416	
Thursday, August 15, 2024	967	1003	102	2072	
Friday, August 16, 2024	864	1372	109	2345	
Saturday, August 17, 2024	644	1106	160	1910	
Sunday, August 18, 2024	630	1459	85	2174	
Monday, August 19, 2024	857	713	46	1616	
Tuesday, August 20, 2024	829	739	25	1593	
Wednesday, August 21, 2024	971	724	54	1749	
Thursday, August 22, 2024	999	683	40	1722	
Friday, August 23, 2024	921	1058	56	2035	
Saturday, August 24, 2024	705	1433	160	2298	
Sunday, August 25, 2024	630	1483	109	2222	
Monday, August 26, 2024	931	711	68	1710	
Tuesday, August 27, 2024	859	700	73	1632	
Wednesday, August 28, 2024	952	516	64	1532	
Thursday, August 29, 2024	1073	654	71	1798	
Friday, August 30, 2024	1017	1274	98	2389	
Saturday, August 31, 2024	733	1548	85	2366	
Route Totals	26652	34522	2546	63720	9

September 2024 Ridership on Routes Serving Manitou Springs

September 2024	Boardings			
	Rt 3	Rt 33	Rt 36	Total all 3 rts
Sunday, September 1, 2024	406	1404	108	1918
Monday, September 2, 2024	301	1034	212	1547
Tuesday, September 3, 2024	698	664	51	1413
Wednesday, September 4, 2024	630	620	73	1323
Thursday, September 5, 2024	642	377	43	1062
Friday, September 6, 2024	698	792	79	1569
Saturday, September 7, 2024	444	1452	91	1987
Sunday, September 8, 2024	418	1663	96	2177
Monday, September 9, 2024	583	570	85	1238
Tuesday, September 10, 2024	597	413	94	1104
Wednesday, September 11, 2024	550	723	140	1413
Thursday, September 12, 2024	622	685	89	1396
Friday, September 13, 2024	722	914	70	1706
Saturday, September 14, 2024	330	1895	81	2306
Sunday, September 15, 2024	315	1623	106	2044
Monday, September 16, 2024	609	678	55	1342
Tuesday, September 17, 2024	587	458	68	1113
Wednesday, September 18, 2024	611	549	53	1213
Thursday, September 19, 2024	725	803	141	1669
Friday, September 20, 2024	704	1094	99	1897
Saturday, September 21, 2024	419	231	105	755
Sunday, September 22, 2024	231	112	27	370
Monday, September 23, 2024	577	947	72	1596
Tuesday, September 24, 2024	609	591	61	1261
Wednesday, September 25, 2024	710	711	66	1487
Thursday, September 26, 2024	638	599	48	1285
Friday, September 27, 2024	594	1007	45	1646
Saturday, September 28, 2024	437	1214	75	1726
Sunday, September 29, 2024	345	1191		1536
Monday, September 30, 2024	614	589		1203
Route Totals	16,366	25,603	2,333	44,302

October 2024 Ridership on Routes Serving Manitou Springs

October 2024	Boardings		
	Rt 3	Rt 33	Total both rts
Tuesday, October 1, 2024	632	411	1043
Wednesday, October 2, 2024	635	940	1575
Thursday, October 3, 2024	671	940	1611
Friday, October 4, 2024	653	1039	1692
Saturday, October 5, 2024	415	1296	1711
Sunday, October 6, 2024	334	1072	1406
Monday, October 7, 2024	641	728	1369
Tuesday, October 8, 2024	695	519	1214
Wednesday, October 9, 2024	698	1493	2191
Thursday, October 10, 2024	580	1659	2239
Friday, October 11, 2024	588	976	1564
Saturday, October 12, 2024	480	1499	1979
Sunday, October 13, 2024	322	1122	1444
Monday, October 14, 2024	582	1107	1689
Tuesday, October 15, 2024	619	662	1281
Wednesday, October 16, 2024	565	1507	2072
Thursday, October 17, 2024	619	1223	1842
Friday, October 18, 2024	536	1131	1667
Saturday, October 19, 2024	407	801	1208
Sunday, October 20, 2024	273	861	1134
Monday, October 21, 2024	564	369	933
Tuesday, October 22, 2024	599	416	1015
Wednesday, October 23, 2024	583	1089	1672
Thursday, October 24, 2024	564	1157	1721
Friday, October 25, 2024	615	929	1544
Saturday, October 26, 2024	628	30	658
Sunday, October 27, 2024	334	914	1248
Monday, October 28, 2024	598	483	1081
Tuesday, October 29, 2024	566	330	896
Wednesday, October 30, 2024	568	438	1006
Thursday, October 31, 2024	522	349	871
Route Totals	17,086	27,490	44,576

November 2024 Ridership on Routes Serving Manitou Springs

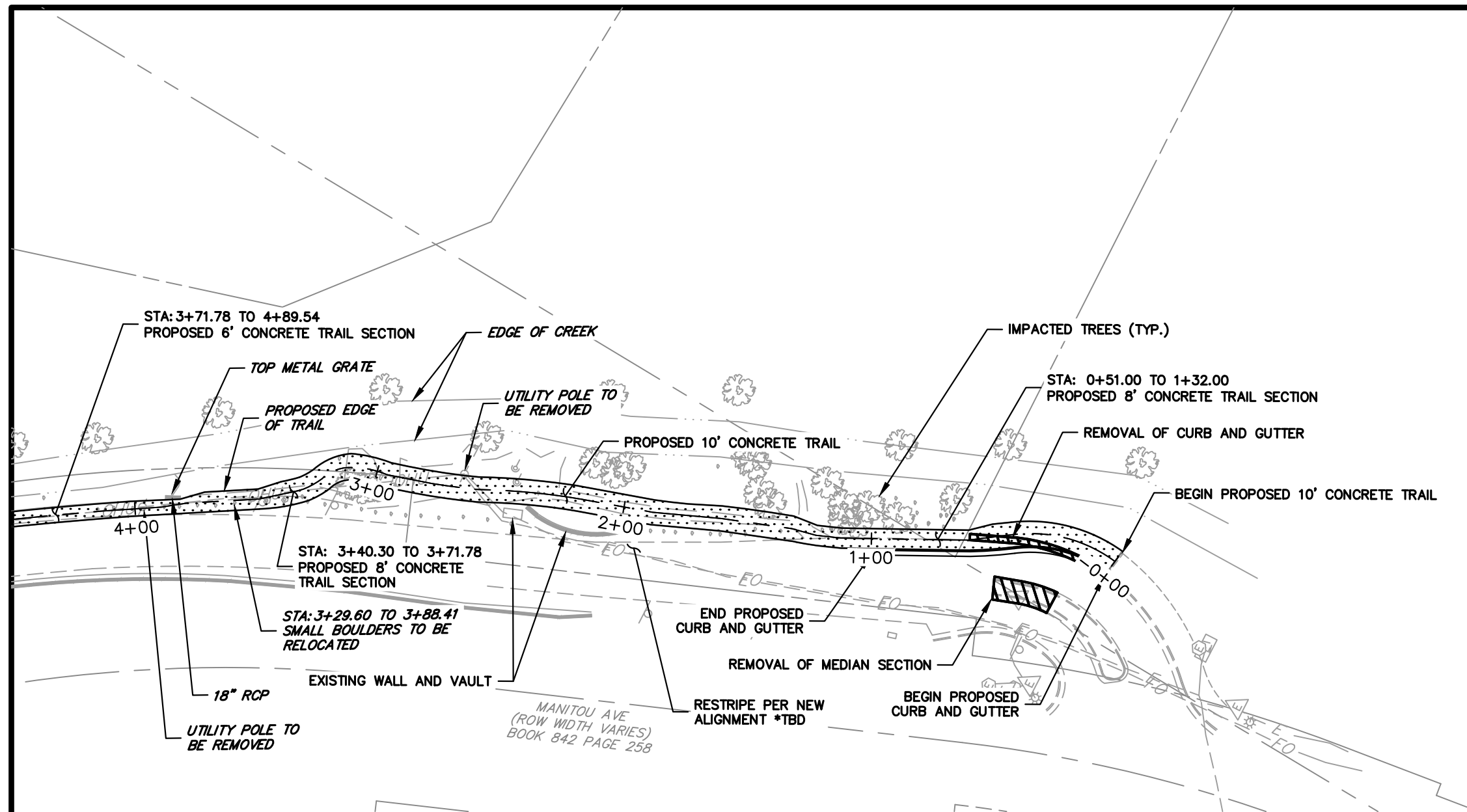
November 2023	Boardings		
	Rt 3	Rt 33	Total both rts
Friday, November 1, 2024	680	475	1155
Saturday, November 2, 2024	450	1185	1635
Sunday, November 3, 2024	419	915	1334
Monday, November 4, 2024	547	93	640
Tuesday, November 5, 2024	558	165	723
Wednesday, November 6, 2024	425	85	510
Thursday, November 7, 2024	28	44	72
Friday, November 8, 2024	No service - Snow Day		
Saturday, November 9, 2024	264	55	319
Sunday, November 10, 2024	320	353	673
Monday, November 11, 2024	555	248	803
Tuesday, November 12, 2024	485	99	584
Wednesday, November 13, 2024	539	446	985
Thursday, November 14, 2024	607	406	1013
Friday, November 15, 2024	541	197	738
Saturday, November 16, 2024	447	658	1105
Sunday, November 17, 2024	366	406	772
Monday, November 18, 2024	554	194	748
Tuesday, November 19, 2024	488	84	572
Wednesday, November 20, 2024	457	447	904
Thursday, November 21, 2024	554	345	899
Friday, November 22, 2024	583	288	871
Saturday, November 23, 2024	403	612	1015
Sunday, November 24, 2024	287	693	980
Monday, November 25, 2024	495	195	690
Tuesday, November 26, 2024	442	426	868
Wednesday, November 27, 2024	477	304	781
Thursday, November 28, 2024	No service - Thanksgiving		
Friday, November 29, 2024	517	517	1034
Saturday, November 30, 2024	466	686	1152
Route Totals	12,954	10,621	23,575

December 2024 Ridership on Routes Serving Manitou Springs

December 2023

[illegible]

Route Totals



NOTES:

- ALTERNATIVE #2 WILL BEGIN WITH PROPOSED PATH ALONG THE NORTH SIDE OF MANITOU AVE. THEN CROSS PERPENDICULARLY AT THE EXISTING CROSSING LOCATION NEAR PARKING AREA. THEN CONTINUE WITH THE PATH ALONG SOUTH SIDE TO TERMINATION
- THIS WILL REQUIRE WIDENING MANITOU TO THE NORTH TO MAKE ROOM FOR ANOTHER TRAFFIC LANE.



PROPOSED CONCRETE TRAIL

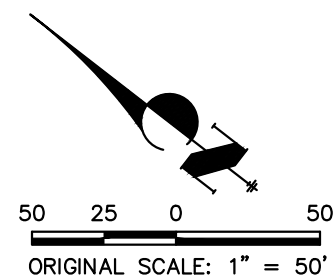


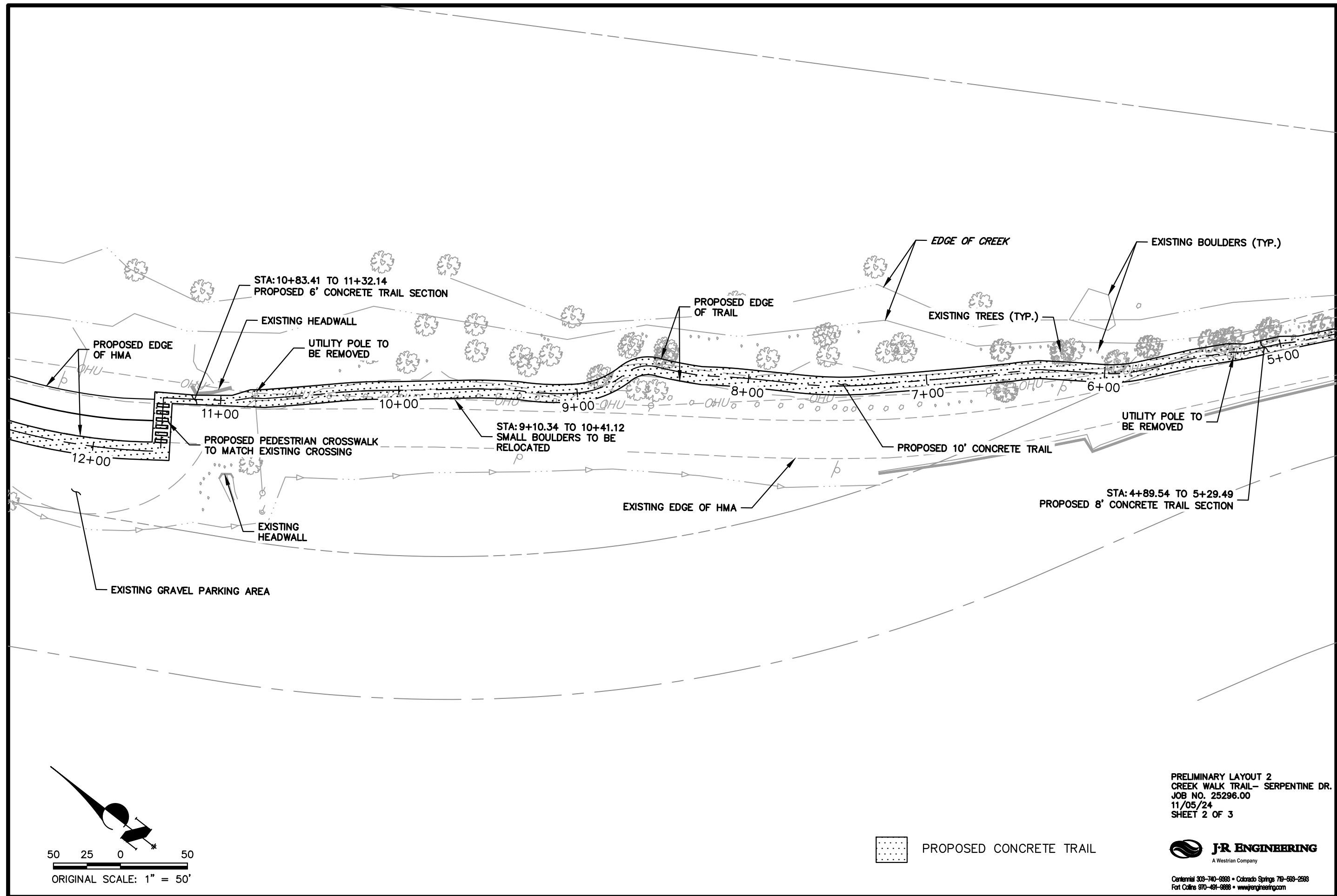
REMOVAL OF CONCRETE

PRELIMINARY LAYOUT 2
CREEK WALK TRAIL- SERPENTINE DR.
JOB NO. 25296.00
11/05/24
SHEET 1 OF 3



Centennial 303-740-8888 • Colorado Springs 719-593-2588
Fort Collins 970-491-8888 • www.jrengineering.com



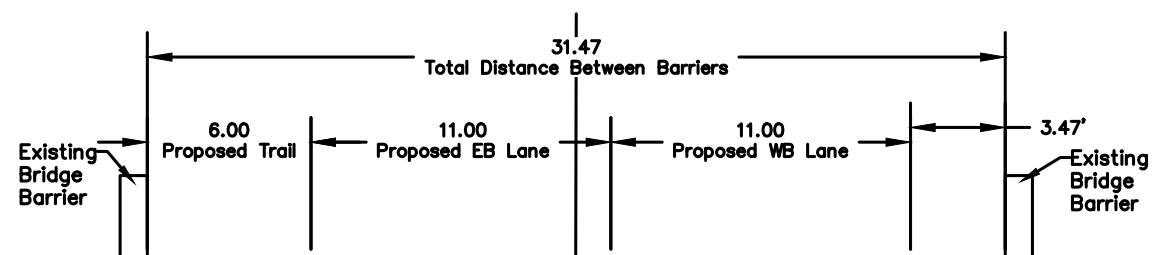
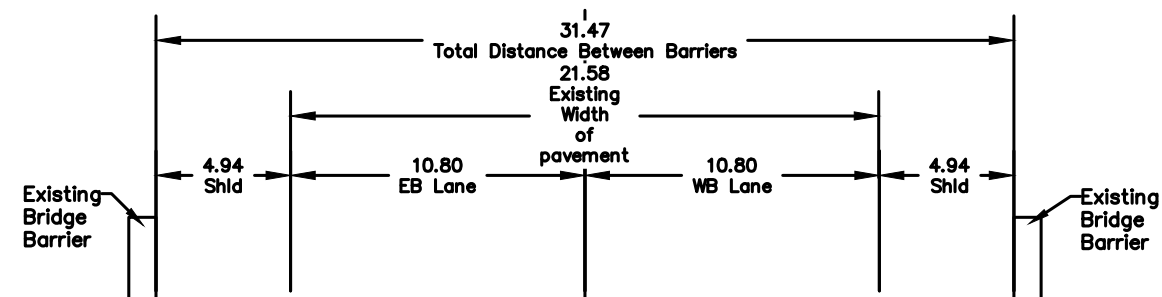


PRELIMINARY LAYOUT 2
CREEK WALK TRAIL- SERPENTINE DR.
JOB NO. 25296.00
11/05/24
SHEET 2 OF 3



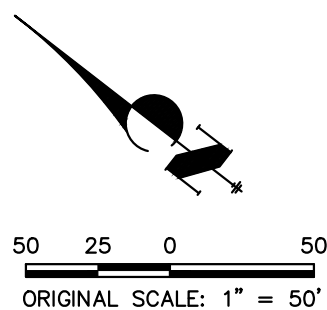
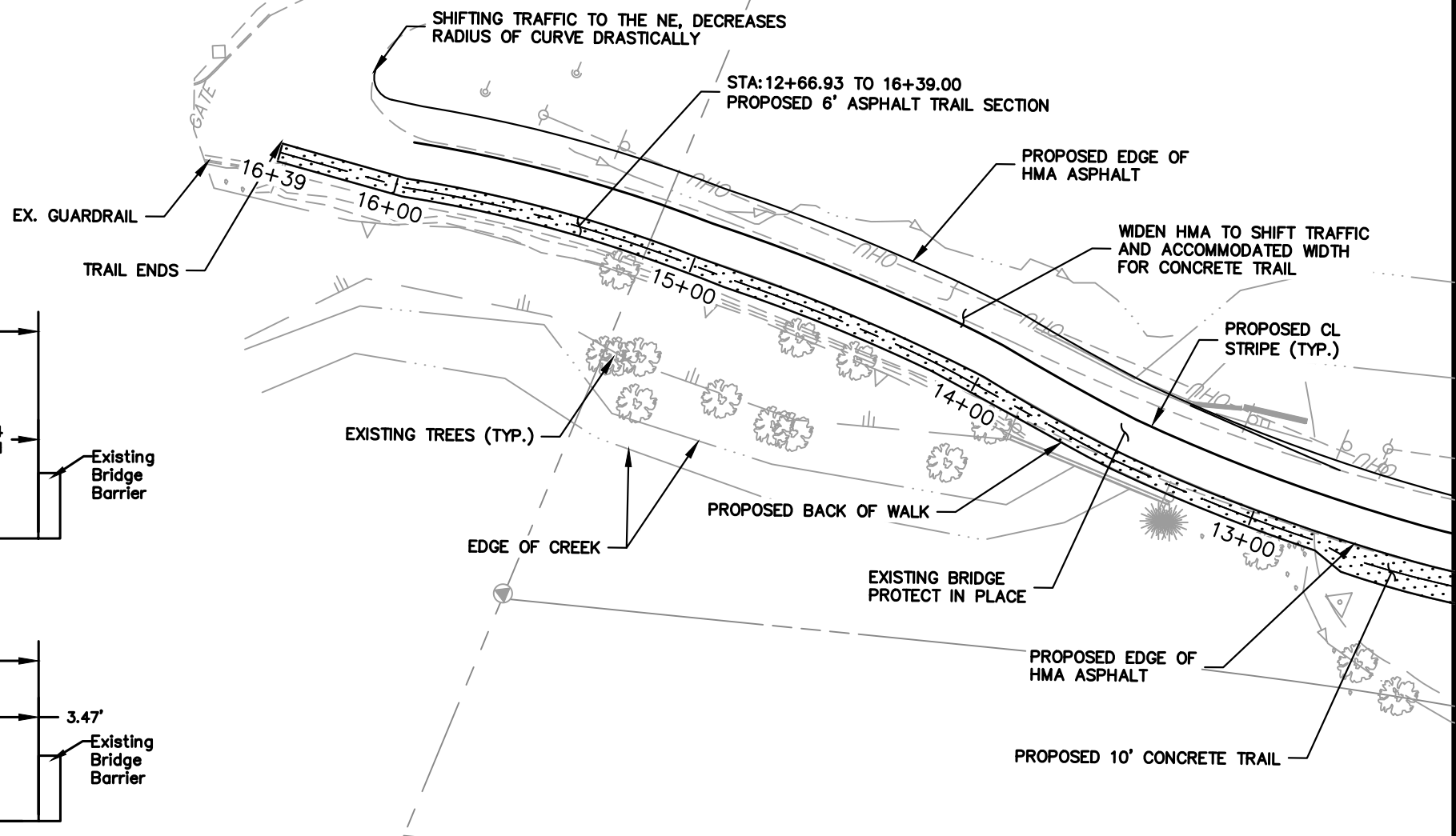
Centennial 303-740-8993 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

 PROPOSED CONCRETE TRAIL



EXISTING BRIDGE TYPICAL SECTION

PROPOSED BRIDGE TYPICAL SECTION



NOTES:

- THE EXISTING BRIDGE IS THE LIMITING FACTOR FOR WIDTHS
- POTENTIAL FOR NARROWING THE TRAIL OVER THE BRIDGE AND CONTINUE WEST

 PROPOSED CONCRETE TRAIL

PRELIMINARY LAYOUT 2
CREEK WALK TRAIL- SERPENTINE DR.
JOB NO. 25296.00
11/05/24
SHEET 3 OF 3

 **J-R ENGINEERING**
A Westrian Company

Centennial 303-740-8888 • Colorado Springs 719-593-2588
Fort Collins 970-491-8888 • www.jrengineering.com



Pikes Peak Area
Council of Governments
Communities Working Together

MOVING FORWARD 2045

Pikes Peak Area Regional
Transportation Plan



TABLE OF CONTENTS

CHAPTER 1	Introduction	1
CHAPTER 2	Planning Process & Public Involvement	9
CHAPTER 3	System Performance Report	31
CHAPTER 4	Future Regional Development	71
CHAPTER 5	Regional Transportation Needs	89
CHAPTER 6	Financial Plan	109
CHAPTER 7	Implementation Plan	123
CHAPTER 8	Systems Management & Operations	183
CHAPTER 9	New and Emerging Technologies	213
CHAPTER 10	Safety	233
CHAPTER 11	Security	295
CHAPTER 12	Freight & Commodity Flows	319
CHAPTER 13	Public Health & Transportation	353
CHAPTER 14	Mitigation & Monitoring	383
CHAPTER 15	Air Quality Conformity	407

THANK YOU TO ALL MOVING FORWARD 2045 CONTRIBUTORS

PPACG BOARD OF DIRECTORS

Norm Steen, PPACG Chair,
Teller County Commissioner

Jill Gaebler, PPACG Vice Chair,
Colorado Springs Councilmember

Neil Levy, PPACG Second Vice Chair,
Mayor of Woodland Park

Holly Williams, PPACG Secretary,
El Paso County Commissioner

Sharon Thompson, PPACG Treasurer,
Fountain Councilmember

Yolanda Avila, Colorado Springs
Councilmember

Cami Bremer, El Paso County
Commissioner

Bruce Brown, Mayor of Cripple Creek

Cameron Chausse, Mayor of Calhan

John Cressman, Mayor of
Palmer Lake

Don Daniel, Mayor of Victor

Dick Elsner, Park County Commissioner

Ken Jaray, Mayor of Manitou Springs

Frank Just, Mayor of Fairplay

Gabriel Ortega, Mayor of Fountain

Andy Pico, Colorado Springs
Councilmember

Turner Smith, Trustee Ramah

Tyler Stevens, Trustee Green
Mountain Falls

Stan VanderWerf, El Paso County
Commissioner

Don Wilson, Mayor of Monument

Andrew Zimmerman, Trustee Alma

Mr. Rod Chisholm, Fort Carson
(non-voting)

Chris Colclasure, Air Quality Control
Commission (non-voting)

Col. Jennifer Grant, Schriever AFB
(non-voting)

Rick Hum, Water Quality Control
Commission (non-voting)

Col. Todd Moore, Peterson AFB
(non-voting)

Karen Rowe, Region 2 Director,
Colorado Department of Transportation
(non-voting)

Rocky Scott, Colorado Transportation
Commission (non-voting)

Rob Sleeth, US Air Force Academy
(non-voting)

Terry Storm, Military Community
Representative (non-voting)

TRANSPORTATION ADVISORY COMMITTEE

Brandy Williams, TAC Chair, Fountain

Brian Vitulli, TAC Vice Chair, Colorado
Springs MMT

Victoria Chavez, TAC Second Vice Chair,
El Paso County

Larry Manning, Monument

Jason Dosch, Palmer Lake

Anthony Ramage, El Paso County

Tim Roberts, Colorado Springs

Sally Riley, Woodland Park

Aaron Bustow, FHWA (non-voting)

Kathleen Collins, Colorado Department
of Transportation (non-voting)

Darren Hortsmeier, Schriever AFB
(non-voting)

Steven Jacobson, US Air Force Academy
(non-voting)

Amy Kelley, US Air Force Academy
(non-voting)

Kristen Kenyon, FTA (non-voting)

Richard Orphan, Fort Carson
(non-voting)

Wendy Pettit, Colorado Department
of Transportation (non-voting)

COMMUNITY ADVISORY COMMITTEE

Sharon Brown, CAC Chair, Fountain

Tim O'Donnell, CAC Vice Chair, CONO

Courtney Stone, CAC Second Vice Chair,
Citizen at large

Bill Boles, Park County

Orrin Childers, Citizen at large

Aubrey Day, Citizen at large

Jon DeVaux, Woodland Park

Tamara Dipner, Colorado Springs

Ann Esch, Green Mountain Falls

Jim Moore, Citizen at large

Terri Hayes, Monument

Kim Mutchler, Citizen at large

Julie Ott, League of Women Voters

Thomas Pfeifle, Colorado Springs

Adam Rezner, El Paso County

Roy Rosenthal, Manitou Springs

PPACG STAFF

Andrew Gunning, Executive Director

John Liosatos, Transportation Division
Director

Kathryn Wenger, Senior Transportation
Planner

Jason O'Brien, Transportation Planner

Will Mast, Innovation and
Technology Lead

John Hanson, GIS Planner

Phillip Roy, GIS Analyst

Brian Potts, JLUS Manager

Ann Werner, JLUS Planner II

Jenny Phillips, Web and IT Coordinator

Jessica Bechtel, Office Administrator

Jessica McMullen, Policy and
Communications Manager



CHAPTER 1

INTRODUCTION

Moving Forward 2045 is the foundation for transportation planning in our region and helps decision makers understand the social, economic, financial and environmental impacts of transportation and land-use decisions.

This regional transportation plan provides the foundation for many aspects of transportation decision-making by establishing the vision and goals for regional transportation, evaluating the system as a whole, and identifying strategies for implementation. It also presents an opportunity for decision makers to understand the broader social, economic, financial and environmental impacts of transportation and land-use decisions.

As the federally-designated Metropolitan Planning Organization (MPO) for the Colorado Springs urbanized area, the Pikes Peak Area Council of Governments (PPACG) is responsible for developing and maintaining a long-range regional transportation plan and the supporting short-range implementation program. The PPACG the Metropolitan Planning Area is shown in Figure 1-1.

All transportation projects that are regionally significant, or impact air quality within the metropolitan planning area, no matter what the source of funding, must be included in the plan. The primary purpose of the plan is to develop a strategy for the best use of public funds in meeting community goals.

The region's previous transportation plan, the *Moving Forward Update 2040 Regional Transportation Plan*, were adopted in November 2015. This *Moving Forward 2045 Regional Transportation Plan* updates that plan and addresses all of the performance-based planning requirements established with federal transportation

legislation, Moving Ahead for Progress in the 21st Century Act (MAP-21) and continued with the Fixing America's Surface Transportation (FAST) Act. The plan examines current regional conditions, considers updated socioeconomic projections and changing growth patterns, and describes the financial resources available through current law and how well those resources will meet transportation system needs in the Pikes Peak region through 2045. In its entirety, the plan meets the requirements for its composition and preparation process, and demonstrates conformity with applicable laws and regulations. Long-range transportation plans are required to comply with federal and state laws for regional and statewide planning, in order for the region to be eligible for federal transportation funding.

FEDERAL LEGISLATION

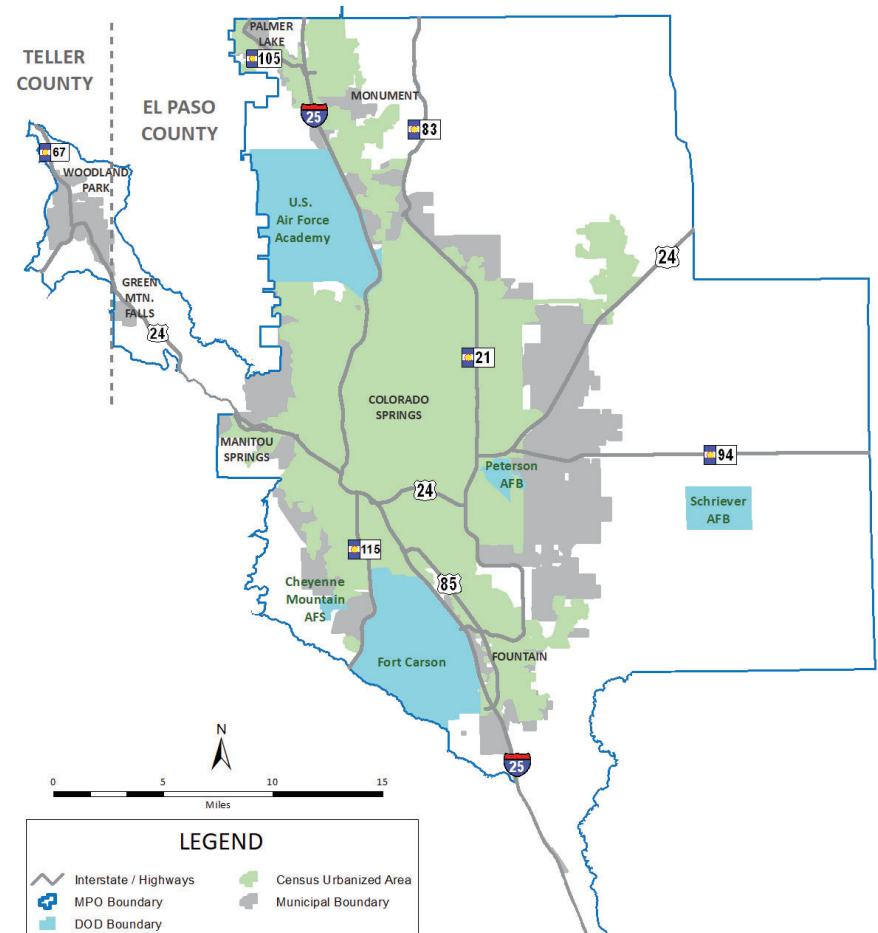
All federal transportation legislation passed by Congress since 1991 emphasizes:

- Efficient use and preservation of existing transportation infrastructure;
- Synergistic relationships between transportation modes;
- Inclusion of private citizens and stakeholders in planning; and
- The need for plans to be financially constrained, which means that projects can only be included in the plan if specific funding is expected to be reasonably available to pay for them.

Long-range transportation plans must extend at least 20 years beyond their end date (24+ years at adoption) and use the latest available estimates and assumptions for population, land use, travel, employment, congestion, and economic activity. The transportation plan must be reviewed and updated every four years, and the Metropolitan Planning Organization must demonstrate that transportation activities are consistent with air-quality goals.

FIGURE 1-1

PIKES PEAK AREA METROPOLITAN PLANNING ORGANIZATION (MPO) BOUNDARY



Transportation planning within metropolitan areas is defined by three major pieces of federal legislation:

1. Fixing America's Surface Transportation Act (FAST, the current enactment of federal transportation legislation)
2. The Clean Air Act Amendments of 1990
3. The Civil Rights Act of 1964

MAP-21, the previous transportation legislation, signed into law by President Obama in 2012, incorporated performance goals, measures, and targets into the process of identifying necessary transportation improvements and selecting projects. The FAST Act continued these provisions and gave additional emphasis to highway mobility, freight and economic growth, and innovation. The long-range plan must describe the performance measures and targets used in assessing system performance and progress in achieving the national and regional goals.

CLEAN AIR ACT AMENDMENTS

The FAST Act is linked to the Clean Air Act Amendments, which recast transportation planning to ensure that it will help, not hinder, the region in meeting federal air-quality standards. It encourages reduced auto emissions and fewer trips by single-occupant vehicles, and it promotes the use of alternative transportation modes, including transit, pedestrians and bicycles, as a viable part of the transportation system. Making receipt of all federal funding dependent on a region's ability to meet air-quality standards reinforces the link between transportation planning and federal air-quality standards.

CIVIL RIGHTS ACT

Requirements within the FAST Act are similarly linked to the 1964 Civil Rights Act, which states that "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." The Act bars intentional discrimination, as

well as disparate impact discrimination (i.e., a neutral policy or practice that has a disparate impact on protected groups).

Funding recipients must follow these fundamental environmental justice principles:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations;
- Ensure the full and fair participation by all potentially-affected communities in the transportation decision-making process; and
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

PURPOSE AND SCOPE

The objective of regional long-range transportation planning is to provide a strategic framework for the development, operation, and management of the transportation system within the larger context of an MPO's economic, social, mobility, and environmental goals. Planning conducted within this framework must be flexible to adapt to changing economic and technological conditions and forward-thinking enough to maximize return on investment, all while minimizing negative impacts.

Transportation planning is a process of balancing goals to improve the quality of life for the region's citizens. This process is coordinated among federal, state, and local governments and private transportation providers to continuously anticipate and respond to the comprehensive transportation needs of people and goods moving throughout the region, fostering economic activity, and enabling access to and from areas outside the region. The plan documents this process and presents the system improvements for all modes of transportation for the Colorado Springs metropolitan planning area through 2045.

PPACG, as the federally designated MPO for the Colorado Springs Urbanized Area, derives its authority from Title 23, United States Code 134. Formed in 1967 under Colorado laws regarding regional

planning and intergovernmental contracting, PPACG is not a unit of local government, but an organization of local governments whose purpose is to identify regional problems and opportunities, develop solutions, and make recommendations on region-wide strategies. PPACG's Board of Directors, elected officials from participating local and county governments, governs the MPO. Figure 1-1 is a map of the Pikes Peak metropolitan boundaries and local jurisdictions.

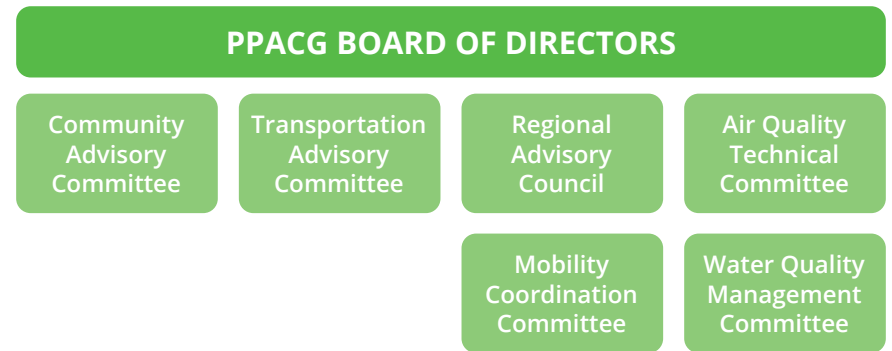
This plan:

- Describes the multimodal transportation system components designed to facilitate mobility of people and goods throughout the region;
- Identifies how the transportation system, as recommended herein, assures maintenance of the National Ambient Air Quality Standards and meets the mobility needs of persons with disabilities;
- Is fiscally-constrained, meaning it includes only fully funded projects;
- Identifies all funding—federal, state, local, and private—that is reasonably anticipated to be available during the period 2020 to 2045; and
- Uses year-of-expenditure value for both project costs and revenues.

The FAST Act requires that the MPO planning process be continuing, cooperative and comprehensive. The PPACG governing board, committee structure, and public outreach programs support cooperation. Chapter 2 in this document, Public Participation, discusses the public process in depth. PPACG's committee structure allows opportunities for stakeholder agencies to be involved in regional transportation planning in the Pikes Peak region. The Citizens Advisory Committee is the lead committee for ongoing input and review of public participation activities and input. PPACG's committee meetings are open to the public and each agenda sets aside time for public comment on any matter, and for public comment on each item before any action is taken. Figure 1-2 illustrates the PPACG advisory committee structure.

FIGURE 1-2

PPACG ADVISORY COMMITTEE STRUCTURE



CHAPTER 2

PLANNING PROCESS & PUBLIC INVOLVEMENT

An essential goal of PPACG is to provide an environment that encourages public involvement and maintains trust in the planning process.

Under the FAST Act, the Federal Highway and Federal Transit Administrations require that all metropolitan areas conduct a comprehensive, coordinated, and continuing transportation planning process which includes development of long and short-range plans and programs. The long-range plan must be updated every five years (every four years for air quality non-attainment areas), include a forecast period of at least 20 years and address several federal planning priorities, known as planning factors. This chapter formally documents the comprehensive, coordinated, and continuing (3C) transportation planning process outlined in Figure 2-1.

FEDERAL REQUIREMENTS

Federal requirements place several demands on the regional transportation planning process. Those demands are summarized and stated in federal regulations as factors to be addressed by the transportation planning process:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- Increase the safety of the transportation system.
- Increase the security of the transportation system.
- Increase accessibility and mobility of people and freight.
- Protect and enhance the environment and promote energy conservation.

- Improve quality of life.
- Promote consistency between transportation improvements and state and local planned growth and economic development.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operation.
- Emphasize the preservation of the existing transportation system.
- Use a Public Participation Plan (PPP) developed “in consultation with all interested parties” that provides “explicit procedures, strategies, and desired outcomes” for reasonable opportunities for interested parties to comment on the Regional Transportation Plan and Transportation Improvement Program.

PUBLIC PARTICIPATION

PPACG’s public involvement goal is to provide an environment encouraging proactive and continuous public involvement while establishing and maintaining trust in the planning process. This is achieved through disseminating complete and timely information and providing full public access.

PPACG emphasizes community involvement in all of its planning and public involvement procedures to address FAST Act public participation and consultation requirements. PPACG adopted the latest update to its Public Participation Plan (PPP) in June 2019. Using multiple outreach techniques, PPACG empowered citizens to be involved at every stage of plan development.

The PPACG Public Participation Plan can be found in Appendix A of this document.

AGENCY CONSULTATION & COORDINATION

PPACG is a voluntary organization of municipal and county governments that provides a forum for local officials to identify regional opportunities and challenges, develop solutions, and make recommendations on area-wide strategies. PPACG is the lead

agency for transportation planning, air- and water-quality planning, demographic and economic forecasting, and services for seniors.

In this role, PPACG improves coordination and communication between plans and improves decision-making by integrating multiple agencies, disciplines, and activities. PPACG’s mission is to aid decision-making and speed project implementation by providing information that quantifies future impact. The direct, indirect, and/or cumulative effects of various agencies’ plans and projects can be assessed to highlight conflicts and connect them for avoidance, preservation, and mitigation priorities.

KEY PARTNERS

THE BOARD OF DIRECTORS

The PPACG Board of Directors is primarily comprised of city and county elected officials of general-purpose local governments in the Colorado Springs Urbanized Area. Statewide air-quality and transportation-planning concerns are represented by the Colorado Air Quality Control Commission and the Colorado Transportation Commission. Regional transit and military commanders also sit on the board.

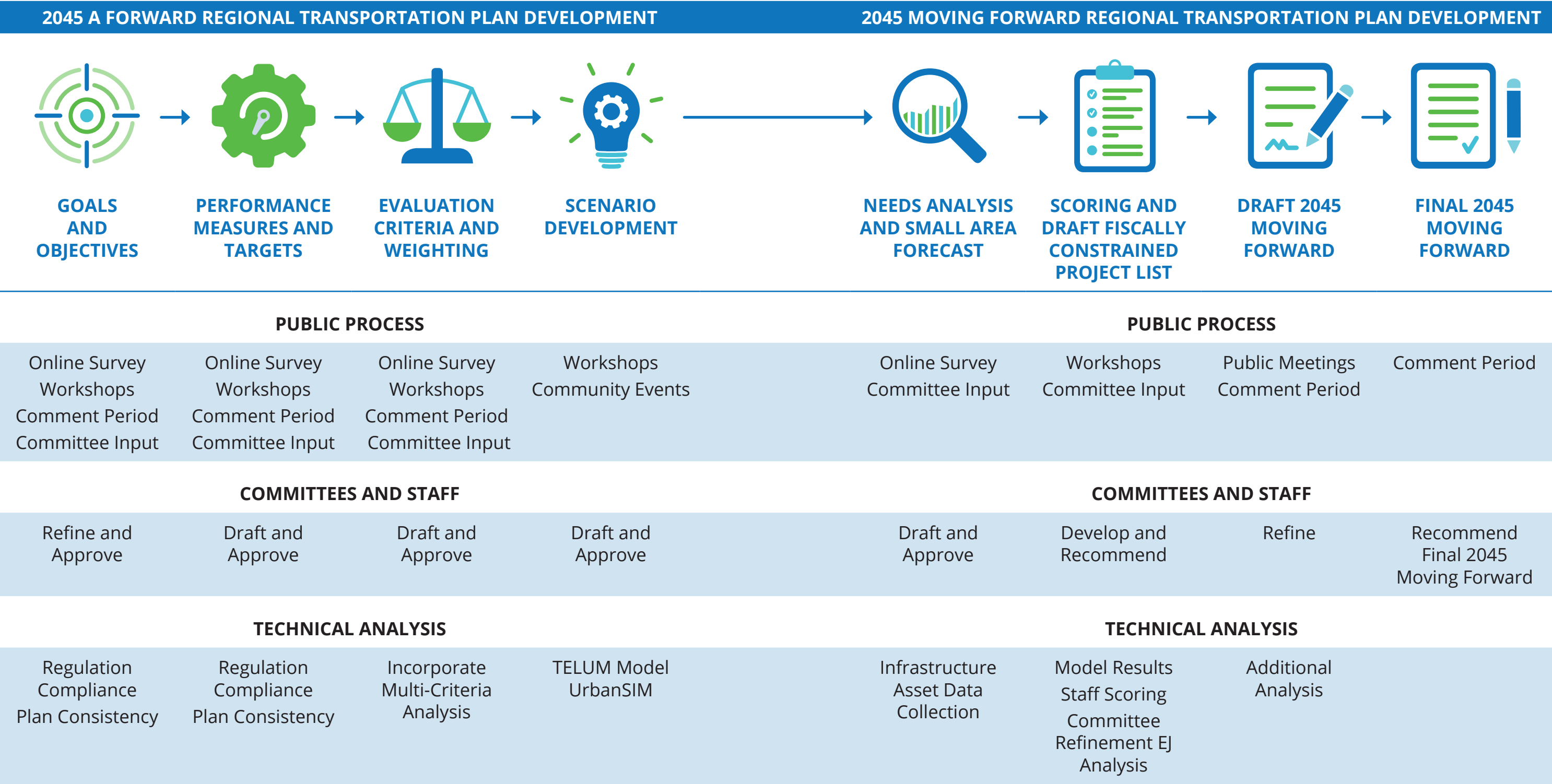
THE TRANSPORTATION ADVISORY COMMITTEE

The Transportation Advisory Committee (TAC) is closely involved in every step of the transportation planning process, providing technical expertise and input with monthly and special meetings. Membership on the Transportation Advisory Committee includes planning, engineering, and public works staff of local governments, including the transit operator, the State of Colorado, military bases, Federal Transit Administration, and Federal Highway Administration.

THE COMMUNITY ADVISORY COMMITTEE

The Community Advisory Committee (CAC) provides the means for citizens of the Pikes Peak region to have an ongoing role in

FIGURE 2-1
PPACG PLANNING PROCESS



PPACG planning activities. In particular, the Community Advisory Committee is charged with providing ongoing input into public involvement methods to ensure that the public is heard in preparing transportation plans and programs. The Community Advisory Committee is the lead committee responsible for maintaining PPACG's Public Participation Plan (see Appendix A). Membership includes citizens appointed by PPACG member jurisdictions, representatives of designated community organizations, and six citizens-at-large appointed by the PPACG Board of Directors.

ADDITIONAL PARTNERS

PPACG also participates in the Inter-Agency Coordination group, which meets monthly to coordinate transportation planning and programming activities among PPACG, the Colorado Department of Transportation, Mountain Metropolitan Transit, and the Federal Highway Administration.

PLAN DEVELOPMENT

PPACG refined the transportation planning development to increase citizen orientation and transparency as outlined in the PPP. Citizen input was used to develop alternatives, determine how to analyze potential benefits and impacts, and plot the preferred future transportation system. Procedures were undertaken to ensure the transportation planning framework is:

- **Legitimate:** The process must actively reach out and be accessible to all potentially-affected interests.
- **Rigorous:** The process should not allow those who voice their concerns most loudly, most often, or most articulately to wield disproportionate influence. Instead, the impacts and alternatives must be evaluated using scientific standards for data and analysis so that competing claims are assessed fairly. PPACG used a performance-based planning and programming evaluation methodology for goals, objectives, and performance measures.

- **Timely:** The complexity of decision-making can lead to lengthy deliberative processes. There is a need to expedite decision making, though not at the expense of public process.

ESTABLISHING A PLANNING FRAMEWORK FOR DECISION MAKING

The planning framework guides the development of the regional transportation plan, articulating what PPACG is trying to achieve through the regional transportation planning effort. It establishes the foundation for decision-making, focuses data-gathering efforts, shapes project alternatives, and outlines how decision-makers select and fund the best investments.

The PPACG process included: the creation of goals, objectives and performance measures, setting targets, forecasting future development and analyzing alternative strategies, developing investment priorities, and evaluating/reporting performance. The investment prioritization, evaluation and programming stages are continual activities which require constant monitoring of the transportation system. This process is essential for PPACG to assess transportation investments and consider their ability to meet the established goals and targets as set by our regional partners, and as appropriate adjust investment priorities accordingly.

Development of the Moving Forward 2045 Plan consisted of region-wide input from citizens and local stakeholders including our member jurisdictions, board members and the Colorado Department of Transportation as outlined in the PPP. A variety of outreach tactics and platforms were utilized, and the feedback solicited from these groups drove the development of the fundamental planning components of PPACG's 2045 Plan. The results of the planning framework process are detailed in Chapter 3: Performance Report, Chapter 4: Scenario Development, Chapter 5: Regional Transportation Needs and Chapter 8: Implementation Plan.

FIGURE 2-2
PPACG VISION, MISSION, AND PRINCIPLES



Create a sustainable multimodal transportation system that meets regional mobility and accessibility expectations as essential elements of the Pikes Peak Area’s quality of life.



Plan multimodal transportation facilities and services that efficiently move people and goods, support economic vitality, and sustain and improve the quality of life in the Pikes Peak region.



1. Preserve the function of the existing transportation system.
2. Provide efficient transportation for people and goods.
3. Develop a multimodal transportation system that provides access to employment services, military installations, and other destinations.
4. Fully integrate connections within and between modes for people and for freight.
5. Increase the safety of motorized and non-motorized travel.
6. Increase the security of the multimodal transportation system.
7. Support the economic vitality of the Pikes Peak region.
8. Improve mobility of people and goods.
9. Protect and enhance the environment by implementing transportation solutions that are sensitive to natural and human contexts.
10. Seek reliable and sufficient funding sources to implement regional transportation needs.

VISION, MISSION, AND PRINCIPLES

Creation of a strategic direction through the formulation of a vision, mission, and principles was the first component of the PPACG planning framework (Figure 2-2).

The vision articulates the Pikes Peak region’s desired outcome for a future regional transportation system. This statement helps focus planning efforts for the 2045 Moving Forward plan. The vision is responsive to the needs of citizens, references the various plans of our member governments, and challenges all to develop a transportation system that addresses the region’s quality of life.

The mission statement provides guidance on how those involved in the plan effort will move forward to achieve the desired outcome.

Principles are standards that describe the integrated multimodal transportation system the Pikes Peak region is working to achieve. They provide an overview of the factors that must be addressed in the plan.

GOALS AND OBJECTIVES

PPACG goals were developed to specifically reflect the priorities of the region, as well as to align with the national goals, and state goals outlined in the statewide long-range plan (CDOT Transportation Matters 2040) (Figures 2-3 and 2-4). Goals were formulated with a focus on outcomes, rather than on activities or policies. Our goals are broad statements that describe a desired end state (Figures 2-5).

- “What do we want our area to look like?”
- “What do we want to achieve?”

Once goals were identified, the next component of the process was developing objectives. Whereas goals related to the “big picture” or desired end-result, objectives are specific and measurable. Our objectives are not just sub-goals but provide a level of specificity necessary to fully implement broader based goals.



FIGURE 2-3
FEDERAL GOAL AREAS

Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all roads.
Infrastructure Condition	To maintain the highway infrastructure asset system in a state of good repair.
Congestion Reduction	To achieve a significant reduction in congestion on the National Highway System.
System Reliability	To improve the efficiency of the surface transportation system.
Freight Movement and Economic Vitality	To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
Environmental Sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment.
Reduced Project Delivery Delays	To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

FIGURE 2-4
CDOT GOAL AREAS

Safety	Safety Focus Areas Reduce Crashes
Mobility	Operations Interregional Transit Managed Lanes Multi-modal Solutions Bicycle/pedestrian
Economic Vitality	Project Selection Freight Funding to maintain competitiveness
Maintaining the System	Pavement Management Preventative Maintenance Asset Management Maximize Funding

FIGURE 2-5
PPACG GOAL AREAS



PROCESS AND PUBLIC PARTICIPATION

Public Survey — Starting with what was included in the *Moving Forward 2040 Regional Transportation Plan* in 2014, PPACG staff kicked off the development of the goals of the 2045 Plan by soliciting public input through an online survey. The survey asked respondents to prioritize the 13 goals from the 2040 Plan and to specify which goals should be removed or retained for the 2045 Plan. The survey also included four open-ended questions related to what should be considered with regards to transportation in the PPACG region over the next thirty years. PPACG staff coded the responses and divided them into 18 categories.

Following the closure of the survey, PPACG hosted a workshop with local stakeholders including members of the Transportation Advisory Committee (TAC), the Community Advisory Committee (CAC) and the Board of Directors to evaluate the survey results. The group discussed and ranked the top themes from the survey. A Special TAC meeting was held subsequent to the workshop to finalize a draft list of five goals. The Board of Directors approved the goals that were recommended by the TAC.

The goals that were approved are high-level in nature to encompass the broad challenges and priorities related to transportation in the PPACG region. PPACG also hosted a series of special TAC and CAC meetings and workshops to first develop the objectives. The committees emphasized that the objectives should be (1) measurable, (2) PPACG should have some control or influence over them, (3) objectives should not be repeated in different goals. After approximately three months of coordination between advisory committees, the Board of Directors approved the objectives that were recommended.

PERFORMANCE MEASURES AND TARGETS

Selection of performance measures was closely tied to development of goals and objectives, since performance measures are used to assess progress toward meeting objectives and in turn regional goals. Performance results inform PPACG and

our member jurisdictions on whether the types of projects and strategies that are implemented, are in fact helping the region achieve our strategic goals. Performance measures help:

- 1. Clarify the definition of goals** — Performance measures are a tool that is used in converting broad goals into measurable objectives.
- 2. Monitor or track performance over time** — Metrics are used to track performance on regular basis (e.g., yearly, monthly).
- 3. Act as a reference for target setting** — Metrics are used as the basis for selecting a target that is intended to be achieved.
- 4. Create a basis for supporting policy and investment decisions by comparing alternative options** — Metrics are used as a basis for comparing alternative investments or policies in order to make decisions.
- 5. Assess the effectiveness of projects and strategies** — Metrics are what enable measurement to assess whether projects and strategies have worked to further goals.

While a performance measure itself provides a metric for comparison, identification of desired trends (e.g., reduce, increase, maintain) or targets (specific numerical figures) associated with the performance measure, provide direction to strategy analysis and performance tracking. In order to develop targets, it is important to analyze baseline data to understand past trends in performance, as well as conduct analysis of expected future performance.

Federal regulations require MPOs and states to set targets for specific performance measures within the Safety, System Performance, System Maintenance, Transit Asset Management and Air Quality goal areas. In addition to the required federal measures, PPACG and member entities created additional performance measures and targets for the region's goals and objectives that were not federally required. This ensures the region is addressing all its goal areas, not just those required by law.

PROCESS AND PUBLIC PARTICIPATION

During the workshop for creation of objectives, PPACG staff and members also selected performance measures and targets based

on baseline data to coincide with each objective. This process occurred before the official rule making on required measures was release by FHWA. Where appropriate, the measures required by FHWA replaced some of the measures previously selected at the original workshop. Once the final rules were released, PPACG staff worked with TAC, CAC and the BOD to set new targets for the required measures discussed in the following chapter.

As an MPO, PPACG had two options for the selection of targets for the federally required performance measures. PPACG could either support the targets set by and for the entire state or, formulate targets that were region specific. PPACG member jurisdictions and staff determined that they would support the state measures regarding the federal targets to help the state meet their goals. Supporting of the state targets, will not only help meet the state targets, but will help to meet the regional targets and objectives as well, given both have similar goals. For performance measures that were not federally required, but were deemed important to the region, our own targets were set during the workshops based on a regional baseline data trend analysis and technical expertise from our regional partners.

Chapter 3, the Performance Report further details the performance measures, baseline data and targets set for the PPACG region.

PROJECT EVALUATION CRITERIA AND SCORING

Following the creation and adoption of clear, measurable goals, performance measures and regional targets, evaluation criteria were developed. This was necessary to help determine how proposed projects and policies would be evaluated to determine the most valuable alternatives to recommend for plan inclusion. When developing evaluation criteria, PPACG member jurisdictions considered each of the regional goal and objective areas to ensure the criteria would evaluate projects based on all regional priorities.

The entire decision-making process ensures that meaningful input and evaluation techniques and information-gathering processes consider the needs and objectives of all potentially affected

member jurisdictions. A well-designed planning framework and evaluation system may not eliminate conflicts, but it can ensure credible decision-making and pinpoint areas and reasons for conflict. It can also contribute to building consensus by establishing the foundation to focus data-gathering efforts, shape the alternatives and evaluate tradeoffs between them, and finally, select the best options for investment.

PROCESS AND PUBLIC PARTICIPATION

Following Board approval of the objectives and targets, PPACG hosted multiple TAC workshops to develop scoring criteria. The committees and PPACG staff ultimately recommended 12 scoring criteria to capture the most significant and measurable components of approved targets.

WEIGHTING OF EVALUATION CRITERIA AND INVESTMENT PRIORITIES

While evaluation criteria act as a tool to score possible investments, a process of prioritizing, or weighting, the evaluation criteria was needed to identify which criteria are more important or valuable to regional stakeholders and the community. The assigned weight of each criterion places a level of importance on each relative to the others and assists in selecting projects that help to achieve the region's transportation system goals and investment priorities. During the evaluation of a candidate project, the technical score from each criterion is combined with the criterion's weight in order to create a weighted criterion score. The sum of the 12 weighted criterion scores is the project's total weighted score.

PROCESS AND PUBLIC PARTICIPATION

The weighting of the evaluation criteria was selected and approved through the TAC, CAC and BOD. Final approval by the BOD occurred in April 2018.

IDENTIFY STRATEGIES AND ANALYZE ALTERNATIVES

Scenario analysis may be used to assess alternative packages of strategies, to consider alternative funding levels, or to explore what level of funding would be required to achieve a certain level

of performance or growth scenario. To forecast future growth and analyze possible scenarios, a series of advanced analytical tools evaluated the impact of the plan on transportation, traffic, development and environmental issues. These analytical tools included:

- A transportation demand model based on the VISUM software platform. This model forecasted travel patterns, congestion, and demand levels.
- UrbanSIM, a socioeconomic distribution/forecasting tool, was used in the development of the Small Area Forecast and Development Scenarios.

SMALL AREA FORECAST

The Small Area Forecast (SAF) is a socioeconomic forecast used to model the location of population and employment within El Paso and Teller counties over the next 25 years. PPACG uses Census data, commercial employment data sets, local planning knowledge, and advanced modeling software to develop this forecast. The SAF serves as a key input for the Long-Range Transportation Plan (LRTP) and the regional travel model. The travel model and the Small Area Forecast are used in tandem to determine future transportation needs and develop potential growth scenarios.

PROCESS AND PUBLIC PARTICIPATION

PPACG hosted a public open house on July 9, 2018 from 4:00 to 6:00 PM to receive comments and answer questions about the 2045 Small Area Forecast. Ten members of the public were in attendance. Staff engaged in conversations with all attendees, but no formal/written comments were received.

SCENARIO DEVELOPMENT

The 2045 LRTP projects potential growth patterns, demographics shifts, technological advancements and other factors to assist planners and decision-makers in making the best possible transportation investments over the next twenty years. It is difficult to accurately forecast these changes even with the best data available. Scenario development helps planners and

decision-makers model possible futures to ensure the Long-Range Plan is flexible and responsive to unexpected challenges and opportunities.

PROCESS AND PUBLIC PARTICIPATION

PPACG launched a robust public outreach program to seek community input from a wide mix of local stakeholders and the general public from all parts of the PPACG region. The feedback received during this process ultimately led to three land-use scenarios; Infill, New Centers and Dispersed Development, the results of the scenarios are explained in Chapter 4. Each project was scored under all three land-use scenarios to ensure that regional transportation investments are robust under a range of possible futures. Public participation activities included a Scenario Planning Workshop and attendance at community events.

NEEDS ANALYSIS

An important component of planning transportation projects for the future is to gain an understanding of what regional needs exist today. PPACG collects maintenance and performance data for many types of infrastructure assets in the region like roads, bridges and transit vehicles. This information quantifies the condition of these assets and is used to establish a baseline for regional performance measures. However, this data does not paint the full picture of one's perception and user experience of transportation in the Pikes Peak Region. To gain a full perspective of regional transportation conditions and performance, PPACG launched an online survey to gauge public perception of regional transportation needs.

PROCESS AND PUBLIC PARTICIPATION

PPACG received 717 responses to the survey from a fairly representative segment of our region's population. The survey included questions about four different modes of travel; driving, bus/transit and bicycle and walking. The respondents were not required to answer all questions about all modes and of the 717 survey responses, 88 percent chose to answer questions about cars, driving and roads; 38 percent answered the series of

questions about bus/transit; 56 percent weighed in on bicycling; and 46 percent answered questions about walking. PPACG shared this Needs Report with project sponsors — entities who submit projects for consideration in the 2045 Long Range Transportation Plan (LRTP) — to ensure that proposed projects help meet the most pressing needs in the region. Key takeaways from the surveys and the analysis are detailed in Chapter 5.

CREATE A FISCALLY-CONSTRAINED PROJECT LIST

A fiscally-constrained project list is federally required. For projects to be included, and ultimately funded, in a Transportation Improvement Program, they must be listed in a fiscally-constrained Regional Transportation Plan. If a project is selected for funding in a Transportation Improvement Program process but is not included in the Regional Transportation Plan, the plan must be amended.

PROCESS AND PUBLIC PARTICIPATION

After each of the projects were scored, the average of the weighted scores for each scenario was used to develop the recommended fiscally-constrained project list. This list was then prioritized by member jurisdictions during two TAC workshop meetings. The prioritized list was then released for public comment and stakeholder workshops, before receiving final approval from the TAC, CAC and the Board of Directors. Chapter 8, The Implementation Plan is the final prioritized list and outlines how the projects selected align with the PPACG regional goals.

ADDITIONAL PLANNING FACTORS

To address the remaining planning factors required by federal law, PPACG staff analyzed and updated information and data from the 2040 Plan. Updates were made to the Environment, Transportation System Management and Operations (TSMO), Safety, Security, Freight, Public Health and Air Quality chapters. Additionally, a new chapter was added which outlines emerging transportation technologies. Detailed updates and results can be found in the subsequent chapters of the plan.

PROCESS AND PUBLIC PARTICIPATION

Members of all our committees (TAC, CAC and BOD) were given the opportunity to review and comment on all chapter drafts before final approval. Additionally, for much of the chapter updates, inter-agency communication and coordination was required to get the most up to date data and information. This included not only our member entities but also CDOT, FHWA and other federal agency data sites.

ON-GOING MONITORING OF THE 2045 MOVING FORWARD RTP

Planning requires that policies, programs, and projects are systematically assessed for its desired outcomes. Monitoring also assists in the early identification of unintended environmental impacts and provides information to update and fill gaps in baseline data necessary to inform future strategy development. Appraisal techniques must be evaluated and their effectiveness in predicting the outcomes of particular decisions put to the test. The products of on-going monitoring will be evaluated and incorporated as appropriate in the development of the next long-range regional transportation plan.

PLAN REVIEW AND ADOPTION

Development of the Moving Forward 2045 Regional Transportation Plan followed the process depicted in Figure 2-1. The PPACG Board of Directors released the draft document for a 30-day public comment period in October and November of 2019. The executive summary was also released in Spanish to ensure PPACG was able to reach the members of the community that had limited English speaking and reading abilities. Spanish was chosen, as it is the second highest percentage of spoken language in the region. PPACG also made Spanish translation services available if needed to interpret the remainder of the document. Additionally, the public was made aware that PPACG would reasonably accommodate any other needs to ensure we were able to reach out to people of all languages and abilities.

In October 2019, PPACG hosted two open houses to discuss the draft plan with citizens. PPACG staff also attended a community event to share the results of the 2045 plan and ask for public comments.

During the 30-day public review period, advisory committee meetings also included an opportunity for public comments, and comments received were distributed to the committees. Comments received were distributed to the committees in November and December for review and consideration for inclusion in the plan. Once final edits were made based on public and committee feedback, PPACG staff brought the final draft to TAC and CAC for final recommendation to the board. The PPACG Board of Directors gave their final approval and adopted the Moving Forward 2045 Regional Transportation Plan in its entirety in January 2020.



CHAPTER 3

SYSTEM PERFORMANCE REPORT

The PPACG system performance report outlines where we are now (current condition), where we want to go (targets), how we propose to get there (targets, strategies and project selection) and then finally, how we plan to monitor and adjust, as needed, to make progress.

OVERVIEW

MAP-21 introduced sweeping new performance planning and programming requirements for state DOTs and MPOs. MAP-21 transformed the Federal-aid highway program and the Federal transit program by requiring a transition to performance-driven, outcome-based approaches to key areas. With respect to planning, MAP-21 leaves the basic framework of the planning process largely untouched. However, the statute introduced critical changes to the planning process by requiring States, MPOs, and operators of public transportation to link investment priorities to the achievement of performance targets that they would establish to address performance measures in key areas such as safety, infrastructure condition, congestion, system reliability, emissions, and freight movement. Accordingly, the final rule establishes that the statewide and metropolitan transportation planning processes must provide for the use of a performance-based approach to decision-making. The current authorization, Fixing American’s Surface Transportation (FAST) Act continues and refines this approach.

PERFORMANCE BASED PLANNING

Performance-based planning applies performance management principles to transportation system policy and investment decisions. It is a system-level, data-driven process that identifies strategies and investments. Using specific performance measures and agreeing upon desired targets provides an objective, quantified basis for policies and investments, and improves accountability in communicating with stakeholders and the public.

The emphasis on Performance Based Planning and Programming that began with the Moving Ahead for Progress in the 21 Century Act (MAP-21) is intended to:

- Transform the Federal-aid Highway Program and to provide a framework for the most efficient investment of Federal transportation funds;
- Refocus on national transportation goals;
- Increase the accountability and transparency of the Federal-aid Highway Program; and
- Improve decision-making.

The Performance management process will be carried out using six essential steps:

- 1. National Goals:** Congressionally established goals or program purpose to focus the Federal-aid highway program into specific areas of performance.
- 2. Measures:** FHWA-established measures for assessing performance/condition in carrying out performance-based Federal-aid highway programs.
- 3. Targets:** Targets established by Federal-aid highway funding recipients for the measures to document future performance expectations.
- 4. Plans:** Development of strategic and/or tactical plans by Federal funding recipients to identify strategies and investments that address performance needs.

5. Reports: Development of reports by Federal funding recipients that document progress toward target achievement, including the effectiveness of Federal-aid highway investments.

6. Accountability and Transparency: FHWA-developed requirements for Federal funding recipients to use to achieve or make significant progress toward targets.

With the establishment of national performance goals and measures, the states and MPOs select specific performance targets (a quantity: a number, ratio, percent, etc.) and develop plans designed to help reach those targets. For accountability and transparency, reports are made describing progress toward achieving the targets and evaluating the effectiveness of investments. This is an iterative process where subsequent plans and policies are revised to make greater progress toward achieving performance targets. Ideally, coordination and data are also improved over time. The concept is to move toward an objectively accountable system that reflects the effectiveness of investment decisions, allowing federal funding recipients to improve decision-making.

The major benefit of performance-based planning will be measurable progress toward specific goals, increasing the intelligence and accountability of the planning and programming processes. The alternative is to rely on general policy statements that can't be connected directly with results and on investment decisions whose outcomes can't easily be measured. Performance management organizes these efforts so that measurable progress is part of the entire planning effort, with policies connected to measures and measures connected to targets, within a cooperative framework that includes regular reporting.

A significant limitation of performance-based planning is of course the availability of data. While data is reasonably available for the federally required performance measures, a more robust multi-modal performance management system will require more data across all modes of travel. Most significantly lacking are standardized data about bicycle and pedestrian system usage and conditions.

PERFORMANCE MEASURES AND TARGET SETTING

Federally required performance measures assess conditions and performance related to the national goals. There are a total of twenty federally required performance measures: five safety, four pavement condition, two bridge condition, two travel time reliability, one freight movement, four transit, and two congestion mitigation and air quality. In addition to federally required measures, state DOTs and MPOs are encouraged to identify measures that further help achieve either the federal goals or other goals as set by the state or region. PPACG chose to include additional measures in their reporting to coincide with goals and objectives that were specific to the region.

While performance measures are the types of figures that are to be created from data and reported, performance targets represent the performance levels we are trying to reach. State DOTs and MPOs are required to establish performance targets for each performance measure. MPOs may develop their own performance targets in cooperation with State DOTs and transit agencies, or they may choose to support the state's targets. For the federally required measures, PPACG committees and staff chose to support the state set targets. This is the preferred option because it helps to avoid duplication of effort and promotes consistency between state and regional planning and programming. For the additional regional specific measures, PPACG set their own targets based on region specific data (see Tables 3-1 through 3-5).

REPORTING

Under the Final Planning Rule, State DOTs will submit biennial reports to FHWA on the condition and performance of the National Highway System (NHS). They will submit their targets in a baseline report at the beginning of each performance period and report progress in achieving targets at the midpoint and end of the performance period. The MPOs are not be required to provide separate reporting to FHWA. However, State DOTs and MPOs need to agree on a reporting process as part of their Metropolitan Planning Agreements.

PPACG AND CDOT HAVE AGREED ON THE FOLLOWING PROCESS FOR REPORTING

- Inform CDOT by established dates of each performance period whether PPACG intends to establish their own specific numeric targets for all the performance measures, or support CDOT targets for the federally required measures.
 - If PPACG plans to establish their own targets they will:
 - Establish targets with coordination with CDOT or MMT as needed; and
 - Provide CDOT with data and documentation about the targets and why they were chosen.
- Have the PPACG Board of Directors formally adopt the infrastructure condition targets through resolution by the date set for each performance period.
- Work with CDOT and other pertinent stakeholders to address areas of concern related to performance measures and targets identified in the LRTP.
- Integrate into the metropolitan planning process, the performance goals, objectives, performance measures, and targets described in other CDOT transportation plans and processes such as applicable portions of the Risk-Based Asset Management Plan.
- Include a description in the Transportation Improvement Program (TIP) of the anticipated effect of the TIP toward achieving infrastructure condition and system performance targets in the RTP, linking investment priorities in the TIP to those targets.
- Include baseline infrastructure condition performance and system performance, targets and progress toward achieving these targets in the system performance report in the RTP.
- Include an infrastructure condition and system performance report evaluating the condition and performance of the transportation system with respect to the applicable targets, including progress achieved by the PPACG in achieving these performance targets.

PERFORMANCE PERIOD

MPOs will set targets and report baseline data and progress toward targets in performance periods as outlined by federal regulations. Target setting is required either annually or every four years for MPOs depending on the measures as outlined below.

TARGET SETTING TIMEFRAMES

Safety: Annual

First cycle – February 2017

Next cycle – February 2018

System Performance and Preservation: Four years

First cycle – November 2018

Next cycle – November 2022

Congestion Mitigation and Air Quality: Four years

First cycle – November 2018

Next cycle – November 2022

*Transit: Annual**

First cycle – 2018

Next cycle – 2019

** set by The City of Colorado Springs Mountain Metro
Transit in coordination with PPACG*

MINIMUM CONDITION

Each year, FHWA will determine whether states are meeting minimum condition level for bridges and interstates. If the minimum condition level for interstates is not met for two consecutive years, or the minimum condition level for bridges is not met for three consecutive years, the state will be required to dedicate a greater share of funding toward that end. In planning and programming, therefore, the states and MPOs should keep in mind both their four-year targets and the minimum condition levels for bridges and interstates.

INTEGRATION IN THE MTP PROCESS

Federal regulations require that MPOs incorporate performance-based planning into their long-range plan processes. Chapter 2, Planning Process and Public Involvement outlined how PPACG incorporated PBPP into the creation of Moving Forward 2045. The following steps occurred:

1. Formulated PPACG’s Vision, Mission, and Principles.
2. Created Goals and objectives.
3. Identified Performance Measures.
4. Analyzed baseline data and set targets.
5. Evaluated strategies and scenarios for future regional growth.
6. Integrated scoring criteria and a weighting scheme for project selection.
7. Established a system performance report and procedures for future system monitoring (report can be found in tables 3–1 through 3–5).

INTEGRATION OF OTHER PERFORMANCE-BASED PLANS

The goals, objectives, performance measures, and targets from the following other performance-based plans and programs are also required to be integrated into the transportation planning process:

Transportation Improvement Program (TIP): description in the Transportation Improvement Program (TIP) of the anticipated effect of the TIP toward achieving infrastructure condition and system performance in the RTP, linking investment priorities in the TIP to those targets and goals outlined in the LRTP.

Congestion management process: A congestion management process (CMP) is a systematic and regionally-accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet State and local needs. The CMP uses an objectives-driven, performance-based approach to planning for congestion management. Through the use of congestion management objectives and performance measures, the CMP provides a mechanism for ensuring that

investment decisions are made with a clear focus on desired outcomes. This approach involves screening strategies, using objective criteria, and relying on system performance data, analysis, and evaluation. The CMP is integrated into both the LRTP and the TIP.

Freight plans: The FAST Act established a national policy of maintaining and improving the condition and performance of the National Multimodal Freight Network (“the Network”) to ensure that “the Network” provides a foundation for the U.S. to compete in the global economy. The FAST Act specifies goals associated with this national policy related to the condition, safety, security, efficiency, productivity, resiliency, and reliability of the Network, and also to reduce the adverse environmental impacts of freight movement on the Network. The Fast Act also requires an assessment of the condition and performance of the Network; and barriers to improved freight transportation performance (and opportunities to overcome the barriers). Freight plans should help to inform the planning and programming processes.

Asset management plans: Transportation Asset Management Plans (TAMP) act as a focal point for information about the assets, their management strategies, long-term expenditure forecasts, and business management processes. It is a tactical-level document which focuses its analysis, options development, programs, delivery mechanisms, and reporting mechanisms on ensuring that strategic objectives are achieved. TAMPs are required for state DOTs but not for MPOs. However, state DOTs must coordinate with MPOs and regional partners to the maximum extent possible to ensure a well-rounded process and plan. As with the other performance-based plans, Asset Management Plans should also help to inform the planning and programming processes.

Transit Asset Management Plan: Every agency must develop a transit asset management (TAM) plan if it owns, operates, or manages capital assets used to provide public transportation and receives federal financial assistance under 49 U.S.C. Chapter 53 as a recipient or subrecipient. Each transit provider must designate

an Accountable Executive (49 CFR 625.5) to ensure appropriate resources for implementing the agency’s TAM plan and the Transit Agency Safety Plan. Mountain Metro Transit is responsible for completing the requirements of this plan and other FTA performance measures (<https://coloradosprings.gov/mountain-metro>).

Each TAM plan should:

- Outline how people, processes, and tools come together to address asset management policy and goals
- Provide accountability and visibility for furthering understanding of leveraging asset management practices
- Support planning, budgeting, and communications to internal and external stakeholders
- Asset Management Plans should also help to inform the planning and programming processes.

SCENARIO PLANNING

For MPOs that voluntarily elect to develop multiple scenarios when developing the MTP, the MPO must conduct an analysis as part of the systems performance report on how the preferred scenario has improved the conditions and performance of the transportation system and how changes in local policies and investments have impacted the costs necessary to achieve the identified performance targets. [23 CFR 450.324(f)(4)(ii)].

PPACG member jurisdictions and staff worked together to incorporate the three scenarios into the planning process outlined in chapter 4. To do this, the three scenarios were considered as part of the PPACG scoring process. The PPACG committees decided that the project scoring would be best if the scores were averaged across the three scenarios. Specifically, each project was scored based on each of the scenarios and then the scores were averaged to arrive at a final score. This meant that no one scenario was chosen as ‘best’ for the region, and therefore determining how one scenario would impact the performance over another is not possible. For future LRTPs, PPACG and members may consider altering this strategy.

FUNDING IMPACTS

Integration of performance planning with the MTP process, including the maintenance of minimum standards, is likely to have certain impacts on project selection and funding. The level of impact will be determined by the difference between baseline conditions and performance targets that have been adopted by PPACG.

Given that the performance measures emphasize the state of repair of roads and bridges, there may be more emphasis on maintenance and preservation of the existing system versus expansion of the system. It is possible that expansion projects may be set aside in favor of projects that will improve system condition. Some additional consideration may also be given to the long-term maintenance needs of expansion projects that are being considered, effectively increasing their cost. The long-term cost of roads and bridges will be higher if those facilities must be maintained at a higher level.

While most people are used to discussing congestion, and planners and engineers are accustomed to thinking about road capacity, the performance measures emphasize a different idea: reliability. The difference is that reliability deals with unexpected delay in travel. While routine traffic causes congestion and delay, travelers can plan for routine delay and arrive at their destinations when they expect to arrive. Unexpected delay — or an unreliable system — can be far more disruptive by creating unpredictable conditions. And while capacity increases may help with routine congestion, they may be of no use in combating irregular congestion caused by incidents and other disruptions to the system. Severe delay can occur on roads with adequate capacity. The emphasis on reliability may favor more investment in incident management, alternate routes, and Intelligent Transportation Systems (e.g. dynamic messaging signs) technology that provide travelers with better information about current conditions — those projects may be more useful than capacity projects in meeting reliability targets.

All performance measures and their associated targets, ideally, will help to inform decision makers on how best to invest their limited transportation funds. While tradeoffs for investments are always necessary given funding revenues do not meet funding needs, this performance-based process is meant to help select where best to spend those funds based on national, state and regional goals and priorities with a data-based approach.

NEXT STEPS

This performance-based planning and programming process is new to the region and the nation as a whole and will therefore take some time to integrate fully. PPACG established and finalized our performance measures, baseline data and targets for the first time in 2018 and will be working closely with our local partners to identify ways to further incorporate the results of performance analysis into our planning procedures. While PPACG has completed the beginning steps of PBPP integration as identified in Chapter 2: Planning Process and Public Involvement, the following items are the next steps in the process which will enable the PPACG region to continue making improvements:

1. Monitoring progress

Monitoring, evaluating, and reporting performance is a keystone part of PBPP. The purpose of PBPP is to ensure that results of previous investments and policies help inform future decision-making so that PPACG and member jurisdictions can understand approaches that work best given constraints and conditions. If data on performance are simply collected but not analyzed or used to influence future decisions, planning and programming is not performance based. For performance planning to help inform future decisions about investments and priorities, data must be collected, evaluated, and reported on an on-going basis.

PPACG plans to follow the federal guidance on evaluating and setting new targets. Data analysis and target setting will occur annually for the federally required safety and transit measures.

PPACG staff will reanalyze the baseline data, identify progress and set new targets for all other performance measures for the next long-range plan (2050), which is every four years.

2. Identify new strategies and funding priorities if needed

Once progress towards meeting regional goals and targets has been assessed, PPACG and the member jurisdictions will need to identify what strategies and/or projects are working and which are not. This will likely need to be done at the regional and state level, given that PPACG has elected to support the state targets for the federal measures. Therefore, this assessment will need to be done in close coordination with the state. CDOT will need to first identify their progress and then discuss how PPACG can better help to meet the state targets.

3. Transportation Agency Safety Plan and Targets

Certain operators of public transportation systems that receive federal funds under FTA's Urbanized Area Formula Grants must develop safety plans that include the processes and procedures to implement Safety Management Systems (SMS). The plan must include safety performance targets. Transit operators also must certify they have a safety plan in place meeting the requirements of the rule by July 20, 2020. The plan must be updated and certified by the transit agency annually. PPACG, as the regional MPO must include these measures in their performance reports. Since this plan will be complete after final adoption of the 2045 LRTP, PPAG is only required to include these measures if there is an amendment to the plan. If this occurs PPACG will also include these measures in the update.

SYSTEM PERFORMANCE REPORT

The figures on the following pages outline the performance reports for each of the regional goals and objectives.



GOAL 1 SAFETY HIGHLIGHTS

Areas we are doing well: Unfortunately, the PPACG region is not trending in the direction we would like and is not doing better than the state average for all measures.

Areas that need attention: All crashes and crash rates for fatalities, serious injuries, bike and pedestrian are increasing and the PPACG region may need to look into additional projects and strategies to decrease regional statistics, as well as help meet the established state safety targets.



GOAL 2 MOBILITY HIGHLIGHTS

Areas we are doing well: Level of travel time reliability for interstate and non-interstate are currently better than the state average.

Areas that need attention: Mode share and providing multimodal options. Also, maintaining current levels of reliability with the anticipated and trending increase in congestion and population growth.



GOAL 3 ECONOMIC VITALITY HIGHLIGHTS

Areas we are doing well: Environmental mitigation for critical habitats and storm water are essential factors within NEPA that are considered for PPACG projects in the region.

Areas that need attention: Air quality measures including all four of the standards.



GOAL 4 MAINTENANCE AND OPERATIONS HIGHLIGHTS

Areas we are doing well: Transit infrastructure condition and maintenance are currently meeting set targets and anticipate maintaining current conditions. Percent of interstate pavements and NHS bridges in good condition are better than the statewide average percent.

Areas that need attention: Non-interstate pavement condition is worse than the state average percent and there is a higher percent of non-interstate roads that are in poor condition. Overall, local bridge and pavement conditions are trending down and will need increased funding revenue than currently available, to maintain and improve the existing conditions.



GOAL 5 CONNECTIVITY AND ACCESSIBILITY HIGHLIGHTS

Areas we are doing well: Increasing trend for multimodal options.

Areas that need attention: PPACG may need to identify additional baseline data and targets to track performance for this goal to identify modal connectivity and transit access.





FIGURE 3-1A
PPACG GOAL 1 — SAFETY

Federally required measures — PPACG targets are statewide
Region specific measures — PPACG targets are regionwide

Reduce hazards for all modes of travel

Objective 1: Motorized Vehicles (vehicle–vehicle)

Enhance safety features to reduce hazards

Performance Measures	Current Condition	Target	Project Scoring Criteria	Criteria Weighting
Number of fatalities	648	644	Level of Service Safety (LOSS) and FHWA crash reduction factors for fatalities and injuries	13.5
Fatality Rate (per 100 million VMT)	1.211	1.21		
Number of serious injuries	2,823	2,909		
Serious Injury Rate (per 100 million VMT)	5.277	5.575		

Objective 2: Non-motorized (vehicle–pedestrian/cyclist)

Enhance safety features to reduce hazards

Performance Measures	Current Condition	Target	Project Scoring Criteria	Criteria Weighting
Number of non-motorized fatalities and serious injuries	531	514	Level of Service Safety (LOSS) and FHWA crash reduction factors for fatalities and injuries	13.5



FIGURE 3-1B
PPACG GOAL 1 — SAFETY

Federally required measures — PPACG targets are statewide
Region specific measures — PPACG targets are regionwide

Reduce hazards for all modes of travel

Objective 3: Transit
Enhance safety features to reduce hazards

Performance Measures	Current Condition	Target	Project Scoring Criteria	Criteria Weighting
TBD in 2020 as part of the Public Transportation Agency Safety Plan	TBD in 2020 as part of the Public Transportation Agency Safety Plan	TBD in 2020 as part of the Public Transportation Agency Safety Plan	NA	13.5



FIGURE 3-2A
PPACG GOAL 2 — MOBILITY

Federally required measures — PPACG targets are statewide
Region specific measures — PPACG targets are regionwide

Optimize the movement of people and goods

Objective 1: Auto & Freight

Maintain or improve resiliency and redundancy of transportation system

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
Level of Travel Time Reliability (LOTTR) Interstate	91.4%	82%	81%	PM Peak Vehicles Hours Traveled (VHT)	9.6
LOTTR Non Interstate	85.1%	64%	64%		
Truck Travel Time Reliability Index (TTTRI) for the Interstate System	1.42	1.45	1.5		

Objective 2: Transit

Enhance fixed-route transit

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
Annual Ridership	3,001,246	NA	Meet or exceed system-wide fixed-route ridership by at least 10%	Will project increase ridership?	6.9

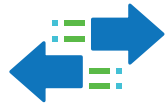


FIGURE 3-2B
PPACG GOAL 2 — MOBILITY

Federally required measures — PPACG targets are statewide
Region specific measures — PPACG targets are regionwide

Optimize the movement of people and goods

Objective 3: Non-motorized
Maintain or improve bike and walk mobility

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
Mode Share					
% Walk	3.3%	NA	Increase mode share to 5% for walking to work	Will project increase bike and/or walk mode share?	4.5
% Bike	0.5%		Increase mode share to 1% for biking to work		



FIGURE 3-3A
PPACG GOAL 3 — ECONOMIC VITALITY

Federally required measures — PPACG targets are statewide

Region specific measures — PPACG targets are regionwide

Improve competitiveness of the regional economy and residents quality of life through strategic transportation investments and integrated transportation technology

Objective 1: Environment

Improve or mitigate impacts to air quality

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
CMAQ — Air Quality Volatile Organic Compounds (VOC) Reduction Particulate Matter, 10 micro-meters or less (PM10) Reduction Carbon Monoxide (CO) Reduction Nitrogen Oxides (Nox) Reduction	PPACG and CDOT required to have the same targets.	101.561 kg/day 49.639 kg/day 1,845.826 kg/day 420.038 kg/day	105 kg/day 152 kg/day 1,426 kg/day 106 kg/day	Air Quality — Travel model VMT/emissions	5.8
Critical Habitats	696,396 acres	NA	Mitigate impacts to critical habitats through the NEPA process	Project influence areas	
Storm Water	81,928 square miles of road (collector and above)		Comply with storm water best management practices	Increase/decrease in impervious surface	



FIGURE 3-3B
PPACG GOAL 3 — ECONOMIC VITALITY

Federally required measures — PPACG targets are statewide

Region specific measures — PPACG targets are regionwide

Improve competitiveness of the regional economy and residents quality of life through strategic transportation investments and integrated transportation technology

Objective 2: Tourism and Economy

Enhance key corridor infrastructure that supports tourism and economic competitiveness

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
Commercial Vehicle Delay on Interstate System	94% of the roads are not congested	NA	94% of the roads are not congested	Vehicle Delay — V/C	8.3
	4% are becoming congested		4% becoming congested		
	2% are congested		2% are congested	Benefit Cost Ratio — B/C	13.1



FIGURE 3-3C
PPACG GOAL 3 — ECONOMIC VITALITY

Federally required measures — PPACG targets are statewide

Region specific measures — PPACG targets are regionwide

Improve competitiveness of the regional economy and residents quality of life through strategic transportation investments and integrated transportation technology

Objective 3: Infill

Increase transportation investments in infill areas, with a focus on existing infrastructure

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
# of projects in urbanized area based on TAZ population density	93%	NA	At least 95% of projects in the 2045 LRTP fiscally constrained project list should be located within the 2015 Population and Employment Boundary, or provide connecting infrastructure to major population and/or employment	Project connects to or within major Population or Employment Boundary or within Urbanized Area	7.4



FIGURE 3-4A
PPACG GOAL 4 — MAINTENANCE AND OPERATIONS

Federally required measures — PPACG targets are statewide, except for transit — only for MMT service area

Region specific measures — PPACG targets are regionwide

Improve the efficiency, condition, and economically sustainable operations of the existing transportation network, including roads, transit, and non-motorized facilities

Objective 1: Roadway

Maintain or improve current roadway infrastructure condition (collector and above)

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
% Interstate System in good condition	55.22%	45%	47%	International Roughness Index (IRI) Classification of the segment or segments	12.0
% Interstate in poor condition	0.99%	0.25%	1%		
% Non interstate in good condition	27.03%	49%	51%		
% Non interstate in poor condition	3.86%	0.96%	2%		



FIGURE 3-4B
PPACG GOAL 4 — MAINTENANCE AND OPERATIONS

Federally required measures — PPACG targets are statewide, except for transit — only for MMT service area

Region specific measures — PPACG targets are regionwide

Improve the efficiency, condition, and economically sustainable operations of the existing transportation network, including roads, transit, and non-motorized facilities

Objective 2: Bridge

Maintain or improve current bridge infrastructure condition

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
% National Highway System (NHS) Bridges in good condition (by deck area)	51.23%	49%	44%	Bridge Sufficiency Rating (average if more than one)	12.0
% NHS Bridges in poor condition (by deck area)	2.88%	4%	4%		



FIGURE 3-4C
PPACG GOAL 4 — MAINTENANCE AND OPERATIONS

Federally required measures — PPACG targets are statewide, except for transit — only for MMT service area

Region specific measures — PPACG targets are regionwide

Improve the efficiency, condition, and economically sustainable operations of the existing transportation network, including roads, transit, and non-motorized facilities

Objective 3: Transit

Maintain or improve current fixed-route vehicle infrastructure condition

Performance Measures	PPACG Baseline Condition	Statewide Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
% of revenue vehicles by type that exceed the usual life benchmark (ULB)	Bus: 0% Cutaway: 33.33% Minivan: 0% Van: 0%	NA	Bus: 0% Cutaway: 33.33% Minivan: 0% Van: 0%	Mountain Metropolitan Transit — Asset Management Conditions (average if multiple items in project)	12.0
% of non-revenue service vehicles by type that exceed ULB (equipment)	Automobiles: 34.78% Trucks & Other Rubber Tire Vehicles: 20%		Automobiles: 34.78% Trucks & Other Rubber Tire Vehicles: 20%		
% of facilities that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale	Administrative & Maintenance Facilities: 0%		Administrative & Maintenance Facilities: 0%		
% of facilities that are rated less than 3.0 on the TERM Scale	Passenger & Parking Facilities: 0%		Passenger & Parking Facilities: 0%		



FIGURE 3-5A
PPACG GOAL 5 — CONNECTIVITY AND ACCESSIBILITY

Federally required measures — PPACG targets are statewide
Region specific measures — PPACG targets are regionwide

Ensure adequate and equitable access to destination using a variety of modes

Objective 1: Transit
Enhance fix-route transit access

Performance Measures	PPACG Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
Population served within 1/4 mile of a transit stop — this was chosen as a future planned measure	NA	Meet or exceed the population served within 1/4 mile of a transit stop	Population served within 1/4 mile of transit stop	7.8

Objective 2: Non-motorized
Enhance NM facilities according to attributes identified in the regional non-motorized plan

Performance Measures	PPACG Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
Number of miles identified in the non-motorized improvement corridors still needing improvements	626.3 miles	Reduce the number of miles identified in the non-motorized improvement corridors still needing improvements	Number of miles reduced in the Improvement Corridors Report of the PPACG Regional Non-motorized Transportation System Plan	4.8



FIGURE 3-5B
PPACG GOAL 5 — CONNECTIVITY AND ACCESSIBILITY

Federally required measures — PPACG targets are statewide
Region specific measures — PPACG targets are regionwide

Ensure adequate and equitable access to destination using a variety of modes

Objective 3: Modal Integration
Enhance modal connections and improve existing ADA accessibility

Performance Measures	PPACG Baseline Condition	Target	Project Scoring Criteria	Criteria Weighting
Missing links connect existing pedestrian, bicycle, or transit facilities (e.g., trails, sidewalks, bike lanes, park and ride, trailhead parking) — this was chosen as a future planned measure	NA	Reduce the number of missing links between bicycle, pedestrian, and transit facilities	Modal integration and ADA Accessibility — Will project connect missing links to existing bike/pedestrian/transit or remove barriers (physical, economic, or ADA)	6.4

CHAPTER 4

FUTURE REGIONAL DEVELOPMENT

The demand for transportation services is directly related to an area's demographic, economic, and geographic characteristics. By 2045, the Pikes Peak region will be home to more than one million people. This chapter examines possible growth scenarios and their effects on the transportation system.

The demand for transportation services is directly related to the demographic, economic, and geographic characteristics of an area. The total demand for transportation typically rises in proportion to increases in population, employment, and improved economic conditions. As an urban area expands, the numbers and lengths of individual trips increase, unless densities and mixed-use developments increase at an equal or greater rate. Expanding population, employment, and urban area size, along with improved economic conditions, result in an increased need for transportation facilities and services. These include freight, roadway, transit, bicycle, and pedestrian facilities, along with strategies intended to increase the efficient use of existing facilities.

By 2045, the Pikes Peak region will be home to over one million people, growing by more than 300,000, as seen in Figure 4-1. In 2015, about 700,000 people lived in the region. One of the biggest changes is the increasing amount of people aged 65 and over. The State Demographer also forecasts the number of jobs to grow by almost 200,000 to 542,000 jobs in the next 25 years.

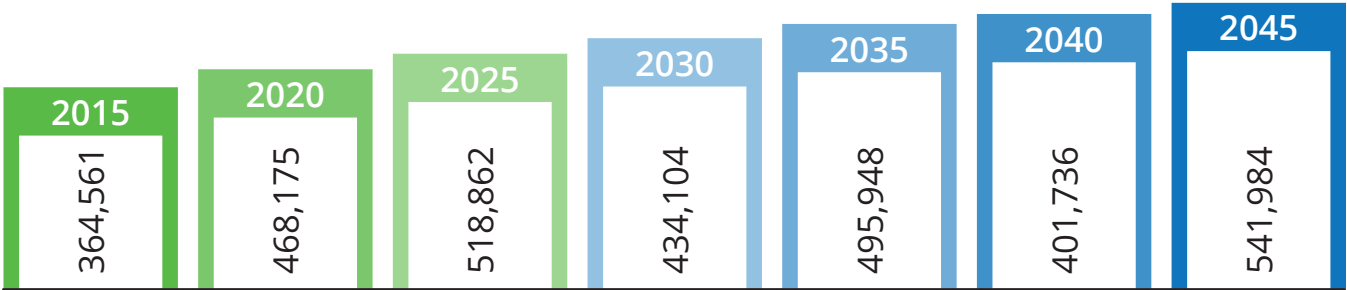
More people and jobs mean more trips to work, to shop, and for health and recreation. These trips will increase the demand on an already strained transportation network. Proactive regional



planning may be able to mitigate the potential issues on our regional transportation system. PPACG uses macro-level forecasts from the Colorado State Demography Office to create its Small Area Forecast, projecting where people might live and work so that transportation investments will address anticipated issues.

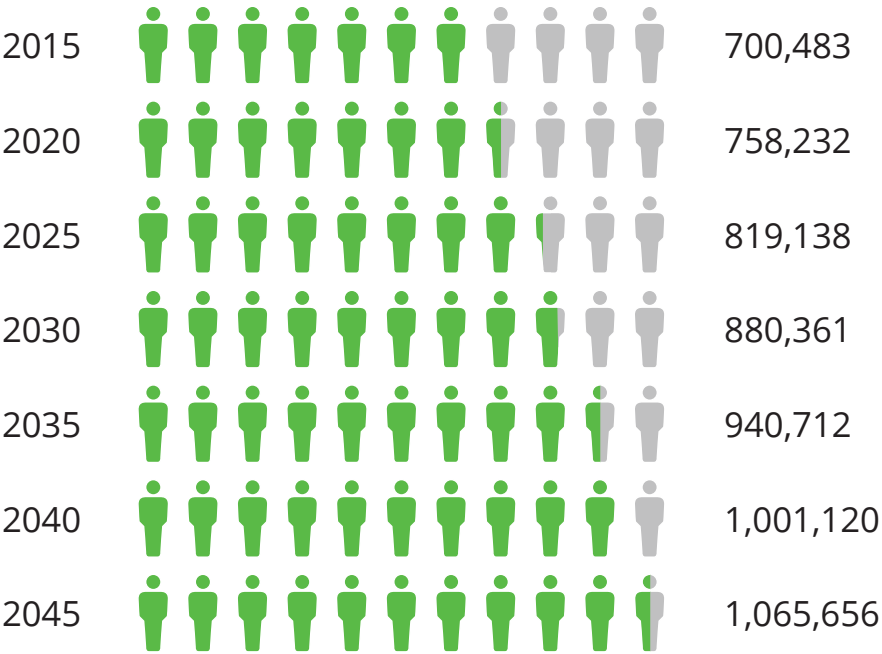
FIGURE 4-1
2015-2045 EMPLOYMENT AND POPULATION GROWTH

EMPLOYMENT GROWTH

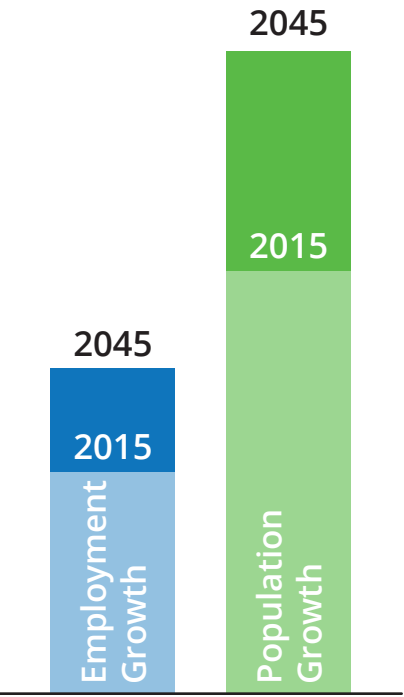


POPULATION GROWTH

Pikes Peak Area Regional projected population by 2045



COMPARISON OF GROWTH



2045 SMALL AREA FORECAST

The Pikes Peak Area Council of Governments prepares a socio-economic forecast every four years for each update of the Regional Transportation Plan (RTP). Development of a demographic forecast (i.e. the Small Area Forecast) is required by federal regulations to ensure that Regional Transportation Plans are based on “the latest available estimates and assumptions for population, land use, travel, employment, congestion, and economic activity” (23 CFR 450.324[e]). The Small Area Forecast is a socioeconomic forecast for El Paso and Teller counties and uses the best available data (U.S. Census data, commercial employment databases, etc.) and local planning knowledge. Once the Small Area Forecast is complete, it becomes a key input into the regional land use modeling system. This modeling system is used to assist in the analysis of key performance measures during development of the Regional Transportation Plan. The complete forecast can be seen in Appendix E.

BACKGROUND

To project future transportation needs and confirm that the 2045 Regional Transportation Plan is consistent with anticipated growth patterns, PPACG analyzed regional projections of population and employment and allocated them into small sub-areas of the region, referred to as transportation analysis zones (TAZs). There are 786 transportation analysis zones in the Colorado Springs Metropolitan Urbanized Area (Figure 4-2).

The regional population and employment control totals were developed using data from the Colorado State Demography Office and incorporated into the models associated with this forecast (Table 4-1). PPACG collaborated with local land-use planners, economic development staff, transportation planners, school district representatives, and other local organizations interested in the forecast to disaggregate the regional totals into the TAZs. The 2045 Small Area Forecast was developed and reviewed in 2017 and 2018 and approved for use in the development of the 2045 Regional Transportation Plan by the PPACG BoD on July 11, 2018.

TABLE 4-1
REGIONAL CONTROL TOTALS

REGIONAL	2015	2020	2025	2030	2035	2040	2045
Population	701,483	758,232	819,138	880,361	940,711	1,001,120	1,055,656
Employment	364,561	401,735	434,104	468,176	495,948	518,862	541,984
El Paso County							
Population	677,022	732,993	791,904	851,955	911,290	970,825	1,024,521
Employment	354,681	390,309	421,464	454,501	481,509	503,824	526,450
Teller County							
Population	24,461	25,239	27,234	28,406	29,421	30,295	31,135
Employment	9,880	11,426	12,640	13,675	14,439	15,038	15,534

THE MODEL

Many types of socioeconomic models exist. The disaggregation methodology used for the 2045 Small Area Forecast was a collaborative process involving local land-use planners, economic development staff, transportation planners, school district representatives, and other local organizations. The Colorado State Demographer develops an annual forecast for population and employment growth for each county in Colorado. Per the demographer’s forecasts, the study area (El Paso and Teller Counties) is expected to have 541,984 jobs and 1,055,656 people by 2045.

The population and employment forecasts for El Paso and Teller Counties are combined to develop regional control totals for PPACG’s Small Area Forecast. The land use model, UrbanSim, incorporates both the population and employment control totals on an annual basis, and ensures that the model’s projections meet but do not exceed expected growth. UrbanSim is an econometric land use model that uses real estate market parameters and location choice models to simulate real world buying and selling decisions by households and businesses. Model inputs can be seen in Figure 4-3.

FIGURE 4-2
TAZ MAP OF COLORADO SPRINGS URBANIZED AREA

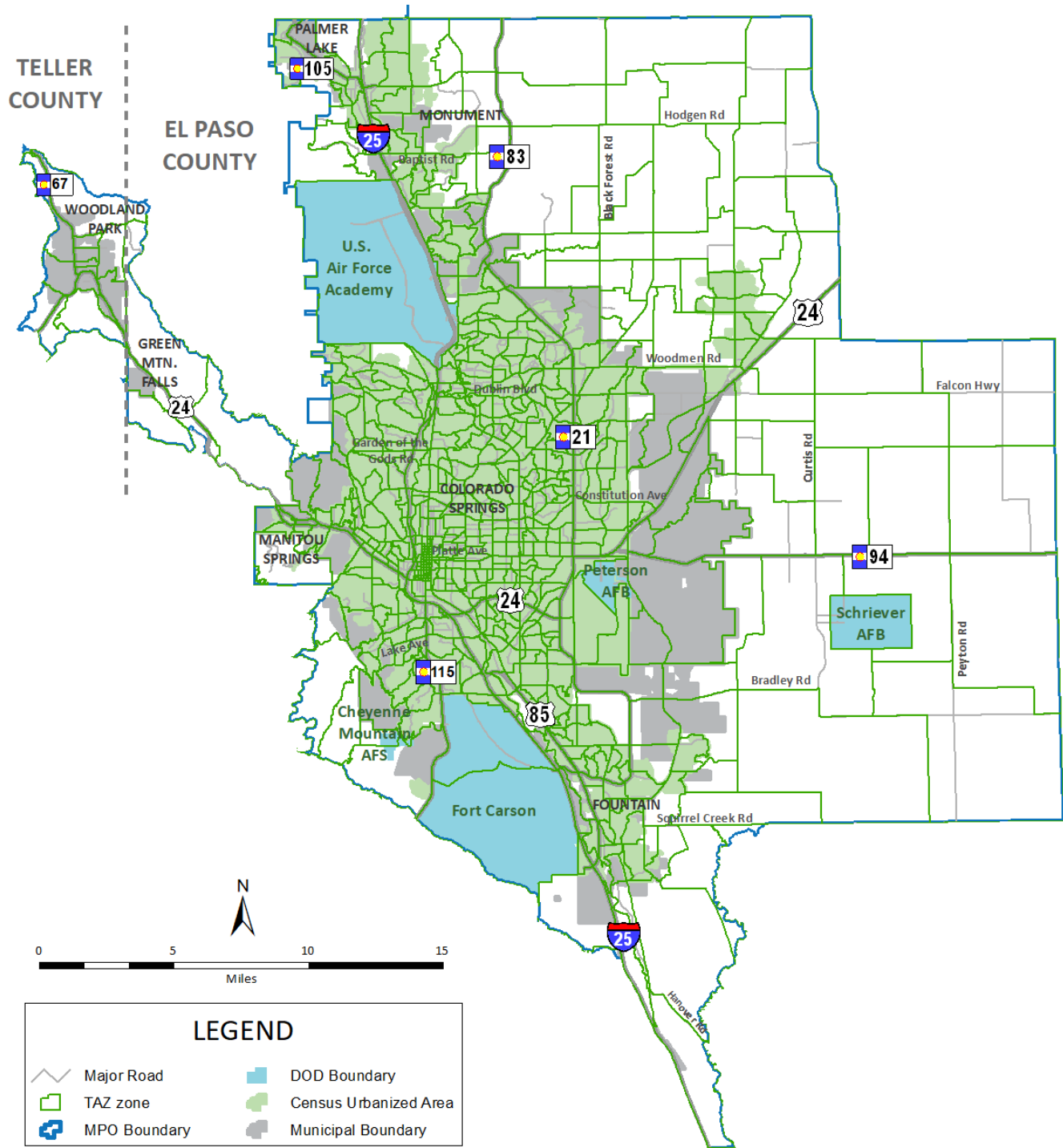
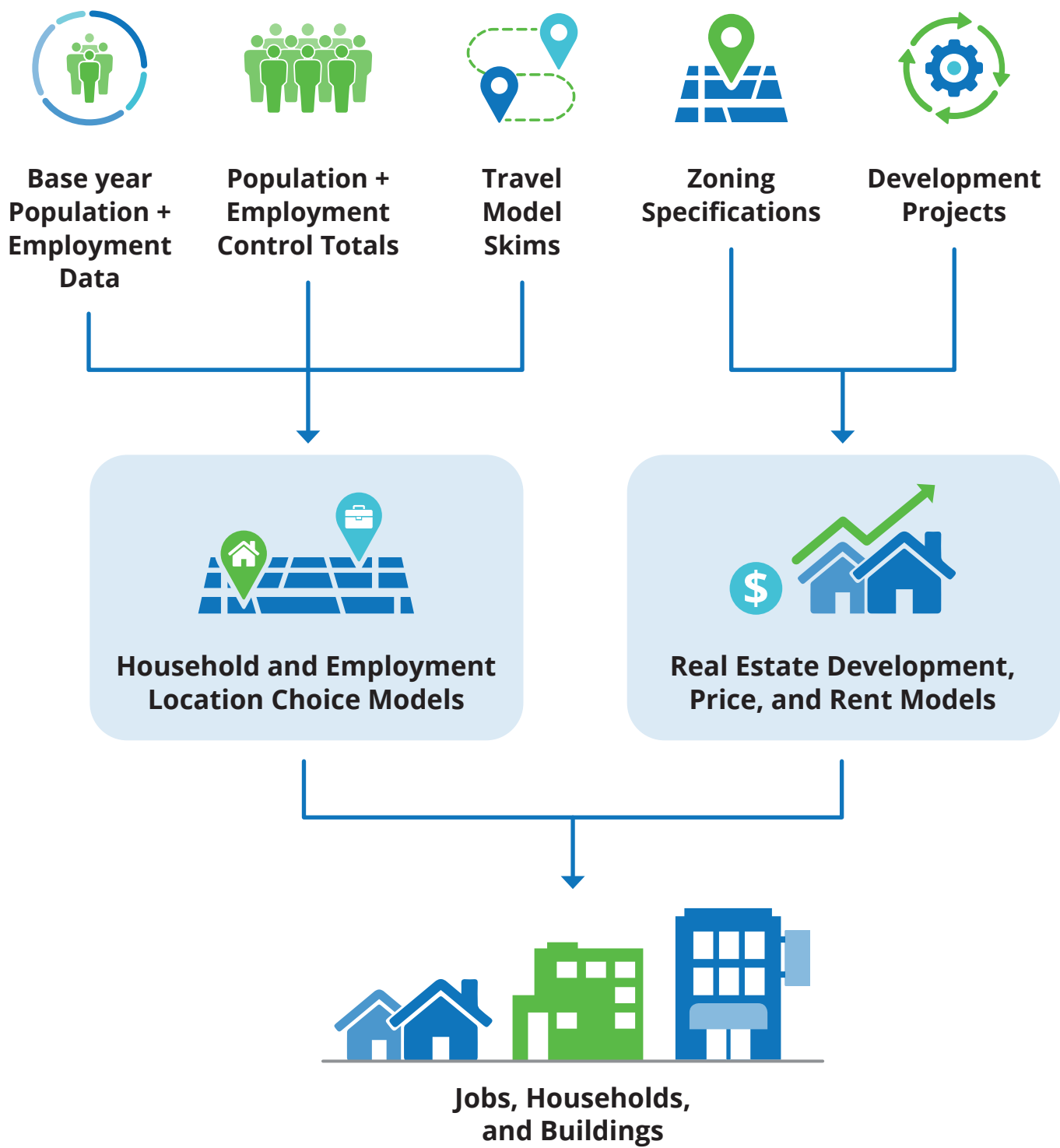


FIGURE 4-3
MODEL INPUTS AND DATA



SCENARIO PLANNING

PPACG developed three land use scenarios for use in the 2045 Long Range Transportation Plan and Small Area Forecast through an extensive public and stakeholder outreach process outlined in Chapter 2. Outreach efforts included a stakeholder workshop held on June 8, 2017 and six community events attended by PPACG staff throughout the summer of 2017. The three conceptual scenarios, as envisioned in the public process and approved by the PPACG Board of Directors, are summarized below:

INFILL

Under the Infill scenario, growth and development occur primarily in already-developed areas (i.e. existing activity centers). Most new housing occurs within already-developed areas in the form of townhomes, condos, apartments, or accessory dwelling units. High-quality transit serves people in the region’s existing activity centers, and many destinations are within walking distance.

NEW CENTERS

Under the New Centers scenario, already-developed areas and existing activity centers remain stable, while the majority of growth and development occurs in new activity centers. New Centers act as complete communities where people can find housing, jobs, shopping, and services within close proximity. Transit service provides accessibility within and between activity centers.

DISPERSED DEVELOPMENT

Under the Dispersed Development scenario, already-developed areas and existing activity centers remain stable, while the majority of new growth and development is more dispersed. This scenario follows a “business as usual” trend of growing outward, beyond the limits of existing cities and activity centers. Most housing is built in new single family subdivisions, while most jobs are located in new office parks along major roadway corridors. People largely depend on private automobile travel for daily trips to work, school, shopping, and recreation, and very few destinations are within walking distance.

TRANSPORTATION AND LAND USE

Land use and transportation planning are inextricably linked. At present, the low-density development patterns in the Pikes Peak region require the use of a vehicle for most of life's normal daily activities.

Current land use patterns and new developments in the Pikes Peak region do not have sufficient density to support effective regional transit service. New residential developments are usually removed from activity centers, are highly auto-dependent, and use a curvilinear street pattern that makes it both physically and financially difficult to provide even basic transit services. Compounding this is the possibility that areas currently lacking transit service often make future transit use less attractive by neglecting sidewalks, bus shelters, and other amenities.

Developments that take transit operations into account during design and construction encourage increased transit use and make transit operations more efficient. Combining compatible land uses and increasing densities complements and supports efficient transit, in addition to an overall reduction in automobile reliance.

Encouraging compact, higher-density development and re-development of existing communities along transit corridors is an important step in achieving the public's desire for better transit service throughout the region. The type and form of residential development along transit corridors are key factors in development potential and transit use. In order to ensure that the transit system will attract enough riders, prospective users must be able to live close by, preferably within half a mile. The only way to achieve this is with higher residential densities than those now found in the Pikes Peak region. This change in development would not only benefit those living near the transit station by offering them a convenient lifestyle, but would also benefit other neighborhoods by lowering traffic congestion, decreasing air pollution, and making more efficient use of infrastructure, which helps tax dollars achieve more.

Pursuing a future development scenario that increases density will decrease vehicle miles traveled, since compact development patterns shorten trip distances. Density increases the viability of transit systems by concentrating potential riders along routes and stops. Development policies that encourage higher density are determined by municipal and regional governments.

MODEL OUTPUT AND MAPS

Two types of maps were created to summarize model output — change maps and density maps. The change maps show whether a given transportation analysis zone (TAZ) is predicted to gain or lose jobs and/or residential units during the forecast period (2015 to 2045). Areas experiencing growth in jobs or residential units are shown in green; those experiencing losses are shown in blue; and those experiencing no change (plus or minus five jobs or units) are shown in gray. The density maps show the number of jobs or residential units per acre in 2015, 2030, and 2045. Major trends in population and employment growth will be summarized for each series of maps. Differences between the three land use scenarios will be highlighted as appropriate.

JOBS (2015–2045)

The majority of TAZs within the City of Colorado Springs and other incorporated areas see job growth under all three land use scenarios, with a few key differences:

- Job growth in the core downtown Colorado Springs area is much more pronounced under the Infill scenario than under the Dispersed Development or New Centers scenarios.
- The TAZs in eastern Colorado Springs, just east, northeast, and southeast of the Colorado Springs Airport, see no change in jobs between 2015 and 2045 under the Infill scenario. This area does experience job growth under the Dispersed Development and New Centers scenarios.

Under the Dispersed and New Centers scenarios, job growth is also seen in the northwest and southwest corners of El Paso County, as well as eastern Teller County in the TAZs surrounding Woodland Park. Under Dispersed Development, some job growth is also seen in eastern El Paso County.

RESIDENTIAL UNITS (2015–2045)

The majority of TAZs throughout the region see growth in residential units under all three land use scenarios. Under the Dispersed Development scenario, additional growth in residential units is seen in outlying areas including eastern and southeastern El Paso County, northern Teller County, and southern Teller County.

Significantly more growth in residential units is seen in many portions of Colorado Springs under the Infill and, to a lesser extent, New Centers scenarios than under Dispersed Development. However, there is very little difference in residential unit growth in the core area of downtown Colorado Springs under the three scenarios. These subsequent maps from the Small Area Forecast demonstrate the aforementioned model outputs.

FIGURE 4–4
2015–2045 INFILL JOBS CHANGE



FIGURE 4-5
2015-2045 DISPERSED JOBS CHANGE

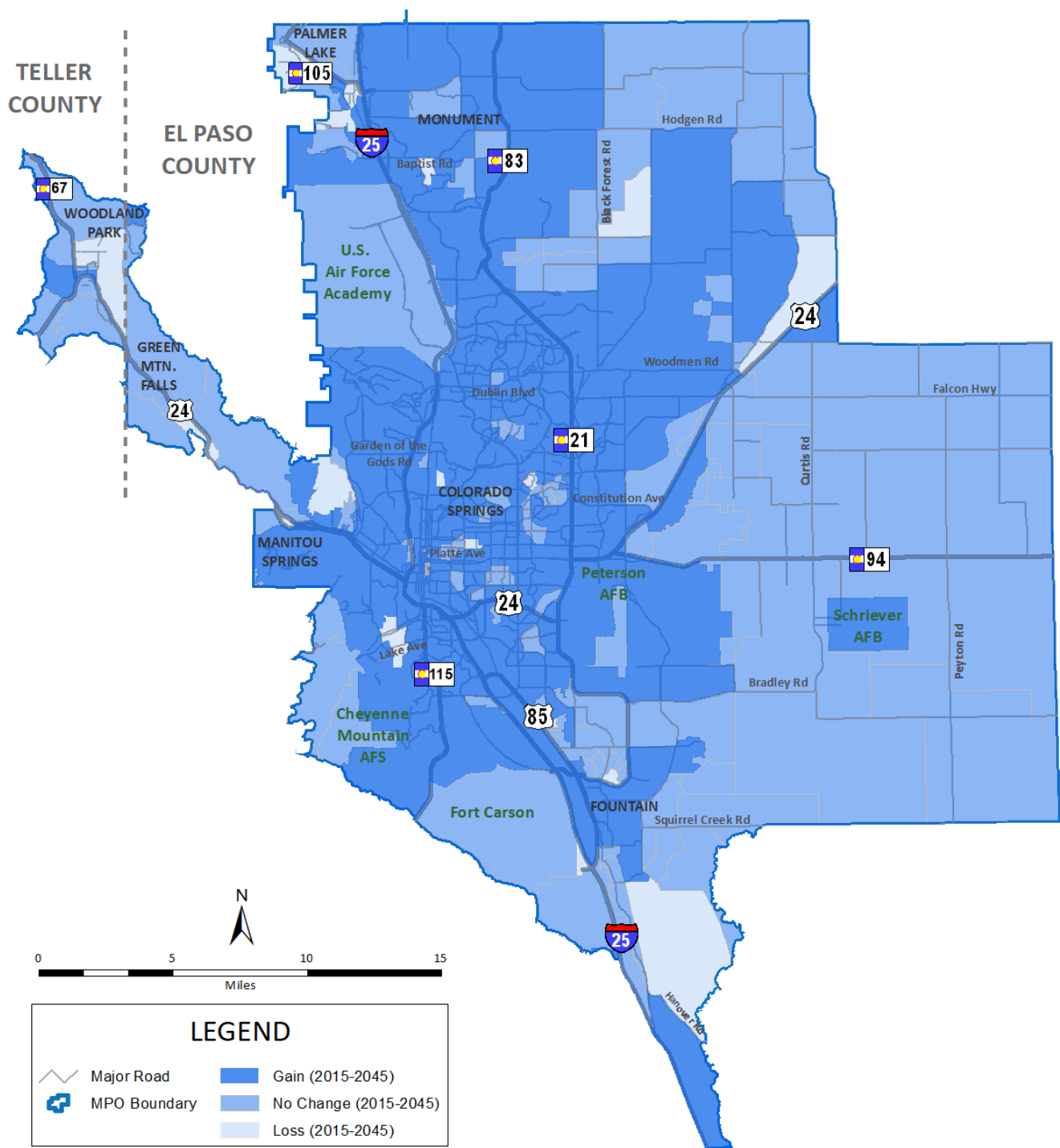


FIGURE 4-6
2015-2045 NEW CENTERS JOBS CHANGE

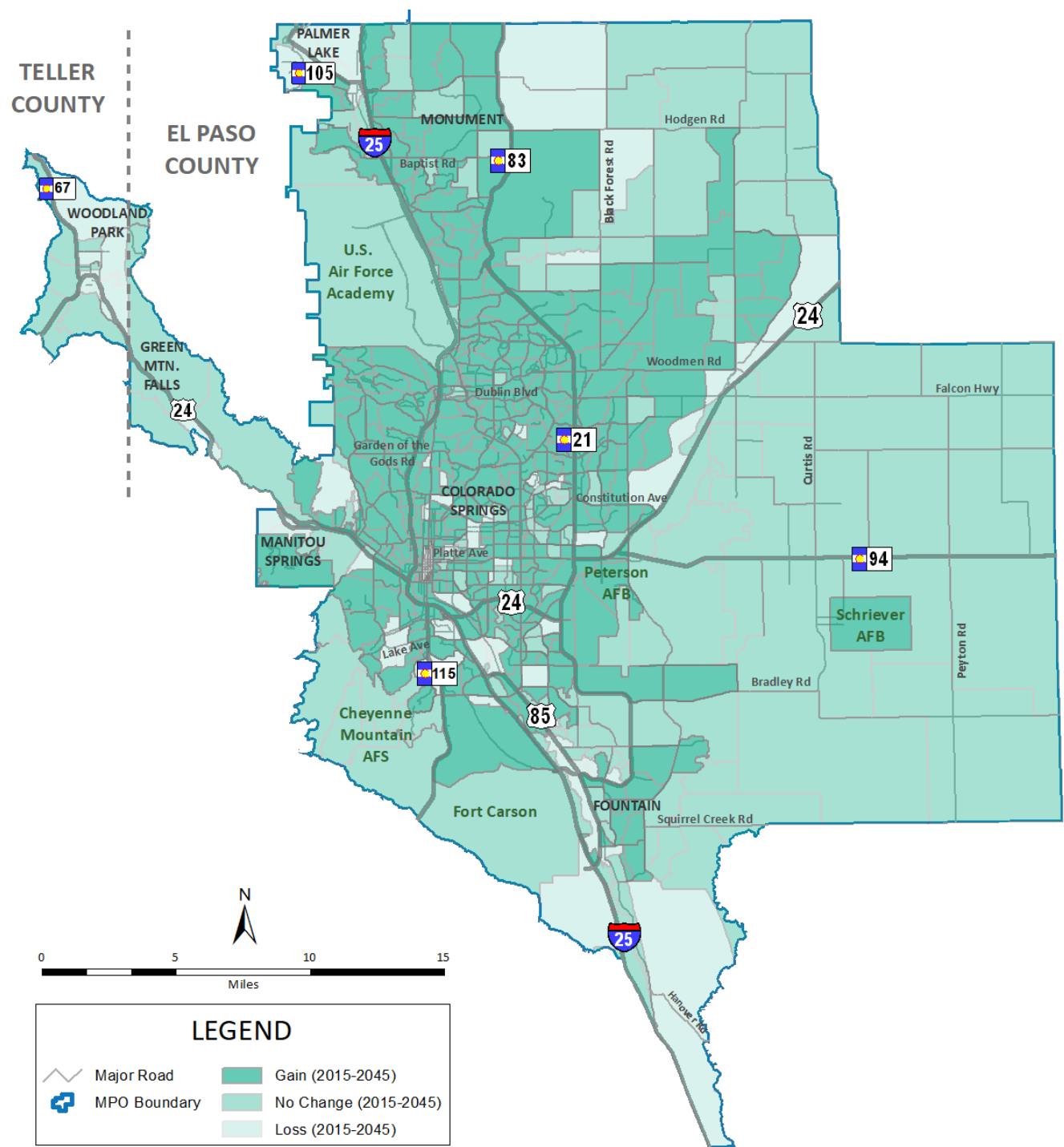


FIGURE 4-7
2015-2045 INFILL RESIDENTIAL UNITS CHANGE



FIGURE 4-8
2015-2045 DISPERSED RESIDENTIAL UNITS CHANGE

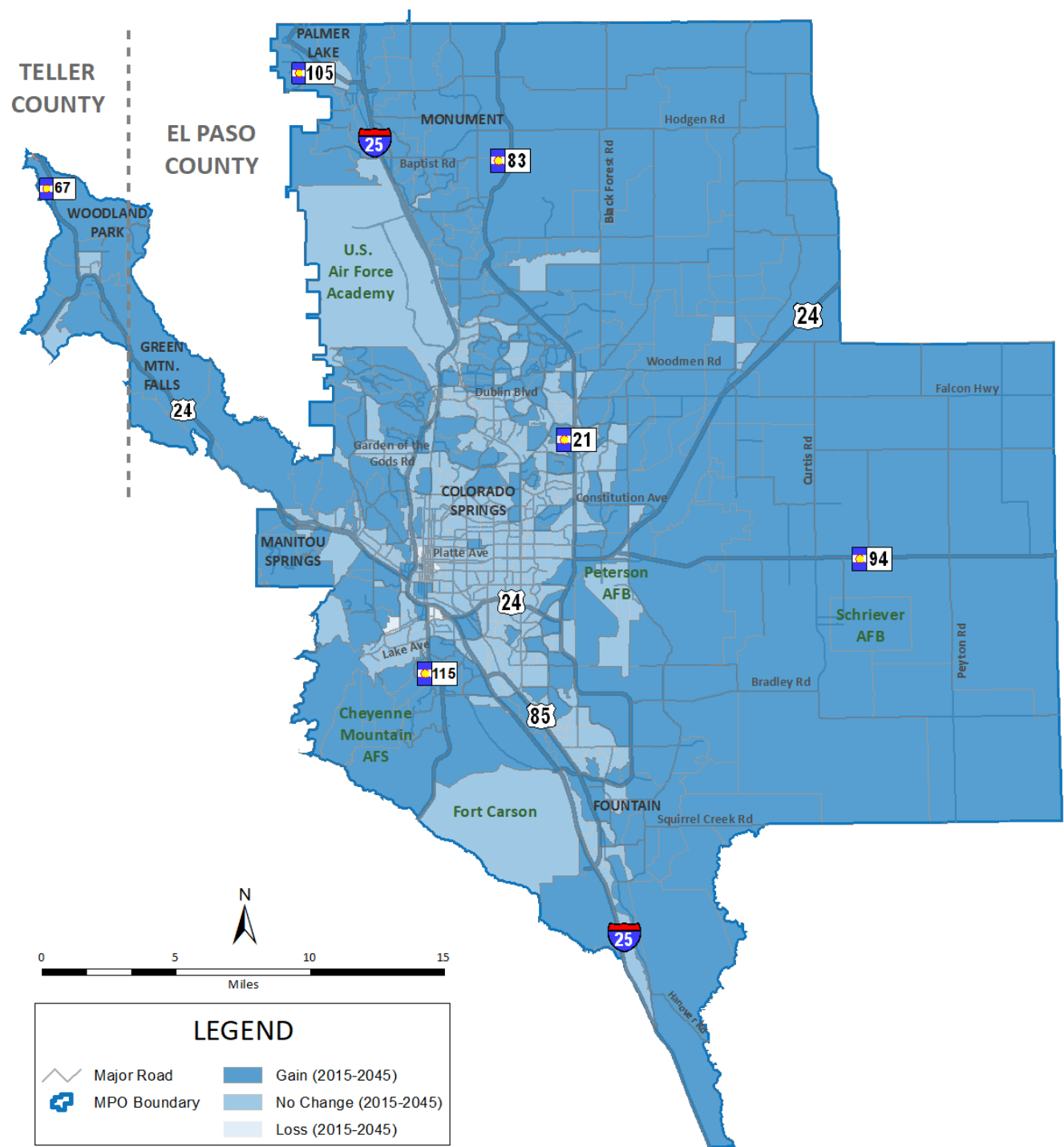
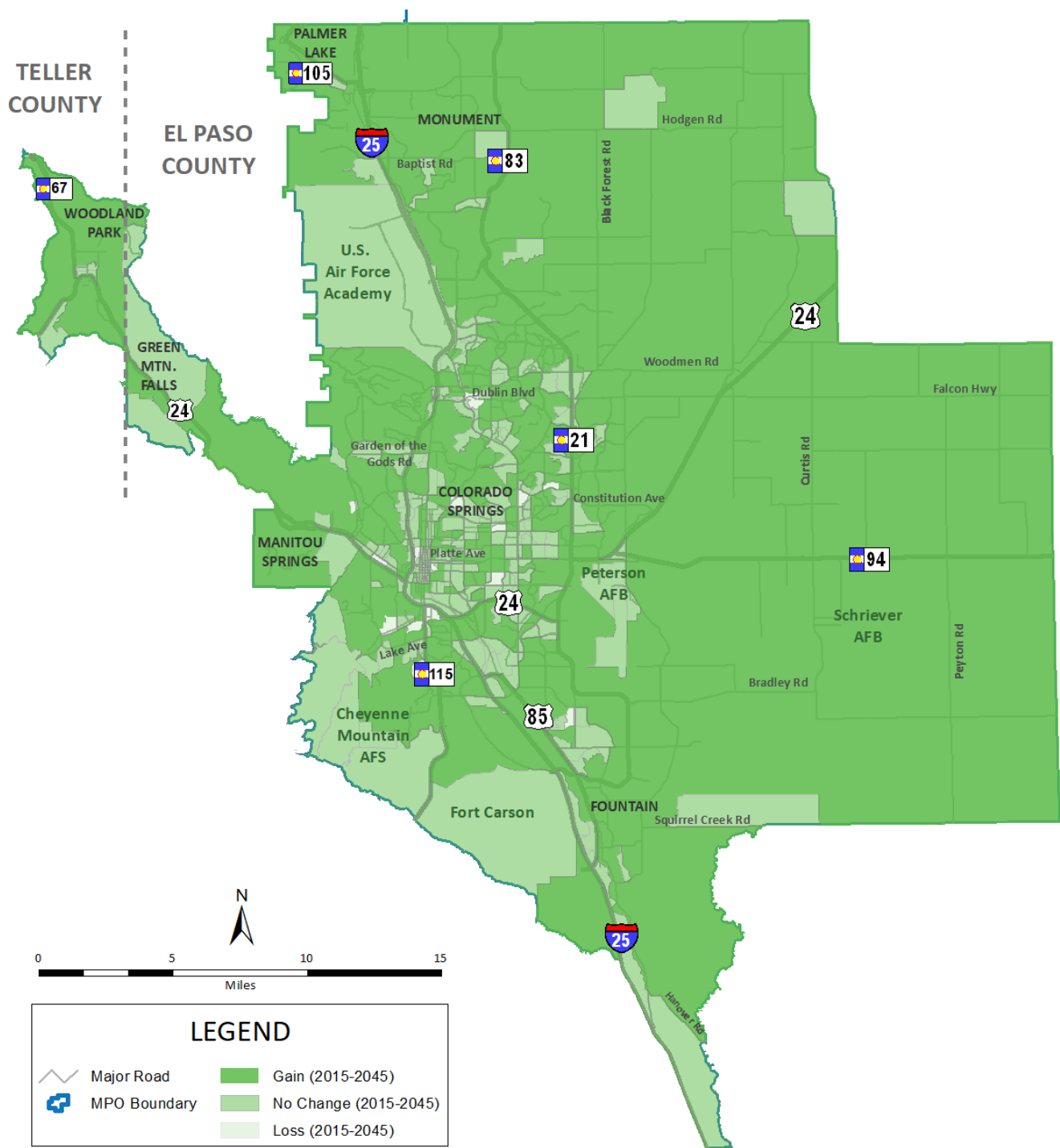


FIGURE 4-9
2015-2045 NEW CENTERS RESIDENTIAL UNITS CHANGE





CHAPTER 5

REGIONAL TRANSPORTATION NEEDS

The objective of a regional transportation plan is to provide a framework for the development, operation, and management of the transportation system within the larger context of the area’s social, economic, mobility, and environmental goals and needs.

OVERVIEW

PPACG staff undertook two significant activities to identify regional transportation needs and opportunities. The first activity involved a needs analysis, general public survey and a report on pavement and bridge condition, congestion and safety. The second activity included stakeholder surveys and workshops with major regional traffic generators including the military, universities and tourism groups. The following sections summarize the key results from both activities.

NEEDS ANALYSIS, PUBLIC SURVEY AND REPORT

PPACG has compiled the most current available data about the condition of our region’s transportation infrastructure, roadway congestion, and safety. We also conducted a survey to compare residents’ perceptions of our needs to the story told by the data. The data and survey results were presented as a “state of the region” report to the public (Appendix F). The report was compiled to highlight the most pressing needs in our region, to be shared with potential project sponsors in advance of PPACG’s call for projects for the 2045 Long Range Transportation Plan. By considering the information in the Needs report, project sponsors

will be better able to submit projects that help meet the needs of our region and move us closer to reaching the transportation goals outlined as part of the long-range plan development process.

DATA ANALYSIS RESULTS

MAINTENANCE

BRIDGE CONDITIONS

Data about the condition of bridges throughout the state of Colorado is collected and made available annually by the Colorado Department of Transportation. The most current bridge condition data set was released in late 2017. Bridges are rated on a scale from 1 to 100. A bridge with a sufficiency rating under 50 is considered to be in poor condition. In 2015, 75.5 percent of the region’s bridges were classified as being in good condition, 22.2 percent were in fair condition, and 2.3 percent were in poor condition.

ROAD CONDITIONS

Road condition is commonly measured using the International Roughness Index (IRI). IRI is used by highway professionals throughout the world as a standard to quantify road surface roughness. Reported in units of inches-per-mile, the IRI describes how much total vertical movement a standard passenger vehicle’s body would experience if driven over a 1-mile segment of roadway at 50 mph. IRI is useful for assessing overall pavement ride quality, with a higher IRI value indicating a rougher road surface. Pavement roughness can also impact vehicle delay, fuel consumption, and maintenance costs. In 2014, 1 percent of the region’s roads were classified as being in “very good” condition, 66 percent were in good condition, 29 percent were in fair condition, 3.5 percent were in poor condition, and 0.5 percent were in very poor condition.

In 2017, PPACG coordinated with the City of Colorado Springs to collect IRI data for the majority of roads throughout the Pikes Peak region, and combined them into a regional data set. According to the data collected, 2.3 percent of the region’s roads are now classified as being in “very good condition, 21.8 percent are in

good condition, 39.2 percent are in fair condition, 31.1 percent are in poor condition, and 5.5 percent are in very poor condition.

NON-MOTORIZED INFRASTRUCTURE CONDITION

Although some entities in the Pikes Peak region collect and maintain data about the condition of sidewalks, trails, and other non-motorized infrastructure, this data is not currently available on a regional scale.

TRANSIT INFRASTRUCTURE CONDITION

In 2015, the average rating of Mountain Metro Transit’s vehicle fleet was 3.24 on the State of Good Repair (SGR) scale commonly used by the Federal Transit Authority. The SGR target for 2045 for the region’s fleet of transit vehicles is 3.0 or greater, so the fleet is considered to be in good repair. Mountain Metro Transit also collects and maintains some data about the condition of bus stops along its fixed routes. As of the 2015 Transit Asset Management Plan, the average rating of Mountain Metro Transit’s bus stops was 3.70 on the SGR scale, which is considered to be in good repair.

CONGESTION

PPACG used a commercial dataset and program called INRIX to analyze congestion on roadways throughout the Pikes Peak region. As is customary in traffic analysis, we compared congestion during the evening peak period, between 5:00 and 6:00 PM, on Tuesdays, Wednesdays and Thursdays throughout the year. Roads were defined as either congested, becoming congested, or not congested based on the percentage of free flow speed vehicles were able to travel. Using this protocol, in 2011, 23 miles (2 percent) of the region’s road network experienced congestion, 44 miles (4 percent) were becoming congested and 976 miles (94 percent) were not congested. In 2015, during the same PM peak period on Tuesday, Wednesday and Thursday: 144 miles (14 percent) of the region’s road network experienced congestion, 168 miles (16 percent) were becoming congested and 735 miles (70 percent) were not congested. In just four years, congested roadways in the region increased by 12% and expected to continue to increase in the years to come.

SAFETY

Since 2011, the Pikes Peak region has seen an increase in injury and fatality crashes, and a significant increase in property damage only crashes. PPACG used a program called Vision Zero Suite to analyze injury and fatality crash data for the Pikes Peak region and help identify potential locations for safety improvements.

Vision Zero Suite moves beyond crash rate, the most common way to measure safety, to account for the relationship between safety and traffic exposure. The software uses a proprietary safety performance function (SPF), which takes into consideration several factors including roadway type, number of lanes, and average annual daily traffic (AADT). The SPF predicts the expected number of crashes on a given facility type, accounting for exposure using AADT. It then compares the observed number of crashes over a five-year period in a given location to the number of crashes predicted by the SPF. Crash frequency is divided into four quadrants. Locations with a much higher number of crashes than expected have a level of safety service (LOSS) of four. Locations with a slightly higher number of crashes than expected have a LOSS of three. Locations with a lower number of crashes than expected have a LOSS of two or one. More safety data analysis and results can be found in Chapter 11 and in Appendix X.

PUBLIC SURVEY RESULTS

An online survey was conducted in February and March of 2018 to gauge public perception of needs in the Pikes Peak region. We received 717 responses.

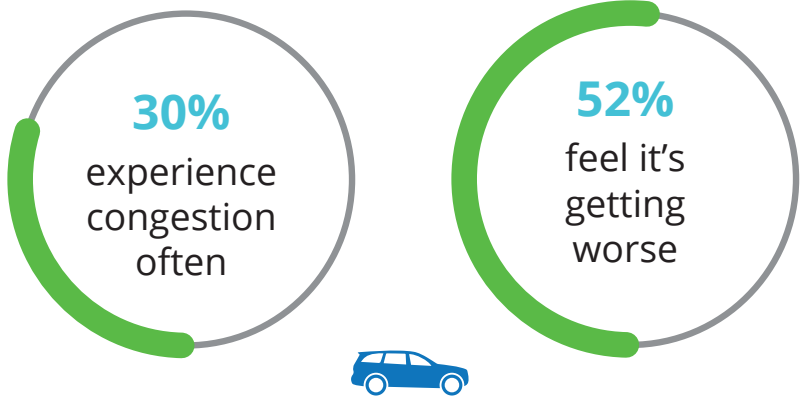
The survey focused on four areas:

- Do you have comments or concerns about cars, driving and roads?
- Do you have comments or concerns about Bus/Transit?
- Do you have comments or concerns about Bicycling?
- Do you have comments or concerns about Walking?

Cars, driving, roads

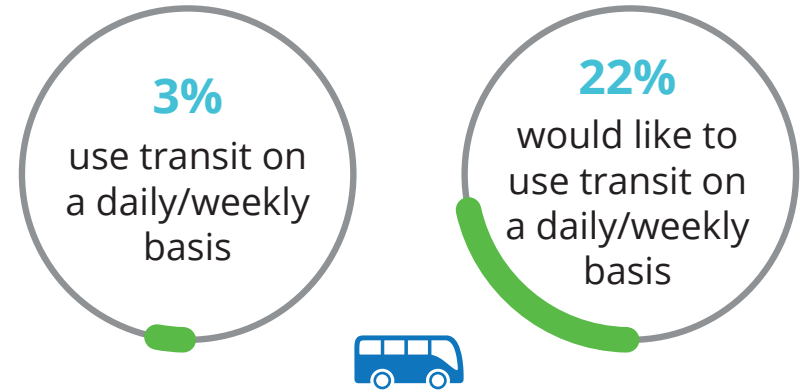
Congestion, maintenance and safety were all significant concerns.

- 30% of respondents said they experience congestion often, and 52% feel it is getting worse.
- 30% of drivers feel pavement in our region is generally in poor condition, with potholes being the foremost concern.
- Distracted driving and speeding are the top safety-related concerns.



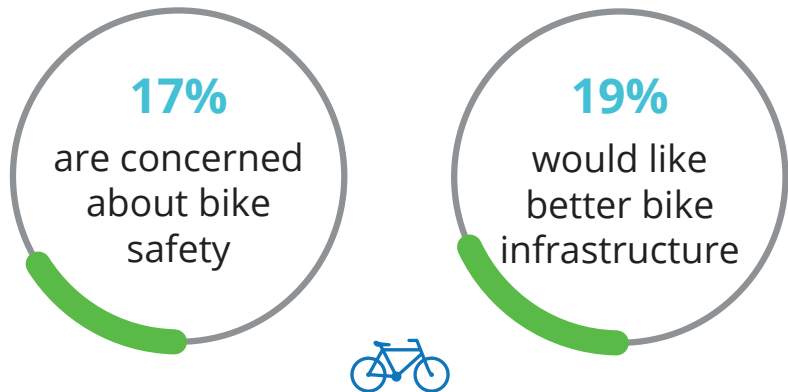
Bus, transit

- 3% of respondents said they use transit to reach destinations like work, school, shopping, or restaurants on a daily or weekly basis. 22% said they'd like to use transit to reach these destination on a daily or weekly basis.
- More frequent transit service and extended hours of operation were cited as the improvements most likely to encourage people to use transit more often.



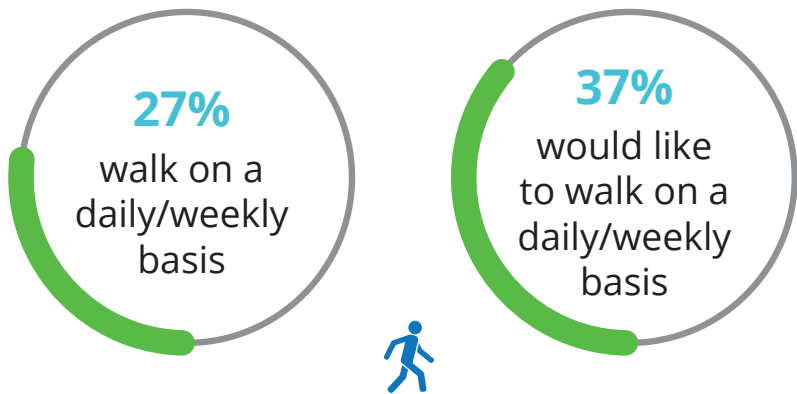
Bicycling

- Cyclists would like to see improvements in driver behavior and enhanced connections between bicycle facilities.
- They cited separated paved or unpaved trails and dedicated bike lanes as the most desirable types of bicycle facilities.
- Distracted drivers and hostile car culture were the top reasons many respondents choose not to bicycle.



Walking

- 27% of respondents said they currently walk to reach destinations like work, school, shopping, or restaurants on a daily or weekly basis. 37% said they'd like to walk to reach these destinations on a daily or weekly basis.
- More/better sidewalks was the top choice for the type of improvements that would encourage people to walk more often, closely followed by safer crossing opportunities, a more pleasant walking environment, and destinations within walking distance.



**MAJOR TRAFFIC GENERATORS:
STAKEHOLDER SURVEY AND WORKSHOPS**

As part of the needs assessment process, PPACG reached out to major traffic generators to provide input regarding transportation needs through the year 2045. A map indicating existing regional transportation projects was incorporated within the survey and workshop process where entities shared their thoughts on those transportation projects that are the most pressing. A table listing transportation projects identified by these stakeholders can be found in Table 5-1.

Military installations, major universities/colleges, tourism-based entities, El Paso County, and Colorado Springs Chamber and Economic Development Corporation (Chamber and EDC) responded to a survey completed in February of 2019. Workshops were conducted in mid-March to share these survey results and build consensus around transportation needs for these major regional stakeholders. Figure 5-1 is a map that identifies the locations of the major generators and the major roadways that lead to them.

MILITARY INSTALLATIONS

The five installation within the region have an estimated associated population of 150,000 that includes military personnel, contract employees, and their families. Fort Carson alone has an on base contingent of 26,000 military personnel and a daily average of approximately 35,000 vehicles coming through their gates. Therefore, military installations and transportation agencies currently coordinate on transportation projects given the military is collectively the largest employment sector in this region and generates a great deal of traffic. Colorado Revised Statutes (CRS) 43-1-1103 (5) (b.5) requires that state transportation plans shall be developed in “coordination with federal military installations in the state to identify the transportation infrastructure needs of the installations and ensure that those needs are given full consideration during the formation of the state plan”. The

transportation-related strategies and actions in this overview are a portion of the 12 strategies and 109 actions within Chapter 10 (Implementation Plan) of the Colorado Springs Regional Joint Land Use Study.

It is important to note that a new funding source may become available as early as next year that could accelerate the timeline for transportation projects that mutually meet the needs of the military and communities. The Defense Community Infrastructure Program (DCIP) was created through the 2018 National Defense Authorization Act (NDAA) to fund for projects outside the installation boundary that benefit the installation, including transportation infrastructure projects. The program requires a 20% state or local funding match. However, funding for this program has not yet been allocated by Congress. Should that occur, this funding could fill funding gaps on certain needed infrastructure improvements. Within this context, it will be important to coordinate with the military to understand how on-base gate projects can reduce traffic outside of the gate on public streets to properly prioritize off-base transportation needs.

There is a significant probability that mission growth will dramatically increase the number of personnel at installations in the area covered by this plan. Peterson Air Force Base (AFB) (including Cheyenne Mountain Air Force Station) and Schriever AFB are candidates as locations for Space Command. Regardless whether this new mission comes to our region, Peterson AFB is expected to double in personnel by 2030 and Schriever AFB is expected to add hundreds of new personnel each year over the next five years. This will drive travel demand on specific transportation networks that serve installation gates and are used by civilian drivers who travel within the vicinity of these installations.

SURVEY HIGHLIGHTS

- Peterson AFB and Schriever AFB need safety concerns addressed at Marksheffel and the East Gate as soon as possible.
- Safety improvements to Highway 94 are a top transportation need for both Schriever AFB and Peterson AFB. This would also help with supporting location of Space Command here in Colorado Springs.
- Peterson AFB is planning for a future where they are double in size by 2050 and as early as 2030 (growing from about 13,000 to 25,000). This will require significant transportation infrastructure investment as this occurs.
- The Air Force Academy (AFA) owns the land where I-25 crosses the installation and the Colorado Department of Transportation (CDOT) has an easement. Due to Federal requirements, construction on this section always requires additional Federal processes due to AFA ownership.
- Planning local/regional trail connections with military installation input is important, particularly Fort Carson and AFA.
- There is a desire by installations to work on connecting installations to multi-modal transportation options, particularly public transit and bike/walking trails while maintaining appropriate security measures at installation boundaries.
- The military commonly uses Inter-Governmental Service Agreements (IGSA), as well as the Joint Land Use Study (JLUS) program as tools to partner with surrounding cities to work on transportation projects.

FORT CARSON

Fort Carson has 34,000 people coming through their gate daily, with Gate 20 as the busiest gate. Gate 20 is half the size it needs to be and should be 6-8 lanes for incoming traffic in order to reduce instances where traffic can back up for two miles and affects Mesa Ridge Pkwy. Improvement to that gate would reduce off-base traffic on South Academy. Improvements to Charter Oak Ranch Road, a project that would be eligible for DCIP funding once

allocated, would significantly reduce traffic at Gate 20 through accommodating traffic at Gate 19 from personnel who commute from Fountain and Pueblo.

The Fountain Urban Renewal Authority is currently working on a rail-served business park on 1,682 acres. In 2007, the City of Fountain identified the potential for the creation of an Industrial Rail Park within its Strategic Plan and was recognized as a great prospect for the community to provide an opportunity for Fort Carson to establish a secondary rail line for redundancy during deployments. This development is located on the north side of the Nixon Power Plant and will create a rail spur off the Nixon Power Plant rail loop that would extend to the eastern boundary of Fort Carson. The business park would be dual served by both Union Pacific and BNSF railways. Fort Carson would like to connect to this rail line, once the rail outside the installation has been constructed. Local governments, the developer, and Fort Carson representatives are coordinating on this project to meet community and military needs.

Fort Carson is also interested in reducing traffic congestion and increasing public transportation options for employees. Representatives would like to participate in discussions with local transportation officials to allow easier bus transportation access that can easily connect to the on-post shuttle and options that mitigate traffic congestion near Gates 1, 4, and 20. Fort Carson has examined having a bus hub at gate 4. There is an existing bus hub at Pikes Peak Community College (PPCC) and Fort Carson would be interested in partnering with the college to improve military access.

Fort Carson would additionally like to connect with Trails and Open Space Coalition to discuss local trail interests and projects. Bike/hike trail connections that link with Cheyenne Mtn. State Park, the Chamberlin Trail, and Fountain Creek Trail will need coordination between the City of Colorado Springs and Fort Carson to ensure effective networks, master planning and wayfinding.

PETERSON AIR FORCE BASE

All three gates, East Gate (Marksheffel Road), North Gate (Peterson Rd and US 24), West Gate (only 24-hour gate) near Powers and Airport Rd are installation gates most impacted by transportation challenges. Peterson AFB is planned to double in size within the LRTP timeframe with more than 2,500 personnel within the next five years. This will put a lot of strain on adjacent roadways especially to the north and east. Another major concern is safety along State Highway (SH) 94 to Schriever AFB, where personnel commute between for work and home. The most urgent need is getting a signalized traffic control on Marksheffel Road at Peterson AFB's East Gate due to frequent accidents at this intersection.

Peterson AFB is also interested/concerned with any project immediately around or near the Gates to the base. They are interested in any work on the major approaches and corridors to PAFB that will change the traffic patterns accessing the base, detours, delays and life and safety of PAFB personnel. Peterson AFB representatives also recommended better connectivity from Marksheffel Road to Colorado Springs Airport via Drennan, or another route north of Bradley. This could alleviate cross traffic and volume on Powers Blvd from people coming from the east to access the airport efficiently.

SCHRIEVER AIR FORCE BASE

Around 7,000 persons travel to Schriever AFB daily as the installation continues to grow in importance and missions. As a result, the criticality of transportation improvements is also increasing. Safety improvements to SH-94 are the most critical concern for the installation. Assured and safe access to Schriever AFB is essential for sustaining National Security operations. Continued considerations for safety and capacity improvements for area roadways connecting regional communities with Schriever AFB (a major employer) would include key access roads of SH-94, Curtis Road, Bradley Road (a Defense Access Road), Enoch Rd (North Gate), and Irwin Rd (West Gate). Specifically, Schriever AFB representatives are supportive of the projects on Curtis to add shoulders to existing pavement from SH-94 up to Judge Orr Road.

AIR FORCE ACADEMY

Unlike other major transportation corridors in the state, I-25 is on federal property owned by the US Air Force and the state has an easement for I-25. It is important to the Air Force Academy (AFA) for CDOT to coordinate easement issues with AFA on all work, since widening or reconfiguration of the right-of-way would require changes to the easement. In some instances, AFA has to coordinate with central Air Force personnel and have additional federal requirements to meet, which can add time to the easement modification process. Early involvement by the Air Force Academy in the easement process, could help reduce project delays and reduce public relations issues.

The Visitors Center and major events at the Air Force Academy also have major traffic impacts around the North Gate exit. Occasionally, gate traffic at both North and South Gates backs up onto the I-25 off ramps. Coordinating with CDOT on construction projects and major improvements in the corridor is essential to help reduce the impacts of this traffic on I-25. Particularly, the Air Force Academy is interested in planned construction on the new Powers interchange project near the north gate entrance and its impact on that area's transportation network.

The AFA is also interested in any improvement to trail connections to Colorado Springs and Monument with non-motorized trails. This includes the Santa Fe Trail at Baptist Road, and bike lanes and sidewalks that run under I-25 into AFA infrastructure to connect the neighborhoods east of AFA via a trail. Also, within the Colorado Springs Regional Joint Land Use Study, discussions included a potential need for a secondary non-motorized corridor east of I-25 to achieve this goal.

For connections to off-installation facilities, AFA says that they should make sure any development or traffic changes that affect Bullseye airfield are brought to command. The AFA also supports upgrades on roads that go to from Colorado Springs to the Woodland Park area where the academy has a training/recreation facility, including the project that would add guard rails on SH-24 and new striping and safety improvements, where needed.

OTHER MAJOR TRAFFIC GENERATORS

VISIT COS (COLORADO SPRINGS)

Thirty-eight percent of Colorado Springs urbanized area guests from out-of-state arrived by plane in 2017, while 56% used a personal car/truck. Well-maintained roads and bridges are critical for tourism across the region. Any projects that improve way-finding signage are needed throughout the region for our 23 million annual visitors. It was also suggested that regional partners consider consistent terminology and signage for more cohesive and accessible tourist communication.

PIKES PEAK COMMUNITY COLLEGE (PPCC)

PPCC has three campuses: the Centennial Campus on Interquest Parkway, the Rampart Range Campus on South Academy adjacent to Fort Carson, and a downtown campus on Pikes Peak Avenue. The primary concern for PPCC is pedestrian and bicycle connections to improve access and safety. Currently, there are no safe routes for pedestrians or bicycles, since there are no sidewalks or bike trails that lead to the north and south college campuses. Commuters must either drive or take a long bus ride. PPCC representatives recommended that bike routes (as opposed to bike lanes on the roads) throughout the city would allow staff, faculty and students easily and safely walk, run or ride a bike to any of their campuses.

UNIVERSITY OF COLORADO, COLORADO SPRINGS (UCCS), AND COLORADO COLLEGE (CC)

While we did not receive responses from these educational facilities, their respective growth needs will impact transportation networks that lead to these campuses. Per the UCCS 2020 Strategic Plan, the expected student population is planned to reach 13,000 from a current enrollment of over 12,000. Additionally, Colorado College (CC) is currently planning for a new ice arena that will hold between 3,000 and 4,000 spectators at their campus on the north end of downtown Colorado Springs. This and other

new facilities, like the ENT Center, built at both campuses, will require coordination with the City of Colorado Springs to mitigate congestion and provide multimodal options.

EL PASO COUNTY TRANSPORTATION

The primary comments from El Paso County were general transportation network planning principles: “Continuing to add lanes upon lanes to major arterial roads will only provide temporary relief. Various forms of public transit, including park and rides, bus routes, railcars, and commuter rail are the only long term options that will provide a true decrease in vehicle traffic. Options like the Bustang and shuttle services work well in the interim, but our region must move forward with more multimodal options in minds other than cars and bikes”. It was noted that portions of US-24 will continue to worsen, particularly in the summer months, if park and ride options are not offered. Downtown traffic will continue to worsen if a more tourist-friendly option like rail or other alternative modes or inter-regional level hubs are not provided.

REGIONAL NEEDS SUMMARY

NEEDS REPORT

- Congestion, maintenance and safety were all significant public concerns.
- Distracted driving and speeding are the top safety-related public concerns.
- More frequent transit service and extended hours of operation were cited as the improvements most likely to encourage people to use transit more often.
- Cyclists would like to see improvements in driver behavior and enhanced connections between bicycle facilities.
- More/better sidewalks was the top choice for the type of improvements that would encourage people to walk more often, closely followed by safer crossing opportunities, a more pleasant walking environment, and destinations within walking distance.

MAJOR TRAFFIC GENERATORS

- Increase non-motorized trail and pedestrian options through coordination with major traffic generators, community stakeholders, and citizens during the planning process.
- Military construction projects on-base can reduce congestion and capacity issues off-base.
- Major traffic generators will continue to grow in their impacts on the transportation network within the boundaries of their existing locations. Transportation planning efforts will need to be very responsive to prevent degradation of travel conditions and increases in congestion.
- Effective coordination between major traffic generators, CDOT and adjacent municipalities is essential to meet regional transportation network to reduce congestion, and increased capacity, safety, and multi-modal options on behalf of citizens.
- Road maintenance operations need to be sufficient to improve roadway surface quality, sidewalks, and safety to mitigate continued degradation of the region’s road network, especially for roadways classified as in poor or very poor condition.

FIGURE 5-1
MAJOR TRAFFIC GENERATORS IN THE PIKES PEAK REGION

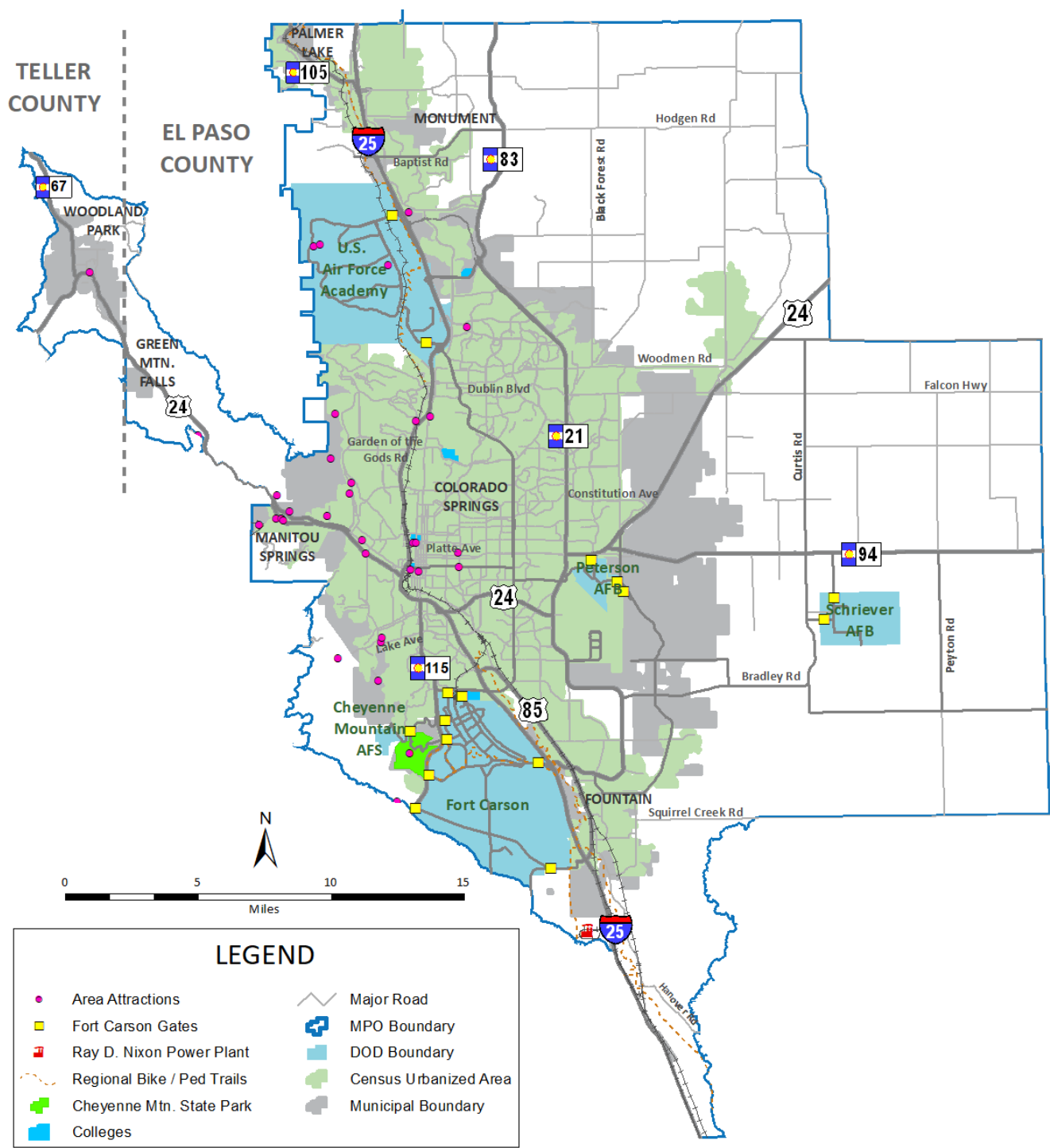


TABLE 5-1.1
MAJOR TRAFFIC GENERATORS TRANSPORTATION NEEDS

Locations were identified using tourism resources associated with Visit COS and are intended to reflect the most frequently visited tourism destinations, but do not reflect a full inventory of all area attractions.

Air Force Academy	Express route operations expansion. I-25 — FONSI Approved Project (South Academy to Monument) Jackson Creek Regional Trail Londonderry Dr. Sidewalks S. Academy Blvd.: I-25 to Bradley Rd. Ramps US-24 West of Manitou to West of Chipitah Park Improvements
El Paso County	Colorado Ave. Roadway Improvements Downtown rail station (intermodal/bus/rail/intercity) Fixed-guideway, Line #5 (Nevada Ave. streetcar extension) Park-n-Ride: US-24 at 31st St. Park-n-Ride: New Cascade/Green Mtn Falls Transit: MMT Route 16 and 4 Enhancements
Peterson Air Force Base	Bradley Rd.: Grinnell to Wageman Dr. Cherry Creek / Fox Run Regional Trails Galley Rd. Sidewalks Garrett Rd. Upgrade: US-24 to Curtis Rd. I-25 — Capacity Project (Fountain to South Academy) I-25 — FONSI Approved Project (South Academy to Monument) I-25 Pavement Rehabilitation (South Academy South) I-25 Widening (S. Academy to Circle) Marksheffel Road Roadway Improvements Platte Ave. Corridor Improvements Study Platte Ave. East Bound over Sand Creek Bridge Replacement Platte Ave. West Bound over Sand Creek Bridge Replacement Platte Ave. Corridor Improvements

TABLE 5–1.2
MAJOR TRAFFIC GENERATORS TRANSPORTATION NEEDS

Peterson Air Force Base	Powers Blvd. (SH-21 Central) — FONSI Approved Project (SH-16 to Woodmen)
	Powers Blvd. (SH-21) Extension SH-94 Corridor Safety Study and Design SH-94 Planning and Environmental Linkage Study SH-94 Projects Identified from Corridor Plan US-24 East — Project from PEL (Powers Blvd. [SH-21] to Stapleton Rd.)
Pikes Peak Community College	Black Forest Rd. Widening: Woodman to Briargate Express route operations expansion I-25 — FONSI Approved Project (South Academy to Monument) Powers Blvd. (SH-21) Extension S. Academy Blvd.: I-25 to Bradley Rd. Ramps SH-67 Corridor Improvements — Phase 1
Schriever Air Force Base	Curtis Road Improvements Garrett Rd. Upgrade: US-24 to Curtis Rd. Jimmy Camp Creek Regional Trail Marksheffel Road Roadway Improvements Platte Ave. Corridor Improvements Study SH-94 Corridor Safety Study and Design SH-94 Planning and Environmental Linkage Study SH-94 Projects Identified from Corridor Plan SH-94 Safety Projects US-24 East — Project from PEL (Powers Blvd. [SH-21] to Stapleton Rd.)
Visit Colorado Springs	21st St. over Fountain Creek Bridge Replacement Academy Blvd.: Fountain Blvd. to Milton Proby Pkwy. Pavement Reconstruction Centennial Blvd. Extension: Fillmore St. to Fontanero St. Colorado Ave. Roadway Improvements Ft. Carson/PPCC Transfer Station Upgrade I-25 — Capacity Project (Fountain to South Academy) I-25 — FONSI Approved Project (South Academy to Monument) I-25 and SH 21 Interchange I-25 Median Cable rail (Circle to S. Academy) I-25 Pavement Rehabilitation (South Academy South) I-25 Widening (S. Academy to Circle) Las Vegas St. Corridor Improvements Monument Park-n-Ride Nevada Tejon Park-n-Ride Expansion Park-n-Ride US-24 at 31st St. Powers Blvd. (SH-21) Extension S. Academy Blvd.: I-25 to Bradley Rd. Ramps SH-115 — Planning and Environmental Linkage Study Shook’s Run Bridge Replacements Transfer Station: Banning Lewis (Golden Triangle) Transit: Downtown Transit Center Relocation US-24 East — Project from PEL (Powers Blvd. [SH-21] to Stapleton Rd.) US-24 West — FONSI Approved Project (I-25 to Manitou) US-24 West of Manitou to West of Chipitah Park US-24 West Planning and Environmental Linkage Study — I-25 to Divide and Reliever Route Ute Pass Pedestrian Project W. Colorado Ave. Reconstruction: 31st St. to US-24



CHAPTER 6

FINANCIAL PLAN

Achieving the transportation vision identified in this plan will require new revenues (or enhanced existing ones) for maintenance, operating, and capital from as-yet-unidentified revenue sources. This financial plan attempts to prepare an approximate but realistic estimate of both the total funds that can be reasonably expected to be available and total program costs.

This chapter describes the anticipated revenues and estimated costs to maintain, operate, and improve the Pikes Peak region's transportation system from 2020 until 2045. The intent of this financial plan is to prepare a "reasonably expected" estimate of both the total funds available and total program costs. The financial analysis presented in this chapter meets the federal requirements detailed in Federal Highways' Fixing America's Surface Transportation Act (FAST) Act.

REQUIREMENTS FOR A FINANCIAL PLAN

The Code of Federal Regulations (CFR 450.324(11)) outlines the elements required to develop a transportation financial plan. The FAST Act requires a financial plan that includes revenues and costs necessary to operate and maintain the roads and associated systems (signals, signage, snow removal, etc.) These costs enable a Metropolitan Planning Organization like PPACG to estimate future transportation conditions and resources to make the fullest use of existing infrastructure. The FAST Act also requires the financial plan include recommendations on the development of new financing strategies.

Additionally, the estimated cost of the projects identified in the plan cannot exceed the total revenue estimated over the life of the plan, this is referred to as fiscal constraint.

FEDERAL FUNDING ELIGIBILITY

Federal Highway Administration eligible roadways are:

- The National Highway System
- The Interstate System
- Non-National Highway System routes which include all other functionally-classified routes (except rural minor collector and local access).

The National Highway System provides an interconnected system of principal arterials and other highways serving major population centers, international border crossings, ports, airports, public and intermodal transportation facilities, and other major travel destinations. The system meets national defense needs and serves interstate and interregional travel. Routes that must be included on the National Highway System are principal arterials, interstate highways, highways on the Strategic Highway Network, major Strategic Highway Network connectors, and congressional high-priority routes.

The FAST Act allows up to 15 percent of Surface Transportation Program rural dollars to be used on rural minor collectors. All of the National Highway Performance Program funds are for use on all of the National Highway System, including those under jurisdiction of local governments. These funds make up over half of the federal funds available to the Colorado Department of Transportation.

REVENUE SOURCES

Transportation has traditionally been funded by user fees. Today, the major tax sources to fund transportation are state and federal

fuel excise taxes, vehicle license fees, sales taxes, and transit fare box revenues. Although dedicated to use within the Pikes Peak region, state and federal funding for all but the STP Metro, Transportation Alternatives, Congestion Mitigation/Air Quality and Transit funding categories is programmed by CDOT.

FEDERAL FUNDING SOURCES

Federal funding is derived primarily from the federal gas tax, which is currently 18.4¢ per gallon for gas and 24.4¢ for diesel. Federal Highway Administration funds may be used to reimburse project costs for general transportation planning, preliminary engineering, right-of-way acquisition, construction, and audit. Federal Highway Administration funds may only be spent after authorization by CDOT through Federal Highway Administration.

Federal Highway Administration Funding Programs:

- National Highway Performance Program (NHPP)
- Surface Transportation Block Group Program (STBG, formerly STP)
- Congestion Mitigation and Air Quality (CMAQ)
- Highway Safety Improvement Program (HSIP)
- Railway Highway Crossing
- Transportation Alternatives Program/STBG Set aside (TAP)
- Ferry Boat Program
- Emergency Relief Program

Federal Transit Authority Funding Programs:

- 5310: Enhanced Mobility of Seniors and Individuals with Disabilities
- 5307: Urbanized Area Formula Program
- 5309: Capital Investment Program
- 5339: Capital Investment Program
- 5314: Capital Investment Program

STATE OF COLORADO FUNDING SOURCES

COLORADO HIGHWAY USERS TAX FUND

The primary source of revenue in Colorado is the Highway Users Tax Fund: \$0.22 per gallon for gasoline and \$0.205 per gallon for diesel. This dedicated revenue source is supplemented by car registration fees and other miscellaneous revenue. There are two levels of funding to the Highway Users Tax Fund: a basic and an additional funding level. All fuel taxes up to 7¢ per gallon are considered basic funding. A portion of the basic funding is allocated off the top to the Department of Public Safety for the State Patrol and Department of Revenue for the Ports of Entry. The State Treasury distributes the remaining basic funding in the following manner:

- 65 percent to CDOT
- 26 percent to Colorado counties
- 9 percent to Colorado cities

The amount over 7¢ per gallon is considered additional funding. Additional funding is distributed:

- 60 percent to CDOT
- 22 percent to Colorado counties
- 18 percent to Colorado cities

FASTER (SENATE BILL 09-108)

In 2009, the enactment of Colorado Senate Bill 09-108 created the Funding Advancements for Surface Transportation and Economic Recovery program. FASTER provides CDOT and local governments with a new funding source separate from the General Fund that is stable and predictable. The funds derive from modest increases to vehicle registration fees and other funding mechanisms and are dedicated to specific programs.

These funds are split into several categories for distribution:

- Statewide Bridge Enterprise
- High-Performance Transportation Enterprise to encourage innovative financing strategies

- A safety program
- Dedicated funds for transit

The FASTER Bridge Fund is used to repair or replace a specific list of poorly rated bridges on the state highway system. FASTER funds 80 percent of each project, with the local entity supplying the remaining 20 percent. FASTER transit funds are granted to local governments and transit agencies for projects such as new bus stops, maintenance facilities, or multimodal transportation centers. These funds cannot be used for operations.

LOCAL FUNDING SOURCES

Local revenue comes from a variety of sources such as property and sales taxes for highway and transit projects. Other revenues include money from street-use permits, utility permits, and impact fees. There is also an allocation of state Highway Users Tax Funds directly to each entity.

In 2004, citizens of El Paso County, Colorado Springs, Manitou Springs, and Green Mountain Falls voted to approve the Pikes Peak Regional (previously rural) Transportation Authority (PPRTA) sales tax of 1 percent on goods sold within their respective jurisdictions. In 2012, the capital portion of this tax was renewed for 10 years with 80 percent approval. Residents in the City of Fountain also approved a ¾ cent sales tax for transportation improvements.

LOCAL TRANSIT FUNDING

FARE AND ADVERTISING REVENUES

Fare and advertising revenues are important funding sources for transit operations. In 2015, these revenues provided approximately 20 percent of Mountain Metro Transit’s operating funds. Fare and advertising revenues are projected to grow at 3 percent per year. This revenue growth is based on historical information and with a moderate growth in ridership on the transit system. No fare increase is included in this assumption.

ASSUMPTIONS AND APPROACH TO FISCAL CONSTRAINT

Moving Forward 2045 identifies regional transportation projects and needs beginning in 2020 and extending through 2045. Revenue and expenditures rely on historical revenues from local, state, and federal sources, and assumptions regarding future economic, social, and behavioral conditions. PPACG followed the following basic principles in plan development:

REVENUE

- Estimates for federal funding sources (STP- metro (STBG), CMAQ, TAP and CPG) came from the State of Colorado’s Transportation Commission’s adopted 2040 program distribution. The 2045 program distribution was not available during document development.
 - 2020 estimates were used as a base year and 3% growth was assumed for the first 15 years. The 3% was applied to the total and NOT compounded.
 - The last ten years of the plan had no growth factor applied to account for inflation/YOE.
- Estimates of PPRTA funds came from the expected continuation of PPRTA.
- Estimates of reasonable expected transit state and local transit funding came from Mountain Metro Transit (MMT).

CAPITAL INVESTMENTS

- The funded project list in Chapter 8 of this plan, includes transit capital, unrestricted capital projects and maintenance and operations. M & O projects that were specifically listed in the RTP are regional in nature while the local projects, while not specifically listed, are included in the overall M & O estimate for the RTP.

- The RTP project list totals approximately \$3.6 billion. \$2.17 billion is capital projects and the other \$1.5 billion would be classified as maintenance and operations.
- The matrix below shows that over the life of the plan, after being adjusted for inflation, there is approximately \$2.0 billion available in unrestricted funding for capital projects.

	2020 BASE YEAR	FIRST 15 YEARS (3% GROWTH)	LAST 10 YEARS (YOE)	CAPITAL INVESTMENTS TOTAL REVENUE
Local	\$57,200,00	\$883,740,000	\$572,000,000	
State	\$12,000,000	\$185,400,000	\$120,000,000	
Federal	\$12,300,000	\$190,035,000	\$123,000,000	
Totals	\$81,500,00	\$1,259,175,000	\$815,000,000	\$2,074,175,000

MAINTENANCE AND OPERATIONS

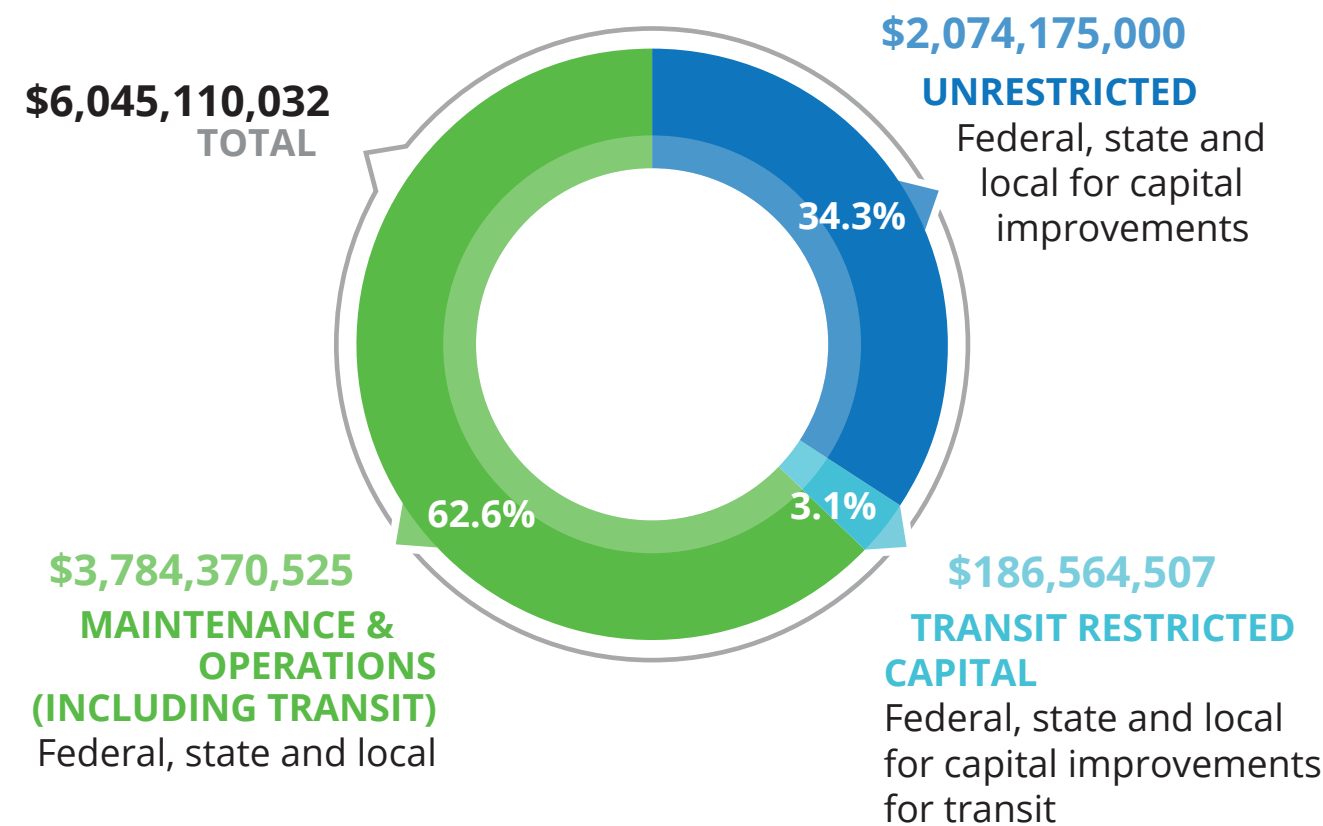
- MMT provided an estimate of \$186,564,507 of funding that’s eligibility is restricted to transit only.
- When you add the unrestricted (\$2.0 billion) and the restricted (\$0.18 billion) you get a rounded total of \$2.18 billion. This total is greater than the \$2.17 listed in the proposed RTP project list to show fiscal constraint.
- When calculating M & O revenues for the region, the following assumptions were made.
 - Teller County was “zeroed” out for M&O calculations because a significant majority of the roads within the MPO boundary that are within Teller County are included in the numbers for Woodland Park, Green Mountain Falls and CDOT.
 - Colorado Springs 2C — ½ cent sales tax for maintenance was not included in the analysis as it is unclear if that measure, even if extended, would be reasonably expected for most of the life of the plan.
 - Jurisdictional HUTF Distributions came from the State of Colorado Treasurer’s web site.

- PPRTA Maintenance came from PPRTA financial records.
- City of Fountain Sales Tax information came from the expected continuation of the City of Fountain revenues provided by city staff and their website.
- CDOT Maintenance was obtained from CDOT data, taking a 5 year average from 2014–2018.
- Transit data was provided by MMT.
- For a given year, either 2018 actuals or 2020 estimates, the region spent \$151.37 million on M&O. Assuming that level of investment holds constant and fund increase keep up with inflation, the region would invest \$3.784 billion in M&O over the 25-year life of the plan.

	2018 — HIGH- WAY USER TAX FUND (HUTF) DISTRIBUTION	PPRTA MAINTENANCE (2020 ESTIMATE)	2018 — FOUNTAIN .75 CENT SALES TAX	CDOT MAINTENANCE (STATE SYSTEM) 5 YEAR AVG. (14–18)	TRANSIT FUNDING (STATE, FTA, PPRTA, FAIRBOX) 2020 ESTIMATE	TOTALS
Colorado Springs	\$18,257,792	\$25,792,544	–	–	–	\$44,050,336
Colorado Springs—MMT	–	–	–	–	\$23,870,250	\$23,870,250
Fountain	\$709,136	–	\$924,280	–	–	\$1,633,416
Green Mountain Falls	\$14,409	\$39,640	–	–	–	\$54,049
Manitou Springs	\$149,660	\$309,193	–	–	–	\$458,853
Monument	\$230,679	–	–	–	–	\$230,679
Palmer Lake	\$95,163	–	–	–	–	\$95,163
Woodland Park	\$284,729	–	–	–	–	\$284,729
El Paso	\$12,967,648	\$10,251,004	–	–	–	\$23,218,652
CDOT (MPO Boundary)	–	–	–	\$57,478,694	–	\$57,478,694
Teller	–	–	–	–	–	–
Totals	\$32,709,216	\$36,392,381	\$2,310,700	\$57,478,694	\$23,870,250	\$151,374,821

TOTAL FUNDING REVENUES

The 2045 RTP contains just over \$6 billion in funding.



EXPENDITURES

Jurisdictions were asked to update project costs for projects submitted for consideration to be included in the 2045 RTP.

Year of Expenditure (YOE). YOE is used to account for inflation over time to help provide a more realistic expectation of what projects or programs can be reasonably delivered over the life of the plan.

Given exact timeframes of projects delivery was unknown, jurisdictions were asked to develop their project cost estimates in 2019 dollars.

To account for YOE expenditure, it was assumed that inflation will grow faster than revenue growth. Thus, expenditures and revenues

were initially inflated through the year 2045, then the revenues in the final ten years of the plan were deflated.

Projects in the plan were not assigned a specific funding source, however, fiscal constraint was maintained by ensuring that there were sufficient projects to address funding that has restricted eligibility.

62.2% of the available funding in the plan goes toward operations and maintenance with the remaining 37.8% going towards capacity projects.

Assuming a conservative 3% growth (total not compounded), the PPRTA will provide \$2.678 billion toward the plan (capital, maintenance and transit) OR 44.3% of the total plan (maintenance and capacity).

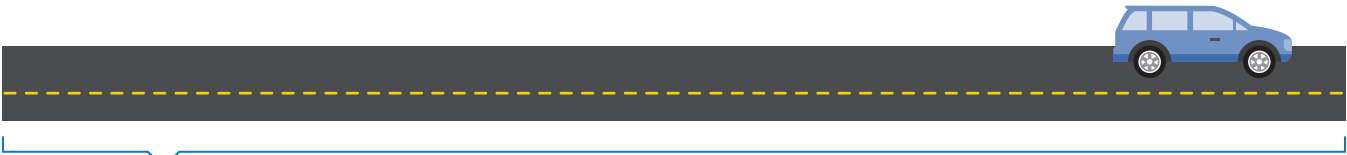
FUTURE TRANSPORTATION FUNDING GAP

The costs of maintaining, operating, and expanding the transportation system have risen dramatically, while the revenues created to maintain and operate the existing system have remained flat. Demands on the system have increased from a growing population and aging infrastructure that is approaching the end of its life cycle. The average age of roads and bridges means that there is an upcoming wave of replacement and rehabilitation that must be funded.

Federal- and state-generated fuel taxes are the primary revenue sources for roadway maintenance, construction and operations. The federal gas tax has been 18.4 cents per gallon since 1993. Colorado’s state fuel tax has remained at 22 cents per gallon since 1991. Fuel taxes are not indexed to inflation and have not been increased since they were implemented, in 1992. Furthermore, due to the steady increase in fuel-efficiency standards, drivers pay less in gas taxes per vehicle mile traveled than they did in 1992. With the increasing popularity of electric vehicles, additional revenue will be lost. Furthermore, revenues have flattened while costs, expressed both as the Colorado Construction Cost Index and price of gasoline, have risen. This has led to a corresponding reduction

in purchasing power from the revenues generated. This level of funding is now 70 percent of the level of funding from when the tax increases was initially approved. Absent new state or federal legislation, it is expected that this trend will continue, widening the gap between revenues and costs. For the 2045 plan, we have identified a total of \$10,615,700,641 in transportation improvement needs. However, we are only able to fund just over \$6 billion or 57% of those needs.

FUNDING CHALLENGES



\$10,615,700,641 is the total cost identified for transportation improvement needs



\$6,045,110,032 is the amount we are able to fund, leaving a need of **\$4,570,590,609** and creating a gap of **43%**





CHAPTER 7

IMPLEMENTATION PLAN

The Pikes Peak region will invest in outcome-driven activities that specifically meet the goals and priorities established in the Regional Transportation Plan. The RTP utilized qualitative and quantitative data gathered through citizen input, partner agency participation, technical analysis and needs assessment to identify the highest priority needs in which to direct funding.

To ensure the transportation system meets existing and future travel needs of the Pikes Peak region, the 2045 Regional Transportation Plan includes implementation guidance for maintenance, operations, safety, and capacity improvements; and for motorized, nonmotorized, transit, and ridesharing systems.

This chapter discusses:

- The recommended project list (Figures 7-1 through 7-5 and Table 7-1);
- Transportation system maintenance, management, and operations strategies; and
- Additional unfunded projects (Table 7-2).

SYSTEM MAINTENANCE & PRESERVATION

Projected funding levels are not sufficient to adequately maintain existing functions or serve projected needs resulting from projected regional population increases and economic growth over the life of the plan. Funding preventive maintenance is crucial to maintaining a transportation system, including maintaining or rehabilitating road surface, and replacing or repairing bridges, as well as maintaining bicycle and pedestrian facilities and public

transportation.

Even though many bridges last their intended design life, there are numerous bridges that currently need rehabilitation, or will in the next 25 years. The infrastructure maintenance goal was established to improve all deficient structures as soon as possible and to provide adequate funding to inspect, maintain, rehabilitate, or replace all state and local bridges.

The primary sources for bridge funding, state funded FASTER Bridge and federal STP funds, require the Pikes Peak region to compete with other regions around the state. At the federal level, Bridge funds are broken into two groups, those funds for bridges not on the federal system and those funds that are for bridges either on or off of the federal system. The Colorado Transportation Commission has a policy that the state-controlled funds for bridges either on or off the federal system will only be used on the State Highway System.

Recommended Maintenance and Preservation Strategies

- Continue resurfacing and reconstruction programs, with priority assigned to higher volume routes.
- Standardize design and use of pavements that better absorb noise and drain water, such as the application of rubberized pavements.

SYSTEM MANAGEMENT & OPERATIONS

System management refers to programs and infrastructure that are used to operate roadways. The goal is to make the transportation system as effective and efficient as possible. Some of the most common features include signal synchronization, traffic monitoring, variable message signs, incident management, public information programs, and marked detours. These types improvements are described in detail in Chapter 8.

Recommended Management and Operations Strategies

Transportation System Management and Operations strategies will be considered and analyzed in connection with all investments in the plan either as individual “stand-alone” projects or as part of another transportation project.

- Implement the Colorado Department of Transportation’s Intelligent Transportation Systems Strategic Plan and regional ITS architecture to enhance incident management program effectiveness.
- Support real-time traveler-information systems, incident management, and information/communication/monitoring systems, including live video feed or internet access to traffic cameras.
- Install “pedestrian timing signals” that count down time remaining for pedestrians to cross at major pedestrian intersections. Install audible pedestrian signal equipment at key locations as warranted. Use alternative pedestrian detection and pre-emption systems as appropriate.
- Expand travel demand management programs to help reduce the number of peak-period single-occupant automobile trips.
- Better link transportation planning and operations, which may include data or resource sharing, cooperative planning, or operations activities.

PUBLIC TRANSPORTATION STRATEGIES

Details about public transit can be seen in the Regional Transit Plan in Appendix D. Some strategies include:

- Evaluate scenarios of reduced capital expenditure and operating funds;
- Expand and strengthen service as funding becomes available; and
- Implement prioritized projects as funding becomes available.

NONMOTORIZED TRANSPORTATION

STRATEGIES

Nonmotorized (bicycle and pedestrian) corridors identified in the Regional Nonmotorized Transportation System Plan are recommended for implementation. Specific projects are contained in the fiscally-constrained project list, Table 7-1.

SPECIALIZED TRANSPORTATION IMPLEMENTATION STRATEGIES

Planned long-range specialized transportation improvements do not assume substantial changes to the existing level of service provided. More information is available in the Specialized Transportation Plan in Appendix D. Additional funding would be required for any notable increases in service provided. The Metro Rides program (carpools, vanpools, school pools, bicycle commuting) is included in the 2019-2022 Transportation Improvement Program and project listings. Potential expansions of Travel Demand Management programs are also included as funding becomes available.

FREIGHT IMPLEMENTATION STRATEGIES

The Moving Forward 2045 Regional Transportation Plan does not include any regional improvement specifically for facilitating the movement of freight. However, PPACG worked in coordination with CDOT during their Freight Plan update in 2017. The update discussed planned improvements at the state level which impact the PPACG roadway network and regional transportation corridors. The suggested improvements throughout the state would also benefit freight traffic in the PPACG region.

Suggested Improvements

- Provide more shoulders and pullouts.
- Targeted safety improvements — signage and geometrics.
- Improved low-clearance infrastructure — bridges, tunnels and

rail crossings.

- Reduced nonrecurring congestion — reduce crashes and improve clearance times.
- Pavement condition improvement.
- Improve bridge conditions.
- Increase last mile connections.

SAFETY INVESTMENT STRATEGIES

- Establish effective programs to monitor and evaluate the highway system to make it possible to identify locations where improvements are needed. Conduct necessary studies and improve deficient locations.
- Support CDOT's efforts to implement the goals, strategies and project needs set forth in the Strategic Highway Safety Plan.
- Continue to participate in Colorado's Strategic Highway Safety Plan and provide direct input to its working groups.
- Work cooperatively with CDOT and local governments to develop Safe Routes to School plans and obtain grant funding from CDOT's Safe Routes to School Grant Program.

ROAD AND HIGHWAY PROJECTS

Roadway and highway transportation projects tend to be the focus of investments and improvements in the Pikes Peak region, as well as most Metropolitan Planning Organizations nationwide. The federal- and state-funded projects in this plan are primarily maintenance, widening, congestion management and safety, not construction of new roads. Within the Pikes Peak region, the construction of new roads is primarily paid for through private funding as part of development agreements. Due to financial constraints or The Colorado Transportation Commission's policies, some new routes may include tollways. The roadway projects recommended for implementation are shown in Table 7-1.

ENVIRONMENTAL JUSTICE ANALYSIS (DOT ORDER 5610.2(A))

As a group, the 2045 projects have the potential to both help and hurt minority and low-income people in the region. Much of the real effect will depend on how the projects are developed and whether any mitigation techniques are used. Mitigation needs and techniques are typically identified by the individual jurisdictions through the federally required NEPA process. At present, it appears likely that EJ populations will benefit from proposed transit projects which will service areas where such populations are concentrated. Since rates of vehicle ownership and the costs of maintaining a vehicle in running order can be difficult or even prohibitive for many people, transit improvements should be especially beneficial. Minority and low-income areas will also benefit from proposed trail improvements — several regional trails will be improved in these neighborhoods.

Of special concern are major widening projects along roads which currently house a large number, or even a majority, of certain minorities and low-income people. The ill effects of more traffic, wider roads, and faster speeds could have disproportionate adverse effects on these populations in a region-wide pattern. It is not certain that this will occur, however, and any final assessment should consider the net effect of mitigating factors and techniques as well as transportation benefits that will accrue to these populations from the 2045 projects.

For the region as a whole, the best way to understand the likely impacts, for better or for worse, would be to perform more targeted outreach to these areas early in the development of the next Plan and TIP process, and to work closely with the appropriate member jurisdictions in determining the best approach for potentially disruptive projects that make use of federal funds.

The recently approved Title VI & Environmental Justice and Limited English Proficiency Plans as required by the DOT order 5610.2(a), include several provisions and recommendations for this type of targeted, proactive outreach and can act as guides moving forward.

The full EJ Analysis can be found in Appendix C.

FISCALLY CONSTRAINED PROJECT LIST

Projects included in Figures 7–1 through 7–5 and Table 7–1, are recommended for implementation through 2045. These projects are planned to be funded through various sources — private, local, the Pikes Peak Rural Transportation Authority, state, and federal. Projects were evaluated, scored, and prioritized by members of our technical committee or TAC, according to the thorough process identified in Chapter 2. Those projects represent the priorities of the region, that can be funded with sources that are reasonably expected to be available throughout the life of the plan. Chapter 6 discusses the expected revenues and costs in detail. Appendix J contains the FFY 2019–2022 Transportation Improvement Program (TIP) project listing that is also considered as part of the fiscally constrained long-range plan revenues and estimates.

UNFUNDED PROJECT LIST

Projects included in Table 7–2, are those that have an identified need but no identified funding source. While these projects would be beneficial to the regional transportation system, funding is not available to implement them within this plan.

TABLE 7–1.1
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Asset Management Projects — CDOT Region 2	CDOT	\$330,463,910
Bridge Enterprise Project	CDOT	\$20,000,000
Bridge Scour Projects	CDOT	\$860,000
CDOT Region 2 — North Program Wall Repair	CDOT	\$3,617,068
I-25 and Research Interchange	CDOT	\$40,475,000
I-25 and SH 21 Interchange	CDOT	\$92,300,000
I-25 Auxiliary Lanes — Garden of the Gods to Fillmore	CDOT	\$15,000,000
I-25 Fillmore to Garden of the Gods	CDOT	\$6,356,000
I-25 Capacity Project (Fountain to South Academy)	CDOT	\$61,081,165
I-25 Median Cable rail (Circle to S. Academy)	CDOT	\$1,609,208
I-25 Median Cable Rail (Phase IV)	CDOT	\$5,990,000
I-25 Pavement Rehabilitation (S. Academy South)	CDOT	\$31,657,000
I-25 Ramp Metering	CDOT	\$3,500,000
I-25 Widening S. Academy to Circle	CDOT	\$1,500,000
I-25 South Academy to Monument: FONSI Approved Project	CDOT	\$111,162,330
Monument Park n Ride: Upgrades.	CDOT	\$8,000,000
Nevada Tejon Park-n-Ride Expansion	CDOT	\$2,000,000
Park n Ride US-24 at 31st St	CDOT	\$5,000,000
Permanent Water Quality Projects	CDOT	\$15,000,000
Pikes Peak Signal Replacements	CDOT	\$6,173,520
Powers (SH-21) and I-25 Interchange Water Quality — Colorado Springs	CDOT	\$6,253,934
Powers Blvd. (SH-21 North) —Woodmen to I-25: FONSI Approved Project	CDOT	\$122,500,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Powers Blvd. (SH-21) Intersection Design	CDOT	\$500,000
Powers Blvd.(SH-21 Central) SH-16 to Woodmen: FONSI Approved Project	CDOT	\$156,500,000
Rainbow Falls Bridge: Repair design and construction for deck and structural repairs.	CDOT	\$250,000
SH-115 — Planning and Environmental Linkage (PEL) Study	CDOT	\$500,000
SH-115 Widening from Gate 6 to Keeton Ranch Road	CDOT	\$10,000,000
SH-67 and Kelly Road: Signal replacement and minor intersection improvements	CDOT	\$645,000
SH-67 Widening in Woodland Park (County Road to Kelly Road)	CDOT	\$4,645,000
SH-83 and CR 404 Round-a-bout	CDOT	\$1,750,000
SH-83 Passing Lanes Project	CDOT	\$3,428,000
SH-83 Traffic Study and Safety Projects	CDOT	\$8,876,167
SH-85 Widening from Comanchi Village Drive to Mesa Road	CDOT	\$10,000,000
SH-94 Capacity Projects	CDOT	\$14,600,000
SH-94 Corridor Safety Study and Design	CDOT	\$500,000
SH-94 PEL Study	CDOT	\$1,000,000
SH-94 Projects Identified from Corridor Plan	CDOT	\$7,000,000
SH-94 Safety Projects	CDOT	\$5,000,000
Smart Mobility and Technology Projects	CDOT	\$15,000,000
Transit Projects — CDOT Transit and Rail Division	CDOT	\$15,000,000
US-24 and Research Pkwy. Design.	CDOT	\$525,000
US-24 East PEL Study	CDOT	\$1,000,000
US-24 East Powers Blvd. (SH-21) to Stapleton Rd.: Project from PEL Study.	CDOT	\$15,000,000

TABLE 7–1.2
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
US-24 Fiber Project	CDOT	\$3,000,000
US-24 West I-25 to Manitou: FONSI Approved Project	CDOT	\$33,896,007
US-24 West Intersection Design	CDOT	\$1,125,000
US-24 West of Manitou to West of Chipitah Park	CDOT	\$5,800,000
US-24 West PEL — Manitou to Divide and Reliever Route	CDOT	\$2,000,000
US-24 West, I-25 to Divide PEL Study	CDOT	\$1,500,000
US-85 and Maxwell Roundabout	CDOT	\$1,445,000
West of Chipitah Park to Woodland Park: Surface treatment.	CDOT	\$8,420,000
Woodmen Park-n-Ride Relocation	CDOT	\$3,000,000
21st St. over Fountain Creek Bridge Replacement: Deteriorated deck - t-girders, substandard sidewalk (west side) and no sidewalk (east side). Replace bridge and widen to accommodate two additional travel lanes, bike lanes, standard sidewalks and construction of Midland Bike Trail underneath.	Colorado Springs	\$3,500,000
21st St. Roadway Improvements: US 24 South to Lower Gold Camp Rd.: Widen 21st St. to a four-lane roadway from US-24 south to Lower Gold Camp Rd. Construct new sidewalk, curb, gutter and bike lanes as none exist. Project will also address drainage deficiencies as water currently sheet-flows off the roadway into curbside ditch or unimproved property.	Colorado Springs	\$6,600,000
30th St. Corridor Improvements: Construct paved shoulders/bike lanes, curb, gutter, pedestrian and intersection improvements from Fontanero St. to Centennial Blvd.	Colorado Springs	\$8,250,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
31st St.: Convert the concrete channel to a naturalistic rock lined channel. The proposed channel will narrow the existing roadway along the 31st Street Bridge and require the reconstruction of four bridges along the corridor. The four bridges over Camp Creek and along the 31st Street project area are at various stages of their service life. For this project, improvements are being considered between Fontanero Street and Colorado Avenue only. The roadway will be narrowed to accommodate a new trail plus the drainage improvements.	Colorado Springs	\$20,000,000
8th St. Improvements: Motor City Way to Fountain Creek: Roadway, pedestrian, bicycle, bridge, and capacity improvements from US-24 south to Lower Gold Camp Rd.	Colorado Springs	\$1,500,000
8th St. over Fountain Creek Bridge Rehabilitation: Deck replacement and substandard road section. Project will replace deck, maintain travel lanes, and add bike lanes as they don't currently exist.	Colorado Springs	\$3,500,000
Academy Blvd.: Bijou St. to Airport Rd. Pavement Reconstruction: Pavement reconstruction Academy Blvd. from Bijou St. to Airport Rd.	Colorado Springs	\$3,817,000
Academy Blvd.: Fountain Blvd. to Milton Proby Pkwy. Pavement Reconstruction: Pavement reconstruction Academy Blvd. from Fountain to Milton Proby Pkwy.	Colorado Springs	\$15,200,000
Academy Blvd.: Palmer Park Blvd. to Bijou St. Pavement Reconstruction	Colorado Spring	\$15,250,000
ADA-Paratransit Bus System Vehicle Replacement: Replace existing fleet of ADA paratransit buses to maintain 2011 service levels.	Colorado Springs	\$1,400,000
ADA-Paratransit Vehicle Purchase (Fleet Expansion): Expand existing fleet of ADA paratransit buses to provide additional service for the region.	Colorado Springs	\$1,400,000

TABLE 7–1.3
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Airport Rd. over Sand Creek Bridge Rehabilitation: Restore the structural integrity and correct major defects. Construct Sand Creek Trail underneath the bridge while maintaining access to Airport Rd. bike lanes.	Colorado Springs	\$6,000,000
Airport Rd. over Spring Creek Bridge Replacement: Substandard road section and undersized. Project will increase bridge capacity, maintain travel lanes, and add sidewalks and bike lanes as they don't currently exist.	Colorado Springs	\$3,000,000
Austin Bluffs Pkwy/Garden of the Gods Rd./ Nevada Ave. Intersection Improvements: .25 miles, 4-6 lanes, 40 mph principal arterial. This project will improve traffic operations and safety for the intersection of Austin Bluffs Parkway/Garden of the Gods Road and Nevada Avenue. The intersection will be designed as a continuous flow intersection for Nevada Avenue which will require additional right of way. The project will also require a new bridge on Garden of the Gods Road over Monument Creek in order to extend left-turn storage onto northbound Nevada Avenue. The enhanced intersection design includes a grade separated bike/pedestrian crossing of Nevada Avenue. The project includes conduit, which will support future smart transportation projects. The project will also install traffic signal improvements, curb, gutter, sidewalks and extend the multi-use trail along Austin Bluffs Parkway to the Pikes Peak Greenway.	Colorado Springs	\$32,000,000
Cache La Poudre over Monument Creek Bridge Rehabilitation: Bridge Replacement: Cache LaPoudre Bridge was built in 1940 and has a deteriorated deck requiring replacement.	Colorado Springs	\$2,927,000
Cascade Ave. over Cheyenne Run: Bridge Replacement: Cascade Bridge is a concrete arch built in 1925. The bridge is too narrow for the roadway and has deteriorated concrete and hydraulic issues.	Colorado Springs	\$1,500,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Centennial Blvd. Extension: Fillmore St. to Fontanero St.: Construct the 4-lane minor arterial extension from Fillmore St. to I-25. Include bike lanes, pedestrian facilities with pedestrian access to Sonderman Park from Mesa Springs neighborhood. Include noise walls/berms adequate to shield Sonderman Park and Mesa Springs neighborhood from excessive noise per the Intermodel Transportation Plan.	Colorado Springs	\$10,450,000
Chapel Hills Transfer Station Upgrade: Upgrade existing Chapel Hills transfer station location to support existing service levels.	Colorado Springs	\$160,000
Chelton Rd. Bridge over Spring Creek: This project will address a much needed bridge replacement on Chelton Road at Spring Creek. The new bridge will include increased flow capacity to accommodate 100 year floods, as water currently overtops the bridge under large storm events.	Colorado Springs	\$6,000,000
Circle Dr. Eastbound over Fountain Creek Bridge Rehabilitation: Circle Dr. eastbound bridge was built in 1963 and has a deteriorated deck and rail requiring a deck replacement. Phase 1 of the rehabilitation is complete on the substructure.	Colorado Springs	\$3,300,000
Circle Dr. Eastbound over Hancock Expwy. Bridge Rehabilitation: Circle Dr. eastbound bridge was built in 1963 and has a deteriorated deck and rail requiring a deck replacement. Phase 1 of the rehabilitation is complete on the substructure.	Colorado Springs	\$3,300,000
Circle Dr. Westbound over Fountain Creek Bridge Rehabilitation: Circle Dr. westbound bridge was built in 1963 and has a deteriorated deck and rail requiring a deck replacement. Phase 1 of the rehabilitation is complete on the substructure.	Colorado Springs	\$3,300,000
Circle Dr. Westbound over Hancock Expwy. Bridge Rehabilitation: Circle Dr. westbound bridge was built in 1963 and has a deteriorated deck and rail requiring a deck replacement. Phase 1 of the rehabilitation is complete on the substructure.	Colorado Springs	\$3,300,000

TABLE 7–1.4
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Citadel Transfer Station Replacement: Replace existing Citadel Transfer Station to support existing service levels.	Colorado Springs	\$2,000,000
Colorado Ave. Roadway Improvements: 2.1 miles; 3-5 lanes; 25-35 mph; minor arterial; Reconstruct a 2.1 mile segment of Colorado Ave. between 33rd and Limit St. Reconstruction of Colorado Ave. as a 3-lane road with a travel lane in each direction and a continuous center turn lane where one does not exist today. The project will enhance ADA accessibility with curb, gutter, sidewalk, and ramp improvements. Many of the pedestrian facilities do not meet ADA requirements today. Stormwater, conduit, and utility improvements are also part of the project. The design process would determine bike lane and parking improvements. The project includes reconstructing the Camp Creek bridge at 31st St. The corridor is located within the PPACG Top 10 Regional Non-motorized corridors.	Colorado Springs	\$14,500,000
Colorado Springs Citywide Congestion and Incident Management Signal Improvement I: Implement citywide/regionwide Intelligent Transportation Systems (ITS) to improve traffic operations, coordinate systems and improve safety. Improvements may include monitoring systems, hardware and software, message systems, metering, communication infrastructure, specialized equipment and staff.	Colorado Springs	\$4,000,000
Colorado Springs Citywide Congestion and Incident Management Signal Improvement II: Implement citywide/regionwide Intelligent Transportation Systems (ITS) to improve traffic operations, coordinate systems and improve safety. Improvements may include monitoring systems, hardware and software, message systems, metering, communication infrastructure, specialized equipment and staff.	Colorado Springs	\$5,000,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Colorado Springs Citywide Intersection Improvements I: Over a 10-year period, upgrade approximately 10 congested intersections throughout the city to reduce traffic delay, add roadway capacity, remove traffic bottlenecks, enhance transit operations and/or improve nonmotorized transportation facilities. This program will target intersections such as Platte Ave./Murray Blvd., S. Nevada Ave./Cheyenne Rd. /Southgate Rd., N. Nevada Ave./Garden of the Gods Rd./Austin Bluffs Pkwy., Briargate Pkwy./Voyager Pkwy., Academy Blvd./Fountain Blvd. and Powers Blvd. (SH-21)/Constitution Ave.	Colorado Springs	\$10,000,000
Colorado Springs Citywide Intersection Improvements II: Over a 10-year period, upgrade approximately 10 congested intersections throughout the city to reduce traffic delay, add roadway capacity, remove traffic bottlenecks, enhance transit operations and/or improve nonmotorized transportation facilities. This program will target intersections such as Platte Ave./Murray Blvd., S. Nevada Ave./Cheyenne Rd./Southgate Rd., N. Nevada Ave./Garden of the Gods Rd./Austin Bluffs Pkwy., Briargate Pkwy./Voyager Pkwy., Academy Blvd./Fountain Blvd. and Powers Blvd. (SH-21)/Constitution Ave.	Colorado Springs	\$12,000,000
Colorado Springs Citywide On-Street Bikeway Improvements II: Restripe and/or sign existing roadways or make needed capital improvements to create new or enhanced on-street bicycle lanes, bicycle routes, paved shoulders, connectivity improvements between on- and off-street bicycle facilities, and related bicycle infrastructure and enhancements projects citywide. Projects will stem from the City's current Intermodal Transportation Plan, Bicycle/Trails Plan and other related plans or policies.	Colorado Springs	\$12,000,000

TABLE 7–1.5
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Colorado Springs Citywide On-Street Bikeway Improvements Phase I: Restripe and/or sign existing roadways or make needed capital improvements to create new or enhanced on-street bicycle lanes, bicycle routes, paved shoulders, connectivity improvements between on- and off-street bicycle facilities, and related bicycle infrastructure and enhancements projects citywide. Projects will stem from the City’s current Intermodal Transportation Plan, Bicycle/Trails Plan and other related plans or policies.	Colorado Springs	\$10,000,000
Colorado Springs Citywide Pedestrian Transportation Improvements Phase I: Construction of new or capital reconstruction of ADA-accessible sidewalks and ramps, crossing improvements, safety en- hancements, etc. for improved pedestrian mobility and accessibility along high-activity corridors like arterial and collector St., transit routes, and to serve important community origins/destinations.	Colorado Springs	\$5,153,000
Colorado Springs Citywide Pedestrian Transportation Improvements Phase II: Construction of new or capital reconstruction of ADA-accessible sidewalks and ramps, crossing improvements, safety enhancements, etc. for improved pedestrian mobility and accessibility along high-activity corridors like arterial and collector streets., transit routes, and to serve important community origins/destinations.	Colorado Springs	\$2,918,000
Colorado Springs Citywide Road Weather Information Systems: Add an additional five systems citywide. Currently there are seven systems installed throughout the city with none farther north than the Chapel Hills Mall or farther east than Powers Blvd. (SH-21).	Colorado Springs	\$330,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Colorado Springs Citywide Roadway Safety, Traffic Operations, and Maintenance I: Install infrastructure such as guard rails, construct/reconstruct medians and intersection to improve capacity, and install traffic control devices where warranted to improve traffic operations and safety. Purchase and install impact attenuators at locations where fixed hazards cannot be moved.	Colorado Springs	\$10,000,000
Colorado Springs Citywide Roadway Safety, Traffic Operations, and Maintenance II: Install infrastructure such as guard rails, construct/reconstruct medians and intersection to improve capacity, and install traffic control devices where warranted to improve traffic operations and safety. Purchase and install impact attenuators at locations where fixed hazards cannot be moved.	Colorado Springs	\$12,000,000
Colorado Springs Citywide School and Neighborhood Pedestrian Improvements Phase I: Construction or capital reconstruction of ADA-accessible sidewalks and ramps, crossing improvements, safety enhancements, etc. for improved pedestrian mobility, accessibility and safety to enhance safe routes to school, parks/trails/open spaces, and other high-priority neighborhood destinations. Staff is currently identifying specific capital school walk route and crossing needs for the 135 schools in the City, which include over 1,000 crossing locations (dozens of very small, small and medium-scale projects citywide).	Colorado Springs	\$3,027,000
Colorado Springs Citywide School and Neighborhood Pedestrian Improvements Phase II: Construction or capital reconstruction of ADA-accessible sidewalks and ramps, crossing improvements, safety enhancements, etc. for improved pedestrian mobility, accessibility and safety to enhance safe routes to school, parks/trails/open spaces, and other high-priority neighborhood destinations. Staff is currently identifying specific capital school walk route and crossing needs for the 135 schools in the City, which include over 1,000 crossing locations (dozens of very small, small and medium-scale projects citywide).	Colorado Springs	\$1,009,000

TABLE 7–1.6
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Colorado Springs Citywide Traffic Signal System Upgrade I: Design and reconstruct dilapidated traffic signal systems at 60 locations across the City.	Colorado Springs	\$15,000,000
Colorado Springs Citywide Traffic Signal System Upgrade II: Design and reconstruct dilapidated traffic signal systems at 60 locations across the City.	Colorado Springs	\$15,000,000
Companion Drainage Improvements for Roadway Projects: Correct drainage problems, such as broken culverts on pavement reconstruction projects that were not identified in the original cost estimate.	Colorado Springs	\$5,000,000
Cottonwood Creek Trail Corridor Improvements: Construct 12' concrete Tier 1 trail segments, crossing improvements (at-grade and grade-separated), drainage improvements, connectivity enhancements, signage/related amenities.	Colorado Springs	\$600,000
Drennan Rd. over Jimmy Camp Creek Bridge Replacement: Load posted DT girder, substructure and deck issues. Construct new bridge meeting standards to include curb, gutter, sidewalk and bike lanes.	Colorado Springs	\$2,000,000
El Paso St. Bridge over Fountain Creek Tributary Replacement: El Paso St. Bridge was built in 1939 and has a deteriorated deck and lacks adequate vertical and horizontal clearances.	Colorado Springs	\$1,000,000
Emergency Bridge Fund: To provide program funds for bridge reconstruction or rehabilitation based on unidentified or unexpected structural problems. An example would be a semi-truck hitting the pier of the bridge causing severe structural damage to the bridge.	Colorado Springs	\$10,762,000
Enchanted Cir. over Sand Creek Tributary Bridge Replacement: Enchanted Cir. Bridge is a concrete pipe. Replacement due to failures along the crown of the pipe; this structure has steel plates temporally bridging the culvert.	Colorado Springs	\$300,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Fillmore St. Roadway Improvements: This project entails widening Fillmore St. from 4 to 6-lanes from Cascade to I-25, and extending left-turn storage at the Nevada Avenue/Fillmore Street intersection. Smart Roadway applications including conduit will also be applied, providing support for future smart transportation improvements. The bridges over Monument Creek/Pikes Peak Greenway and bridges over the Union Pacific Railroad will be widened with this project. The project also includes a trail connection down to the Pikes Peak Greenway. The project will improve the existing sidewalks bringing them to ADA compliance.	Colorado Springs	\$39,600,000
Fixed-Route Bus System Vehicle Replacement: Replace existing fleet of local fixed-route buses to maintain 2011 service levels.	Colorado Springs	\$4,700,000
Fixed-Route Bus System Vehicle Replacement: Replace existing fleet of local fixed-route buses to maintain 2011 service levels.	Colorado Springs	\$4,700,000
Fixed-Route Vehicles Purchase (Fleet Expansion): Expand existing fleet of local fixed-route buses to provide additional service for the region.	Colorado Springs	\$4,700,000
Ft. Carson/PPCC Transfer Station Upgrade: Upgrade existing Fort Carson/PPCC Transfer Station to support existing service levels.	Colorado Springs	\$700,000
Galley Rd. over Sand Creek Bridge Replacement: Galley Rd. Bridge was built in 1965; replacement is needed since this bridge is too narrow for the roadway and is hydraulically inadequate.	Colorado Springs	\$1,936,000
Gateway Rd. over Camp Creek Bridge Replacement: Gateway Rd. Bridge was built in 1950; the bridge is too narrow for the roadway and is hydraulically inadequate.	Colorado Springs	\$1,500,000
Hancock Expwy. Realignment: Clarendon Dr. to Chelton Rd.: Construct street and drainage improvements by extending Chelton Rd. south to Drennan Rd. and realigning Hancock Exwy east from Monica Dr./Claredon Dr. to new Chelton Rd.	Colorado Springs	\$6,600,000

TABLE 7–1.7
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
I-25 Ramps: S. Nevada Ave./Tejon St. Corridor Improvements: Reconstruct Nevada Ave. and Tejon St. along I-25. Split ramps to improve traffic operations, safety, and enhance multimodal options both through and across the corridor.	Colorado Springs	\$5,500,000
Las Vegas St. Corridor Improvements: Construct/reconstruct Las Vegas St. from Tejon St. to US-85/US-87 to include turn lanes, bike and pedestrian facilities, railroad crossing and other safety improvements.	Colorado Springs	\$18,150,000
Las Vegas St./Royer St. Union Pacific Rail Road Crossing Relocation: Construction of approximately 700 ft. of new roadway connecting Las Vegas St. and Hancock Expwy., an at-grade crossing of the Union Pacific Railroad tracks near Spring Creek, and modification of Las Vegas St. to facilitate the new connection and meet design criteria for the railroad crossing. Project also includes construction associated with the elimination of the existing railroad crossing at Royer St.	Colorado Springs	\$3,850,000
Marksheffel Road Roadway Improvements: Construct the 2.2 mile connection of Marksheffel Rd. from Black Forest Rd. to Woodmen Rd. as a 4-lane road with a continuous center turn lane. It also completes the widening of Marksheffel Rd. to 4-lanes from Woodmen Rd. to North Carefree Cr., a distance of 3.3 miles. The project includes conduit, which will support developing technologies. The project will also construct intersection and bridge improvements; install traffic signals, curb, gutter, sidewalks and segments of multi-use trails in some locations.	Colorado Springs	\$45,000,000
Mayhurst Ave. over Cheyenne Creek Bridge Replacement	Colorado Springs	\$1,306,000
Park-and-Ride Access for Bicycles and Pedestrians: Make bicycle and/or pedestrian access improvements to existing park-and-ride lots and transit substations. This will include improved sidewalks, trail connectivity, bicycle parking, directional and information signage, etc.	Colorado Springs	\$109,311
Paseo Rd. Bridge over Shooks Run Tributary Bridge Replacement: Replace Paseo Rd. bridge over Shooks Run tributary.	Colorado Springs	\$600,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Pikes Peak Greenway Corridor Improvements Phase I: Various improvements along the Tier 1 Pikes Peak Greenway corridor including trail paving, capital corridor reconstruction, crossing improvements (at-grade and grade separated), drainage improvements, connectivity enhancements, and signage and related amenities.	Colorado Springs	\$2,500,000
Pikes Peak Greenway Corridor Improvements Phase II: Various improvements along the Tier 1 Pikes Peak Greenway corridor including trail paving, capital corridor reconstruction, crossing improvements (at-grade and grade separated), drainage improvements, connectivity enhance-ments, and signage and related amenities.	Colorado Springs	\$2,500,000
Platte Ave. Connection to I-25 Study: Conduct a study to determine improved connection from I-25 to Platte Ave.	Colorado Springs	\$550,000
Platte Ave. Corridor Improvements Study: Corridor Study: The Platte Ave. corridor contains two existing bridges that lack adequate vertical clearance and horizontal clearance. The bridges are in poor condition with the El Paso St. bridge, built in 1939, being the worst of the two. Portions of Platte Ave. will probably have to be reconstructed to obtain appropriate clearances. Platte Ave. is a major east/west corridor; as a result, this is a challenging project that will require a significant amount of time, coordination and effort to plan. The bridge rehabilitations are one of the driving factors for establishing an improvement approach for the Platte Ave. corridor.	Colorado Springs	\$2,200,000
Platte Ave. East Bound over Sand Creek Bridge Replacement: Platte Ave. eastbound bridge was built in 1956; due to the type of construction, replacement is required.	Colorado Springs	\$5,874,000
Platte Ave. West Bound over Sand Creek Bridge Replacement: Platte Ave. westbound bridge was built in 1956; due to the type of construction, replacement is required.	Colorado Springs	\$5,874,000

TABLE 7–1.8
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Powers Blvd. (SH-21) Extension: 4 miles; 4 lanes; 55 mph; expressway (future freeway); The project entails the construction of a 4 mile extension of Powers Blvd. (SH-21) following the approved Environmental Assessment alignment between SH-83 and Voyager Pkwy. Powers Blvd. (SH-21) will be constructed at-grade with phase 2 constructing the grade separated freeway facility. The design will include shoulders much like the existing cross-section on Powers Blvd. (SH-21) through Briargate Pkwy. today, with bridges and crossings for the La Forret and golf course trails. The project is being funded as a public/private venture and is one of the key recommendations of the East-West Mobility Study completed in 2003.	Colorado Springs	\$150,000,000
Replace and Upgrade Transit IT Equipment and software: Maintain and upgrade existing transit hardware allowing for smart-cards, real-time bus information, traffic signal prioritization, etc. to improve efficiency and customer service.	Colorado Springs	\$300,000
Rock Island Trail Corridor Improvements I: Various improvements along the Tier 1 Rock Island Trail corridor including trail paving, capital corridor reconstruction, crossing improvements (at-grade and grade separated), drainage improvements, connectivity enhancements, and signage and related amenities.	Colorado Springs	\$2,000,000
Rock Island Trail Corridor Improvements II: Various improvements along the Tier 1 Rock Island Trail corridor including trail paving, capital corridor reconstruction, crossing improvements (at-grade and grade separated), drainage improvements, connectivity enhancements, and signage and related amenities.	Colorado Springs	\$3,000,000
S. Cheyenne Canyon Rd. over Cheyenne Creek Bridge Replacement: S. Cheyenne Canyon Rd., Bridge was built in 1956; the bridge is structurally and hydraulically inadequate.	Colorado Springs	\$410,000
Sand Creek Trail Corridor Improvements: Palmer Park Blvd. to Constitution Ave.: Construction of a new 12' trail to include pedestrian underpasses and two pedestrian bridges.	Colorado Springs	\$800,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Shook’s Run Bridge Replacements: Bridge Replacements for deteriorated conditions at: Uintah St., Fountain Blvd., Costilla St., Cache La Poudre St., Uintah and Bijou Ave. Construct new bridges for Shooks Run Trail crossings.	Colorado Springs	\$23,000,000
Shook’s Run Trail Corridor Improvements: Various improvements along the Tier 1 Shook’s Run Trail corridor including trail paving, capital corridor reconstruction, crossing improvements (at-grade and grade separated), drainage improvements, connectivity enhancements, signage/related amenities.	Colorado Springs	\$800,000
Shooks Run Trail Improvements: Construction of the Shooks Run Trail (2.5 miles long, 12’ paved multiuse trail). Shooks Run Trail is a major component of the non-motorized network and is a Tier I trail in the Trails Master Plan. As a Tier I trail, most of the major roadway crossings are intended to be grade separated to provide convenient and comfortable crossings for non-motorized users. The overall vision for Shooks Run is to create a continuous “greenway” along the corridor from the confluence of Fountain Creek to the headwaters in the Patty Jewett Golf Course.	Colorado Springs	\$19,567,000
Sidewalk/Bus Stop Program on Existing Routes (Ramps, Pads, Route Changes, Enhancements): Construct/rebuild ADA pedestrian ramps, bus stop pads, and sidewalks on existing routes.	Colorado Springs	\$1,500,000
Sidewalk/Bus Stop Program on Expanded Routes (Ramps, Pads, Rute Changes, Enhancements): Construct/rebuild ADA pedestrian ramps, bus stop pads, and sidewalks on expanded routes.	Colorado Springs	\$500,000
Sinton Trail Corridor Improvements: Various improvements along the Tier 1 Sinton Trail corridor including trail paving, capital corridor reconstruction, crossing improvements (at-grade and grade separated), drainage improvements, connectivity enhancements, signage/related amenities.	Colorado Springs	\$600,000

TABLE 7–1.9
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Stratton Ave. over Cheyenne Creek Bridge Replacement: Bridge Replacement: Stratton Bridge was built in 1940 and has a deteriorated condition; the bridge is the only access to over 20 residents.	Colorado Springs	\$1,000,000
Templeton Gap Trail Corridor Improvements: Pave (with concrete) and make other improvements to various sections of the Templeton Gap Trail (Union Blvd. to Hancock Ave., Hancock Ave. to Nevada Ave., Nevada Ave. to Goose Gossage Park).	Colorado Springs	\$600,000
Transit - MMT Regional Projects: Please see Appendix D for the full list of planned transit projects in the region.	Colorado Springs	\$955,177,000
Union Pacific Rail Road Mainline over Fontanero St. Bridge Replacement: Fontanero Bridge was built in 1963; the design was sub-standard with the bridge only being half as strong as intended.	Colorado Springs	\$3,250,000
Union Pacific Rail Road Nevada Ave./Tejon St. Crossing Reconstruction (Design Only): UPRR Nevada and Tejon St. crossing reconstruction (design only).	Colorado Springs	\$3,300,000
Union Pacific Rail Road Siding over Fontanero St. Bridge Replacement: Fontanero Bridge was built in 1963; the design was sub-standard with the bridge only being half as strong as intended.	Colorado Springs	\$3,250,000
Vanpool Vehicle Replacement: Replace existing fleet of vanpool vans to maintain 2011 service levels.	Colorado Springs	\$800,000
W. Fillmore St. over Unnamed Channel Bridge Replacement: West Fillmore St. bridge is a corrugated metal pipe built in the 1980s; replacement is needed since this structure type only has a 40-50 year service life.	Colorado Springs	\$1,000,000
Water St. over Camp Creek Bridge Replacement	Colorado Springs	\$1,243,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Weber St. Transportation Improvements: Improve Weber St. to meet city standards from Lilac St. to Jackson St. The project will also construct a trail and transit only connection across the old Rock Island Railroad to Fillmore St. The trail and transit connection includes a bridge and trail connections to the Rock Island Trail.	Colorado Springs	\$10,000,000
Zoo Rd. over Unnamed Channel (Corrugated Metal Pipe Replacement): Zoo Rd. bridge is a corrugated metal pipe built in 1980s; replacement is needed since this structure type only has a 40-50 year service life.	Colorado Springs	\$500,000
Intelligent Transportation Systems: Conduct a Study identifying emerging technologies and infrastructure needs, and implement strategies that provide for efficient and safe transportation separate from widening roadway infrastructure. This project will include, but not be limited to, conduit, fiber optic, advanced communications, computer applications, advanced detection, data collection, analysis, hardware or any other advancement that improves traffic flow, real time traffic/transit information, provides routing/re-routing information, and/or improves safety.	Colorado Springs	\$13,000,000
Platte Avenue Corridor Improvements: This project will implement recommendations from the PPRTA study which will include design, potential roadway widening, installation of conduit and other ITS applications, spot intersection improvements, and consideration of reconfiguring Platte Ave. and Boulder St. to operate as one-way couplets. In addition to addressing traffic congestion, the project includes repair or replacement of several sub-standard bridges. Several of the bridges constrict the roadway width of Platte Ave. while others support grade separated bicycle and pedestrian travel across Platte Ave.	Colorado Springs	\$48,000,000
Black Forest Rd.: Woodmen Rd. to Research Pkwy.: Roadway Improvements: Widen Black Forest Rd. to a 4-lane principal arterial cross-section from Woodmen Rd. to Research Pkwy. extension, including a new bridge over Cottonwood Creek.	Colorado Springs, El Paso County	\$12,400,000

TABLE 7–1.10
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Stapleton Dr./Briargate Pkwy. Corridor Study: Corridor study needed to obtain citizen input and develop plan for preserving and constructing missing segments of corridor (5.3 miles) through the City and County. Corridor study to also develop strategy for funding which could include federal funds, local funds, developer participation, PPRTA, etc. Approximate study limits from Powers Blvd. (SH-21) to Meridian Rd.	Colorado Springs, El Paso County	\$1,100,000
Tutt Blvd. Extension: Dublin Blvd. to Templeton Gap Rd.: Design, ROW acquisition and construction of a four-lane arterial section of Tutt Blvd.	Colorado Springs, El Paso Country	\$1,948,000
W. Colorado Ave. Reconstruction: 31st St. to US-24: Reconstruct West Colorado Ave. from 31st St. to US-24 as 2-lane road with center turn lane. Include curb, gutter, pedestrian and bike facilities, bridge replacement, transit enhancements, ROW, utility relocation and drainage. Partnership between City, County, Manitou Springs and CDOT.	Colorado Springs, El Paso County, Manitou Springs	\$35,500,000
Academy Blvd. Widening: Design and construct a road widening from 4 to 6 lanes from I25 ramps to SH 115 to include shoulders, improved sight distance with horizontal and vertical improvements, and address turn lanes and intersection improvements where needed. To accommodate the new lanes and multiuse shoulders for enhanced multimodal safety and improve drainage, replace or repair the seven bridges and underpasses to Pikes Peak Community College (PPCC), and evaluate an interchange at Venetucci Blvd. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$54,000,000
ADA Compliance Program: Work will occur on a variety of roads in the unincorporated area within the MPO boundary to carry out an ADA Compliance Program.	El Paso County	\$12,000,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Arroya Ln. / Woodmen Hills / Rock Island Regional Trails: Connect the City of Colorado Springs and Falcon with a contiguous non-motorized trail. It will connect to 5 sidewalks, 3 trails, commercial developments, and several neighborhoods. 8 ft wide: 6.00-Miles: Starting Vollmer Rd. and Arroya Ln., the trail follows Arroya Ln. east, past Raygor Rd., then turning southeast continuing past Stapleton Dr., past Woodmen Rd., before turning northeast along US-24 to Old Meridian Rd.	El Paso County	\$1,000,000
B St. at Crestridge Ave.: Traffic signal replacement and intersection reconstruction/safety improvement. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso County	\$750,000
Beacon Lite Rd.: SH-105 to County Line Rd.: Sight distance with horizontal and vertical improvements, surface paving (existing gravel portion), shoulders, multi-modal improvements, drainage and intersection capacity improvements.	El Paso County	\$4,361,000
Black Forest Rd.: Paving: Design and construct surface improvements to Black Forest Rd. by converting the gravel road to pavement, fixing alignments, improving drainage, and improving intersections. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$13,500,000
Black Forest Rd.: Research Pkwy. to Wildridge Rd.: Bring roadway to current 2-lane arterial standards, sight distance, horizontal and vertical improvements, shoulders, drainage and intersection improvements, auxiliary lane improvements, multimodal improvements.	El Paso County	\$15,768,000
Bradley Rd. at Hancock and Main St.: Traffic signal replacement and intersection reconstruction/safety improvement at the Bradley Rd. and Hancock Expy./Main St. intersection. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso County	\$750,000

TABLE 7–1.11
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Bradley Rd.: Design and construct upgrades on approximately 1 mile of Bradley Rd from Academy to Hancock from two to four lanes and improve sight distance and intersections where needed. From Academy Rd to Hancock Exp. design and construct two additional lanes to improve the road to a four lane principle arterial with multimodal access and turn lanes where needed. Resurface the current two lane section and ensure proper drainage. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$5,500,000
Chamberlin South Improvements: Pavement reconstruction, drainage and intersection improvements, and pedestrian improvements.	El Paso County	\$269,000
Charter Oak Ranch Rd.: Design and reconstruction of Charter Oak Ranch Rd. from I-25 to Fort Carson Gate 19.	El Paso Coutny	\$15,000,000
Curtis Road Improvements: Design and reconstruct the eight mile road segments between Judge Orr Rd. and SH-94. Design and construct features that address the higher accident rate including shoulders and improving sight distance with horizontal and vertical improvements, include drainage features, and add turn lanes and intersection improvements where needed. Add multimodal improvements. Maintain bridges and culverts on this segment. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$45,000,000
Deer Creek Rd.: Monument Hill Rd. to Woodmoor Dr., Base Camp Rd. and Emigrant Trail E.: Road rehabilitation, shoulder improvements, pedestrian improvements.	El Paso County	\$200,000
Eastonville Rd.: McLaughlin Rd. to Latigo Blvd.: Bring arterial roadway to current standards, sight distance, horizontal and vertical improvements, surface paving (existing gravel areas), shoulders, drainage and intersection improvements, auxiliary lane improvements, multimodal improvements.	El Paso County	\$8,525,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Eastonville Road Paving: Design and construct surface improvements to Eastonville Rd. by converting the gravel road to pavement. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$18,000,000
Fontaine Blvd. at Grinnel St.: Traffic signal replacement and intersection reconstruction/ safety improvement. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso Coutny	\$750,000
Fontaine Blvd. at Security Blvd./Widefield Blvd.: Traffic signal replacement and intersection reconstruction/ safety improvement. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso County	\$1,250,000
Fontaine Blvd. Improvements: Easy St. to Marksheffel Rd.: Upgrade and maintain Fontaine Blvd. from Easy St. to Marksheffel Rd. to principle arterial standards. Resurface and maintain the road segments. Design and construct shoulders, improve sight distance with horizontal and vertical improvements, address drainage, add turn lanes and intersection improvements where needed. Address the high accident rates at Fontaine Blvd. and Powers Blvd. (SH-21) Include sidewalks and other multimodal access needs.	El Paso County	\$25,000,000
Fontaine Blvd.: Grinnell St. to Powers Blvd.: Resurface and maintain the road segments, shoulder improvements, pedestrian improvements, improve sight distance, drainage, turn lanes and intersections where needed.	El Paso County	\$10,011,000
Fountain Creek Regional Trail: An 8-foot wide, 14.5 mile long segment of trail; This project will complete the Fountain Creek Regional Trail and the last segment of the Front Range Trail through El Paso County. It will connect to 2 transit stops, one park and ride location, and 3 parks/open spaces.	El Paso County	\$2,500,000

TABLE 7–1.12
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Fountain Mesa Rd.: Caballero Ave. to Fontaine Blvd. Improvements: Resurface and maintain the road segments, shoulders improvements, pedestrian improvements, improve sight distance, drainage, turn lanes and intersections where needed.	El Paso County	\$1,619,000
Galley Rd. Sidewalks: Design and construct missing multimodal segments, upgrade to current ADA standards, and improve intersection safety. Fix the drainage problems.	El Paso County	\$4,000,000
Garrett Rd. Upgrade: US-24 to Curtis Rd.: Upgrade Garrett Rd. from US-24 to Curtis Rd. from a collector to a minor arterial. Resurface and maintain the road segments. Design and construct shoulders, improve sight distance with horizontal and vertical improvements, address drainage, add turn lanes and intersection improvements where needed.	El Paso County	\$18,000,000
Gleneagle Dr. and Struthers Rd. Roundabout: Improve safety and traffic efficiency, design and construct a roundabout at the intersection of these two collector streets, address multimodal access, poor alignments and drainage.	El Paso County	\$3,000,000
Grinnell Blvd.: Bradley Rd. to Powers Blvd. (SH-21): Design and construct upgrades to this higher-accident-rate road segment on Grinnell Blvd. from Powers Blvd. (SH-21) to Bradley Rd. by expanding lanes from 2 to 4. Improve safety at higher-accident-rate intersections including Powers Blvd. (SH-21), Bradley Rd. and Fontaine Blvd. Design and construct shoulders, improve sight distance with horizontal and vertical improvements, address drainage, add turn lanes and other needed intersection improvements. Add a regional trail on the east side of Grinnell Blvd. for multimodal access.	El Paso County	\$2,614,000
Hancock Expwy. at Clearview Dr./Yucatan Dr.: Traffic signal replacement and intersection reconstruction/safety improvement. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso County	\$750,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Hodgen Rd.: Black Forest Rd. to Eastonville Rd.: Bring roadway to current two-lane arterial standards, sight distance, horizontal and vertical improvements, surface paving (existing gravel areas), shoulders, drainage and intersection improvements, auxiliary lane improvements, multimodal improvements, bridge replacement.	El Paso County	\$11,095,000
Hodgen Road Improvements: Design and construct surface treatments and features that address the higher accident rate including multiuse shoulders and improving sight distance with horizontal and vertical improvements, include drainage features, and add turn lanes and intersection improvements where needed. At Roller Coaster and Hodgen Rd., design and construct a signal/roundabout and intersection improvements. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$23,000,000
Jackson Creek Regional Trail: Connect the City of Colorado Springs and Monument with a contiguous non-motorized trail. 8-FT Wide: 5.80-Miles: Starting at SH-105 the trail follows Jackson Creek Parkway south, turning east near Leather Chaps Drive, turning south near Gleneagle Dr., Crossing Baptist Rd. and turning southwest near Jessie Dr. following open spaces to Struthers Rd. The trail then splits into two sections, one heading west under I-25 to the New Santa Fe Trail, the other heading south along Struthers Rd. to North Gate Blvd. and the City of Colorado Springs trail system.	El Paso County	\$1,500,000
Jimmy Camp Creek Regional Trail: Connect the City of Colorado Springs and Fountain with a contiguous non-motorized trail. Connect to 4 sidewalks, 8 trails, 3 parks, 2 open spaces, commercial developments, and several neighborhoods. 8-FT Wide: 21.00-Miles: Starting at the confluence of Jimmy Camp Creek and Fountain Creek, the trail continues northeast along Jimmy Camp Creek, continuing north through the Lorson Ranch subdivision, continuing north to the City's Corral Bluffs Open Space, turning northwest and connecting to the City's trail system.	El Paso County	\$2,300,000

TABLE 7–1.13
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Lake Woodmoor Dr.: From Woodmoor Dr. to SH-105, design and construct improvements to sight distances and intersections, resurface pavement, maintain drainage, and add multimodal facilities. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$12,000,000
Londonderry Dr. Sidewalks: Design and construct missing multimodal segments, upgrade to current ADA standards, address drainage and improve intersection safety.	El Paso County	\$2,700,000
Loy Creek Rd./Rampart Range Improvements: Design and construct an overlay the road, new, striping, and safety improvements such as guard rail where needed. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$19,800,000
Main St. at Norman Dr.: Traffic signal replacement and intersection reconstruction/safety improvement. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso County	\$500,000
Main St. at Security Blvd.: Traffic signal replacement and intersection reconstruction/safety improvement. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso County	\$750,000
Major Transportation Corridors Plan (MTCP): Update the MTCP to ensure the County plans for future growth in transportation infrastructure and preserves ROW for the future.	El Paso County	\$603,936
Meridian Rd./McLaughlin Rd. Roundabout: Reconstruct intersection and build a roundabout, drainage and water quality improvements, multimodal improvements, road resurfacing.	El Paso County	\$2,376,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Meridian Rd.: Rex Rd. to Hodgen Rd.: Bring roadway to current 2-lane arterial standards, sight distance, horizontal and vertical improvements, surface paving (existing gravel areas), shoulders, drainage and intersection improvements, auxiliary lane improvements, multimodal improvements.	El Paso County	\$8,500,000
Mesa Ridge Pkwy. Improvements: Powers Blvd. (SH-21) to Marksheffel Rd.: Complete the connection between Powers Blvd. (SH-21) and Marksheffel Rd. by constructing a 2-lane principle arterial (additional 2 lanes to be completed by developer). Intersection and auxiliary lane improvements, pedestrian improvements, drainage and water quality improvements, installation of bridges at Jimmy Camp Creek.	El Paso County	\$9,975,000
Monument Hill Rd.: County Line Rd. to Woodmoor Dr.: Sight distance with horizontal and vertical improvements, surface paving (existing gravel portion), shoulders, multimodal improvements, drainage and intersection capacity improvements.	El Paso County	\$3,965,000
New Meridian Rd. at US-24: Capacity and safety improvement project includes removing traffic signal at Old Meridian Rd./US-24 and limiting access control at this location to a right-in/right-out; converting incomplete intersection at New Meridian Rd./US-24 to signalized intersection with adequate turn lanes at all approaches, drainage and water quality improvements, pedestrian improvements, road resurfacing.	El Paso County	\$4,608,000
Old Pueblo Rd.: Link Rd. to I-25: Bring roadway to current 2 lane arterial standards, sight distance, horizontal and vertical improvements, surface paving (existing gravel areas), shoulders, drainage and intersection improvements, auxiliary lane improvements, multimodal improvements.	El Paso County	\$8,960,000

TABLE 7–1.14
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Pikes Peak Hwy./Fountain Ave. at US 24 in Cascade: Traffic signal replacement and intersection reconstruction/safety improvement. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso County	\$3,000,000
S. Academy Blvd.: I-25 to Bradley Rd. Ramps: Construct additional through lanes to increase capacity from 4 to 6 lane expressway standard to reduce existing congestion, bridge improvements, multimodal facility, drainage improvements and intersection/auxiliary lane capacity improvements.	El Paso County	\$18,000,000
Sand Creek Regional Trail: 8-ft Wide: 3.00-Miles: Starting along Sand Creek north of Woodmen Rd. at the City/County line, the trail follows Sand Creek north to Vollmer Rd., where it continues along Vollmer Rd. to Shoup Rd. and connects to the Pineries Open Space. This project will connect the City of Colorado Springs to Black Forest with a contiguous non-motorized trail. It will connect to the City trail system at Woodmen Rd., 2 bike lanes, 1 school, 2 parks/open spaces, 3 trails, commercial developments, and several neighborhoods along Sand Creek.	El Paso County	\$1,000,000
Security Blvd. at Willis Dr.: Traffic signal replacement and intersection reconstruction/safety improvement. Replace signal equipment, auxiliary lane improvements, drainage improvements and pedestrian improvements.	El Paso County	\$500,000
SH-105 Widening: Design and construct upgrades on 4.5 miles of SH-105 from Lake Woodmoor Dr. to SH-83 from 2 to 4 lanes where needed, add turn lanes/acceleration lanes where needed and improve sight distance and intersections where needed. Also provide multimodal improvements. This project will transition from an urban cross-section to a rural cross-section. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$48,000,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Shoup Rd. Improvements: Resurface and maintain the road segments. Design and construct features that address the higher accident rate including shoulders and improving sight distance with horizontal and vertical improvements, include drainage features, and add turn lanes and intersection improvements where needed. Add multimodal improvements. Evaluate and construct improvements needed to meet current ADA standards.	El Paso County	\$27,000,000
Signal Connectivity by Fiber Optic Cable: Install fiber optic cable to develop an intelligent transportation system (ITS), which would allow for an integrated and centrally controlled traffic management system. Estimate installing about 50 miles of fiber. This would allow connection to about 75% of the Counties signals.	El Paso County	\$4,500,000
Stapleton Dr./Briargate Pkwy.: Meridian Ranch Blvd. to Eastonville Rd.: Construct additional through lanes to increase capacity from 2 to 4 lane expressway standard to reduce existing congestion, drainage and intersection improvements, auxiliary lane improvements, multimodal improvements.	El Paso County	\$5,090,000
Stapleton Dr./Briargate Pkwy.: Towner Ave. to Meridian Rd.: Construct additional through lanes to increase capacity from 2 to 4 lane expressway standard to reduce existing congestion, drainage and intersection improvements, auxiliary lane improvements, multimodal improvements.	El Paso County	\$4,024,000
Struthers Rd. Sidewalks: Design and construct missing multimodal segments, upgrade to current ADA standards, address drainage and improve intersection safety.	El Paso County	\$5,200,000

TABLE 7–1.15
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Vollmer Rd. Improvements: Briargate Pkwy. to Burgess Rd.: Bring roadway to current 2-lane arterial standards, sight distance, horizontal and vertical improvements, surface paving (existing gravel areas), shoulders, drainage and intersection improvements, auxiliary lane improvements, multimodal improvements.	El Paso County	\$3,235,000
Cherry Creek / Fox Run Regional Trails: 8-ft Wide: 12.75-Miles: Starting at I-25 and SH-105, the trail continues east along SH-105 to SH-83, turns southeast through the Walden subdivision to Hodgen Rd. The trail then splits into two sections, one continuing west to Fox Run Regional Park, crossing under Baptist Rd., continuing west before turning south near Gleneagle Dr. where it ends at Baptist Rd. The other continues east along Hodgen Rd .before crossing Hodgen Rd. and turning south to Black Forest Regional Park.	EPC Parks	\$1,700,000
Fortman Ave. Reconstruction — Fountain Mesa Rd. to Medicine Bow Ave.: 2700’ long; 2 travel lanes; 25 mph; major collector; mountable curb and gutter; 4’ attached sidewalk. Full reconstruction to address significant transverse cracking, longitudinal cracking, block cracking and edge cracking as well severe surface raveling. Maintenance efforts and disruptions to the traveling public will be minimized if reconstruction is performed. This is a critical roadway that serves numerous residents of the Country Club Heights East subdivision.	Fountain	\$2,434,643
Fountain Mesa Road Reconstruction — Mesa Ridge Pkwy. to Fortman Ave.: 2,000’ long; 4 travel lanes; 2 bike lanes; 40 mph; minor arterial; 6” vertical curb and gutter. Full reconstruction to address rutting, significant longitudinal cracking, edge cracking, transverse cracking and alligator cracking. Maintenance efforts and disruptions to the traveling public will be minimized if reconstruction is performed. This is a critical roadway that serves military personnel in the area as well as residents in the following adjacent subdivisions Markets at Mesa Ridge Pkwy. (business district) and Country Club Heights East subdivision.	Fountain	\$2,862,686

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Link Road Reconstruction — Old Pueblo Road to Kane Road: 12,100 feet long; 3 travel lanes; 2 6’ wide bike lanes; minor arterial; 6” vertical curb and gutter; 6’ detached sidewalk. Full reconstruction to address significant transverse cracking, extreme asphalt degradation, longitudinal cracking, deterioration of the road edge and alligator cracking throughout. This is a critical roadway that serves military personnel in the area as well as residents in the adjacent subdivisions: Fountain Industrial Park, Countryside North, Countryside West, Countryside, Little Ranches, Ermel Heights and Scheierman. Existing at-grade railroad crossing needs to be reconstructed to qualify as a “quiet zone”. Turn lanes at the intersections to ensure that the through lanes will not experience interrupted flow. Transit mobility will be greatly improved in the area due to the improved roadway section and sidewalk connectivity.	Fountain	\$9,663,897
Medicine Bow Ave. Reconstruction — Fountain Mesa Rd. to Woodstock St.: 3350’ long; 2 travel lanes; 25 to 30 mph; major collector; mountable curb; 4’ attached sidewalk. Full reconstruction to address significant transverse cracking, longitudinal cracking, alligator cracking, edge cracking and severe surface raveling. The street also has numerous patches throughout. This is a critical roadway that serves numerous residents of the Country Club Heights East subdivision.	Fountain	\$3,000,385
Old Pueblo Rd. Reconstruction — Link Rd. to Illinois Ave.: 6900’ long; 2 travel lanes; 2 bike lanes; 25 to 30 mph; minor arterial; 6” vertical curb; 6’ attached/detached sidewalk. Full reconstruction to address significant slippage cracking, longitudinal cracking, alligator cracking, block cracking, potholes, distortions and rutting. This is a critical roadway that serves numerous residents in the following adjacent subdivisions Ventana, Tera, Fountain Farms and Fountain Industrial Park. Turn lanes will be necessary at the inter-sections to ensure the through lanes will not experience interrupted flow as they do today.	Fountain	\$6,465,646

TABLE 7–1.16
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Southmoor Dr. Reconstruction — US Highway 85/87 to US Highway 85/87: 12,100' long; 2 lanes; 25 to 30 mph; major collector; vertical/mountable curb; 6' attached/detached sidewalk. Full reconstruction to address significant transverse cracking, longitudinal cracking, alligator cracking and edge cracking. This is a critical roadway that serves numerous residents and several businesses including Fountain Valley Senior Center, Anderson Brothers Subdivision, Beckett Development, Fountain Plaza North, Fountain Commons, Pedro Subdivision and the Southmoor Subdivision.	Fountain	\$9,989,999
Crystal Park Road Improvements: The first phase of the proposed Crystal Park Road improvement plan is to install sidewalk, curb, gutter, and lighting that is missing on the North and East side from Old Crystal Park Rd. to Sutherland Pl., and install a sidewalk, curb, gutter, and lighting from Sutherland Pl. to Crystal Hills Blvd. A section of the 1.5 miles of Crystal Park Rd., a 2-lane road with a speed limit of 25 mph throughout, with a primarily residential and commercial function. Labeled as phase two, and part of phase one, of the Manitou Springs Crystal Park Rd. Traffic Study.	Manitou Springs	\$698,610
East Manitou Ave. Pedestrian and Drainage Improvements: Sidewalk, curb/gutter, crosswalk, storm drainage, street lighting, and landscaping improvements, and undergrounding of electricity, telephone and cable lines on Manitou Ave. from intersection with El Paso Blvd. to overpass of US-24 Bypass. Project costs also include traffic circle at Manitou Ave./El Paso Blvd. intersection, plans/specs and bid document creation and construction administration services. Project area approximately 5,005 LF total.	Manitou Springs	\$13,267,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Palmer Lake Elementary School Road Improvement Project: Improvements to two roads, Upper Glenway and Pie Corner which are connected to SH-105 and provide the main route to Palmer Lake elementary school. The length of the road is 1350 ft. of which 220 ft. is the student pickup and drop off area. Residential location where the speed limit is 25mph, except approximately 600 ft. of which is in a school zone and is 20mph during school hours. Both roads involved are 2-lane roads except, in the school drop off location where the road widens slightly. Includes new asphalt, upgrades to existing sidewalks and improving storm water runoff.	Palmer Lake	\$1,200,000
Spruce Mountain Rd. Improvement Project: Improvements to Spruce Mountain road, from SH-105 to the Douglas County line. The length of the proposed project road is 2100 ft. Currently, it is configured as a 2-lane road and has no shoulder on either side of the road. Some of the improvements will be new asphalt, a 3ft bike lane, and an added 200-300 ft turn lane giving better access onto County Line Road, these improvements will improve safety for recreational bicycle riders and will significantly ease congestion when I-25 has heavy traffic.	Palmer Lake	\$1,500,000
State Highway 105 Bike Lanes (Palmer Lake to Monument): A 3 mile long, 5 ft. wide bicycle lane on the shoulder of SH-105 between the Town of Palmer Lake and the Town of Monument.	Palmer Lake	\$500,000
Planning — Pooled Funds: Planning projects and/or products within the MPO region.	PPACG Region	\$2,000,000
Alternate Modes — Pooled Funds: Alternate modes projects and/or products within the MPO region	PPACG Region	\$3,500,000
Safety and Congestion Management — Pooled Funds: Safety and Congestion Management projects and/or products within the MPO region.	PPACG Region	\$20,000,000
Black Forest Rd. Widening: Old Ranch to Research: Expand two-lane minor arterial to a four-lane major arterial.	Private	\$4,018,100
Black Forest Rd. Widening: Woodmen to Briargate: Widen to a 6-lane principal arterial from Woodmen Rd. to Briargate Pkwy.	Private	\$3,829,500

TABLE 7–1.17
FISCALLY-CONSTRAINED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Bradley Rd.: Grinnell to Wageman Dr.: Design and construct 2 additional lanes and add multi-modal features.	Private	\$10,000,000
Bradley Rd.: Powers (SH-21) to Goldfield: Design and construct a 2 lane minor arterial with multi-modal features.	Private	\$15,000,000
Fontaine Blvd. Extension: Construct a 4-lane principal arterial from Marksheffel Rd. to Meridian Rd.	Private	\$11,000,000
Grinnell Blvd: Goldfield to Powers Blvd. (SH-21): Design and construct two additional lanes with multimodal features and improve the intersection at Powers Blvd. (SH-21).	Private	\$6,000,000
Powers Blvd. (SH-21) - South Extension to I25: Project to include a corridor feasibility study, ROW, utilities and construction of a 2 lane expressway/principal arterial, eventually being converted to a 4-6 lane freeway that extends from SH21 from Mesa Ridge Parkway to I25 Exit 123.	Private	\$40,000,000
American Discovery Trail Connection: Construct a 550’ long, 8 ft. wide asphalt trail from US-24 (existing sidewalk) to the Fountain Creek Open Space and connect to the American Discovery trail.	Woodland Park	\$85,900
SH-67 Corridor Improvements — Phase II: The SH 67 Phase I project is to widen the highway from 2-lanes to 4-lanes including dedicated left turn lanes, bi-directional center turn lane; accel/decel lanes; and an underground storm-water system. This multi-modal project includes sidewalks on the west side connecting pedestrian facilities with Evergreen Heights Drive and Stone Ridge Village.	Woodland Park	\$3,000,000
SH-67 Corridor Improvements — Phase I: The SH-67 Phase I project is to widen the highway from 2-lanes to 4-lanes including dedicated left turn lanes, bi-directional center turn lane; accel/decel lanes; and an underground stormwater system. This multi-modal project includes sidewalks on the west side connecting pedestrian facilities with Evergreen Heights Drive and Stone Ridge Village. Improvements are between mile markers 77 and 78.	Woodland Park/CDOT	\$4,500,000

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
US-24 Realignment/Woodland Park Reliever Route PEL Study: Realignment / Woodland Park Reliever Route Planning and Environmental Linkage (PEL) Study is to determine environmental impacts, engineering feasibility, corridor preservation and benefits to the larger Central Mountain and Front Range areas of Colorado. The Reliever Route is envision to be a four-lane, split arterial and approximately 2.8 miles long following “Corridor D” south of Woodland Park. The byway would be between mile markers 283 and 288 US Hwy 24. The speed limit would be 55 mph and a Right of Way of 100’ to each side from center (total 200’ wide ROW). The Corridor would be zoned so that no commercial development would be allowed, therefore, focusing economic development towards the existing Woodland Park Downtown.	Woodland Park/CDOT	\$2,400,000
Total Project Costs		\$3,659,566,923

FIGURE 7-1
2045 ROADWAY PROJECTS

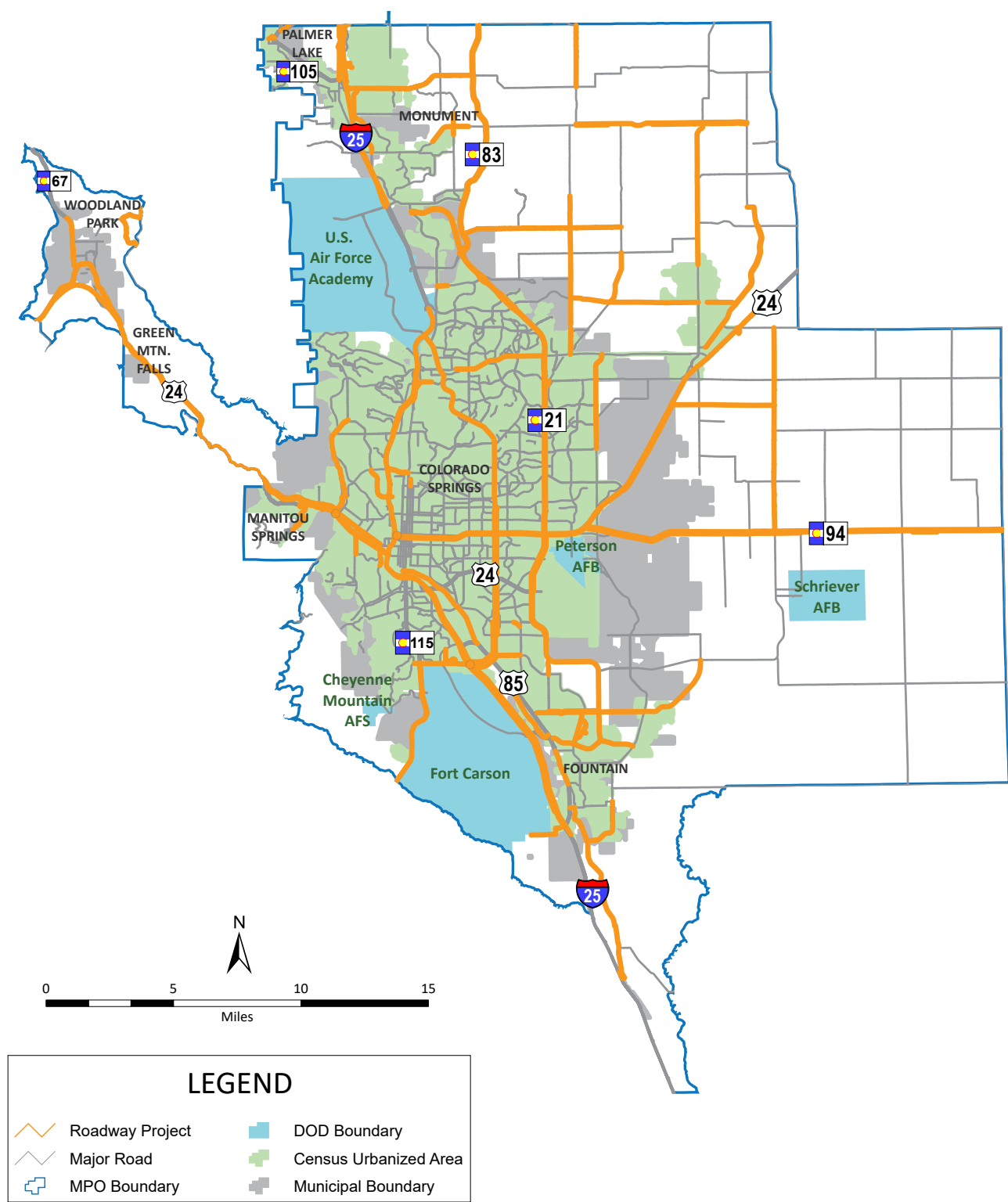


FIGURE 7-2
2045 INTERSECTION PROJECTS

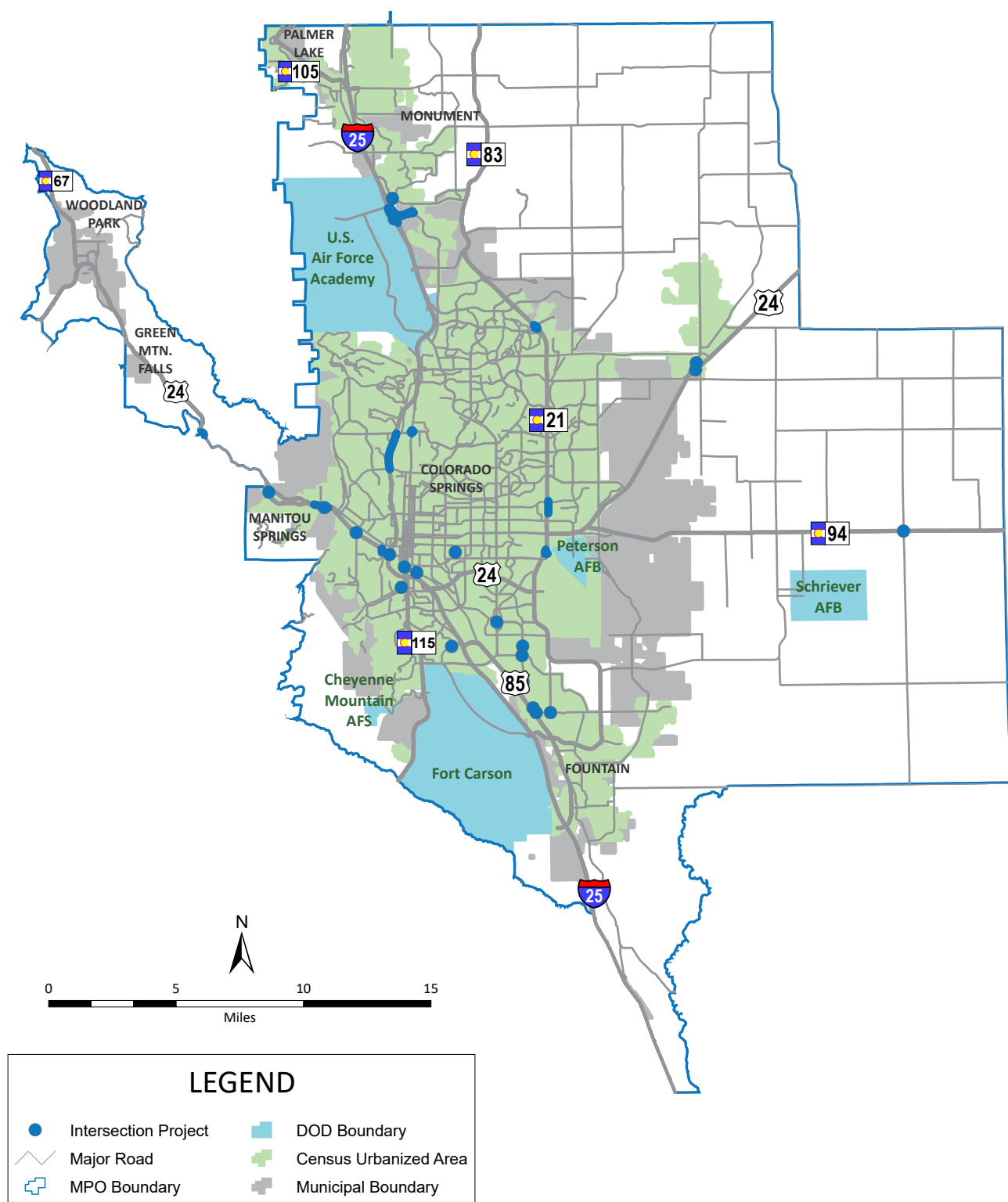


FIGURE 7-3
2045 BRIDGE PROJECTS

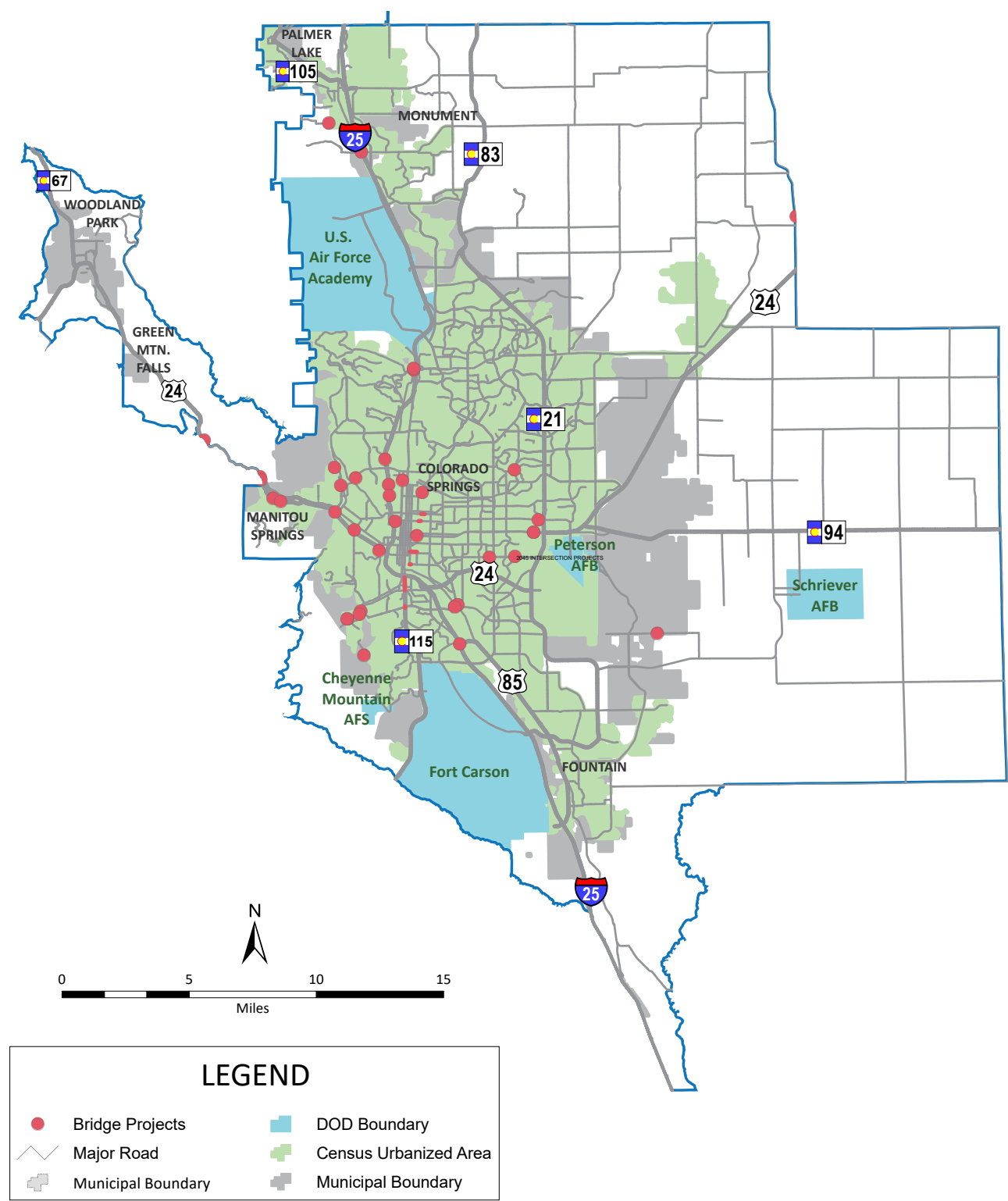


FIGURE 7-4
2045 BICYCLE AND PEDESTRIAN PROJECTS

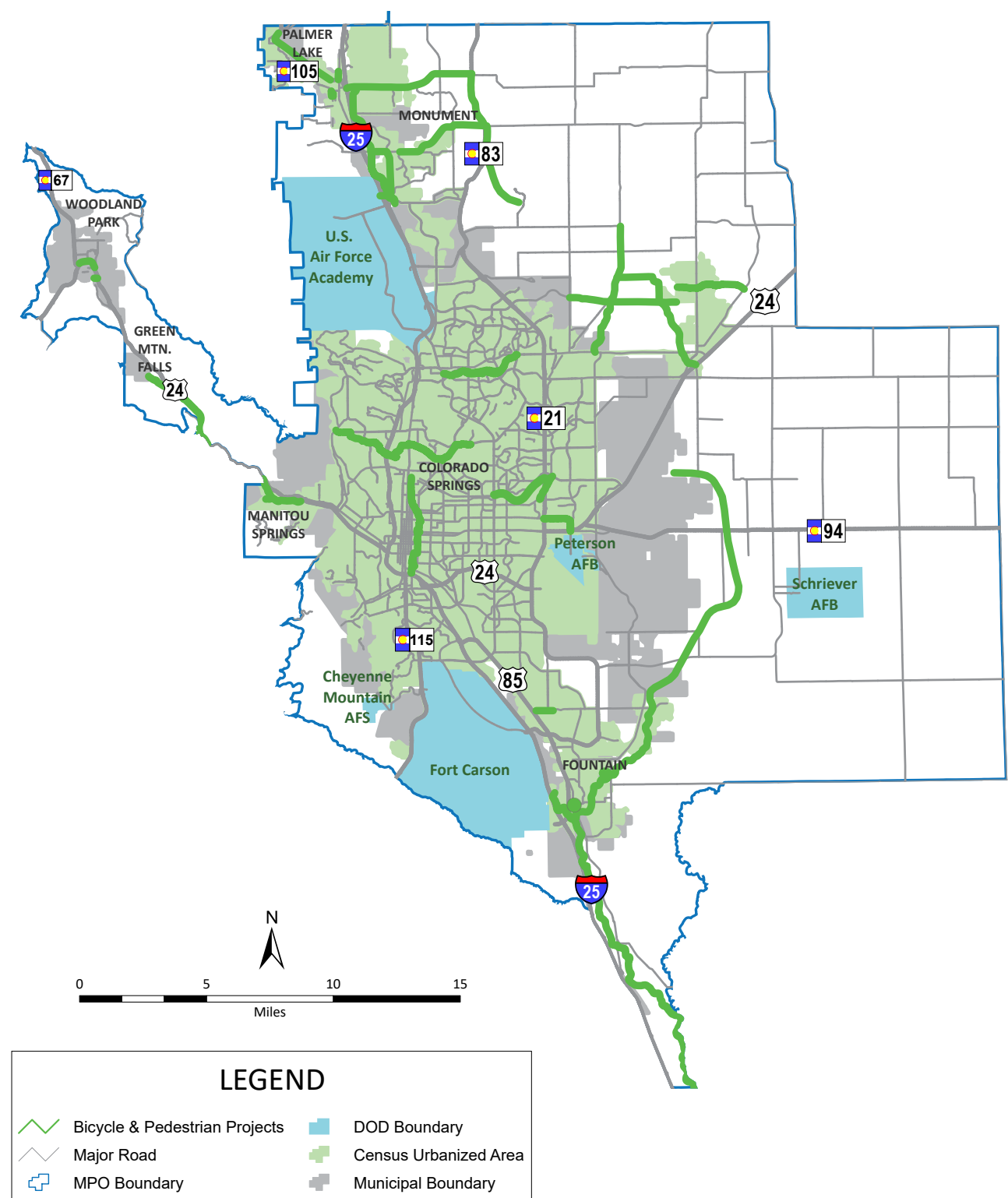


FIGURE 7-5
2045 TRANSIT PROJECTS

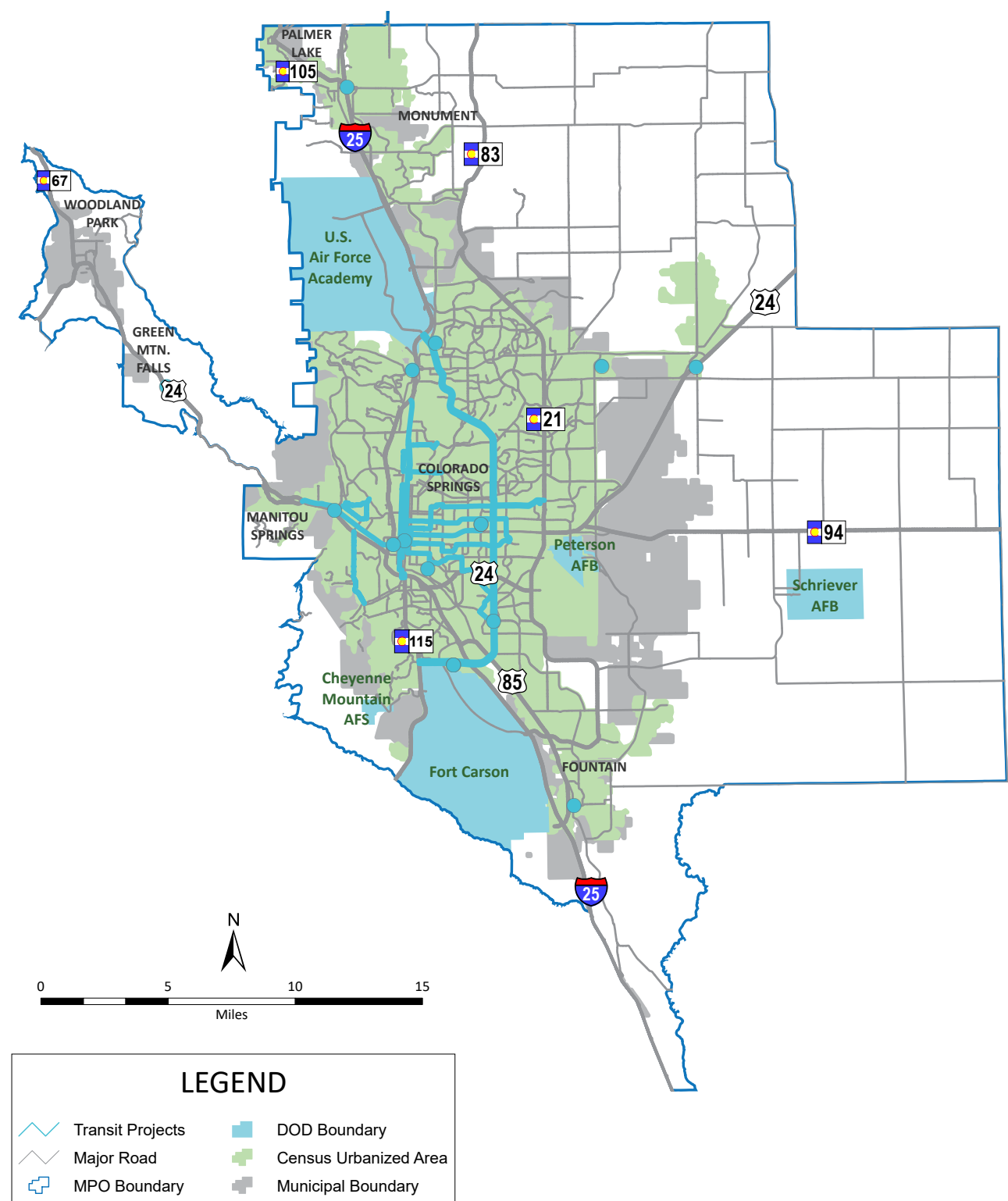


TABLE 7-2.1
UNFUNDED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
I-25 - FONSI Approved Project (South Academy to Monument)	CDOT	\$211,837,670.00
I-25 - Capacity Project (Fountain to South Academy)	CDOT	\$178,000,000.00
Power Blvd. (SH-21) Central — FONSI Approved Project (SH-16 to Woodmen)	CDOT	\$907,000,000.00
Powers Blvd. (SH-21) North —FONSI Approved Project (Woodmen to I-25)	CDOT	\$52,000,000.00
SH-83 — Traffic Study and Safety Projects	CDOT	\$11,623,833.00
SH-94 — Project Identified from Corridor Plan	CDOT	\$28,500,000.00
US-24 East — Project from PEL (Powers Blvd. (SH-21) to Stapleton Rd.)	CDOT	\$500,000,000.00
US-24 West — FONSI Approved Project (I-25 to Manitou)	CDOT	\$356,528,051.00
US-24 Woodland Park Bypass: Property Acquisition and Constuction of 2.8 mile new segment of US-24.	CDOT/ Woodland Park/Teller County	\$200,000,000.00
21st St. over Bear Creek: Reconstruct bridge, just South of Rio Grande St.	Colorado Springs	\$636,832.50
21st St. over Fountain Creek: Replace bridge, just north of US-24.	Colorado Springs	\$2,649,625.00
21st St. over Fountain Creek Tributary: Reconstruct bridge 0.1 mile south of US-24.	Colorado Springs	\$1,286,375.00
8th St. over Bear Creek: Replace bridge, 1.3 mile south of US-24.	Colorado Springs	\$2,385,995.00
Academy Blvd. over Pine Creek: 0.3 Mi south of Briargate Blvd.	Colorado Springs	\$3,848,670.00
Academy Blvd. at Austin Bluffs Pkwy.: Intersection improvements at Academy Blvd. and Austin Bluffs Pkwy. Academy Blvd. functions as a six lane principal arterial. While Austin Bluffs Pkwy. functions as a six lane parkway.	Colorado Springs	\$40,000,000.00

TABLE 7–2.2
UNFUNDED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Academy Blvd. bridge over Platte Ave.: Academy Blvd. bridge over Platte Ave. Substandard road section, need to widen bridge and increase underclearance.	Colorado Springs	\$10,042,004.44
Academy Blvd. over Sand Creek: Replace bridge 0.2 mile north of Astrozon Blvd.	Colorado Springs	\$17,551,843.75
Academy Blvd. over Templeton Gap Basin: Replace bridge, 0.6 mile north of Austin Bluffs Pkwy.	Colorado Springs	\$1,075,250.63
Airport Rd. over Sand Creek: Reconstruct bridge, 0.8 mile east of Academy Blvd.	Colorado Springs	\$6,595,875.00
Airport Rd. over West Fork Sand Creek: Culvert Extensions, 0.4 mile west of Powers Blvd.	Colorado Springs	\$1,851,590.75
Barnes Rd .over Templeton Gap Drainage: Replace bridge, 0.34 mile east of Austin Bluffs Pkwy.	Colorado Springs	\$729,800.00
Bijou St. over Spring Creek: Replace bridge 0.4 mile west of Academy Blvd.	Colorado Springs	\$1,191,562.50
Bijou St. over Spring Creek: 0.17 mile east of Academy Blvd.	Colorado Springs	\$745,687.50
Boulder St. over Shooks Run: Just east of North Corona St.	Colorado Springs	\$1,989,986.25
Cache La Poudre St. over Shooks Run: Bridge is in deteriorated condition, 300 ft. east of El Paso St.	Colorado Springs	\$471,756.25
Centennial Blvd. over Pedestrian Trail: North of Chesham Cr.	Colorado Springs	\$563,750.00
Chelton Rd. over Pedestrian Underpass: At Valley Hi Golf Course.	Colorado Springs	\$311,600.00
Chelton Rd. over Sand Creek: Replace Bridge 0.25 mile east of Academy Blvd.	Colorado Springs	\$6,596,080.00
Chelton Rd. over Spring Creek: Replace bridge, 0.3 mile north of Fountain Blvd.	Colorado Springs	\$1,207,629.38
Chestnut St. over North Douglas Creek: Replace bridge, 0.1 mile south of Garden of the Gods Rd.	Colorado Springs	\$1,313,025.00

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Constitution Ave. over Sand Creek: 0.3 mile east of Powers Blvd.	Colorado Springs	\$4,550,557.20
Constitution Ave. over West Fork Sand Creek: Replace bridge, 0.2 mile east of Academy Blvd.	Colorado Springs	\$981,027.50
Constitution Extension: Extend from Union Blvd. to I-25 as a 4 lane principal arterial roadway.	Colorado Springs	\$200,000,000.00
Drennan Rd. over Jimmy Camp Creek Tributary: 0.8 mile east of Markscheffel Rd.	Colorado Springs	\$3,020,265.00
Dublin Blvd. Reconstruction: Roadway reconstruction on Dublin Blvd. from Vincent Dr. to Academy Blvd.	Colorado Springs	\$10,000,000.00
Dublin Blvd. Widening: Widen Dublin Blvd. from Peterson Rd. to Markscheffel Rd. This segment of Dublin Blvd. is currently a four lane principal arterial.	Colorado Springs	\$4,600,000.00
Fillmore St. over Monument Creek: Reconstruct bridge 0.15 mile east of I-25.	Colorado Springs	\$10,047,255.00
Fillmore St. over Union Pacific Rail Road: Reconstruct bridge. 0.1 mile east of I-25.	Colorado Springs	\$4,293,520.00
Fountain Blvd. at Academy Blvd.: Intersection improvements at Fountain Blvd. and Academy Blvd. Fountain Blvd. functions as a six lane freeway, while Academy Blvd. functions as a six lane principal arterial.	Colorado Springs	\$40,000,000.00
Fountain Blvd. over Spring Creek: Reconstruct bridge, just east of Circle Dr.	Colorado Springs	\$1,520,664.38
Galley Rd. Widening: Widen Galley Rd. from Wooten Rd. to Sand Creek bridge. This segment of Galley Rd. will be widened to a four lane minor arterial.	Colorado Springs	\$8,000,000.00
Garden of the Gods Rd. over South Douglas Creek: Reconstruct bridge, just east of 30th St.	Colorado Springs	\$1,524,380.00
Hancock Expy. East Bound over Spring Creek: Reconstruct bridge, under US-24.	Colorado Springs	\$1,183,106.25

TABLE 7–2.3
UNFUNDED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Hancock Expy. Extension: Extend from Clarendon Dr. to Chelton Rd. as a 4 lane minor arterial roadway.	Colorado Springs	\$8,170,000.00
Hancock Expy. over Peterson Tributary: Bridge is in deteriorated condition, substandard road section, West of Chelton Rd.	Colorado Springs	\$369,000.00
Hancock Expy. over Peterson Tributary: 100 yards East of Jet Wing Dr.	Colorado Springs	\$852,953.75
Hancock Expy. over Peterson Tributary: Corridor, east of Clarendon Dr.	Colorado Springs	\$538,125.00
Hancock Expy. over Peterson Tributary: At Hancock Expy.	Colorado Springs	\$154,518.75
Hancock Expy. PEL: Conduct phase two PEL at Hancock Expy and Academy Blvd.	Colorado Springs	\$4,000,000.00
Hancock Expy. West Bound over Spring Creek: Reconstruct bridge, under US-24.	Colorado Springs	\$1,183,106.25
Janitell Rd. over Fountain Creek Tributary: Southeast of I-25 and Circle Dr.	Colorado Springs	\$378,225.00
Lexington Dr. over Pine Creek Tributary: At Meadow Ridge Dr.	Colorado Springs	\$520,905.00
Maizeland Rd. over West Fork Sand Creek: Replace bridge, 0.25 mile east of Academy Blvd.	Colorado Springs	\$824,100.00
Mesa Rd. improvements: Bring Mesa Rd. up to standard, between Fillmore Rd. and Uintah St.	Colorado Springs	\$19,000,000.00
Murray Blvd. over West Fork Sand Creek: 0.35 mile south of Palmer Park Blvd.	Colorado Springs	\$2,103,505.00
N. 30th St. over pedestrian trail: Replace bridge south of Glen Eyrie Entrance.	Colorado Springs	\$123,281.88
Nevada Ave. over Templeton Gap Floodway: Reconstruct bridge, south of Mountview St.	Colorado Springs	\$3,893,975.00
North Nevada Ave. Reconstruction: Reconstruct N. Nevada Ave. from Fillmore St. to Austin Bluffs Pkwy./ Garden of the Gods Rd.	Colorado Springs	\$16,800,000.00

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
North Union Blvd. over Cottonwood Creek Tributary: Replace bridge, 50 ft. South of Woodland Hills Dr.	Colorado Springs	\$412,562.50
North Union Blvd. over Pine Creek Tributary: Replace Bridge, 0.1 mile west of Lexington Dr.	Colorado Springs	\$637,037.50
Old Ranch Rd.: Widen Old Ranch Rd. from Voyager Pkwy. to Kettle Creek bridge. This segment of Old Ranch Rd. is currently a 4 lane minor arterial.	Colorado Springs	\$7,600,000.00
Palmer Park Blvd. over Sand Creek: Reconstruct bridge. 0.2 mile west of Powers Blvd.	Colorado Springs	\$4,627,875.00
Palmer Park Blvd. over West Fork Sand Creek: Culvert Extensions, 0.8 mile east of Murray Blvd.	Colorado Springs	\$627,300.00
Pikes Peak Ave. over Spring Creek: 0.4 mile west of Academy Blvd.	Colorado Springs	\$6,511,312.50
Platte Ave. Connectivity: Construct connectivity on Platte Ave. at Cascade Ave. to access I-25.	Colorado Springs	\$4,000,000.00
Platte Ave. over West Fork Sand Creek: 0.75 mile east of Academy Blvd.	Colorado Springs	\$5,765,010.00
South 8th St. over Cheyenne Run: Reconstruct bridge, 0.3 mile north of Cheyenne Blvd.	Colorado Springs	\$261,375.00
South Carefree Cir. over west fork Sand Creek: Reconstruct bridge west of Murray Blvd.	Colorado Springs	\$984,768.75
South Nevada Ave. Congestion Mitigation: Improvements to mitigate congestion on South Nevada Ave. from Southgate Rd. to Las Vegas St. South Nevada Ave. is a six lane principal arterial.	Colorado Springs	\$10,000,000.00
Tutt Blvd. Improvements: Improve Tutt Blvd. from Dublin Blvd. to Templeton Gap Rd.	Colorado Springs	\$1,800,000.00
Twenty-First Street widening: Widen Twenty-First Street from Lower Gold Camp Rd. to US-24.	Colorado Springs	\$9,000,000.00
Union Blvd. over Cottonwood Creek: Just south of Woodland Hills.	Colorado Springs	\$5,379,370.15

TABLE 7–2.4
UNFUNDED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Union Blvd. over Pedestrian Path: South of Templeton Gap Floodway.	Colorado Springs	\$1,180,800.00
Union Blvd. over Templeton Gap Floodway: Replace bridge, 0.6 mile north of Fillmore St.	Colorado Springs	\$7,452,416.25
Union Pacific Rail Road bridge over Rockrimmon Blvd.: Replace bridge at intersection with Mark Dabbling Blvd., in deteriorated condition.	Colorado Springs	\$1,452,937.50
Union Pacific Rail Road bridge over Uintah St.: Bridge just east of I-25, in deteriorated condition.	Colorado Springs	\$4,313,968.75
Union Pacific Rail Road over Nevada Ave.: Bridge is in deteriorated Condition, substandard road section. 0.12 mile north of Las Vegas St.	Colorado Springs	\$1,904,450.00
Woodmen Rd. Congestion Management: Roadway improvements for congestion management on Woodmen Rd. from Corporate Dr. to Vincent Dr. Woodmen Rd. is currently a six lane parkway.	Colorado Springs	\$5,000,000.00
Woodmen Rd. Widening: Widen Woodmen Rd. from Powers Blvd. to Black Forest Rd. This segment of Woodmen Rd. is currently a four lane expressway, and will be widened to six lanes.	Colorado Springs	\$12,000,000.00
Bus Transfer Station Reconstruction, Citadel Mall Area.	Colorado Springs — MMT	\$10,000,000.00
Construction Site Planning: MMT Facilities Expansion	Colorado Springs — MMT	\$10,000,000.00
Fixed-guideway, Line #1 (downtown streetcar)	Colorado Springs — MMT	\$71,500,000.00
Fixed-guideway, Line #2 (Academy Blvd. BRT)	Colorado Springs — MMT	\$12,600,000.00
Fixed-guideway, Line #3 (W. Colorado Ave.)	Colorado Springs — MMT	\$105,100,000.00

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Fixed-guideway, Line #4 (Citadel to Downtown)	Colorado Springs — MMT	\$119,000,000.00
Fixed-guideway, Line #5 (Nevada Ave. streetcar extension)	Colorado Springs — MMT	\$119,000,000.00
Fixed-guideway, Line #6 (Academy Blvd. BRT) extension	Colorado Springs — MMT	\$8,000,000.00
High Capacity Transit Services — TBD	Colorado Springs — MMT	\$131,199,462.00
Human Service Providers: Vehicle Replacement	Colorado Springs — MMT	\$14,400,000.00
Human Service Providers: Vehicles, Expansion (10 Vehicles)	Colorado Springs — MMT	\$2,400,000.00
Intermodal Park-and-Ride/Rail Reconstruction: Woodmen Rd./I-25/RR	Colorado Springs — MMT	\$3,000,000.00
Metro Mobility Operations Expansion	Colorado Springs — MMT	\$10,000,000.00
Non-Revenue/Maintenance Vehicles	Colorado Springs — MMT	\$600,000.00
Transfer Station Improvements: Ft. Carson Gate 4/PPCC	Colorado Springs — MMT	\$3,100,000.00
Transfer Station: Banning Lewis (Golden Triangle)	Colorado Springs — MMT	\$3,300,000.00
Transit IT Improvements: Improvements to the information technology capabilities of MMT.	Colorado Springs — MMT	\$32,995,000.00

TABLE 7–2.5
UNFUNDED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
ADA Improvements: Make accessibility improvements on roads and sidewalks across EPC.	El Paso County	\$60,000,000.00
Baptist Rd. Upgrade: Upgrade pavement and bring the road to current standards between Desiree and Roller Coaster.	El Paso County	\$6,000,000.00
Beacon Lite Rd. Upgrade: Upgrade pavement and bring the road to current standards between SH-105 and County Line.	El Paso County	\$6,048,000.00
Black Forest Rd. Capacity Improvement: Add two lanes between Stapleton and Research & Woodmen and Burgess	El Paso County	\$12,320,000.00
Black Forest Rd. New Segment: Construct a new road segment at Black Forest and Hodgen.	El Paso County	\$3,000,000.00
Black Forest Rd. Upgrade: Upgrade pavement and bring the road to current standards between Hodgen and Stapleton.	El Paso County	\$25,760,000.00
Bradley Rd. Upgrade: Upgrade pavement and bring the road to current standards between COS City Limits and Curtis Rd.	El Paso County	\$26,880,000.00
Bridge Maintenance and Repair: Maintain and upgrade bridges in EPC.	El Paso County	\$50,000,000.00
Chamberlin South Resurfacing: Resurface between B St. and end of road.	El Paso County	\$600,000.00
Curtis Rd. Upgrade 2: Upgrade pavement and bring the road to current standards between SH-94 and Drennan Rd.	El Paso County	\$27,000,000.00
Deer Creek Rd. Upgrade: Upgrade pavement and bring the road to current standards between Monument Hill and Woodmen Rd.	El Paso County	\$575,000.00
Eastonville Rd. Upgrade: Upgrade pavement and bring the road to current standards between McLaughlin and Latigo.	El Paso County	\$20,720,000.00

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Enoch Rd. Capacity Improvement: Add two lanes between SH-94 and Schriever AFB.	El Paso County	\$9,296,000.00
Falcon Hwy Upgrade: Upgrade pavement and bring the road to current standards between US-24 and Curtis Rd.	El Paso County	\$17,920,000.00
Fontaine Blvd. New Segment: Construct a new road segment between Fontaine and Meridian.	El Paso County	\$12,320,000.00
Fontaine Blvd. Upgrade: Upgrade pavement and bring the road to current standards between Grinnell and SH-21.	El Paso County	\$11,648,000.00
Fontaine Capacity Improvement: Add two lanes between Marksheffel and Easy.	El Paso County	\$48,875,000.00
Fountain Mesa Rd. Resurfacing: Resurface between Caballero and Fontaine.	El Paso County	\$900,000.00
Grinnel St. Capacity Improvement: Add two lanes between SH-21 and Bradley Rd.	El Paso County	\$3,920,000.00
Higby Rd. Upgrade: Upgrade pavement and bring the road to current standards between Cloverleaf and Roller Coaster.	El Paso County	\$6,384,000.00
Hodgen Rd. New Segment: Construct a new road segment between Eastonville and Elbert.	El Paso County	\$5,040,000.00
Howell Ln. New Segment: Construct a new road segment over Kettle Creek.	El Paso County	\$9,184,000.00
Intersection Improvements: Upgrade signal equipment, turn lanes and pedestrian crossings across EPC.	El Paso County	\$20,000,000.00
Judge Orr Rd. Capacity Improvement: Add two lanes between Eastonville and Curtis Rd.	El Paso County	\$16,576,000.00
Marksheffel Rd. Capacity Improvement 1: Add two lanes between Dublin and Tamlin.	El Paso County	\$15,680,000.00
Marksheffel Rd. Capacity Improvement 2: Add two lanes between Fontaine and Link.	El Paso County	\$11,648,000.00

TABLE 7–2.6
UNFUNDED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Marksheffel Rd. Capacity Improvement 3: Add two lanes between Tamlin and Carefree.	El Paso County	\$23,520,000.00
Meridan Rd. Capacity Improvement: Add two lanes between Murphy and Rex.	El Paso County	\$23,520,000.00
Meridian Rd. New Segment: Construct a new road segment between Bradley and Mesa Ridge Pkwy.	El Paso County	\$12,880,000.00
Meridian Rd. Upgrade: Upgrade pavement and bring the road to current standards between Hodgen and Murphy.	El Paso County	\$8,736,000.00
Mesa Ridge Pkwy. New Segment: Construct two additional lanes between SH-21 and Marksheffel Rd.	El Paso County	\$16,000,000.00
Milam Rd. Upgrade: Upgrade pavement and bring the road to current standards between Shoup and Old Ranch.	El Paso County	\$10,640,000.00
Monument Hill Upgrade: Upgrade pavement and bring the road to current standards between Woodmoor and County Line.	El Paso County	\$6,000,000.00
Multimodal Improvements: Improve multimodal facilities across EPC.	El Paso County	\$15,000,000.00
Murphy Rd. Resurfacing: Resurface between Meridian and Peyton Hwy.	El Paso County	\$2,000,000.00
Old Pueblo Rd. Upgrade: Upgrade pavement and bring the road to current standards between Fountain City Limits and I-25/	El Paso County	\$19,040,000.00
Peyton Hwy. New Segment: Construct a new road segment between Judge Orr Rd. and Peyton Hwy.	El Paso County	\$9,520,000.00
Rex Rd. New Segment: Construct a new road segment between Rex and Eastonville.	El Paso County	\$7,280,000.00
Roller Coaster Rd. Upgrade Upgrade pavement and bring the road to current standards between Hodgen and Old Northgate.	El Paso County	\$13,104,000.00

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Roller Coaster Rd. New Segment: Construct a new road segment at Higby and Roller Coaster.	El Paso County	\$4,704,000.00
Safety Improvements: Address safety concerns across EPC.	El Paso County	\$35,000,000.00
Vollmer Rd. Capacity Improvement: Add two lanes between Marsheffel and Stapleton.	El Paso County	\$10,752,000.00
Vollmer Rd. Upgrade: Upgrade pavement and bring the road to current standards between Stapleton and Shoup.	El Paso County	\$13,440,000.00
Walker Rd. Capacity Improvement: Add two lanes between SH-83 and Steppler.	El Paso County	\$16,800,000.00
Walker Rd. Upgrade: Upgrade pavement and bring the road to current standards between Steppler and Black Forest.	El Paso County	\$7,616,000.00
Walker Rd. Paving: Convert the gravel road to pavement from Black Forest to Meridian.	El Paso County	\$5,600,000.00
Woodmen Hills Rd. New Segment: Construct a new road segment between Stapleton and Raygor.	El Paso County	\$14,000,000.00
Woodmen Rd. Capacity Improvement: Add two lanes between Marksheffel and Banning Lewis.	El Paso County	\$22,400,000.00
Marksheffel Rd. New Segment: Construct a new road segment between Woodmen Rd. and Research Pkwy.	El Paso County/ Colorado Springs	\$44,800,000.00
El Paso Blvd. drainage and pedestrian improvements: El Paso Blvd. is an important collector that serves as an alternative to Manitou Ave. to provide access to Garden of the Gods and downtown.The street is in need of drainage and pedestrian improvements.	Manitou Springs	\$2,000,000.00
Electric Vehicle Charging Stations: Installation of 12 “pay as you use” electrical charging stations throughout the downtown area to permit recharging of electric cars.	Manitou Springs	\$1,152,000.00

TABLE 7–2.7
UNFUNDED PROJECT LIST

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Hiawatha Gardens Transit Center: Transit hub/parking structure at Hiawatha Gardens site (10 Old Man’s Trail).	Manitou Springs	\$17,000,000.00
Lovers Lane reconstruction: Lovers’ Lane is designated as a one-way road and bike lane in the Creek Walk Trail Master Plan. Lovers’ Lane provides access to downtown homes and businesses, as well as public parking. The lane requires redesign and construction and is in need of stabilization. It is adjacent to Fountain Creek.	Manitou Springs	\$3,000,000.00
New roundabout at intersection of Becker’s Ln. and El Paso Blvd. to improve access to Garden of the Gods Park: Becker’s Lane provides important access to Garden of the Gods Park. Warrant study, design development and engineering plans, and construction of a roundabout at Becker’s Lane and Garden of the Gods.	Manitou Springs	\$585,000.00
New roundabout at intersection of Crystal Park Rd. and Sutherland Pl.: Warrant study, design development and engineering plans, and construction of roundabout at Sutherland Pl. and Crystal Park Rd.	Manitou Springs	\$585,000.00
New roundabout at intersection of Manitou Ave. and Ten Old Man’s Trail: Warrant study, design development and engineering plans, construction, and construction admin. of roundabout at intersection of Manitou Ave. and Old Man’s Trail. This project would provide improvements to serve proposed Hiawatha Gardens transit hub/parking facility.	Manitou Springs	\$650,000.00
Ruxton Ave. Construction: Ruxton Ave. is a mixed-use corridor that provides access to key economic generators including the Cog Railway, Manitou Incline, and Barr Trail. Updates include pedestrian and drainage improvements, street lighting, landscaping, and undergrounding utilities.	Manitou Springs	\$15,000,000.00

PROJECT TITLE & DESCRIPTION	PROJECT SPONSOR	PROJECT TOTAL COST
Extension of Mitchell Ave.: Extend the southern terminus of Mitchell/Synthes south to Baptist Rd., including a bridge over Monument Creek.	Monument	\$15,000,000.00
Gleneagle Dr., Higby Rd. south 1 mile to south to existing northern terminus: New road construction including bridge.	Monument	\$1,000,000.00
Higby Rd. from Jackson Creek Pkwy. to east 2.2 miles: Widen existing road including signalization upgrade at intersection.	Monument	\$10,000,000.00
Intersection of Old Denver Rd. and Second St.: Installation of traffic control and laneage to meet future demands.	Monument	\$1,000,000.00
Jackson Creek Pkwy. Widening: Widen existing road to accommodate existing and future traffic from Higby Road north to Sh-105, including pedestrian and bicycle facility.	Monument	\$15,000,000.00
Old Denver Rd. Widening: Widen existing road to accommodate existing and future traffic from Baptist Rd. north to Second St.	Monument	\$20,000,000.00
Redevelopment of Midland Ave.: As a result of relocating US-24 to a reliever route, this project would redesign and constuct Midland Ave. with a road diet to remove medians, widen sidewalks and add onstreet parking.	Woodland Park	\$50,000,000.00
Total Unfunded Projects Cost		\$4,566,890,609.79

CHAPTER 8

SYSTEM MANAGEMENT & OPERATIONS

Systematically managing the existing infrastructure can improve the efficiency and economy of the regional transportation system.

Rapidly increasing congestion, constraints on capacity expansion and limited financial resources both nationally and locally are causing concern for transportation agencies and their customers. The Pikes Peak region metropolitan transportation planning process has traditionally focused on constructing new roadways and widening existing highways to address congestion; however, current challenges associated with transportation system reliability, safety, and security require new strategies to improve operations of the existing system.

Commuters and freight shippers are increasingly sensitive to delays affecting tightly scheduled personal activities and manufacturing distribution procedures. Regional growth in traffic volumes often means that even small disruptions can have a significant ripple effect on transportation system performance. There is also an increasing recognition locally of the significance of road construction, weather conditions, traffic incidents, special events, and emergency situations on the reliability of the transportation system. It is estimated that about half of regional traffic congestion is caused by temporary disruptions that take away part of the roadway from use (“non-recurring” congestion).

Transportation System Management and Operations (TSMO) is an integrated approach to optimize the performance of existing infrastructure by implementing multimodal, intermodal, and often cross-jurisdictional systems, services and projects. This includes regional operations coordination among transportation and public safety agencies. TSMO is not routine road maintenance like



resurfacing or guardrail replacement. TSMO strategies improve system efficiency, enhance public safety and security, reduce traffic delays, and improve access to information for travelers. The emphasis of TSMO is an outcome-driven, performance-based system.

Improving transportation system management and operations can support other goals. For instance, TSMO strategies can:

- Support economic vitality by improving system reliability, which is valued by the freight and business communities.
- Increase safety through driver education, speed enforcement, and technologies to improve pedestrian safety.
- Increase security by improving communication and coordination between transportation agencies and law enforcement.
- Improve accessibility and mobility by implementing strategies that reduce recurrent and non-recurrent congestion and improve the efficiency of operations such as transit priority, signal timing, and pricing.
- Enhance the environment, energy conservation, quality of life, and consistency with planned growth by implementing programs to manage travel demand, providing traveler information to help avoid and reduce traffic delays.
- Avoid the need to develop new transportation infrastructure with negative impacts to the environment and communities.
- Enhance integration and connectivity to allow seamless travel between transit and other modes.
- Preserve the existing transportation system by focusing resources on optimizing existing capacity, rather than building new capacity.

In Transportation Management Areas that are designated as ozone or carbon monoxide non-attainment or maintenance areas, Federal guidelines prohibit projects that increase capacity for single-occupant vehicles unless the project comes from a Congestion Management Process (CMP) discussed later in the chapter. Moreover, the CMP provides an analysis of all reasonable travel demand reduction and operational management strategies

for any corridor in which single-occupant vehicle capacity will significantly increase. TSMO strategies that may be used include changing:

- Mode of travel
- Location/need to travel
- Time of travel
- Travel route
- Operations
- Pricing
- Other institutional changes

FEDERAL OPERATIONS OBJECTIVES

On December 4, 2015, the Fixing America's Surface Transportation Act (FAST Act) was signed into law. It is the first long-term surface transportation authorization enacted in a decade that provides long-term funding certainty for surface transportation by building upon the Moving Ahead for Progress in the 21st Century Act (MAP-21), enacted in 2012. MAP-21 included provisions to make the Federal surface transportation more streamlined, performance-based, and multimodal, and to address challenges facing the U.S. transportation system, including improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

The FAST Act builds on the changes made by MAP-21 by requiring all State DOTs to develop risk-based Transportation Asset Management Plans (TAMPs) for the pavement and bridge assets on the National Highway System to improve or preserve the condition of the assets and the performance of the system. States are encouraged to add assets beyond pavement and bridges, such as Intelligent Transportation Systems (ITS), traffic signals, and other infrastructure that support TSMO, to have a more comprehensive asset management system.

Furthermore, federal guidelines state that regional operations objectives should relate to recurring and nonrecurring congestion,

access to traveler information, emergency response, and ease of movement across modes and jurisdictions. TSMO should be integrated into the long-range transportation planning process and addresses both short and long-term system performance. An increased focus on TSMO within the Pikes Peak region will not only fulfill federal MAP-21 requirements but also address pressing issues such as congestion, air quality, safety, and security.

DEFINITIONS OF CONGESTION

STATIC CONGESTION

Static congestion is a measurement of delay on a corridor during a typical peak hour. See Figure 9–1. This congestion measurement is a relative rather than an absolute condition, and a uniform measurement could not be used for all facilities and cities. In the Pikes Peak region, overall roadway congestion is defined by a volume to capacity ratio of 1.00 or greater. This corresponds to a Level of Service (LOS) F for regionally significant roadways. Facilities with LOS D and E are designated as “approaching congestion” and contain V/C ratios with a range from 0.71 to 0.99. Facilities with a LOS A-C are not considered congested (Figure 8–1).

The actual capacity of a given road cannot realistically be expressed in an absolute number (i.e., 2,400 vehicles per lane per hour) because the traffic stream is not uniform in weather conditions or driver behavior. Friction from traffic entering or leaving a highway can affect the through-put of traffic, as does a road’s operating speed, number of lanes, width of lanes, shoulder width, sight distance, horizontal (left or right) curvature, and vertical curvature (up and down, or grade.) Traffic speed and flow on urban streets are determined primarily by intersection capacity, which is affected by traffic volumes on cross streets and left turn signal phases.

What can be used instead is the assignment of level of service to traffic facilities under various traffic flow conditions. (The capacity analysis methodology is based on the concepts and procedures in the Highway Capacity Manual 2010.) LOS is defined as “...a qualitative measure describing operational conditions

within a traffic stream and their perception by motorists and/or passengers.” Traffic speed and flow on urban streets are determined primarily by intersection capacity, which is affected by traffic volumes on cross streets and left turn signal phases.

LOS measures the relationship between volume and density and provides an index to the quality of traffic flow in terms of freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Six LOS results are defined for each type of facility. They are given letter designations from A to F, with A representing the best operating conditions and F the worst. Since the LOS of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of LOS, depending on the time of day, day of week, or period of year.

LEVELS OF SERVICE AT INTERSECTIONS

Intersection LOS, described in Table 8–1, define congestion in terms of control delay, a measure of driver discomfort or frustration, and increased travel time. The delay experienced by the motorist is caused by a number of factors that relate to control, geometrics, and traffic volume. Total delay is the difference between the travel time actually experienced and the reference travel time that would result in the absence of traffic control, geometric delay, any incidents, and any other vehicles. LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-minute analysis period.

Traditionally, the concept of congestion has only been applied to motor vehicles. This leads to pressure on traffic engineers to add lanes at intersections. However, changing expectations about the physical and operational design of intersections and how a signalized intersection should perform for all travelers (bicycle and pedestrian) is leading to increasing the threshold volume-to-capacity ratio for motor vehicles. Careful consideration of the likely impacts of intersection improvements on pedestrians, cyclists and adjacent land uses before finalizing design helps meet mobility and accessibility goals for all modes of transportation.

FIGURE 8–1
HIGHWAY LEVEL OF SERVICE (LOS) DEFINITIONS

LEVEL OF SERVICE A	
	Optimal vehicle operating conditions. This is a free-flow condition with little or no restrictions on speed or maneuverability caused by other vehicles.
LEVEL OF SERVICE B	
	This designation has a stable vehicle flow, where operating speeds may be restricted by other traffic. However, restrictions on maneuverability are negligible. There is little probability of a major reduction in vehicle speed or flow rate.
LEVEL OF SERVICE C	
	This designation still maintains a stable vehicle flow, but at this volume and density most vehicles are restricted in their freedom to select speed, change lanes, or pass. Operating speeds are between 66% and 75% of maximum.
LEVEL OF SERVICE D	
	This designation has unstable vehicle flow. Tolerable operating speeds are maintained but are subject to considerable and sudden variation. Freedom to maneuver and driver comfort are low.
LEVEL OF SERVICE E	
	This designation reflects upper capacity limit of the facility. Operations on facilities are unstable and speed will fluctuate wildly from point to point. There is little independence in speed, selection, and maneuverability.
LEVEL OF SERVICE F	
	This designation is a “force-flow” condition. Travel speed and vehicle flow will drop to zero for short-time periods. Vehicle densities will continue to increase as long as the arrival rate exceeds the discharge rate.

TABLE 8–1
INTERSECTION LEVEL OF SERVICE (LOS) DEFINITIONS

LOS A	Describes operations with low delay, which is described as 10 sec/vehicle (veh) or less. This LOS occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all.
LOS B	Describes operations with delay greater than 10 and up to 20 sec/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop in LOS B conditions than in LOS A conditions, causing higher levels of delay.
LOS C	Describes operations with delay greater than 20 and up to 35 sec/veh. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles and overflows occur. The number of vehicles stopping is significant in LOS C, though many still pass through the intersections without stopping.
LOS D	Describes operations with delay greater than 35 sec/veh and up to 55 sec/veh. Congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
LOS E	Describes conditions with delay greater than 55 sec/veh and up to 80 sec/veh. These higher delays indicate poor progression, long cycle lengths and high V/C ratios. Individual cycle failures are frequent.
LOS F	Describes operations with a control delay in excess of 80 sec/veh. This level, considered unacceptable to most drivers, often occurs with oversaturation—that is, when arrival flow rates exceed the capacity of the lane groups. It may also occur at high V/C ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

DYNAMIC CONGESTION

PPACG uses detailed real-time and historic traffic data at one-minute or larger intervals to provide a high level of operational analysis on the region's roadways, including speed, travel time, delay, queue lengths, and bottleneck locations and frequencies. The data is collected from smart-phone users traveling on the regional transportation system. With this data, the region is able to obtain analytical benefits such as:

- A system-wide view of the region's corridor operations.
- Congestion levels on corridors, including seasonal variations from month to month and between weekdays and weekends.
- Recurring and non-recurring bottlenecks.

Dynamic congestion was divided into recurring and non-recurring congestion. Recurring congestion, such as that related to commuter traffic, occurs regularly on a corridor. Non-recurring congestion occurs sporadically and tends to occur during incidents or special events.

CONGESTION MANAGEMENT PROCESS

A major component of TSMO is the Congestion Management Process (CMP), which identifies the causes of congestion and develops solutions. CMP is required as part of the metropolitan planning process in Transportation Management Areas. A CMP applies strategies to improve the transportation system's performance and reliability by reducing the adverse impacts of congestion, managing demand and reducing travel delays. The intent is to maximize the use of existing facilities, not construct new ones, and to cost-effectively improve regional mobility.

Federal requirements state that a CMP must include methods to:

- Monitor and evaluate the performance of the multimodal transportation system;
- Identify the causes of congestion;
- Identify and evaluate alternative actions;

- Provide information supporting the implementation of actions;
- Evaluate the efficiency and effectiveness of implemented actions; and
- Identify an implementation schedule, responsibilities, and possible funding sources.

The CMP will help the Pikes Peak region:

- Develop a definition of congestion;
- Identify congested locations;
- Determine the causes of recurring and nonrecurring congestion;
- Develop and evaluate a menu of strategies to mitigate congestion;
- Develop performance measures and related data collection systems; and
- Set priorities among projects for incorporation into the Transportation Improvement Program.

CORRIDOR CLASSIFICATION

The CMP corridors are defined by the degree to which a corridor provides mobility and capacity for regional traffic. CMP corridors carry—or are projected to carry in 2045—at least 30,000 vehicles per day. This volume threshold approaches the point where six-lane arterial streets with at-grade intersections are generally necessary. The CMP uses posted speed and corridor lengths to establish priority corridors.

Following is a summary of the thresholds used in defining the CMP corridors:

STRATEGIC CORRIDORS

- Serve regional and inter-regional traffic;
- Are projected to carry at least 30,000 vehicles per day on at least one segment;
- Have a posted speed of 55 mph or more on at least one segment; and
- Are a minimum of 10 miles long.

SIGNIFICANT CORRIDORS

- Serve regional traffic;
- Are projected to carry at least 30,000 vehicles per day on at least one segment;
- Have a posted speed of 45–50 mph on at least one segment; and
- Are a minimum of 5 miles long.

NATIONAL HIGHWAY SYSTEM

- The National Highway System (NHS) includes the Interstate Highway System as well as other roads important to the nation’s economy, defense, and mobility. The NHS was developed by the Department of Transportation in cooperation with the states, local officials, and metropolitan planning organizations. It includes the following subsystems of roadways:
 - **Interstate:** The numbered Eisenhower Interstate System of highways are the backbone of the NHS and have a separate identity within the NHS.
 - **Principal arterials:** Highways in rural and urban areas which provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.
 - **Strategic Highway Network:** A network of highways which are important to the United States’ strategic defense and which provide defense access, continuity and emergency capabilities for defense purposes.
 - **Major Strategic Highway Network Connectors:** Highways which provide access between major military installations and the Strategic Highway Network.
 - **Intermodal Connectors:** Provide access between major intermodal facilities and the other four subsystems making up the National Highway System. A listing of all official NHS Intermodal Connectors is available here.

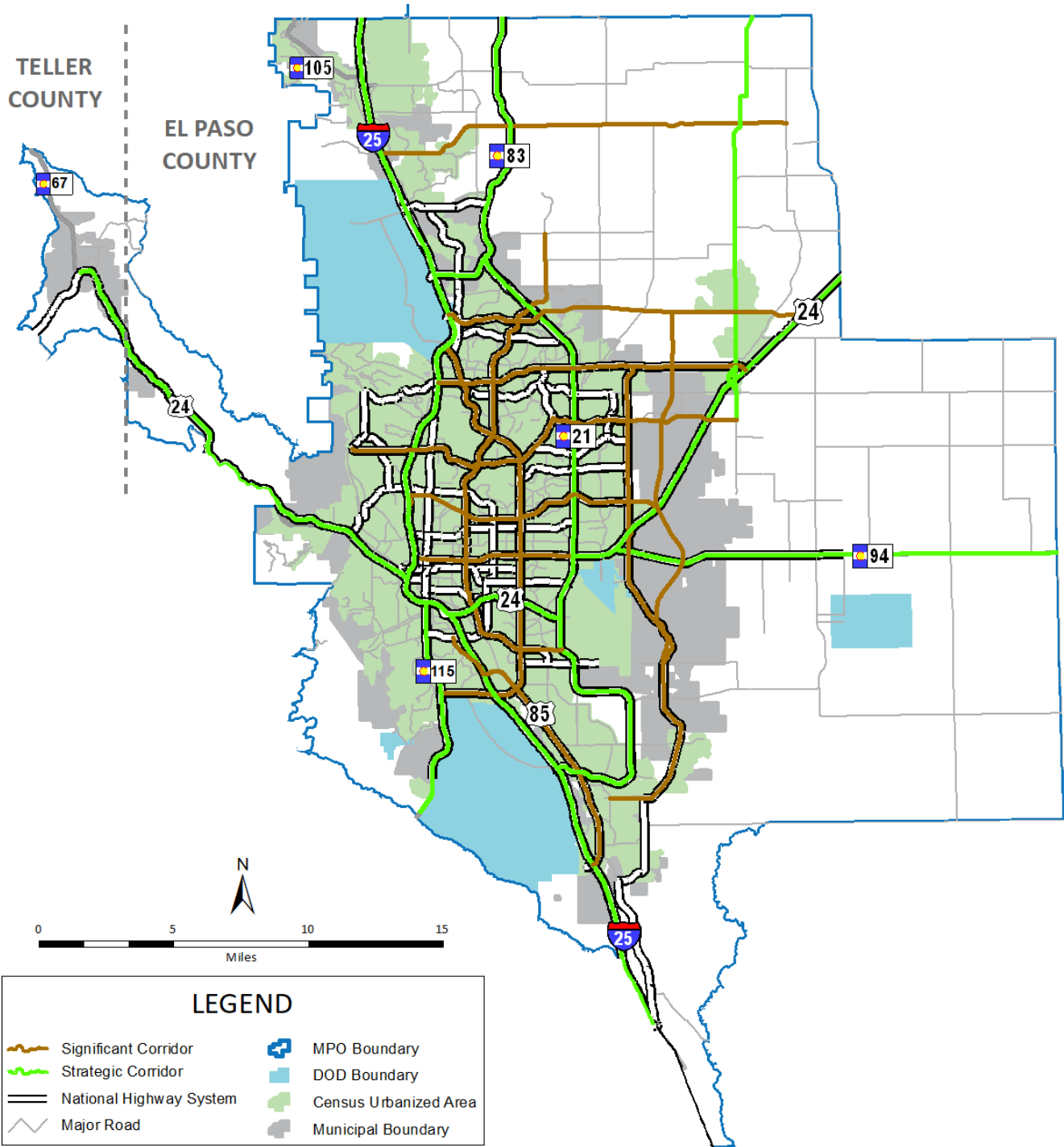
The CMP corridors in the Pikes Peak region are displayed in Figure 8–2 and listed in Table 8–2.

TABLE 8–2
PPACG CONGESTION MANAGEMENT PROGRAM (CMP) CORRIDORS

STRATEGIC CORRIDORS	EXTENTS
I-25 North	Briargate Pkwy to County Line Rd
I-25 Central	MLK Bypass to Briargate Pkwy
I-25 South	Midway Rd to MLK Bypass
US 24 West	I-25 to SH 67
US 24 East	I-25 to Elbert Rd
SH 115/S. Nevada Ave	Rock Creek Canyon Rd to I-25
SH 94	US 24 East to Ellicott Hwy
SH 83	I-25 to County Line Rd
SH 21 (Powers Blvd)	SH 83 to I-25 via Mesa Ridge Pkwy
Meridian Road	County Line Rd to Blaney Rd

SIGNIFICANT CORRIDORS	EXTENTS
Baptist Rd/Hodgen Rd	I-25 to Eastonville Rd
Briargate Pkwy/Stapleton Rd	I-25 to US 24 East
Garden of the Gods/Austin Bluffs Pkwy/ Stetson Hills Blvd/ Huber Rd	30th St to Meridian Rd
Constitution Ave	I-25 to US 24 East
Platte Ave	Cascade Ave to US 24 East
Milam Rd/Union Blvd/ Hancock Expwy	Shoup Rd to SH 21 (Powers Blvd)
Academy Blvd	I-25 to SH 115
Marksheffel Rd	Woodmen Rd to Fountain Mesa Rd
Venetucci Blvd/Old Hwy 85/ Santa Fe Ave	Lake Ave to I-25
Woodmen Rd	I-25 to US 24 East

FIGURE 8-2
PPACG CMP CORRIDOR CLASSIFICATION



PPACG CONGESTION MANAGEMENT PROCESS

The PPACG CMP establishes a process to continually monitor and improve the efficiency of the regional transportation system. Corridors are analyzed for specific performance and improvement strategies identified for consideration. Performance measures are derived from the vision, goals, and objectives established for the plan. The CMP is designed to put into action the visions and goals relating to congestion by transforming the goals into specific objectives, identifying where goals are not being met, and coming up with strategies to achieve the goals.

PPACG CMP CORRIDOR PLANS

A “Toolbox of Strategies” was identified and developed to be considered for managing congestion on the CMP corridors. The Toolbox is shown in Table 8-3. Many of these strategies are complementary but need to be verified as feasible for a particular corridor. The application of these strategies to CMP corridors will be analyzed for specific improvements. The Toolbox is segmented into both systematic and capacity-related strategies, which include transportation system management (TSM), travel demand management (TDM), bicycle and pedestrian, transit, and land development strategies; and roadway construction alternatives.

CMP corridor plans are to be developed in collaboration with local communities with a guiding philosophy that corridor plans include only tools and projects that are appropriate for the corridors. The proposed plans for each CMP corridor are regional in nature and will assist local communities and PPACG in developing projects to manage congestion.

TABLE 8–3.1
CMP CORRIDOR PLANNING “TOOLBOX”

TRANSPORTATION SYSTEM MANAGEMENT

Access Management	Minimize conflict points and improve traffic flow by limiting the number of curb cuts and median cuts along a roadway.
Intersection Improvements	Improve traffic flow through an intersection by constructing or extending right-turn and/or left-turn lanes or other geometric improvements that increase operational capacity. Projects may include, but are not limited to, turn-lane construction, signal removal, roundabout construction, or continuous-flow intersections.
Signalization Optimization	Enhance signal operations for emergency response, automobiles, and buses through the implementation of technological upgrades and integration of traffic control devices at congested intersections and along transportation corridors.
Reconstruction/ Widening of Existing Travel Lanes	Improve traffic flow by widening substandard travel lanes and/or constructing separate bike lanes from a shared-lan facility.
All Modes Roads Reconstruction	Reconstruct existing roadways and/or corridors to accommodate multiple modes of transportation.
Bottleneck Removal	Construct additional capacity at “hot-spot” locations to improve traffic operations. Projects may include construction of triple left-turns, additional through lanes through an intersection, or other efficiencies where excessive delays occur at a specific location.

One-way Paired Streets	Conversion of bidirectional streets to one-way paired streets to improve traffic operations and traffic flow.
Freeway Ramp Improvements	Reconstruct existing ramps or interchange approaches to address shortfalls in queuing and merging areas that result in negative impacts on traffic flow. Projects may include, but are not limited to, extending ramps, braided ramps, “X” ramps, construction of continuous ramps.
Freeway Ramp Metering	Facilitate freeway traffic by regulating the amount of traffic entering the traffic flow from on-ramps.
High Tech/Intelligent Transportation System	Technological improvements that enhance the operations of the existing transportation systems. Projects may include incident detection and response, motorist information assistance, real-time routing, transit queue jumping, and enhanced bicycle/pedestrian systems.
Incident Management and Mitigation	Construct improvements at high-accident, high-volume locations to address reoccurring delay due to crashes and emergency response.

TABLE 8–3.2
CMP CORRIDOR PLANNING “TOOLBOX”

TRAVEL DEMAND MANAGEMENT

Parking Management	Encourage multiple-occupant vehicle trips by providing preferential parking for carpool vehicles and motorcycles; provide relief for required minimum parking stalls near transit transfer stations, intermodal transit hubs, and/or where transit-oriented development exists.
Carpool/Vanpool Programs	Develop programs that encourage and support increased vehicle occupancy by either carpools or vanpools. Includes program management, guaranteed rides home, and infrastructure such as vehicles and park-and-ride lots.
Employer-Based Programs	Implement programs that provide incentives for employers to allow employees to telecommute, stagger work hours away from peak traffic periods, use flex time, and compressed work weeks, and for employees who use transit or alternative modes of transportation.
HOT Lanes/ Transit-Only Lanes	Construct or dedicate exclusive travel lanes for vehicles with a minimum number of passengers, motorcycles, or transit vehicles. These lanes can be anywhere from peak hour only to 24 hours and are frequently reversible.
Incident Management and Mitigation	Construct improvements at high-accident, high-volume locations to address reoccurring delay due to crashes and emergency response.

BIKE AND PEDESTRIAN

Non-motorized Infrastructure Development	Develop programs and construct projects that enhance the bicycle and pedestrian infrastructure. These projects include, but are not limited to, construction of on-street bike lanes, restriping of existing roadways, and construction of sidewalks and trails.
Non-motorized Optimization	Encouraging the use of the non-motorized transportation system by removing barriers, enhancing connectivity, and improving accessibility. Develop a regional and sub-regional unimpeded bikeway system that includes grade separations across major barriers. Elements that develop/enhance the bikeway infrastructure; integrate the automobile, bike, and transit systems where feasible; remove gaps in the system; and enhance non-motorized accessibility and connectivity to major destinations and populations are encouraged as both stand-alone and with roadway construction projects.

TABLE 8–3.3
CMP CORRIDOR PLANNING “TOOLBOX”

TRANSIT		LAND DEVELOPMENT	
Transit Service Optimization	Improve transit system services by reducing headways, providing longer hours or service, expanding the service area, or providing more days of service.	Transit-Oriented Development	Development that integrates commercial, retail, and residential design to maximize access to public transportation. This type of development often incorporates features to encourage transit ridership and non-motorized transportation.
Accessibility Improvements	Construct/reconstruct multimodal infrastructure and facilities for trip chaining of different modes.	Growth Management Policies	Regulate growth so traffic generated remains within adequate ranges for forecast transportation capabilities.
Express Routes	Provide express transit line(s) from one area of the region to another.	Transit Supportive Density	Encourage and incentivize residential and employment centers to develop a density supportive of mass transit.
Fixed Guideway Transit	Implement a fixed guideway system designed to move high volumes of people quickly and efficiently. Fixed guideway projects may include light rail, commuter rail, bus rapid transit, or streetcars and associated stations, infrastructure, and complementary land use.		
Transit System Enhancements	Implement technological advancements and improve transit facilities to encourage “choice” ridership.		

TABLE 8–3.4
CMP CORRIDOR PLANNING “TOOLBOX”

ROADWAY CAPACITY IMPROVEMENTS

Construct New Roads/Bypass Corridors	New roadway construction that will provide traffic congestion relief to a parallel or complementary facility.
Construct Additional Travel Lane(s)	Construct additional travel lanes to existing roadways to increase the carrying capacity of an existing road in order to relieve traffic congestion.
Arterial Grade Separation	Construct grade-separated intersections where at-grade improvements or adjacent facilities cannot provide relief of “hot-spot” congestion.
Freeway Interchange Reconstruction	Reconstruct a freeway interchange where an existing facility is operating over capacity and where improvements to alternative facilities cannot provide relief.
Connectivity/Gap Elimination	New roadway construction that eliminates gaps in the transportation system while improving connectivity to other corridors.

TSMO GOALS, STRATEGIES, AND SOLUTIONS

TSMO strategies will be considered as individual “stand-alone” projects or as part of another transportation project. If analysis demonstrates that travel demand reduction and operational management strategies cannot fully satisfy the need for additional capacity in the corridor or transit line, the Congestion Management Plan will identify all reasonable strategies to manage the facility effectively. Potential congestion management strategies for the Pikes Peak region are summarized in the following sections.

INTELLIGENT TRANSPORTATION SYSTEMS

The vision for ITS is to:

- Improve the mobility, safety, and comfort of the multi-modal transportation system;
- Support economic development in the region;
- Protect the natural environment through real-time management of the transportation system; and
- Provide reliable, timely and accurate traveler information to all users of the system.

ITS components can include:

- Computerized signal systems
- Traffic control and surveillance equipment
- Motorist information systems
- Roadway channelization
- Intersection improvements
- State-of-the-art incident notification capabilities
- Operations improvement for I-25 (including ramp metering)

INCIDENT MANAGEMENT

Non-recurring congestion relies on the Incident Management Plan for the Pikes Peak region to provide additional capacity during a specific event. The Incident Management Plan has ITS capability to handle events on the I-25 corridor. Key components of the system include video cameras and variable message signs linked to real-time communication, signal monitoring, and real-time adjusting of the length of the green time relative to other signals region-wide. US 24, Powers Boulevard (SH 21), and Academy Boulevard are also included in the master plan for ITS applications.

ITS operations are managed through the Colorado Springs Transportation Management Center, which performs traffic, incident, and event management, and monitors traffic sensors, closed circuit television cameras, radar detectors, and other devices.

The City of Colorado Springs' traffic signalization program includes dealing with effective incident management through linked communications systems, state-of-the-art incident detection capability, and the development of an incident management plan to effectively coordinate and expedite the removal of accidents and other incidents on I-25, US 24, Powers Boulevard (SH 21), Academy Boulevard, and other CMP facilities.

RAMP METERING

The principal behind ramp metering is to time the access to a freeway segment to maintain an optimum level of service, minimizing delays for all motorists using the freeway. Signals are installed at on-ramps and are active when traffic demand exceeds the level that can be accommodated by the freeway. Minor shifts to high-occupancy vehicles may also occur if they are provided preferential bypass of ramp controls. Success of ramp control is largely dependent on the extent to which the following conditions are met:

- The reduction in freeway delay and congestion with ramp metering must be noticeable to the user; that is, elimination of recurring congestion.

- Additional capacity strategies must be available in the corridor, such as alternate routes, time periods, or modes of travel, to accommodate demand shifts.
- Adequate space for vehicles to line up must exist, or be created, at the entrance ramps.
- Ramp signals must be used and timed appropriately.

Ramp metering is currently not implemented in the Pikes Peak region, however there is a planned project by CDOT starting construction in 2019.

TRANSPORTATION DEMAND MANAGEMENT

There are two sides to any transfer of services: supply and demand. Traditional strategies increase transportation supply by adding capacity and more efficiently operating the roadway system. In contrast, travel demand management strategies indirectly change the demand for travel by spreading the timing of travel to less-congested periods; shifting the routing of vehicles, including trucks and single-occupant vehicles, to less congested facilities; and reducing the need to travel at all. Managing demand means providing all travelers with choices of location, route, and time, as well as mode of travel.

Real-time information systems can help travelers make better decisions about how they travel (mode), when they travel (time), where and whether they travel (location), and which route they travel (path). These information systems can be used at employment centers and to manage critical shifts in demand such as occur for special events, tourist activity, incidents and emergencies, schools, shopping centers, recreation areas, medical facilities, weather problems, and reconstruction projects.

The Pikes Peak region has not yet taken full advantage of the informational, technological, and financial mechanisms available to deploy robust travel demand management, although the military bases in the region have implemented some limited deployment of these strategies. However, a number of trends will facilitate increased usage of travel demand management.

BOX 8-1

21st CENTURY ENABLERS OF TRAVEL DEMAND MANAGEMENT (TDM)

Information in an accessible and timely format for:

- | | |
|---|--|
| ☐ Construction updates and alternative modes | ☐ Parking pricing |
| ☐ Crashes and alternative routes | ☐ Transit and van pool |
| ☐ Emergencies | ☐ Flexible work schedule |
| ☐ Weather issues | ☐ Compressed work weeks |
| ☐ Real-time conditions | ☐ Telecommuting |
| ☐ Real-time weather | ☐ Satellite work centers |
| ☐ Transit-carpool availability | ☐ Decreased transit fares |

Via technologies such as:

- | | |
|--|--|
| ☐ Cell phones | ☐ Dynamic message signs |
| ☐ GPS navigation | ☐ Vehicle to vehicle communication |
| ☐ Internet | ☐ Infrastructure to vehicle communication |
| ☐ Networks | |
| ☐ Radio announcements | |
| ☐ E-payment | |

LAND USE MANAGEMENT

Land use management and activity center concepts should be advanced in local comprehensive planning documents, with the respective local policy makers adopting them as goals and objectives.

ACCESS MANAGEMENT AND CORRIDOR PRESERVATION

Access management makes more efficient use of the existing roadway system. Consolidating access points and using frontage roads can protect the capacity of a road well beyond that of a similar road lacking access control, reducing the need for expansion or replacement. Access management is best incorporated into initial project planning and design. This avoids costly future expenditures for road expansion or even repurchase of access rights. More information concerning access management can be found in Chapter 10, Transportation System Safety.

A related issue is corridor preservation. This entails preserving rights-of-way for new or expanded roads in order to reduce the amount of development near the property that will be needed for construction. This can greatly reduce the cost of projects and shorten the time needed to construct projects.

HIGH-OCCUPANCY VEHICLES

HOV lanes on freeways provide preferential service to buses, vanpools, carpools, and motorcycles. The purpose of HOV lanes is to increase the person-carrying capacity of freeways. HOV lanes can provide incentives for increased transit and carpooling if the user experiences reduced travel times and cost. In order for the HOV to be successful, and therefore feasible, the following conditions should exist or be achievable:

- The existing corridor should be experiencing levels of service of E or F (congested travel conditions) during the peak period.
- Average existing peak-hour speeds on the existing corridor must be 25 mph or less.
- The corridor should be relatively long a minimum 10 miles.

- The HOV lane should be able to provide at least a five-minute travel-time advantage, and preferably a 10-minute travel advantage. In general, the travel time advantage should be at least one minute per mile.
- The number of person trips projected on the HOV lane should at least equal the average number of person trips on a general-purpose lane.
- Person minutes of travel time saved by users of the HOV lane must exceed person minutes lost in the general-purpose lanes.
- Existing bus volumes should be at least 15 buses per hour in the current-year peak period, and a minimum of 40 buses per hour in the design-year peak period, with 750 and 2,000 passengers per hour, respectively. This compares to general-purpose lane-carrying capacities of 2,000 vehicles and 2,200 persons per hour.
- Commuter express bus service should be provided or expanded where it already exists.
- Park-and-ride lots should be provided at a distance of at least five and preferably 10 miles from the destination. Capacity of park-and-ride lots should total 1,000 spaces now and should be expanded to 2,500 spaces along the corridor.

IMPLEMENTATION PROGRAM

PPACG, as the Metropolitan Planning Organization (MPO) for the Colorado Springs metropolitan area, recognizes that implementation of the majority of congestion management strategies must rest with local operating agencies. In fact, most actions can be initiated and implemented without the involvement of the MPO. However, there is much to be gained from coordinating these efforts so that they reinforce one another and are aimed toward the resolution of regional problems.

Through the metropolitan transportation planning process, PPACG will continue refinement of congestion performance measures, and data-collection geography and temporal frequency. PPACG and associated local governments in the metropolitan planning area will participate in the identification of activities

to address congestion problems on individual facilities through established planning processes: the transportation improvement program, long-range plan development, congested-corridor feasibility studies, and the Congestion Mitigation and Air Quality Improvement (CMAQ) program. Potential strategy “action packages” are listed by geographic level in Table 9–4.

SUMMARY

The Pikes Peak region can improve performance and reduce congestion using an objective-driven and performance-based transportation-planning process that specifically considers TSMO strategies. This LRTP is intended to assist in managing congestion as the region continues to experience rapid growth that leads to increasing demands on the region’s transportation networks. TSMO addresses safety, security, mobility, recurring and nonrecurring congestion, and other issues, resulting in a mix of infrastructure and operational strategies founded on measurable, performance-based regional-operations objectives. Within the context of limited transportation funds, it is important to use all available tools to enact the most effective projects that maximize the impact of these limited funds and move the region closer to meeting these objectives.

TABLE 8–4
CONGESTION MANAGEMENT ACTION PACKAGES

DOWNTOWN COLORADO SPRINGS

Traffic operations	Bike storage sites
Transit improvements	Pedestrian facilities
Ridesharing	Traffic signal improvements
Parking incentives for alternative modes and motorcycles	Concrete pavement
Auto restricted zones	Variable work hours

STRATEGIC REGIONAL CORRIDORS

Ramp metering	In-vehicle and highway system technology
Incident management	Bus/HOV bypasses at ramp meters
Provision of storage space for disabled vehicles	Direct access to park and rides for transit
Provision of traffic condition information	Completing gaps in the transportation system
Selective on-ramp closures	Addition of general-purpose lanes

REGIONALLY SIGNIFICANT ROUTES

Trip reduction ordinance	Ridesharing
Parking policies to encourage use of HOV and motorcycles	Development consistent with transportation infrastructure
Transit improvements	Telecommunications

REGIONAL ACTIVITY CENTERS

Variable work hours	Ridesharing
Traffic signal and operations improvements	Parking management to encourage ride-sharing and motorcycles
Access to park-and-ride lots	Provision of bike storage facilities
Longer-term land use policies to encourage multiple uses and employer concentrations and to provide nearby affordable housing	

OTHER CONGESTED ROUTES

Traffic signal improvements	Turn prohibition using medians
Remove unnecessary multiple access points	Retrofit shopping center access to reduce delays on arterials
Provide continuous pedestrian facilities	Provide direct pedestrian pathways from subdivision to bus routes
Addition of general-purpose lanes	Bicycle racks and storage facilities at suburban park-and-ride locations
Bus pullouts where feasible	Bus shelters
Concrete intersections and bus pads at stops to reduce pavement wear	Completing gaps in the transportation system
Provide bike routes and/or crossings where accident potential may be high	

OTHER PRINCIPAL ARTERIALS

Traffic signal improvements to reduce delay	Improve curb radii for bus movements
Reversible lanes	Turn prohibitions
Provision of off-street parking	Bus shelters
Completing gaps in the transportation system	Addition of general-purpose lanes

INTERSECTIONS

Add lanes	Regional timing
-----------	-----------------

CHAPTER 9

NEW AND EMERGING TECHNOLOGIES

New and emerging technologies will play an increasing role in the transportation system over the next 20 years. Private vehicles, public transportation, and active transportation are all expected to undergo a transformation over the next few years.

OVERVIEW

Over the next twenty-five years and beyond, new and emerging transportation technologies are going to dramatically change mobility. Connected and autonomous vehicles and other new forms of transportation will lead to changes in demand, new risks, new opportunities, new infrastructure, and changes to urban form and the way streets are managed and operated. A revolution in transportation data paralleling the emergence of “smart cities” will change how time and mobility are conceptualized: the Colorado Department of Transportation’s concept of the Internet of Roads is a good example of this. Commuting time may be reclaimed as working time for those who no longer need to operate vehicles as they travel from place to place. Connectivity will deliver real-time information to travelers, helping them avoid danger and delay. And as always, more convenient travel may lead to increased demand. Rising costs and the opportunities presented by technology are expected to shift funding priorities from new facility construction toward more investment in operations and management.

Some of PPACG’s member jurisdictions are already planning to take advantage of the opportunities presented by new technologies. What should the regional agency’s role be? Some regional agencies are creating master plans for the development and implementation of new high-tech transportation systems. PPACG prioritizes and funds regional transportation projects and does

not propose or build them, so in this region the initiative will have to come from member cities and counties. However, with the high degree of uncertainty, the lack of expert consensus, and the lack of any “solid” information about emerging technologies and the effects they’ll likely have on mobility and on society in general, the regional agency may appropriately be a provider of information and, eventually, coordination.

AUTONOMY

Of all the technological changes on the horizon, connected and autonomous vehicles are expected to have the largest impact on transportation and land use. Connected vehicles will communicate directly with infrastructure and with each other, using real-time data to improve safety and mobility. Self-driving vehicles are also expected to improve mobility and safety while freeing travelers from operating vehicles. Although they have some features in common and are frequently confused, connected and autonomous vehicles are not the same. While connected vehicles focus on providing timely and accurate information to travelers, they offer driver support capabilities rather than self driving; and although most autonomous vehicles will be connected, their immediate self-driving capabilities will not rely on being connected.

The scope of changes that are possible with the advent of connected and autonomous vehicles is vast, and transportation planners and other experts currently do not agree on any one scenario that is likely to develop. A connected vehicle may alert its driver to weather, wildlife, traffic, emergencies, and other situations that will affect drivers’ choices and the time it takes to get from one place to another. Autonomous vehicles will have an even greater effect and may alter everything from where people choose to live to whether they need to own a vehicle to whether parking will be needed. For example, if a traveler can sleep or work during his commute in an autonomous vehicle, he has less incentive to live close to work; or if one can be dropped off by her car, there is less reason for her to avoid heavily trafficked areas where parking is scarce.

SAFETY

One of the main sources of interest in connected and autonomous vehicles is the expected safety benefits. Connected vehicles are expected to accomplish safety improvements by providing drivers with better information than they could expect from traditional sources and by enhancing limited driver-supportive autonomous functions. Autonomous vehicles will remove the human element from vehicle operation, eliminating error, reaction time, intoxication, distraction, poor vision, and many other factors that are frequently responsible for accidents that cause property damage, injury, and death.

Early on, self-driving vehicles will provide increasing levels of driver assistance rather than full autonomy. An example of driver assistance that will benefit safety is collision detection with emergency braking. While these safety benefits are reasonably expected in the future, there is likely to be a time in the near future when autonomy will be less safe than it will be ultimately. The outcome of this is uncertain. So far, the public has been less tolerant of injury and fatality accidents involving autonomous vehicles than it has been of the same accidents caused by human drivers. It is not known how accepting the public will be of autonomy during the inevitable transition period or whether this will affect the timing of widespread deployment of autonomous vehicles.

Overall, because automation and other technologies can change so quickly, safety regulations and guidelines will need to be both broad and specific. While some regulations will need to be updated more quickly for new situations, general protections will need to be in place in the form of broader safety policies not tied to a specific technology.

MOBILITY

Experts agree that autonomy will have significant impacts on mobility and congestion. What exactly those impacts will be is still very much open to debate. Open questions deal with how

the system will evolve, consumer preferences, and ideas as fundamental as the concept of owning a vehicle.

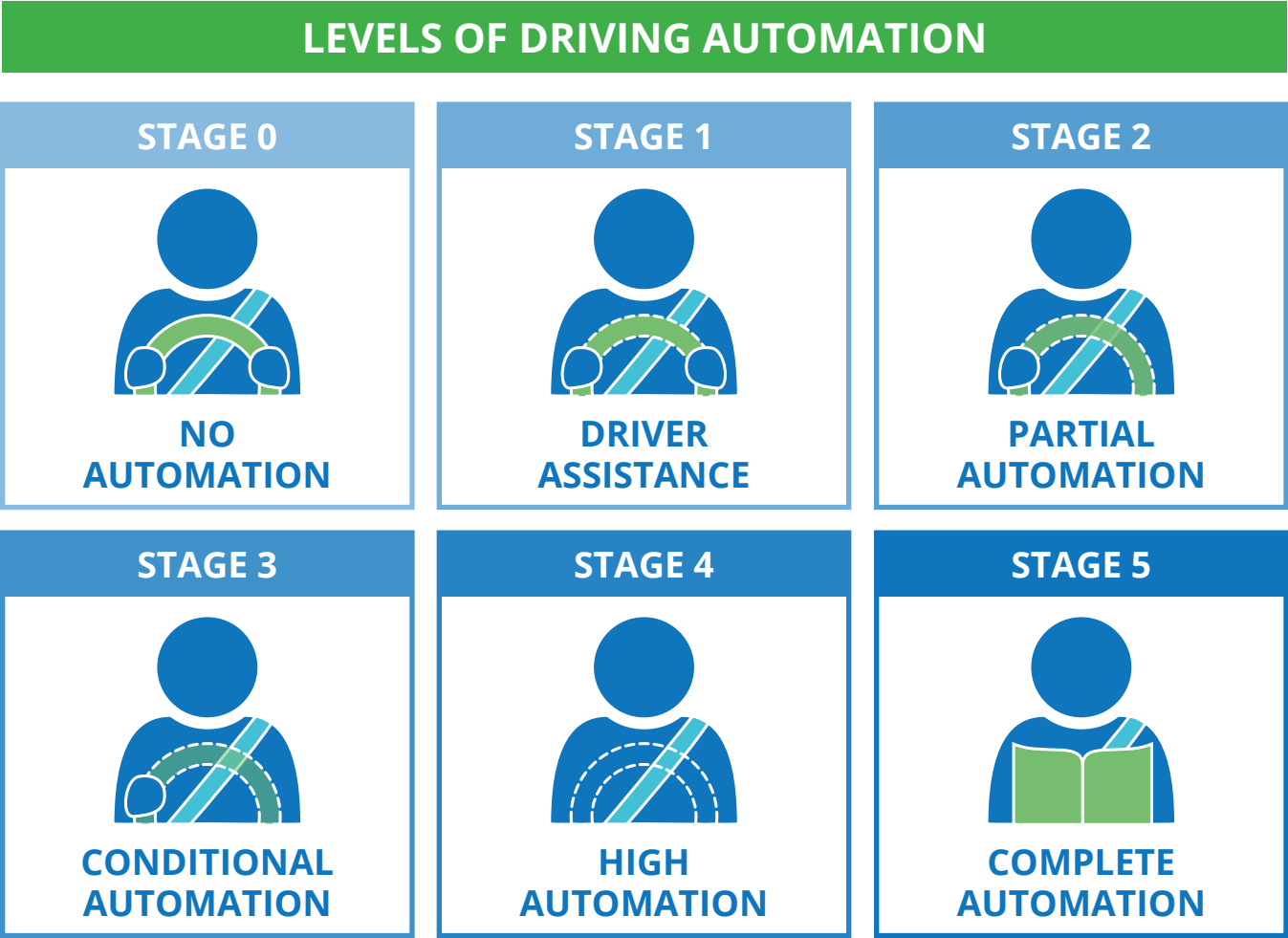
Autonomy will arrive in stages. As new technologies become available and—later—affordable, they will be incorporated into new vehicles. Experts discuss the evolution of fully autonomous vehicles in terms of five distinct stages:

- 0. No automation. A human driver performs all operating tasks.
- 1. Driver Assistance. The vehicle assists with some functions, with the driver performing steering, acceleration, and monitoring of the environment.
- 2. Partial Automation. The vehicle assists with steering or acceleration so that the driver can partially disengage. The driver still has to be ready to take over and is still responsible for most safety-critical tasks. Most automakers are currently developing vehicles at this level.
- 3. Conditional Automation. The vehicle monitors the environment and performs safety-critical functions in some circumstances. A driver must be ready to intervene if needed.
- 4. High automation. The vehicle can perform all safety-critical functions, monitor the environment, navigate to destinations, and respond to events, but not in all circumstances. The driver does not need to be ready to intervene, only decides when to engage and disengage automation in appropriate conditions.
- 5. Complete Automation. No human attention is needed. The vehicle does everything a level 4 autonomous vehicle can do but is not limited by circumstances.

Other descriptions of the progression of autonomy feature more or fewer than the above stages; we use 5 stages here to reflect those used by FHWA and CDOT.

SCENARIOS

Widespread autonomy may develop in two distinctive ways that would produce strikingly different results in terms of traveler cost, congestion, and in terms of who bears the burden of owning and



maintaining the vehicles. Experts are divided as to which scenario is more likely to develop and which will end up being preferred by consumers. In one scenario, individual consumers purchase autonomous vehicles as they have traditional vehicles, store them at home, and use them when needed. Under this option, the initial cost to the consumer of transportation is high, but so are privacy and convenience. Maintenance may be difficult and costly until autonomous vehicles become cheaper and easier to service. In the other scenario, commercial transportation companies like taxi or ridesharing companies own and maintain most autonomous vehicles, and consumers use them as a service and potentially share rides with other passengers. Under this scenario, the burden of owning and maintaining autonomous vehicles is with the companies.

CONGESTION

One important area where these two scenarios would have dramatically different impacts is in the cost to society. One scenario, it is thought, will lead to reduced congestion with autonomy; the other could lead to dramatically increased traffic congestion, creating a much higher demand for infrastructure. In either scenario, technology would lead to greater efficiency from tighter platooning of vehicles (they can follow each other more closely without the same risks from tailgating by human drivers) and other optimization. However, the efficiencies are small compared with the increases in demand if everyone owns their own autonomous vehicle.

Increased congestion is likely only in the scenario in which most autonomous vehicles are owned by individuals or households. With the increased convenience (imagine a wi-fi connected living room on wheels) of being able to disengage from driving and engage in work or private leisure during travel, demand for travel might soar. With empty vehicles returning home or driving to pick up their owners, zero-person cars would be added to regular traffic. Alternatively, in the shared-use scenario, in which transportation is a service offered by commercial fleet operators, it is expected that congestion could be reduced below current levels. Whether individually or commercially owned autonomous vehicles become dominant, commercial vehicles will arrive first because transportation companies can more easily bear the costs of acquiring and maintaining early autonomous vehicles. Mixed scenarios may also develop based on pricing or timing: a commercial service fleet may exist simultaneously with many vehicles owned by private households.

AUTONOMOUS MICROTRANSIT

Public transit ridership has been falling since 2014, even in major public transit cities such as New York and San Francisco. Much of this is due to the rise of transportation networking companies such as Uber and Lyft, which provide affordable door-to-door service. It is thought that if these services have drawn some travelers away from public transit, then autonomous vehicles, which will be even

cheaper and more convenient, might bring about an even more dramatic downturn in transit usage. One advancement that might mitigate or even reverse this effect is autonomous microtransit: small autonomous shuttles that specialize in circulating through high-traffic areas and making first- and last-mile connections. These systems are ideally suited to airports, downtown areas, and delivering passengers to major transit routes.

It is thought that microtransit will be valued for its responsiveness and flexibility, and for the cost savings of eliminating human drivers. Most microtransit options offer variations of two different operating modes: demand response, in which a user calls the vehicle using a cell phone, and circulation, in which vehicles can be programmed for different fixed routes and stop frequency. Vehicles can switch between modes by day and/or time in order to offer the most appropriate and efficient service for the type of travel that is occurring. Several airports, university campuses, and cities worldwide are already using different forms autonomous microtransit from companies such as Easymile and Local Motors.

AUTONOMOUS TRUCKING

Commercial trucks may be the first autonomous vehicles in widespread use, although, as with passenger vehicles, early advancements will not eliminate drivers or necessarily deliver higher levels of autonomy. They will form another part of the many changes taking place in logistics and supply chain, along with automation and crowd-sharing of warehouses, same-day delivery, and the sustained acceleration of e-commerce versus traditional retail. Current advancements in truck autonomy are aimed at reducing crashes and improving fuel efficiency. Peloton is an automated vehicle technology company that has developed a system for truck platooning, which allows trucks (with drivers) to follow each other more closely, in safety, reducing drag and improving fuel economy for both trucks. The platooning system controls the acceleration of the trucks. This is an example of the kind of truck automation that may be in casual use by the early 2020s.

OTHER NEW VEHICLES AND MODES

E-SCOOTERS AND BIKES

While autonomous cars enjoy the spotlight most of the time, other new forms of transportation are already appearing in US cities, among them e-scooters and dockless shared bikes. These small vehicles are unlocked using a mobile device and left in place when users are finished with them. Often seen as disruptive (or merely as clutter) because they don't seem to quite belong on the sidewalk or in the street (e-scooters can go about 15 miles per hour), these new modes are proving challenging for planners and regulators.

Companies like Lime and BIRD have introduced e-scooters en masse in some cities, where they have aggravated drivers and pedestrians alike and led to injuries. Other reports indicate that the disruptions described are exaggerated and that e-scooters and dockless shared bikes harmlessly fill a useful niche in areas where parking is a hassle but some destinations may be too far away to walk comfortably. Still others say that if our transportation system can't accommodate a technology that is clearly cost effective and convenient, then it is time to rethink how cities view their streets, at least in certain areas. Some cities now accommodate these vehicles amicably, with data-sharing agreements and other tools that assist planners and regulators in keeping track of activity and setting meaningful policies. The only certainty at this point seems to be that e-scooters and dockless shared bikes are only the first of many more novel forms of transportation that are likely to come along and challenge conventional use of streets (and sidewalks).

CARPOOL APPS

Although carpooling is not new, new applications are now making it simple and cost-effective for more commuters, bringing an increase in the number of people carpooling and vanpooling. Travelers can cut their fuel and other costs by sharing rides, without the difficulty of figuring out routes and pickup times, which are optimized by the apps. In addition to cost savings, carpoolers can also avoid parking hassles and take advantage of

High Occupancy Vehicle (HOV) lanes. Traditional transit agencies are also taking advantage of new apps and technologies to expand demand management services like carpool and vanpool in a more streamlined and cost-effective way.

HYPERLOOP

The hyperloop is a form of high speed transit that uses sealed, low-pressure tubes to minimize air resistance and reach speeds of up to 700 miles per hour. The concept came from Elon Musk, CEO of SpaceX, who "open sourced" the idea and encouraged others to develop the technology, prompting the creation of several hyperloop startup companies. The speeds that can be reached by the hyperloop would allow travelers to move faster than they can currently travel by air, arriving hundreds of miles away in only minutes. The technology and infrastructure are costly at this point, and no operating hyperloops currently exist. Skeptics claim that costs and risks have been underestimated, so far.

The Hyperloop Global One Challenge began in May 2016, and Colorado was ultimately one of the ten winners of this global competition to identify the strongest potential hyperloop routes. The company Hyperloop One and the Colorado Department of Transportation, supported by AECOM, have partnered to complete the Rapid Speed Travel Study, a feasibility study for a Front Range route from Cheyenne to Pueblo.

DRONES

Aerial drones are expected to play an increasing role in various areas of transportation over the next several years. In the near term, they will be used ever more frequently in search and rescue, data gathering and surveying, construction monitoring, real estate, wildlife management, film, and others. However, a potentially much larger role — and one that could affect transportation much more substantially — is in package delivery. Many important companies that ship or deliver packages have long-term plans that include delivery by drone. This list includes Amazon, Google, Walmart, UPS, DHL, and others. Drones will help reduce costs and



increase the speed of deliveries, and plans for ultra-fast delivery will certainly require drones.

It is expected that drones will work in tandem with traditional delivery trucks, at first, rather than replacing them, but some long-term plans (e.g. Amazon) call for drone delivery from warehouse to destination. Before this can begin, regulations will need to be updated to permit drone flight over populated

areas. There is currently a general ban on drone flight over non-participating individuals. Drones have successfully delivered numerous packages in rural areas during controlled tests.

PLANNING FOR THE AUTONOMOUS FUTURE—CONSIDERATIONS

The suite of emerging technologies brings with it too many questions and considerations to address in one document, although some of the central near-term issues are growing more clear. Of major concern is data. Vast amount of data will need to be collected and brought to bear in order to take advantage of the opportunities presented by, for example, connected vehicles. How will this data be gathered and maintained, by whom, and how will the privacy and cyber-security of the traveling public be protected? How much time and money will be required to put into place the 5G infrastructure needed to support the exchange of so much data? At least as important will be the question of who our streets will belong to in the connected and autonomous future. This raises questions such as:

- Will there be a network of AV-only lanes that will create barriers for other modes of transportation?
- Will pedestrians be required to wear sensors in order to be safe, or will they be banned from certain areas?
- Will the next transportation system be developed by default to be optimal for new technologies, or will it be guided by a community vision and values?

The fate of public transit is also very much in doubt. On-demand connections could do an excellent job “feeding” traditional transit routes and improving access for all travelers, or it could simply attract riders away from traditional public transit, pushing it toward obsolescence. Planners, the public, and community leaders will have these and other questions to ponder as the connected and autonomous future grows closer.

CURRENT ACTIVITY

US DEPARTMENT OF TRANSPORTATION

Rather than being a driver and implementer of new technologies like autonomy, the United States Department of Transportation (US DOT) is acting as a convener and facilitator, partnering with a broad coalition of industry, academic, states and local, safety advocacy, and transportation stakeholders to support the safe development, testing, and deployment of automated vehicle technology.

In an important paper that was wrapping up in late 2018, “Automated Vehicles 3.0: Preparing for the Future of Transportation,” it USDOT lays out six core principles describing the federal approach to shaping policy for automated vehicles:

- 1. We will prioritize safety.** Automation offers the potential to improve safety for vehicle operators and occupants, pedestrians, bicyclists, motorcyclists, and other travelers sharing the road. However, these technologies may also introduce new safety risks. US DOT will lead efforts to address potential safety risks and advance the life-saving potential of automation, which will strengthen public confidence in these emerging technologies.
- 2. We will remain technology neutral.** To respond to the dynamic and rapid development of automated vehicles, the Department will adopt flexible, technology neutral policies that promote competition and innovation as a means to achieve safety, mobility, and economic goals. This approach will allow the public—not the Federal

Government—to choose the most effective transportation and mobility solutions.

3. ***We will modernize regulations.*** USDOT will modernize or eliminate outdated regulations that unnecessarily impede the development of automated vehicles or that do not address critical safety needs. Whenever possible, the Department will support the development of voluntary, consensus-based technical standards and approaches that are flexible and adaptable over time. When regulation is needed, USDOT will seek rules that are as nonprescriptive and performance-based as possible. As a starting point and going forward, the Department will interpret and, consistent with all applicable notice and comment requirements, adapt the definitions of “driver” and “operator” to recognize that such terms do not refer exclusively to a human, but may in fact include an automated system.
4. ***We will encourage a consistent regulatory and operational environment.*** Conflicting State and local laws and regulations surrounding automated vehicles create confusion, introduce barriers, and present compliance challenges. USDOT will promote regulatory consistency so that automated vehicles can operate seamlessly across the Nation. The Department will build consensus among State and local transportation agencies and industry stakeholders on technical standards and advance policies to support the integration of automated vehicles throughout the transportation system.
5. ***We will prepare proactively for automation.*** USDOT will provide guidance, best practices, pilot programs, and other assistance to help our partners plan and make the investments needed for a dynamic and flexible automated future. The Department also will prepare for complementary technologies that enhance the benefits of automation, such as communications between vehicles and the surrounding environment, but will not assume universal implementation of any particular approach.
6. ***We will protect and enhance the freedoms enjoyed by Americans.*** USDOT embraces the freedom of the open road,

which includes the freedom for Americans to drive their own vehicles. We envision an environment in which automated vehicles operate alongside conventional, manually-driven vehicles and other road users. We will protect the ability of consumers to make the mobility choices that best suit their needs. We will support automation technologies that enhance individual freedom by expanding access to safe and independent mobility to people with disabilities and older Americans.

CDOT: SMART MOBILITY

The Colorado Department of Transportation (CDOT) is taking a proactive approach to emerging technologies and is developing the Smart Mobility Plan as a guide for statewide technology deployment over the next five to ten years. The Smart Mobility Plan incorporates the Statewide Fiber Plan and the statewide plan for the Internet of Roads, which will guide the implementation of Colorado’s connected, digital infrastructure, or the Connected Vehicle (V2X) Network. The overarching goal of the Smart Mobility Plan is to maximize the benefits of emerging technologies. It defines goals for improving safety and efficiency with technology and guides the preparation of data and communication systems that will support connectivity and autonomy. Fiber will form the backbone of the system, and transportation systems will be treated as information systems as well as physical systems. CDOT held regional workshops to gain input from local and regional organizations about critical needs, and the following priorities were identified for CDOT Region 2 (which contains the Pikes Peak Region):

- Road Weather Information Systems: improved for wind condition and emergency evacuations
- Smart Work Zones
- Enhanced Maintenance Decision Support System
- Wildlife Detection and Warning
- Pedestrian Detection at signal locations in rural and urban settings
- Positive Train Control at rail crossing

Learn more at: <https://www.codot.gov/programs/operations/intelligent-transportation-systems/infrastructure/planning>

CDOT: ROADX

With \$13 billion in annual roadway crash costs and a population increase that's expected to vastly outpace increases in revenue over the next 20 years, CDOT's RoadX program seeks to use emerging technologies in place of the traditional large infrastructure projects to address safety and efficiency issues. It embraces the idea that "we cannot build our way out of congestion". The main focus is on infrastructure needed for a system of connected and autonomous vehicles. RoadX features the following Action Areas:

- **Commuting:** transform Colorado's transportation system into the most reliable in the nation by deploying technology and infrastructure systems to improve reliability of travel times, and optimize routing and movement of commutes.
- **Sustainability:** become the nation's leader in energy conservation and emissions reduction.
- **Transport:** deploy emerging in-vehicle technology and supporting infrastructure to improve the safety and efficiency of transporting freight.
- **Safety:** make a dramatic leap toward zero deaths on Colorado highways.
- **Connection:** develop solutions to transform data into actionable intelligence and deliver to drivers, cellular/mobile applications, and connected and autonomous vehicles.

The program strongly encourages private-public partnerships and input from industry. It will initially be funded with \$20 million from CDOT's operating budget, with potential for growth as it showcases the advantages of leveraging technology to solve transportation problems.

Please learn more at <https://www.codot.gov/programs/roadx>.

MEMBER JURISDICTION PLANS

SMARTCOS



A "smart city" uses different types of electronic [data collection](#) to manage assets and resources efficiently in the areas of transportation, power, water, waste management, law enforcement, information systems, schools, libraries, hospitals, and others. The smart city concept is closely related to that of the Internet of Things (IoT), or systems of connected assets that gather, receive, and report data — that have an electronic existence as well as a physical one. CDOT's concept of the Internet of Roads parallels this idea. The City of Colorado Springs and Colorado Springs Utilities, in partnership with Panasonic, recently completed a smart city plan, SmartCoS. The planning process resulted in 11 Smart City Concepts that will be deployed as funding permits.

TABLE 9–1
SMART CITY TECHNOLOGY CONCEPTS

SMART CITY CONCEPTS	BRIEF DESCRIPTION OF CONCEPT
Advanced Metering Infrastructure	Integrated system of smart meters, communications networks, and data management systems.
Connected Vehicle Platform	Enabling the adoption of connected vehicles in urban environment.
Microgrids	Integrated power delivery system.
Enhanced Engagement	Publish city-owned data & modernize citizen request process.
Smart Building Management System	Making buildings more efficient through automation and integration.
Smart Kiosks	Integrating wayfinding and other user-friendly information in the downtown core.
Smart Parking	Improving the efficiency and customer interaction with parking.
Smart Payment Solutions	Payment integration system for various modes of transportation.
Smart Security Systems	Adopting cutting edge technologies for the benefit of public safety.
Smart Streetlights	Converting existing streetlight infrastructure with sensor-capable LED lighting.
Smart Transportation	Integrating smart technologies into long-term transportation planning.

TECHNOLOGY PROJECTS

PPACG’s member jurisdictions are already planning to seek funding for technology-related projects through the Transportation Improvement Program. Among the 2040 and 2045 Long Range Transportation Plan projects are proposed traffic detection systems; various components of Intelligent Transportation

Systems (ITS) such as monitoring and messaging systems, communication infrastructure, specialized equipment and staff; upgrades to transit IT equipment and software (supporting capabilities such as Smartcard, real-time bus information, and traffic signal prioritization, variable message sign expansion, interactive voice recognition, mobile data terminals, and others); and expansion of fiber optic connectivity.

Smart Cities and connectivity are well underway in the Pikes Peak region, and member jurisdictions are continuing to implement improvements which will support a more connected and autonomous future. Many of these improvements will be completed using federal funds prioritized by PPACG, so it is possible that PPACG will be called up to provide a certain degree of coordination of these efforts in the future, helping to serve continuity and interoperability of systems which, if properly integrated, can strengthen the region as a whole and provide the best return on investment for member cities and counties.

PPACG TECHNOLOGY-FOCUSED EVENTS AND PUBLIC INPUT

Despite an abundance of articles and anecdotal stories, information about emerging technologies and how to prepare for them remains ambiguous and partial at best, contradictory at worst. In order to provide information and gather direct public input, PPACG has held two public events with a strong emerging-technology component.

Early during the 2045 Plan development process, with the creation of different development “scenarios”, PPACG conducted tabletop exercises with staff and members of the Board and committees. The goal was to help determine how four factors would affect and be affected by three different regional development scenarios: “Infill”, “New Centers”, and “Dispersed”. The four factors examined were Demographic Shifts and Lifestyle Preferences, Technology, Regulatory Environment, and Natural Environment. Please see Appendix I for the results of the tabletop exercises.

TECHNOLOGY EVENT

PPACG’s primary technology event was held in February 2019. This was a daylong event focused on bringing expert information to the region as a foundation for future decision-making regarding

technology. During a morning session, Dr. Johanna Zmud, a senior research scientist from the Texas Transportation Institute (TTI), discussed a study examining early users of autonomous vehicles. It was found that current users of transportation networking services such as Uber and Lyft are likely to be early adopters of autonomous vehicles networks, and that the ridership numbers and demographics of users of these services are likely to be comparable with what would be seen in the earliest stages of an autonomous system. A research report regarding policy and planning strategies for connected and autonomous vehicles was also discussed.

The research report may be found here: <http://www.trb.org/Main/Blurbs/176418.aspx>.

For the afternoon session, four speakers were invited to discuss four different topics: autonomous vehicles, autonomous microtransit, CDOT’s RoadX Program, and drones. The speakers each gave a 20-minute presentation and then responded as a panel to a set of predetermined questions. One of the major conclusions of the afternoon event was that there are different ways in which the connected and autonomous future may develop, and the answer to the questions of safety, congestion, and efficiency will depend on which scenarios (for example, private/ household versus commercial ownership of the autonomous vehicle fleet) actually develop.



Presentations may be found here: <http://www.ppacg.org/transportation/the-next-big-thing-transportation-technology-%E2%80%8B-and-planning-our-future-system/>.

Attendees of the afternoon event were asked a series of questions in a follow-up survey. The results are can be found in Appendix I.

CONCLUSION

Future Long-Range Plan updates will surely place more emphasis on technology as the first benefits and disruptions of emerging technologies are seen over the next few years, and our future system begins taking shape. We also look forward to exploring PPACG’s role, whether simply as a provider of information or as a regional convener and coordinator.

The Pikes Peak Area Council of Governments Presents

The Next Big Thing: Transportation Technology & Planning Our Future System

Date

February 4, 2019

Location

Centennial Hall
200 S. Cascade Ave.
Colorado Springs, CO 80903



Johanna Zmud
Texas Transportation Institute
How Far Away Are Autonomous Vehicles?



Lisa Streisfeld
Colorado Dept. of Transportation
What's Next for RoadX: Plans for 2019



Sharad Agarwal
EasyMile
Can Autonomous Shuttles provide a real return on investment?



Sean McClung
UAS Colorado
The Role of Unmanned Aircraft in Transportation's Future

SCHEDULE OF EVENTS

1:00 - COFFEE SERVED

1:10 - OPENING REMARKS

1:20 - HOW FAR AWAY ARE AUTONOMOUS VEHICLES?

1:50 - WHAT'S NEXT FOR ROADX: PLANS FOR 2019

2:20 - REFRESHMENTS

2:35 - CAN AUTONOMOUS SHUTTLES PROVIDE A REAL RETURN ON INVESTMENT?

3:05 - THE ROLE OF UNMANNED AIRCRAFT IN TRANSPORTATION'S FUTURE

3:35 - PANEL DISCUSSION

4:05 - NETWORKING

230 | MOVING FORWARD 2045

NEW AND EMERGING TECHNOLOGIES | 231

Page 149 of 253

CHAPTER 10

SAFETY

In the Pikes Peak MPO region, 283 people were killed, and 20,892 people were injured from motor vehicle crashes between 2010 and 2015.

Metropolitan Planning Organizations are a key forum for addressing safety issues through transportation system planning. This chapter presents a background of federal legislation concerning transportation safety, and it outlines the Safety Conscious Planning approach. Safety improvements not only reduce fatalities and injuries but, can also reduce negative impacts to the regional economy. Approximately half of the congestion in the nation is caused by crashes.

FEDERAL LAW AND FUNDING

The 2012 enactment of the MAP-21 created a streamlined, performance-based, and multimodal program to address the challenges of the U.S. transportation system, including improving safety. MAP-21 doubled funding for infrastructure safety, and aimed to make a significant reduction in serious injuries and fatalities on all public roads, and continues to build on existing safety efforts. The FAST Act continued this and the prioritization of safety.

FEDERAL LEVEL SAFETY PLANNING AND REGULATIONS

HIGHWAY SAFETY IMPROVEMENT PROGRAM

The Federal Highway Administration's Highway Safety Improvement Program is a series of regulations designed to ensure an organized approach to safety. Federal regulations require states to develop local Highway Safety Improvement Programs with



the objective of reducing the number, severity, and potential for crashes on all highways. Major requirements of the HSIP include:

- Planning: Collecting and maintaining a record of crash, traffic, and highway data; analyzing data to identify hazardous conducting benefit-cost analysis of alternatives;
- Implementation: Scheduling and implementing safety improvement projects and allocating funds according to the priorities developed in the planning phase; and
- Evaluation: Evaluating the effects of transportation improvements on safety, including the cost of the safety benefits derived from improvements and a comparison of pre- and post-project crash numbers, rates, and severity.

SAFETY-CONSCIOUS PLANNING

The Federal Highway Administration recommends a framework called Safety Conscious Planning, a comprehensive, system-wide, multimodal, proactive process that integrates safety into surface transportation decision making:

- Comprehensive, because it considers all aspects of transportation safety: locations; conducting engineering studies of those locations; engineering, education, enforcement, and emergency medical response.
- System-wide, because it considers corridors and entire transportation networks at the local, regional and state levels, as well as specific sites.
- Multimodal, because it includes transit, bicycle, and pedestrian safety improvements.
- Proactive, because it addresses current safety problems and prevents future hazards and problem behaviors.

PPACG supports Safety-Conscious Planning and, as the forum for cooperative decision-making in the Pikes Peak region, will strive to implement and support the process.

The keys to Safety-Conscious Planning are:

- The four E's of transportation safety: Engineering, Enforcement, Education, and Emergency Medical Services;

- Inviting a variety of agencies to collaborate, including local, state, federal government;
- Agreeing on problem areas and strategies, and goals to address them; and
- Engineering/construction, law enforcement, emergency medical services, nonmotorized community all collaborating to increase safety.

REGIONAL TRANSPORTATION SAFETY

Regional safety issues:

- Distracted driving
- Impaired driving
- Aggressive driving
- Transportation infrastructure
- Motorcycle driver behavior
- Nonmotorized and passenger safety
- Congestion
- Roadway departure
- Intersection crashes

SAFETY STRATEGIES

- Increase collaboration with available state and federal resources: Build in more collaboration by establishing regular meetings of the safety collaboration (once per quarter). Consider using grant funding for increased education or enforcement to offset lack of local funding sources.
- Establish laws/policies that have bearing/are enforceable: Current motor vehicle laws are too lenient to be a permanent deterrent to change behavior long-term (no real consequences).
- Build on successful law enforcement practices: Everyone generally attends common trainings and communicates across agencies effectively. Regulate and/or make this an ongoing effort.

- Education: Leverage existing programs like Drive Smart, MADD and Safe Routes to School.
- Education:
 - No formal driving education at high schools; and
 - Campaign that describes how speeding does not necessarily get you there faster due to the timing of lights.
- Engineering and infrastructure:

Minimize speed differential;

- Adaptive signal system (has had success in Woodland Park);
- Radar detection system;
- Make road seem “narrower” with striping so drivers slow down; and
- Enlarge road signs.
- Improve pedestrian engineering, safer cross walks, especially at intersections with high crashes
 - Add pedestrian bump outs; and
 - Add advanced flashing beacons before the intersection to inform drivers that pedestrians are crossing.

Some of these effects, such as negotiating curves and sight distance, are especially noticeable because speed limits are set based upon the design of roads. The only exception to this is when legislative speed limit standards are enacted or repealed, as with the National Maximum Speed Limit policy. This law set the national speed limit at 55 miles per hour (65 mph in rural areas) and was designed to conserve energy and reduce foreign oil dependency; however, it also had the effect of reducing crash and especially fatality rates, as shown in a 2003 report from the Insurance Institute for Highway Safety. The report examined the effects of the repeal of the NMSL in 1995, finding that injury and death rates increased in states that chose to increase speed limits. States that increased the speed limit to 75 experienced a 38 percent increase in speed-related deaths per million vehicle miles traveled, while states that increased the limit to 70 mph experienced a 35 percent increase in deaths per million vehicle miles. This has led to concerns that additional gains made from safety restraint usage

and lowered impaired driving crashes are being reduced by speed-related (not just speeding-related) mortality.

Of the 68,065 crashes in El Paso and Teller between 2010 and 2015, 7 percent were caused by exceeding the safe or legal speed; another 10 percent involved following too closely.

SPEEDING AND SPEED LIMITS

Speeding is involved in up to a third of all motor vehicle crashes in the United States. The NHTSA lists speeding as the third leading contributing factor in traffic fatalities, and state crash data for local and collector roads points to even more speeding-related injury and fatal crashes. As listed in a Governors Highway Safety Association report, speeding:

- Reduces a driver’s ability to negotiate curves or maneuver around obstacles in the roadway;
- Extends the distance necessary for a vehicle to stop;
- Increases the distance a vehicle travels while the driver reacts to a hazard;
- Compromises the integrity of the vehicle structure;
- Decreases the effectiveness of vehicle design features such as airbags and restraint systems;
- Decreases the ability of roadway hardware such as guardrails, barriers, and impact attenuators to protect occupants;
- Increases wear on tires and braking systems; and
- Increases the risk of crashes because other vehicles and pedestrians may not be able to judge distance accurately.

ACCESS MANAGEMENT

Access management is one of the cornerstones of traffic safety. Conflicts created by driveways, intersections, and other access points create the most complex challenges drivers face every day, sometimes unsuccessfully. Intersection crashes, for example, account for more than 35 percent of all reported crashes, 38 percent of injury crashes, and 27 percent of fatal accidents.

In general, as the number of access points per mile increases on a facility, the number of accidents increases geometrically. This

situation becomes increasingly dangerous on higher-speed, higher volume roads that are sometimes accessible directly by residential driveways or choked by closely-spaced commercial drives.

The key to safety on arterial roads is local road networks. Having an appropriate hierarchy of facilities with local-to-major roadway connections leads to improved traffic safety as well as reduced congestion on major facilities. Although some businesses can be reluctant to participate in access management plans, studies show that appropriate access management increases traffic flow to major facilities, thus expanding business market areas. Congestion due to crashes is also reduced.

Although the foundation of access management is having a good hierarchy of roads, other strategies include reducing signalized intersections (which experience more than four times more crashes than unsignalized intersections, on average), installing raised medians, increasing signal spacing, and installing roundabouts, among others.

Access management strategies for the roads in the Pikes Peak region are determined by the responsible jurisdictions and are related to the functional classification of the roadway. Dating back to approximately 1970, local planning, public works, and transportation departments have vigorously sought to control access along new arterial corridors. Prominent among facilities subject to focused access control are the Powers Boulevard and Marksheffel Road corridors. A standing intergovernmental task force, the Major Thoroughfares Task Force, was formed with the sole mission of advising policy makers regarding access and transportation system capacity issues for new developments.

Several different approaches can be taken to balance property access and the need to move traffic through an area safely and efficiently. They are often used together to develop an area or corridor-wide plan. Many of the approaches are physical changes that control the movement of vehicles. Several are standards or policy decisions that establish the conditions to make many of the physical improvements possible. The physical changes are typically related to managing how vehicles enter and exit driveways through

appropriate numbers and locations of curb cuts, encouraging shared driveways, restricting turning movements, providing access roads connected to traffic signals, and turning lanes. When access management policies and techniques are combined, significant gains can be made in terms of improved traffic flow and reduced accident potential. There are six basic access management techniques that can be applied to roadways:

1. Limit the number of conflict points: Reduce the complexity of driving by limiting the information that drivers must process at any given time. Limiting the interaction between vehicles and between vehicles and pedestrians and bicyclists simplifies the driver's task, which in turn reduces the potential for accidents and improves traffic flow.
2. Separate conflict areas: This type of improvement attempts to increase the time or distance between decision points for drivers, allowing them to face potential conflicts one at a time, or at least in reduced numbers. This would include not allowing left turns from a driveway so the driver only has to focus on approaching traffic from one direction rather than two. As with #1, the intent is to simplify the driving task.
3. Remove turning vehicles from through traffic lanes: The addition of turn lanes reduces the impact of vehicles slowing to make a turn on through traffic. In areas without turn lanes, all traffic stops behind vehicles waiting to turn. This leads to increased congestion and greater accident potential.
4. Reduce the number of turns: Eliminate short-distance, slow-movement travel on primary roadways. By interconnecting parking lots and providing access roads and connections to side streets, vehicles can move between businesses without having to re-enter the roadway only to exit again shortly thereafter. This results in less congestion and reduced accident potential.
5. Improve roadway operations: Use a variety of methods to manage traffic operations on a corridor.
6. Improve driveway operations: Well-defined driveways of appropriate width and adequate curve radii reduce the

impact on through traffic by making the entering or exiting movement less difficult, and provision of adequate sight distance reduces accident potential.

NONMOTORIZED SAFETY

Walking is a legitimate mode of transportation that needs to be improved in every community in the United States. It is no longer acceptable that close to 5,000 pedestrians are killed in traffic every year, that people with disabilities cannot travel without encountering barriers, and that a desirable and efficient mode of travel has been made difficult and uncomfortable.

—Federal Highway Administration 2004

Detailed bicycle and pedestrian design guidelines are available in Appendix F, Regional Nonmotorized Transportation System Plan. A few of the key statistics involving nonmotorized transportation safety are noted below. Figure 10–1 and Figure 10–2 depict the location of bicycle and pedestrian collisions, respectively, in the Colorado Springs MPO area in 2010–2015.

In the Pikes Peak MPO area, in the five years between 2010 and 2015, there were 1,378 reported nonmotorized (walking or bicycling) crashes. The actual number is likely higher because it is typical that only crashes involving a legal dispute are reported to police. National studies indicate that as little as 10 percent of nonmotorized crashes are reported to police. Of these reported crashes, El Paso and Teller Counties had 26 fatal pedestrian and 4 fatal bicycle crashes. Looking in more detail at these fatalities, more than three-quarters occurred during normal weather conditions and sixty percent occurred at night.

Schools have significant pedestrian activity and are a focus for pedestrian safety. Figure 10–3 shows the locations of elementary, middle, and high schools, and child-pedestrian-involved crashes within a one-quarter mile walking areas around each school. The clustering of crashes indicates that enhanced education and enforcement in these areas could be especially effective.

FIGURE 10–1
REPORTED BICYCLE CRASHES (2010–2015)

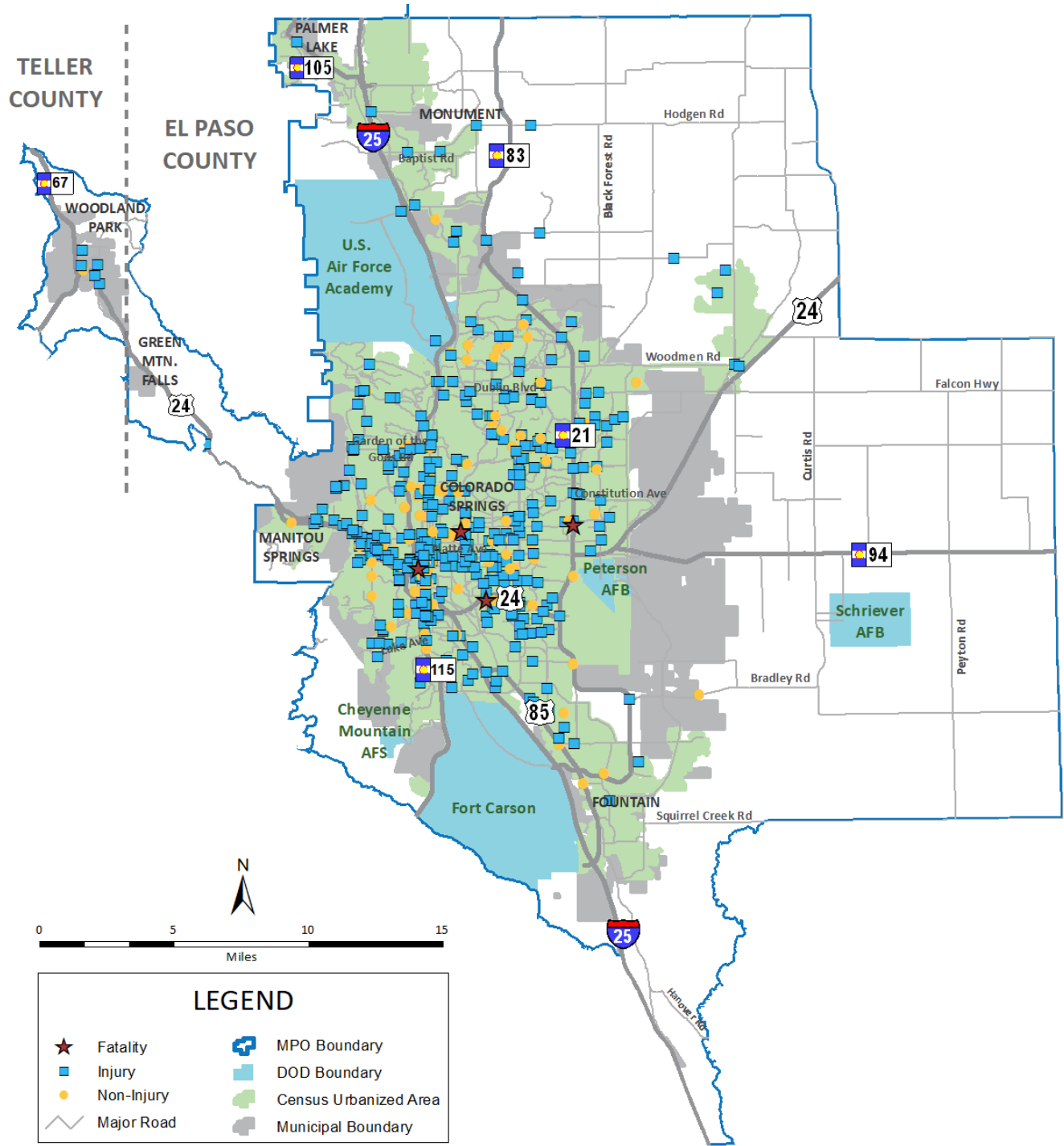


FIGURE 10-2
REPORTED PEDESTRIAN CRASHES (2010-2015)

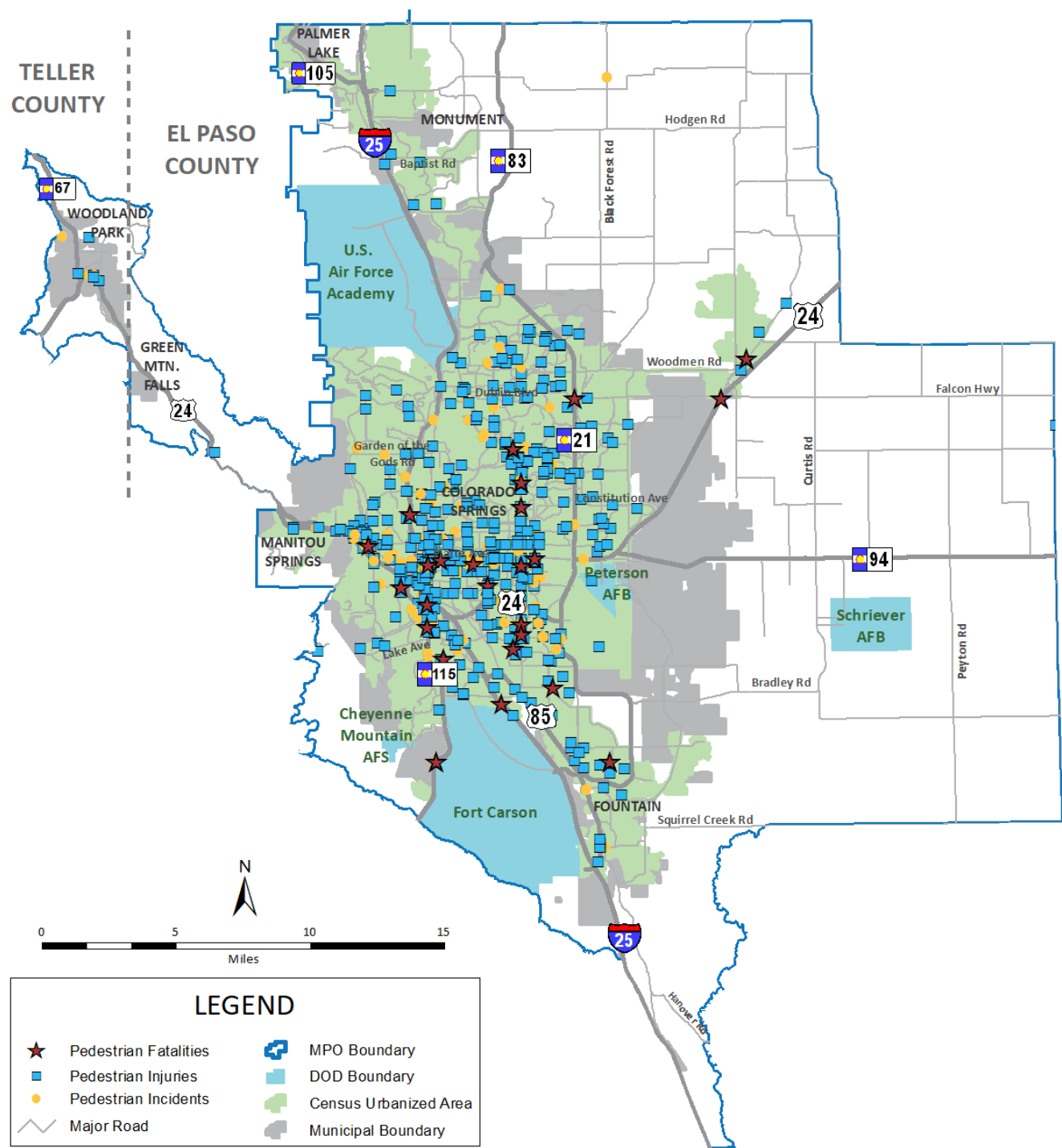
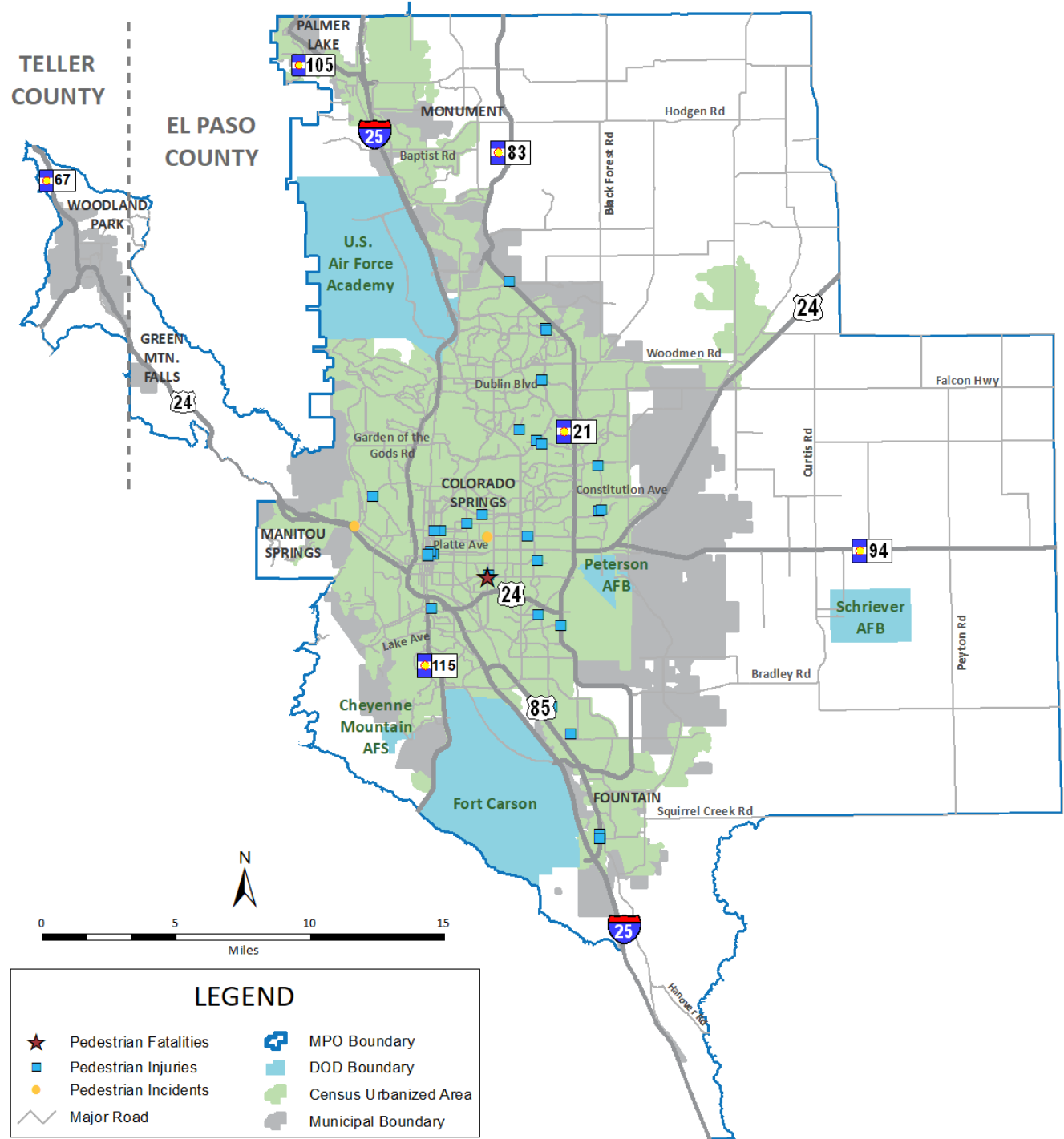


FIGURE 10-3
REPORTED CHILD PEDESTRIAN INVOLVED CRASHES WITHIN
¼ MILE RADIUS OF SCHOOLS (2010-2015)



STATEWIDE SAFETY PLANS

CDOT has two key plans that show they place high priority on increasing the safety for all travelers: the Strategic Highway Safety Plan and the Integrated Safety Plan.

Participants were divided into smaller groups to discuss relevant safety issues throughout the region and identify possible strategies to address them.

SAFETY ANALYSIS

Safety throughout all transportation programs continues to be the US Department of Transportation's number one priority. Many factors have been found to relate to the number and type of crashes that occur. Some of these factors include type of and speed of vehicles, road design characteristics, demographics of those involved in crashes and infrastructure maintenance conditions. A few specific engineering details that impact crashes are number of lanes and how wide they are, type and width of shoulders, type and width of medians, left / right and up / down angles of the roadway, number of cross streets and driveways, and speed of traffic.

DATA

One of the valuable planning tools for addressing transportation safety problems is the collection and maintenance of crash data. The Colorado Department of Revenue collects crash data to meet federal reporting requirements. Additionally, CDOT, MPOs, and other jurisdictions use the data for safety analysis. The data analyzed for this plan is for the years 2010 through 2015. At the time of analysis, more recent data was not available due to the lag time in which PPACG receives the crash data.

SAFETY ANALYSIS OF MAJOR ROAD SEGMENTS AND SIGNALIZED INTERSECTION RESEARCH PROJECT

For the 2045 Long Range Transportation Plan, Pikes Peak Area Council of Governments has utilized a software program called "DiExSys Roadway Safety Systems" that calculates the safety performance function (SPF) of mainlines and intersections to derive

a level of safety service (LOSS). The algorithms are based upon a cumulative binomial probability to predict the probability of future accidents for mitigation and, reflect the safety performance measures used for the state of Colorado. The graphing procedure simply uses Accidents per Mile per Year (APMPY) for the y-axis and Annual Average Daily Traffic (AADT) for the x-axis to establish where the calculated LOSS point lies for fatalities and injuries. LOSS values fall within a range of 1 to 4, with 1 representing the least severe LOSS and 4 being the most severe LOSS. Analysis was conducted for signalized intersections and major road segments throughout the MPO area to include the NHS system.

SIGNALIZED INTERSECTION ANALYSIS

Figure 10-4 ranks intersections by the number of fatality and injury crashes that occurred within their influence area.

Figure 10-5 ranks the top ten intersections by the severity of the crash (injury and fatality).

ROAD SEGMENT ANALYSIS

The previous section concentrated on intersections; this section discusses road segments between intersections.

Figure 10-6 ranks mainlines by the number of fatality and injury crashes that occurred within their influence area.

Figure 10-7 ranks the top ten mainlines by the severity of the crash (injury and fatality).

FIGURE 10-4
LEVEL OF SAFETY SERVICE (LOSS) FOR SIGNALIZED INTERSECTIONS

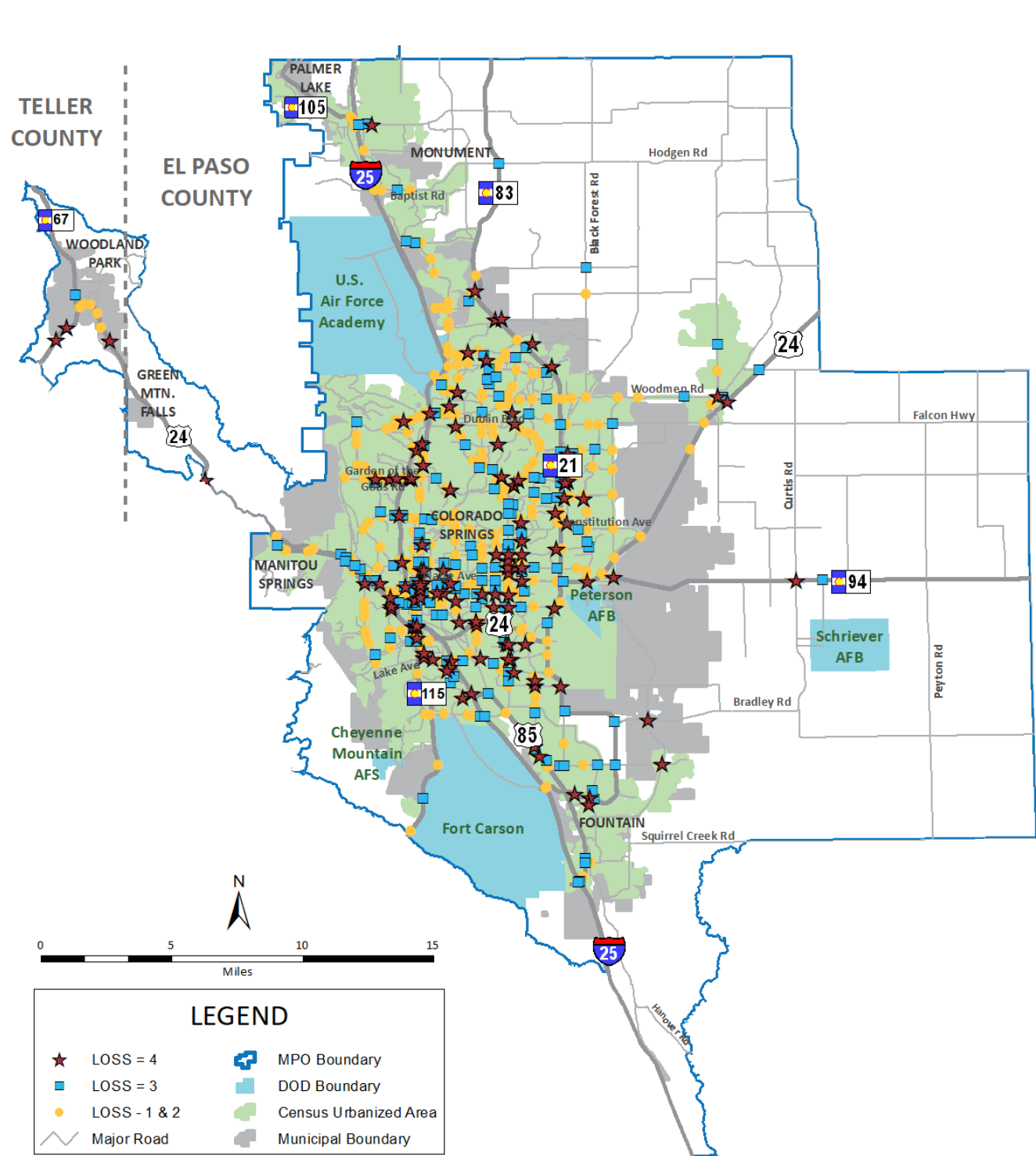
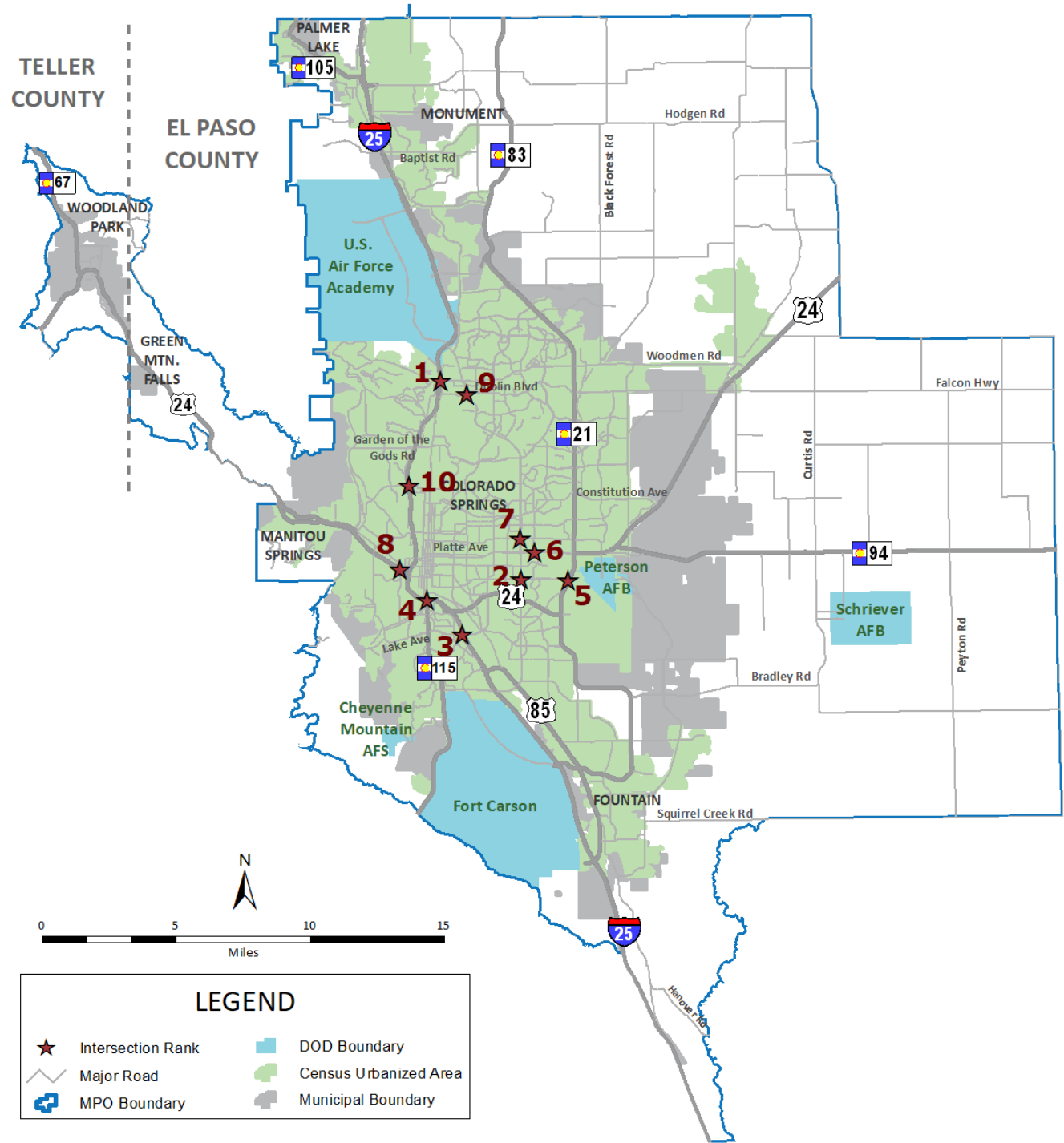


FIGURE 10-5
TOP TEN SIGNALIZED INTERSECTIONS



SAFETY MODELING

Safety models tend to be explanatory, micro-level tools used to establish crash causation and suggest location-specific safety improvements. Safety research has shown that accidents have a large random component; they often cannot be explained or prevented by specific road segment or intersection characteristics. Much of this is due to poor driver decisions such as distracted driving, following too closely, or speeding, all of which may happen independently of road or intersection characteristics.

On the other hand, crashes are strongly related to certain aggregate predictors. At the traffic analysis zone or TAZ level, certain “high risk” populations have been identified:

- Younger drivers are inexperienced and tend to drive more aggressively; and
- Older drivers have reduced reaction and perception times, as well as reduced vision and flexibility.

In terms of facility types, interstates have relatively low crash rates and high speed rural roads are associated with high injury and fatality rates.

The list of useful crash predictors is quite extensive. For example, school zones are associated with high bicycle and pedestrian crash rates; complex intersections are prone to very high crash rates; and traffic congestion lowers crash severity.

CRASH ANALYSIS

PPACG processes crash data, collected by state and local police and sheriff’s departments and maintained by the Department of Revenue, into a more refined data set to be used in software and modeling programs. Crash records include the type of crash, location, weather conditions, and contributing factors such as alcohol. Different factors were used to rank the safety performance of roadways and intersections, including quantity, rate, and severity.

CDOT provided data for El Paso and Teller counties for 2010 through 2015 and applied to all road networks and the NHS system is included:

- 283 fatal accidents that resulted in 307 deaths Figure 10–8;
- 20,832 Injury accidents that resulted in 29,368 injuries Figure 10–9; and
- 46,759 Property Damage Only (PDO) crashes that resulted in 86,651 total vehicles involved Figure 10–10.

The largest number of crashes tends to occur on roads with the greatest vehicle miles traveled, such as I-25, US Highway 24, and State Highway 21. Typically, traffic varies significantly by time of day and day of the week, particularly during work day morning and afternoon peak hours Figure 10–11 and Figure 10–12.

The figures below illustrate that crashes correspond to the volumes during the morning and afternoon peak hours. The traffic volumes are derived from traffic counts collected throughout the region in 2015 Figure 10–12.

Traffic variation with an average day and crash variation by hour of an average week along with major variables (i.e. fatalities, motorcycle, Driving Under the Influence (DUI), etc.) crashes is shown in Figure 10–13a and Figure 10–13b. The figures illustrates that crashes vary significantly by the time of day and week, with Friday typically experiencing the highest number of crashes. To a great extent, this variation mirrors fluctuations in Vehicle Miles Traveled (VMT). Figure 10–14 is similar but shows the variability of crash severity by the day of the month.

FIGURE 10-8
TOTAL AND NHS FATAL CRASHES BY YEAR

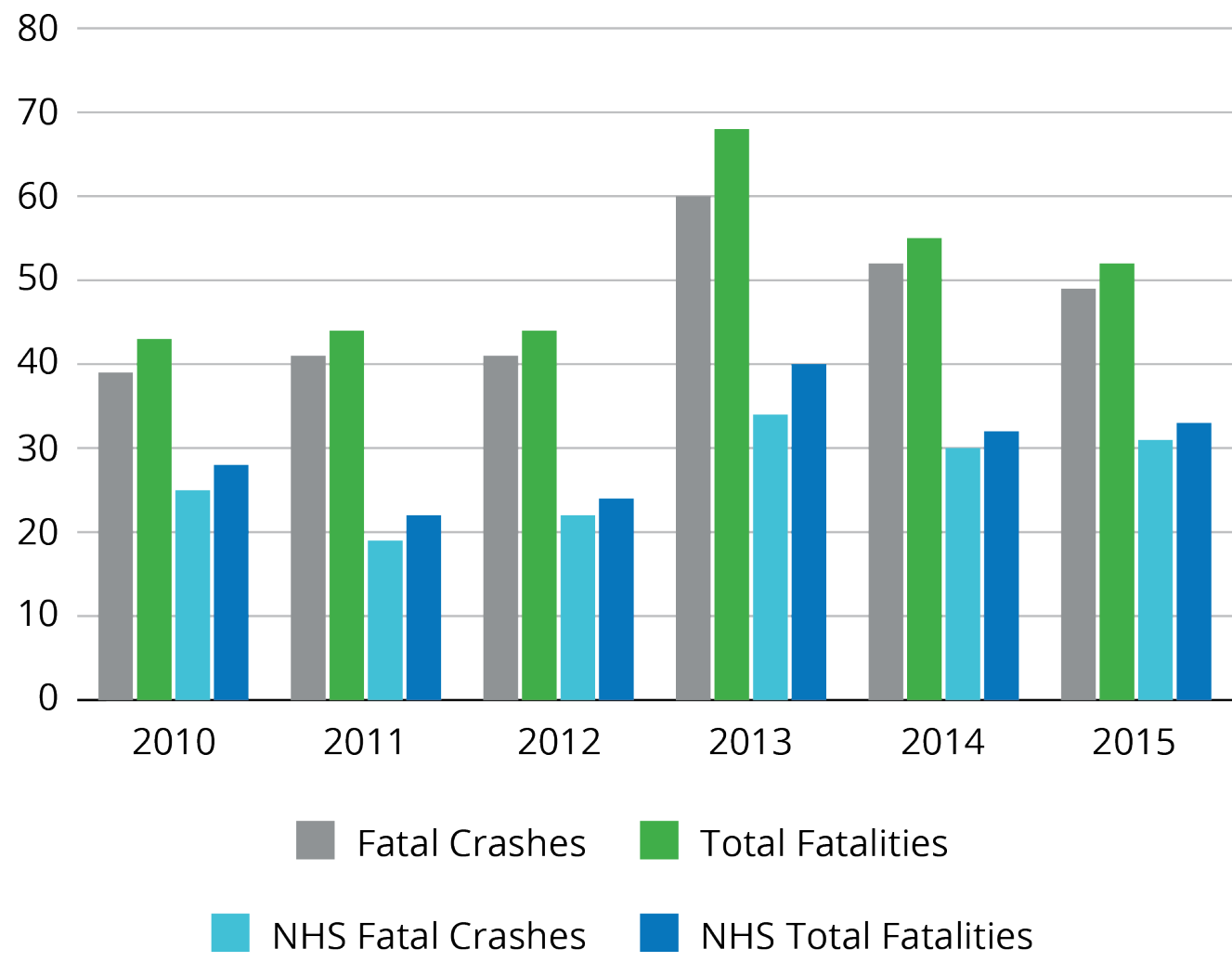


FIGURE 10-9
TOTAL AND NHS INJURY CRASHES BY YEAR

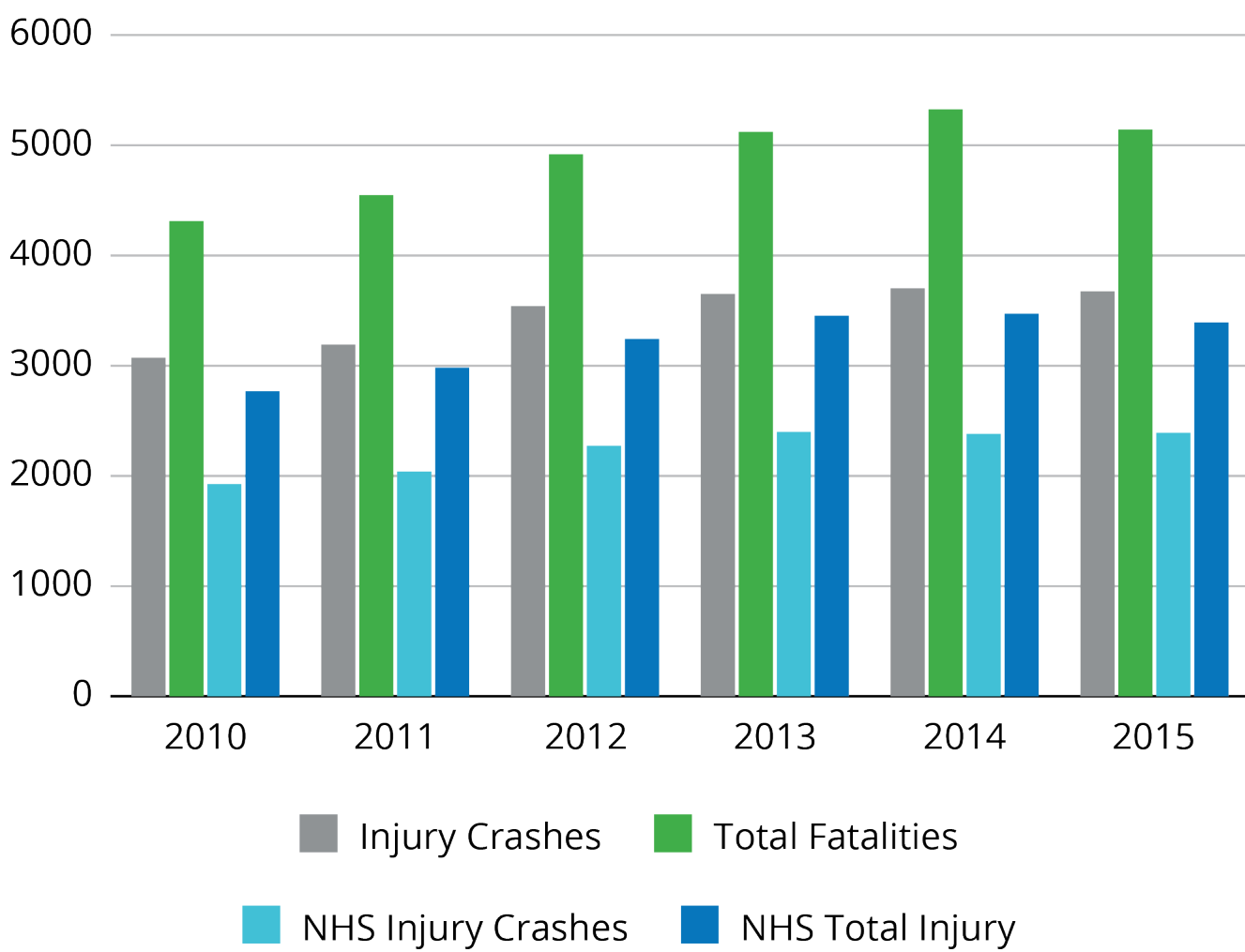


FIGURE 10-10

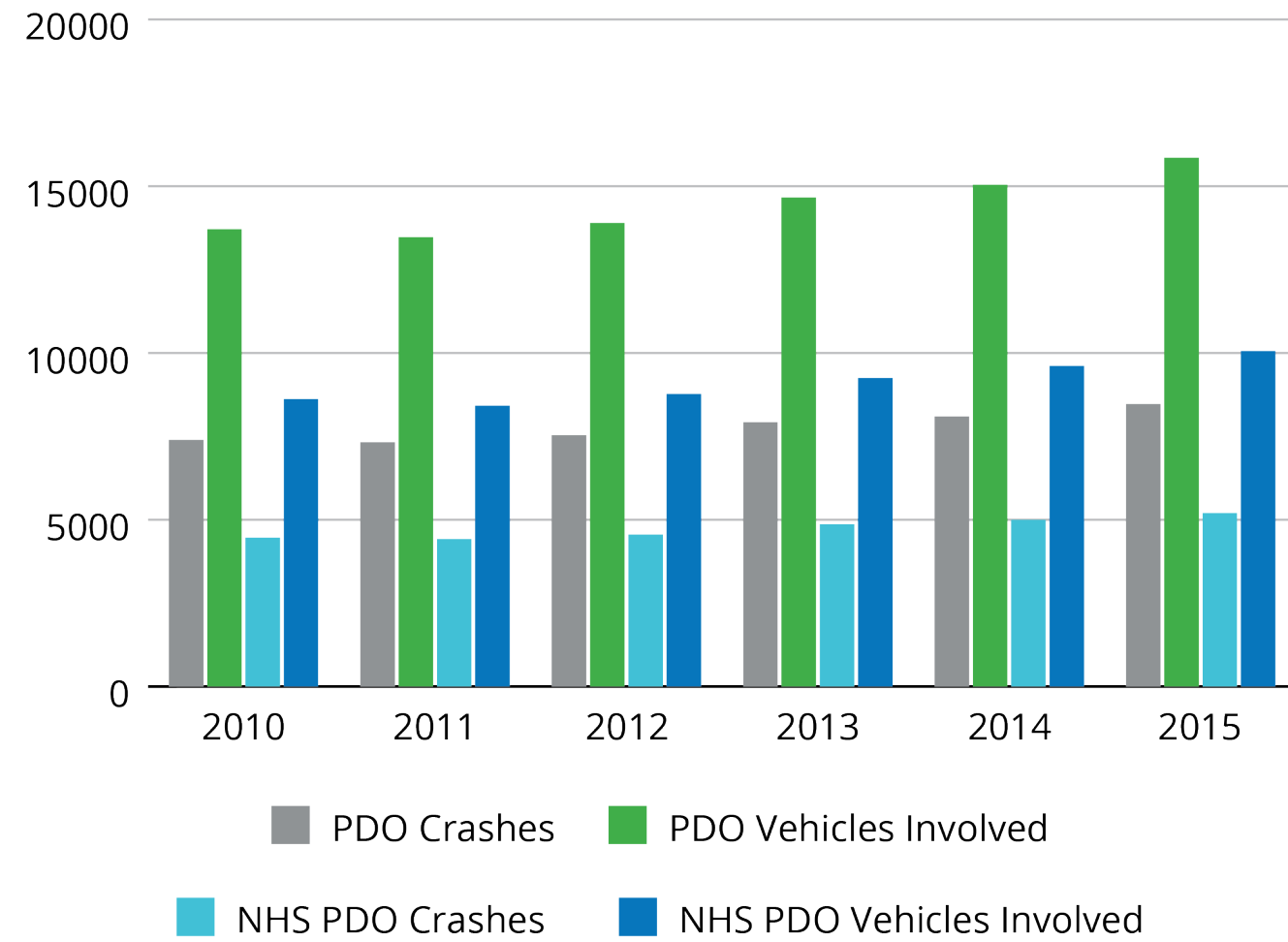


FIGURE 10-11

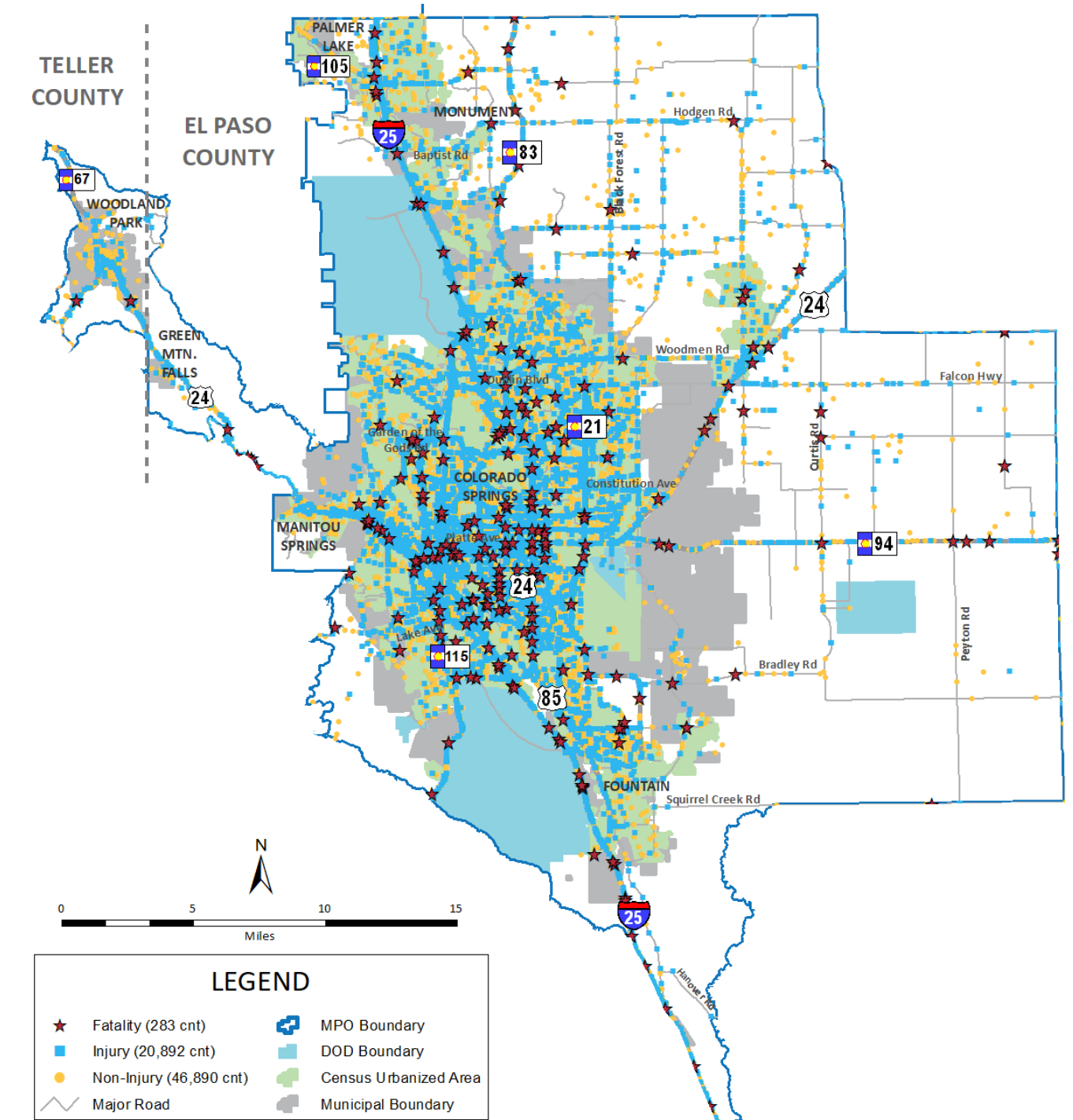


FIGURE 10-12
CRASHES AND TRAFFIC VOLUME BY TIME OF DAY (2010-2015)

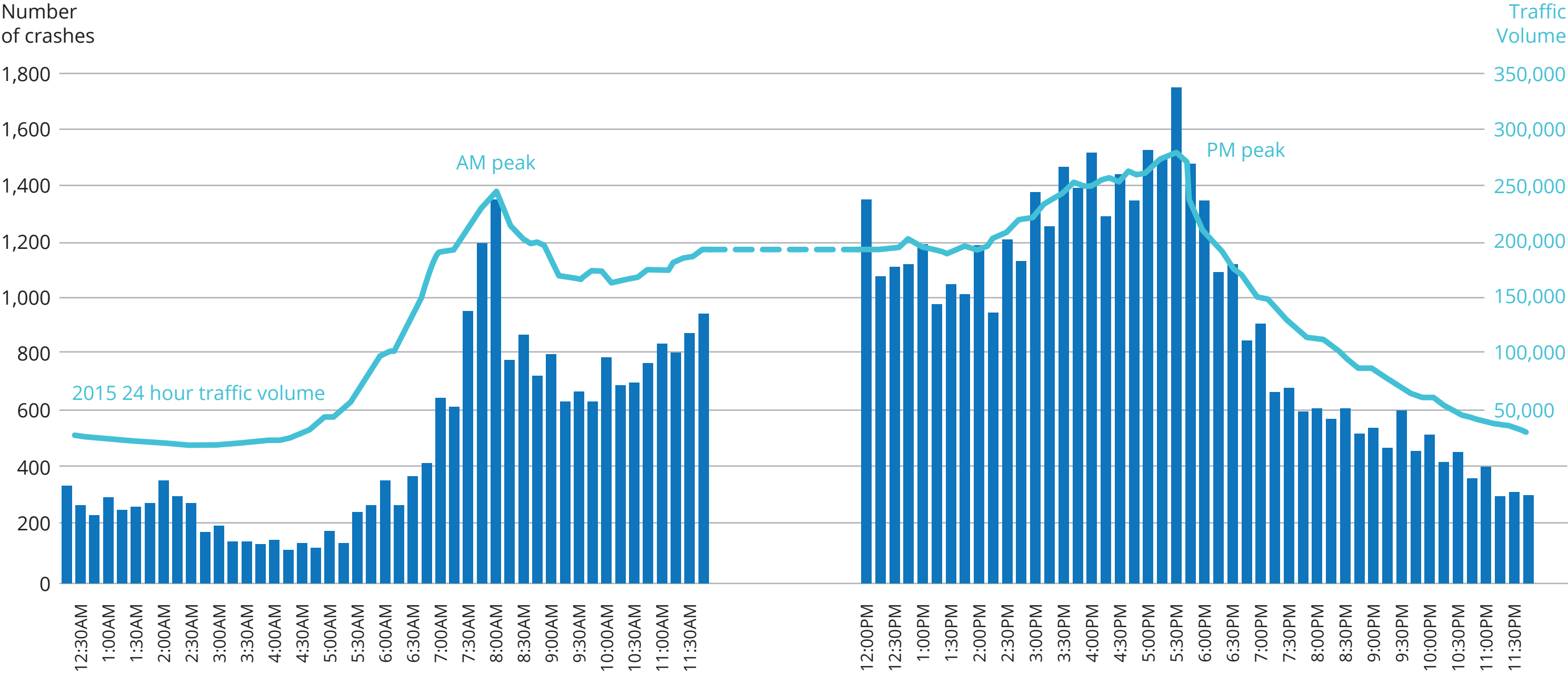
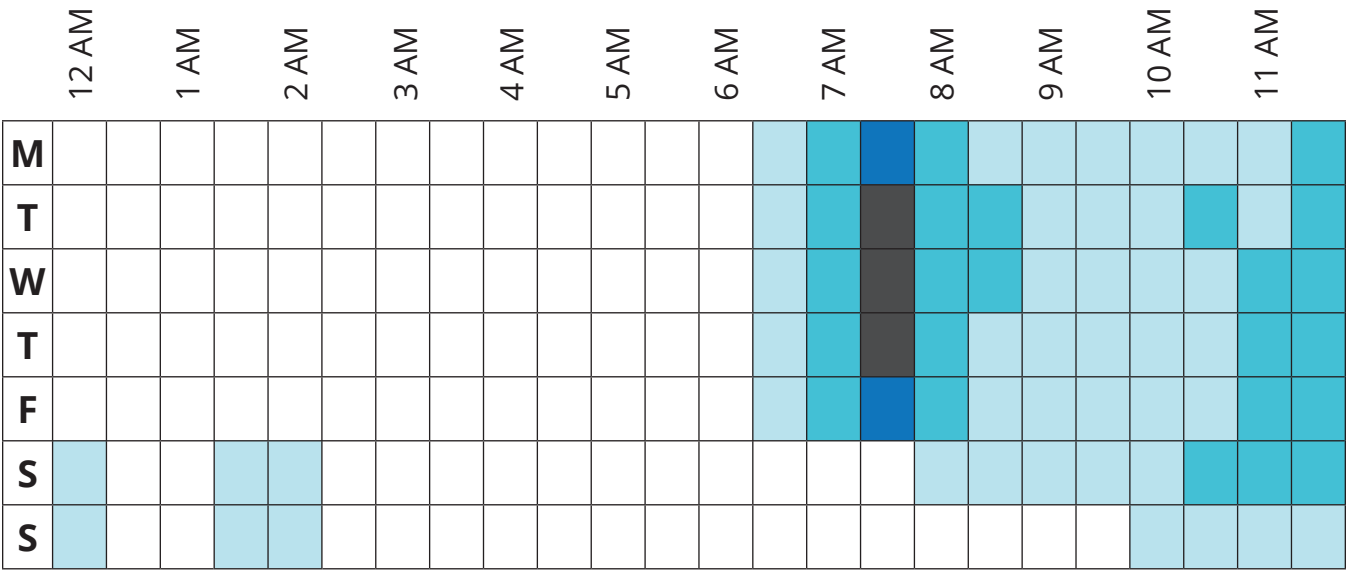


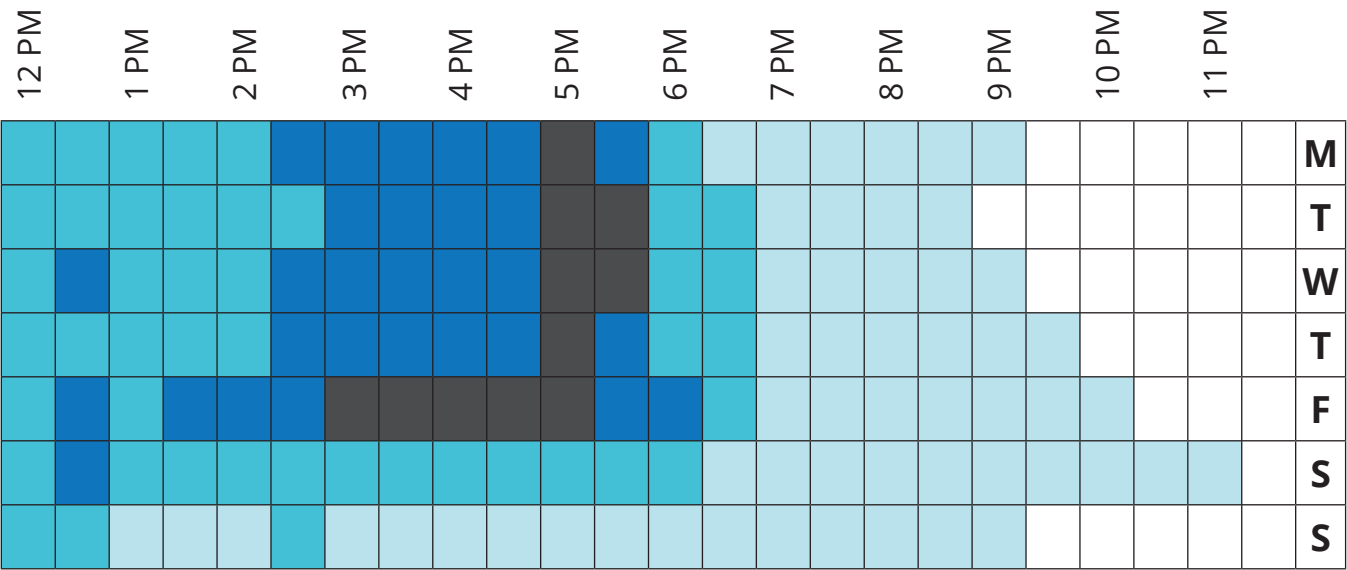
FIGURE 10-13A
2010-2015 CRASHES BY TIME OF DAY

ALL CRASHES

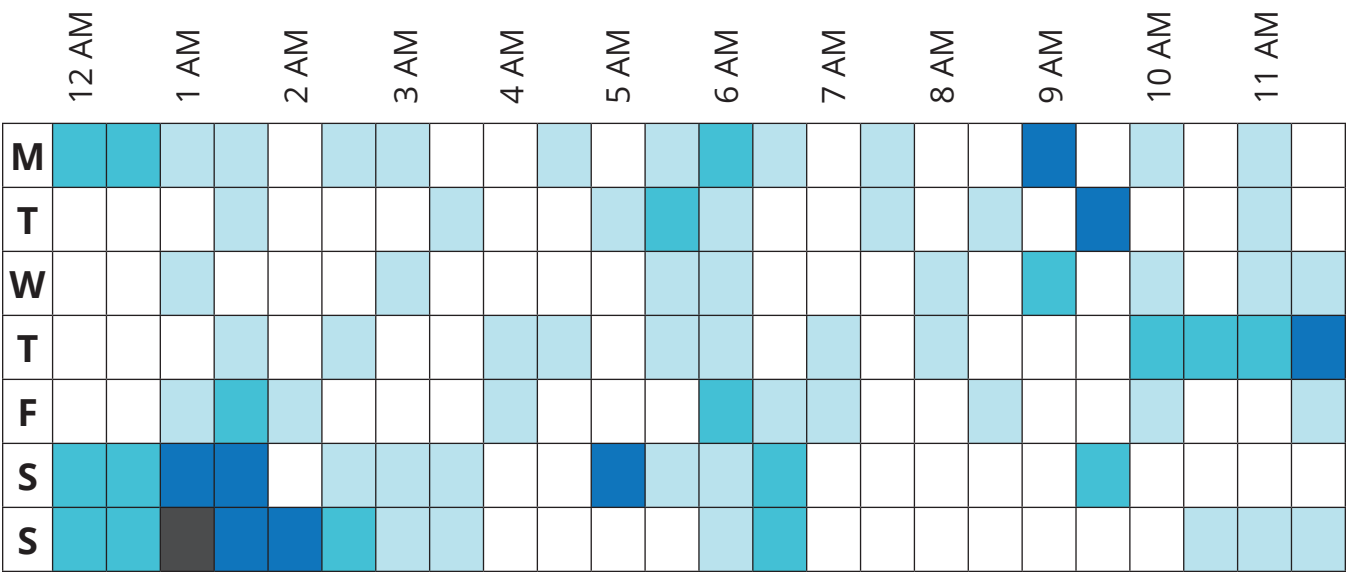


Numeric Range of Crashes per Cell

17-131	132-246	247-361	362-476	477-591
--------	---------	---------	---------	---------



FATALITY CRASHES



Numeric Range of Crashes per Cell

0	1	2	3	4-5
---	---	---	---	-----

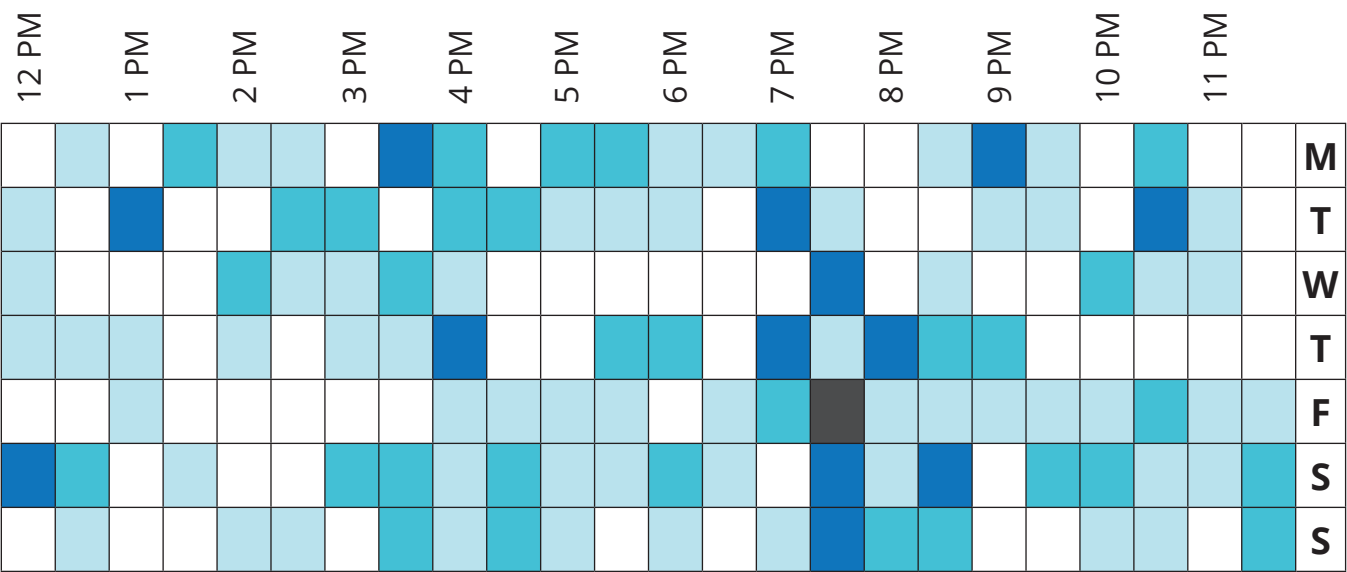
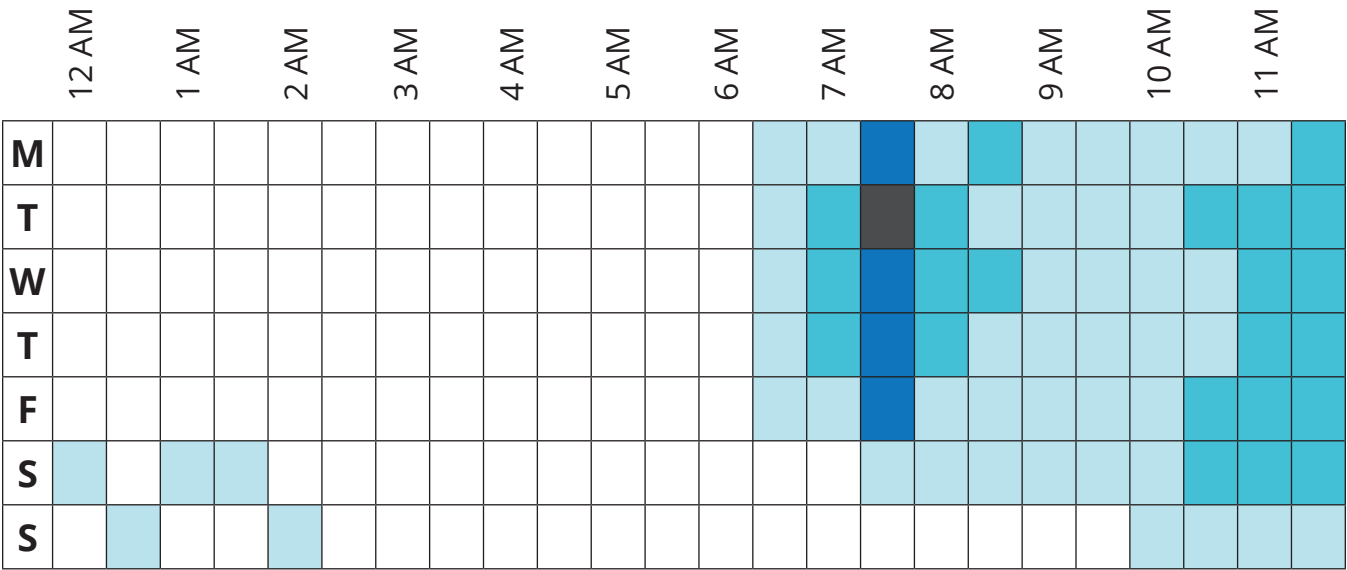


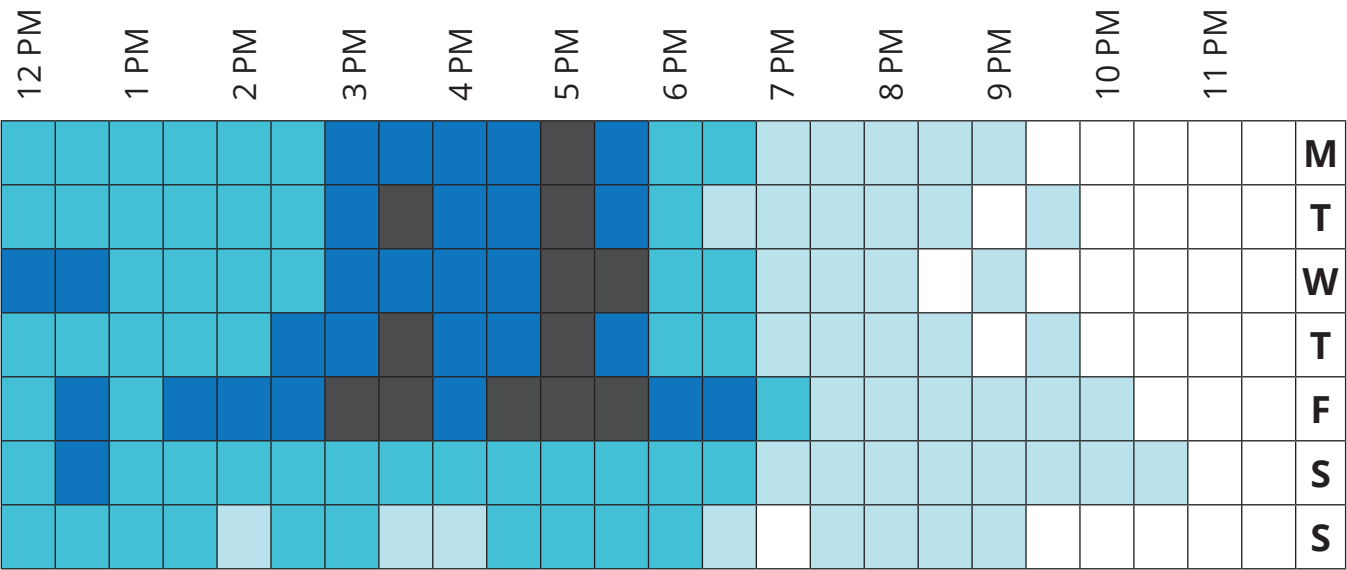
FIGURE 10-13B
2010-2015 CRASHES BY TIME OF DAY

INJURY CRASHES

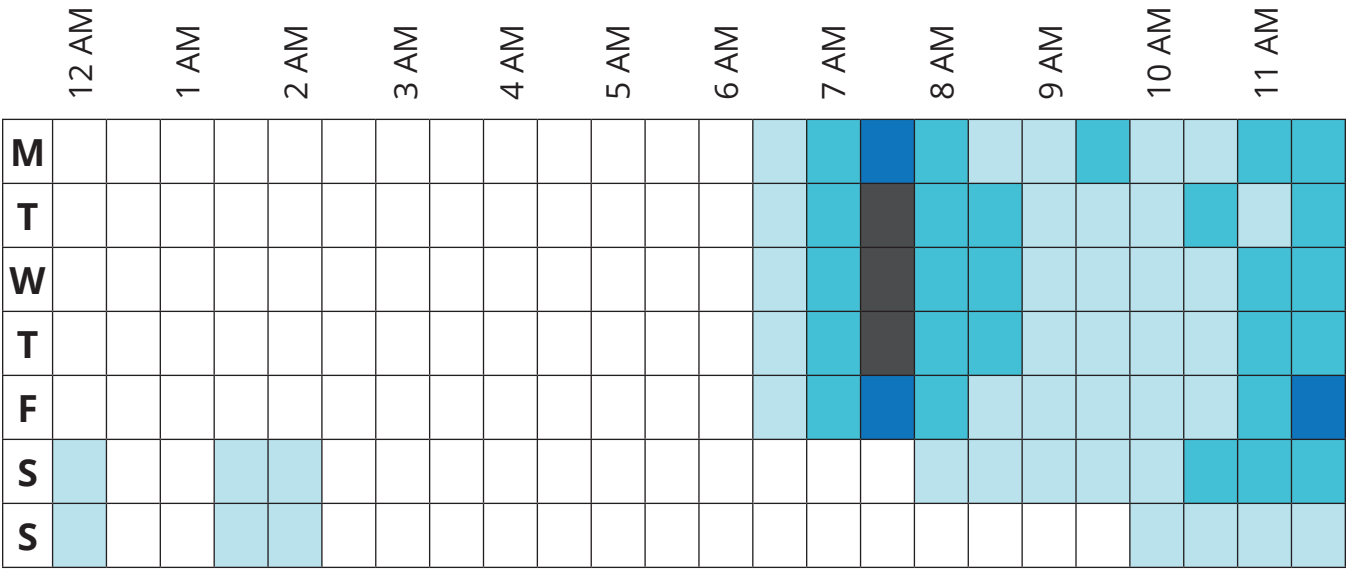


Numeric Range of Crashes per Cell

2-39	40-76	77-113	114-150	151-188
------	-------	--------	---------	---------



PDO CRASHES



Numeric Range of Crashes per Cell

12-90	91-168	169-246	247-324	325-402
-------	--------	---------	---------	---------

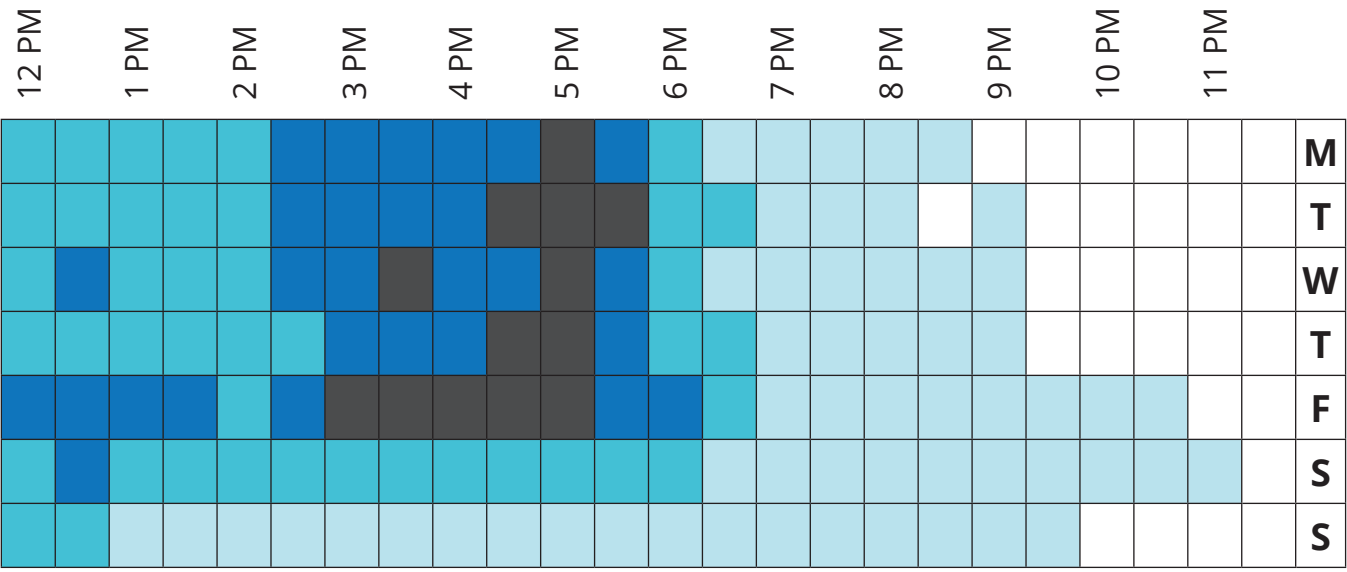
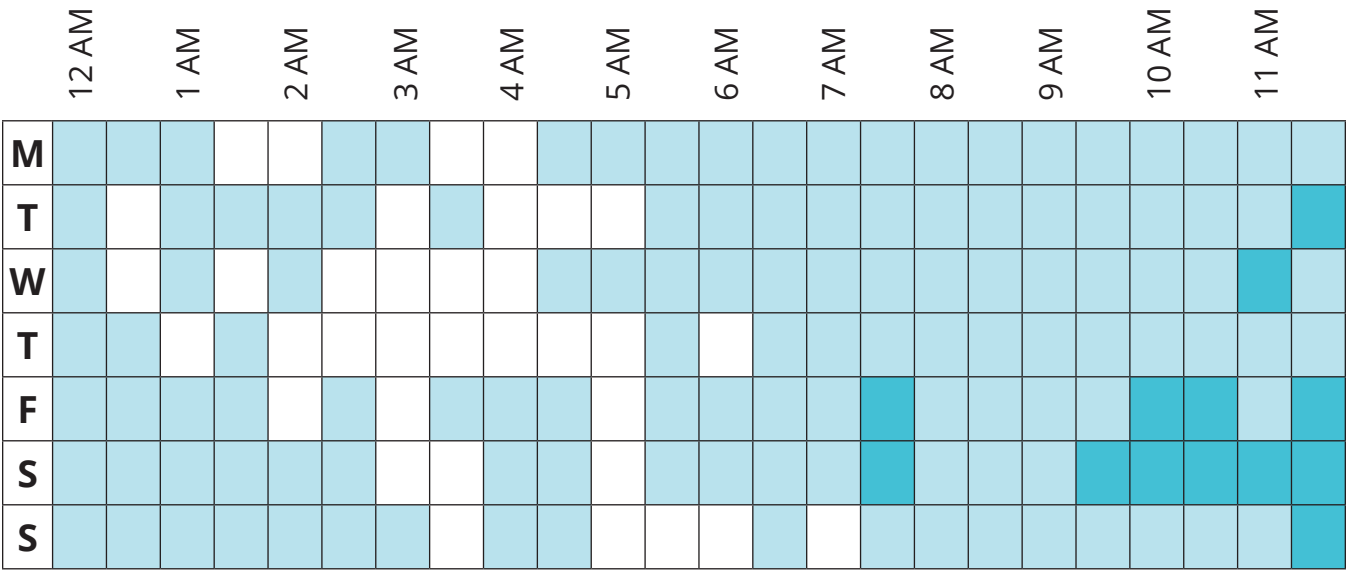
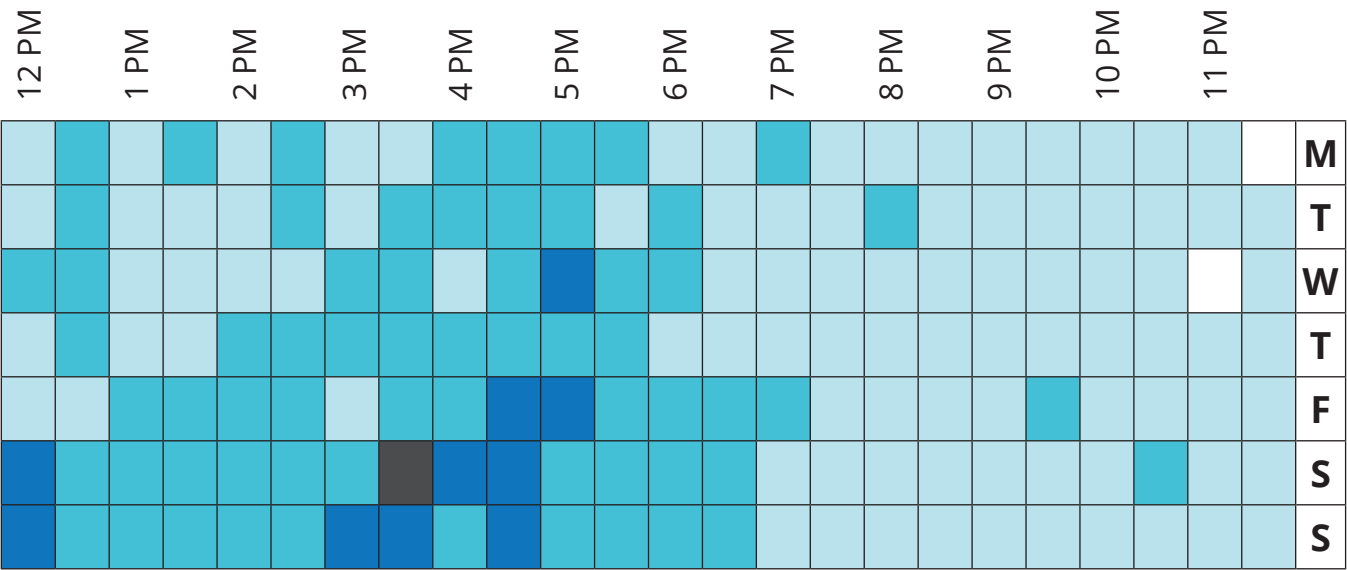


FIGURE 10-13C
2010-2015 CRASHES BY TIME OF DAY

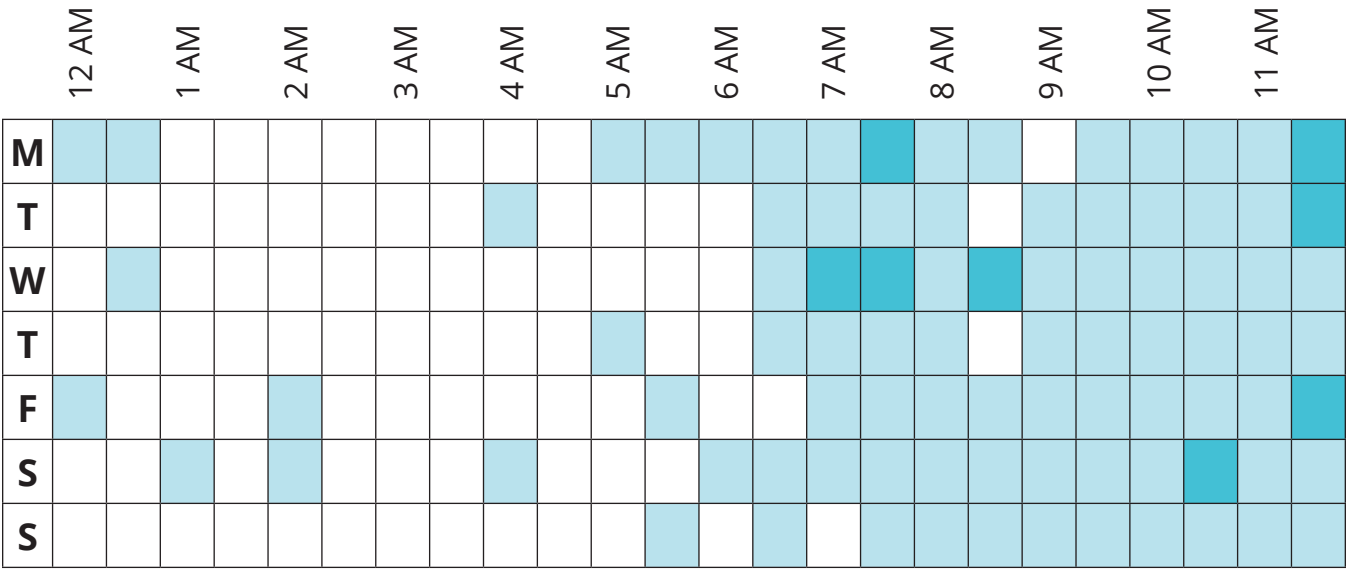
MOTORCYCLE CRASHES



Numeric Range of Crashes per Cell 0 1-8 9-16 17-24 25-33



BICYCLE CRASHES



Numeric Range of Crashes per Cell 0 1-4 5-8 9-11 12-14

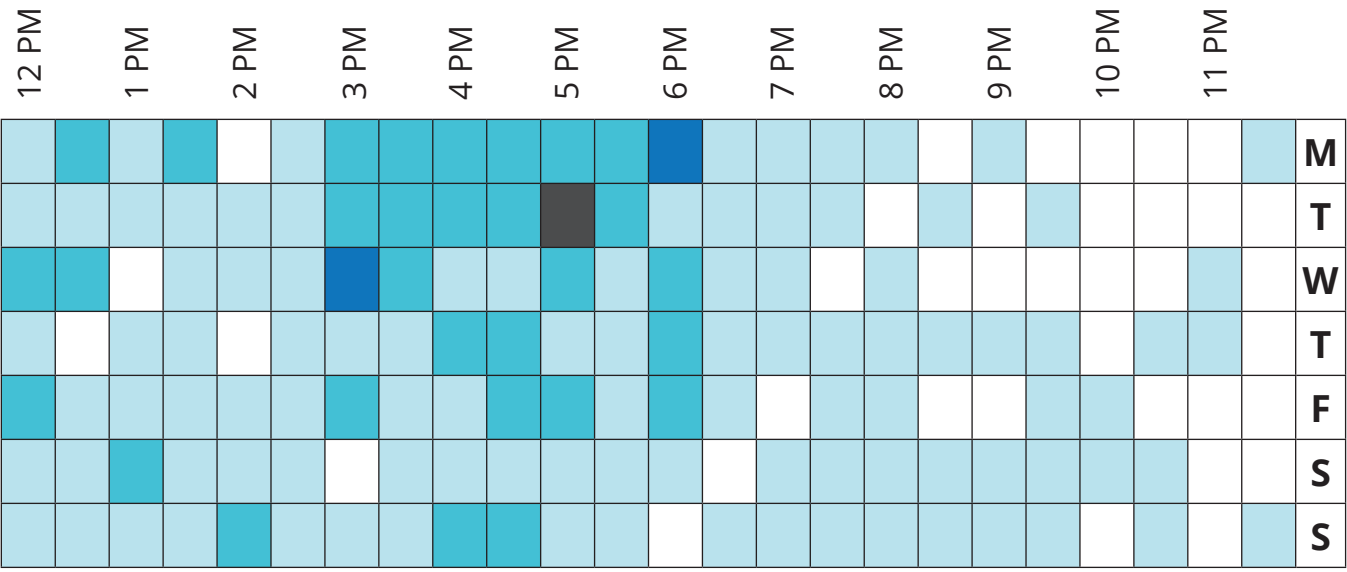
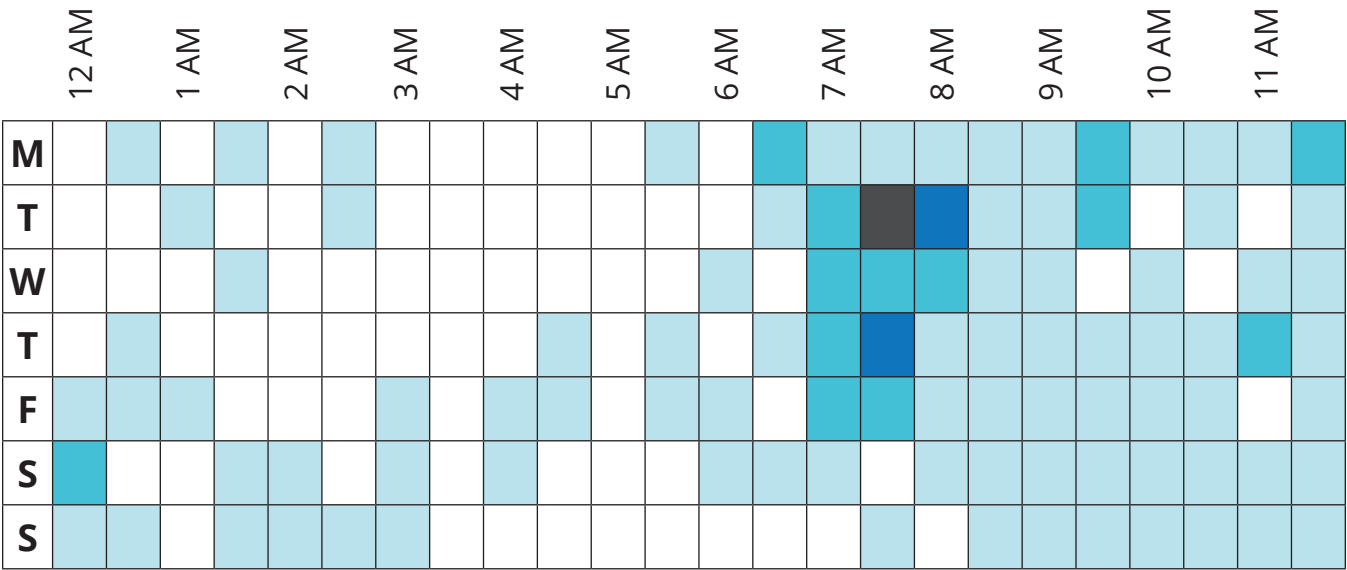
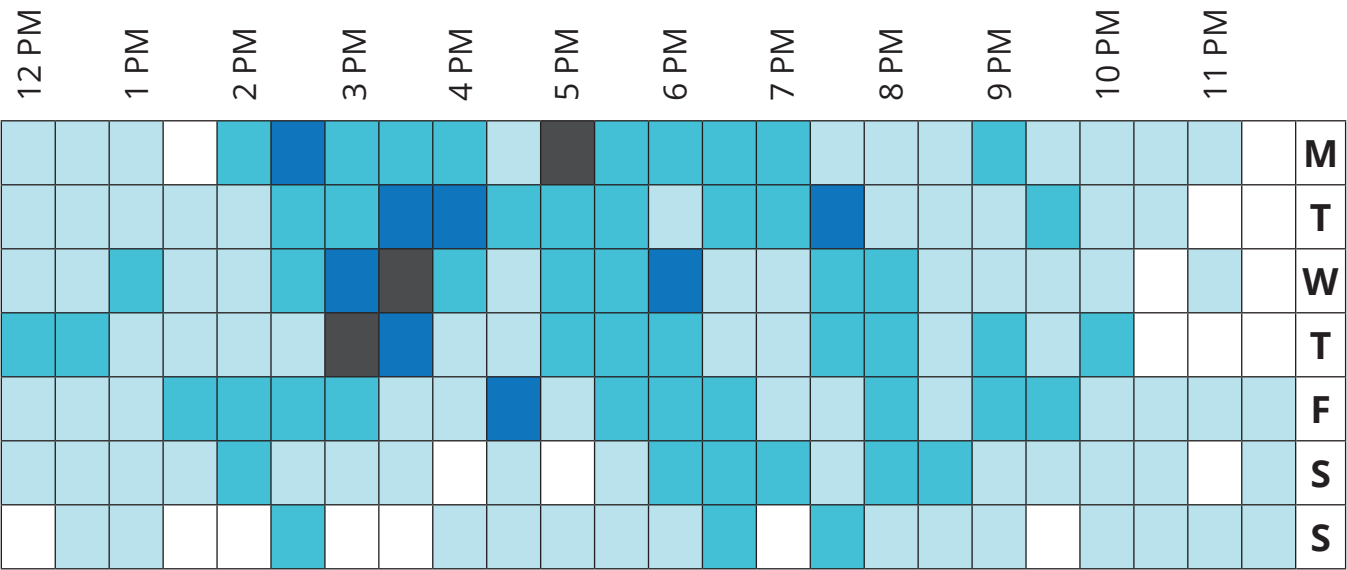


FIGURE 10-13D
2010-2015 CRASHES BY TIME OF DAY

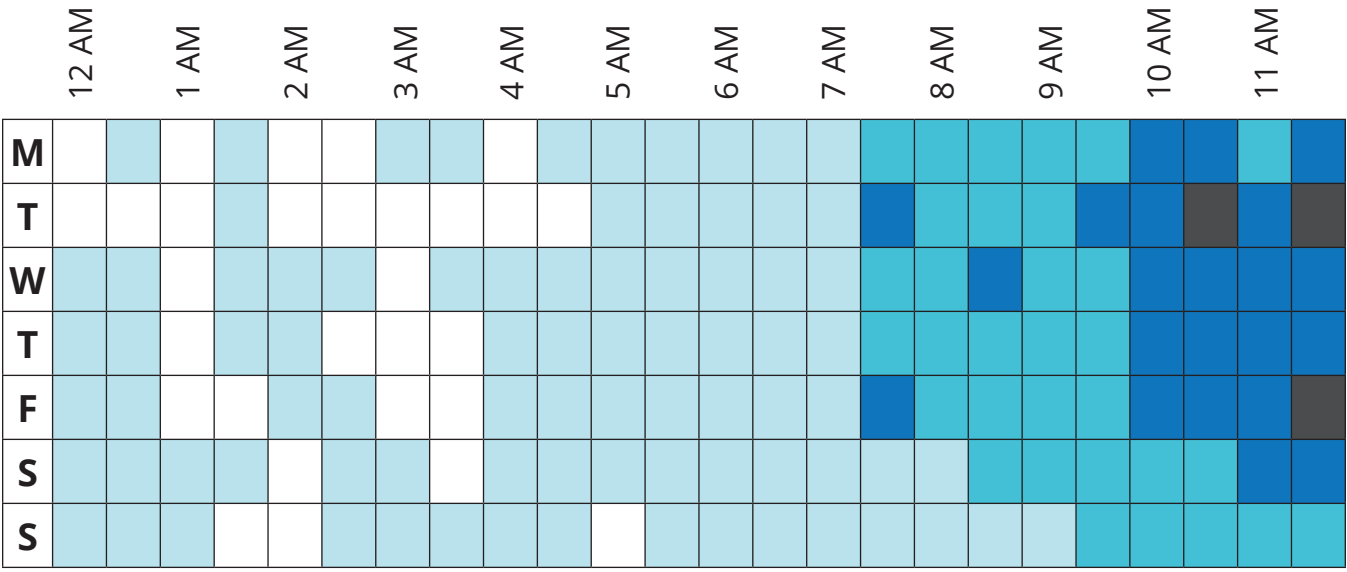
PEDESTRIAN CRASHES



Numeric Range of Crashes per Cell



AGE 65+ CRASHES



Numeric Range of Crashes per Cell

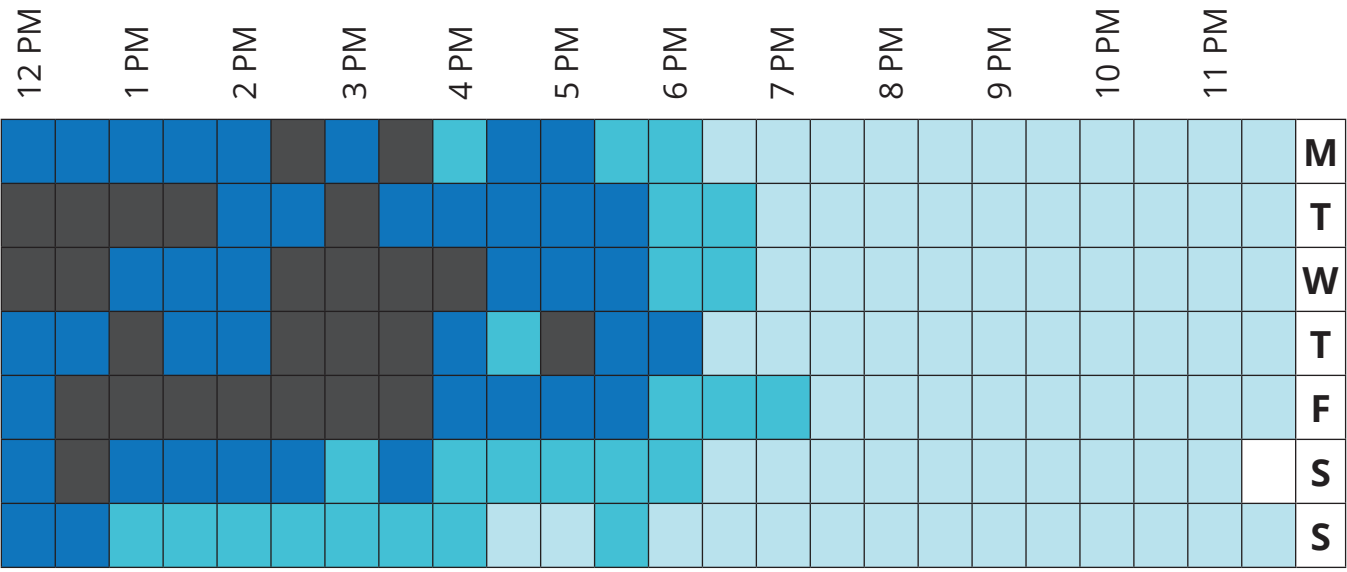
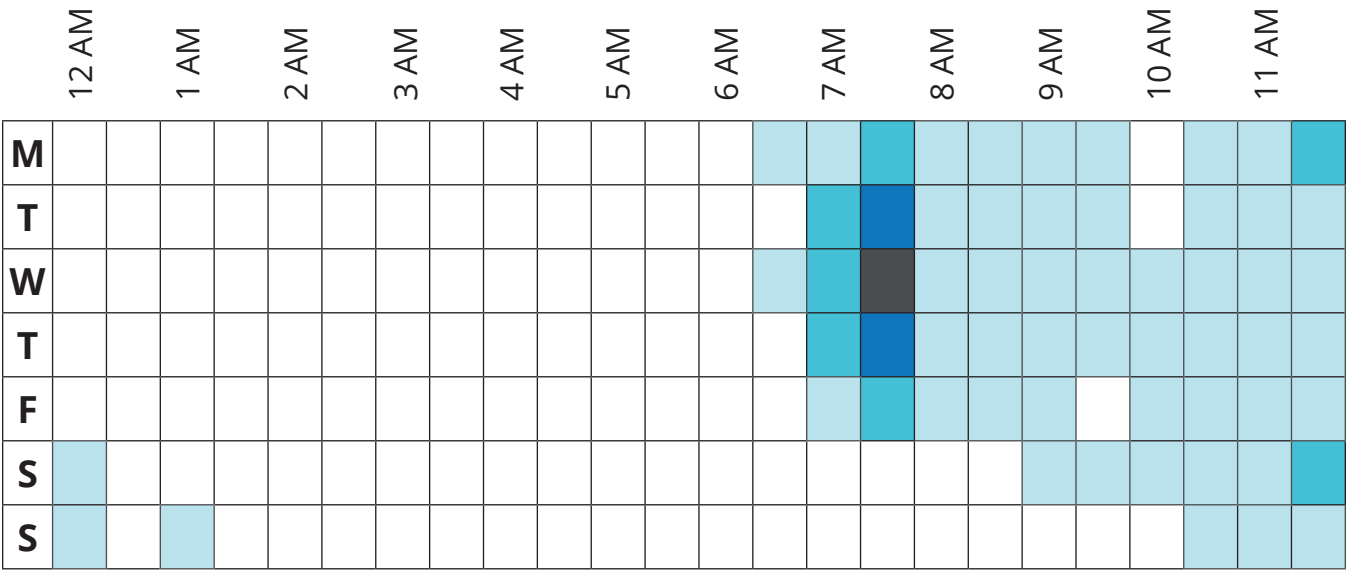


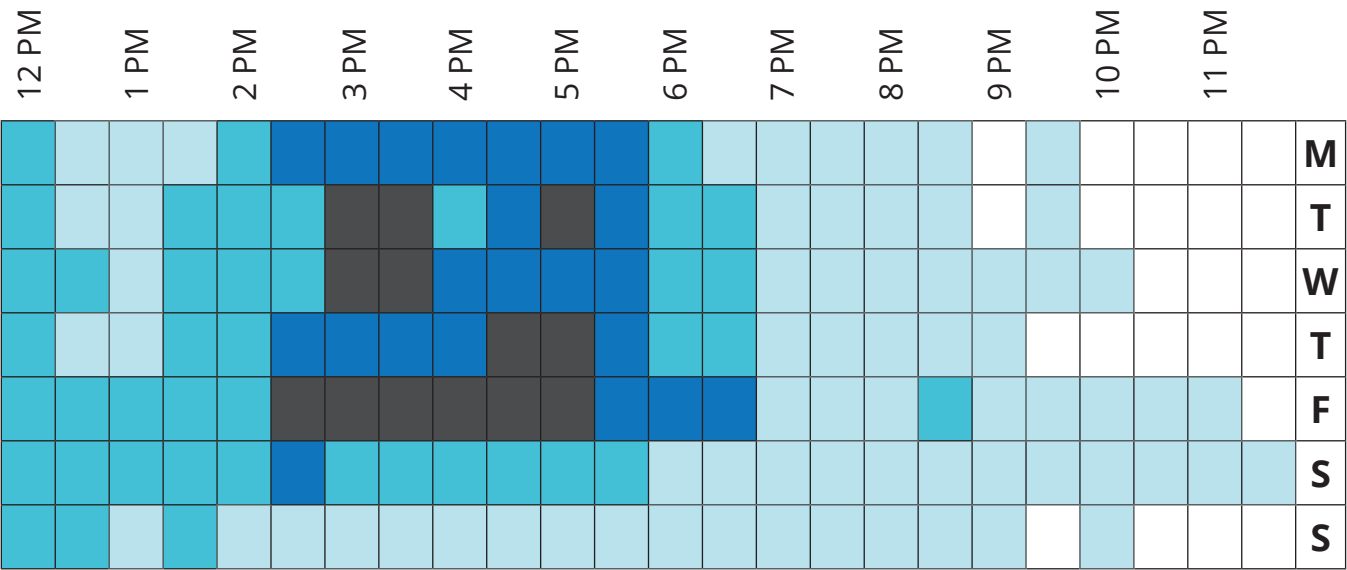
FIGURE 10-13E
2010-2015 CRASHES BY TIME OF DAY

AGE LESS THAN OR EQUAL TO 20 CRASHES

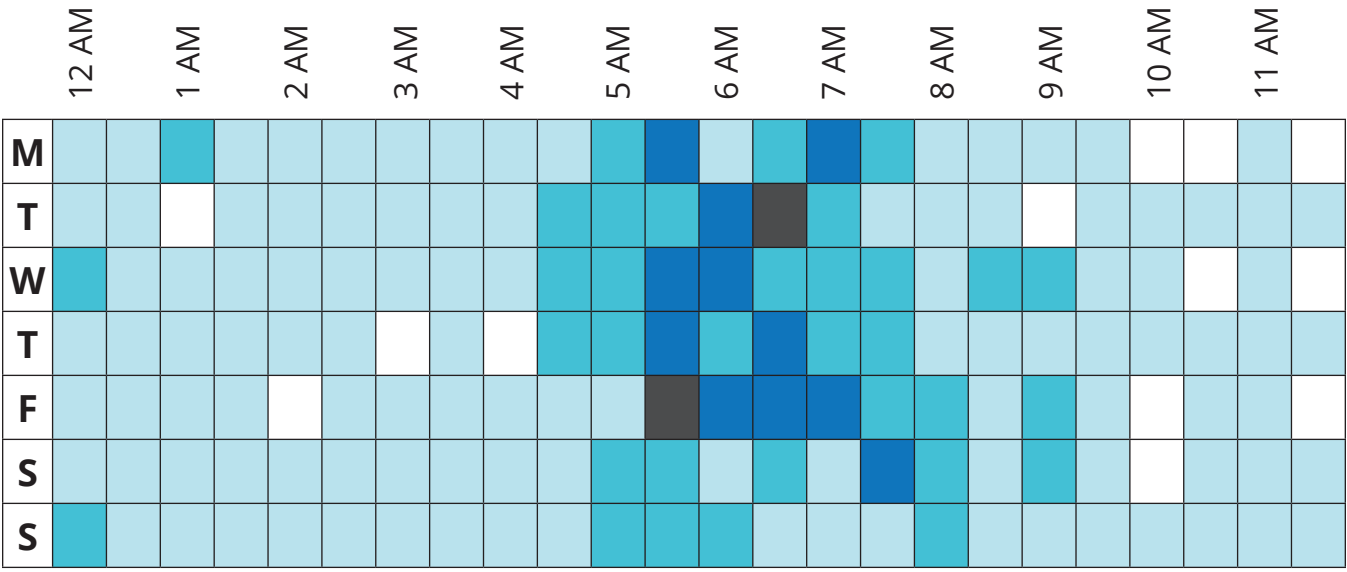


Numeric Range of Crashes per Cell

1-31	32-61	62-91	92-121	122-152
------	-------	-------	--------	---------



ANIMAL CRASHES



Numeric Range of Crashes per Cell

0	1-5	6-10	11-15	16-19
---	-----	------	-------	-------

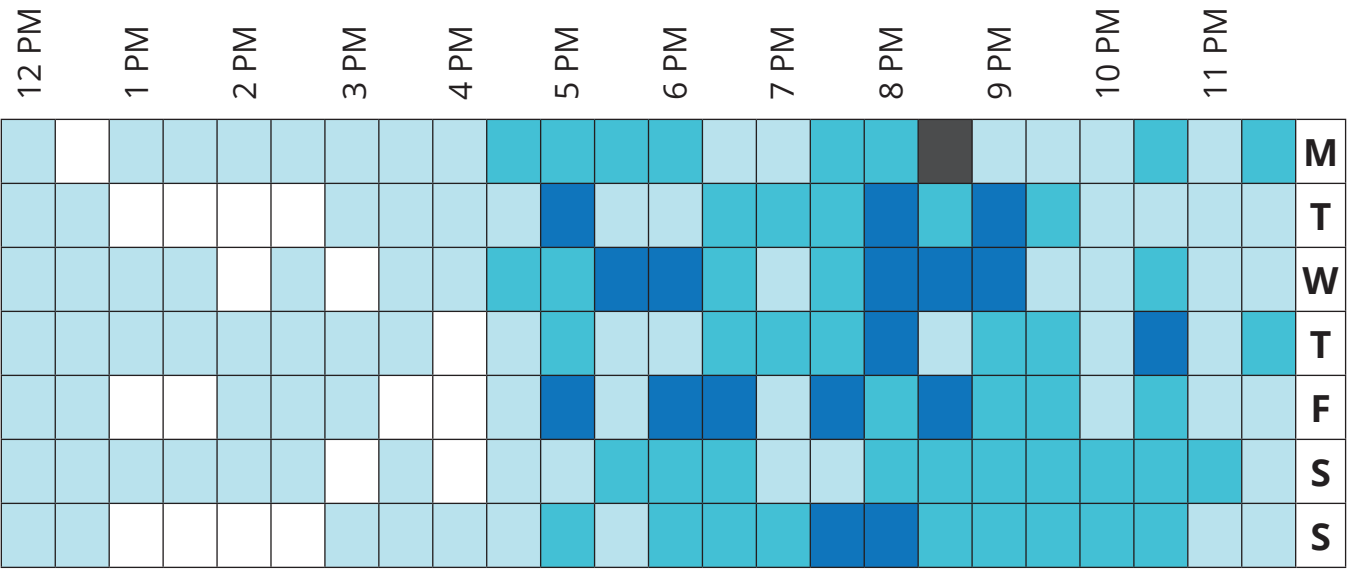
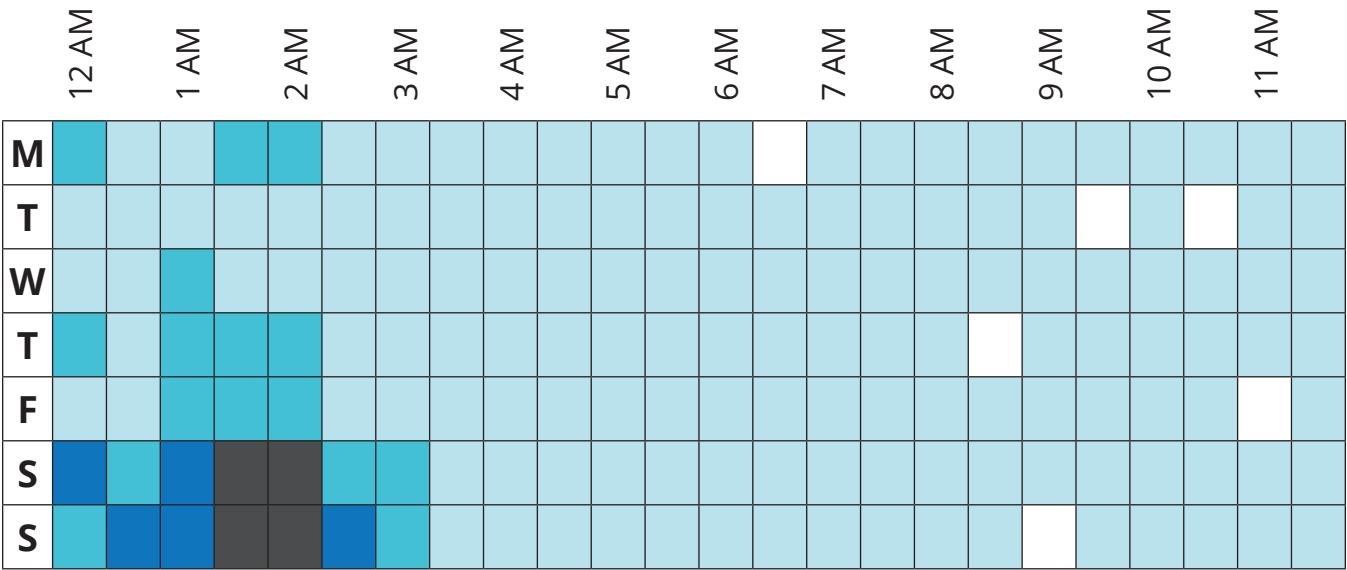
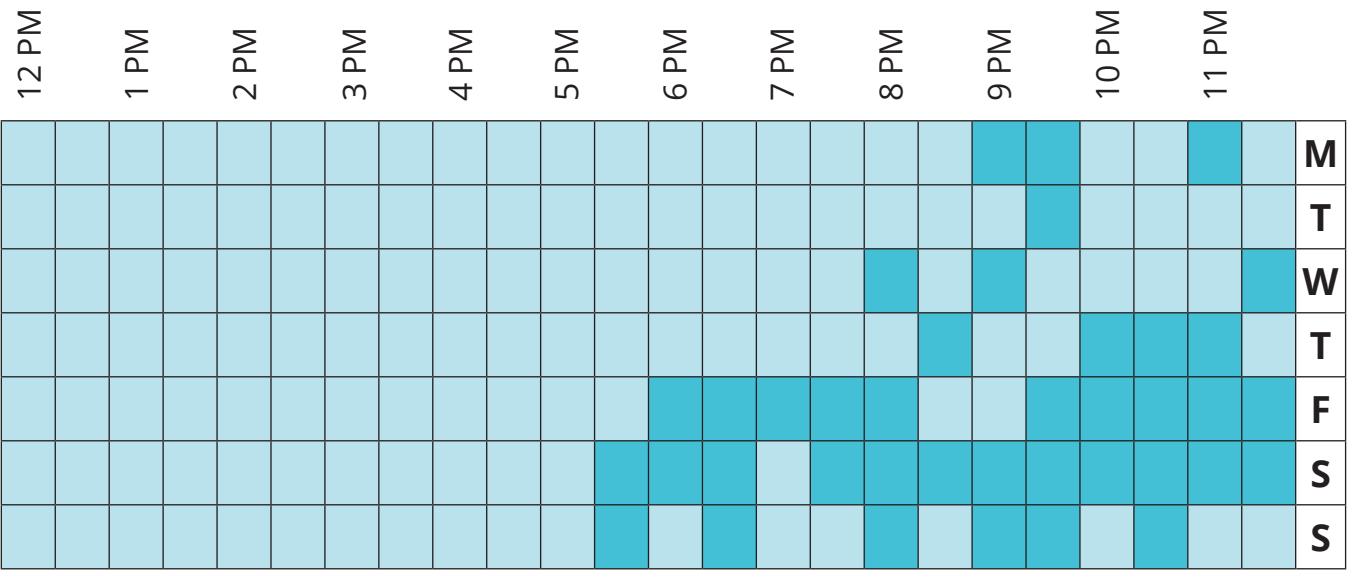


FIGURE 10-13F
2010-2015 CRASHES BY TIME OF DAY

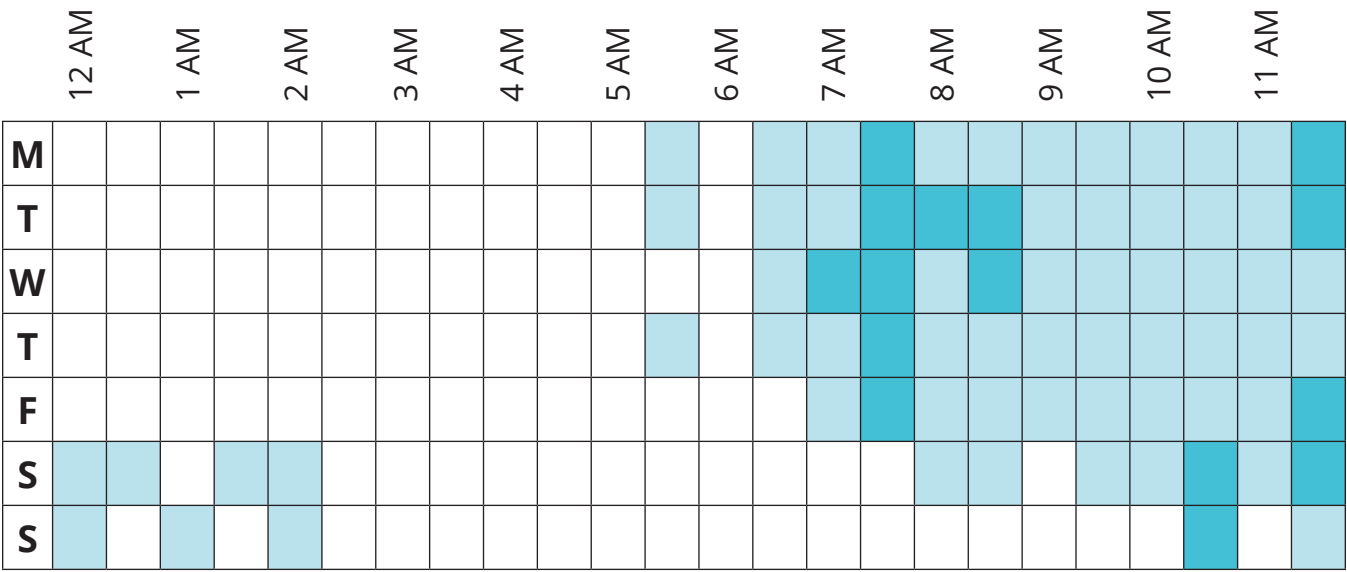
DUI CRASHES



Numeric Range of Crashes per Cell 0 1-20 21-40 41-60 61-78



OUT OF STATE DRIVER CRASHES



Numeric Range of Crashes per Cell 1-26 27-52 53-77 78-103 104-129

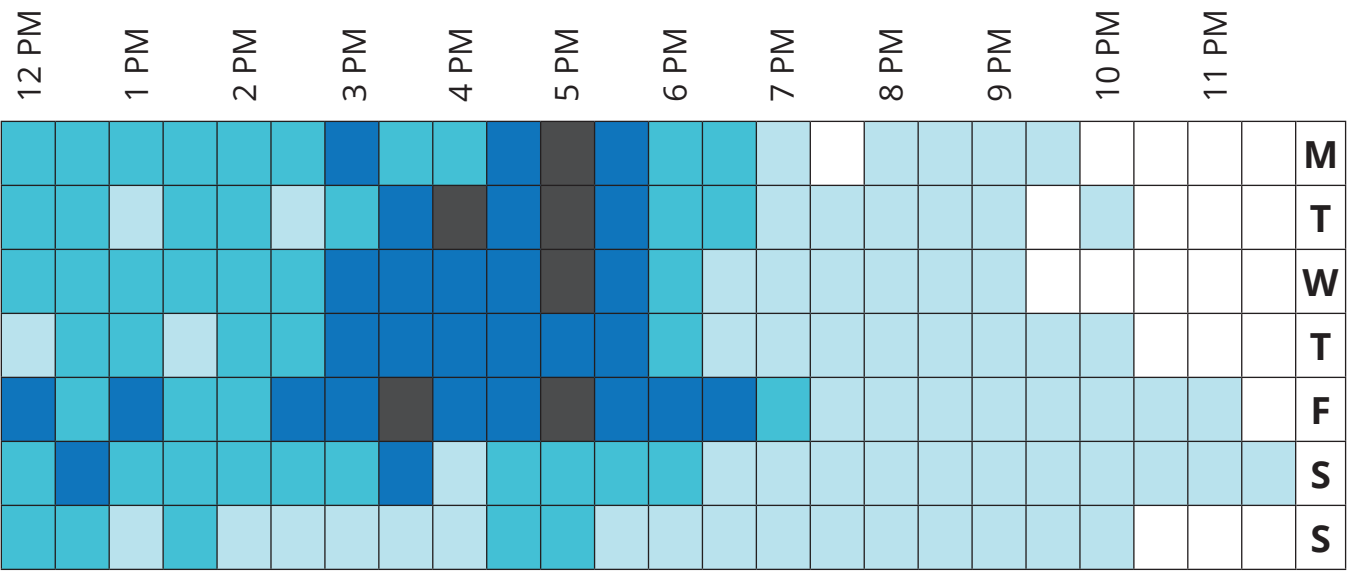
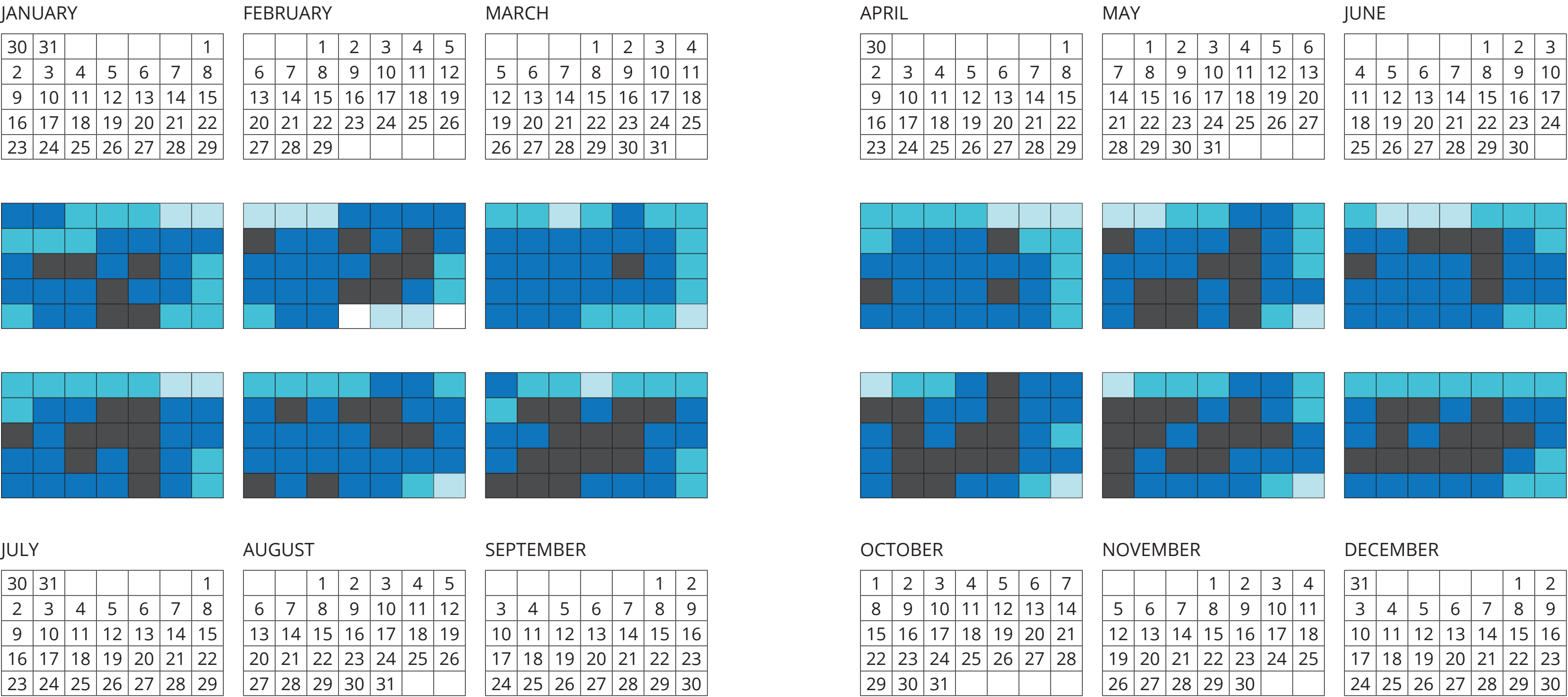


FIGURE 10-14A
2010-2015 DAY OF MONTH CRASHES

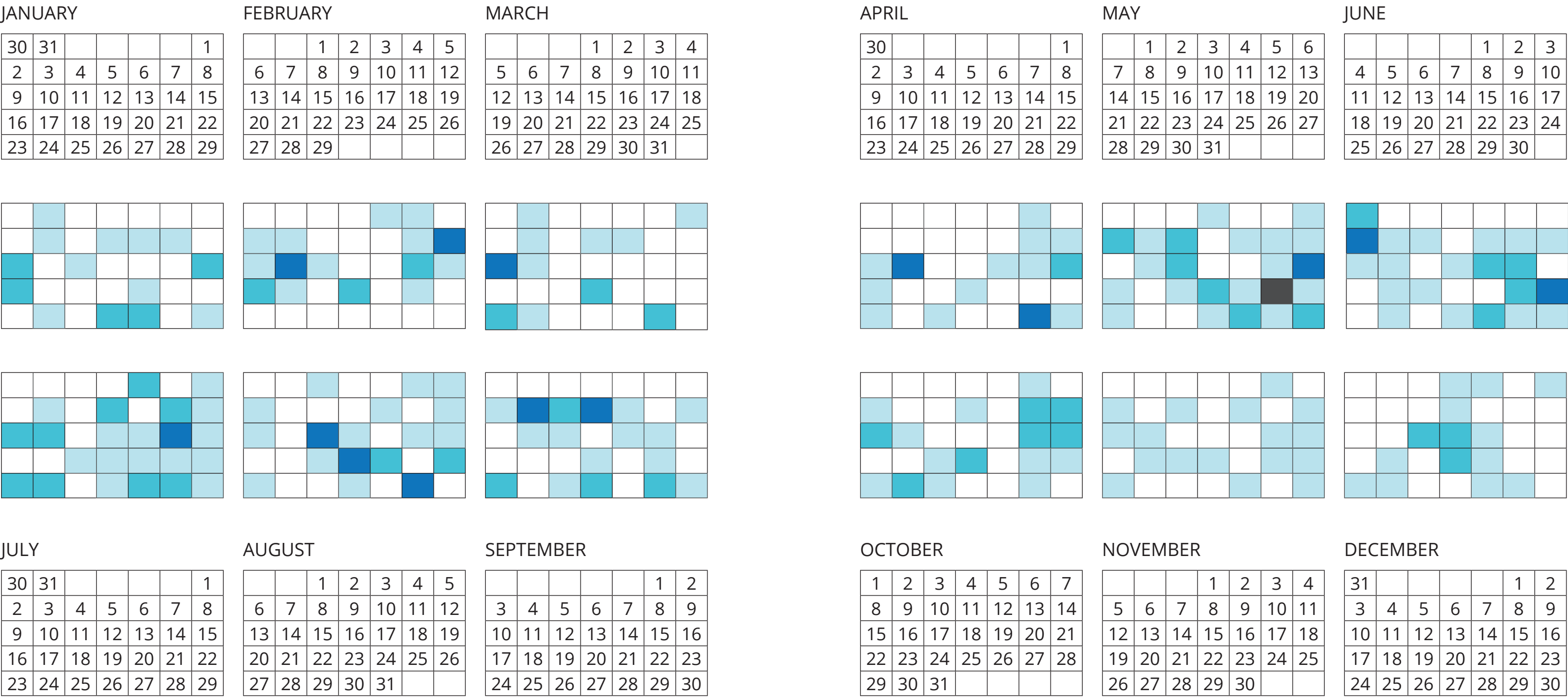
ALL CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14B
2010-2015 DAY OF MONTH CRASHES

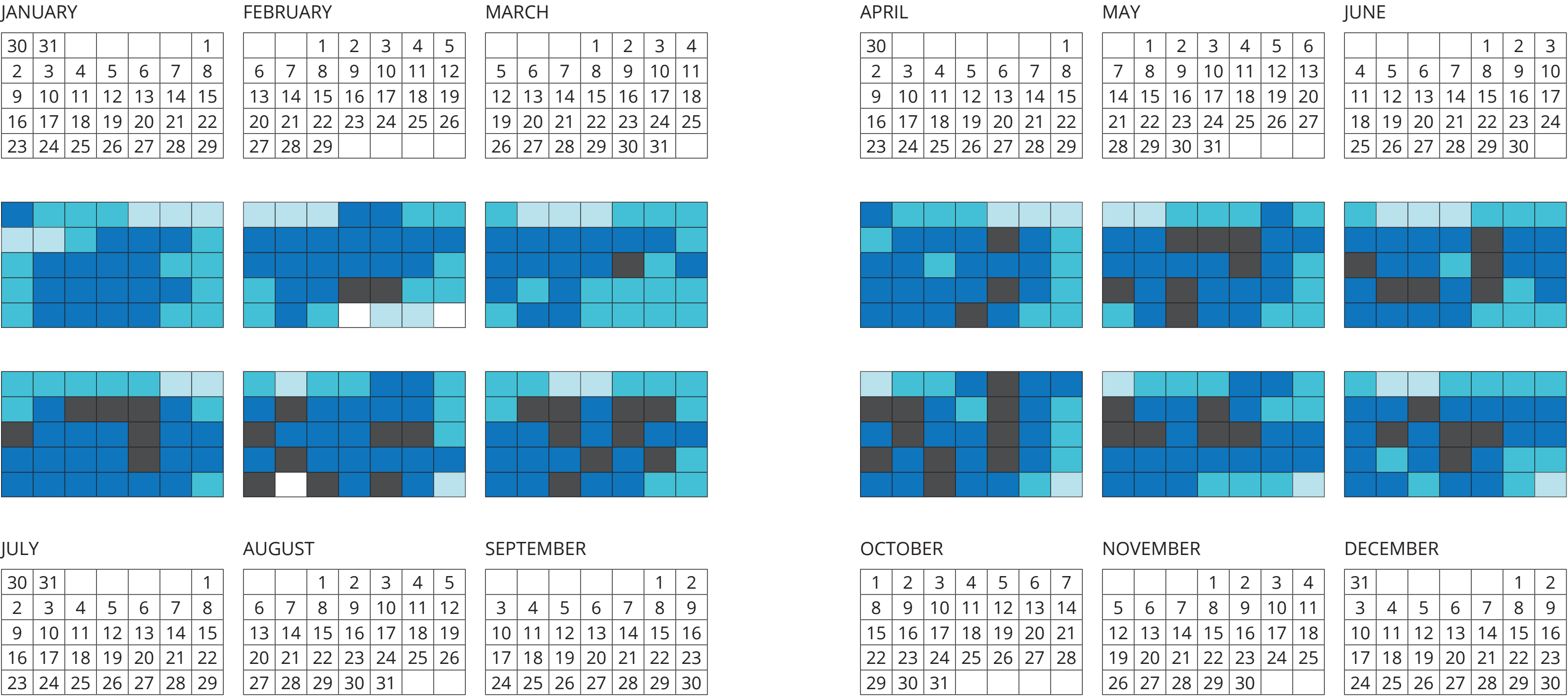
FATAL CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14C
2010-2015 DAY OF MONTH CRASHES

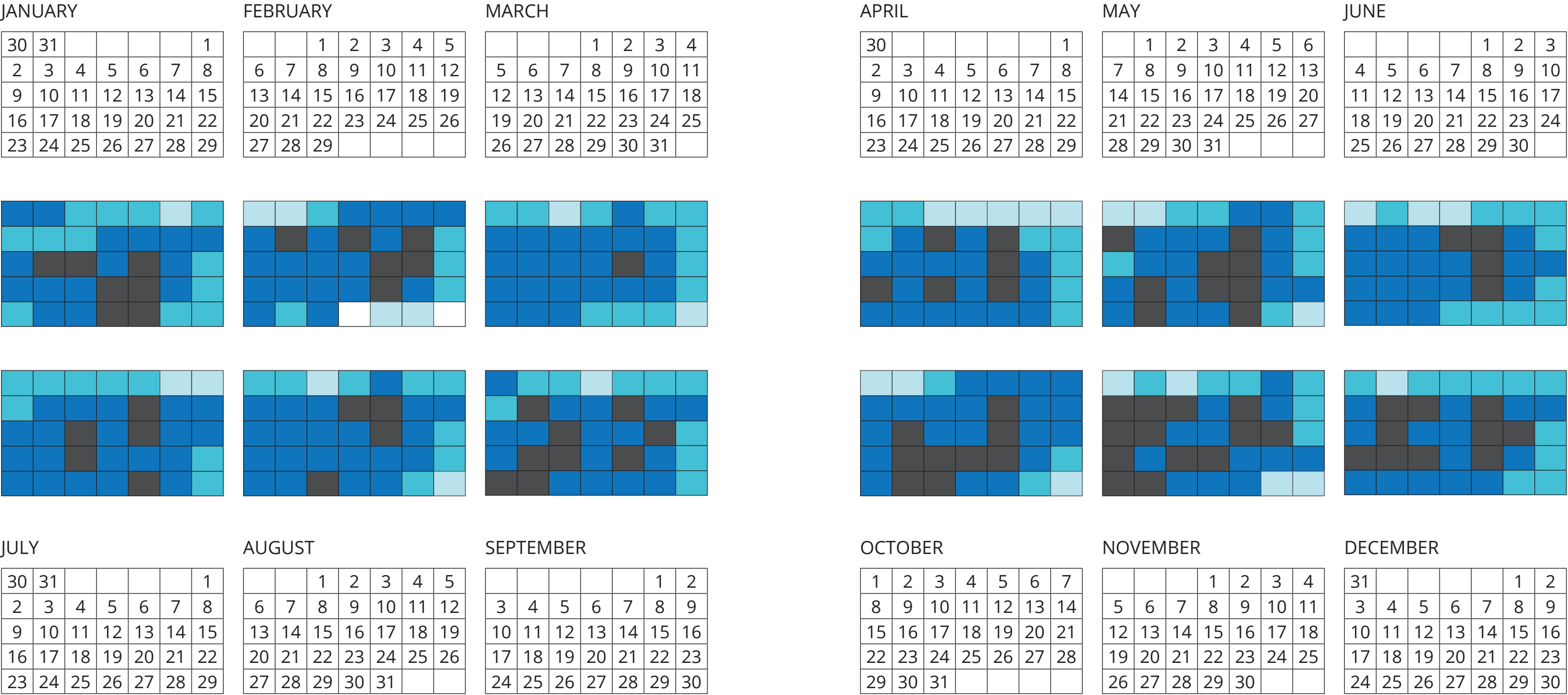
INJURY CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14D
2010-2015 DAY OF MONTH CRASHES

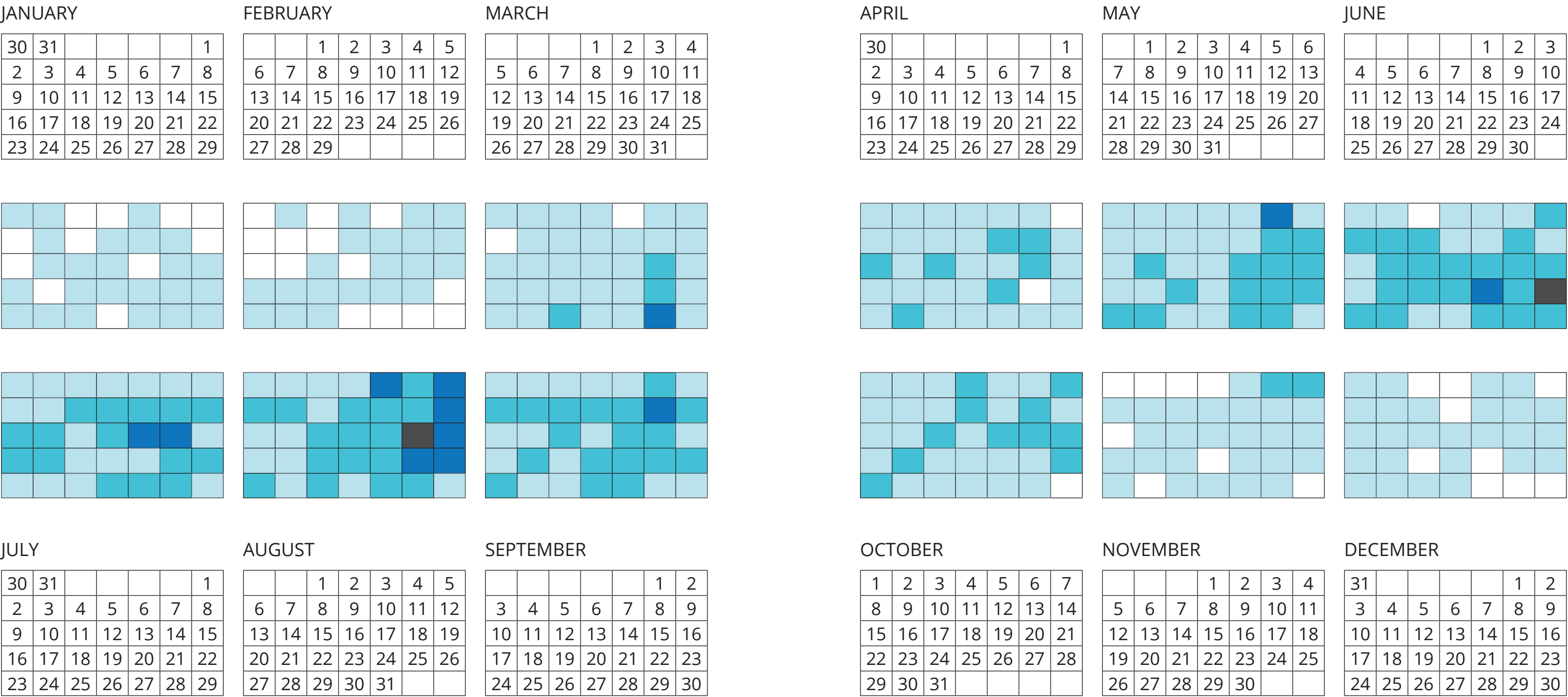
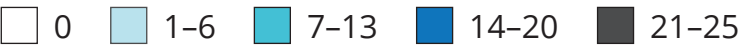
PDO CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14E
2010-2015 DAY OF MONTH CRASHES

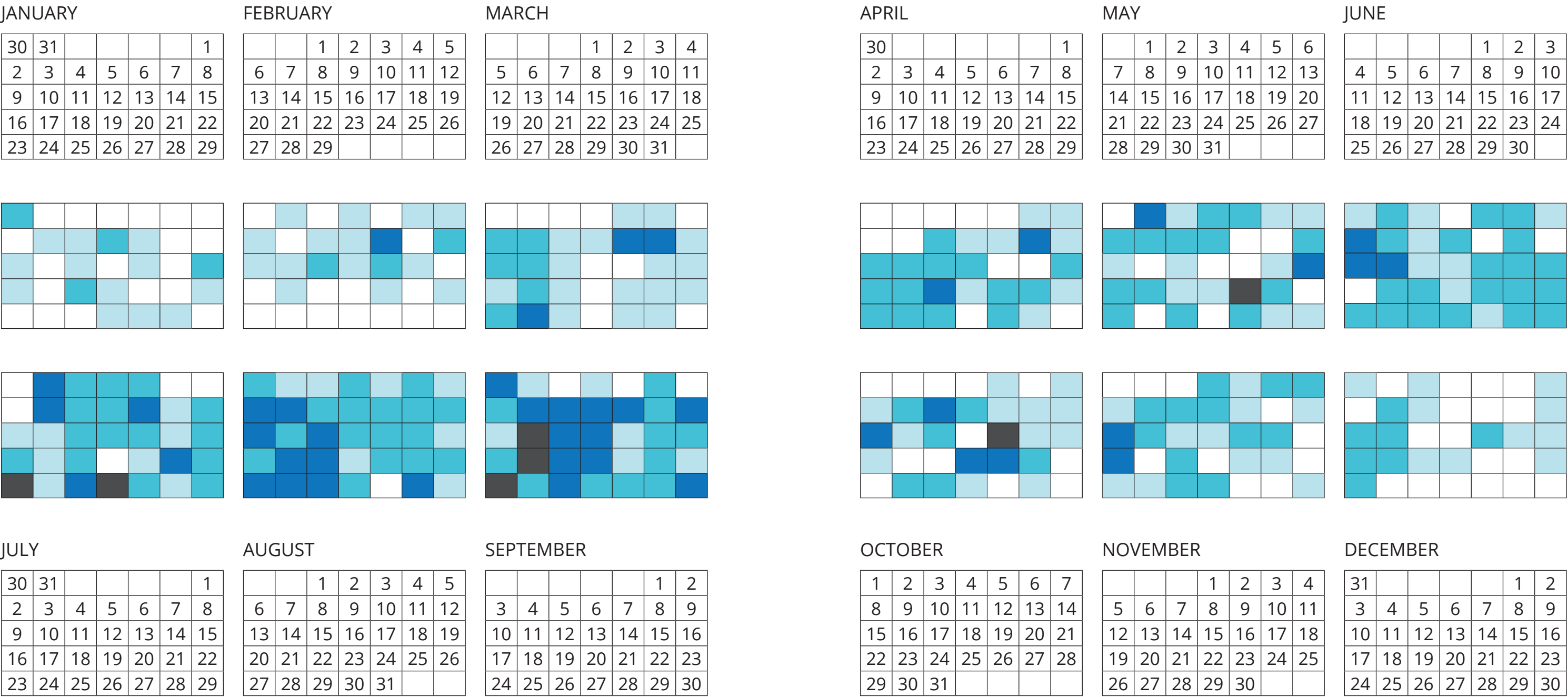
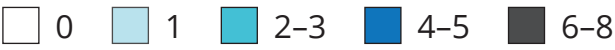
MOTORCYCLE CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14F
2010-2015 DAY OF MONTH CRASHES

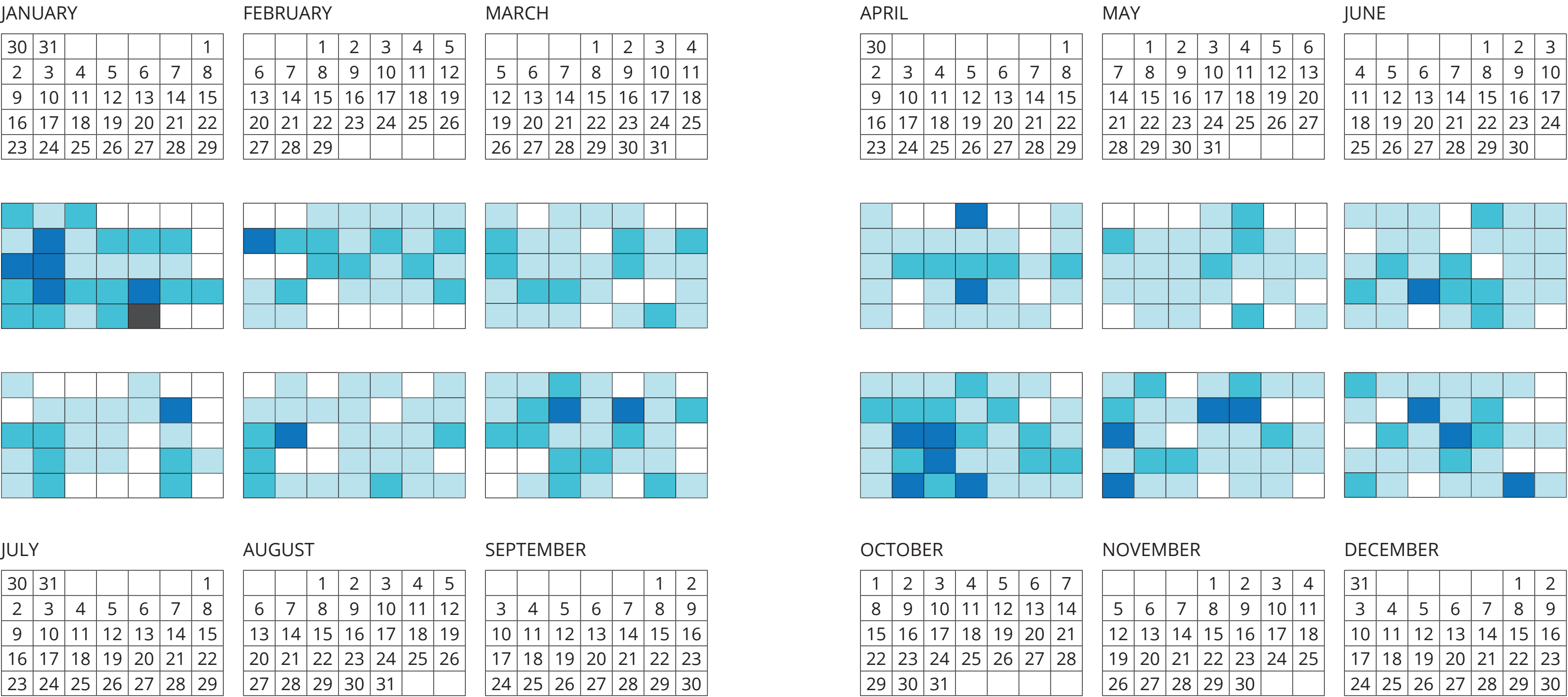
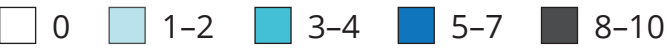
BICYCLE CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14G
2010-2015 DAY OF MONTH CRASHES

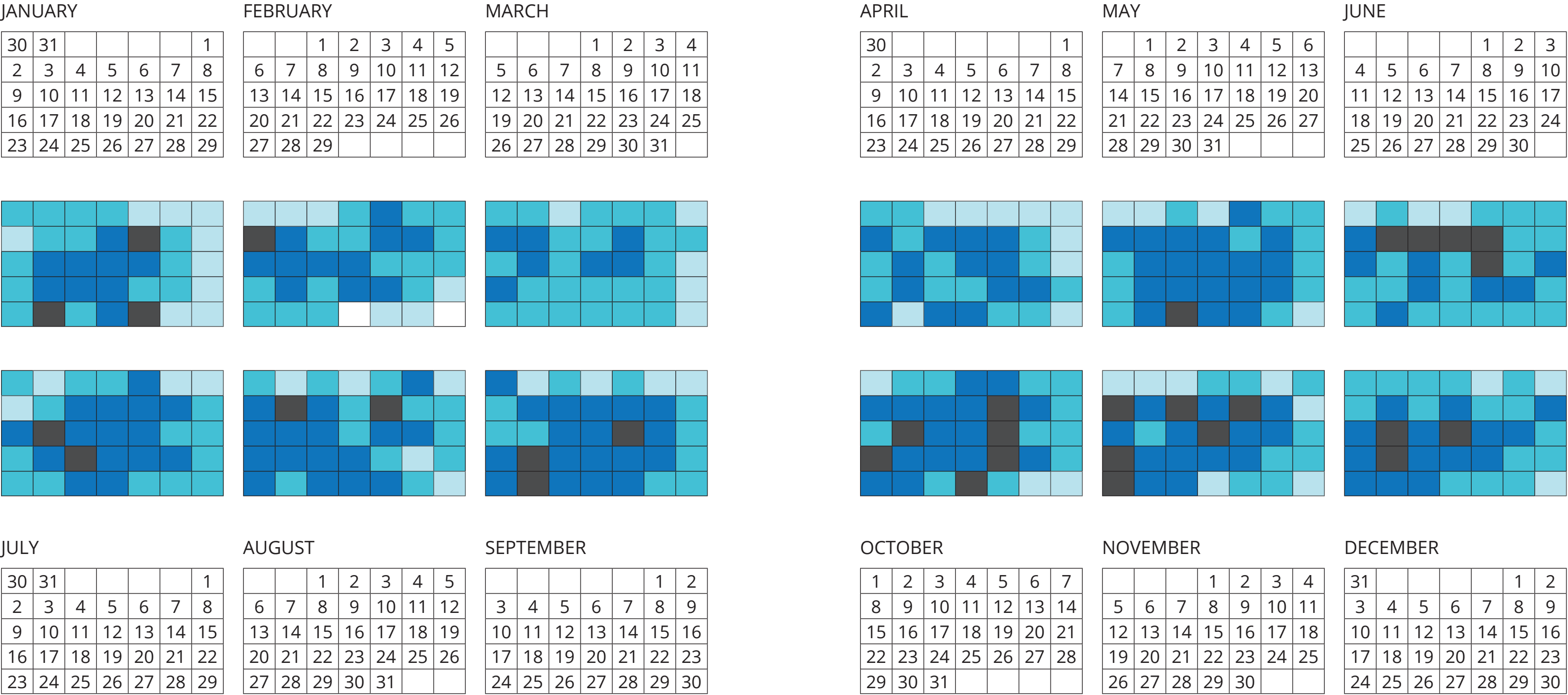
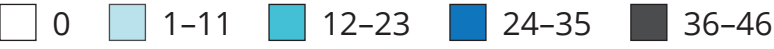
PEDESTRIAN CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14H
2010-2015 DAY OF MONTH CRASHES

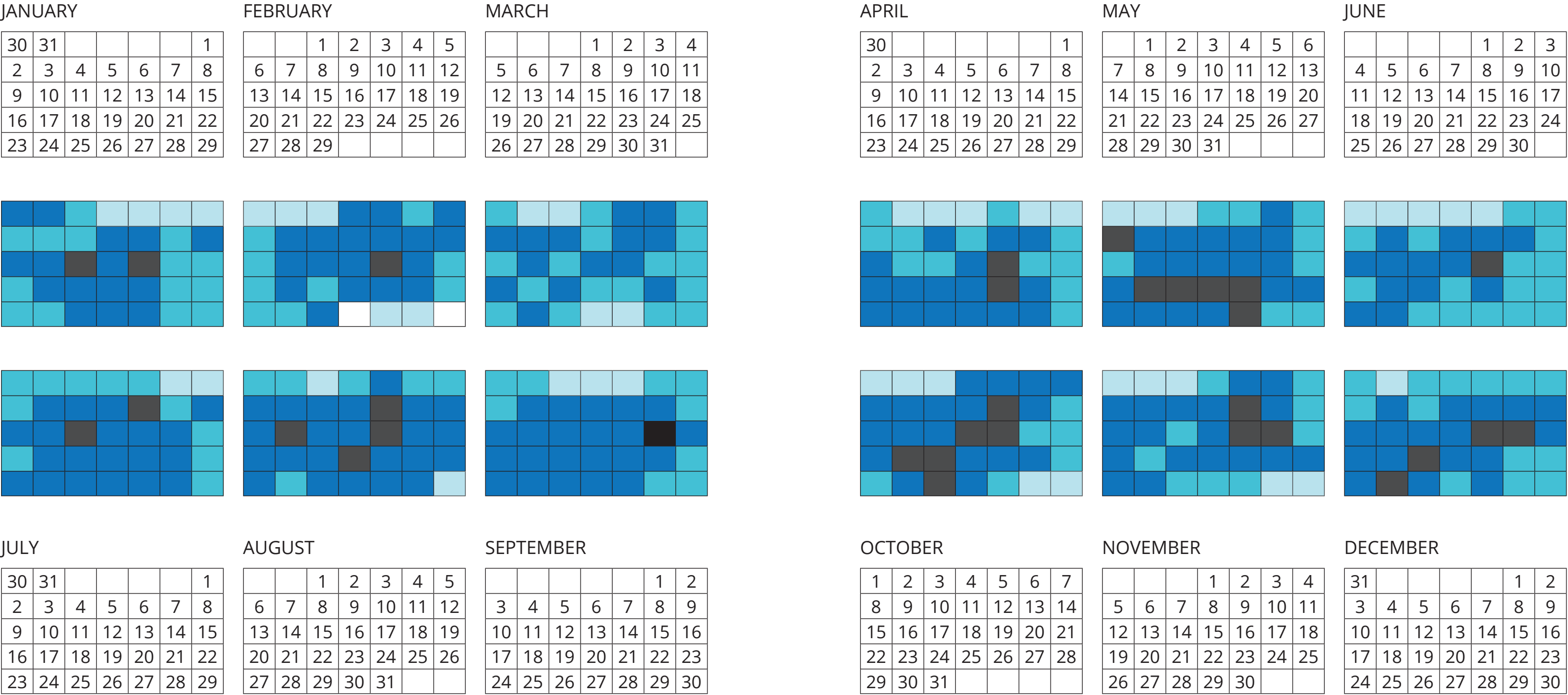
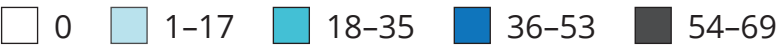
AGE 65+ CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14I
2010-2015 DAY OF MONTH CRASHES

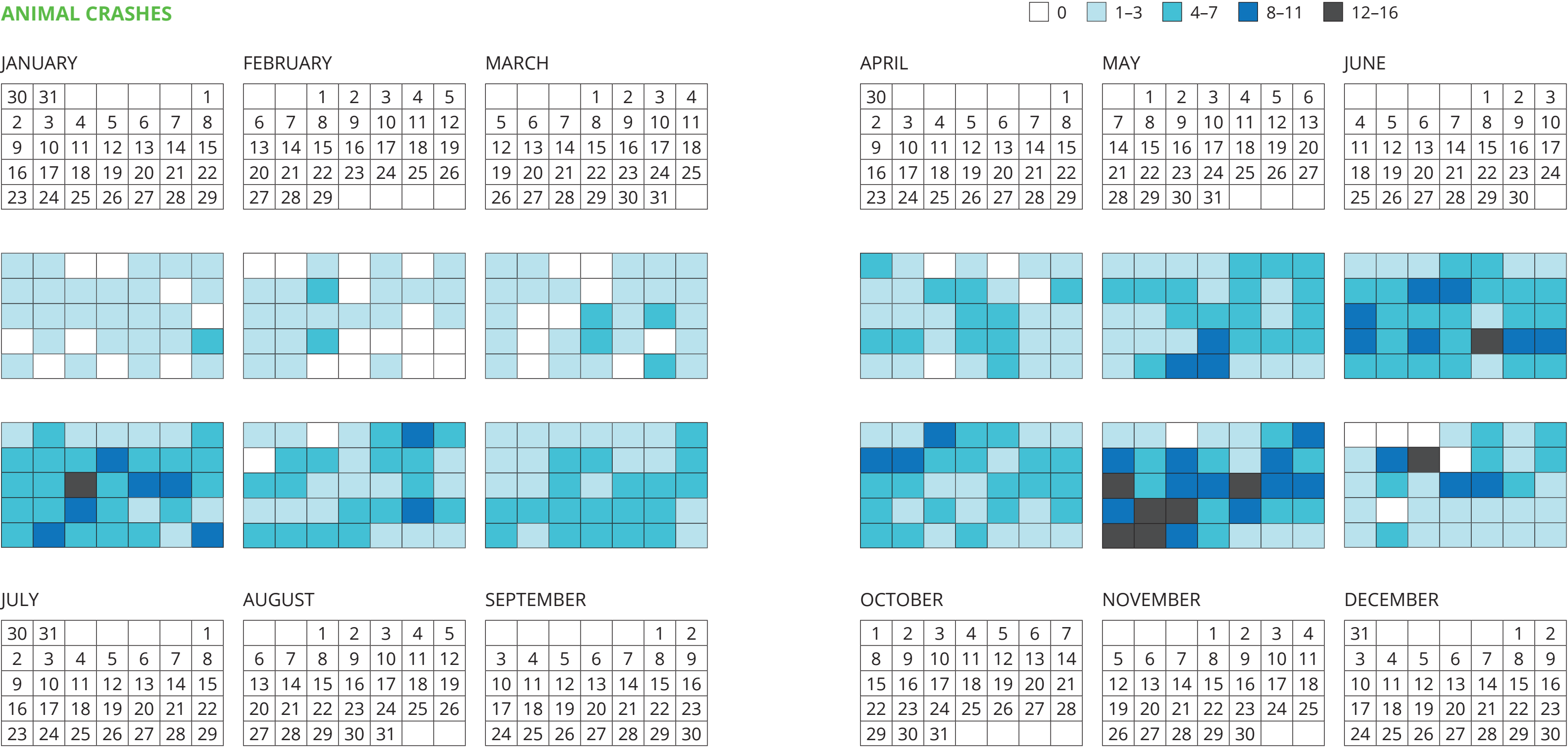
AGE LESS THAN OR EQUAL TO 20 CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14J
2010-2015 DAY OF MONTH CRASHES

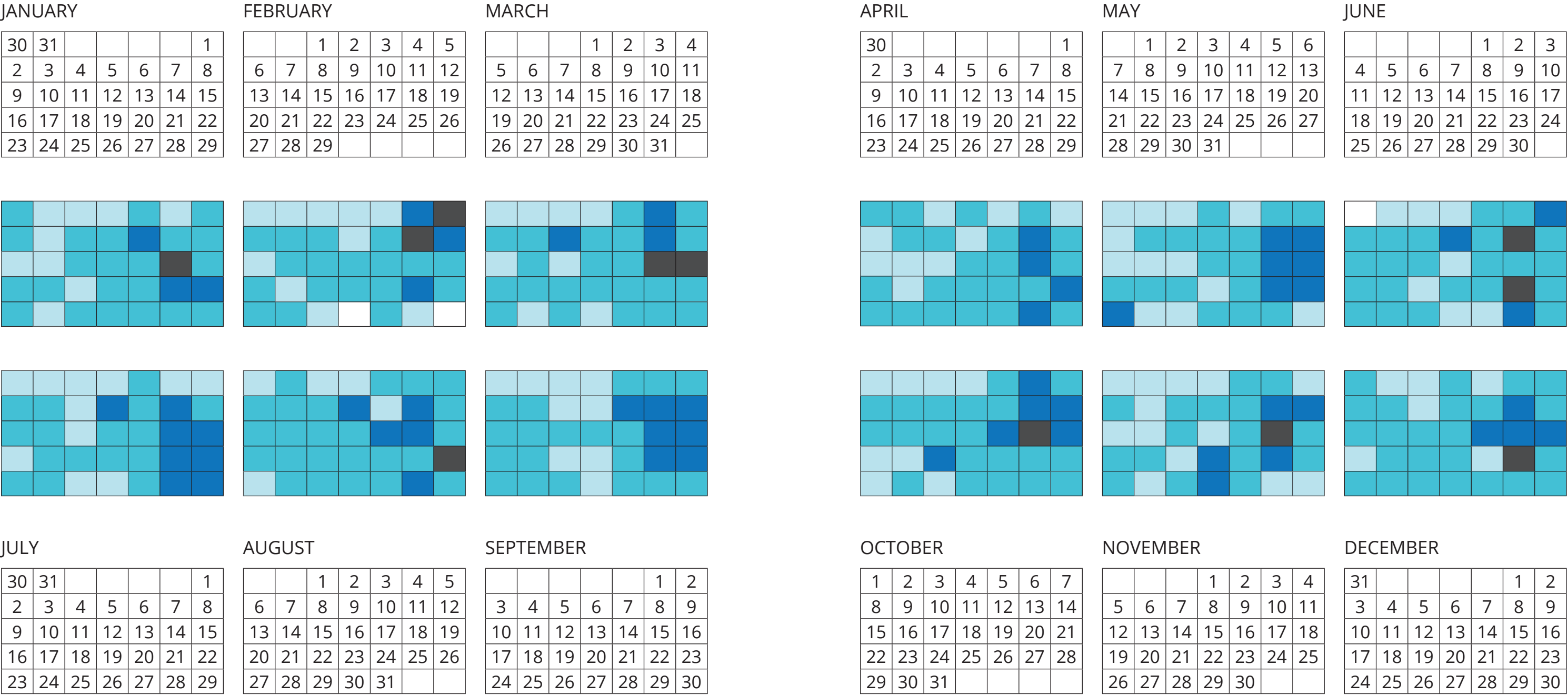
ANIMAL CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14K
2010-2015 DAY OF MONTH CRASHES

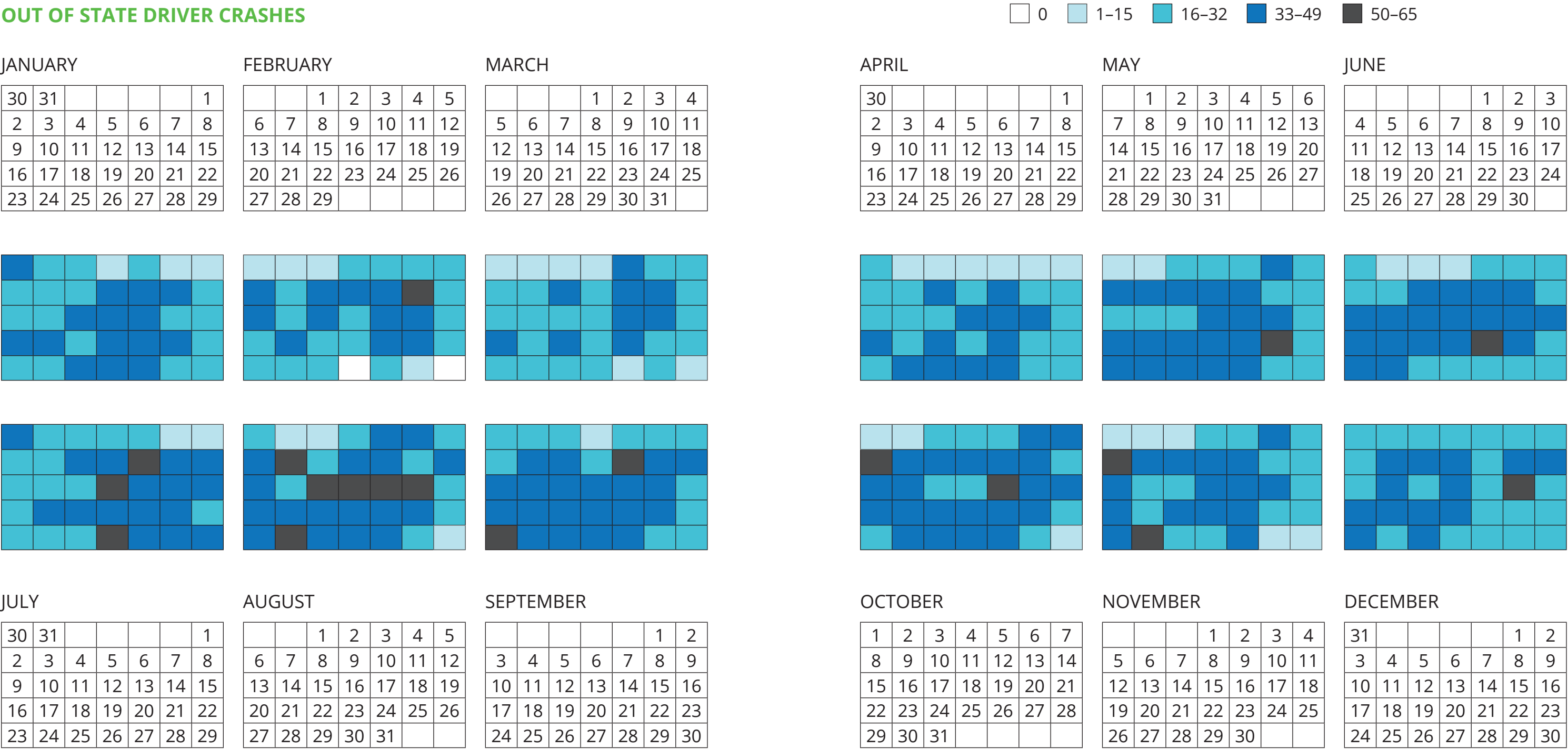
DUI CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

FIGURE 10-14L
2010-2015 DAY OF MONTH CRASHES

OUT OF STATE DRIVER CRASHES



Note: 2010-2015 Crashes Adjusted onto a 2012 Calendar

CHAPTER 11

SECURITY

During emergencies, the transportation system serves a crucial role in safeguarding regional security. PPACG has focused on enhancing emergency preparedness by providing technical support related to evacuation modeling.

In the years since September 11, 2001, increased emphasis has been placed on emergency preparedness and homeland security issues. According to federal regulations, "The metropolitan transportation plan should include appropriate emergency relief and disaster preparedness plans and strategies and policies that support homeland security as appropriate and safeguard the personal security of all motorized and non-motorized users." The role of PPACG has been limited, with a focus on support of preparedness through evacuation modeling, as was the case in previous plans.

From a transportation-planning perspective, homeland security is still an emerging concern, and different areas will have different security priorities, so a one-size-fits-all approach is not appropriate. The Federal Highway Administration and Federal Transit Authority expect the transportation plan to include:

- Defining the role of the Metropolitan Planning Organization and public transportation operators in promoting security, which may in part be defined elsewhere in state or local legislation related to emergency management responsibilities;
- Identification of critical facilities and transportation system elements, the risk to assets such as highways, transit systems, or rail lines critical to national defense or economic security, and infrastructure intricately related to potential high-value security targets;

- Identification of appropriate security goals and strategies; and
- Reflection of projects and strategies that will increase the security of transportation system users in the Regional Transportation Plan and the Transportation Improvement Program.

The focus of local, state, and federal security-planning efforts is to minimize direct or indirect disruptions caused by natural or human actions. Examples are shown in Table 11–1. Whatever the cause, disasters have several key characteristics:

- The event is unexpected, with little or no prior warning or opportunity to prepare;
- Lives, health, or the environment are endangered; and
- Personnel and emergency services may not be available during the initial stages.

When one element in the system breaks down, a series of sequential reactions can occur that increase the severity of the original impact. Secondary impacts can affect transportation, utilities, communications systems, fuel supplies, and/ or water supplies. For example, damage to roads may cause the following:

- Ambulances may be prevented from reaching victims and/or victims prevented from reaching emergency medical services;
- Police and fire departments may be slowed or prevented from reaching affected areas;
- Flow of needed supplies may be interrupted; and
- Ability to assess damage may be compromised.

TABLE 11–1
SECURITY EVENTS

NATURAL EVENTS	HUMAN EVENTS
Tornado	Hazardous Material Incident
Blizzard	Power Outage
Flood	Act of Terrorism (bombing)
Wildfire	Civil Disobedience (riots, etc.)

PLANNING FOR SECURITY

In 2004, the U.S. Department of Homeland Security introduced the National Response Plan and the National Incident Management System (NIMS).

Emergency operations plans address the ability to direct, control, coordinate, and manage emergency operations. The National Response Plan establishes a comprehensive, national, all-hazards approach to domestic incident management. NIMS provides a nationwide template enabling government and non-government emergency responders to use a coordinated and modular approach based on the Incident Command System. Federal preparedness funding is conditioned upon full compliance with NIMS, which means local jurisdictions have:

- Adopted NIMS through resolution or legislation as the local jurisdiction’s all-hazard, incident response system;
- Had appropriate personnel complete NIMS training; and
- Completed regular self-assessments of NIMS programs.

Institutionalize the use of the Incident Command System. The Av all-hazards planning approach includes four phases of long-term and short-term preparedness:

A. MITIGATION

1. Identify threats to systems and resources;
2. Develop plans, procedures, and organizational structure to ensure that the safe and timely movement of both the public and emergency services during an incident; and
3. Maintain sufficiency ratings and other data such as built plans for primary bridges and critical transportation infrastructure.

B. PREPAREDNESS

1. Identify and maintain a network of available local, county, and state resources to aid safe and timely movement of the public and emergency-service resources;
2. Participate in training sessions and exercises;
3. Evaluate agency emergency operations plans;
4. Ensure that administrative and accounting procedures are in place to document actions taken and costs incurred during incident operations; and
5. Ensure that on-call contracts with engineering companies and construction contractors include provisions for emergency services.

C. RESPONSE

1. Select and contact appropriate personnel;
2. Designate personnel authorized to enter affected area and provide this information to the Office of Emergency Management;
3. Provide a representative to the Office of Emergency Management, as requested.
4. Confirm and report the level, severity, and extent of involvement;
5. Provide and coordinate public information through the Emergency Operations Center and Joint Information Center, if activated; and

6. Coordinate with law-enforcement personnel for maintaining security of facilities and supplies.

D. RECOVERY

1. Coordinate and organize long-term plans for the safe movement of the public and emergency service resources; and
2. Provide documentation on injuries and/or deaths of persons resulting from the incident.

SECURITY CONCEPT OF OPERATIONS

Activation of an Emergency Operations Center (EOC) may be required during an incident. Effective January 22, 2019, Colorado Springs City Council and the El Paso County Board of Commissioners approved an Intergovernmental Agreement (IGA) to operate a joint office of emergency management. It is called the Pikes Peak Regional Office of Emergency Management. Responsibilities of this office include coordinating and assisting first responders in emergencies and assisting local governments in disasters. The EOC may consist of one person, such as the emergency manager (in small events) or a full activation of the organizational structure for a large incident. All agencies coordinate activity, maintain communication with and support the Office of Emergency Management and EOC, if activated. This system will be used to coordinate on-scene incident response.

ALL HAZARDS PLANS

There are locally-developed and approved plans to provide for coordination, control, and allocation of transportation assets in support of the movement of emergency resources, including the evacuation of people and the redistribution of food and fuel supplies.

Key participants in this endeavor are local municipality public works departments, emergency management offices, Colorado Springs Internal Support Services, local law enforcement, Colorado

State Patrol, County Emergency Services Division, state agencies, federal agencies, and military installations.

As an example, the City of Colorado Springs has identified a truck route system to support secure, efficient freight movement. Partners include the Colorado Springs Police Department, the Colorado State Patrol, and the El Paso County Sheriff.

All agencies that have identified roles during emergencies will ensure continual operational readiness. Agencies will develop inter-agency (IGA) and inter-jurisdictional agreements with similar agencies to expedite resource mobilization when additional assistance is needed. Mobilization centers, staging areas, receiving and distribution sites, key operational support facilities, and necessary staffing are identified in appropriate plans. Mutual aid agreements are in place with all the local military installations and their neighboring civilian jurisdictions, i.e., Fort Carson, the City of Fountain, and the City of Colorado Springs; Cheyenne Mountain Air Force Station, the U.S. Forest Service, State Parks, and the City of Colorado Springs; and Schriever Air Force Base and the Town of Ellicott.

All agencies and organizations with transportation or emergency-response responsibilities are responsible for developing standard operating procedures to carry out the following functions:

- Identify, train, and assign personnel to maintain contact with and prepare to execute missions during periods of activation;
- Coordinate activities and maintain communication with the EOC, if activated, during all emergency operations;
- Provide an agency representative to the Emergency Operations Center, as requested;
- Provide information and coordinate any public announcement, statement or news release through the Office of Emergency Management or the Emergency Operations Center and Joint Information Center, if activated;
- Provide program assistance and expertise as appropriate and in coordination with other agencies;

- Activate continuity of operations and recovery plans, as needed. Establish emergency supplies including food, water, blankets, electrical generators, communications, etc. to provide continued operations and shelter employees as necessary; and
- Provide to the OEM all requested information prior to, during, and following any incident.

STATE OF COLORADO EMERGENCY OPERATIONS PLAN

The State of Colorado Emergency Operations Plan identifies the roles, responsibilities, and actions of state government in disasters. When local government capabilities are taxed, state government has resources and expertise available to provide emergency or disaster assistance.

The Colorado Division of Homeland Security and Emergency Management provides financial and technical support to local governments throughout the state with both out-stationed and in-house staff. The Pikes Peak region is in the Central Region (Figure 11-1).

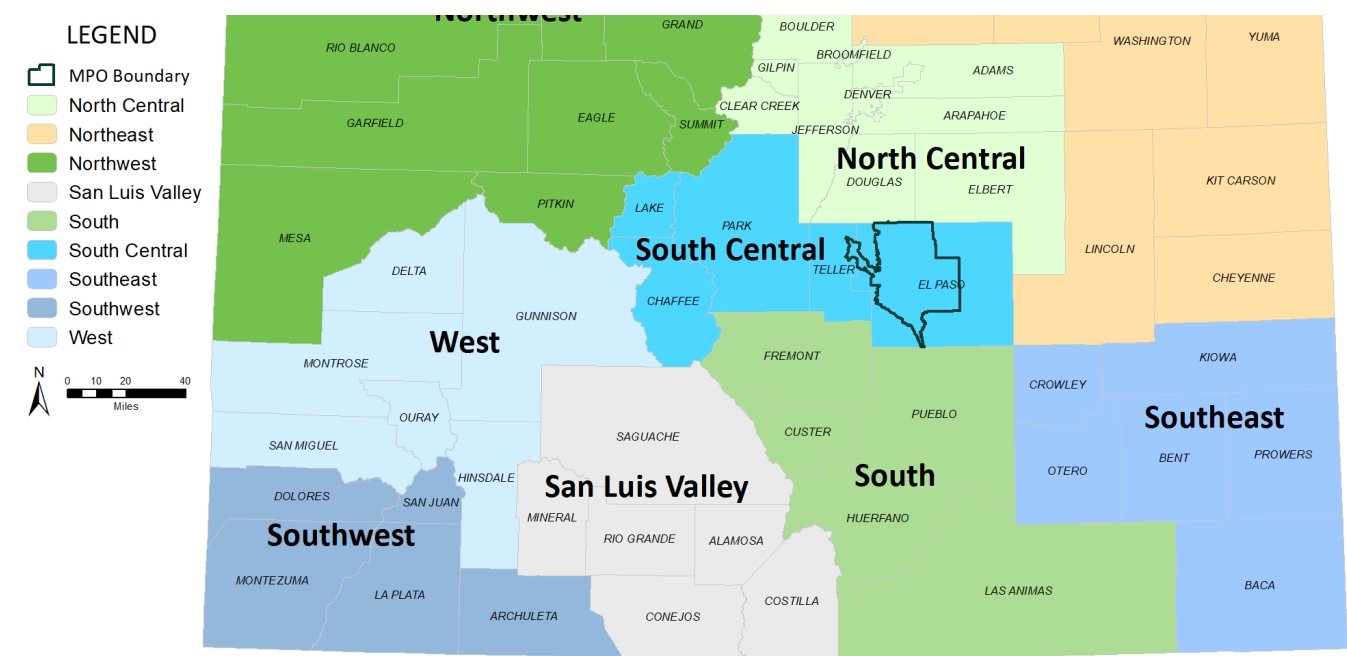
STATE OF COLORADO HOMELAND SECURITY STRATEGY

The State of Colorado Homeland Security Strategy was prepared by the Colorado Department of Local Affairs with extensive cooperation and input from stakeholders. It provides a framework for the state's ability to prevent, respond to, and recover from an act of terrorism. The plan furnishes state and local officials with the means to develop interlocking and mutually-supporting emergency preparedness programs. This coordinated effort identifies necessary resources, develops strategies, and creates partnerships throughout the public and private sectors.

DIVISION OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT

Colorado's Multi-Agency Coordination Center offers state, federal, and local agencies a central location to coordinate emergency and disaster response throughout the state. The center is linked to CDOT's Transportation Operations Center, which provides highway surveillance to monitor statewide roadways and weather. The center also provides general intelligence on all transportation

FIGURE 11-1
PPACG WITHIN THE SOUTH CENTRAL SECURITY REGION



systems, including railroads and airports. The Traffic Operations Center has command and control over all state road systems, bridges, and underpasses, provides avalanche analysis and control, and acts as the transportation system’s command and control center in emergencies.

The Information Analysis Center provides one central point in Colorado for the collection, analysis, and timely dissemination of terrorism-related information to numerous agencies.

COLORADO DEPARTMENT OF TRANSPORTATION

The Colorado Department of Transportation’s role in emergency management consists primarily of safeguarding and maintaining the state transportation system in the affected area and facilitating and coordinating evacuation routes that use the state transportation system. CDOT maintenance staff are the primary responders for damage to CDOT infrastructure and assistance to others, but staff from other areas may be used as needed.

PPACG INVOLVEMENT

The role of a metropolitan planning organization in security and emergency management efforts varies based upon the political and institutional context of its region. As a facilitator of collaboration, the Metropolitan Planning Organization can assist in multiple ways. The MPO can serve as a forum for cooperative decision-making, or as an advocate for funding of regional transportation strategies. At the technical level, PPACG provides transportation network-based technical analyses to assess impacts of transportation related security and emergency management efforts. An example of this is assisting with planning for wildfire necessitated evacuation.

WILDFIRE EVACUATION PLANNING

PPACG provides technical support for wildfire emergency-response planning. Wildfire poses a significant threat within the PPACG planning boundaries. Over the last decade, a number of wildfire events have occurred within the Pikes Peak region (Table 11-2).

In response to the wildfire threat, the Colorado Springs Office of Emergency Management, with the support of the police and fire departments, undertook development of a comprehensive wildfire emergency-response plan in 2011. The city planning team identified critical plan components to include identification of areas at risk for wildfire, implementation of an educational/outreach program, and adoption of specific evacuation protocols. The City reached out to PPACG technical staff to support formulation of wildfire evacuation logistics. A collaborative process was used to establish evacuation routes, as well as traffic control and staffing plans for at-risk areas. Those areas, as shown in Figure 11-2a and 11-2b, included nine larger districts, each with a number of smaller neighborhood areas.

In accordance with strategies identified by the PPACG Board of Directors, PPACG provided modeling and GIS mapping support to the Colorado Springs planning team. The PPACG regional travel demand model was adapted to assess evaluation scenarios and develop detailed evacuation-traffic control plans at the local

evacuation district and neighborhood levels. The model simulated evacuation of each area, with consideration of strategies including access restriction and contra-flow operations. Through iterative simulation, the planning team gained a clear understanding of both the magnitude of evacuation traffic and the capacity of the roadway network to handle that traffic.

The final product was a consolidated Fire Evacuation Traffic Control Plan field atlas, including a section for each evacuation area in which a key map shows the overall traffic control plan, followed by larger-scale detail maps using the Colorado Springs Fire Department’s map grid. The scale and nomenclature already used by the fire department in their field operations map books were used for consistency. The symbols on the traffic control plan, such as turn-back or contra-flow, can be readily translated into a required number of emergency personnel at specific locations.

KEY PARTNERS

PUBLIC WORKS DEPARTMENTS

The Public Works departments of Colorado Springs, El Paso, and Teller counties are partners in the PPACG planning process. They are also managers of key portions of the existing roadway network in the area and have critical emergency management responsibilities. Specific roles and responsibilities include:

- Inspection of bridges, roads, signs, lighting, and sidewalks for damage;
- Coordination and repair of damaged transportation structures, including roads, traffic control systems, and signage;
- Maintaining rights-of-way for emergency vehicles;
- Assisting in traffic management during incidents;
- Helping secure geographic areas with roadblocks or other physical measures;
- Establishing short-term and long-term detours and signage;
- Removing debris and cleaning streets and roadways; and

TABLE 11–2
REGIONAL WILDFIRE EVENTS

INCIDENT DATE	WILDFIRE INCIDENT DESCRIPTION
June 2018	High Chateau Fire in Teller Country burned just over 1,423 acres. The fire was located about four miles south of the Florissant Fossil Beds. The cause was a campfire that was left without being put out.
June 2013	The Black Forest Fire was the most destructive fire in the state’s history, surpassing the 2012 Waldo Canyon Fire. The evacuation area covered 94,000 acres, 13,000 homes, and 38,000 people. Two people died, 486 homes were destroyed, 37 homes were damaged, and 14,280 acres were burned.
June 2013	The Waldo Canyon Fire burned 18,247 acres in the Pike National Forest adjacent to the City of Colorado Springs. On June 26, the fire spread from the wildland area into the developed area of the city. Nearly 34,000 persons were evacuated, more than half during a six-hour period. Before the Waldo Canyon Fire was fully contained, 347 homes and other structures had been destroyed and many others had been damaged. Tragically, two individuals lost their lives as a result of the fire.
June 2010	A wildfire burned 700 acres within a rural area about 14 miles northwest of Cañon City and just north-northeast of the Royal Gorge Bridge and Park area. The area was evacuated, and the park and nearby highways were closed until the blaze was contained.
Early March 2009	A fire on Fort Carson (U.S. Army) burned more than 6,500 acres. The fire jumped the post’s eastern fence, threatening buildings and forcing evacuations from an area between Fort Carson and Interstate 25.
Mid-February 2009	Two grass fires burned 30 acres south of Colorado Springs but luckily did not threaten residential areas.

TABLE 11-2
REGIONAL WILDFIRE EVENTS

INCIDENT DATE	WILDFIRE INCIDENT DESCRIPTION
Late January 2009	The Orchard Canyon Fire burned 131 acres on Fort Carson on the south side of Colorado Springs.
Mid-August 2008	A fire near Fort Carson burned 100 acres.
April 2008	A large fire burned nearly 9,000 acres and caused the evacuations of 700 people south of Colorado Springs and west of SH115. This fire claimed the life of one firefighter. Firefighters were aided by an opportune spring snowstorm.
Fall 2007	A wildfire burned in Manitou Springs, just south of U.S. highway 24. The fire burned more than 80 acres, threatened homes, closed roads, and forced the Pikes Peak Cog Railway to cease operations and hikers on Pikes Peak's Barr Trail to be evacuated from the mountain. With the help of military foam retardant drops, the fire was contained before it could reach the more populated areas of the city.
September 2002	The Hayman fire emphasized the need for a management plan for wildfire evacuations within the City of Colorado Springs. This fire is the largest in Colorado's history. It impacted four counties, burning more than 138,000 acres immediately to the west and north of the Colorado Springs area. Hundreds of forestry officials and firefighters fought the fast-moving fire, which caused nearly \$40 million in damages, burned 600 structures (including 133 homes), and forced the evacuation of 5,340 people. Before the Hayman Fire, wildfire incidence had primarily affected rural areas. However, the wildfires described above signal a change in this pattern due to drought conditions, which produce extremely dry vegetation (fuel availability), placing Colorado's urban areas increasingly at risk from wildfires.

FIGURE 11-2A
COLORADO SPRINGS WILDFIRE HAZARD DISTRICTS/
NEIGHBORHOODS

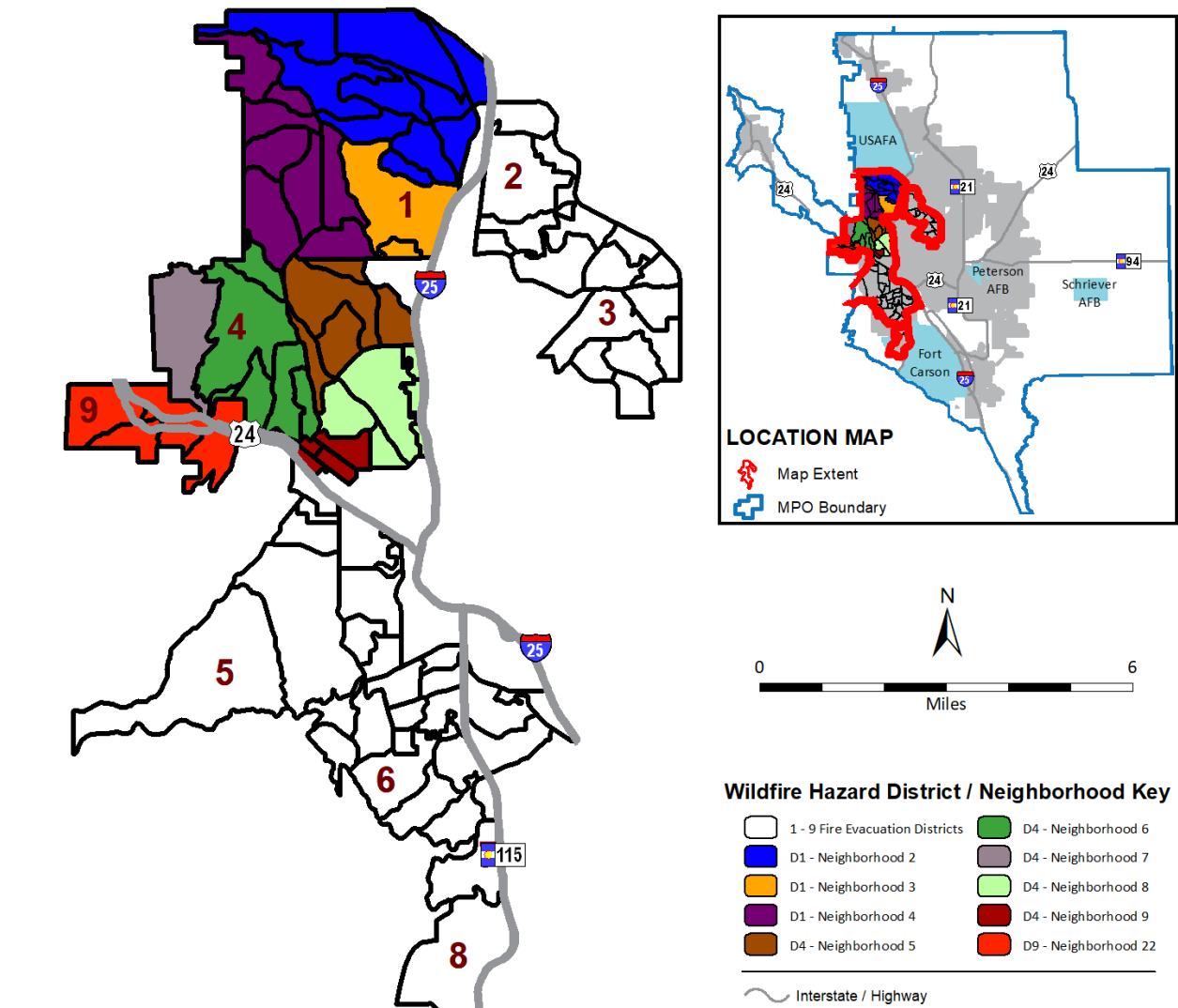
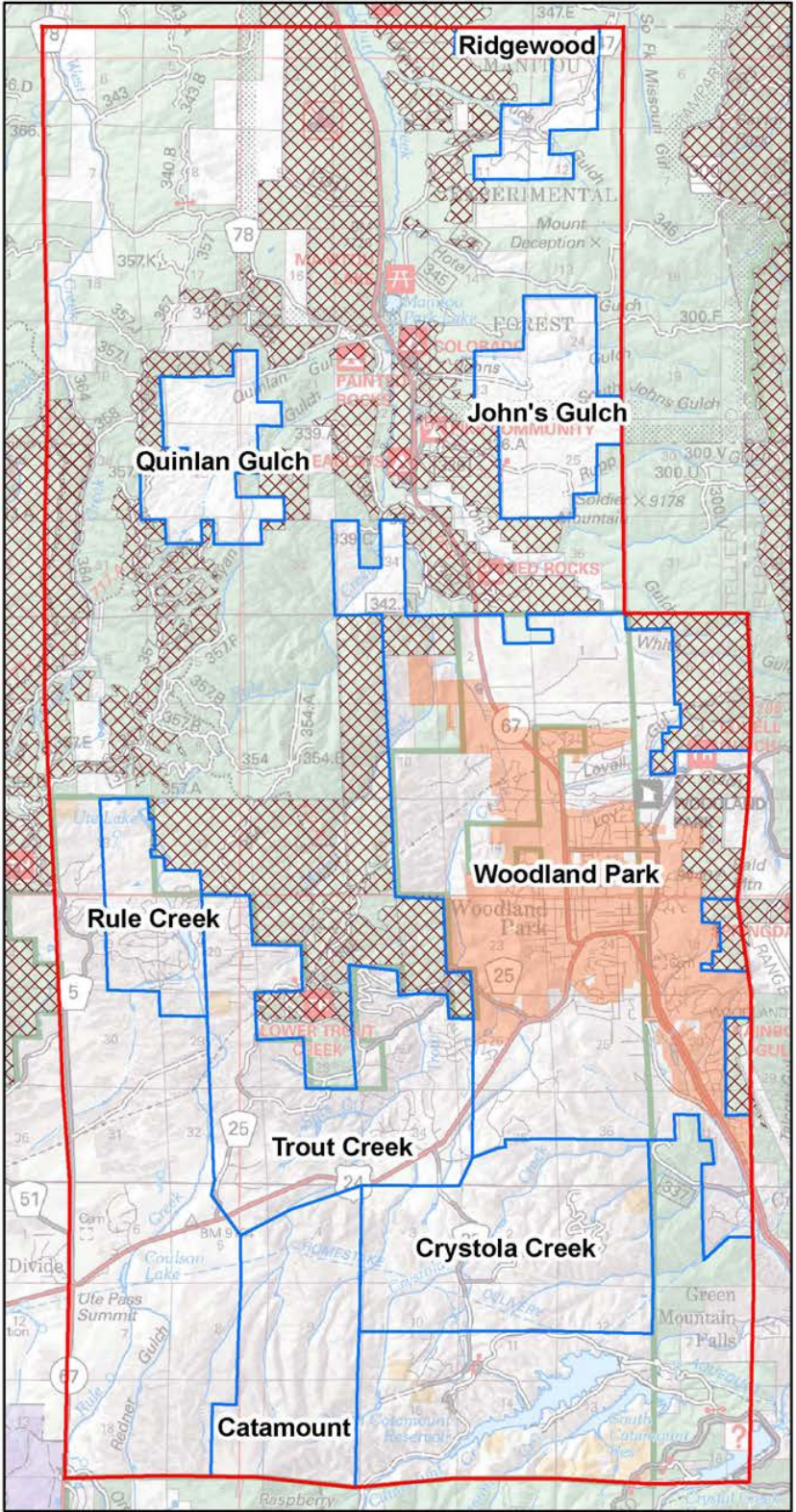


FIGURE 11-2B
WOODLAND PARK WILDFIRE HAZARD PRIORITY ZONES

WPHFI
Non-Federal
Land Priority
Zones

2010



MOUNTAIN METROPOLITAN TRANSIT SYSTEM

In emergencies, Mountain Metropolitan Transit is a provider of resources. By law, an emergency management director has the authority within 72 hours of an incident to commandeer local transit vehicles to aid in response and recovery operations. Mountain Metropolitan Transit dispatchers and managers are trained in emergency response and have been involved with many emergency situations over recent years.

KEY TRANSPORTATION ASSETS

Key transportation system assets in the PPACG Planning Area include:

- Interstate Highway System
- National Highway System Routes
- Strategic Highway Network Routes, the road system deemed necessary for emergency mobilization and peacetime movement of heavy armor, fuel, ammunition, repair parts, food, and other commodities to support U.S. military operations of the region's five installations
- Transit system, particularly important relative to its potential contribution to the evacuation of areas
- Colorado Springs Airport
- The BNSF Rail Line Corridor

Most of these facilities are linear in nature, and while risks exist across these networks due to a potential incident, there is built-in redundancy from the supporting network of state, county, and city roadways that can serve as alternate routes. However, there are elements of these networks, such as key bridges, that, if damaged, would have a more significant effect on the operation of the system.

An assessment to identify potentially important bridge facilities should be carried out. The key criteria should include:

- Casualty risk
- Economic disruption
- Military support
- Emergency relief

RESPONSIBLE AGENCIES FOR HIGHWAY SECURITY

Agencies primarily responsible for major highway security in the Colorado Springs metropolitan area include the Colorado State Patrol and local law enforcement. Effective coordination and communication among these agencies is crucial. Security is provided through routine road patrols, maintaining the traffic management/operations center, flight patrols, and crash and criminal investigations.

The joint City of Colorado Springs and CDOT Traffic Operations Center is located near downtown Colorado Springs. The Traffic Operations Center uses Intelligent Transportation Systems (ITS) technology, including electronic message signs, a traveler information hotline, and video surveillance cameras all of which have been enhanced in the past five years along highways 24, 94, and 115. Traffic management information is streamed directly to the CDOT district office for real-time monitoring.

INTERMODAL SECURITY

Intermodal transportation security is developed and implemented by the Transportation Security Administration. The TSA's management strategy focuses first on identifying areas of high risk and then establishing baseline security standards to address those risks.

FREIGHT TRUCKING

FREIGHT TRUCKING OVERVIEW

The Colorado State Patrol and the county sheriff are primarily responsible for providing security on the regional truck-freight network. Freight security initiatives include:

- State permitting for haulers
- Mandatory roadside freight check-points
- Commercial operator vehicle requirements
- Restricted travel times
- Specific restrictions for hazardous material haulers
- Background checks on transporters
- Carrier safety ratings and assessments
- Preferred hazardous material routing
- Safety audits and surveys
- A security training program

TSA TRUCKING BASELINE STANDARDS

The TSA has been working closely with a number of chemical shippers to develop a series of baseline security standards for both Toxic Inhalation Hazard and hazardous chemicals of concern. Those standards will address specific areas such as vehicle tracking, vehicle attendance, vehicle alarm systems, truck cab access controls, locking fifth wheel on tank trailers, and security route and stop areas.

AVIATION

AVIATION OVERVIEW

The Colorado Springs Municipal Airport is owned and operated by the City of Colorado Springs. The Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems classifies the Colorado Springs Airport as a primary commercial-service airport.

The Transportation Security Agency (TSA) uses a multi-layered, high-tech, industry-cooperative approach including canine teams, TSA and airline inspectors, and physical screening of a sizable portion of air cargo. TSA also is responsible for background checks, specifically on cargo employees. TSA is partnering with industry to increase security awareness, so that individuals are empowered to detect, deter, and report potential or actual security threats.

Security measures installed at the Colorado Springs Airport include monitored surveillance of airport property by airport security, video surveillance cameras, fenced grounds, luggage and passenger screening, and the Aircraft Rescue and Fire-Fighting Unit.

TSA AIR CARGO STRATEGIC PLAN

TSA regulations require airport and aircraft operators, foreign air carriers, and indirect air carriers to implement security measures in the air-cargo supply chain. Like other elements of the aviation system, air cargo presents a potential risk to air travel and simultaneously underpins the economic value of the nation's supply chain. These requirements are to:

- Provide for screening of all property, cargo, carry-on and checked baggage, and other articles that will be carried aboard a passenger aircraft operated by a domestic or foreign air carrier; and
- Establish a system to screen, inspect, or otherwise ensure the security of freight that is to be transported in all cargo aircraft.

The objectives of these requirements are to address two critical risks in the air cargo environment:

- The hostile takeover of an all-cargo aircraft leading to its use as a weapon; and
- The use of cargo to introduce an explosive device onboard a passenger aircraft.

The TSA:

- Screens all cargo shipments in order to determine their level of relative risk;
- Works with industry and federal partners to ensure that 100 percent of items that are determined to be of elevated risk are inspected;
- Develops and ensures that new information and technology are deployed; and
- Implements operational and regulatory programs that support enhanced security measures.

RAIL

In the United States, an estimated 40 percent of inter-city freight transport occurs by rail, including half of the nation's hazardous materials. The rail line through the Pikes Peak region is a potential route for many types of hazardous material. Improved security elements for rail facilities within the PPACG region could include:

- Repairing gaps in fencing to provide more control around the perimeter of rail facilities;
- Improving lighting, both to deter terrorists and improve facility observation;
- Installing closed-circuit television to provide stationmasters and security personnel with better visibility;
- Training of personnel and passengers to report suspicious behavior and to improve readiness for evacuation and emergency actions;
- Using public communication strategies to; advise on threats, service disruptions, or the availability of alternate routes and transportation methods; and
- Developing policies and procedures for dealing with hoaxes and false alarms so that these would not unduly burden rail operations.

The rail corridor that travels through the Pikes Peak region is heavily used and suffers from a lack of alternative routes. Attacks on critical freight nodes or functions could, therefore, create substantial bottlenecks and throughput pressures.

TSA FREIGHT RAIL BASELINE STANDARDS

The highest potential risk in rail is posed by unattended toxic-inhalation-hazard railcars in high-threat urban areas. That risk factor takes into account car hours, the population of urban areas, and the proximity to residential and commercial structures. The TSA identified 24 focus areas as security action items for the rail industry to begin to address. The action items focus on:

- Security awareness training
- Security-focused inspections
- Suspicious activity reporting
- Control of sensitive information
- Employee identification

RAIL TRANSPORT OF BAKKEN CRUDE OIL BY RAIL

A series of petroleum crude oil railroad accidents, beginning in July 2013, prompted the United States Department of Transportation to issue an Emergency Restriction/Prohibition Order [49 U.S.C. 5121(d)]. The Emergency Order requires that each railroad carrier notify the State Emergency Response Commission when and where it will operate trains transporting 1,000,000 gallons or more of Bakken crude oil.

HAZARDOUS MATERIALS RESPONSE PROGRAM

There are five Chemical Response Teams in the Pikes Peak region that provide support for each other, housed within the Colorado Springs Fire Department, the El Paso County Sheriff, in Teller County, at Peterson Air Force Base, and at Fort Carson.

PIKES PEAK AREA COMMUNICATIONS NETWORK

Communication resources are critical to any incident response effort. An 800MHz trunked digital radio system is deployed by all governments in El Paso and Teller counties. Over the next few years, the system may be expanded into the 900 MHz range in order to allow nongovernmental entities access to emergency communications. Another important communication tool recently deployed by the City of Colorado Springs is the Geocast automatic notification system, which can send 2,800 one-minute messages per hour in standard mode and 11,000 in full evacuation mode.

EMERGENCY ALERT SYSTEM

The Emergency Alert System is an all-hazard warning tool used whenever an emergency requires quick dissemination of information that affects a large percentage of the population. The system is a voluntary service provided by local and regional broadcasters and cable-television operators. Federal Communications Commission regulations only mandate its use for national emergencies. Types of messages that can be distributed by an administrative message through the EAS can include:

- Location of displaced persons
- Location of the evacuated elderly
- Location of school children
- Location of health/med centers
- Location of feeding centers
- How to get debris clearance
- Projected road openings
- How to get public assistance

CDOT-ENHANCED UTE PASS EMERGENCY COMMUNICATIONS

During the summer of 2013, flash flooding occurred along the US 24 Ute Pass corridor and within the adjacent communities, including the City of Manitou Springs. The flooding produced extensive property damage. Motorists were stranded and two people were killed. In the wake of the flash flood events, CDOT Region 2 implemented enhanced communications for flash flooding that include:

- Use of electronic sign boards to warn of flooding;
- An email/text alert system that notifies motorists, communities and others of road conditions, closures and openings, accidents and other impacts to US 24;
- A US 24 webpage (www.coloradodot.info/projects/us24utepass) that includes frequently-asked questions, construction project information, etc.;
- 2014 construction of an extra-large box culvert under US 24 into Manitou Springs to help control mudslides and flooding; and
- 2014 construction of a spillway on US 24 near Cascade.



A freight train with orange and yellow locomotives is traveling through a dry, hilly landscape. The train is moving from left to right, and the locomotives are pulling several freight cars. The background shows rolling hills and some trees with yellow leaves, suggesting an autumn setting. The train is on a set of tracks that curve slightly to the right.

CHAPTER 12

FREIGHT AND COMMODITY FLOWS

As the nation has grown, so has the freight transportation industry. Freight transportation is an essential part of development, supporting population expansion and economic activity, enabling dramatic growth and incorporating multiple components that employ millions.

As competition grows in today's global marketplace, economic rewards will be reaped by regions that actively plan for and pursue a seamless and dynamic transportation network. A stated goal of the PPACG regional transportation plan is to "improve economic vitality and freight movement in the region by enhancing the transportation system." This goal is among the top of PPACG's transportation planning goals, and is consistent with the generally accepted understanding that cost-effective freight movement is a vital component of economic competitiveness.

Freight transportation is an essential part of the United States' development, supporting population expansion, encouraging economic activity, enabling dramatic national growth, and incorporating multiple components that employ millions. The Colorado Springs area serves as a vital link in the regional, statewide, and national transportation system, providing a hub for freight distribution via air, rail, and truck industries that directly impact the Pikes Peak regional economy. The 2045 Regional Transportation Plan represents a comprehensive effort to develop the region's multimodal transportation network; however, additional effort is required to strengthen the economic competitiveness and attractiveness of the region. Since many of these planning elements involve private sector entities, their participation in the region's planning process is encouraged.

Understanding demographic and economic trends is critical when considering long term transportation infrastructure investment priorities. As the population continues to grow and employment centers develop and change, freight transportation networks must also develop and adapt to new system demands. This chapter discusses, in general terms, the national and state picture and PPACG's long range transportation plan's freight and commodity flow vision.

The most important operational improvement that can be made for truck freight movement is maintaining or improving the capacity for operations along the key truck routes within the Pikes Peak region. Opportunities for capacity improvement include addressing gaps in the existing roadway network and eliminating bottlenecks through congestion management techniques, such as implementing intelligent transportation systems and real-time system information programs. More information on these can be found in Chapter 8: TSMO.

FREIGHT MOVEMENT

UNITED STATES FREIGHT MOVEMENT

According to the U.S. Census Bureau, the U.S. population grew 6% between 2010 and 2018, to an estimated 327.2 million people. Population growth in the West was even more significant, experiencing 8.4% growth over that same period. The U.S. economy also expanded during those years, with gross domestic product (GDP) increasing 37% in real terms (inflation adjusted). In 2015, the nation's transportation system moved an average of 48 million tons of freight each day, valued at more than 17 trillion dollars for the entire year. In 2020, freight tonnage movement is expected to increase to 55 million daily tons, with an estimated average value of \$55 million a day. Furthermore, the value of freight moved is expected to increase at a greater rate than the tonnage transported, with freight value increasing from \$1,017 per ton in 2015 to \$1,377 per ton in 2040 when controlled for inflation.

The majority of freight in the region, state, and nation, is transported by truck. At the national level it is approximately 60-70%, regardless of whether the share of total freight is based on weight or value. In Colorado and the Pikes Peak region, the weight of freight (tonnage) moved by truck is 55% and 99%, respectively. Rail is the second most significant transportation mode across the nation, with a 23% share of tonnage moved. Rail also ranks second in the Pikes Peak region in terms of tonnage moved, though it is an extremely small share, less than one-half of one percent. Pipeline ranks second in the state, moving 29% of tonnage. In terms of value, air freight holds the second highest value in the Pikes Peak region at 7.3 percent. Table 12-1 presents a comparison of value and tonnage transported by different modes through both the State of Colorado and the PPACG region.

The Colorado primary freight network is presented in Figure 12-1. This map was compiled by the FHWA and identifies the locations of the state's airports, railroads, roadways, and other facilities. Also reflected in Figure 12-1 is Interstate 25 serving as the principal route through the PPACG region, and by the relative share of roadways compared to airports and other transportation facilities, trucks being the dominant freight movers along the Front Range. A more detailed view of the primary state highway freight network routes in the Pikes Peak region is shown in Figure 12-2. It should be noted that the I-25 primary freight network stops at the south side of the PPACG region, while the comprehensive network is the entire length.

CanAm HIGHWAY

The CanAm Highway, which runs from Mexico to Canada via I-25 and US 85, forms the spine of Colorado and Colorado Springs' transportation systems. There have been considerable efforts over the years to ensure that the Colorado portion of this corridor continues to be able to meet its demands in terms of capacity and safety. Currently, the I-25 South Gap Project is underway, aimed at expanding the number of lanes between the Pikes Peak region and Castle Rock. Information about the South Gap Project can be found [here](#).

TABLE 12-1
COMPARISON OF VALUE AND TONNAGE TRANSPORTED

BY WEIGHT (TONS)

MODE	STATE 2015	STATE 2045	PERCENT CHANGE	PPACG 2015	PPACG 2045	PERCENT CHANGE
Air	63,305	122,600	94%	14,081	22,215	58%
Other	9,397,883	13,453,100	43%	5,477	24,247	343%
Pipeline	115,392,859	224,685,800	95%	0	0	0%
Rail	50,385,269	41,377,000	-18%	75,509	147,666	96%
Truck	216,319,196	279,071,300	29%	18,745,819	32,069,465	71%

BY VALUE (MILLIONS)

MODE	STATE 2015	STATE 2045	PERCENT CHANGE	PPACG 2015	PPACG 2045	PERCENT CHANGE
Air	\$4,040,526.90	\$8,461,423.79	109%	\$1,087.94	\$2,055.31	89%
Other	\$54,898,826.60	\$100,373,606.20	83%	\$99.77	\$449.78	351%
Pipeline	\$31,467,265.70	\$56,172,784.60	79%	\$0.00	\$0.00	0%
Rail	\$6,306,867.70	\$8,166,343.60	29%	\$58.70	\$126.39	115%
Truck	\$199,420,989.20	\$320,145,693.15	61%	\$13,736.56	\$24,436.90	78%

FREIGHT MOVEMENT IN THE PPACG REGION

The movement of freight in the PPACG region happens on commercial vehicles or trucks. A commercial vehicle is defined as any vehicle with a gross vehicle weight of over 10,000 pounds and used primarily for transporting freight. Virtually every type and quantity of freight in the region is moved using commercial vehicles. Certain sectors of our economy, including agriculture, oil and gas distribution, depend heavily on commercial vehicles for both interstate and intrastate movement. With this reliance on commercial vehicles, it is essential that the region provide an adequate roadway system to ensure the efficient transportation of goods.

Within the City of Colorado Springs, truck traffic is limited to specific truck routes adopted by the City of Colorado Springs City Council. El Paso County does not specifically designate truck routes; rather, the county allows truck traffic on all roadways within the county except those roads that have weight-restricted bridges. Other governmental agencies in the Pikes Peak region also typically follow the same policy as El Paso County. Figure 12-2 shows truck routes in the Pikes Peak region.

To better understand truck usage of roadways in the Pikes Peak region, CDOT's roads were examined as a "first stop" in studying freight mobility and truck use in El Paso and Teller Counties. These studies focused on seven CDOT highways, both federal and state roads, in the region and include Interstate 25 and US 24 and State Highways 21, 67, 85, 94, and 115. Examination of truck data suggests that the truck share of traffic in the Pikes Peak region ranges from a low of 1% to a high of 7.5% of vehicles using the roads. In addition, there is a clear urban/rural dividing line with urban roadways carrying greater total traffic, but with a lower truck volumes, and rural roadways carrying lower total traffic, but with a higher percentage volume of trucks.

Other distinctions exist, such as the more rural the roadway in the Pikes Peak region, the higher the percentage of Multiple Unit Trucks (MUTs) using the roadway as a proportion of all trucks in the region. Geography also impacts the type of vehicle used; for

example, the more mountainous the terrain, the higher the usage of Single Unit Trucks (SUT) instead of MUTs.

To better understand traffic, a rough measure of truck Vehicle Miles Traveled (VMT) was calculated using the sum of segment length and the average truck traffic from the data. Not surprisingly, the highest truck VMT route was I-25 followed by US 24 and SH-21.

KEY TRUCK ROUTES IN THE PIKES PEAK REGION

INTERSTATE 25

Interstate 25 is the federal interstate in the Pikes Peak region, running north/ south for approximately 47 miles (one-way) through the Pikes Peak Metropolitan Area. It is part of the Primary Highway Freight System (PHFS) established in 2018 under the Fixing America's Surface Transportation (FAST) Act. I-25 is the principal freight carrier in the region, and it also has the highest truck-carrying profile.

On average, within the Pikes Peak MPO, the north segment of I-25 carries Average Daily Traffic volumes (ADT) of 106,000 vehicles, with 4.3% of that traffic being trucks. Of those trucks, 67% are Single Unit Trucks (SUTs). The central segments of I-25 carry an ADT volume of 114,000 vehicles, with 3.8% truck traffic. Of those trucks traveling the central segments of I-25, 65% are SUTs. The southern segment of I-25 carries an ADT volume of 44,000 vehicles, with 7.2% being trucks. 66% of the trucks on the southern segments are SUTs. This ADT data reveals a "bulge" in overall traffic and truck freight in the middle of the I-25 corridor where the region has a denser development pattern.

US HIGHWAY 24

US Highway 24 is an east/west corridor. Within the Pikes Peak Metropolitan Area it spans approximately 62.7 miles (one-way) across Teller and El Paso Counties. US 24 west, largely in Teller County, has an ADT of 27,000 vehicles with 6% truck traffic. Of the truck traffic on this segment, almost half (43%) are SUTs. The US 24

TABLE 12-2
TRUCK USAGE OF ROADWAYS IN THE PIKES PEAK REGION

ROADWAY	FROM	TO	MILES	AVERAGE ADT	AVERAGE TRUCK %	AVERAGE SUT	AVERAGE MUT	% SUT
I-25	Monument, CO	Woodmen Rd.	14	106,123	4.3%	3,027	1,494	67%
	Woodmen Rd.	Academy Blvd. (S)	13	113,814	3.8%	2,802	1,481	65%
	Academy Blvd. (S)	El Paso County Line (S)	19	44,092	7.2%	2,082	1,082	66%
US 24	Woodland Park, CO	Manitou Springs, CO	12	28,120	6.3%	838	943	47%
	Manitou Springs, CO	Peterson Road	12	33,681	3.7%	684	558	55%
	Peterson Road	Judge Orr Road	10	17,790	4.0%	234	470	33%
	Judge Orr Road	El Paso County Line (N)	28	4,782	7.4%	76	278	21%
SH 94	Marksheffel Rd.	Peyton Road	9	7,991	3.5%	104	177	37%
	Peyton Road	El Paso County Line (E)	26	2,672	5.6%	32	118	21%
US 83	El Paso County Line (N)	Powers Blvd.	10	11,708	4.8%	179	381	32%
SH 21	US 83	Platte Avenue	13	62,279	1.0%	488	139	78%
	Platte Avenue	SH 16	10	41,167	1.9%	595	184	76%
US 85	B Street at I-25	Charter Oak Ranch Dr.	9	20,153	4.3%	432	442	49%
SH 115	Teller County Line (W)	Nevada Avenue	19	23,686	3.9%	561	361	61%
SH 67	Teller County Line (N)	Woodland Park, CO	12	5,156	2.3%	63	54	54%
	Divide, CO	Victor, CO	24	3,898	2.1%	44	38	54%

central segment (primarily within the City of Colorado Springs) has an ADT of 38,000 vehicles, with 2.4% trucks and 75% of the trucks are SUTs. The US 24 east segment has an ADT of approximately 14,000 vehicles with 5% truck traffic and 31% of the trucks are SUTs.

STATE HIGHWAY 94

SH 94 is an east/west corridor extending from United States Highway 24 east for 35.5 miles (one-way) in the Pikes Peak Metropolitan Area. The western-most segment of this highway has a volume of 8,000 ADT with 3.7% trucks; and 37% of the truck traffic is SUTs. The easternmost segment is less traveled, with a volume of 1,800 ADT and 9.3% truck traffic. Of the truck traffic, 16% are SUTs.

STATE HIGHWAY 21 (POWERS BOULEVARD)

SH 21, locally identified as Powers Boulevard, is a north-south highway approximately 33 miles long within the PPACG region. The northernmost segment has a volume of 63,000 ADT with 1% truck traffic, and 77% of the trucks identified as SUTs. The central segment has approximately 62,000 ADT with 1.3% truck traffic and 77% of these trucks being SUTs. The southern segment of the SH 21 corridor is more rural and has a commensurably lower volume of 20,000 ADT with 2% truck traffic, while approximately 87% of the trucks are SUTs.

US HIGHWAY 85

US Highway 85 runs north-south for approximately 9 miles from B Street in the City of Fountain to the I-25 interchange in the town of Stratmoor. The road segments carry a traffic volume of 20,000 ADT, with 4.4% being trucks, and 50% of those trucks being SUTs.

STATE HIGHWAY 115

SH 115 runs southwest-northeast for about 19 miles from the Teller County line to Nevada Avenue in Colorado Springs. An average of 24,000 vehicles per day uses these segments, 6.3% being trucks. Of the truck traffic, approximately 62% are SUTs.

STATE HIGHWAY 67

State Highway 67 is a north-south road from the northern Teller County line south through Woodland Park for approximately 36 miles to the Fremont County line. The northern-most segment of SH 67 has 5,200 ADT, with 2.3% truck traffic and 46% of those trucks being SUTs. The southern segment has a traffic volume of 5,200 ADT with 2% truck traffic and 58% of all truck are SUTs.

8TH STREET

8th Street extends south from US 24 two miles to Cheyenne Rd. At its northern end it has 24,500 ADT, with 12% truck traffic and 99% of those trucks being single-unit trucks.

ACADEMY BOULEVARD

Academy Blvd. runs primarily north-south for about 17 miles from SH 115 north to I-25. East of I-25 at the southern end, Academy Blvd. has 53,000 ADT, with 2% truck traffic and 70% of those trucks being single-unit trucks. North of Woodmen Rd., Academy Blvd. has 44,000 ADT, with 1% truck traffic and 60% of those trucks being single-unit trucks. In the middle, north of Platte Ave., it has 53,000 ADT, with 1% truck traffic and 67% of those trucks being single-unit trucks.

AIRPORT ROAD

Airport Road extends east from Union Blvd. almost four miles to Powers Blvd. West of Powers Blvd., it has 13,500 ADT, with 2.4% truck traffic and 65% of those trucks being single-unit trucks. East of Academy Blvd. it has 15,400 ADT, with 3% truck traffic and 62% of those trucks being single-unit trucks.

AUSTIN BLUFFS PARKWAY

Austin Bluffs Parkway extends east from I-25 a little over four miles to Academy Blvd. where it turns north for another five miles to Woodmen Rd. At I-25, Austin Bluffs Parkway has 47,000 ADT, with 1% truck traffic and 80% of those trucks being single-unit trucks. East of Academy Blvd, Austin Bluffs Parkway has a traffic volume

of 26,500 ADT with 1.5% truck traffic and 66% of all trucks being single-unit trucks.

BARNES ROAD

Barnes Road extends east from Austin Bluffs Parkway almost four miles to Marksheffel Road. West of Powers Blvd. it has 21,500 ADT, with 3.5% truck traffic and 57% of those trucks being single-unit trucks.

BRADLEY ROAD

Bradley Road is a Defense Access Roadway that extends almost 12 miles eastward from Academy Blvd. on the south side of Colorado Springs, crossing Powers Blvd on the way to its terminus at Schriever AFB, and is used for military freight deliveries. West of Powers Blvd., Bradley Road has a traffic volume of 13,000 ADT, with 2% truck traffic, and 53% of those being single-unit trucks. East of Powers Blvd., next to Schriever AFB, the ADT drops to 3180, with 3% truck traffic, 18% of which are single-unit trucks.

BRIARGATE PARKWAY

Briargate Parkway extends east from I-25 almost four miles to Powers Blvd. West of Powers Blvd. it has 20,000 ADT, with 1% truck traffic and 77% of those trucks being single-unit trucks.

GARDEN OF THE GODS ROAD

Austin Bluffs Parkway extends west from I-25 a little over two miles to 30st St. At I-25 Garden of the Gods Rd. has 55,700 ADT, with 1% truck traffic and 63% of those trucks being single-unit trucks.

NORTH CAREFREE CIRCLE

N. Carefree Circle extends east from Academy Blvd. a little over four miles to Marksheffel Rd. East of Academy Blvd. it has 17,000 ADT, with 2.6% truck traffic and 63% of those trucks being single-unit trucks.

CONSTITUTION AVENUE

Constitution Avenue extends east from Paseo Rd. about eight miles to US 24. West of Academy Blvd. it has 16,200 ADT, with 4% truck

traffic and 61% of those trucks being single-unit trucks. West of Marksheffel Rd. it has 13,500 ADT, with 5% truck traffic and 55% of those trucks being single-unit trucks.

HANCOCK EXPRESSWAY

Hancock Expwy. runs primarily north-south from US 24 (Martin Luther King Parkway) south to Bradley Rd, a distance of about five miles. East of Academy Blvd. it has 21,600 ADT, with 6% truck traffic and 51% of those trucks being single-unit trucks.

MARKSHEFFEL ROAD

Marksheffel Road runs primarily north-south from Woodmen Rd. south to Bradley Rd., a distance of about 13 miles. North of Barnes Rd. it has 16,800 ADT, with 3% truck traffic and 49% of those trucks being single-unit trucks. South of Space Village Ave. it has 17,000 ADT, with 5.4% truck traffic and 44% of those trucks being single-unit trucks.

PALMER PARK BOULEVARD

Palmer Park Boulevard extends east from Uintah St. about five and a half miles to Peterson Rd. West of Powers Blvd. it has 22,100 ADT, with 1.4% truck traffic and 60% of those trucks being single-unit trucks. West of Academy Blvd. it has 10,700 ADT, with 3.7% truck traffic and 61% of those trucks being single-unit trucks.

PLATTE AVENUE

Platte Avenue extends east from Cascade Ave. a little under six miles to Powers Blvd. where it becomes US 24. East of Union Blvd. it has 25,000 ADT, with 6% truck traffic and 60% of those trucks being single-unit trucks. West of Powers Blvd. it has 37,000 ADT, with 1.2% truck traffic and 88% of those trucks being single-unit trucks.

UNION BOULEVARD

Union Boulevard runs primarily north-south from Powers Blvd. south to S. Circle Dr., a distance of about 13 miles. West of Powers Blvd. it has 9,000 ADT, with only 0.3% truck traffic and 83% of those trucks being single-unit trucks. North of Platte Ave., it has 24,500

ADT, with 6.8% truck traffic and 56% of those trucks being single-unit trucks.

WOODMEN ROAD

Woodmen Road runs east-west from I-25 to US 24, about 12 miles. East of I-25 it has 55,700 ADT, with 1% truck traffic and 63% of those trucks being single-unit trucks. East of Powers Blvd. it has 29,400 ADT, with 1% truck traffic and 70% of those trucks being single-unit trucks.

STATE AND REGIONAL COMMODITY MOVEMENT

Despite the availability of alternate transportation modes, it is projected that trucks will remain the dominate transportation mode for moving freight throughout Colorado. As shown in Table 12-1, trucks were used to ship approximately 99% of freight tonnage in the Pikes Peak region in 2015, and trucking is expected to continue to be the dominate regional and statewide shipping choice over the next two decades, experiencing a significant increase in tonnage transported by 2045. The value of freight moved by truck through the region in 2045 is expected to increase even more than the tonnage, with 78% projected growth versus 71%, respectively.

Alternative forms of commodity transportation do exist and include rail, pipeline, and air. In terms of the types of commodities shipped nationally, the top rail commodity (based on weight) is coal, representing 34% of all rail freight tonnage transported. Pipeline is another transportation alternative that is similarly dominated by a single commodity; 56% of all pipeline tonnage transported is coal NEC (e.g., coke). Air freight transportation is dominated by electronics and machinery, at 18% and 11%, respectively.

Pipeline in Colorado is also dominated by coal NEC from a value perspective. Top rail imports and exports include coal, cereal grains, and waste metals. For air freight, however, commodities differ somewhat when direction is considered. No freight is

shipped by air between points in Colorado, but printed products, base metals, and meat are some of the top commodities exported from Colorado by air. Freight arriving by air into Colorado is dominated by textiles, chemical products, and manufactured goods.

FREIGHT MOVEMENT IN THE PPACG REGION

To better understand what these overall freight figures encompass, the top commodities transported through the Pikes Peak region were identified, using 2015 data. The figures below identify the region’s top import and export commodities ranked by weight and value. The figures also provide projections for 2045.

EXPORTS

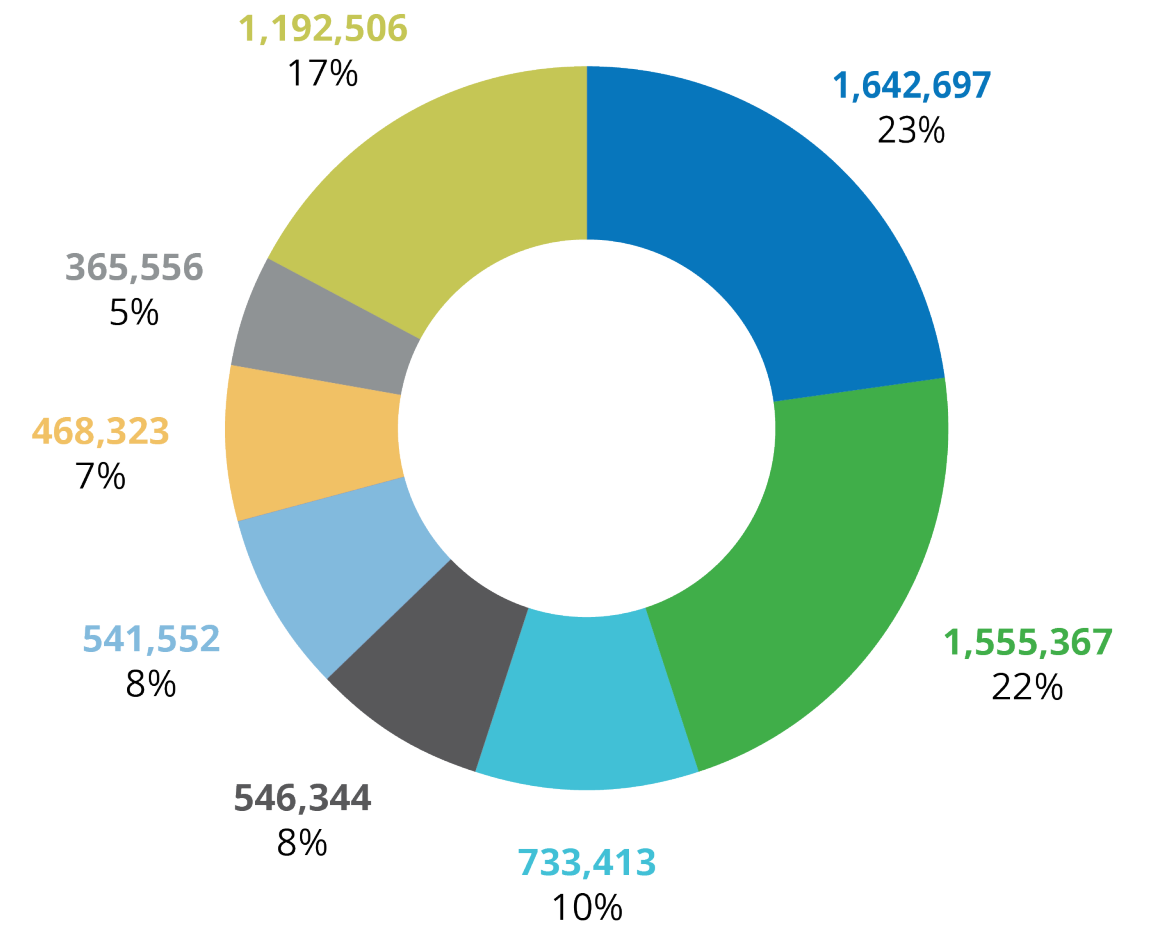
Figure 12-1 identifies waste or scrap, and broken stone, gravel, and sand, as the region’s top commodities in tonnage, representing 55% of all exported freight. Over time, the domination of these commodities is projected to slightly diminish as other commodities account for a larger share of the overall freight weight. For example, concrete products represent 13% of the commodities tonnage exported in 2015. By 2045, these products are expected to be the third-highest tonnage of commodities exported, with a share of 19%.

When analyzed based on value, Figure 12-2 reveals warehouse and distribution exports to account for almost 20% of the freight value exported from the Pikes Peak region. It is estimated that the value share of these exports will decrease to 12% in 2045, while solid state semiconductors will grow to be the second highest export by value at 10% share.

The overall trend for the region’s exports, based on tonnage and value, is the decline of raw construction aggregates as the region’s largest export commodity, while other commodities, such as solid state semiconductors, assume a greater share of the region’s total freight exports. Today, solid state semiconductors represent less

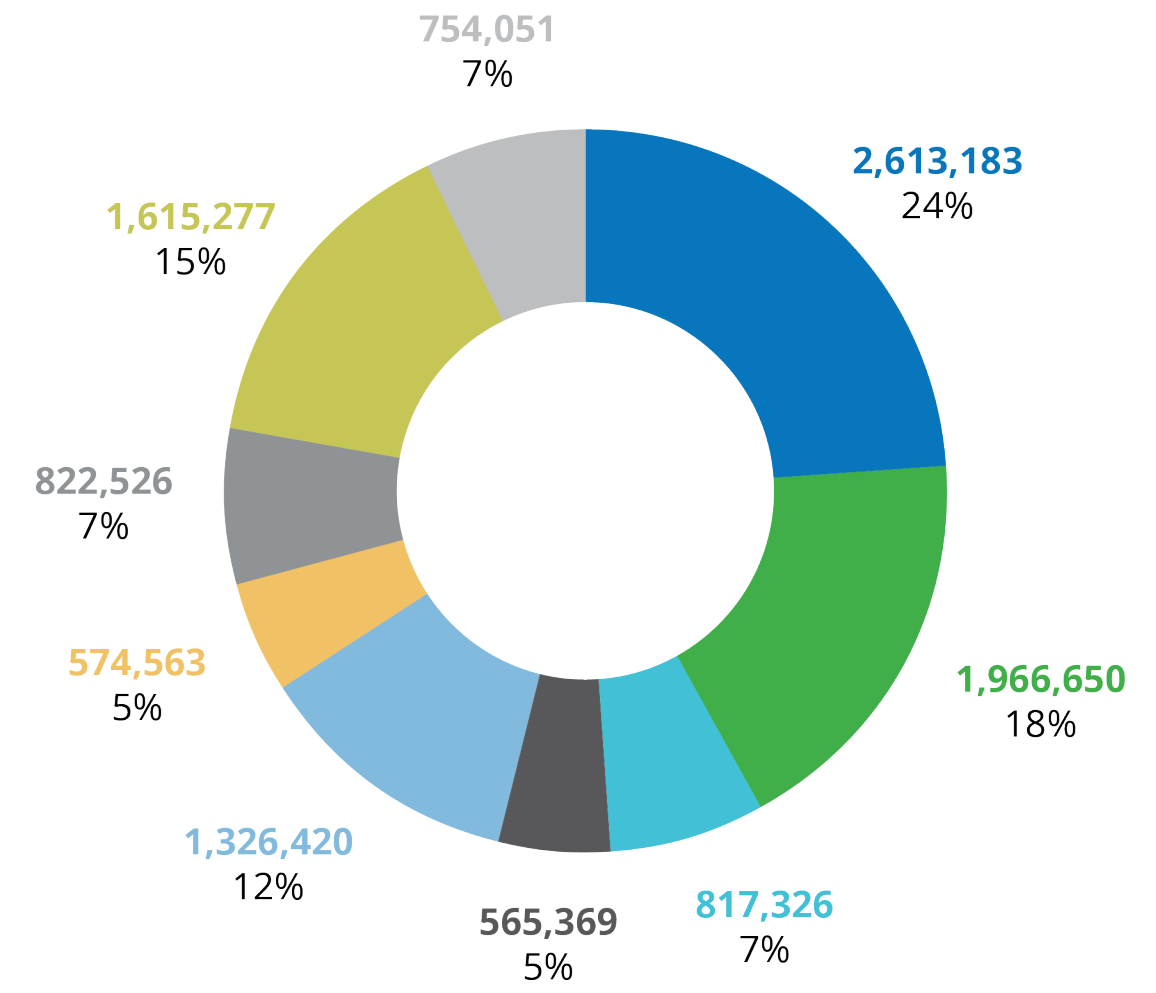
FIGURE 12-1
REGION'S TOP EXPORT COMMODITIES IN TONNAGE

2015 EXPORTS



- Misc Waste or Scrap
- Gravel or Sand
- Warehouse & Distribution Center
- Broken Stone or Riprap
- Ready-mix Concrete, Wet
- Petroleum Refining Products
- Concrete Products
- Other Commodities

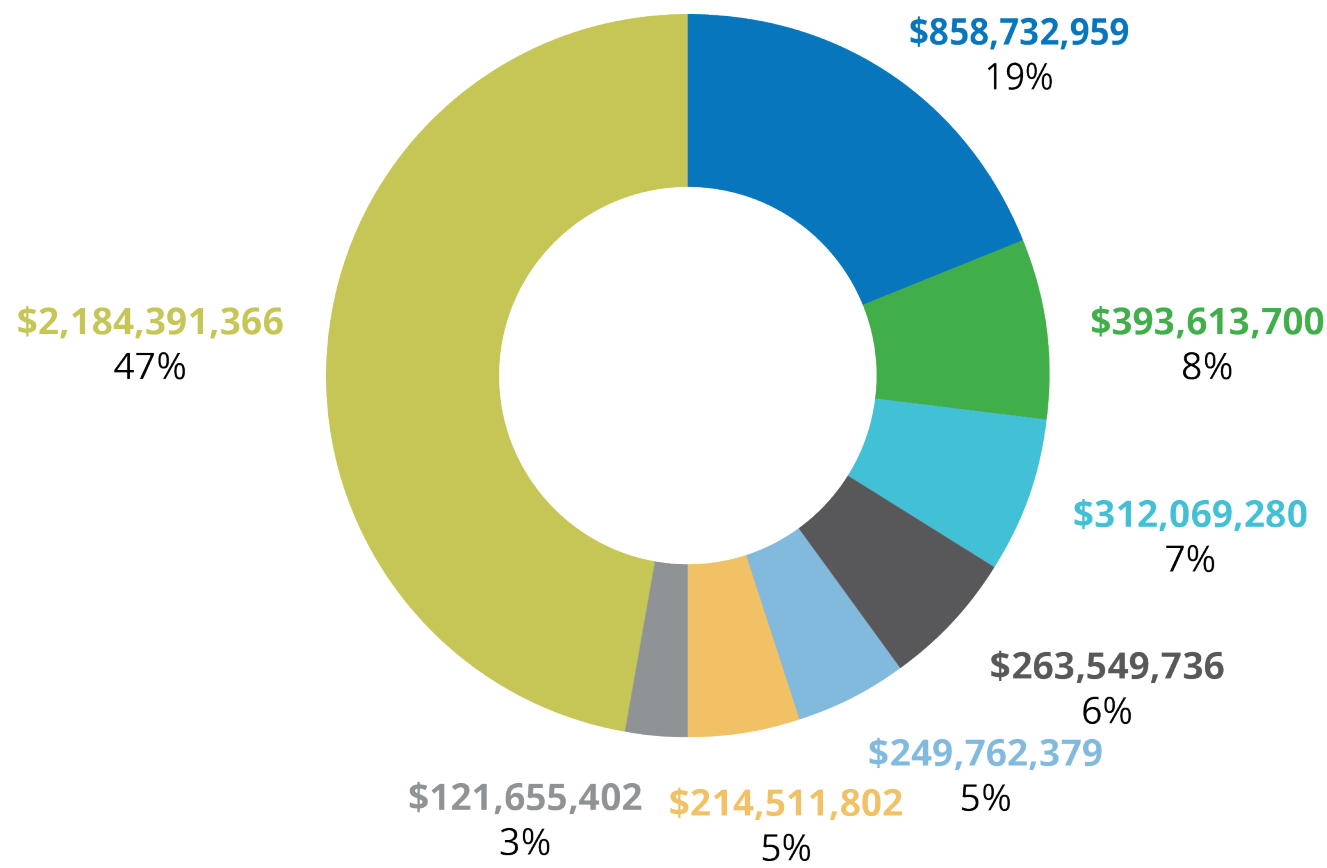
2045 EXPORTS



- Misc Waste or Scrap
- Gravel or Sand
- Warehouse & Distribution Center
- Broken Stone or Riprap
- Ready-mix Concrete, Wet
- Petroleum Refining Products
- Concrete Products
- Other Commodities
- Cut Stone or Products

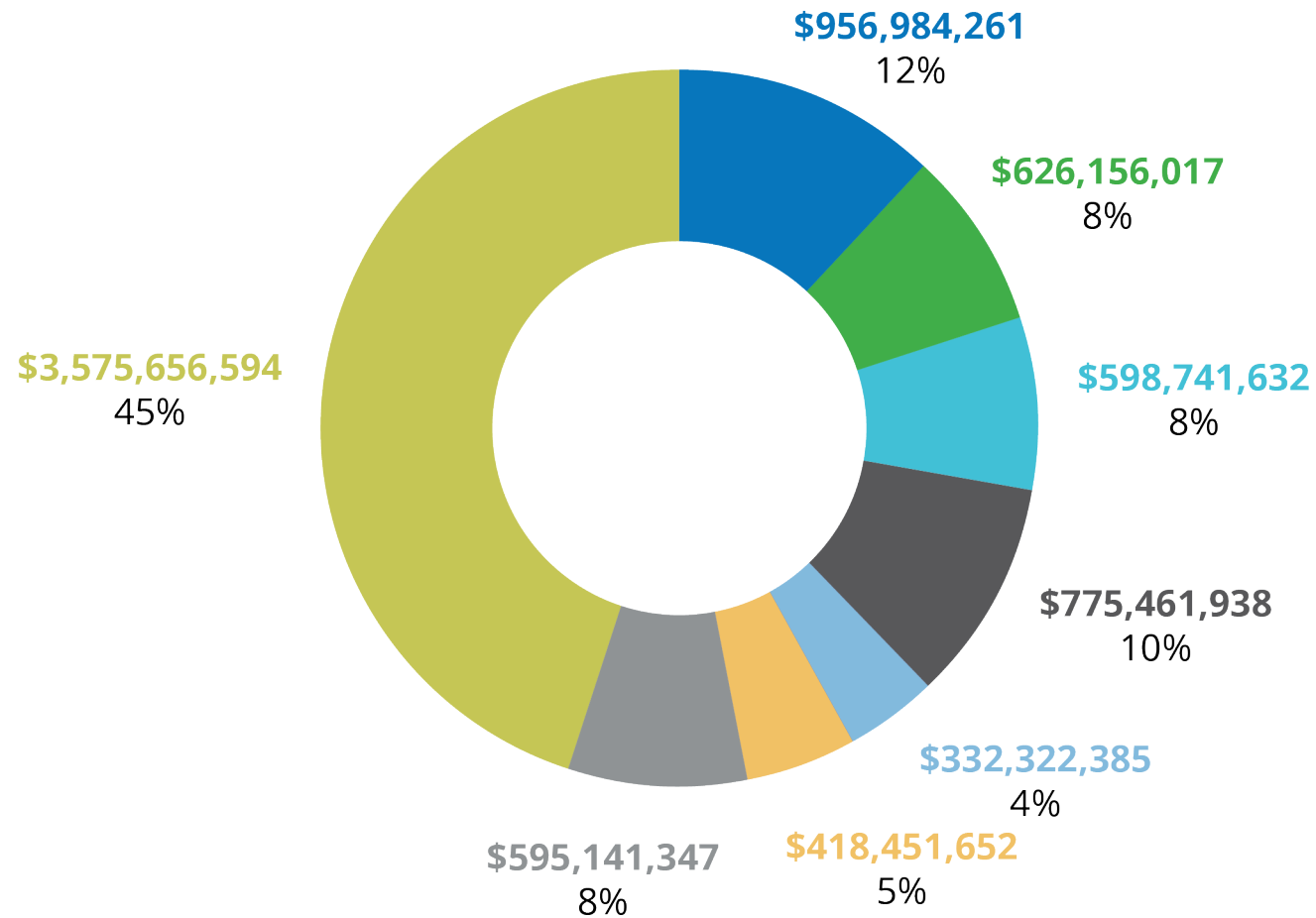
FIGURE 12-2
TOP EXPORT COMMODITIES IN VALUE

2015 EXPORTS



- Warehouse & Distribution Center
- Misc Waste or Scrap
- Gold Ore
- Solid State Semiconducts
- Petroleum Refining Products
- Drugs
- Electronic Data Proc Equipment
- Other Commodities

2045 EXPORTS



- Warehouse & Distribution Center
- Misc Waste or Scrap
- Gold Ore
- Solid State Semiconducts
- Processed Milk
- Drugs
- Electronic Data Proc Equipment
- Other Commodities

than 6% of the region's export value, however, it is expected that the export market for this commodity will grow to represent 10% of the region's total export market by 2045. Concrete products are also likely to represent a greater share of the region's overall export tonnage growing from today's market share of 13% to 19% in 2045.

IMPORTS

Figure 12–3 and Figure 12–5 show the region's top import commodities by weight and value, respectively. Nearly 8 million total tons of goods are imported into the PPACG region every year. Gravel and sand represent the largest share of import tonnage at 25%, and its import volume is expected to increase to 30% of the region's total import tonnage by 2045. Like Colorado, warehouse and distribution center tonnage is also expected to increase its relative importance, reaching 13% of all import tonnage by 2045.

Warehouse and distribution center commodities also account for a relatively larger share of total import value in the region, with 12% share in 2015. Its share of value is expected to remain steady through 2045. Among the top commodities in terms of value, pharmaceuticals, plastic products, and motor vehicles also have larger relative shares of imports to the region. Of these, only pharmaceuticals is expected to increase in value, from 5% to 7% share in 2045. Miscellaneous plastic products are expected to retain their 5% share, while motor vehicles drop to less than 2% share of import value.

The trend of imports into the PPACG region predict continued growth for the products necessary to support construction and increased semiconductor manufacturing, with warehouse and distribution center commodities being one of the top imports by tonnage and value, second only to gravel and sand imports when evaluated by tonnage alone.

Figure 12–5 shows a summary of freight modal shipment shares by weight and value for the PPACG region and the state of Colorado.

FREIGHT MOVEMENT EMPLOYMENT

In addition to the importance of the trucking industry to the overall movement of freight in the state and region, it is also important to note that it is an important component of the employment sector for Colorado residents. According to the Colorado Motor Carriers Association, the trucking industry provided 110,200 Colorado jobs in 2017. In 2018, there were 21,990 heavy and tractor-trailer truck drivers licensed in the state; with an average annual salary of \$46,960.

Like the trucking industry, rail also supports employment in the state. According to the Association of American Railroads, the 14 freight railroads in Colorado employ 2,973 employees with annual wage and benefits averaging \$113,220.

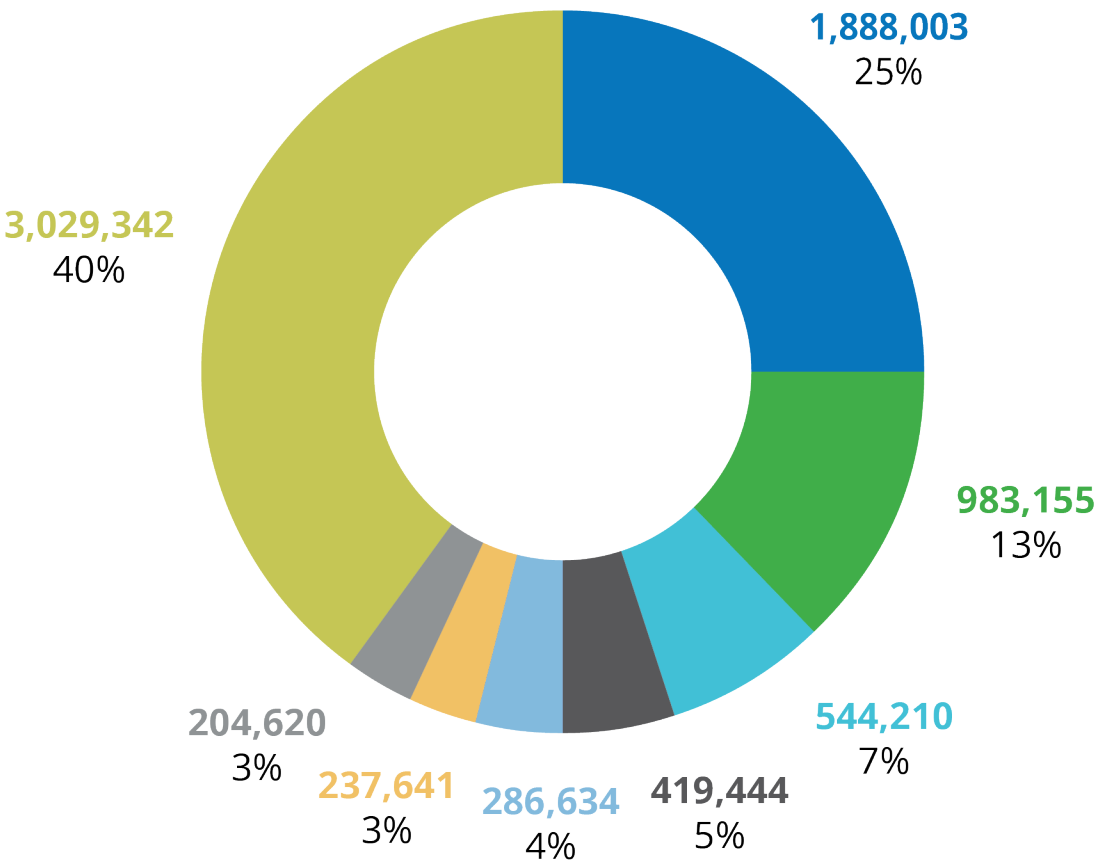
Pipelines also support a number of jobs. Specifically, the Bureau of Labor Statistics (BLS) (May 2018) identifies 3,780 Derrick, Rotary Drill, Service Unit Operators, Oil, Gas, and Mining works in Colorado. The average hourly wage in these industries is \$27.07 and the annual mean wage is \$56,310.

INTERMODAL CONNECTORS

Although there are no intermodal facilities in the Pikes Peak region, several truck terminals and distribution centers do exist and generate concentrated volumes of freight traffic. Intermodalism is the concept that binds all transportation modes together so that people and freight can be transported in the most efficient manner possible. Beyond the basic travel needs of Colorado Springs area residents, there are additional travel considerations for moving freight on rail, truck, and planes. The primary freight connectors of the PPACG region, identified earlier in this chapter, must also support personal inter-regional travel via bus, rail, and plane. Fixed-route transit (bus system) providers and specialized transportation (door-to-door or curb-to-curb) providers, which are discussed in greater detail elsewhere in this plan, also share these freight connection routes. As such, the percentage of freight traffic carried by the road network in the PPACG region is a vital consideration, but one that must be considered alongside the

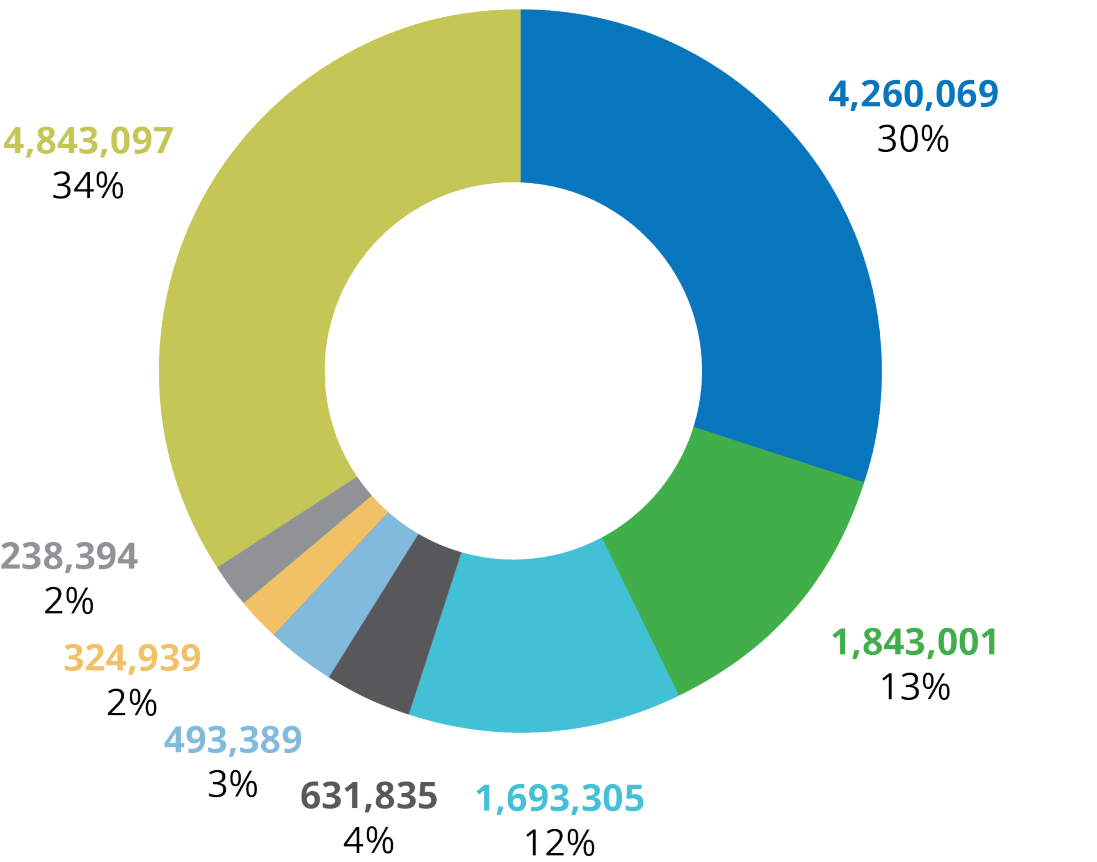
FIGURE 12-3
REGION'S TOP IMPORT COMMODITIES IN TONNAGE

2015 IMPORTS



- Gravel or Sand
- Warehouse & Distribution Center
- Broken Stone or Riprap
- Misc. Field Crops
- Concrete Products
- Petroleum Refining Products
- Asphalt Paving Blocks or Mix
- Other Commodities

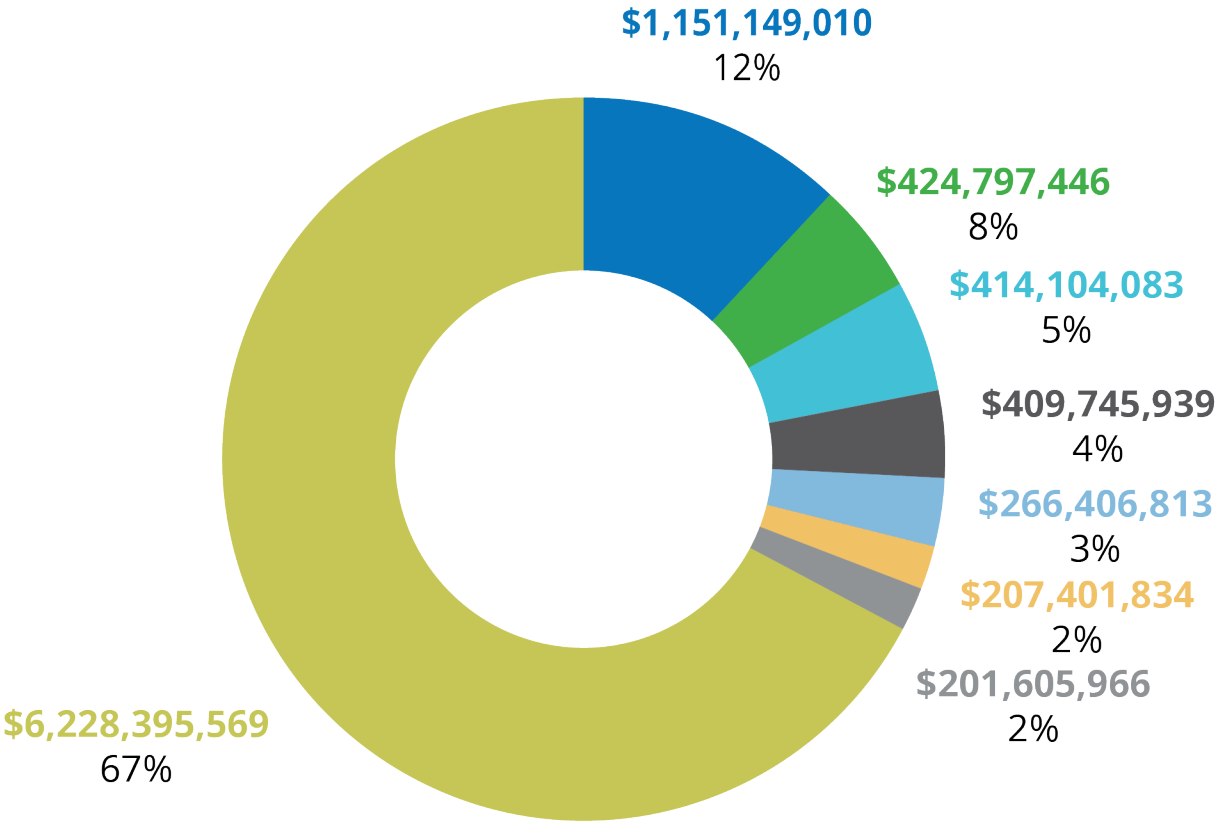
2045 IMPORTS



- Gravel or Sand
- Warehouse & Distribution Center
- Broken Stone or Riprap
- Misc. Field Crops
- Concrete Products
- Dairy Farm Products
- Ready-mix Concrete, Wet
- Other Commodities

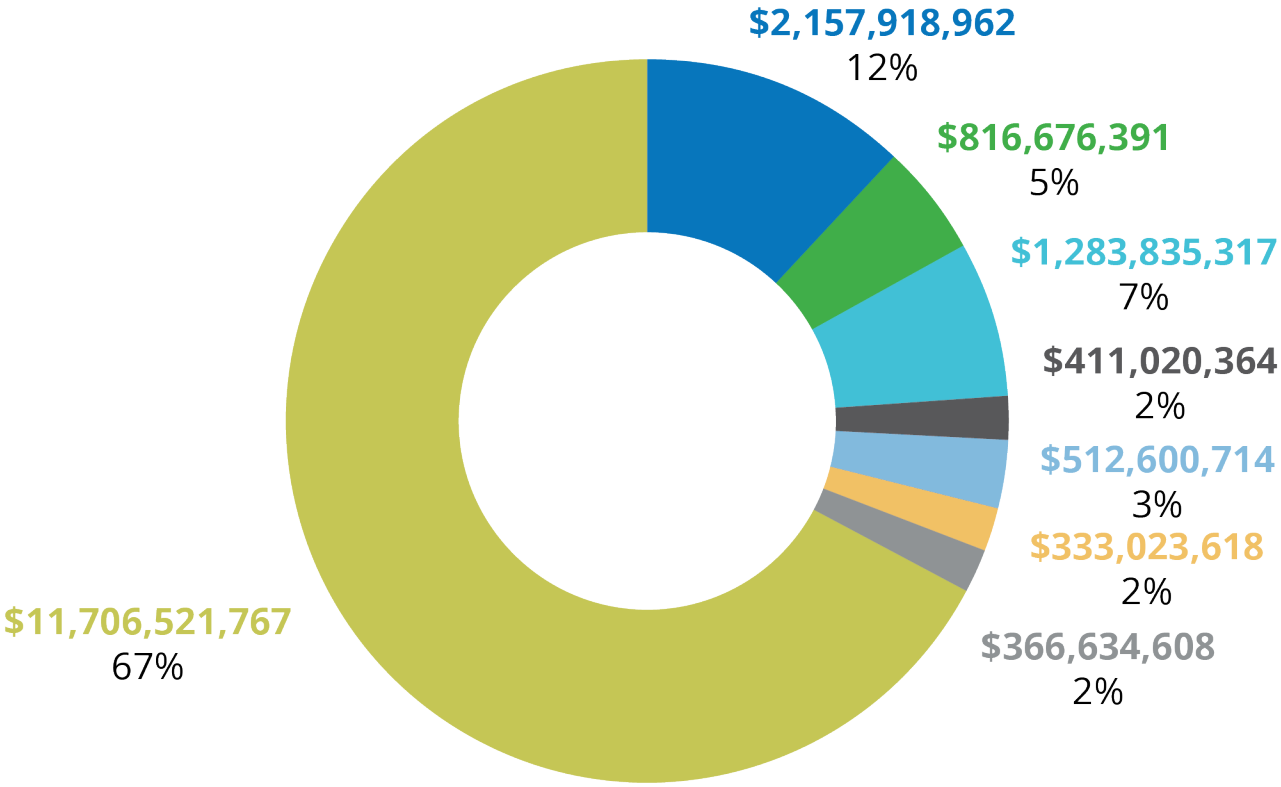
FIGURE 12-4
REGION'S TOP IMPORT COMMODITIES IN VALUE

2015 IMPORTS



- Warehouse & Distribution Center
- Misc Plastic Products
- Drugs
- Motor Vehicles
- Rail Intermodal Drayage from Ramp
- Leater Footwear
- Bread or Other Bakery Prod
- Other Commodities

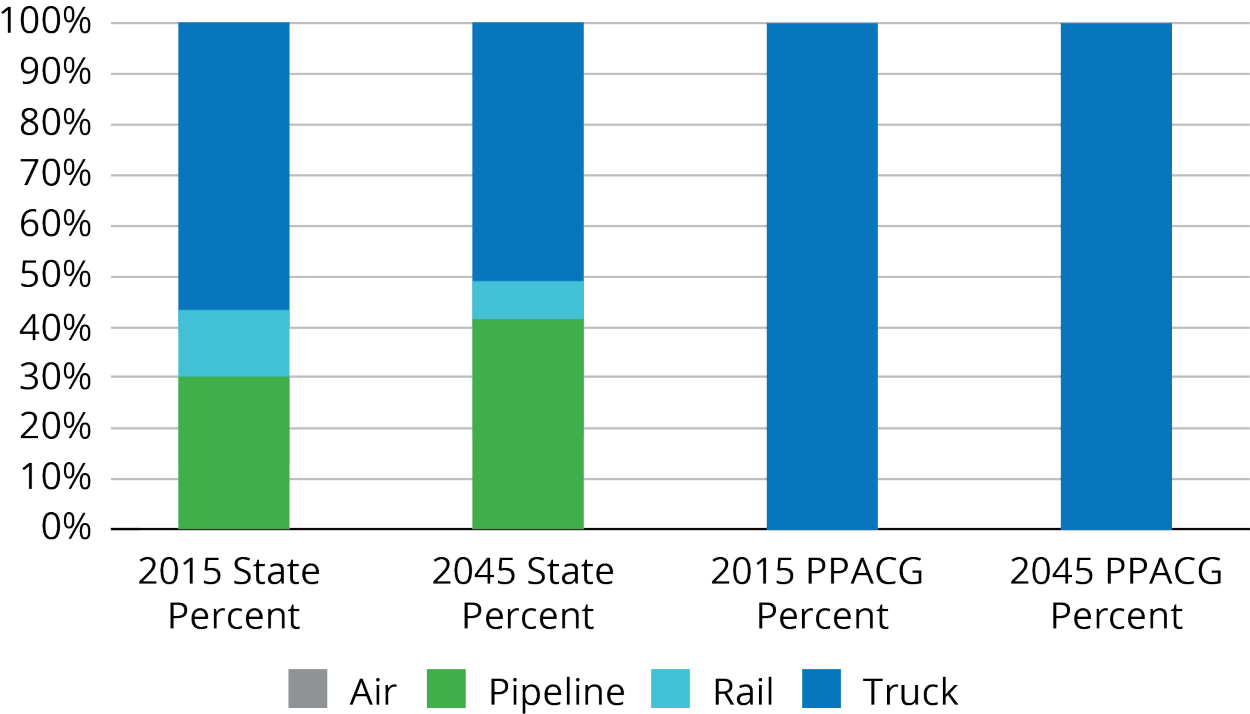
2045 IMPORTS



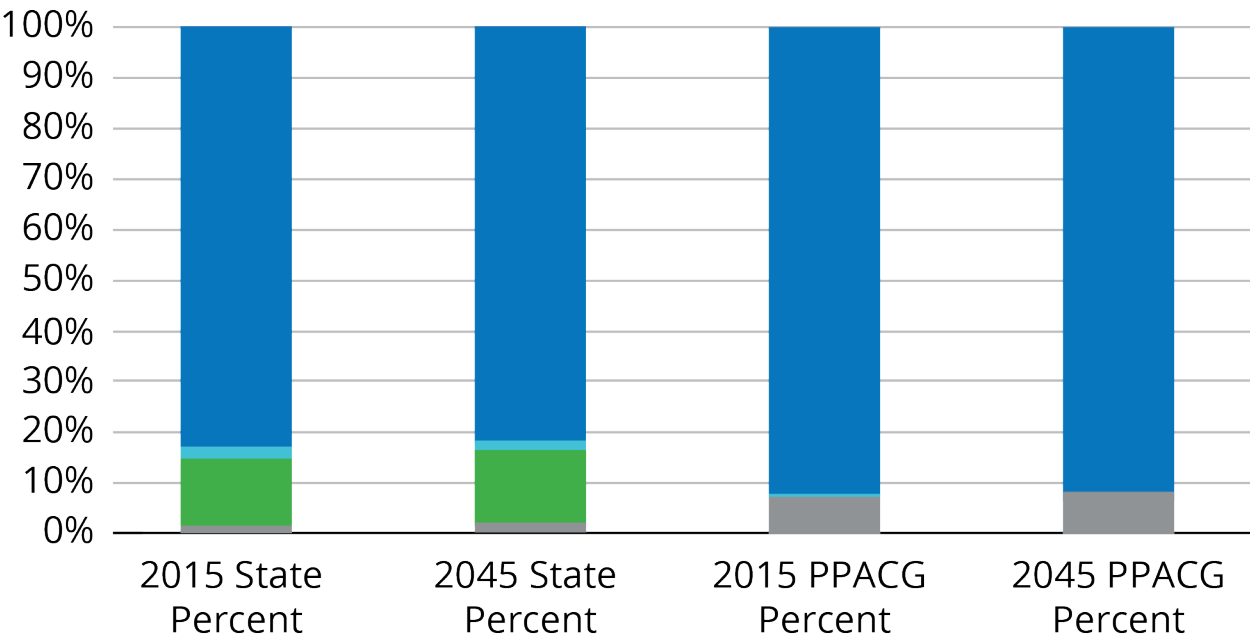
- Warehouse & Distribution Center
- Misc Plastic Products
- Drugs
- Electronic Data Proc Equipment
- Rail Intermodal Drayage from Ramp
- Misc Manufacturing Products
- Bread or Other Bakery Prod
- Other Commodities

FIGURE 12-5
SUMMARY OF FREIGHT MODAL SHIPMENT SHARES

BY TONS



BY VALUE



multiple modes of personal travel demands when evaluating the PPACG network as an intermodal system.

OTHER MODES OF FREIGHT TRANSPORTATION

While trucking is clearly the dominant mode for transporting freight in the state and Pikes Peak region, other transportation modes do exist and support the region’s freight transportation network. The following section discusses alternative modes.

RAIL

Although rail accounts for a very small percentage of overall freight moving in and out of the Pike’s Peak region there are two “Class-One” railroads operating here: Burlington-Northern-Santa-Fe (BNSF) and Union Pacific (UP). A class-one railroad is defined as a railroad with annual gross operating revenues of \$50 million or more. BNSF possesses the primary trackage rights through the region, but it also has an agreement to share the line located just south of Colorado Springs with Union Pacific Railroad. The existing rail system for the Colorado Springs metropolitan area is illustrated in Figure 12-8.

Two tracks enter El Paso County on its northern boundary and continue to the Town of Palmer Lake where they connect as the Joint Line. The Joint Line is a single track shared by both railroads that continues through Colorado Springs and Security/Widefield. The track then separates into two single lines near the City of Fountain. Several spur lines are located within the Colorado Springs metropolitan area, these include:

- Service to the Martin Drake and Birdsall Power Plants;
- Service to Fort Carson; and
- Service to the industrial area along E Fillmore St.

Within the region, the addition of rail crossings is very unlikely over the 24-year planning horizon. The increasing roadway traffic and potential at-grade conflicts would likely prevent the railroad

company from receiving approval of additional crossings. Due to the increased safety issues with at-grade crossings, the railroads, along with a number of communities with at-grade crossings, have been exploring the possibility of constructing grade-separated interchanges.

PIKES PEAK REGION RAIL CROSSINGS

A total of 170 rail crossings exist within the metropolitan planning area. The majority of these crossings are located along the class-one rail lines. The remaining crossings are located along classification yards and spurs to the main lines. Table 12-3 summarizes the number of rail crossing facilities classified as grade-separated and at-grade as well as subcategorized as public and private. Grade-separated facilities are categorized as crossing under or over the rail line.

TABLE 12-3
NUMBER OF RAIL CROSSING FACILITIES

	CROSSINGS	PERCENT
Grade Separated		
Public-Underpass of Rail	29	18%
Public-Overpass of Rail	21	12%
Subtotal	50	30%
At-Grade		
Public	76	44%
Private	44	26%
Subtotal	120	70%
Total	170	

COLORADO STATE RAIL PLAN

The Colorado Department of Transportation has a state rail plan completed in 2018 that will be integrated into the Statewide Long Range Multimodal Transportation Plan. CDOT’s mission is “to provide the best multimodal transportation system for Colorado that most effectively and safely moves people, goods and information.” The state rail plan provides guidance for investing in future rail needs and present ways to enhance passenger and freight rail development to support economic growth and environmental sustainability.

Additional information on this effort, including a draft list of potential freight and passenger rail projects, can be found [here](#). Figure 12-9 shows rail line ownership in Colorado.

AVIATION

The Colorado Springs Metropolitan Area is served by three general aviation/ public use airports:

- Colorado Springs (Municipal) Airport
- Meadow Lake Airport
- Springs East Airport

Additionally, the PPACG region is home to 4 military/non-public use air facilities:

- United States Air Force Academy (USAFA) Air Field
- Bullseye Auxiliary Airstrip (USAFA Training Field) east of Ellicott
- Fort Carson — Butts Air Field
- Peterson Air Force Base (located at the Colorado Springs Airport)

Military air facilities are important to note in the region due to the volume of air traffic they generate and the airspace they control. Figure 12-10 identifies the region’s air facilities, with the exception of the USAFA Bullseye Auxiliary training field, east of the town of Ellicott.

The following provides greater detail on the PPACG region’s three general aviation/public use airports.

COLORADO SPRINGS AIRPORT

The Colorado Springs Airport (COS) is owned and operated by the City of Colorado Springs as an enterprise of the city. The FAA’s National Plan of Integrated Airport Systems (NPIAS) classifies the Colorado Springs Airport as a primary commercial service airport.

COS is located in the southeast portion of the City of Colorado Springs, with its boundaries extending into El Paso County. Its elevation is 6,183 feet above sea level. The airport operates three runways: two north-south runways and one crosswind runway. A 12-gate terminal building, expandable to 20 gates, was completed in 1994. In 2018 the COS terminal was remodeled and the taxiways between the runways and terminal were rebuilt. COS serves as the primary public/commercial service airport for the region and is also home to Peterson Air Force Base. COS is conveniently located within easy driving distances to a variety of regional tourist attractions.

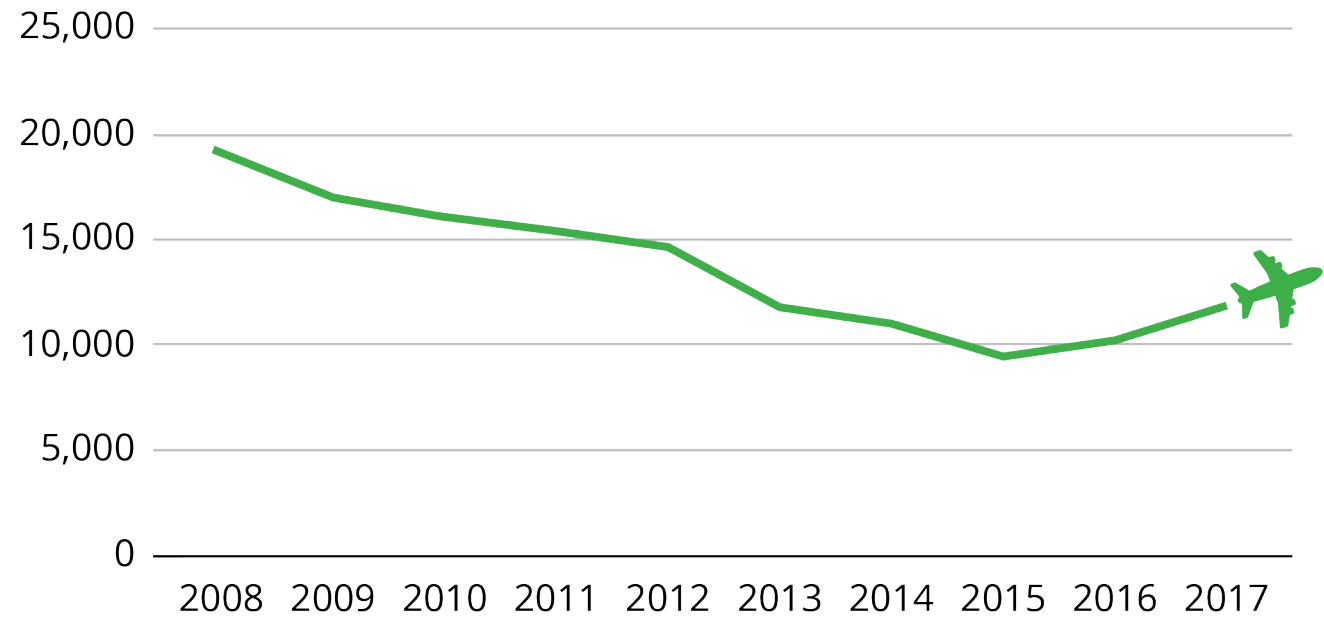
Since 2008, aircraft operations decreased to a low of around 127,000 in 2013, and then made generally consistent improvement to 135,000 operations in 2017. The number of departures from COS followed a similar trend, as can be seen in Figure 12–6. The City of Colorado Springs reported in July 2018, that 1,028,007 passengers traveled through the Colorado Springs Airport (COS), representing a 15.7 percent increase in year-to-date total passenger traffic in comparison to the prior year.

The number of enplaned passengers, aircraft operations, landed weight, and freight and mail for the years 2008 to 2017, as reported in the Colorado Springs Airport 2017 Financial Statement, is presented in Table 12–4.

MEADOW LAKE AIRPORT

Meadow Lake Airport is located 3.5 miles east of Colorado Springs’ city limits near the intersection of US 24 and Judge Orr Road. The Federal Aviation Administration has designated this privately owned facility as a reliever to the Colorado Springs Airport.

FIGURE 12–6
NUMBER OF DEPARTURES FROM COLORADO SPRINGS AIRPORT



SPRINGS EAST AIRPORT (CSEA)

Springs East Airport is located on Ellicott Road between US-24 and SH-94 in El Paso County, approximately 16 miles east of Colorado Springs. Located on 261 acres, CSEA is a General Aviation Airport with Class “G” airspace with three runways, two north/south and one west/east with 8,760 annual landings.

TABLE 12-4
COLORADO SPRINGS AIRPORT 2017 FINANCIAL STATEMENT

	2008	2009	2010	2011		2012	2013	2014	2015	2016	2017
Enplaned Passengers	998,347	929,600	863,407	814,336		822,008	650,529	622,982	597,654	656,277	850,270
Aircraft Operations	145,333	145,012	140,047	131,238		134,070	127,656	130,393	125,303	130,354	135,178
Landed Weight (thousands)	1,295,914	1,148,138	1,134,849	1,120,533		1,150,438	913,555	915,724	799,425	849,273	1,048,694



CHAPTER 13

PUBLIC HEALTH AND TRANSPORTATION

Transportation planners increasingly find themselves integrating public health into the transportation planning process. A holistic approach to planning includes serious consideration of the health impacts of transportation policies and decisions.

OVERVIEW

This chapter summarizes the relationship between health and transportation, how health is integrated into the PPACG planning process, and how various public agencies broadly address intertwining health and transportation planning issues.

The effect of the built environment on the physical, social, and mental health of the community is substantial. Transportation affects physical activity, lifestyle diseases, environmental quality, safety, quality of life, and access to healthy food and destinations. An understanding of the connections between transportation and health can help decision makers achieve desired public health outcomes.

Transportation can affect public health through:

- Injury and death crashes;
- Promoting or limiting active transportation opportunities;
- Air and water pollution;
- Noise and vibration; and
- Access to healthy choices such as nutritious food sources and outdoor recreation.

STUDIES AND GUIDANCE

Many transportation and health-focused organizations have begun studying and monitoring the connection between transportation and health over the last several years. While some connections have been well known for some time, such as the connection between tailpipe emissions and air quality, the substantial impact of transportation on lifestyle diseases like obesity and diabetes has only recently come to light. New studies and guidance are becoming available all the time.

The **World Health Organization (WHO)** notes that “very good evidence shows that some transport policies bring benefits to health and the environment, while others are harmful...the urgency of the need to respond to this challenge is vividly demonstrated by the massive increases in motor vehicle traffic and by the strong public reaction against the noise, air pollutants and congestion that makes cities unlivable.” In their paper *Transport, Environment, and Health* the WHO explored the direct effect of transportation on a variety of human factors including mortality, respiratory and cardiovascular diseases, mental health, and overall wellbeing.

The **National Association of Area Agencies on Aging’s** report, *A Blueprint for Action: Developing a Community for All Ages*, discusses the importance of older Americans’ mobility, and how the physical environment impacts their quality of life as they become less able to drive and turn to other means of transportation.

The **Centers for Disease Control and Prevention** believe transportation policies and decisions have deep public health implications. The CDC notes that transportation planning/funding that is narrowly focused on motor vehicle movement results in a lack of active transportation options (contributing to rises in rates of obesity, diabetes, heart disease, stroke, and other chronic conditions), motor vehicle crashes as a leading cause of injury and death (pedestrians and cyclists are at an even greater risk of death from crashes), unsafe pedestrian and cycling infrastructure, and increased air pollution (contributes to adverse respiratory and cardiovascular health).

The CDC makes eight specific transportation recommendations for improving public health:

- Reduce injuries associated with motor vehicle crashes;
- Improve air quality;
- Expand public transportation;
- Promote active transportation;
- Encourage healthy community design;
- Design to minimize adverse health and safety consequences;
- Require research and surveillance; and
- Support professional development and job creation.

During 2013-16, a National Physical Activity Plan was developed by a broad coalition of public health organizations (including medical associations, universities, and other research institutions). The NPAP identifies five strategies related to transportation:

1. Community planners should integrate active design principles into land-use, transportation, community, and economic development planning processes.
2. Communities should change zoning laws to require or favor mixed-use developments that place common destinations within walking and bicycling distance of most residents and incorporate designated open space suitable for physical activity.
3. Physical activity and public health organizations should advocate for funding and policies that increase active transportation and physical activity through greater investment in bicycle and pedestrian infrastructure and transit.
4. Transportation and public health agencies should invest in and institutionalize the collection of data to inform policy and to measure the impacts of active transportation on physical activity, population health, and health equity.
5. Transportation and public health agencies should implement initiatives to encourage, reward, and require more walking, bicycling, and transit use for routine transportation.

At the end of 2012, the **Federal Highway Administration** developed a white paper titled Metropolitan Area Transportation Planning for Healthy Communities that describes a holistic approach to integrating health in transportation planning. The paper is based on best practice studies from four major MPOs discusses on interdisciplinary or “holistic” planning and identifies four focus areas:

- Active transportation
- Safety
- Air pollution
- Access to opportunities for healthy lifestyles

Although the case studies revealed different motivations and processes for incorporating public health into the metropolitan planning process, some cross-cutting themes were found:

- MPOs form partnerships with local or state organizations with health-related missions, in some cases leading to later establishment of formal roles and responsibilities such as membership in MPO committees;
- All of the case study MPOs are developing internal capacity to conduct quantitative assessment of health benefits of transportation plans and projects, and are providing training and tools to community members, including those with responsibility for land use decisions;
- The MPOs emphasize the importance of building support from their boards and the community for the incorporation of health into MPO planning and activities; and
- All of the case study participants have made substantial progress through an incremental approach. This helps build interest and support within the MPO staff and Board as well as with metropolitan stakeholders for health to be added as a priority without adversely affecting pursuit of core transportation goals.

The FHWA’s current work on Health in Transportation focuses on six objectives:

- Promote safety;
- Improve air quality;
- Respect the natural environment through Context Sensitive Solutions;
- Improve social equity by improving access to jobs, health care and other community services;
- Create additional opportunities for the positive effects of walking, biking, public transportation, and ride- and vehicle-sharing; and
- Conduct research on transportation’s role in improving quality of life.

They list a variety of important stakeholders, including public health agencies, social service agencies and non-profits, medical and health providers, medical first responders, professional health associations, community and advocacy groups, school districts and educational institutions, local parks and recreation departments, and chambers of commerce and other economic development groups.

PLANNING CONTEXT

In almost all public health agencies’ lists of goals, one can find injury prevention, reduction in motor vehicle injuries, reducing obesity, and improving mental health. The 2045 plan explicitly envisions a more multi-modal and accessible system, both of which are supportive of public health, safety, and economic vitality all include objectives which will enhance active transportation or environmental quality and reduce injury and mortality. The following list gives all of the goals and objectives directly or indirectly related to public health:

Goal 2: Mobility

Objective 2 — Enhance fixed-route transit

Objective 3 — Maintain or improve bike and walk mobility

Goal 3: Connectivity and Accessibility

Objective 1 — Enhance fixed-route transit

Objective 2 — Enhance non-motorized facilities according to the regional non-motorized plan

Objective 3 — Enhance modal connections and improve existing ADA accessibility

Goal 4: Safety

Objective 1 — Enhance safety features to reduce vehicle-to-vehicle hazards

Objective 2 — Enhance safety features to reduce vehicle-to-bike/pedestrian hazards

Goal 5: Economic Vitality

Objective 1 — Improve or mitigate impacts to air quality

When local entities submitted projects for inclusion in the 2045 Moving Plan, they were scored using several criteria related to public health:

- Will the project increase transit ridership?
- Will the project increase bike and/or walk mode share?
- Population served within ¼ mile of a transit stop
- Number of miles reduced in the Improvement Corridors Report of the PPACG Regional Non-motorized Transportation System Plan
- Will project connect missing links to existing bike/ped/transit or remove barriers (physical, economic, or ADA)
- Effect on level of Service Safety (LOSS) and FHWA crash reduction factors for fatalities and injuries
- Air Quality — Travel model VMT/emissions

PPACG’s Regional Non-Motorized Transportation Plan (2015) explicitly makes the connection between active transportation and health:

Improving the health of a community through encouraging active transportation (e.g. cycling or walking) yields significant social and economic benefits. Increasing levels of cycling or walking to work or school have been reported to improve performance at both work and school. Inducing a mode shift from the personal vehicle to active modes can result in cleaner air, lower obesity rates, increased physical activity, in addition to a number of other benefits.

COMMUNITY PROFILE

Colorado has a reputation for being a healthy place to live. It is the leanest state in the nation, and many residents engage in physical activity, especially outdoors. However, recent statistics show emerging issues. For example, an increase in vehicle miles traveled statewide mirrors the upward trend in the obesity rate (see Figure 13-1).

The health of the Pikes Peak region has recently been measured in the El Paso County Public Health Department’s Community Health Improvement Plan, the Teller County Public Health Department’s 2013 Community Health Status Report and Public Health Improvement Plan, and the Pikes Peak United Way Quality of Life Indicators Report.

In El Paso County:

The county identified Improving Health Eating and Active Living, as well as Improving Mental Health and Substance Abuse, as its local public health priority area.

37% of adults are overweight and 60% of adults are overweight or obese.

More than 28% of children (ages 5 to 14) are at an unhealthy weight.

Suicide rates for 2004–2017 (1,785 total) were significantly higher than the rest of the state.

In 2018, the county had the **highest number of vehicle fatalities** out of all Colorado counties or 14% of statewide deaths. 2018 was a record high for fatalities since 2000.

The total cost of all crashes and fatalities in 2015 is estimated at over \$1,704 million.

In Teller County:

The county identified behavioral and mental health, substance use and abuse, access to care, and injuries and violence as its local **tier 1 health concerns**.

16% of adults are overweight and 38% of adults are overweight or obese.

OBESITY

The United States is experiencing a massive increase in chronic diseases related to poor nutrition, inactivity, and lifestyle choices. The number of children and adults who are either overweight or obese is increasing at an alarming rate. Obesity and other health conditions associated with being overweight, such as diabetes, heart disease, and many types of cancer, are the leading drivers in rising healthcare costs. The state and nationwide figures can be seen in Table 13-1.

LOW-INCOME HOUSEHOLDS

Research suggests an important relationship between household income, the level of physical activity people engage in, and overall health. In several studies, low-income households were shown to engage in less physical activity and have a poorer state of health than the general population. Removing barriers (social, physical, and environmental) and connecting these households to safe and affordable transportation options can help ensure low-income households have access to recreational areas, active transportation infrastructure, and healthy food outlets.

The Colorado Department of Public Health and Environment acknowledges that generations-long social, economic and environmental inequities result in adverse health outcomes.

They affect communities differently and have a greater influence on health outcomes than either individual choices or one’s ability to access health care.

ZERO VEHICLE HOUSEHOLDS

Households without vehicles can have difficulty accessing basic services like healthy food outlets and medical care. According to the 2008–2012 American Community Survey, approximately 5.1 percent of households in our region are zero-car households, and 1 out of every 3 households has 1 or fewer vehicles. These households are dependent on transit and nonmotorized modes.

According to a 2013 onboard survey from Mountain Metropolitan Transit, “vehicle ownership for households and the ability to drive play key roles” in the choice to use transit. Fifty-eight percent of respondents indicated they lived in a zero-vehicle household. Three out of four riders had a household income of less than \$30,000, and 90 percent of respondents were transit-dependent.

Figure 13-4 shows Traffic Analysis Zones (TAZs) that are home to a higher-than-average percentage of households with zero vehicles.

AGING POPULATION

Colorado and the Pikes Peak region are experiencing a dramatic increase in aging citizens. Though Colorado has the fourth smallest share of its population over the age of 65 in the nation, its over-65 population is the fourth fastest growing in the nation. The implications of this growing population are yet to be seen, but it will most likely require well-coordinated long-term planning in health and transportation to adequately address the changing mobility and health needs of the population.

The percentage of the 65+ population in our two-county region is shown in Figure 13-6. By 2045, it is projected that 16.4 percent of the region’s population will be 65 or over (Table 13-2). It is important to plan the transportation system with them in mind. The proportion of drivers is expected to be lower among the 65+ population, and it is unknown whether autonomous vehicles will make up a great part the vehicle fleet within 20 years as some

planners predict. There may be a substantially greater need for transit, walking, and biking options as a result of this demographic change.

OPPORTUNITIES AND CHALLENGES

The effect of the lack of active transportation opportunities due to existing land use and transportation policies hasn't been quantified, but it has been proven that "the effect of sedentary lifestyles on heart disease is similar to that of tobacco... [and that] one could therefore speculate that barriers to physical activity might have the greatest impact of all traffic-related health risks." Outlined below are 10 focus areas that present unique opportunities and/or challenges in terms of regional transportation planning in the Pikes Peak region.

SAFETY

One of the most visible links between public health and transportation is transportation safety. This focus area is extensively analyzed in Chapter 10. Lack of safety or perceived lack of safety is one of the key issues affecting active transportation. The "stress" of closely passing vehicles, large differences in speed, and asymmetric collisions (a car is much larger and heavier than a bicycle), can severely limit the enjoyment and basic practicality of using active transportation. The safety and security of public transit can also be an issue in comfort and ridership rates, and can make the difference between a system for everyone versus a system for captive riders only.

OBESITY

As discussed earlier in this chapter, obesity is a major threat to health. Several ways to address obesity via transportation systems are:

- Increase safe and well-maintained infrastructure for active modes;
- Encourage active transportation;

- Increase access to healthy food; and
- Increase access to recreational areas.

Public health solutions for overweight and obese people also apply to the over-65 population. This relationship is reflected in much of existing research, which suggests that coordinated, multi-component programs and policies for public health, transportation, and the built environment are necessary to effectively implement solutions to current health problems and improve mobility for the elderly and disabled.

AGING IN PLACE

The population of the United States is aging rapidly, and research shows that only a small percentage of Americans move after reaching retirement age, meaning that most will "age in place". The Center for Disease Control defines aging in place as "the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level." Typically, people find that their ability to operate and navigate in a private vehicle diminishes with age. According to a report by Transportation for America ("Aging in Place, Stuck Without Options"):

Pedestrian-friendly streets and recreational trails built with seniors in mind will help older Americans get around safely and remain active...but only adequate public transportation services can assure that older adults are able to travel as often or as far as they would like.... Absent access to affordable travel options, seniors face isolation, a reduced quality of life and possible economic hardship.

The World Health Organization points out that "the perceived dangers and threats of traffic can lead to social isolation, distrust of others and reduction in social and neighborhood networks of support as well as the loss of important opportunities for regular physical activity."

MENTAL HEALTH + WELLBEING

Though not conventionally thought of in connection with transportation, mental health and wellbeing is an important aspect of health that is affected by transportation. The World Health Organization defines health as “more than the absence of physical health burdens and includes such things as having social support, being free from threats of violence, not being anxious or fearful, being in a good temper and feeling empowered.”

Though noise will be discussed later in the chapter, it is important to note that traffic noise “has been shown to induce nervousness, depression, sleeplessness and undue irritability...irritation and frustration.” Other transportation factors leading to poor mental health include congestion, perceived safety, barriers (steep grade, lack of crosswalks, etc.), aggressive drivers, and transit-related stressors (missed connections, late buses, crowding).

The once close-knit, walkable communities of urban centers have given way to suburban development that is auto-dependent and isolated over the last 75 years or so. This low-density peripheral development results in neighborhoods with less social interaction and increased isolation. This kind of development deters people from establishing social-support networks, and low levels of social support are tied to increased mortality rates.

Mental health benefits that come with active transportation are discussed below.

ACCESS TO HEALTHY FOODS

Increasing the accessibility of healthy food for low-income and/or low-access residents is important because food insecurity results in skipped meals, limited portions, and/or poor-quality food. Increasing access to healthy foods reduces obesity and chronic diseases which carry large individual and societal costs. The Centers for Disease Control believes that without better access to healthy food outlets, people cannot improve their diets.

Transportation-related barriers such as mileage, lack of adequate pedestrian or bicycle facilities, or lack of transit service often bar people from full-service grocery outlets, leaving them with only

fast food or gas station/convenience stores without healthy food options. Because many low-income areas are also low-access (one or no vehicles per household), ensuring adequate transportation is critical. In addition, the number of supermarkets in low-income communities is 30 percent small than the number in high-income communities, making adequate transportation even more important.

The Colorado Health Foundation reported that many low-income, carless residents use taxis to transport themselves and their groceries to and from the grocery store because fixed route transit doesn't always provide seamless service. This adds an additional financial burden to these residents trying to access healthy food.

In 2008, Congress directed the United States Department of Agriculture to research several food environment factors, one of which was to measure and understand the consequences of food deserts, defined as “a census tract with a substantial share of residents who live in low-income areas that have low levels of access to a grocery store or healthy, affordable food retail outlet.” Low access means at least 500 persons and/or at least 33 percent of the tract's population lives more than one mile from a supermarket or large grocery store, or 10 miles in the case of non-metropolitan census tracts.

The USDA estimates that around 23.5 million people nationwide live in food deserts, and more than half are low-income. In the Pikes Peak region, Census Tracts identified as low-income and low-access food deserts can be seen in Figure 13-5.

ACCESS TO OPPORTUNITIES FOR HEALTHY LIFESTYLES

Community design and transportation systems impact the opportunity for residents to make healthy choices. Access to health-related destinations is important for vulnerable populations, especially because these populations generally have a low vehicle ownership rate and/or depend on transit. Several aspects of community can affect opportunities for a healthy lifestyle, among them mixed use zoning, pedestrian-friendly streets and intersections, handicap accessibility, and transit infrastructure.

ACTIVE TRANSPORTATION

Most modern discussions of health and transportation give a substantial amount of attention to active transportation — any human-powered transportation mode, typically walking or biking. However, transportation systems are typically hostile to active transportation on multiple levels, from (primarily) roads dedicated to vehicle speed above all other considerations to poorly maintained or absent sidewalks to lack of crosswalks and other infrastructure. Surveys reveal that many more Americans would use nonmotorized transportation if physical infrastructure supported these modes in a safer way (survey responses are discussed in greater detail in Chapter 5.) New ways of protecting cyclists and pedestrians are emerging — for example, protected bike lanes — but it remains to be seen whether these new approaches will take hold in most cities.

In addition to physical infrastructure, laws, rules, and policies could also be more supportive of active transportation. Lower speed limits on certain roads, for example, can reduce the danger and discomfort of cycling, and requirements for new developments could include provisions for supplying active transportation infrastructure such as bicycle parking.

Active transportation has the following proven benefits:

- Reduction in heart disease
- Reduction in adult diabetes
- Improved mood
- Improved self-esteem
- Reduction in obesity
- Reduction in hypertension
- Reduced osteoporosis
- Relief of symptoms of depression
- Relief of symptoms of anxiety
- Prevention of falls for elderly

Commuter mode share in the Pikes Peak region can be seen in Figure 14–7. Close to 5 percent of commuters walk to work, a

relatively high number and something the region took into account during the Regional Nonmotorized Transportation System Plan. The survey also showed around 0.5 percent of people bike to work. About 1 percent of the population took transit to work. One important factor that is not always adequately accounted for in travel surveys is which mode of transportation travelers desire to use if it were safer and/or more convenient.

The State of Colorado is ranked the seventh most bicycle-friendly state in the nation. As the home to USA Cycling and USA Triathlon, Colorado Springs has already attracted the cycling elite. Colorado Springs achieved the League of American Bicyclists' national Silver Level Bicycle Friendly City ranking. For more information, see the Regional Nonmotorized Transportation System Plan.

This plan contains a number of bicycle and pedestrian projects which could be beneficial for public health. Figures 13–8 through 13–10 below show existing and planned bike and pedestrian projects with respect to the locations of schools and colleges, major retail centers, and major parks.

TRANSPORTATION NOISE

Whether living in an urban downtown, near an airport, or even a railroad, research points to significant health impacts caused by exposure to transportation noise. There is growing evidence linking noise pollution levels to:

- Communication problems
- School performance problems
- Sleep problems
- Temper
- Elevated hormone levels
- Psychological problems
- Heart disease and hypertension
- Hearing impairment

Low-noise road surfaces and rail tracks, sound walls, noise barriers, and traffic calming are all potential mitigation strategies.

AIR QUALITY

The US EPA identifies three types of air pollution from mobile sources: ozone, particle pollution, and air toxics. Mobile source air pollution affect the health of millions of people, especially people who live near busy roads.

Ground level ozone is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. It is the main ingredient in “smog.” Breathing ozone can trigger a variety of health problems, particularly for children, the elderly, and people of all ages who have lung diseases such as asthma. Ozone can:

- Make it more difficult to breathe deeply and vigorously
- Cause shortness of breath, and pain when taking a deep breath
- Cause coughing and sore or scratchy throat
- Inflame and damage the airways
- Aggravate lung diseases such as asthma, emphysema, and chronic bronchitis
- Increase the frequency of asthma attacks
- Make the lungs more susceptible to infection
- Continue to damage the lungs even when the symptoms have disappeared
- Cause chronic obstructive pulmonary disease (COPD)

Particle pollution (also called particulate matter or PM) is a mixture of solid particles and liquid droplets found in the air. Some particles are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires. Others form in complicated reactions in the atmosphere of chemicals such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industries and automobiles. These particles make up most of the fine particle pollution in the country.

Particulate Matter can cause:

- Premature death in people with heart or lung disease
- Nonfatal heart attacks

- Irregular heartbeat
- Aggravated asthma
- Decreased lung function
- Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing

People who live or spend time near major roads tend to have an increased incidence and severity of health problems associated with air pollution related to roadway traffic. Children, older adults, people with preexisting cardiopulmonary disease, and people of low socioeconomic status are among those at higher risk for health impacts from air pollution near roadways. These risks include:

- Higher rates of asthma onset and aggravation
- Cardiovascular disease
- Impaired lung development in children
- Pre-term and low-birthweight infants
- Childhood leukemia
- Premature death

Air toxics pose greater risks in urban areas because these areas have large populations and a higher concentration of emission sources. Low-income neighborhoods, tribal populations and communities of color that live in urban areas may be disproportionately exposed to air pollution, which is a barrier to economic opportunity and security. People exposed to toxic air pollutants at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects, including:

- Damage to the immune system
- Neurological disorders
- Reproductive disorders (e.g., reduced fertility)
- Developmental disorders
- Respiratory and other health problems

WATER QUALITY

Air pollution may be the most visible and studied health consequence of transportation system, but water pollution should also be a major consideration. Fuel, particle, and salt-laden runoff from streets, highways, and storage facilities results in damage to public water supplies, ponds, lakes and surface streams, roadside soil, vegetation and trees.

According to the EPA, transportation affects water quality directly in four ways: 1) road construction and maintenance, including the creation of impervious surfaces, can adversely affect water quality due to faster rates of runoff, lower groundwater recharge rates, and increased erosion; 2) pollutants such as vehicle exhaust, oil, and dirt, and deicing chemicals, are deposited to roadways and other impervious surfaces; 3) leaking underground storage tanks release petroleum to groundwater; and 4) oil spills, especially in the marine sector affect the water quality of inland waterways and coastal areas.

MOVING FORWARD

DATA COLLECTION

PPACG collects data to support research and analysis during the development of the Small Area Forecast and Regional Transportation Plan. Much of that data can be used to support public health initiatives in addition to the application to transportation planning. Demographic data can be used to demonstrate the presence of vulnerable populations. Car ownership rates and transit ridership data can both be proxy measures to identify populations with limited access to healthy food or recreation. Travel behavior is accounted for in the transportation planning process, and can indicate which residents or employees choose active transportation.

Additional partnerships with public health organizations could bring about a more robust collection of meaningful data, and perhaps help local agencies in the development of local health

impact assessments, which do not currently include local data on traffic-related air pollution, noise, or vibration analysis.

PPACG maps planned and/or proposed infrastructure relative to spatial data (city limits, environmental resources, etc.), but there is an opportunity to bring in another level of analysis and to map proximity and connectivity of access to healthy food, access to recreational opportunities, and access to multimodal transportation infrastructure.

MODELING

PPACG is required to project future population and employment as well as demand on the transportation network as part of the regular long-range planning process. The statistical modeling process predicts where and when congestion will occur. The current model does not incorporate travel modes other than private automobile. Future incorporation of transit and active transportation modes would benefit planning for those types of travel and, consequently, public health.

PLANNING AND COORDINATION OPPORTUNITIES

A specific methodology needs to be developed to make integrated and informed assessments about the impact of transportation on public health. Monitoring progress and performance, and identifying the social, economic, and environmental costs of such programs will help PPACG coordinate the integration of public health into the transportation planning process.

One potentially valuable tool for integrating public health concerns into the planning process is the Health Impact Assessment (HIA). According to the US Department of Transportation, an HIA is—

...a process used to evaluate the potential health effects of transportation policies, plans, or projects on the community and to help integrate these considerations into the decision-making process. An HIA includes recommendations about enhancing health outcomes and mitigating potential negative health impacts. An HIA also considers the distribution and equity of health outcomes in relation to vulnerable populations. The main steps in conducting

an HIA include screening, scoping, assessing potential impacts, developing recommendations, reporting findings to decision makers, and monitoring and evaluation.

PERFORMANCE MEASUREMENT

MAP-21, the federal transportation legislation, created a performance-based and multi-modal program to enhance the transportation system. Performance-based planning increases accountability, improves transparency, and allows close monitoring of projects and systems in an effort to make the most of dwindling transportation funding. By linking performance to planning and programming, not only is coordination increased, but funds are targeted toward the most effective projects and programs.

PPACG will be tracking performance measures related to public health in the following areas:

- Mode share — percent bike and walk
- Population served within 1/4 mile of a transit stop
- Number of miles identified in the non-motorized improvement corridors still needing improvements
- Missing links connect existing pedestrian, bicycle or transit facilities (e.g. trails, sidewalks, bike lanes, park and ride, trailhead parking)
- Total # of fatalities, Fatality Rate (per 100 million VMT), # of serious Injuries, Serious Injury Rate (per 100 million VMT)
- Total # of non motorized fatalities and serious injuries
- Volatile Organic Compounds (VOC) Reduction
- Particulate Matter, 10 micrometers or less (PM10) Reduction
- Carbon Monoxide (CO) Reduction
- Nitrogen Oxides (NoX) reduction
- Critical Habitat
- Storm Water

TRANSPORTATION EQUITY

According to the World Health Organization, “the health effects of transport fall disproportionately heavily on certain groups of the population. The areas they live, work or travel in may have traffic of higher volumes or speeds, or specific geographical, topographical or settlement characteristics that intensify levels of air pollutants and noise, and increase the risk of accidents.” In most cases, these populations are exposed to more health risks caused by transportation than other communities, including traffic, noise pollution, air pollution, and barriers to healthy food and lifestyles. Incorporating specific health impacts into the environmental justice analysis would be beneficial.

Recognition of the impacts of transportation on public health is a relatively recent development with an uncertain future. Planners and other transportation professionals are more aware of the connection between transportation and public health. However, rising annual VMT (Vehicle Miles Traveled), technology changes, and rising obesity all challenge the idea that public health is actually playing a larger role in transportation planning. One factor which will heavily influence whether public health is appropriately considered in transportation planning is whether it is included early in the planning process — as early as the visioning and goal setting processes for long range plans. Once the fundamental connection is clear, then the tools and measures will, to a great extent, follow from that.

FIGURE 13-1
COLORADO VMT AND OBESITY RATE

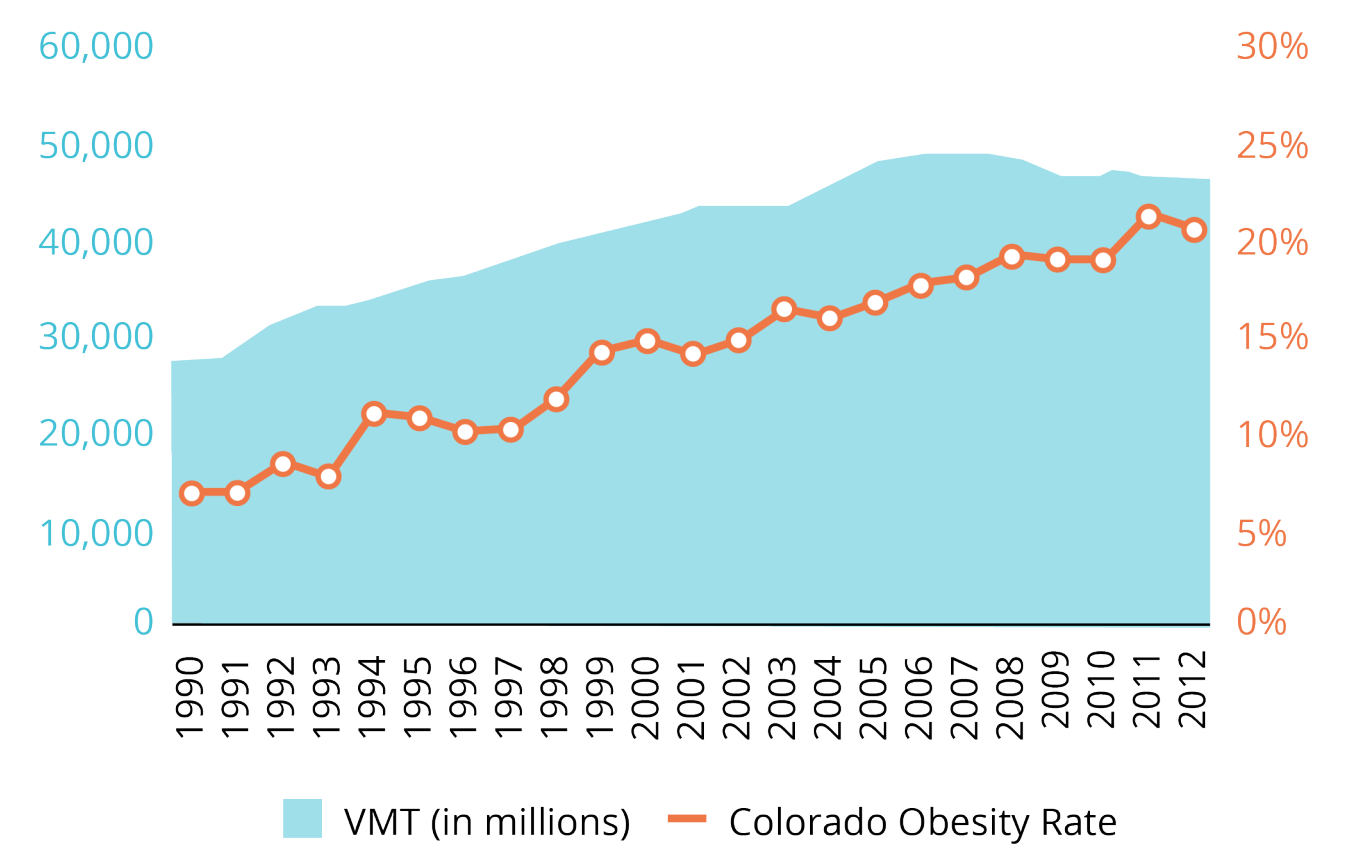


TABLE 13-1
OBESITY RATES (ADULTS AND CHILDREN)

YEAR	REGIONAL	NATIONAL
1990	6.90%	11.60%
1995	10.80%	14.40%
2000	14.90%	19.60%
2005	16.80%	23.20%
2010	19.00%	26.90%

FIGURE 13-2
REGIONAL POPULATION BELOW POVERTY LEVEL



FIGURE 13-3
REGIONAL VEHICLE OWNERSHIP BY HOUSEHOLD



TABLE 13-2
REGIONAL VEHICLE OWNERSHIP BY HOUSEHOLD

YEAR	EL PASO	TELLER	REGION
2010	62,836	3,088	65,924
2040	159,766	5,726	165,492

FIGURE 13-4
TAZs WITH HIGHER THAN AVERAGE HOUSEHOLDS WITHOUT VEHICLES

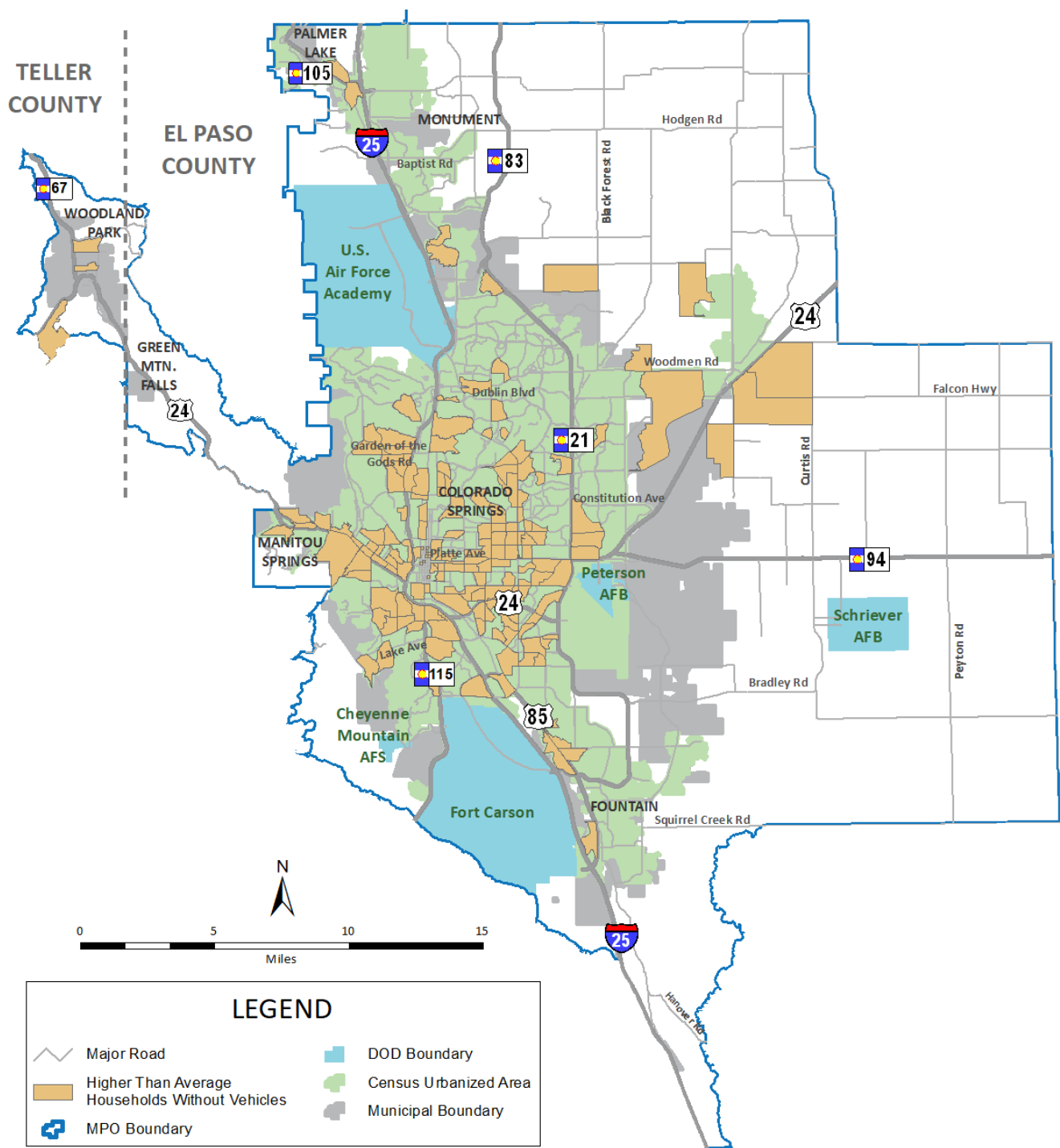


FIGURE 13-5
USDA FOOD DESERTS BY CENSUS TRACT

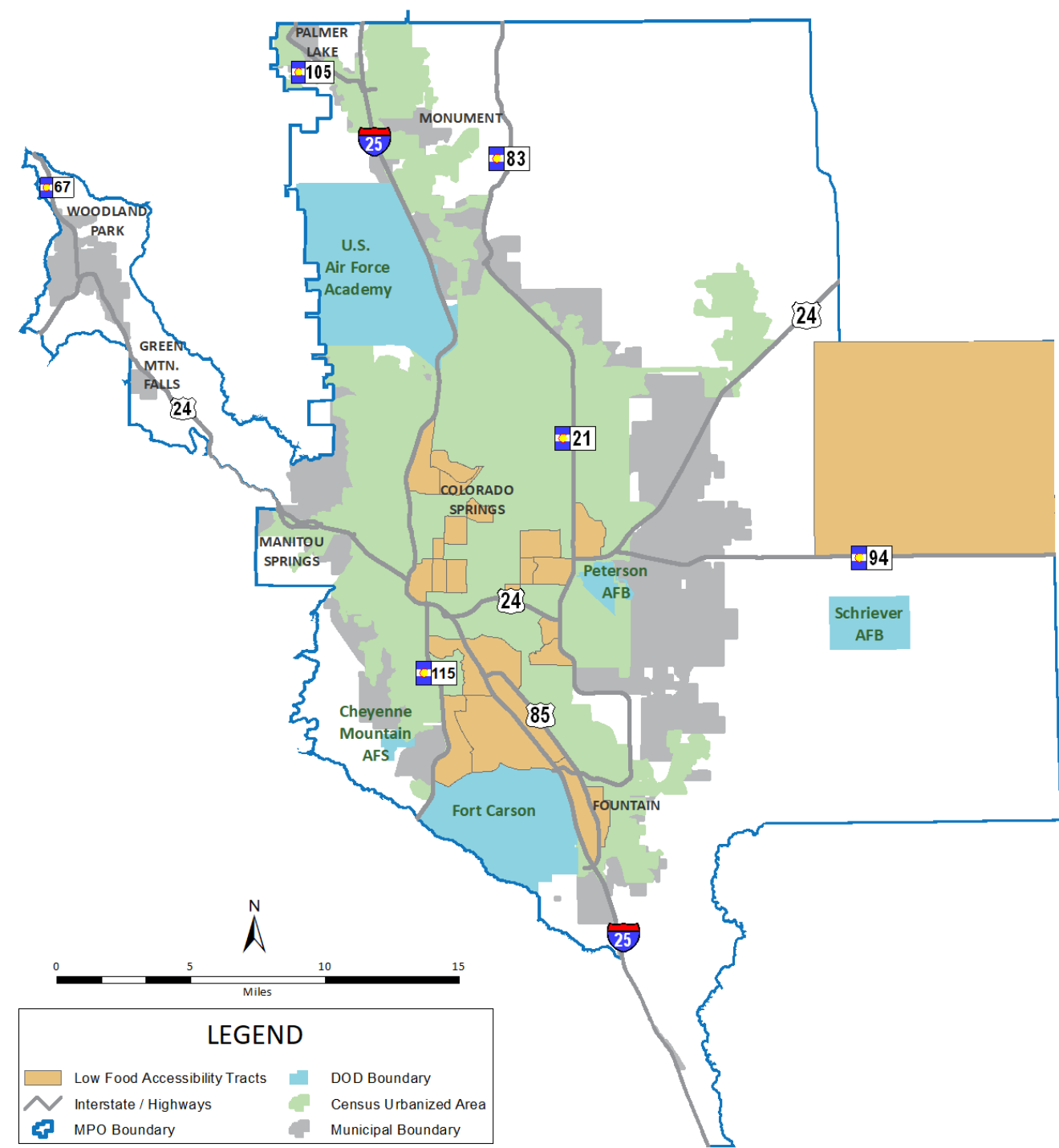


FIGURE 13-6
PERCENT OF POPULATION 65 AND OVER

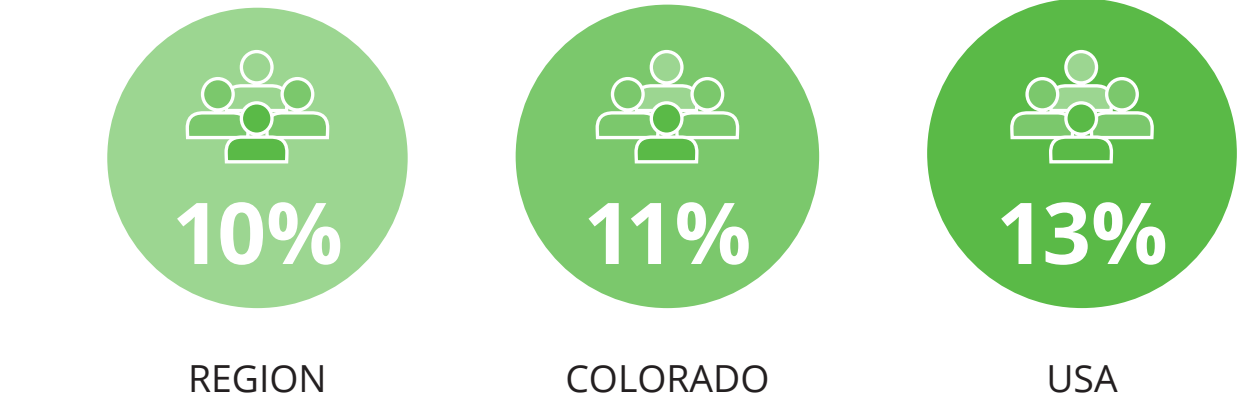


FIGURE 13-7
JOURNEY TO WORK

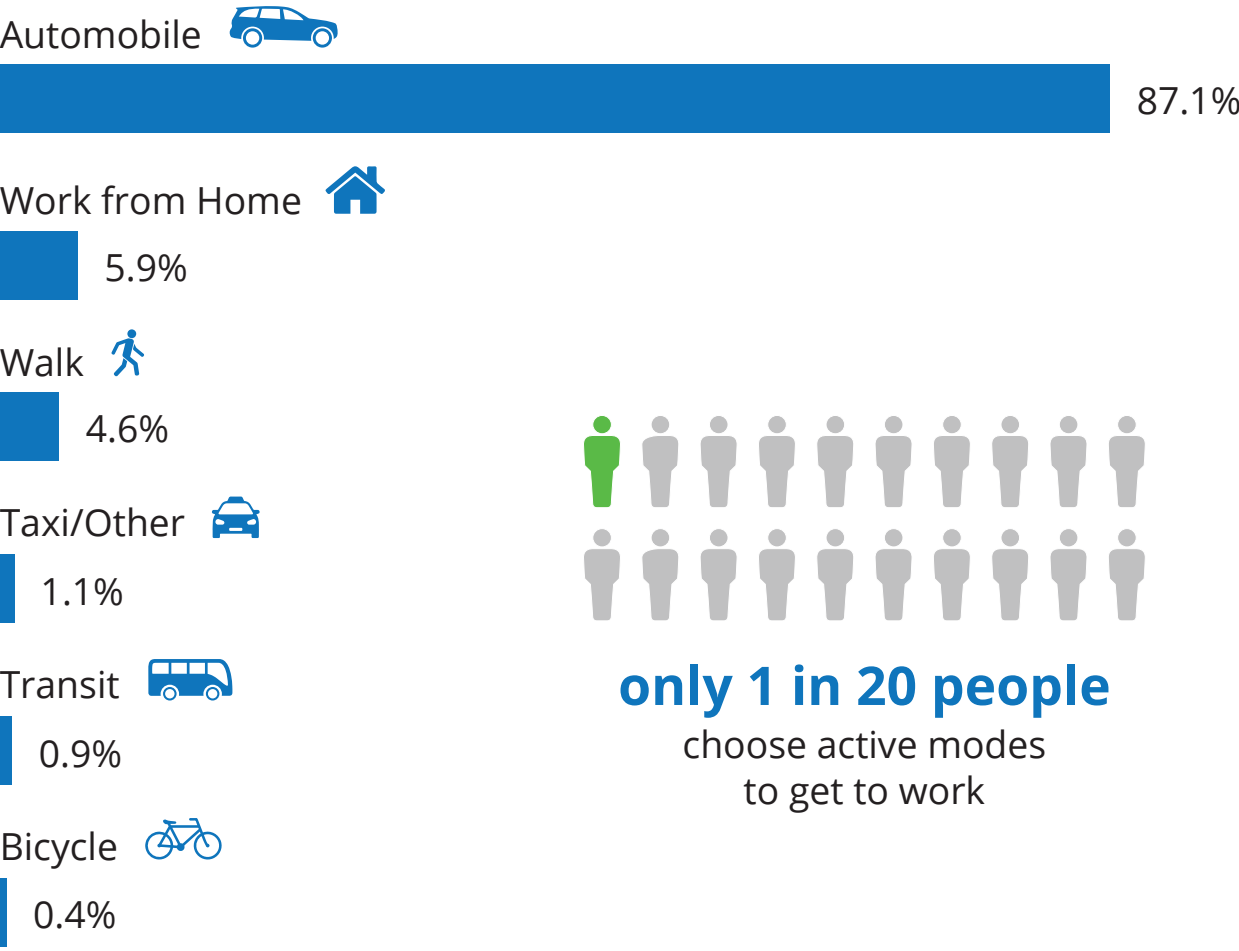


FIGURE 13-8
2045 BIKE-PEDESTRIAN PROJECTS AND SCHOOLS

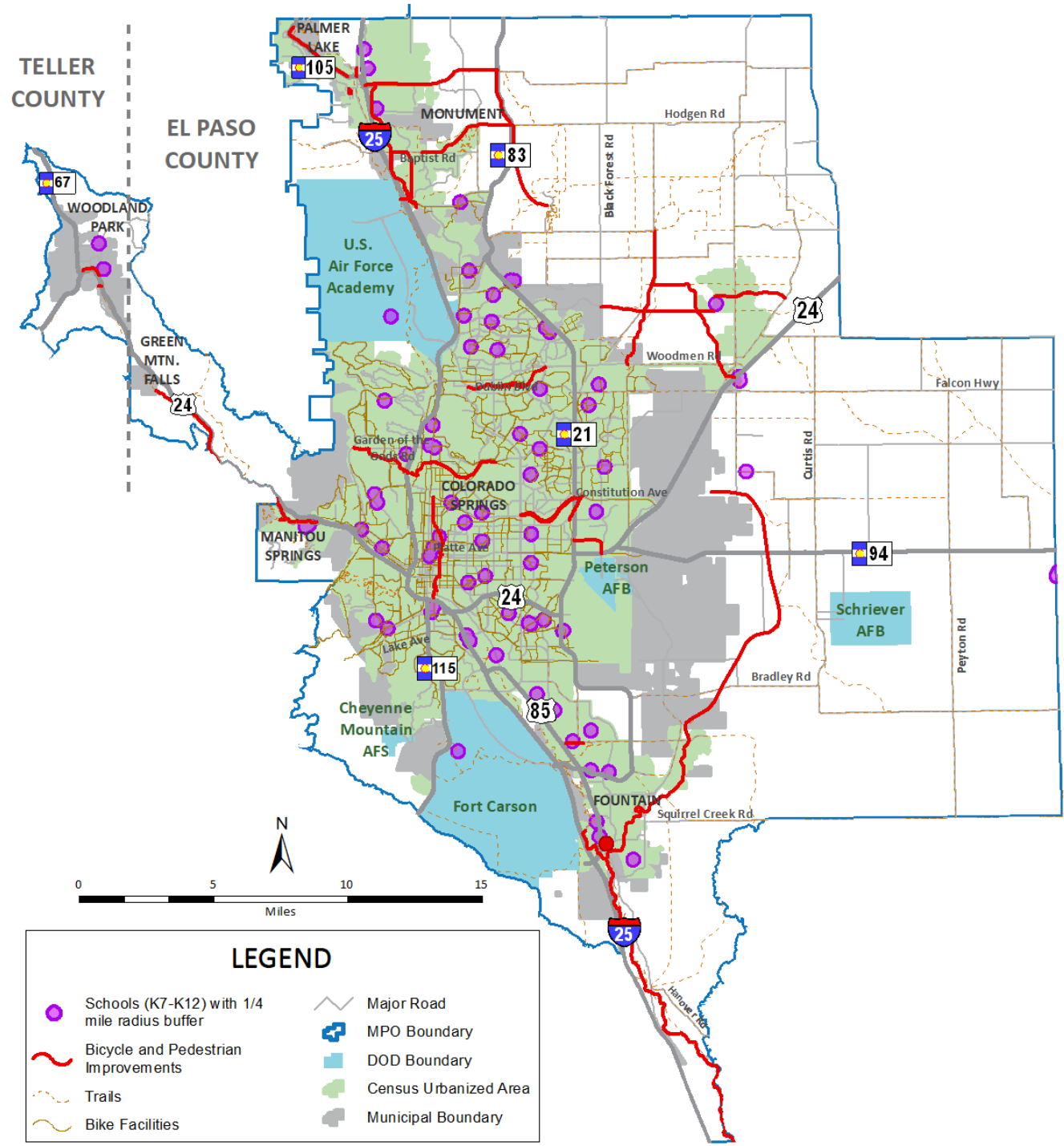


FIGURE 13-9
2045 BIKE-PEDESTRIAN PROJECTS AND RETAIL CENTERS

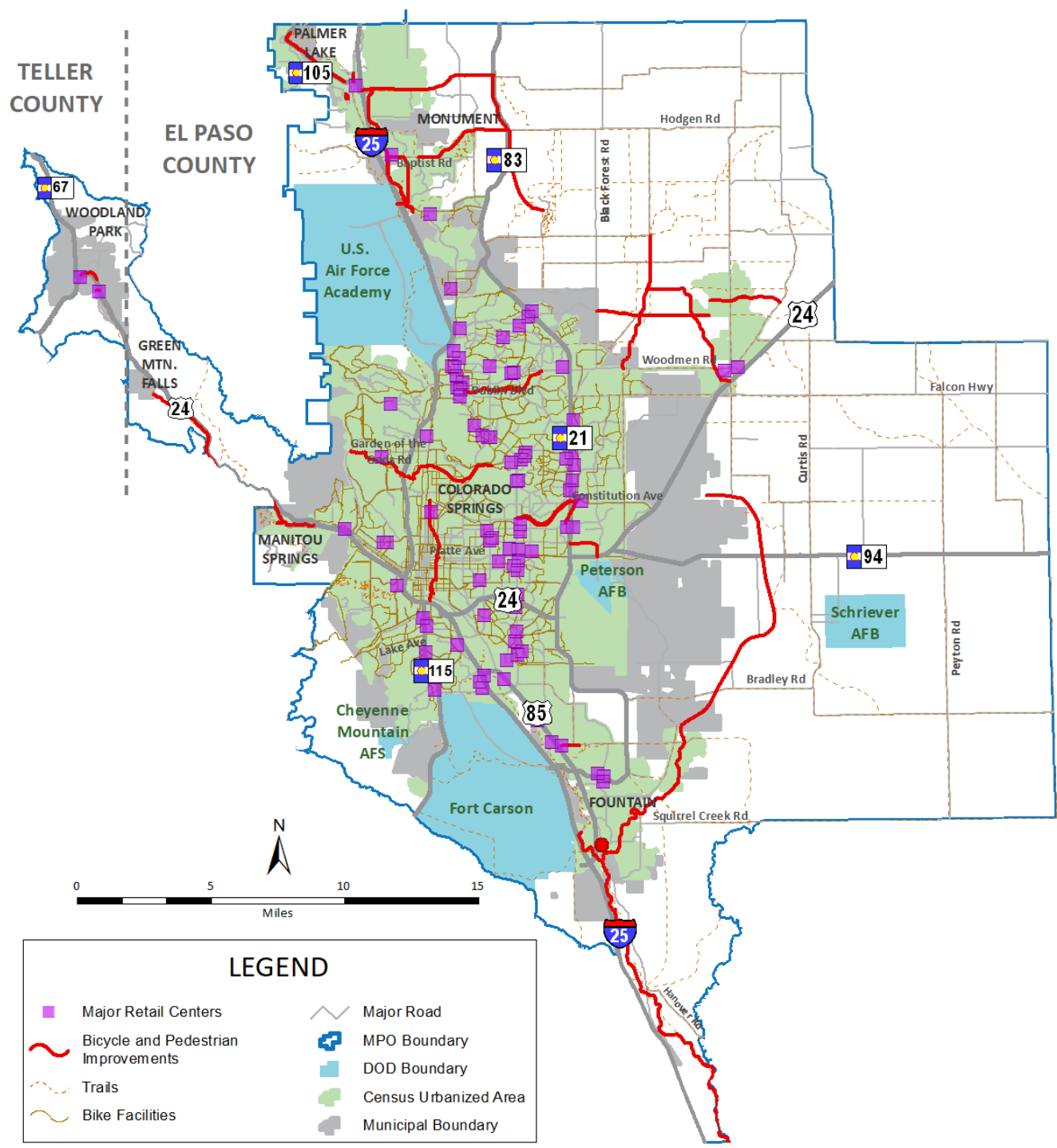
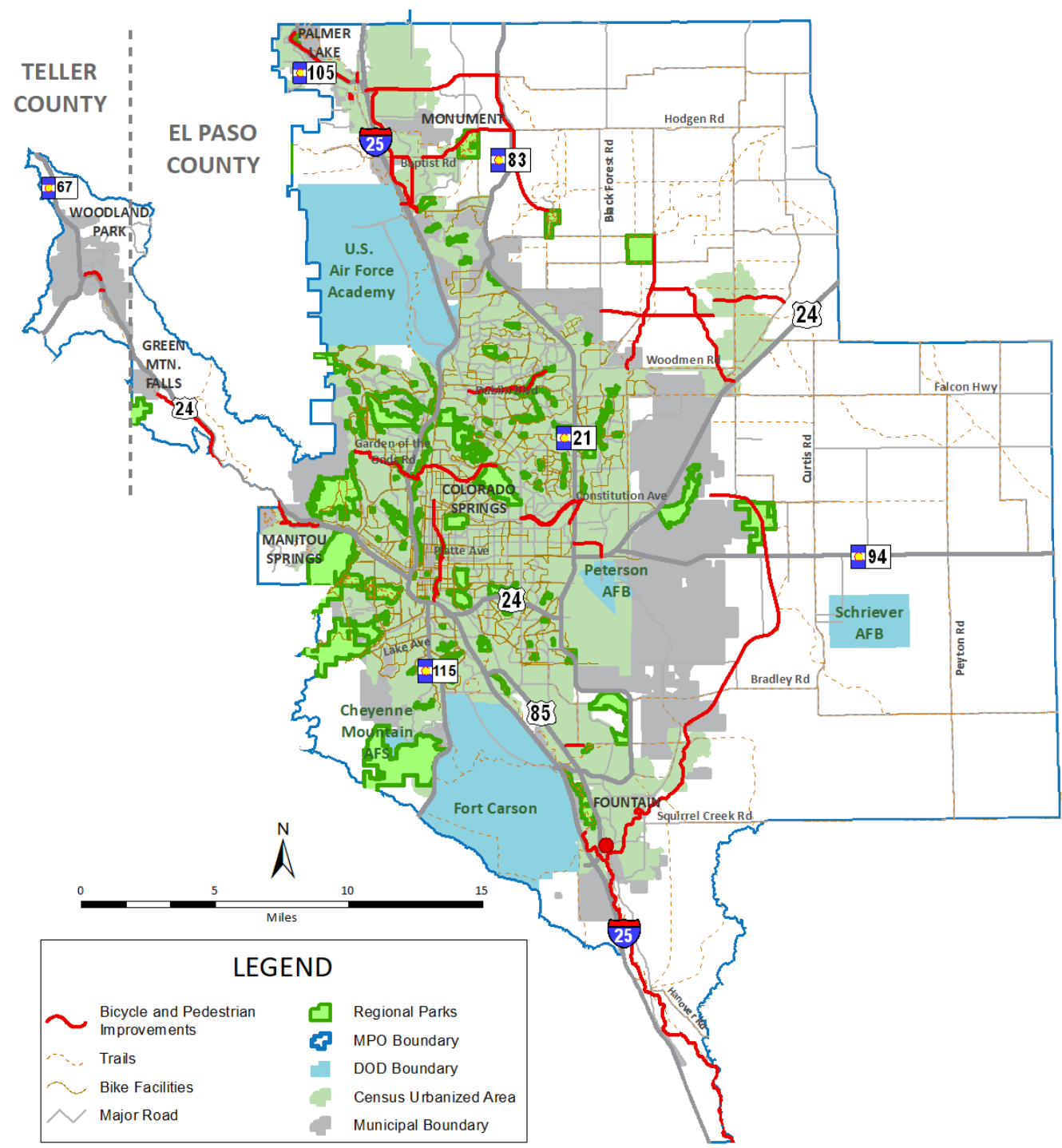


FIGURE 13-10
2045 BIKE-PEDESTRIAN PROJECTS AND PARKS





CHAPTER 14

MITIGATION AND MONITORING

Transportation planning and decision making, including project selection, must be integrated and coordinated with land use, water quality, and natural resource concerns.

Preserving the high quality of life in the Pikes Peak region requires maintaining or enhancing communities and ecosystems while also accommodating growth and development. PPACG aspires to accomplish this by being as deliberate in developing coordinated and collaborative mitigation activities as we are in developing transportation projects. PPACG collaborates with local governments, non-profit organizations, and state and federal resource and regulatory agencies to mitigate adverse impacts of transportation projects. Collaboration among transportation planning, economic development, land development, and wildlife conservation efforts is critical because the impacts of policies will cut across all of these individual efforts. A desired outcome of the PPACG collaboration process is that transportation planning and decision making, including project selection, is integrated and coordinated with land use, water quality, and natural resource planning and management. The identification of a full range of environmental concerns will occur early in the transportation planning and project development process.

In the context of a regional transportation plan, mitigation means the broad strategies, policies, programs, and actions that serve to help avoid, minimize, mitigate, or remediate impacts to the human and natural environments associated with the implementation of the regional transportation plan. This planning process will identify issues and concerns that can be addressed proactively and can then be mitigated or incorporated into projects in a manner that both informs and reinforces other planning efforts in the region.

FEDERAL REQUIREMENT

As part of the consultation process, the long-range plan shall include a discussion of types of potential environmental mitigation activities and areas to carry out these activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan (23 CFR Part 450.322 (f)(7)). These activities shall be developed in consultation with Federal, State and tribal wildlife, land management, resource agencies and regulatory agencies. (23 CFR Part 450.322(g)).

There is only one federal source of funding directed by the PPACG Board to this effort: STP-Metro funds. Local, state, and federal officials have access to other funds, but they are very limited.

FEDERAL OBJECTIVES

The FAST Act requires a more consistent consideration of environmental issues at all stages of the transportation project development process, especially during long-range planning. Environmental mitigation strategies and activities are regional in scope and may not address potential project-level impacts. Changes in the FAST Act do not alter how the National Environmental Policy Act relates to a long-range transportation plan. The requirements to previous legislation including MAP-21 and SAFETEA-LU, have been incorporated into the FAST Act.

PLANNING FOR MITIGATION

Planning in the context of complex interactions between social, economic, environmental, and political factors creates special challenges, especially when different stakeholder groups have conflicting interests. It is difficult to mitigate a negative impact if there isn't agreement on what constitutes a negative impact. PPACG uses a collaborative planning process that identifies and adapts to conditions based on modeling, monitoring, and other research and analysis efforts. A desire of this is to add value to other planning and mitigation efforts and reinforce their effectiveness.

MONITORING REGIONAL INDICATORS

Using a common set of performance measures, or indicators, among agencies makes those indicators much more meaningful and useful. These measures should focus on the current status and on-going trends of resources. It is imperative that these indicators are developed cooperatively with partner agencies. Monitoring changes in key indicators not only provides information on whether a strategy or plan is delivering desired outcomes, but also assists in the early identification of unintended impacts.

ENVIRONMENTAL MITIGATION— NATURAL SETTING

GEOLOGY AND PALEONTOLOGY

The geology and topography of the region makes for impressive landscapes, but its inherent nature also makes it susceptible to risks and hazards. Most of the City of Colorado Springs is built over Pierre Shale, a Cretaceous rock that is weak and prone to shrinking and swelling, especially on hillsides. The regional jurisdictions each have their own requirements for developers on how to address geologic hazards on any proposed site and to engineer ways to mitigate those hazards.

The Colorado Geological Survey's regional landslide-susceptibility map delineates which areas are prone to slope failure and which are not. City planners, consultants, developers, and homeowners can use this data as a tool for future development and for appropriate hazard mitigation.

Banning Lewis Ranch is a key archaeological site in eastern Colorado Springs. The Palmer Land Trust is working to conserve portions of the ranch. Two million years of geological history from about 67 to 65 million years ago are preserved at Banning Lewis Ranch, including the most recent of five mass extinctions when an asteroid hit Mexico, ending the time of dinosaurs. Several hundred feet of rock, covering a million years' time, are filled with dinosaur

and plant fossils and, above the extinction line, with the fossils of mammals.

At this location, there is a great opportunity to intermix ecological conservation with archaeological conservation and new development. There is the opportunity to capitalize on the unique ecological, archaeological and paleontological assets using innovative development and include conservation and recreation amenities.

CLIMATE AND PRECIPITATION

Climate is important for energy conservation and safety reasons and should be considered along with other physical factors in new development. For instance, subdivisions can be designed to capture the sun and be protected from the wind. Developments with steep street grades that face north can be a safety hazard in the winter.

Climate is indirectly affected by development patterns that influence travel behavior. Combustion of motor vehicle fuel emits carbon dioxide, a greenhouse gas that may trap heat within the atmosphere. With the current level of greenhouse gases, the atmosphere may warm and temperatures and sea levels may rise over the next 50 years. In the Pikes Peak region, there could be an increase in the occurrence of extreme weather events such as droughts, floods and wildfires. There may be increased incidences of extreme weather, including heat waves, cold snaps, wind, and severe storms. Creating a transportation system that is resilient to these events includes providing more redundant mobility systems, creating additional transportation choices, accommodating floodways under bridges, reducing vehicle travel, and decreasing fuel use per trip. This includes decreasing traffic congestion and increasing the occupancy of vehicles.

LANDSCAPE AND VEGETATION SOILS AND MINERAL RESOURCES

Of the nearly 200 soils found within the area, only two are useful as potential restoration soils. The Fluvaquentic Haplaquolls (Figure 14-1) is a hydric soil located on terraces and the higher portions of floodplains with continual sources of groundwater supply. Due to landscape positions, these soils are elevated out of the immediate floodplain and are consequently not as prone to water erosion. The information on Fluvaquentic Haplaquolls soils will be combined with other information from other resource reports to pinpoint specific areas suitable for restoration.

Important characteristics of these soils include:

- The ability to support wetland or riparian vegetation;
- Have continual source of hydrology;
- Not prone to water or wind erosion;
- Close proximity to riparian areas; and
- Accessible to monitoring.

Soils not selected for potential restoration projects:

- Generally occur in cold climates;
- Do not have consistent hydrology;
- Have shallow depths to bedrock or contain exposed bedrock;
- Are located on steep slopes; and
- Lack close proximity to riparian areas.

Plants selected for restoration activities should be based on the characteristics of the soils. Native plants that can tolerate salinity, such as western wheat grass, should be selected for restoration activities. Soils that should be avoided in potential restoration activities generally do not have consistent hydrology, have shallow depths to bedrock or contain exposed bedrock, are located on steep slopes, lack close proximity to riparian corridors, or are located in the middle of floodplains.

FIGURE 14-1
HYDRIC SOILS



VEGETATION

Vegetation impacts from transportation projects can have direct effects on the ecological health of an area and cumulative impacts to wildlife and other issues. In addressing vegetation, mitigation strategies include:

- Revegetating affected areas to replicate or enhance native vegetative communities;
- Planting native trees in proximity to locations where trees are removed;
- Minimizing construction disturbances by implementing best management practices;
- Enhancing and restoring the existing conditions of the local vegetative communities;
- Re-establishing and maintaining fundamental structures and ecological processes across landscape; and
- Surveying areas that are impacted by road widening to minimize the potential disturbance.

Potential vegetation mitigation locations are closely tied to the type of wildlife they support. The Colorado Natural Heritage Program designates Potential Conservation Areas that help sustain rare, diverse, and/or significant ecological processes. It is critical to avoid bisecting these areas or, if a road already bisects an area, to take steps to increase connectedness, such as increasing bridge width and culvert height to accommodate motility. Key areas are listed in Table 14-1 and shown in Figure 14-2. Other potential conservation areas include those designated by:

- Colorado State Parks as natural areas because they consist of native plant communities, habitat for rare plants or animals, geologic formations or processes, and paleontological locations.
- USDA/USFS Research Natural Areas, the Forest Service Research Natural Areas (RNAs) network protects some of the finest examples of natural ecosystems for the purposes of scientific study and education and for maintenance of biological diversity.

- Colorado Open Lands and the Nature Conservancy have established conservation easements as part of the Peak to Prairie Project. These groups focus on properties in southern El Paso County and northern Pueblo County along Fountain Creek.
- Palmer Land Trust, Colorado Division of Wildlife and Great Outdoors Colorado have been working on the Pikes Peak Conservation Corridor (PPCC). The PPCC is a block of ecologically sensitive public and private lands that frame the north slope of “America’s Mountain” between Woodland Park and Divide, Colorado.

WETLANDS

Under the Clean Water Act and Interagency Wetlands Policy Act, the Colorado Department of Transportation must demonstrate that all measures were taken, to first avoid, and then minimize, impacts to wetlands, to the fullest extent practicable. Unavoidable impacts are mitigated through either restoration or creation of wetlands. CDOT uses the following best management practices, which are requirements of Section 107.25 of the Standard Specifications for Road and Bridge Construction, to limit temporary impacts to wetlands:

- Construction, staging, fill material, equipment, etc. should be located outside of wetlands and riparian areas and at a minimum of 15 meters outside of the high-water mark.
- All practicable efforts should be used to avoid and minimize in-stream work.
- All measures should be taken to avoid excess application and introduction of chemicals.
- Geotextile fabrics shall be placed over existing wetland areas located within work areas.
- Temporary fencing should be installed in areas around the project area to protect wetlands and riparian areas.

Cities and counties also have requirements for construction activities around wetlands. Discharge of water directly into streams from cofferdams or new channel construction is prohibited. Direct

impacts to wetlands are typically offset by compensatory mitigation due to regulatory requirements (Section 401 and 404 of the Clean Water Act).

Generally, the Fountain Creek area provides the greatest opportunity for the restoration of wetland/riparian areas. Many of the wetlands are in need of preservation due to high development pressure. Specific mitigation locations depend on many factors, such as the type of construction activity, vegetation type, health of the wetland area, and if it is a wetland creation or wetland enhancement project.

As shown in Figure 14–2, the southern portion of El Paso County and northern Pueblo County represent the greatest opportunities for the preservation of large, quality wetland and riparian areas. One example of this is large plains cottonwood complexes along Fountain Creek, mixed with wetlands. Monument Creek Sub-Watershed also has smaller high-quality wetlands ideal for preservation at the edge of rural areas that are being pressured by development. The criteria for high-restoration potential include some level of undisturbed areas combined with a relatively large undeveloped area. Disturbance could include weed infestation, erosion, and sedimentation.

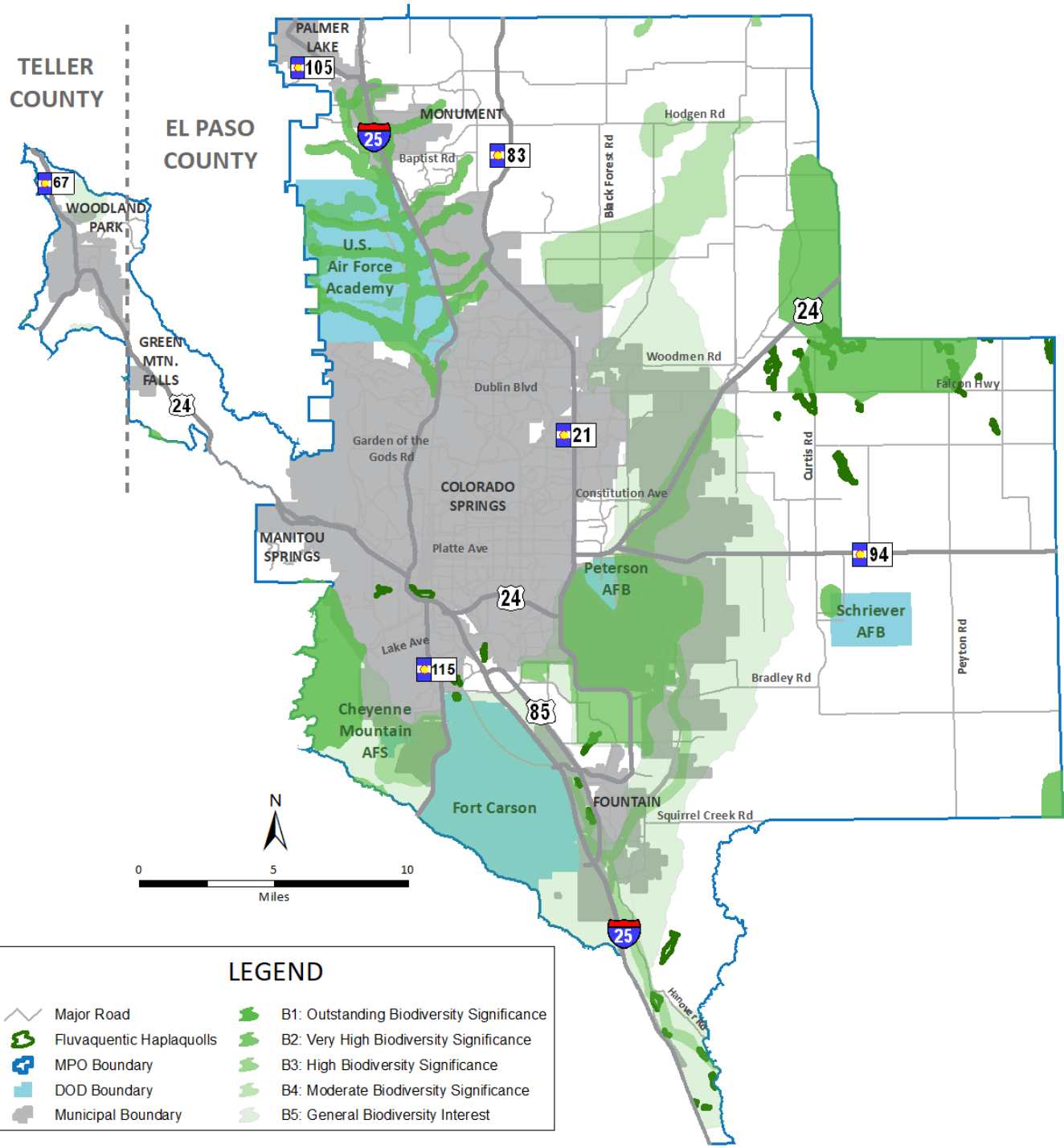
HAZARDOUS MATERIALS AND SOLID WASTE

Although groundwater and surface water have been impacted by hazardous materials in numerous areas, the majority of these areas are currently being remediated. Many hazardous material facilities in the region have been cleaned up and have received “no further action” or “closure” status from the State of Colorado. Many of the remaining sites are open leaking underground storage tanks that are currently being remediated under direction by the State of Colorado. Corrective Action and Comprehensive Environmental Response, Compensation and Liability Information Systems sites and some landfills are also currently undergoing soil and/or groundwater remediation. Although groundwater and surface water have been impacted by hazardous materials in numerous areas, the majority of the areas are currently being remediated.

TABLE 14-1
POTENTIAL CONSERVATION AREAS

B1 OUTSTANDING SIGNIFICANCE	B2 VERY HIGH SIGNIFICANCE	B3 HIGH SIGNIFICANCE	B4 MODERATE SIGNIFICANCE	B5 GENERAL SIGNIFICANCE
Pikes Peak	Monument Creek	Farish Recreation Area	La Foret	I-25 Shamrock
Rare Plants of the Chalk Barrens	Severy Creek	Air Force Academy Oak Foothills	Halfway Picnic Ground	Crystola Creek at Aqueduct
	Cheyenne Cañyon	Colorado Springs Airport	Cheyenne Mountain	Fountain Creek
	Cascade Creek East	Blue Mountain to Phantom Canyon	Fountain and Jimmy Camp Creeks	Fountain Creek Springs at Pinon
	Aiken Canyon	Almagre Mountain	Sand Creek Ridge	Hanover Road
	Chico Basin Short- grass Prarie	Bohart Playas	Blue Springs	Whit Gulch
	Jude Orr Road	The Craggs	Midway Prairie	Widefield Fountain
	Schriever Pass	Central Arkansas Playas	Catamount Creek	
	South Slope	Chico Creek	Cave of the Winds	
	Signal Rock Sandhills	Monument Southeast	Crystola	
		Table Rock	Pine Drive	
		West Kiowa Creek at Elbert	Pineries at Black Forest	
			South Catamount Creek	
			Upper Crystola Creek	

FIGURE 14-2
POTENTIAL CONSERVATION AREA MAP



SEISMIC AND EXTREME WEATHER IMPACTS

There is increasing awareness regarding the effects of extreme weather and seismic events on transportation projects. Creating a resilient transportation system that can adjust to disasters is a new effort from the Colorado Resiliency and Recovery Office.

SURFACE WATER AND GROUNDWATER ISSUES STORMWATER RUNOFF AND FLOODING

Imperviousness is an issue anywhere the natural ground surface is altered. Parking lots, roads, and buildings all interfere with natural filtration processes and also serve to divert and concentrate stormwater flow. All new developments require the building of new roads, and these projects will dramatically increase the amount of impervious surfaces. Identification of key filtration areas is necessary to reduce the issues that arise from imperviousness. At sites where infiltration must be preserved, stormwater ponds are a possible solution. Stormwater ponds collect runoff from roadways and other impervious surfaces and allow the water to enter the ground at a nearby site.

Given that the Moving Forward 2045 Regional Transportation Plan will increase the amount of impervious surfaces, several management strategies can be used to reduce the impacts of impervious surfaces on waterways. The state of Colorado has developed a Non-point Source Management Program to reduce the amount of pollutants in the waterways. This program suggests many best management practices to help manage the construction and runoff of roads and reduce pollution in a feasible, economically viable way.

The Colorado Department of Transportation has adopted an erosion control manual for all highway and road construction projects. The main point of this BMP is to protect areas that provide important water quality benefits that are susceptible to erosion or sediment loss to limit land disturbance. The manual also contains inspection and general maintenance guidelines to maintain the erosion and sediment release from a construction site. See Table 14-2 for a few examples. (The full text can be found in Colorado’s Non-point Source Management Program.)

TABLE 14-2
BEST MANAGEMENT PRACTICES

EROSION AND SEDIMENT CONTROL BMPs	STORMWATER QUALITY MANAGEMENT BMPs
Seeding and Mulching Surface	Grass Swales
Roughening Erosion Bales and Silt Fence	Grass Buffer Strips
Berms, Diversions, and Check Dams Inlet and Outlet Protection	Constructed Wetlands
Slope Drains Erosion Control Blankets	Extended Dry Ponds
Channel Linings Sediment Traps Sediment Basins	Wet Detention Ponds
	Infiltration Basins

EROSION AND SEDIMENTATION

A broad range of potential watershed management practices are designed to mitigate past and future problems, controlling nonpoint-source pollution, protecting water quality and riparian habitats, mitigating floods, and maintaining stream stability. The Colorado Department of Transportation has developed an Erosion Control and Stormwater Quality Guide that includes guidelines for the application, use limitations, design, construction, and maintenance of best management practices for erosion and sediment control, water quality, and stormwater quality management.

WATER QUALITY

Water quality is extremely important to land health, ecosystem health, and human usage, and is greatly affected by both point and nonpoint source pollutants. Good water quality is usable for wildlife and habitat preservation, recreation, drinking water supply, crop irrigation, and industry. Successful mitigation will be

accomplished using a regional and coordinated approach that recognizes creeks and streams as regional assets supporting diverse interests.

PPACG developed a watershed-based plan for the Fountain Creek watershed in 2017. This study prioritizes the areas needing evaluation and assesses the potential effectiveness of best management practices to remediate segments listed as water-quality impaired for E. coli. The study presents solutions for reducing nonpoint source pollutant loadings that contribute to water quality impairments and outline how these solutions can be implemented. Table 14-3 is an overview of the water quality issue in the region.

AIR QUALITY

The Pikes Peak Metropolitan Planning Area is in the final stages of carbon monoxide maintenance and is fully compliant with all current air quality standards. The most likely pollutant that the area could violate is ozone.

OZONE

On October 26, 2015, the Environmental Protection Agency reduced the National Ambient Air Quality Standard for ozone to 0.070 parts per million. The Colorado Springs Urbanized Area currently meets this standard. If the region is designated as a non-attainment area in the future, strategies will be evaluated to determine the best mechanisms to bring the area into compliance. Transportation related strategies could include vehicle emission testing, addressing vehicle on-board diagnostics such as check-engine lights, or other measures. The development of emissions budgets may also be required, similar to what was done in the past for carbon monoxide. PPACG’s regional transportation plans will be required to conform to (not exceed) these emissions budgets.

TABLE 14-3
OVERVIEW OF WATER QUALITY ISSUES

TOPIC	ISSUE/IMPLICATION
Arsenic	Arsenic standards for streams identified for drinking water and fish consumption use could decrease significantly in the near future. Such a decrease could require treatment of groundwater from construction dewatering before discharge into these segments.
Copper	There is the opportunity to develop alternate standards for copper where such standards could provide relief compared to the current hardness-based limits.
E. coli	Numerous streams are listed as impaired for E. coli. If these streams are not delisted, dischargers could receive more stringent limits.
Nutrients	Colorado’s nutrient standards, especially nitrogen, are so low that they are currently technologically infeasible without going to drinking-water levels of treatment (re- verse osmosis). Identification of alternate, site-specific options to these stringent values is imperative to balance the cost/benefit.
Selenium/ Sulfate	Naturally occurring levels of selenium exceed the current standard, and lower standards are expected in the near future.
Temperature	Temperature standards could drive dischargers to install effluent cooling, such as chillers or cooling towers.
Resegmentation	Stream segmentation may not be representative and could result in standards that are overly stringent. The Commission directed AFCURE to resolve re-segmentation issues in the Fountain Creek Basin.

ENVIRONMENTAL MITIGATION —
BIOLOGICAL RESOURCES AND ISSUES

WILDLIFE SPECIES, VIEWING AREAS, AND CROSSINGS

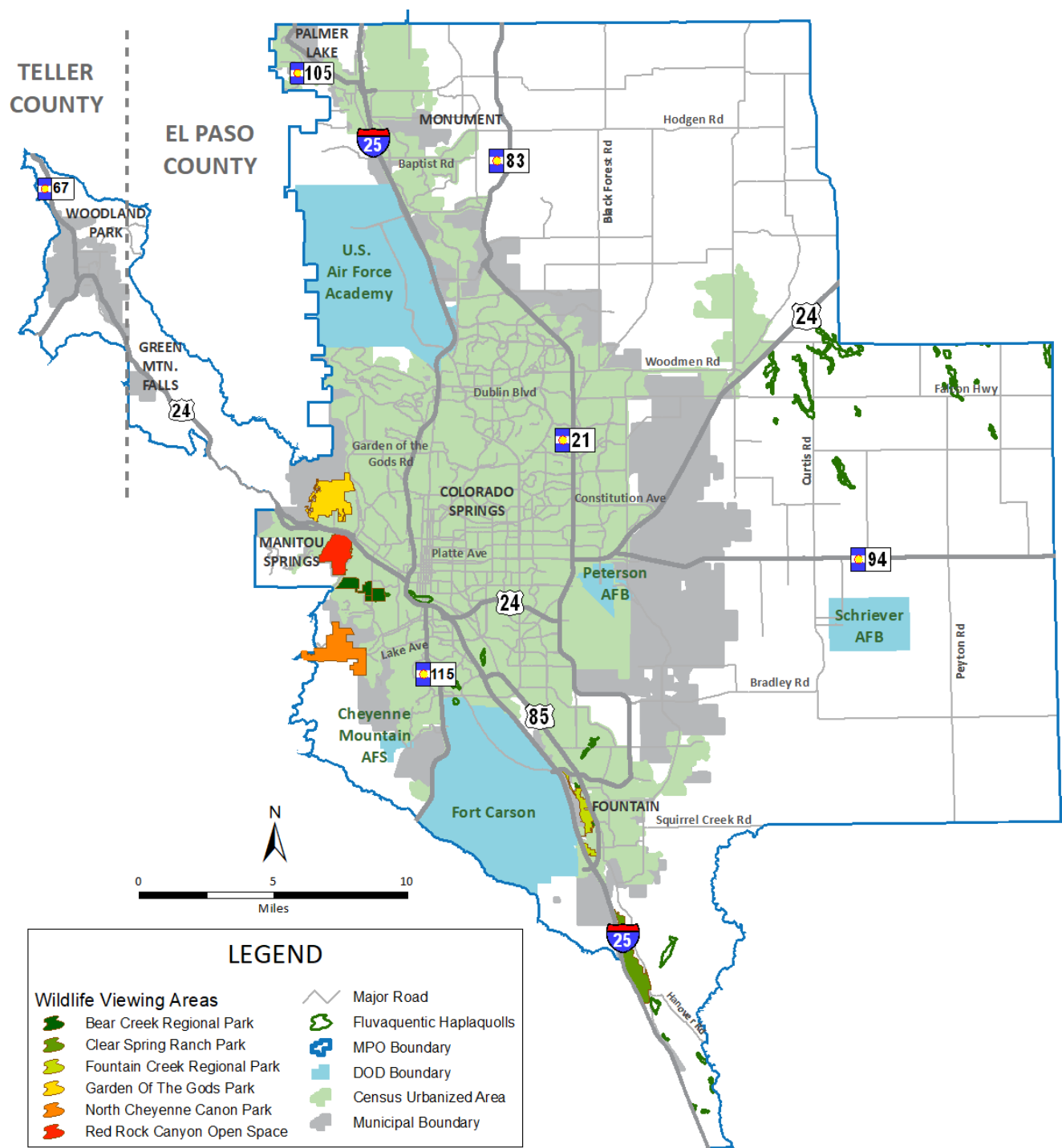
Avoiding having wildlife cross roads is beneficial to both the wildlife and to the people in cars that may impact that wildlife. Strategies for protecting wildlife species also serve to connect habitats. The sites, shown in Figure 14-3, have been identified by Colorado State Parks, the Colorado Natural Heritage Program, wildlife viewing guides, local nature societies, and field experts as areas to observe wildlife and preserve high-quality wildlife habitat. These areas are currently protected as part of the Pike National Forest, city and county open space, or parkland, or are on military bases and are subject to federal regulations. While some progress has been made in this area, the state could look to their surrounding states (Arizona and Montana) to find solutions that have been shown to work in reducing wildlife collisions.

MIGRATORY POPULATIONS

Most migrations, regardless of species, occur on predictable annual cycles. Timing transportation projects to reduce impact is a simple method for ensuring safety of migratory species. Also, for land animals, it is necessary to protect migration corridors and provide effective ways to pass through development and avoid road crossing.

Primary migratory corridors are along main rivers and streams and are most concentrated to the north of the city, where significant development is expected to occur. These areas need to be looked at closely and carefully to examine the potential of habitat destruction by road building and development.

FIGURE 14-3
WILDLIFE VIEWING AREAS



CULTURAL RESOURCES

SOCIOECONOMICS

Protection of the environment is a key element in maintaining a vital regional economy. Many examples of the potential for economic diversification depend on protecting and enhancing water quality, such as tourism and recreation.

These include:

- Expansion of recreational opportunities under a system more sensitive to diverse public needs, balanced with resource conservation and watershed protection;
- Regional and multi-jurisdictional watershed management that includes participation from a broad range of stakeholders, resource managers, and public officials;
- Maintenance and/or establishment of viewsheds; and
- Increased opportunities for local economic development.

Demographic and socioeconomic trends in the region not only affect the environment but also provide a base for establishing the region’s transportation vision. Rapidly expanding population, as with this region, employment, and urban area size typically result in the need for increased transportation facilities and services. Changes in population alter travel patterns. An increase in the number of households or an increase in income results in an increase in the number of vehicle trips.

Social patterns can determine travel characteristics as well. With new construction or increased traffic congestion, homes or businesses could be displaced and ethnically-homogeneous neighborhoods could be divided. To address such negative impacts, more efficient utilization of transportation facilities is important to meet increased travel demand. Improved transportation facilities and services are required to alleviate congestion, to maintain acceptable air quality, and to provide for the general safety and welfare of the community. Maintaining environmental quality is critical for quality of life of residents, as well as for tourists.

LAND USE

Due to the rapid growth described in Chapter 4: Scenario Development, land use within the Metropolitan Planning Organization area is increasingly residential, commercial or urbanized and decreasingly agricultural or natural. This results in a low-density, suburban and exurban land-use pattern that spreads development impacts more broadly across the region. With this development comes increased infrastructure maintenance costs, increased automobile use and increased air and water pollution.

NEIGHBORHOODS

Roads have a particular impact on the landscape, fragmenting natural areas and neighborhoods. Effects of highways and roads on neighborhoods include:

- Loss of landmarks;
- Degraded neighborhood identity;
- Loss of community cohesion;
- Interruption of traffic flow within neighborhoods; and
- Increased noise.

To achieve these goals, many neighborhoods have formed active organizations to allow residents of different areas to get together to express common concerns and opinions. Examples of such groups include the Old North End Neighborhood association and the Organization of Westside Neighbors.

The Metropolitan Planning Area contains numerous identifiable neighborhoods with a variety of living conditions. For the most part, new neighborhoods in the MPO area are located in the outlying areas to the north and east of the region, far from the downtown district.

PARKS AND RECREATION

When developing projects, coordinators should ensure that transportation developments do not interfere with the existing park system and should be encouraged to continue to reserve lands for future recreational use. Park and open space design

should meet a wide range of recreational needs, preserve important natural features, use native landscaping materials, and incorporate multi-use facilities.

Recreation sites exist throughout the transportation planning region. The majority of parkland acreage within the region is in its natural state such as the Garden of the Gods or Palmer Park, while the rest can be found in community parks, neighborhoods parks, golf courses, and bicycle and pedestrian pathways. Projects that cross or may interfere with a site may occur. For example, bicycle and pedestrian paths commonly cross roadways and high levels of nonmotorized accessibility must be maintained when developing new road projects.

Section 4(f) of the USDOT Act of 1966 applies to any USDOT-funded projects that involve the use of any significant publicly-owned public park, recreation area, or wildlife and waterfowl refuge and any land from a historic site of national, state, or local significance. Special environmental analyses are required to determine if there is a feasible or prudent alternative to taking the proposed action involving the use of the 4(f) property. In addition, the project sponsor must demonstrate that all possible planning to minimize harm has occurred. These measures to minimize harm, which include mitigation, will be documented in the 4(f) evaluation.

Section 6(f) of the Land and Water Conservation Fund Act of 1965 applies to any USDOT-funded projects that involve the use of lands using Land and Water Conservation or Open Space Land Acquisition and Development funds for their purchase or development.

SUMMARY

Individual projects in the Moving Forward 2045 Regional Transportation Plan could have a significant impact on the environment if they are not managed properly. The cumulative impacts to the region are significant and warrant a well-reasoned plan to remediate the social, economic, and ecological impacts.



Impact prevention and mitigation strategies must be fully evaluated to prevent as much harm as possible during the construction and operation of new roads. Some possible mitigation effects for the construction of new roads is to ensure that all construction is done in a way that avoids and minimizes harm. After these efforts have been done, further efforts to mitigate and remediate past harms may also be necessary. Alternatives to roadway construction should be thoroughly evaluated to identify any other possibilities that offer the least impact to people and the environment.



CHAPTER 15

AIR QUALITY CONFORMITY

Air quality conformity ensures that transportation plans will not create violations of federal air quality standards.

In the 1980s, carbon monoxide levels in the Colorado Springs area exceeded the Environmental Protection Agency standard and the area was designated non-attainment for carbon monoxide. The last violation of the 8-hour standard was in 1989. This allowed the area to be re-designated as a maintenance area. The EPA requires maintenance areas to develop two 10-year air quality maintenance plans that demonstrate attainment of the standard for a 20-year period.

The EPA reclassified the Colorado Springs area as a maintenance area in October 1999. The maintenance area boundary is shown in Figure 15-1. More information about air quality can be found in Chapter 2, Regional Setting.

PPACG is the Metropolitan Planning Organization for the Colorado Springs Urbanizing Area. One of the responsibilities of an MPO in an air quality maintenance area is making an air quality conformity determination for regional long-range transportation plans and transportation improvement programs.

The US EPA and the US Department of Transportation have jointly developed “Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 U.S.C. of the Federal Transit Act,” commonly called the transportation conformity rule.

Air quality conformity ensures that transportation plans, programs, and projects will not:

- Produce new violations of air quality standards;
- Worsen existing violations; and
- Delay timely attainment or maintenance of national ambient air quality standards.

The conformity determination of the Moving Forward 2045 Regional Transportation Plan is based on these criteria.

CONFORMITY CRITERIA

On September 7, 2004, the EPA published a final rule (see 69 FR 54019; effective November 8, 2004) that approved the second revision to the “Revised Carbon Monoxide Maintenance Plan for the Colorado Springs Attainment/Maintenance Area.” This version of the carbon monoxide (CO) maintenance plan established a motor vehicle emissions budget (MVEB) of 531 tons per day (tpd) of CO for 2010. When showing conformity to this version of the CO maintenance plan, estimated emissions from on-road mobile sources in the future were required to be less than the CO MVEB (531 tpd) that was established in the EPA approved maintenance plan.

On March 31, 2010, Colorado submitted to EPA a Clean Air Act (CAA) section 175A(b) required second 10-year CO maintenance plan for the “Revised Carbon Monoxide Maintenance Plan for the Colorado Springs Attainment/Maintenance Area.” This CO maintenance plan was prepared by the Colorado Department of Public Health and Environment (CDPHE) to meet the requirements and provisions of EPA’s October 6, 1995, “Limited Maintenance Plan” policy option to demonstrate continued maintenance of the CO National Ambient Air Quality Standard (NAAQS) for the Colorado Springs Attainment/Maintenance area. According to this policy, areas that can demonstrate CO monitored design values at or below 85% (or 7.65 ppm) of the CO 8-hour NAAQS of 9.0 ppm for eight consecutive quarters qualify to use EPA’s Limited Maintenance Plan (LMP) policy. The CDPHE showed in

the second 10-year maintenance plan that the Colorado Springs area’s CO design value for eight consecutive quarters was 2.6 ppm, well below the required 7.65 ppm. A key provision for an LMP maintenance area is that these areas are not required to project emissions over the maintenance period and, therefore, do not establish a MVEB. This is because the air quality design value for the area is low enough that existing SIP controls and federal control measures provide adequate assurance of maintenance of the CO NAAQS over the 10-year maintenance period.

The EPA determined the second 10-year Colorado Springs carbon monoxide maintenance plan, the Revised Carbon Monoxide Attainment/Maintenance Plan Colorado Springs Attainment/Maintenance Area, adequate for transportation conformity purposes on August 2, 2011 (see 76 FR 46288; effective August 17, 2011). EPA approved the “Revised Carbon Monoxide Attainment/Maintenance Plan Colorado Springs Attainment/Maintenance Area” on August 1, 2013 (see 78 FR 46521, effective September 30, 2013). In addition to the adequacy determination, EPA’s August 1, 2013, approval of the second 10-year limited maintenance plan completed the regulatory process, and as such there is no requirement for a MVEB or regional emissions analysis.

Under the LMP approach, transportation conformity is demonstrated by showing that regional transportation plans and transportation improvement programs are consistent with any existing emission budgets. When any existing budgets expire, conformity is then presumed, and regional analyses and emission budget tests for transportation conformity are no longer necessary. The LMP policy states that emission budgets may be treated as essentially non-constraining for transportation conformity because it is unreasonable to expect that such an area will experience so much growth during the maintenance period that a violation of the CO NAAQS would result. Therefore, the “budget test” of the transportation conformity rule is met, according to the policy. For the Colorado Springs Attainment/Maintenance Area, the previous EPA-approved motor vehicle emissions budget (MVEB) was 531 tons per day for 2010 and beyond (69 FR 54019, September 7, 2004.) According to EPA’s LMP policy and SIP and conformity

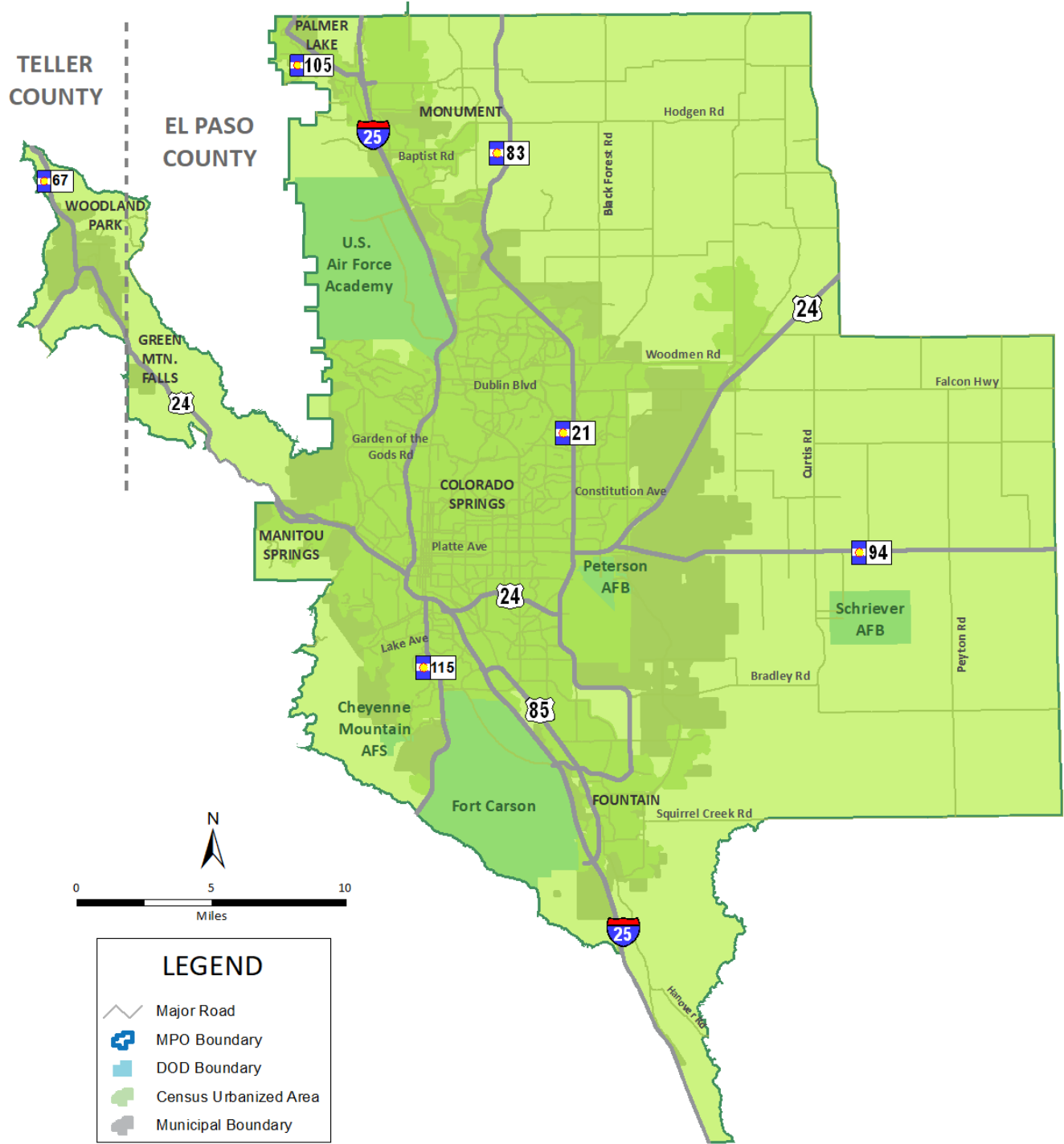
requirements, this MVEB was to remain in place, and conformity demonstrated to this MVEB, through 2010. Beginning in 2011, this MVEB is no longer applicable, and a regional emissions analysis will not need to be performed for conformity determinations for the 2045 RTP. The reason for this is because the 2010 MVEB is no longer in the time frame of the program.

As noted above, transportation plans and TIPs in carbon monoxide LMP areas are presumed to automatically satisfy the emissions budget test requirement, and no regional emissions analysis described in section 40 CFR 93.118 or 93.119 (i.e., MVEB, build less than no-build, or build less than base year) of the conformity rule is required for a transportation plan and TIP conformity. As described above, EPA’s LMP policy states that emissions budgets in LMP areas may be treated as essentially not constraining for the length of the maintenance period because it is unreasonable to expect that such an area will experience so much growth in that period that a violation of the CO NAAQS would result. However, as described in EPA’s LMP policy, conformity still applies in limited maintenance plan areas, and the following requirements must still be met:

- An affirmative conformity determination by the metropolitan planning organization and the US Department of Transportation;
- The requirements for regional transportation plans contained in 40 CFR 93.109; and
- The consultation, public involvement, and fiscal constraint requirements.

All requirements of both the federal conformity regulation and Colorado’s conformity regulation, Air Quality Control Commission Regulation 10, including fiscal constraint and latest planning assumptions, have been met. The 2045 RTP conforms to the Clean Air Act Amendments of 1990 and the “Revised Carbon Monoxide Attainment/Maintenance Plan Colorado Springs Attainment/Maintenance Area.”

FIGURE 15-1
COLORADO SPRINGS CARBON MONOXIDE MAINTENANCE AREA MAP





CONNECT WITH US

Questions, comments or suggestions? Contact us:

-  719.471.7080
-  www.ppacg.org
-  15 South 7th Street,
Colorado Springs, CO 80905
-  www.facebook.com/ppacg
-  www.twitter.com/ppacg
-  www.instagram.com/ppacg



Pikes Peak Area
Council of Governments

Communities Working Together

Mobility and Parking



Vision Statement:

The Mobility and Parking Board shall develop, review and make recommendations to City Council on multi-modal mobility and parking management with the goal of making Manitou Springs a mobile, safe and convenient place for residents, businesses and visitors.

Members:

Cory Sutela – Chair
Karl Stang – Vice Chair
Bill Koerner – Board Member
Joy Porter – Board Member
Luke Harper-Prince – Board Member
Rolf Jacobson – Board Member
Susan Presti – Board Member
Pam Smith - Alternate



Mobility and Parking 2024 Accomplishments



Goal 1	Accomplishment
a. Recommendations for congestion mitigation on Ruxton and Manitou Ave. (Quarterly) b. Update and streamline the RPP program c. Analysis of data to make actionable recommendations - Quarterly Progressive Rates Analysis - Parking Field Studies - Traffic Calming Data	a. MaP had some discussions around these topics but did not make specific recommendations and did not follow a quarterly cadence. Staff and council had ongoing dialog about this. b. This item was not addressed by MaP nor staff. It has been rolled over to a 2025 goal. c. MaP board was kept up to date about staff activity on this topic, and we're aware of council discussions about it. MaP did not make actionable recommendations.

Mobility and Parking 2024 Accomplishments



Goal 2	Accomplishment
Walkable City Rules (Jeff Speck) for solutions and strategies • MAP Board to review and discuss strategies for walkability/bikeability in Manitou Springs • Research and recommend potential walkability experts/groups for purpose of consultation • Host one community discussion regarding mobility corridors (possibly El Paso Corridor, Canon Ave., Downtown Manitou Ave.) and identify options that can be tested with pilot projects • Coordinate one demonstration pilot and gather data (impacts, vehicle speeds, parking occupancies, participant surveys and counts)	• MaP completed a group review of the book Walkable City Rules, throughout all of 2024. We have selected one item from the book as a goal for 2025, related to a community engagement event. • We remain overall supportive of pilot projects and data analysis as a way to test infrastructure but did not recommend or complete any in 2024, and are not recommending any specific pilots for 2025

Mobility and Parking 2024 Accomplishments



Goal 3	Accomplishment
Draft and finalize Bikeability Master Plan · Establish vision/rationale · Assess and plan for network development and connectivity - Explore Creekwalk Trail as a mobility corridor · Assess and plan for amenities and facilities - Collect data on usage of bike hubs, bikes, and E-Bikes · Develop action plan for communication and engagement - Public engagement – open house question/answer session - Introducing plan to the public and promoting engagement · Explore public and private partnerships	• We incorporated Pike Ride use statistics into our monthly meetings and discussed the expansion of hubs. • We collected some basic information about bikeability master plans and made the recommendation that COMS engage with a professional consultant to create a plan - please see details in 2025 goals. • We did not develop an action plan for communication and engagement.

Mobility and Parking 2024 Accomplishments



Goal 4	Accomplishment
Develop onboarding manual for new MAP members • Establish subcommittee and point of contact • New Member Framework Manual (overview, job description/expectations, policies/procedures, impact reports, budget, calendar) • Welcome Procedures (personal phone call, meet and greet, introduction to community) • Review of Vision, Mission, Strategic Plan, and TMMP • Ongoing education and participation in task forces/committees	• Members of MaP have begun a draft of this document • The onboarding manual is not complete but we do plan to have it, and a SOP document, completed in early 2025

Mobility and Parking 2024 Accomplishments



Goal 5	Accomplishment
Support tram program with community engagement and outreach (Apr 2024) • Discussion of uses and beneficial routes, and advise staff • Support community engagement and public outreach/events - Open house question/answer sessions - City Website - Social media	• MaP board had some discussions about tram options. • Some of us attended the city's public meeting as private citizens but there wasn't a MaP board presence or engagement with the public meeting.

Mobility and Parking 2025 Goals



Mobility and Parking 2025 Goals



Goal 1: Develop the scope for a Micromobility (not just bikeability) Master Plan, to focus on safe bike, pedestrian, and roll infrastructure, including thorough public engagement, by December 2025.

- Develop scope by July 2025
- Create RFP by September 2025
- Engage with contractor by December 2025



Mobility and Parking 2025 Goals



Goal 2:

Collaborate with Chamber of Commerce, PaC-Man, and other stakeholders to host a city-wide bike/walk to school/work day to promote walking and biking in 2025.

- Initial Task Force Meeting by February 2025
- Confirm partners and event scope by April 2025
- Target Event Date June 2025

Mobility and Parking 2025 Goals



Goal 3:

Establish a regular cadence of gathering feedback and providing input for Mountain Metro route recommendations for City Council's consideration.

- Initial recommendations for potential changes to Fall 2025 routes (in April 2025)
- Continue to provide timely feedback and recommendations at all future opportunities.

Mobility and Parking 2025 Goals



Goal 4:

Update the *Guidelines and Procedures for Residential Permit Parking (RPP)* for presentation to City Council by August 2025.

- Form subcommittee by February 2025
- Propose & review scope for revisions by April 2025
- Propose revisions by June 2025
- Presentation of proposal by August 2025



Questions

