

# West Royalty Commercial Area



## Transportation Master Plan

City Council Meeting – February 22, 2021





# Project Study Area



# VISSIM Traffic Microsimulation Model



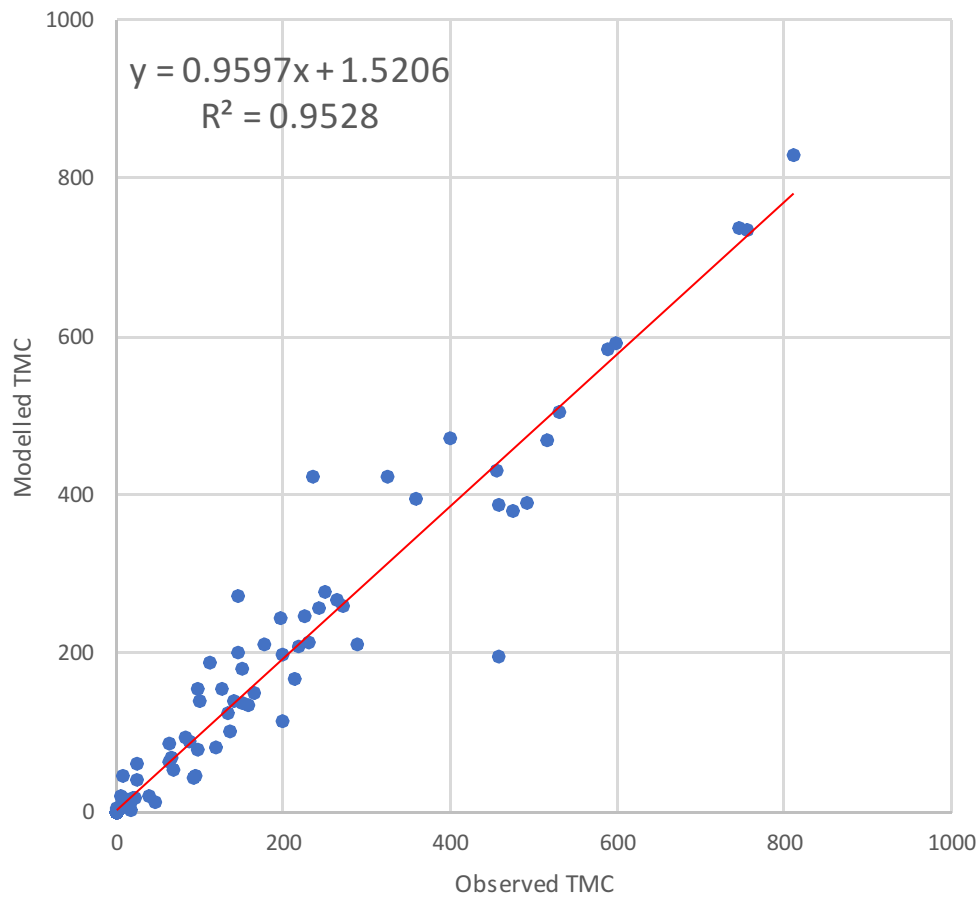
- **Roadways & Streets**
- **Major Driveways**
- **Intersections & Traffic Control Devices**
- **Turning Lanes at Intersections**
- **Lane Geometries (ramps, flares & merges)**
- **Pedestrian Crosswalks**
- **Transit Routes and Bus Stops**
- **Peak Hour Traffic Volumes**
  - **Weekday AM/PM & Saturday**

AM Peak Hour	Modelled	Total	Modelled	Target	Check
Turns with GEH <= 5	62	76	82%	75%	OK
Turns with GEH <= 10	74	76	97%	95%	OK

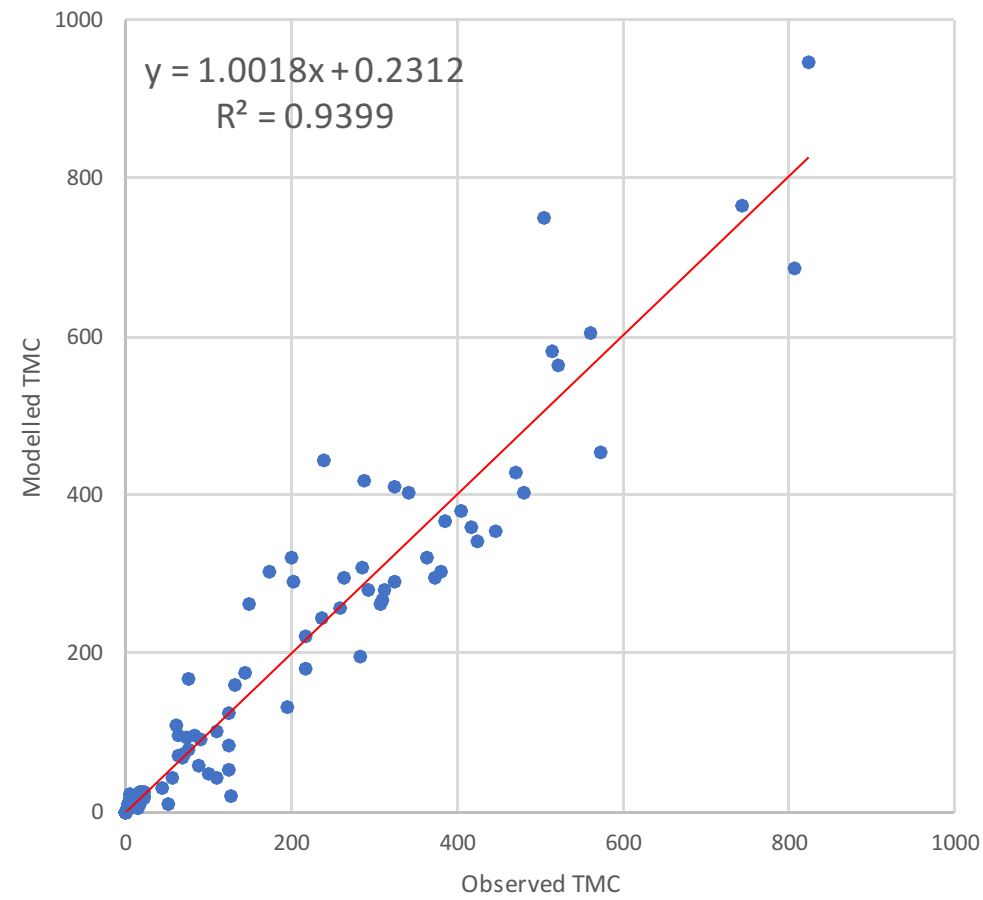
PM Peak Hour	Modelled	Total	Modelled	Target	Check
Turns with GEH <= 5	60	76	79%	75%	OK
Turns with GEH <= 10	74	76	97%	95%	OK

Saturday Peak Hour	Modelled	Total	Modelled	Target	Check
Turns with GEH <= 5	120	145	83%	75%	OK
Turns with GEH <= 10	145	145	100%	95%	OK

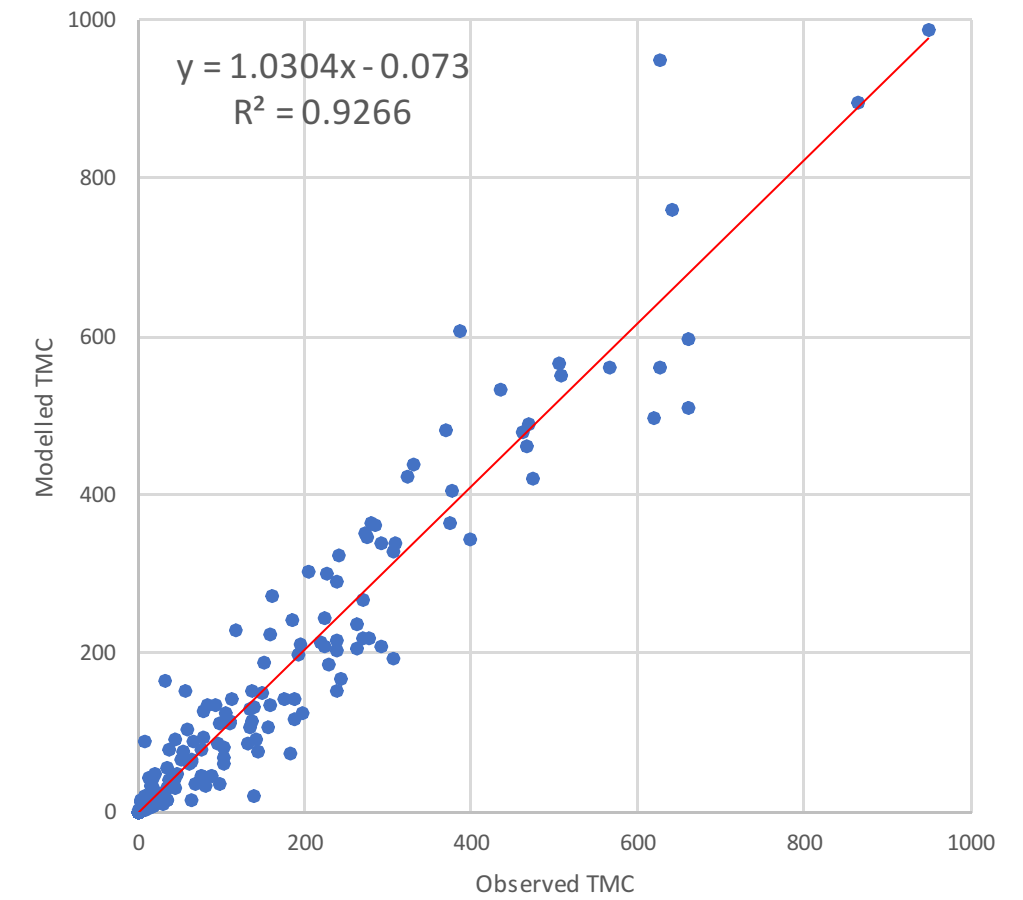
TMC Volumes - AM Peak Hour



TMC Volumes - PM Peak Hour



TMC Volumes - Saturday Peak Hour



# Model Calibration

Road	From	To	Direction	Distance	AM Fast	AM Typical	AM Slow	AM Modelled	AM Difference	PM Fast	PM Typical	PM Slow	PM Modelled	PM Difference	Sat Fast	Sat Typical	Sat Slow	Sat Modelled	Sat Difference
Buchanan Drive	NRiverBuchanan	Walmart	Eastbound	392	110	113	110	49	-64	114	115	122	51	-64	95	106	111	55	-51
Buchanan Drive	Walmart	UniversityBuchanan2	Eastbound	416	75	72	75	50	-22	88	83	89	56	-27	61	70	77	69	-1
Buchanan Drive	UniversityBuchanan2	Walmart	Westbound	426	87	80	87	52	-28	101	105	105	70	-35	68	68	65	64	-4
Buchanan Drive	Walmart	NRiverBuchanan	Westbound	392	114	113	114	57	-56	118	120	116	71	-49	99	105	106	63	-42
Capital Drive	LowerMalpequeCapital	Rhynes	Eastbound	392	91	78	91	35	-43	83	111	145	40	-71	70	84	89	39	-45
Capital Drive	Rhynes	MalpequeCapital1	Eastbound	396	123	116	123	51	-65	116	130	141	69	-61	114	124	123	94	-30
Capital Drive	MalpequeCapital2	Rhynes	Westbound	407	48	40	48	29	-11	43	61	69	39	-22	36	40	41	32	-8
Capital Drive	Rhynes	LowerMalpequeCapital	Westbound	393	54	46	54	58	12	48	72	75	81	9	40	47	52	59	12
Lower Malpeque Road / North River Road	NRiverBuchanan	LowerMalpequeCapital	Northbound	387	57	47	57	82	35	52	82	102	127	45	36	50	58	107	57
Lower Malpeque Road / North River Road	LowerMalpequeCapital	Gates	Northbound	376	35	30	35	34	4	36	45	46	31	-14	32	50	78	29	-21
Lower Malpeque Road / North River Road	Gates	Old Moore	Northbound	323	20	19	20	23	4	20	21	19	24	3	19	19	19	23	4
Lower Malpeque Road / North River Road	Old Moore	Gates	Southbound	323	19	19	19	46	27	19	19	20	24	5	17	19	20	24	5
Lower Malpeque Road / North River Road	Gates	LowerMalpequeCapital	Southbound	376	53	45	53	185	140	49	64	77	96	32	42	51	56	84	33
Lower Malpeque Road / North River Road	LowerMalpequeCapital	NRiverBuchanan	Southbound	387	48	38	48	37	-1	47	69	66	41	-28	32	44	52	36	-8
Malpeque Road / University Avenue	UniversityBuchanan2	MalpequeCapital2	Northbound	298	52	42	52	63	21	48	62	87	72	10	36	47	48	72	25
Malpeque Road / University Avenue	MalpequeCapital1	Irwin1	Northbound	461	50	41	50	31	-10	46	60	84	35	-25	38	47	49	36	-11
Malpeque Road / University Avenue	Irwin2	MalpequeTCH2	Northbound	353	42	36	42	38	2	37	50	61	117	67	36	40	41	104	64
Malpeque Road / University Avenue	MalpequeTCH1	Irwin1	Southbound	341	28	24	28	24	0	25	35	41	24	-11	22	25	30	24	-1
Malpeque Road / University Avenue	Irwin1	MalpequeCapital1	Southbound	442	44	38	44	97	59	44	64	80	105	41	31	38	46	91	53
Malpeque Road / University Avenue	MalpequeCapital1	UniversityBuchanan1	Southbound	271	40	31	40	50	19	41	58	71	52	-6	24	32	36	53	21
Mount Edward Road	Towers	MtEdwardTCH2	Northbound	750	69	64	69	69	5	68	81	83	76	-5	64	68	76	70	2
Mount Edward Road	MtEdwardTCH1	Towers	Southbound	739	55	54	55	66	12	72	80	95	70	-10	53	57	60	66	9
Sandstone Road	Walmart	Rhynes	Northbound	329	69	69	69	41	-28	69	69	70	44	-25	69	70	70	47	-23
Sandstone Road	Rhynes	Walmart	Southbound	329	73	73	73	45	-28	73	73	73	47	-26	73	73	73	45	-28
TCH	MalpequeTCH1	MtEdwardTCH1	Eastbound	792	55	55	63	67	12	56	79	104	66	-13	48	59	71	65	6
TCH	MtEdwardTCH2	MalpequeTCH2	Westbound	796	61	55	61	68	13	55	73	94	69	-4	45	55	79	65	10



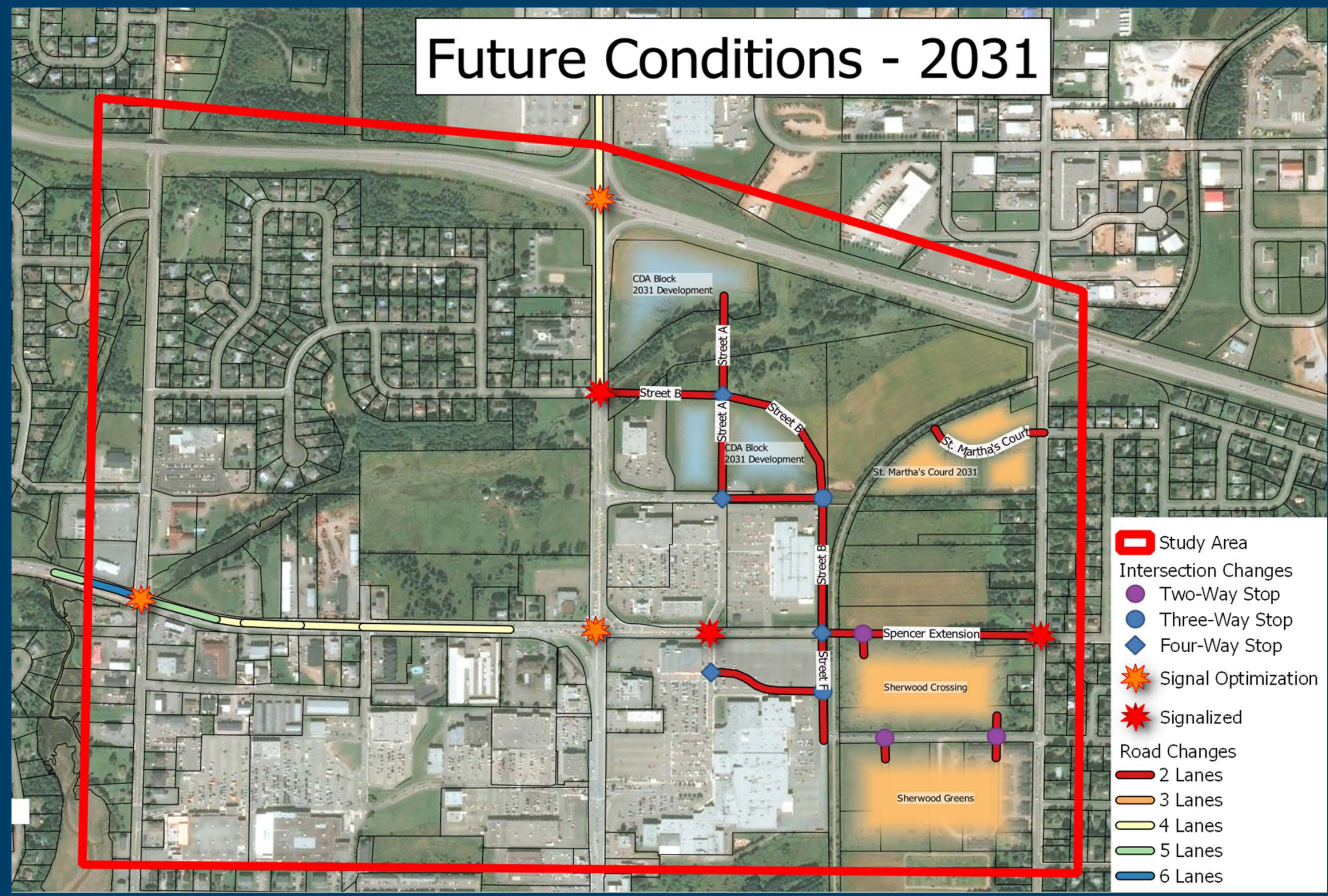
# Model Validation

Existing Conditions



# Baseline Existing Conditions

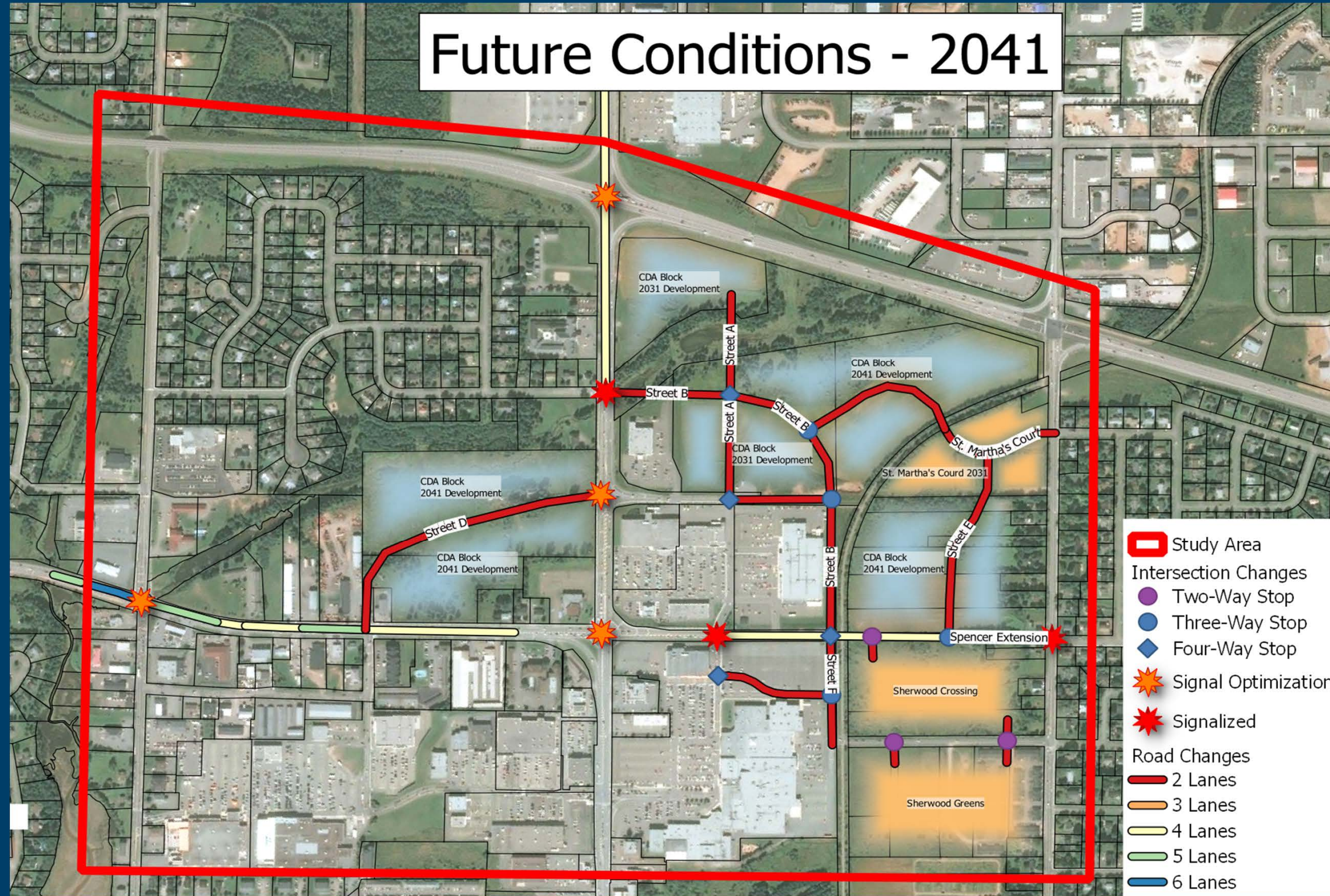
# Future Conditions - 2031



# Future Development Scenario - 2031



# Future Conditions - 2041



# Future Development Scenario - 2041

VISSIM Zone	ITE LU Code	Total Units OR GLA (1000ft)	Weekday, AM PH of Adj. Street (7-9AM)			Weekday, PM PH of Adj. Street (4-6PM)			Saturday, PH of Generator		
			TOTAL AM TRIPS	AM In	AM Out	TOTAL PM TRIPS	PM In	PM Out	TOTAL SAT TRIPS	Sat In	Sat Out
10036	220 - Multifamily Housing (Low-Rise)	58	27	6	21	32	20	12	41	22	19
10036	221 - Multifamily Housing (Mid-Rise)	172	62	16	46	76	46	30	76	37	39
10037	820 - Shopping Center	118.622	129	80	49	294	141	153	386	200	186
10015	220 - Multifamily Housing (Low-Rise)	65	30	7	23	36	23	13	46	25	21
10015	221 - Multifamily Housing (Mid-Rise)	193	69	18	51	85	52	33	85	42	43
10016	820 - Shopping Center	80.309	88	54	34	199	96	103	261	136	125
10017	220 - Multifamily Housing (Low-Rise)	143	66	15	51	80	50	30	100	54	46
10017	221 - Multifamily Housing (Mid-Rise)	428	154	40	114	188	115	73	188	92	96
10059	220 - Multifamily Housing (Low-Rise)	7	3	1	2	4	2	2	5	3	2
10059	221 - Multifamily Housing (Mid-Rise)	136	49	13	36	60	37	23	60	29	31
10058	220 - Multifamily Housing (Low-Rise)	456	210	48	162	255	161	94	319	172	147
10057	220 - Multifamily Housing (Low-Rise)	36	17	4	13	20	13	7	25	14	11
10057	221 - Multifamily Housing (Mid-Rise)	314	113	29	84	138	84	54	138	68	70
10056	630 - Clinic	9	33	26	7	30	9	21	0	0	0
10146	220 - Multifamily Housing (Low-Rise)	50	23	5	18	28	18	10	35	19	16
10146	221 - Multifamily Housing (Mid-Rise)	222	80	21	59	98	60	38	98	48	50



# Network Trip Generation



## Weekday AM Peak Hour

- Existing – 7,240 vehicles
- 2031 – 8,130 vehicles
- 2041 – 9,070 vehicles



## Weekday PM Peak Hour

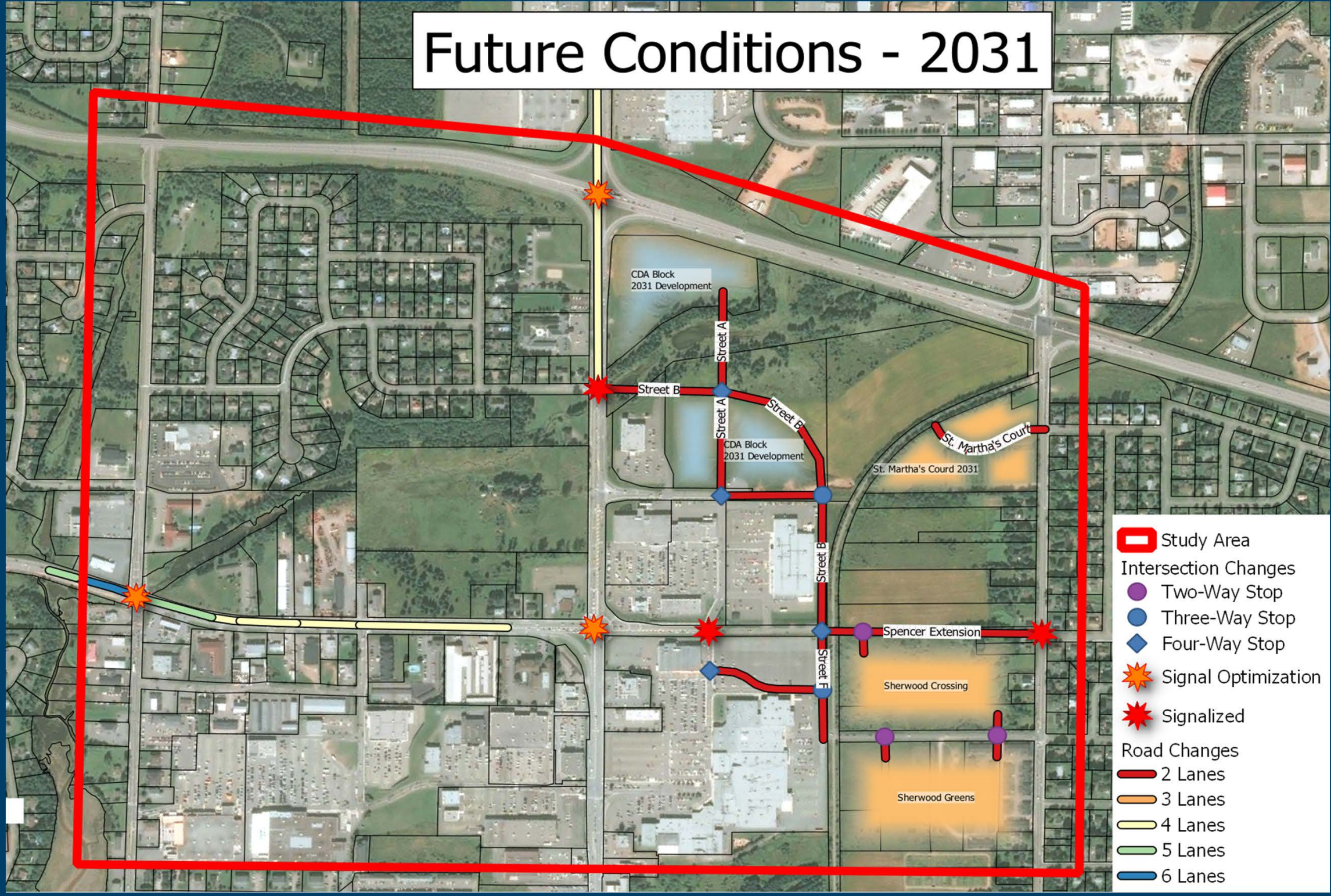
- Existing – 9,060 vehicles
- 2031 – 10,290 vehicles
- 2041 – 11,650 vehicles



## Saturday Peak Hour

- Existing – 7,720 vehicles
- 2031 – 8,920 vehicles
- 2041 – 12,270 vehicles

# Future Conditions - 2031

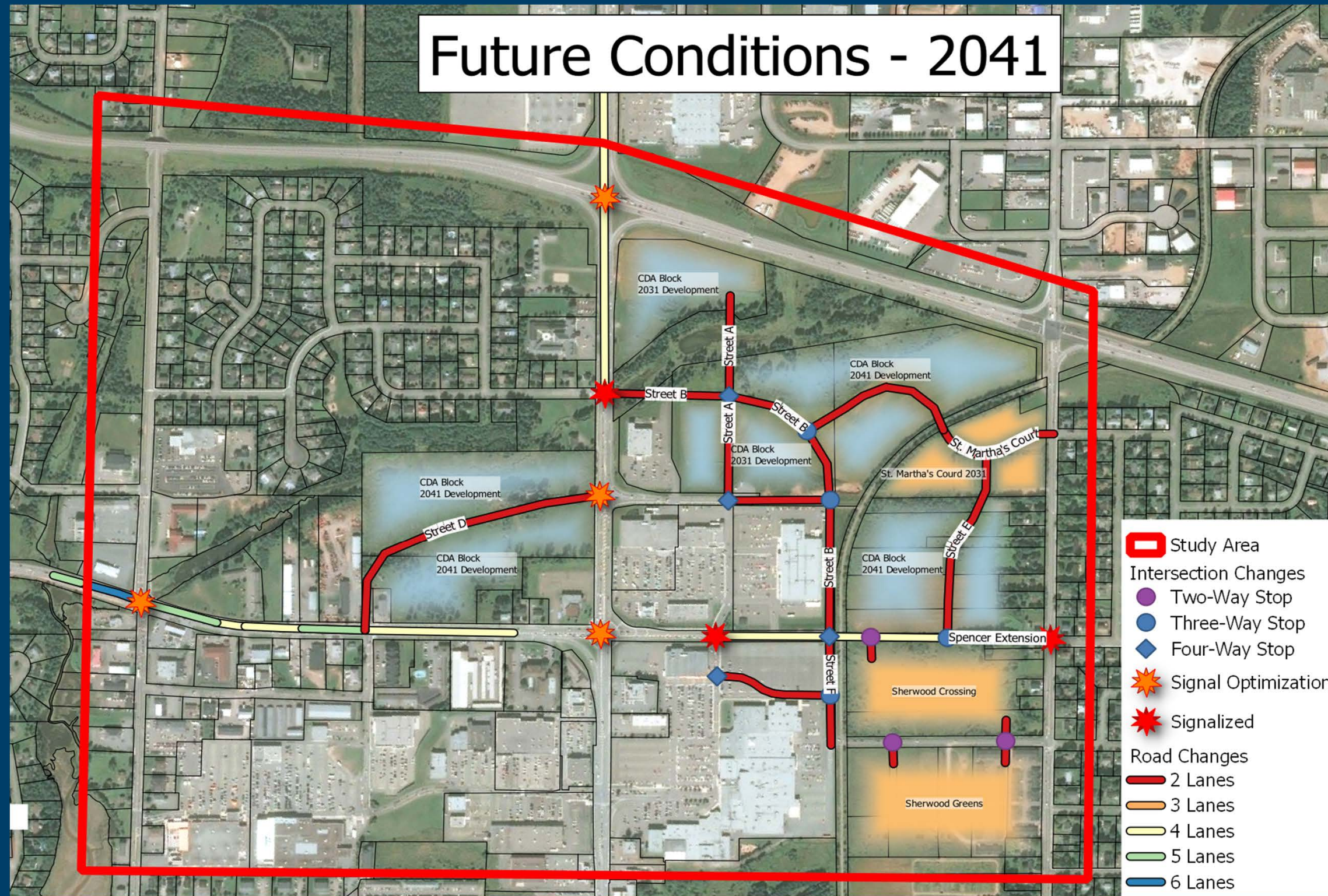


- Study Area
- Intersection Changes
  - Two-Way Stop
  - Three-Way Stop
  - Four-Way Stop
  - Signal Optimization
  - Signalized
- Road Changes
  - 2 Lanes
  - 3 Lanes
  - 4 Lanes
  - 5 Lanes
  - 6 Lanes

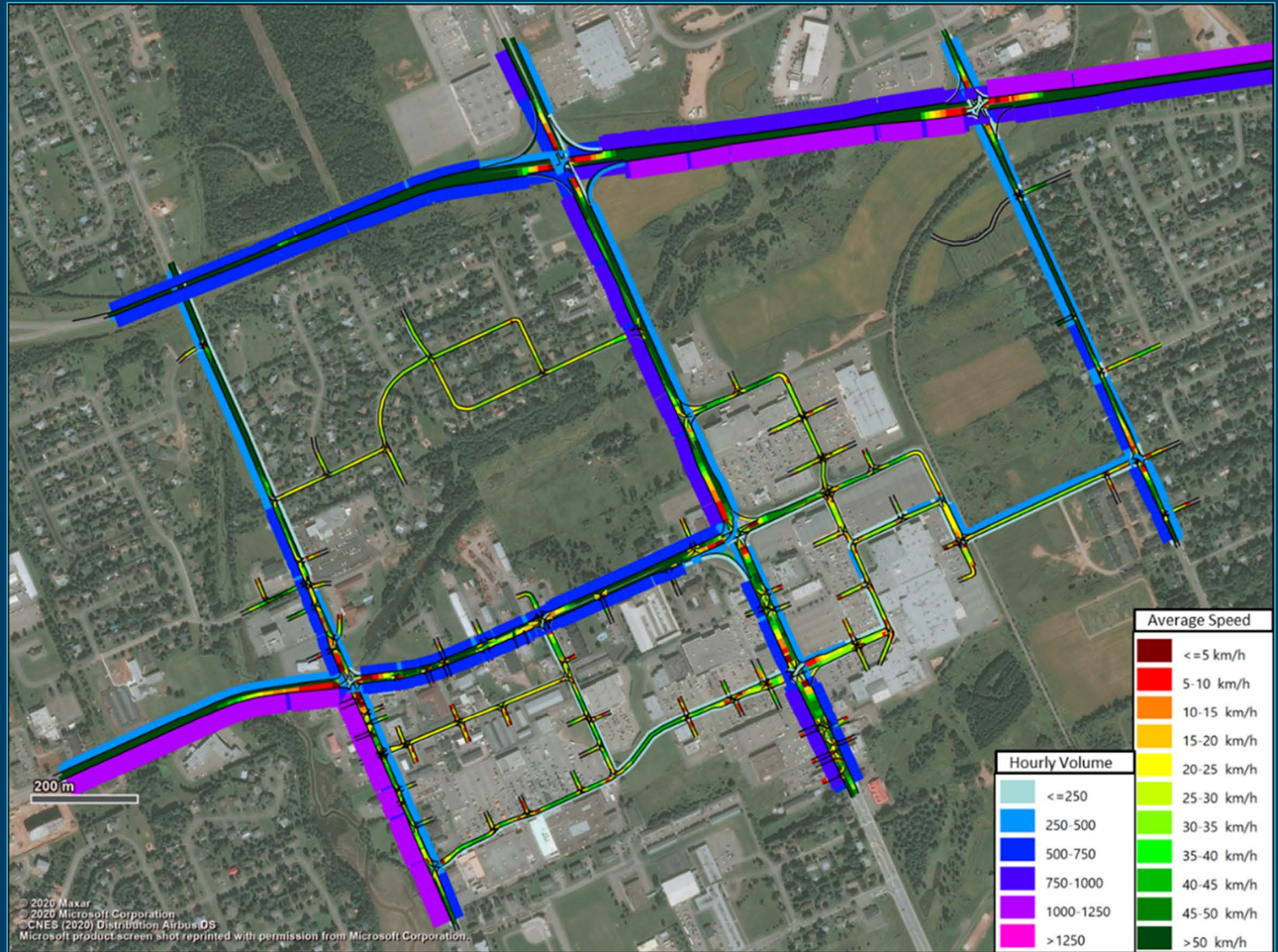


# Street Network Changes - 2031

# Future Conditions - 2041

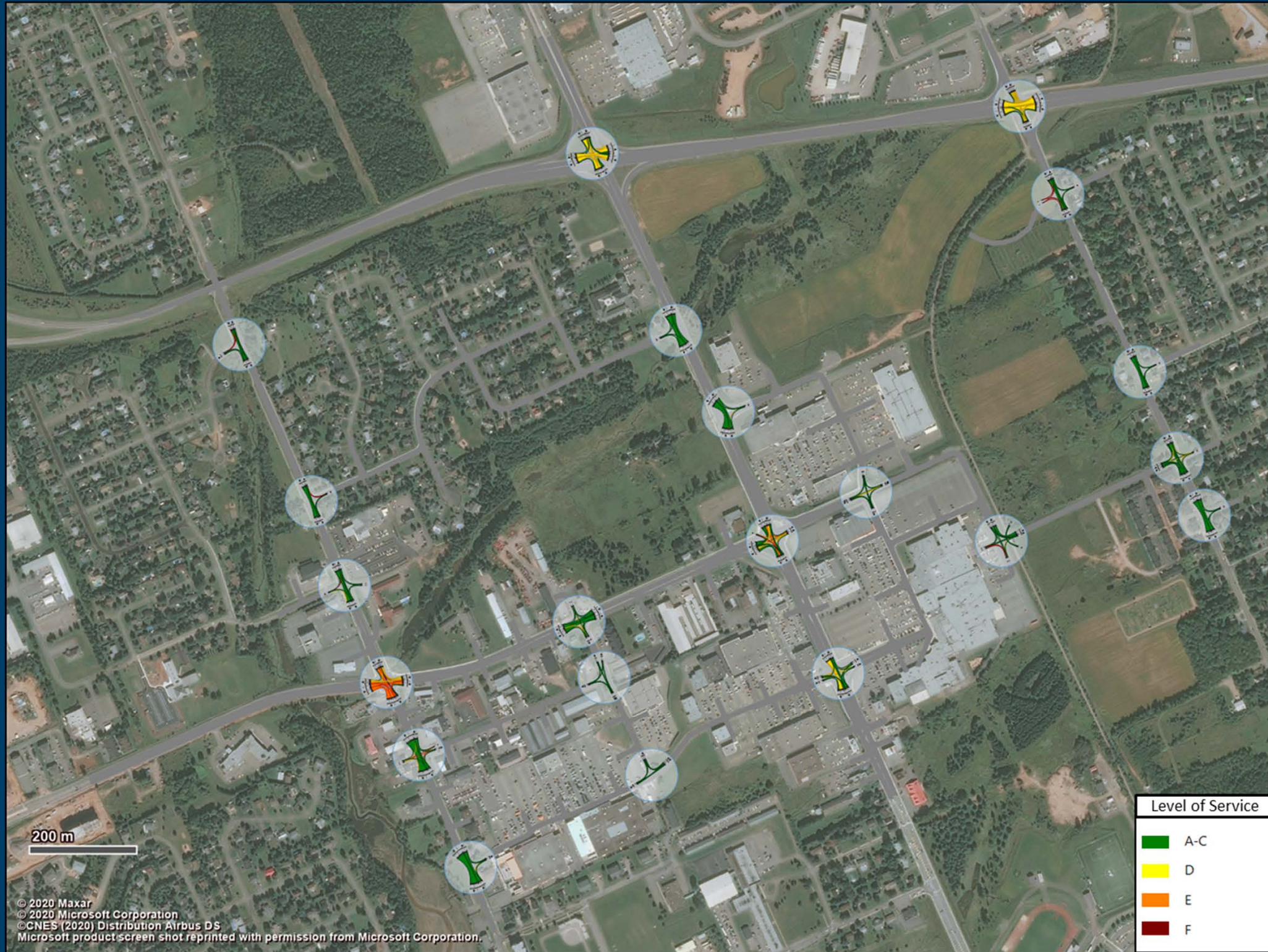


# Street Network Changes - 2041

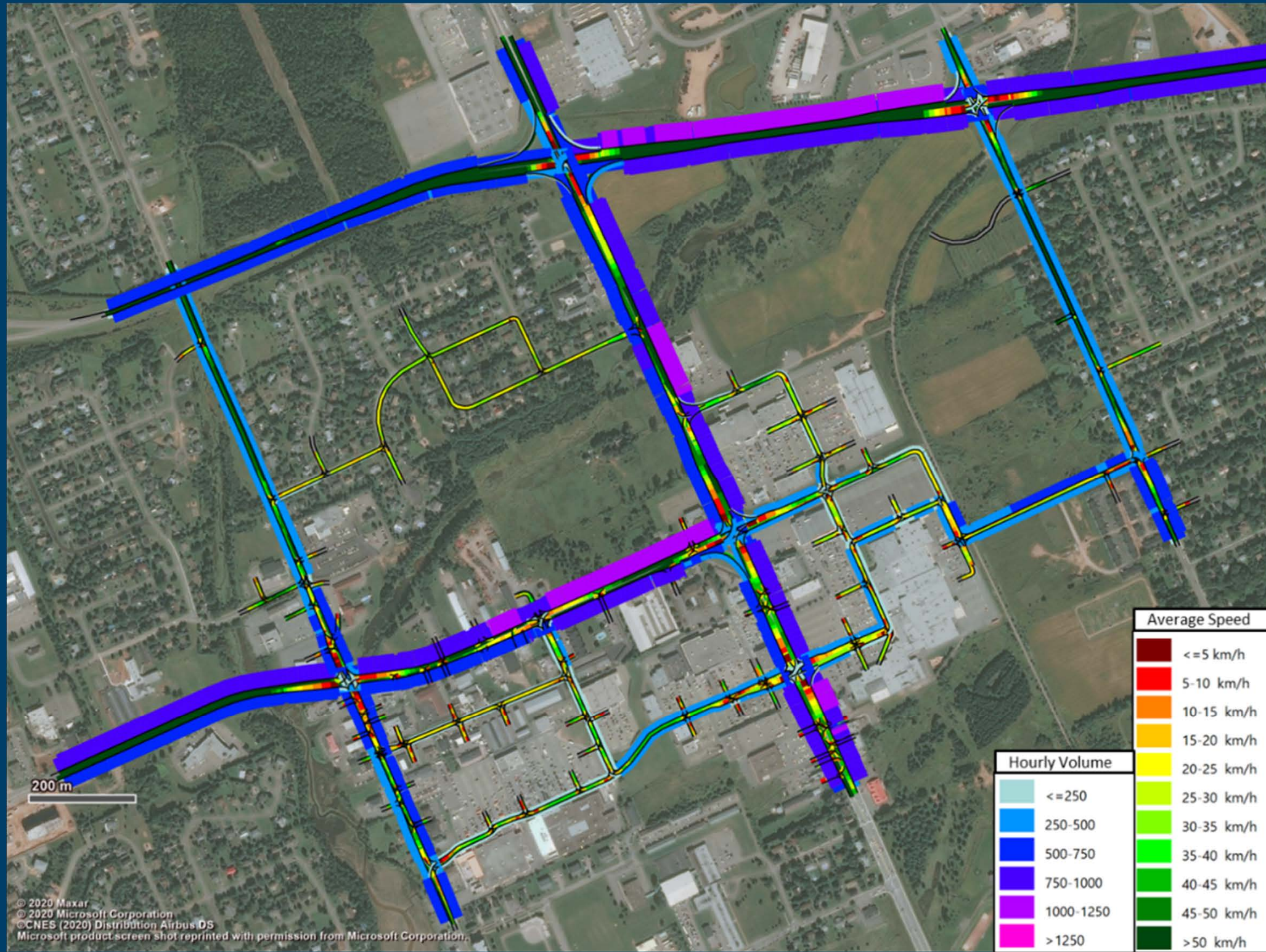


# Baseline AM – Speeds & Volumes

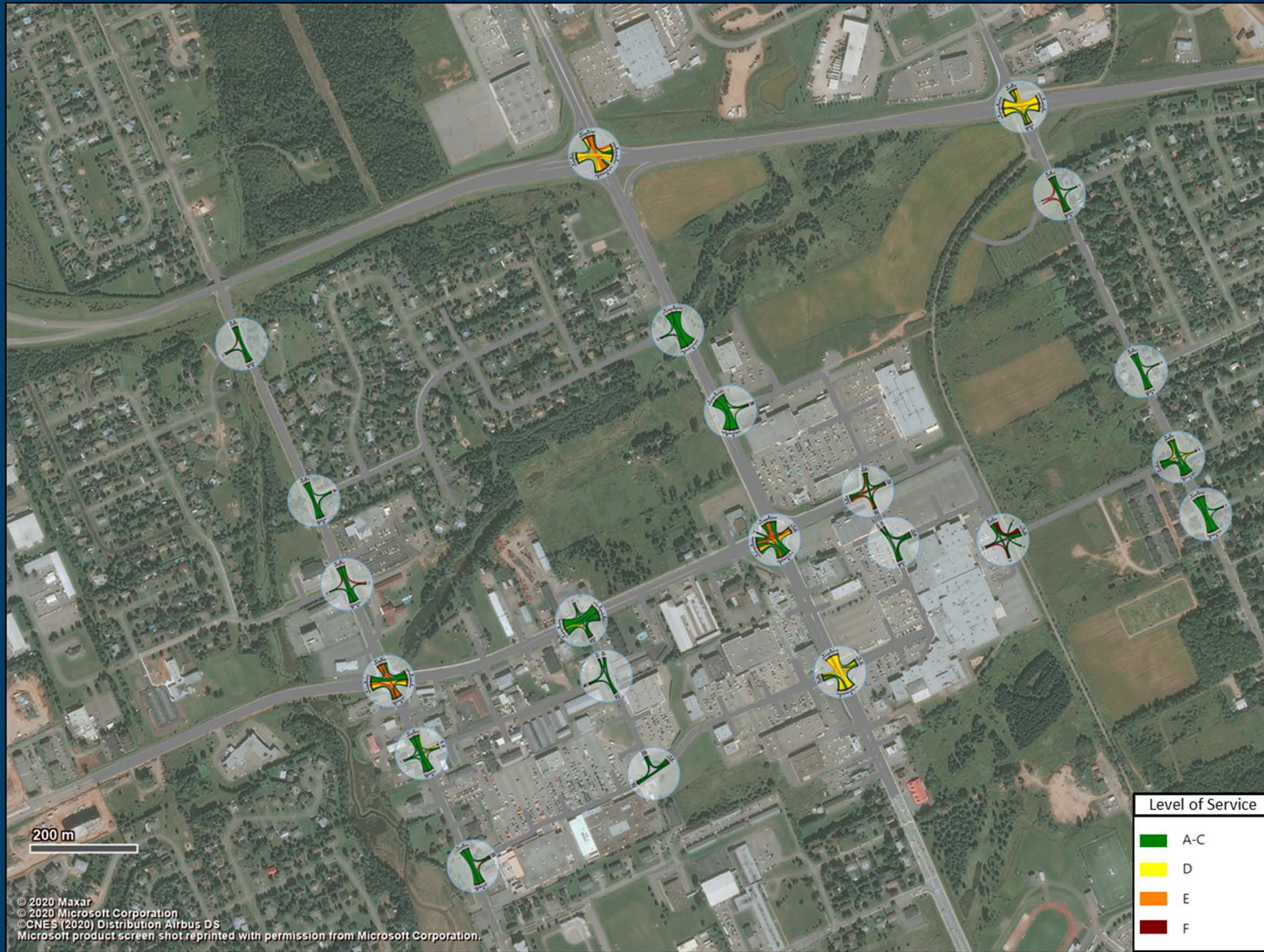




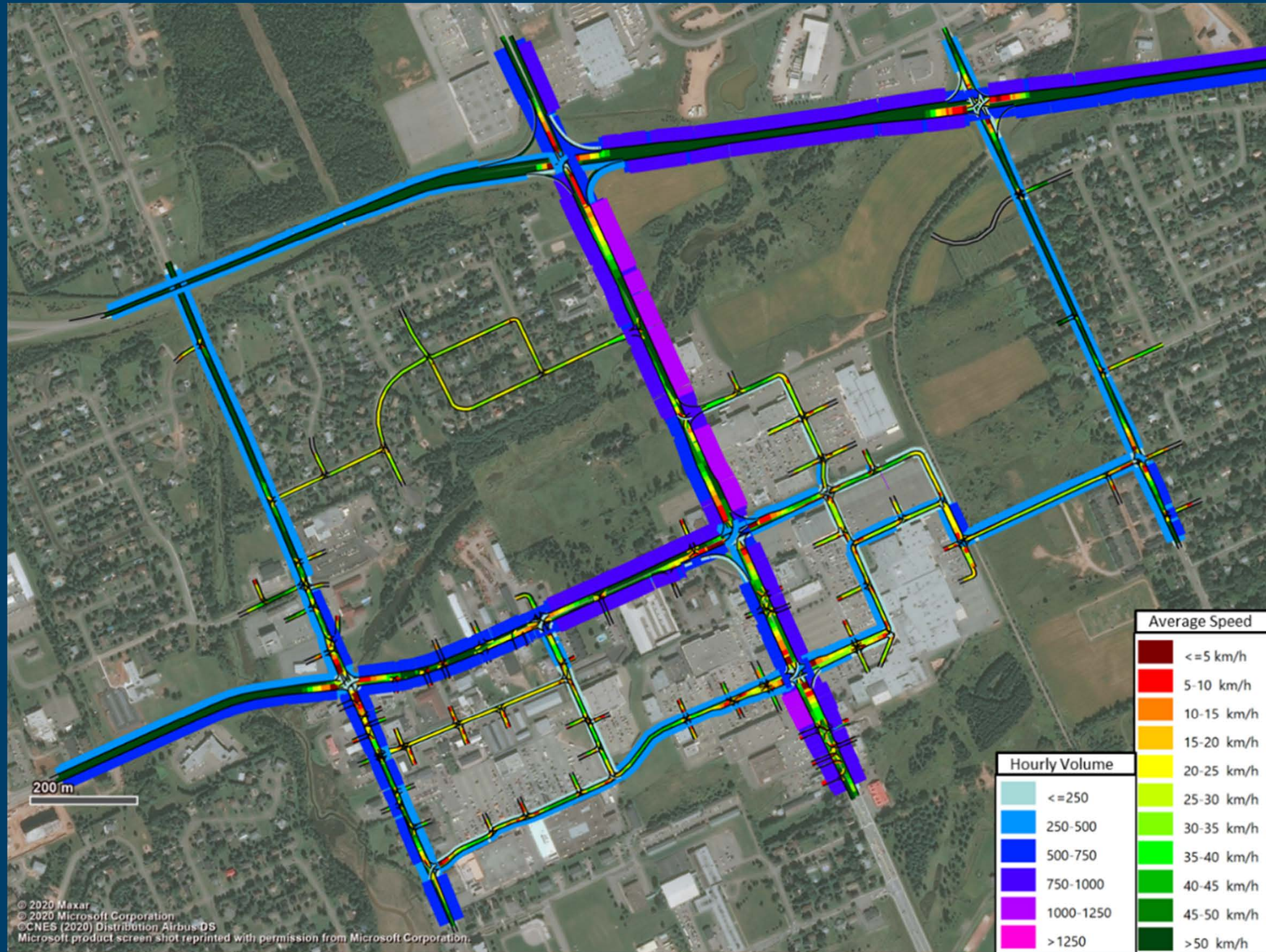
# Baseline AM - Levels of Service



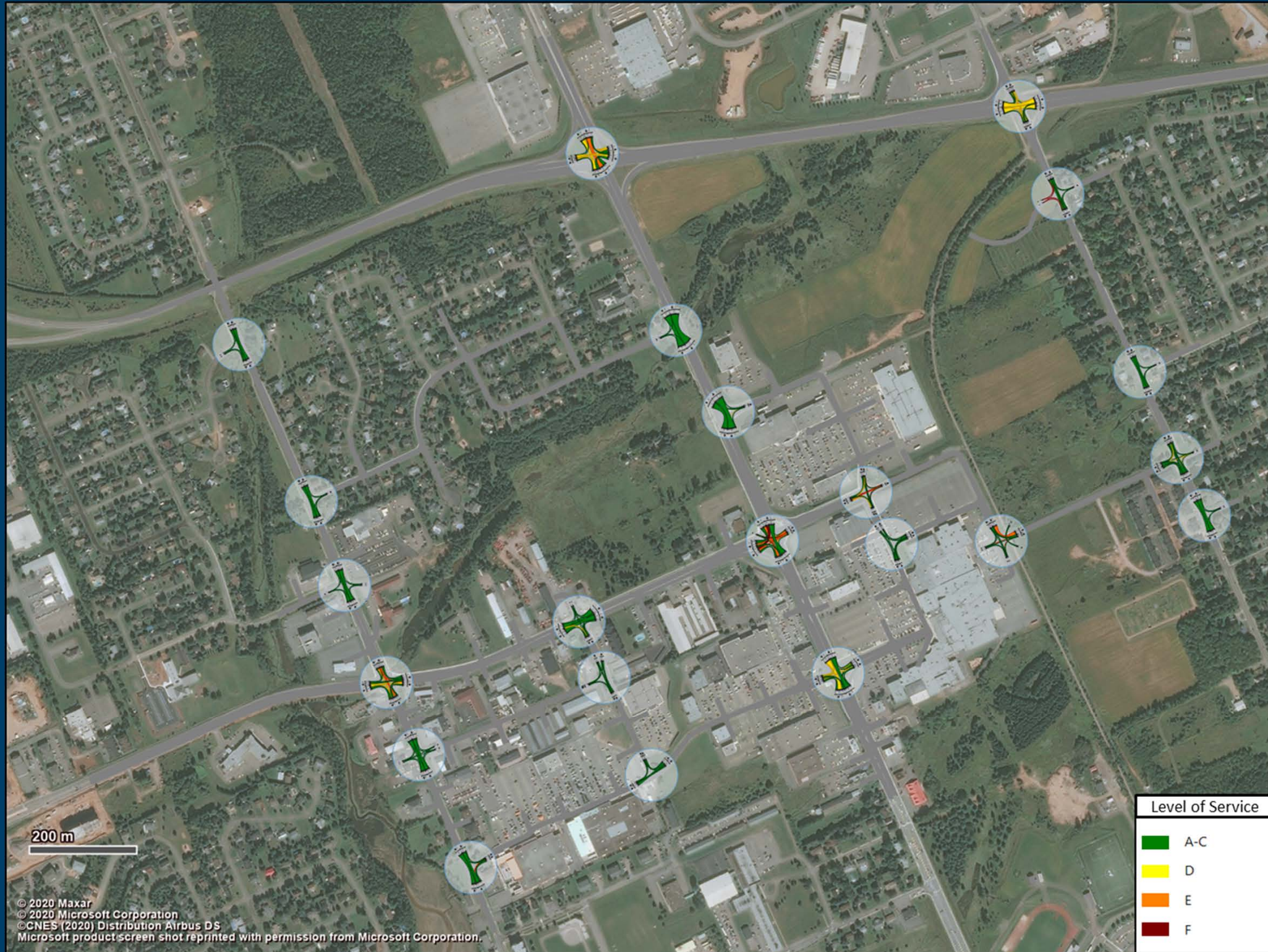
# Baseline PM – Speeds & Volumes



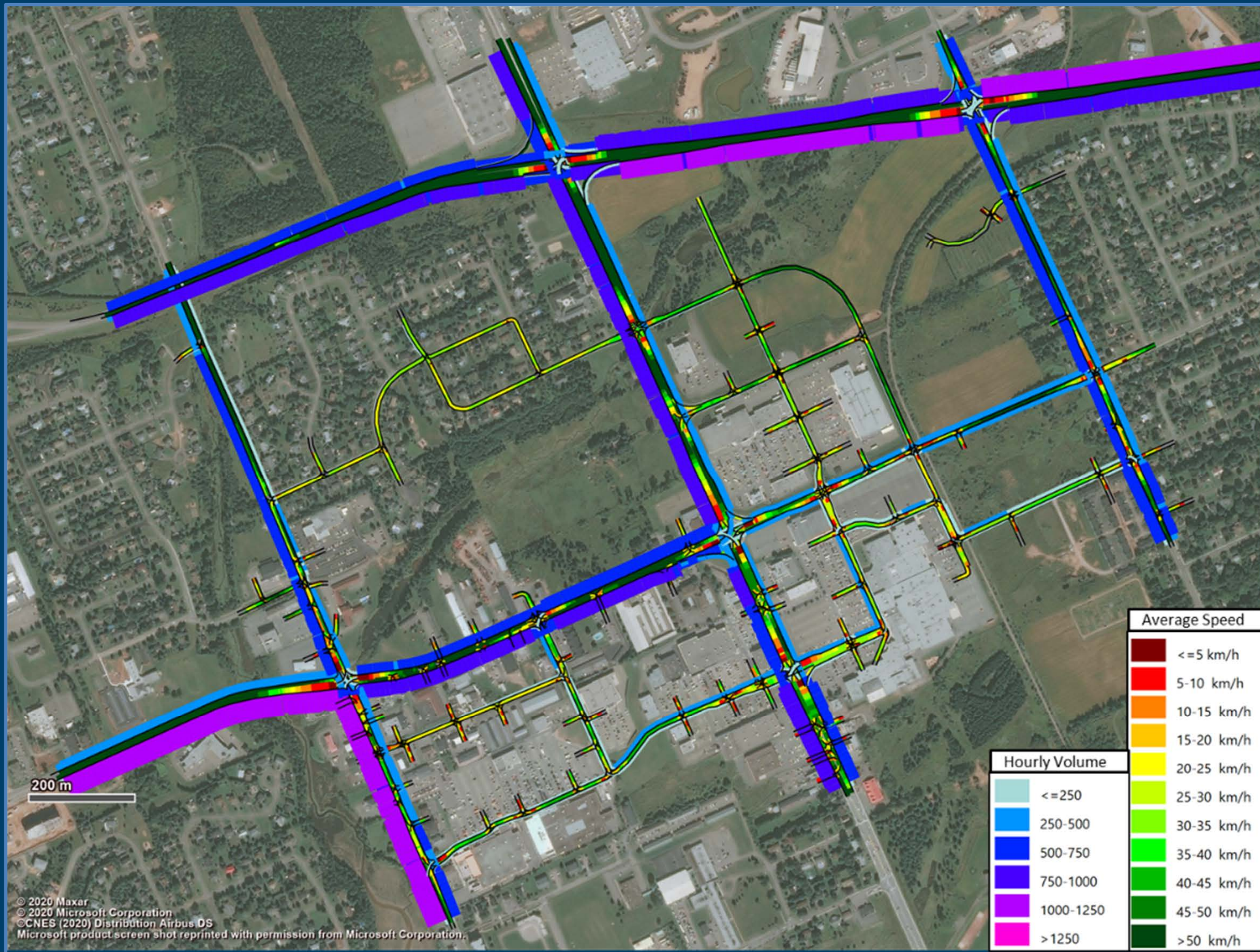
# Baseline PM – Levels of Service



# Baseline Sat PH - Speeds & Volumes



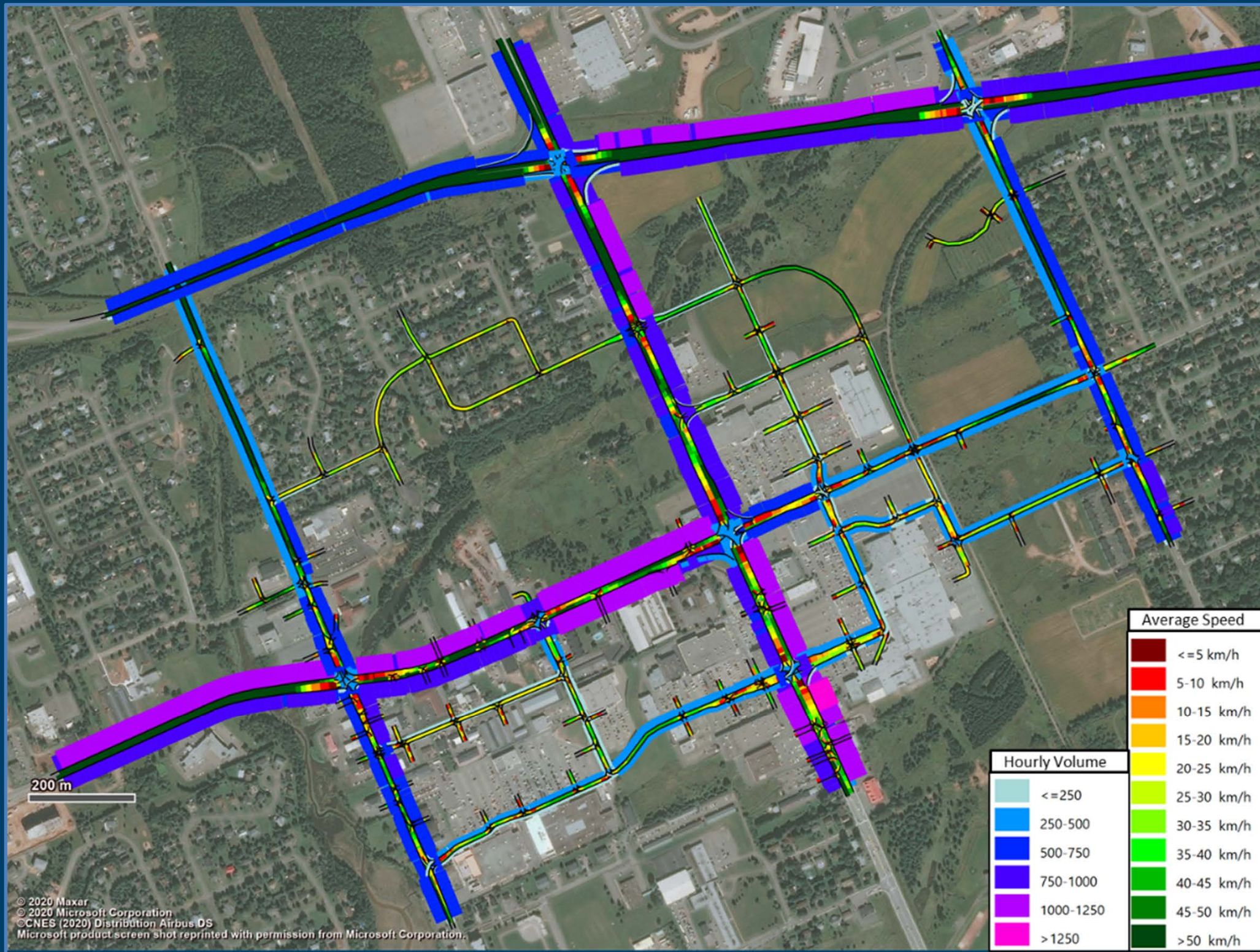
# Baseline Sat PH - Levels of Service



# 2031 AM – Speeds & Volumes

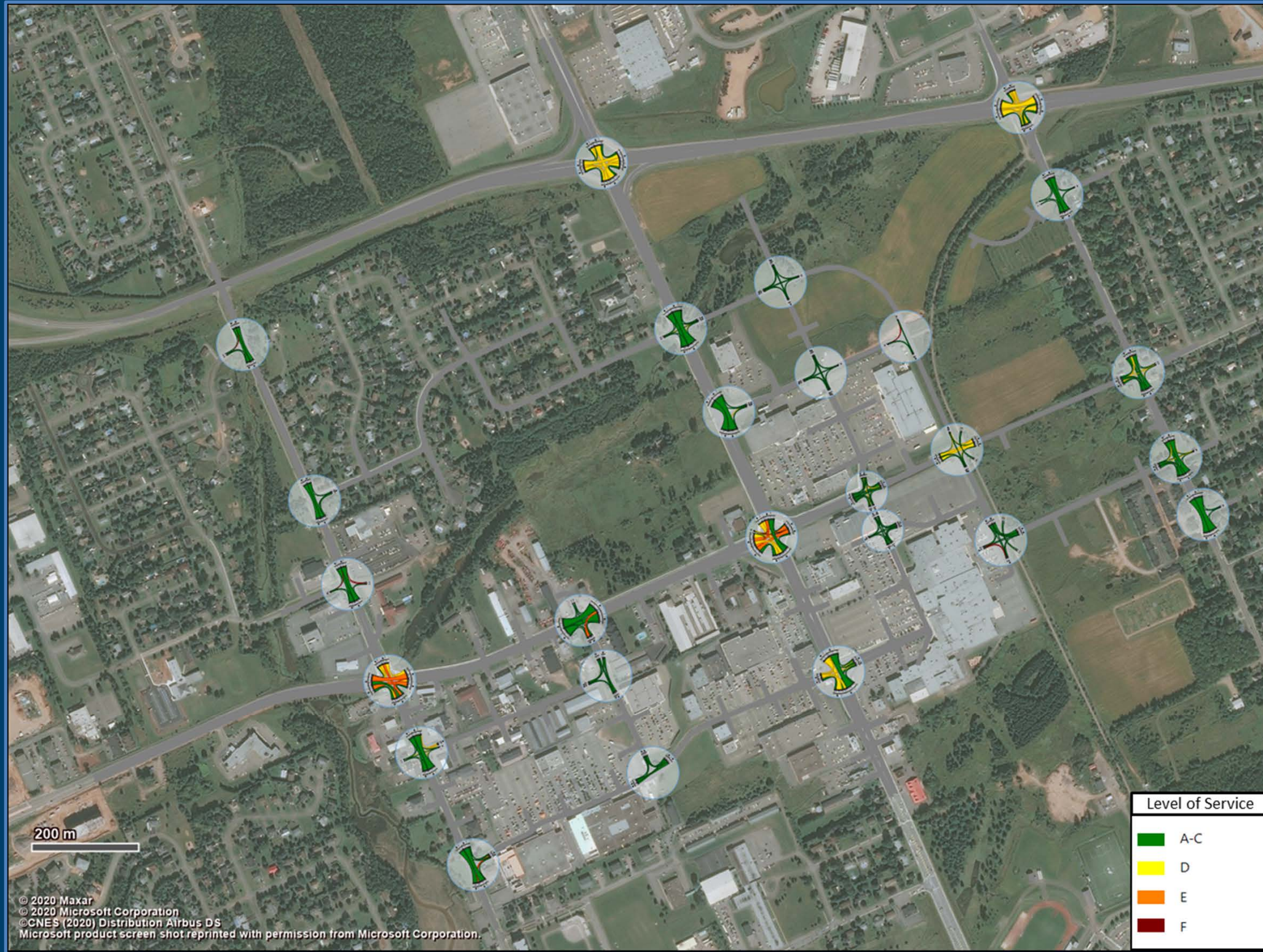


# 2031 AM – Levels of Service

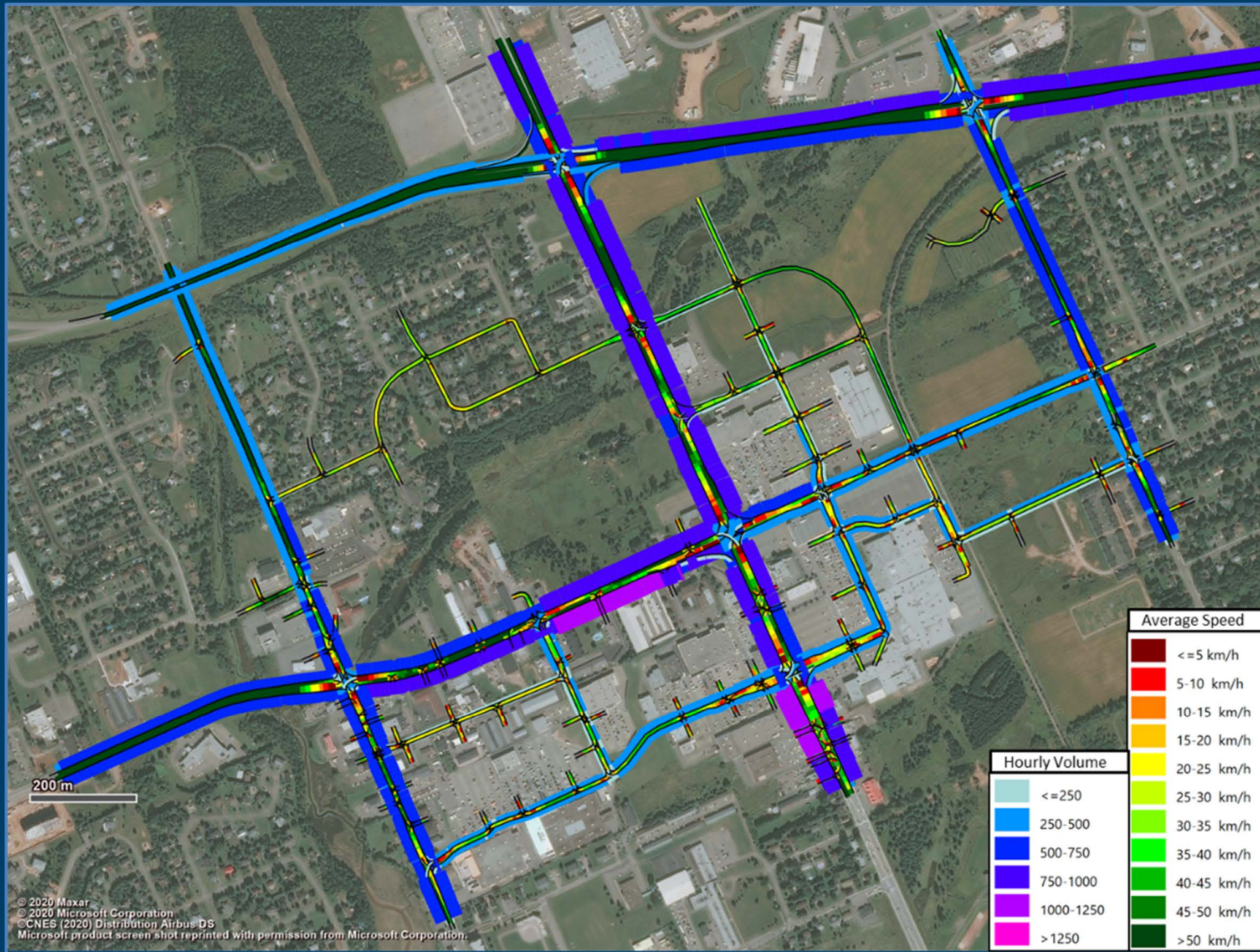


# 2031 PM – Speeds & Volumes

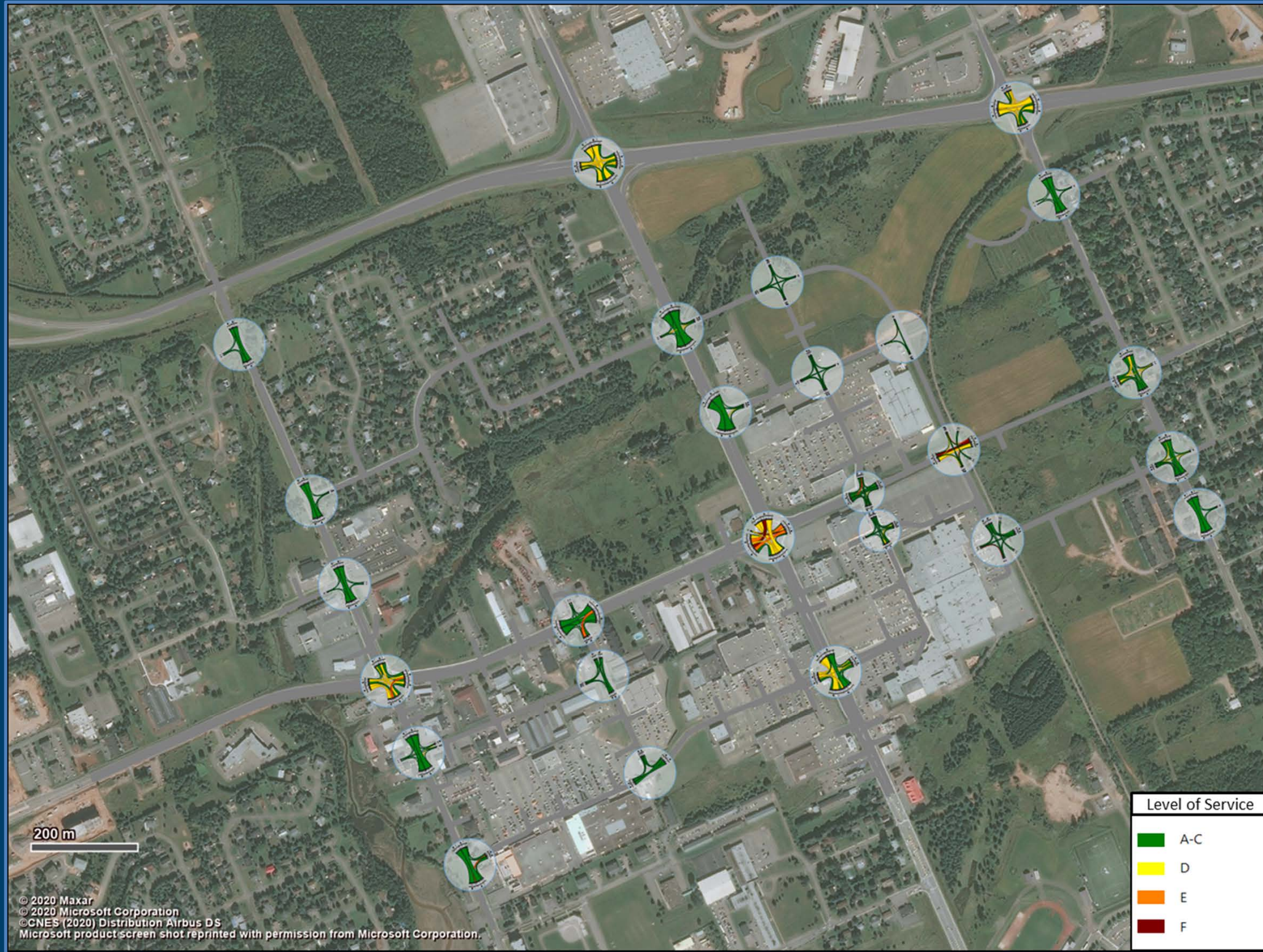




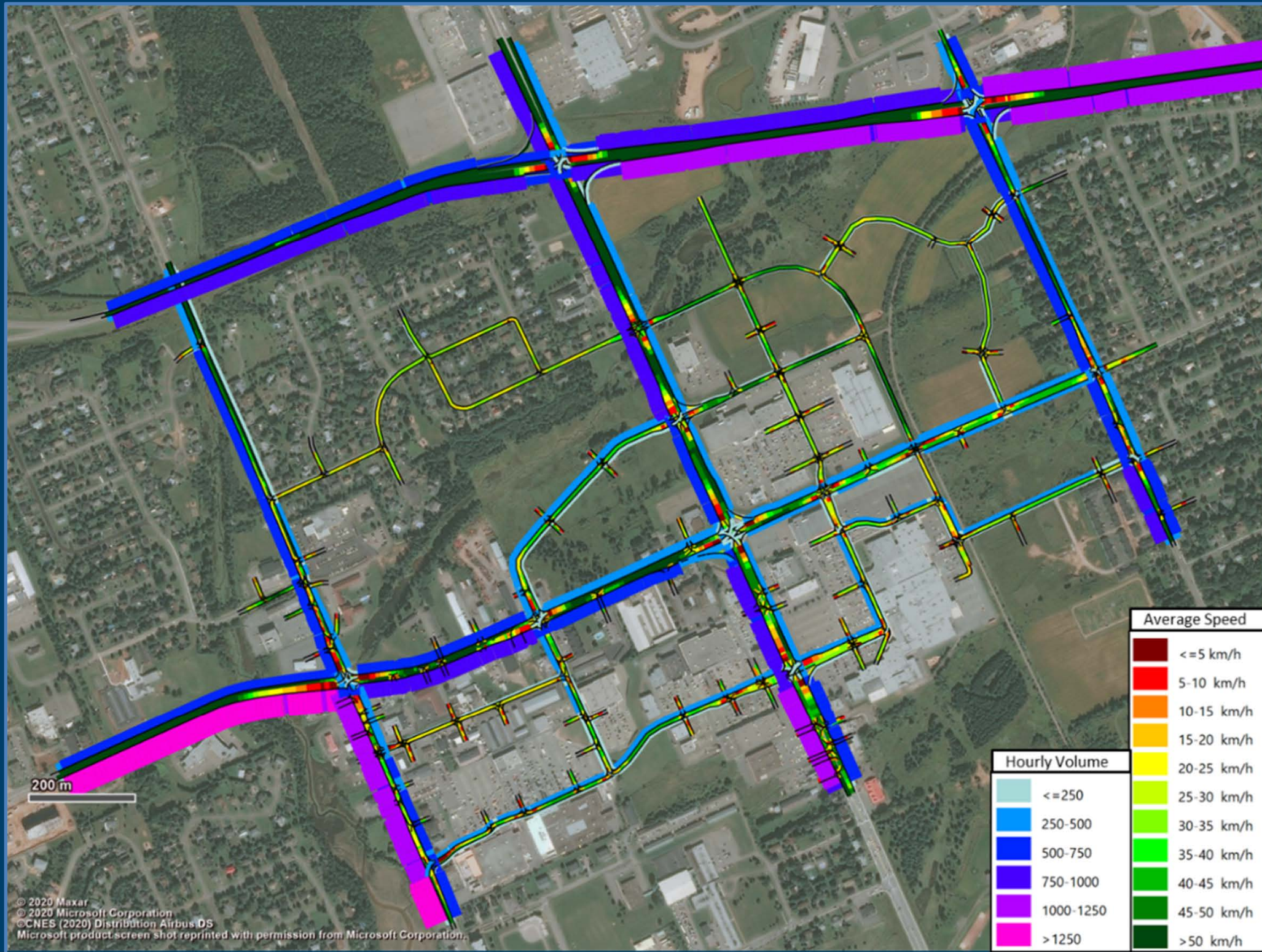
# 2031 PM – Levels of Service



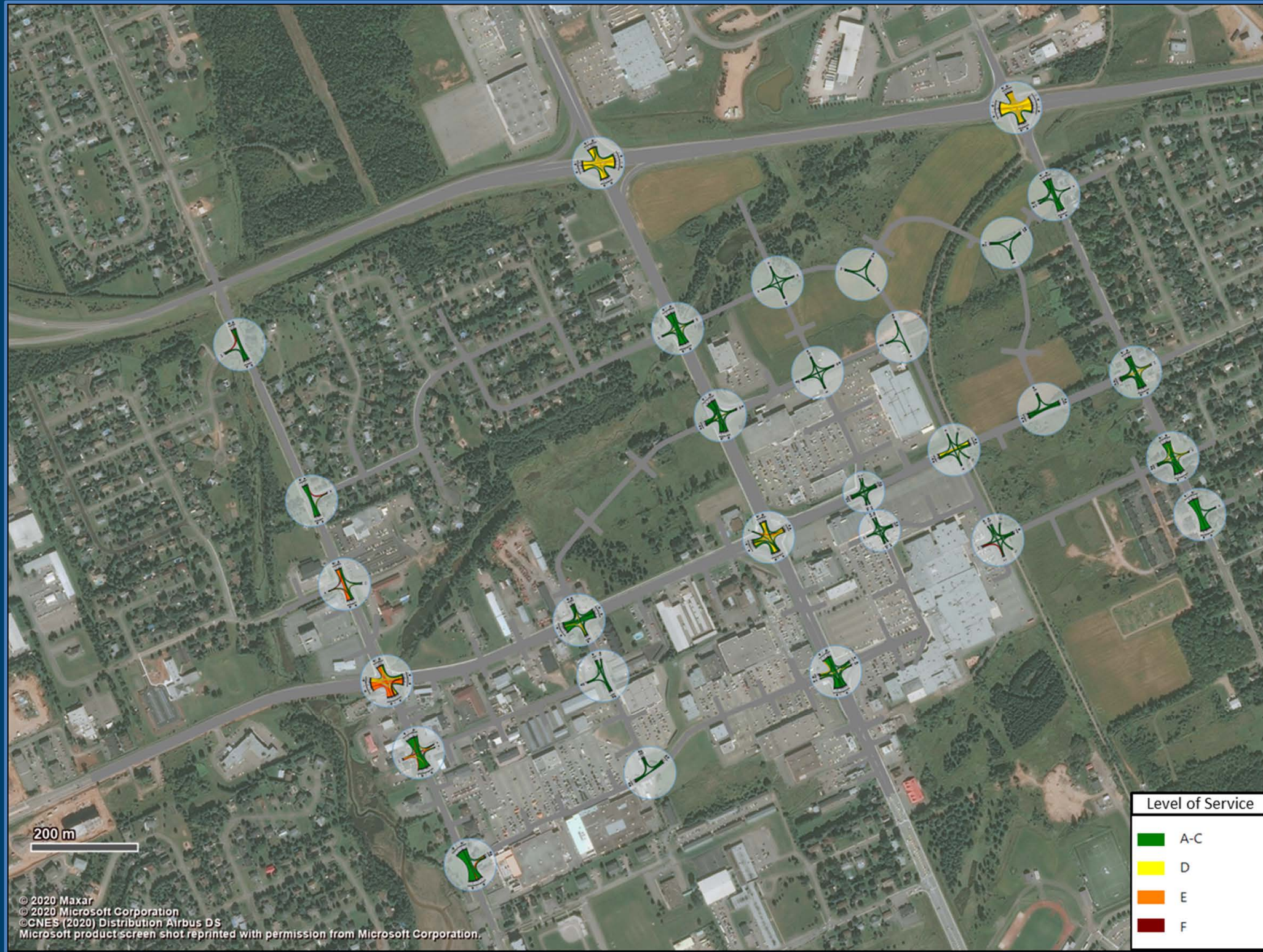
# 2031 Sat PH - Speeds & Volumes



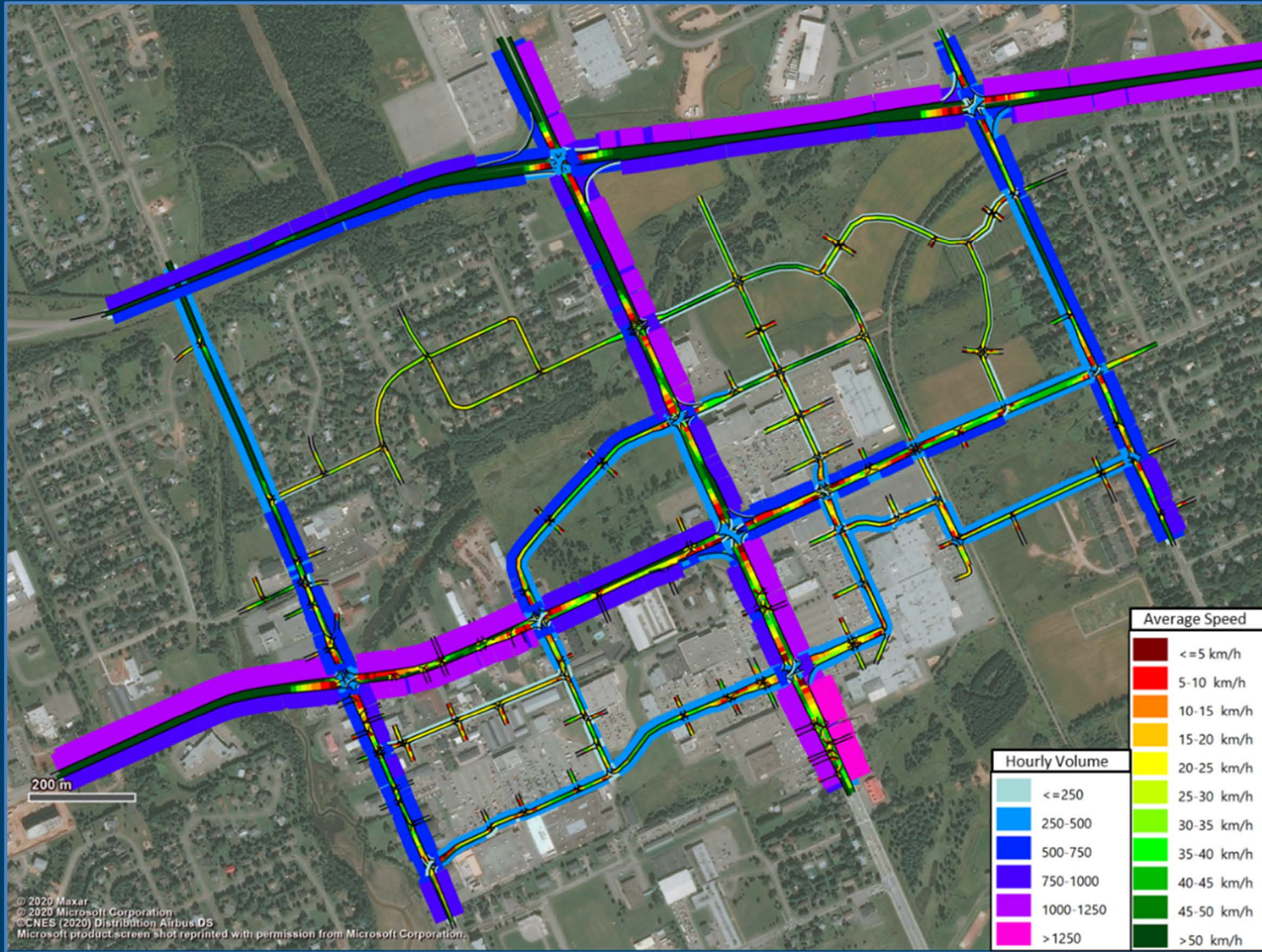
# 2031 Sat PH - Levels of Service

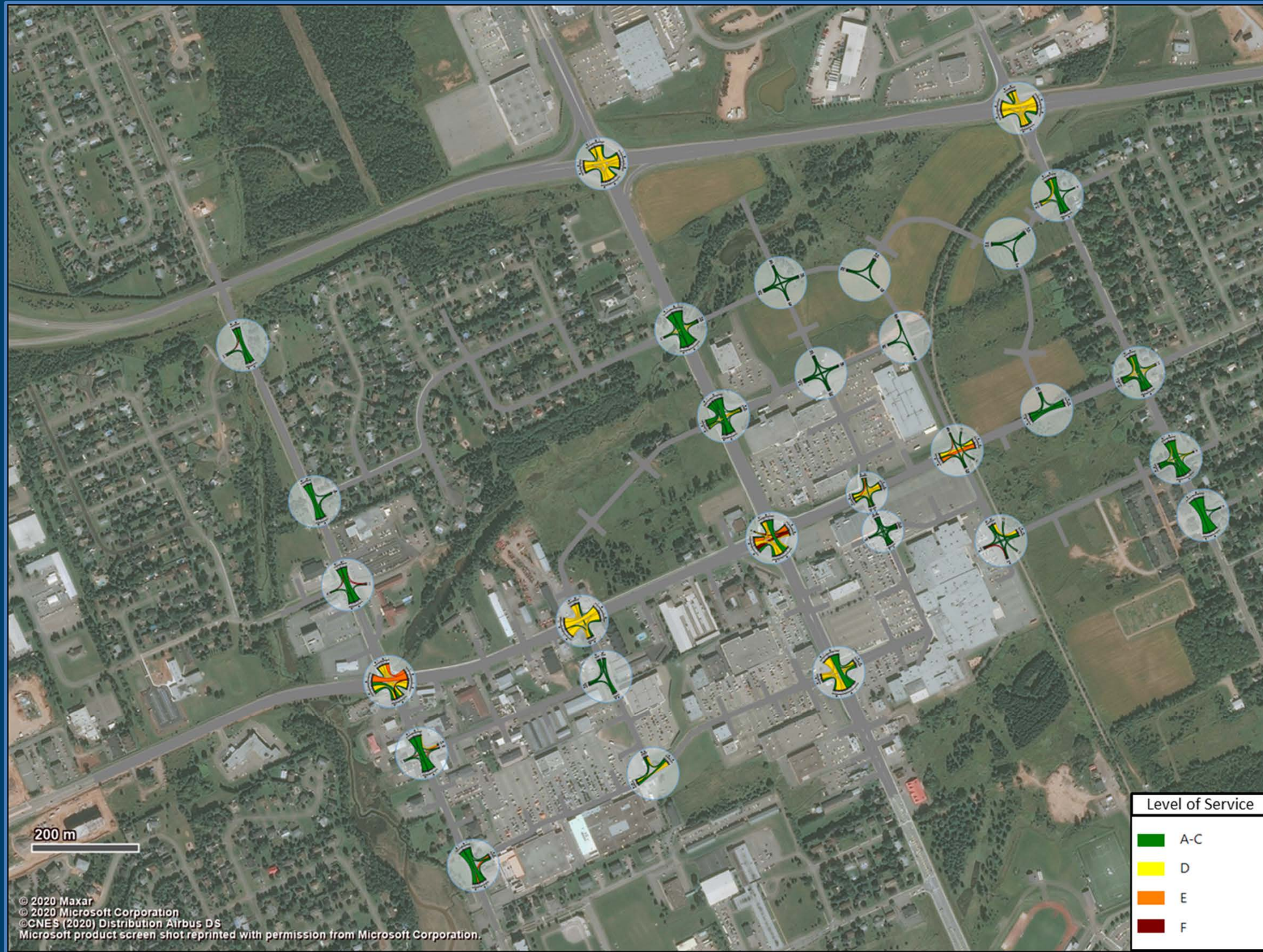


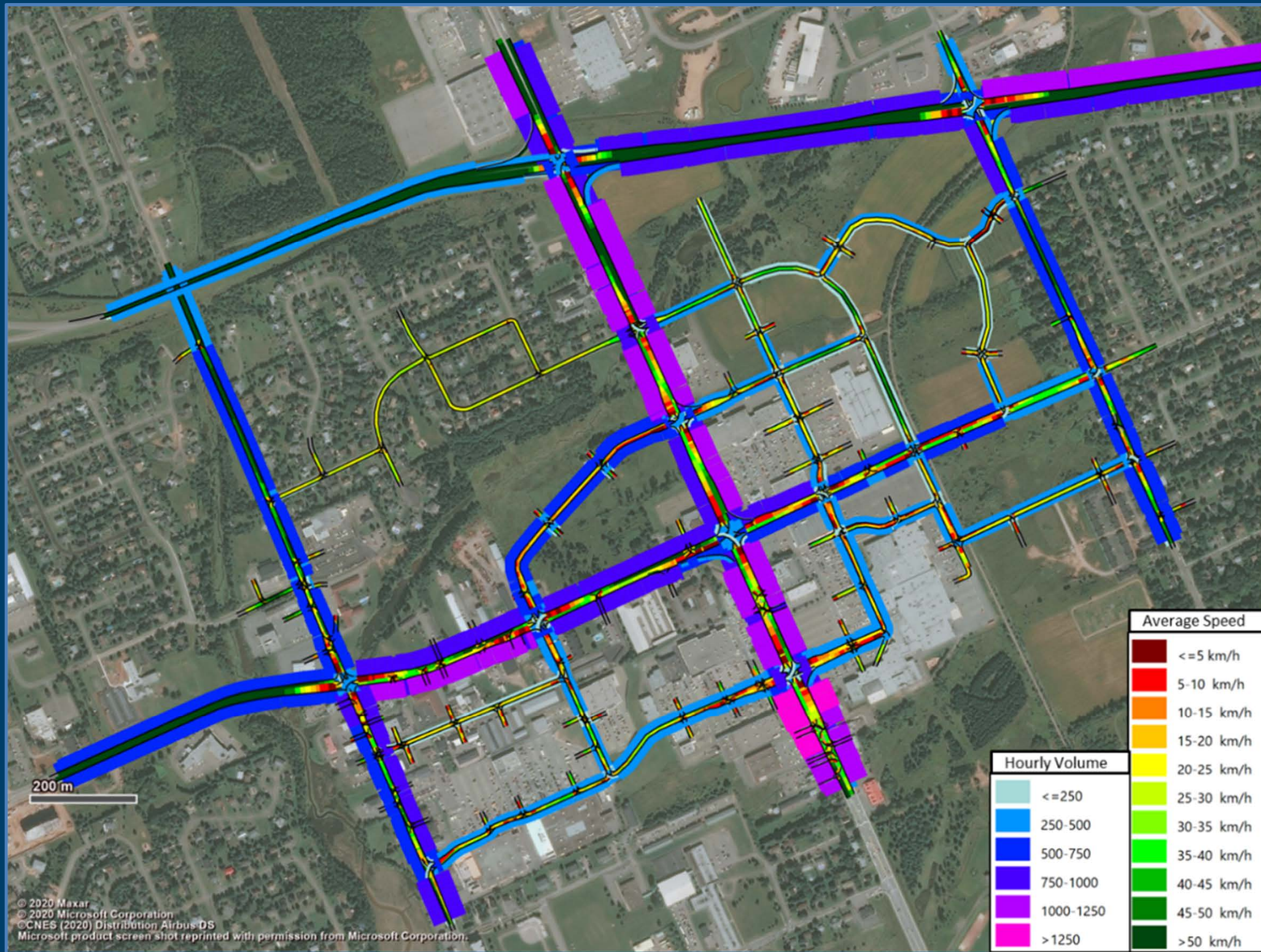
# 2041 AM – Speeds & Volumes



# 2041 AM - Levels of Service

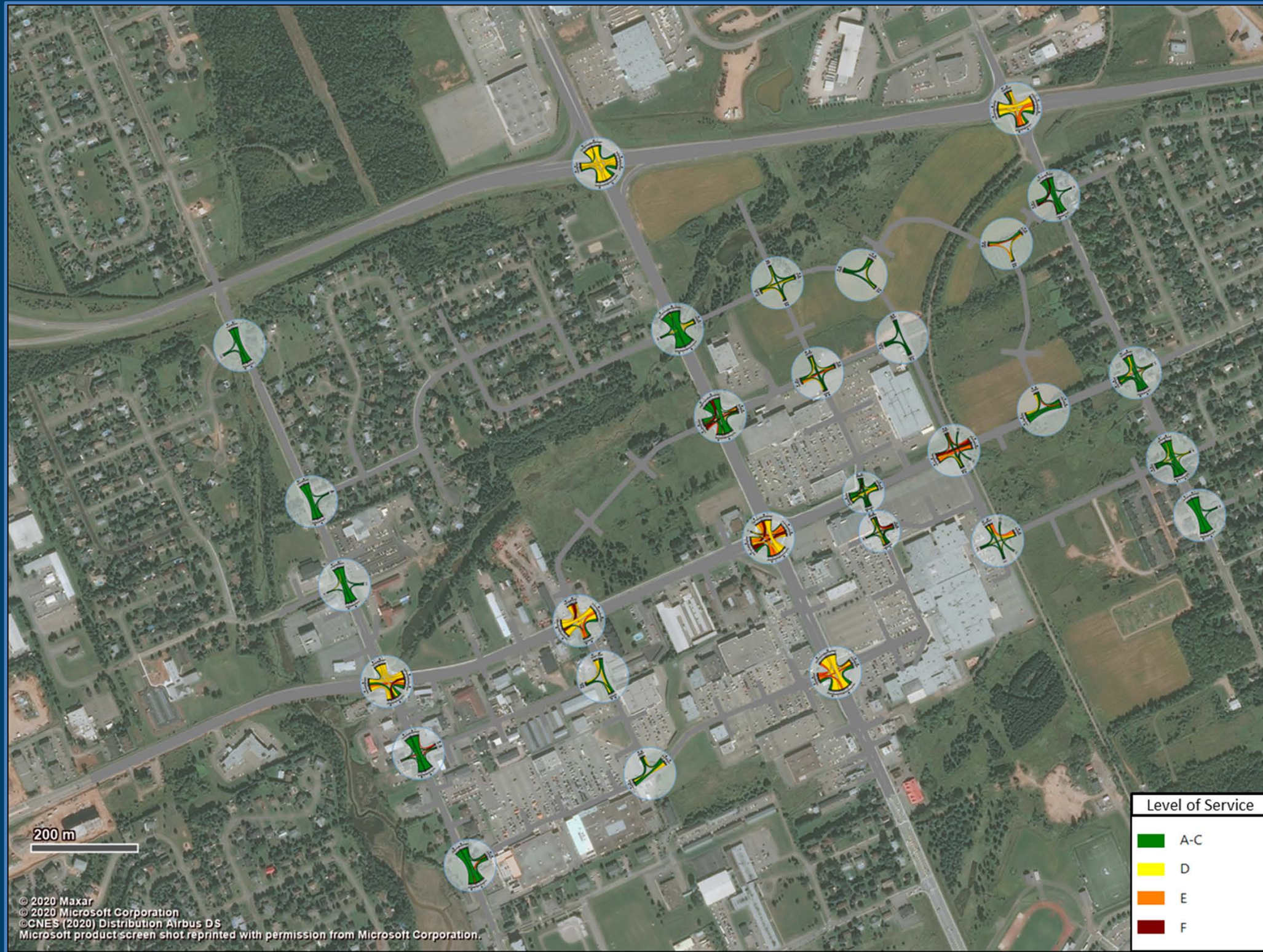






# 2041 Sat PH - Speeds & Volumes





# 2041 Sat PH - Levels of Service



**Questions?**