Cape Cod Canal Transportation Study, 8th Working Group Meeting.

Bourne, Plymouth, Sandwich, Wareham.

Sandwich Town Hall

June 29, 2017 4:30 PM to 6:00 PM

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Welcome and Introductions.

- MassDOT:
  - Ethan Britland – Project Manager.
- US Army Corps of Engineers.
  - Craig Martin – Project Manager.
- Study Team:
  - Bill Reed, P.E. – Principal in Charge (Stantec).
  - Michael Paiewonsky, AICP – Team Project Manager (Stantec).
  - Fred Moseley, P.E. – Transportation Engineer (Stantec).
  - Jennifer Siciliano, AICP – Public Engagement (Harriman).
  - Sudhir Murthy, P.E. – PTOE – Trans. Modeler (TrafInfo).
  - Frank Mahady – Socio-Economic (FXM Associates).

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Alternatives Development and Analysis

Evaluation of Alternatives – Travel Demand Model.

- Future no-build conditions complete and presented to Working Group.
- Improvements at key locations previously evaluated separately/stand-alone.
- Combinations of improvements (known as ‘cases’) recently evaluated.
- Travel demand model will provide modified travel patterns given the ‘transportation system’ alternatives.
- Seeking acceptable future traffic conditions in the focus area.

4 Cases Selected for Evaluation.

- Cases selected to provide logical and comprehensive groups of improvements given the available study resources.
- Cases represent conceptual scenarios that could occur in the future given the uncertainties in permitting, funding, and actions by the USACE affecting the study area's transportation system.
- Close coordination between MassDOT and the USACE will continue.

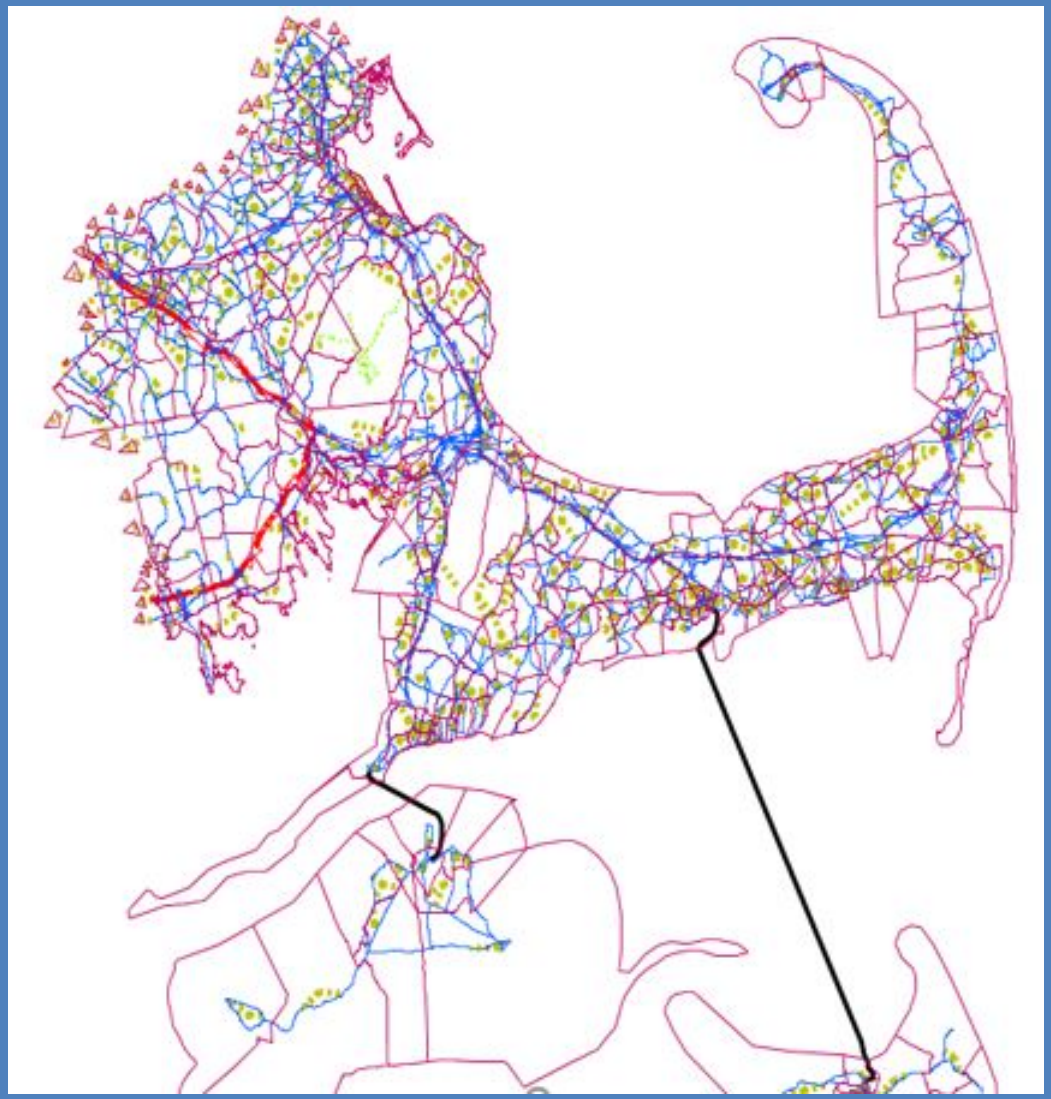
Assumptions for Alternatives Development Process.

- Focus on year-round safety and mobility problem locations.
- Short- and Mid-Term Alternatives assume existing bridges remain and do not preclude new bridge construction.
- New bridges to be built adjacent to (inside of the) existing bridges. Toll-Free.

Design Understanding.

- Design for future (2040) fall weekday PM peak period.
- Seek further improvements for summer Saturday peak, as feasible.
- Not intending to resolve all peak-season traffic problems.

Travel Demand Model.



- Roadway network for Cape Cod and portions of Plymouth County.
- Used for forecast traffic for existing and future (2040) for no-build and build alternatives

Growth in Traffic Volumes – 2014 to 2040.

Growth forecast based on:

- Commuter and non-commuter trips (0.11% non-summer and 0.50% summer annual growth), and
- Visitor trips (0.69% annual growth)
- 2014 to 2040 Growth in Traffic
  33.4 % Summer
  22.5 % Non-Summer

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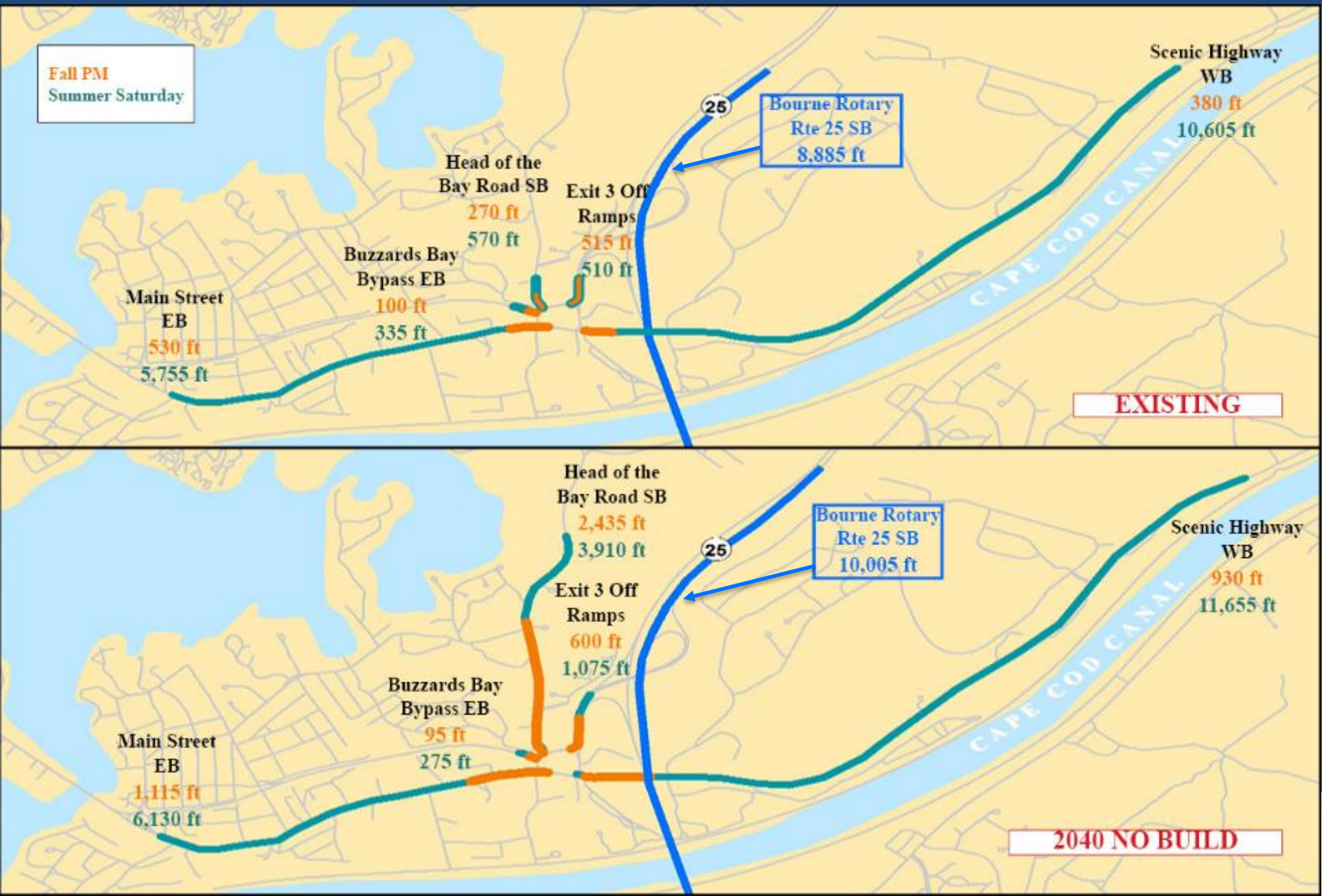
Growth in Traffic Volumes – 2014 to 2040 – Belmont Circle.

BELMONT CIRCLE OPERATIONS								
Street Name /Approach	2014 EXISTING				2040 NO BUILD			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM				Worsens →				
Exit 3 Off Ramps	10	515	5	A	5	600	3	A
Head of the Bay Rd SB	25	270	15	C	1,120	2,435	369	F
Buzzards Bay Bypass EB	0	100	3	A	0	95	3	A
Main Street EB	35	530	13	B	130	1,115	23	C
Scenic Highway WB	20	380	7	A	140	930	20	C
Summer Saturday								
Exit 3 Off Ramps	15	510	4	A	35	1,075	4	A
Head of the Bay Road SB	110	570	83	F	2,495	3,910	817	F
Buzzards Bay Bypass EB	50	335	19	C	30	275	13	B
Main Street EB	1,790	5,755	82	F	3,140	6,130	130	F
Scenic Highway WB	3,510	10,605	125	F	4,825	11,655	165	F

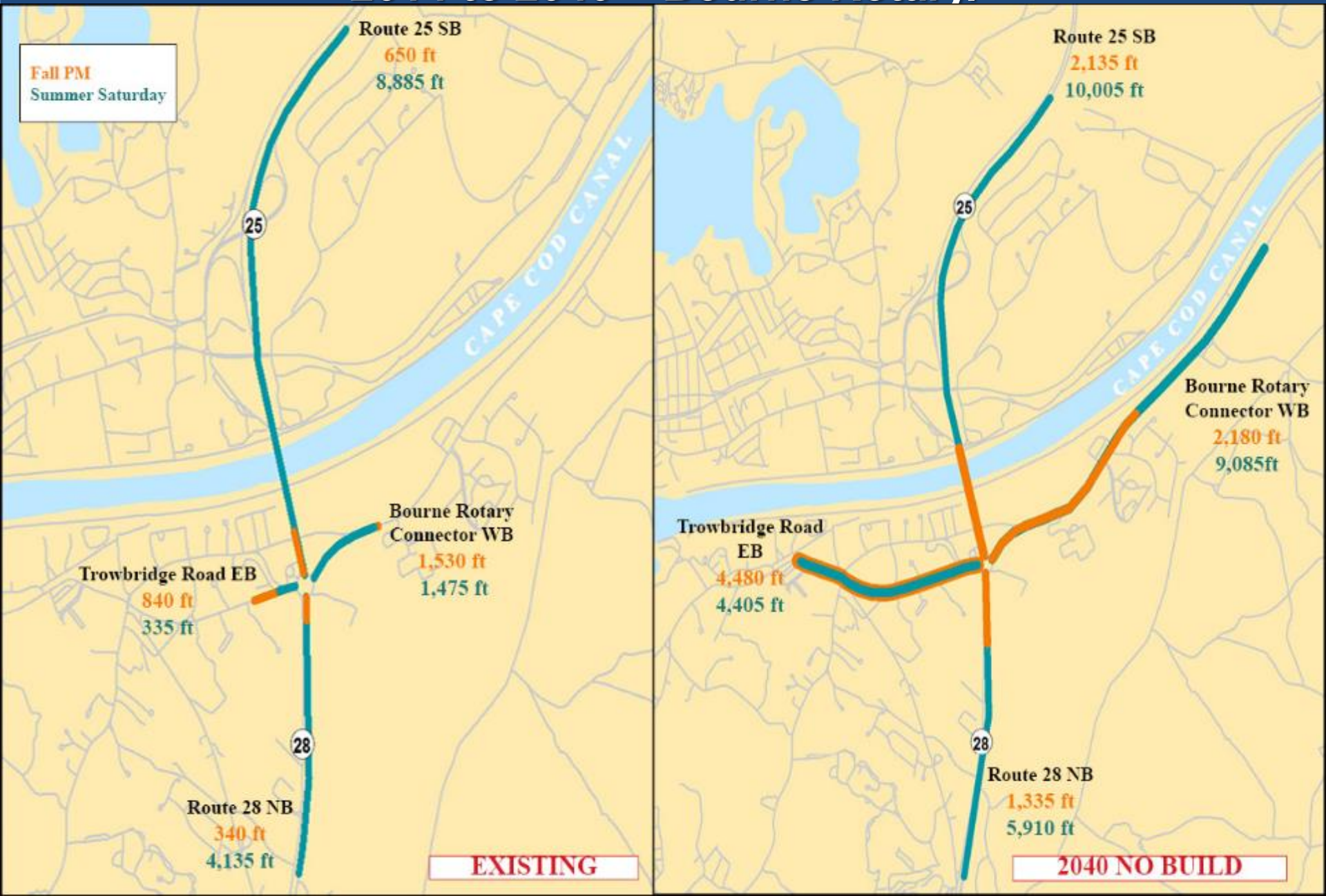
Growth in Traffic Volumes – 2014 to 2040 – Belmont Circle.



Growth in Traffic Volumes – 2014 to 2040 – Bourne Rotary

BOURNE ROTARY OPERATIONS								
Street Name /Approach	2014 EXISTING				2040 NO BUILD			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM				Worsens →				
Route 25 SB	120	650	19	C	790	2,135	82	F
Trowbridge Rd EB	190	840	75	F	1,765	4,480	345	F
Route 28 NB	50	340	14	B	395	1,335	81	F
Bourne Rotary Connector WB	130	1,530	20	C	480	2,180	38	E
Summer Saturday								
Route 25 SB	5,290	8,885	280	F	6,505	10,005	341	F
Trowbridge Rd EB	35	335	30	D	1,920	4,405	398	F
Route 28 NB	2,195	4,135	301	F	2,885	5,910	264	F
Bourne Rotary Connector WB	195	1475	27	D	4,025	9,085	149	F

Growth in Traffic Volumes – 2014 to 2040 – Bourne Rotary.



Travel Demand Model
Case 1
Mid-Term Alternatives
(5-8 years For Design and Permitting)

Travel Model Case 1 (Mid-Term Alternatives).

Evaluates effectiveness of two transportation improvements:

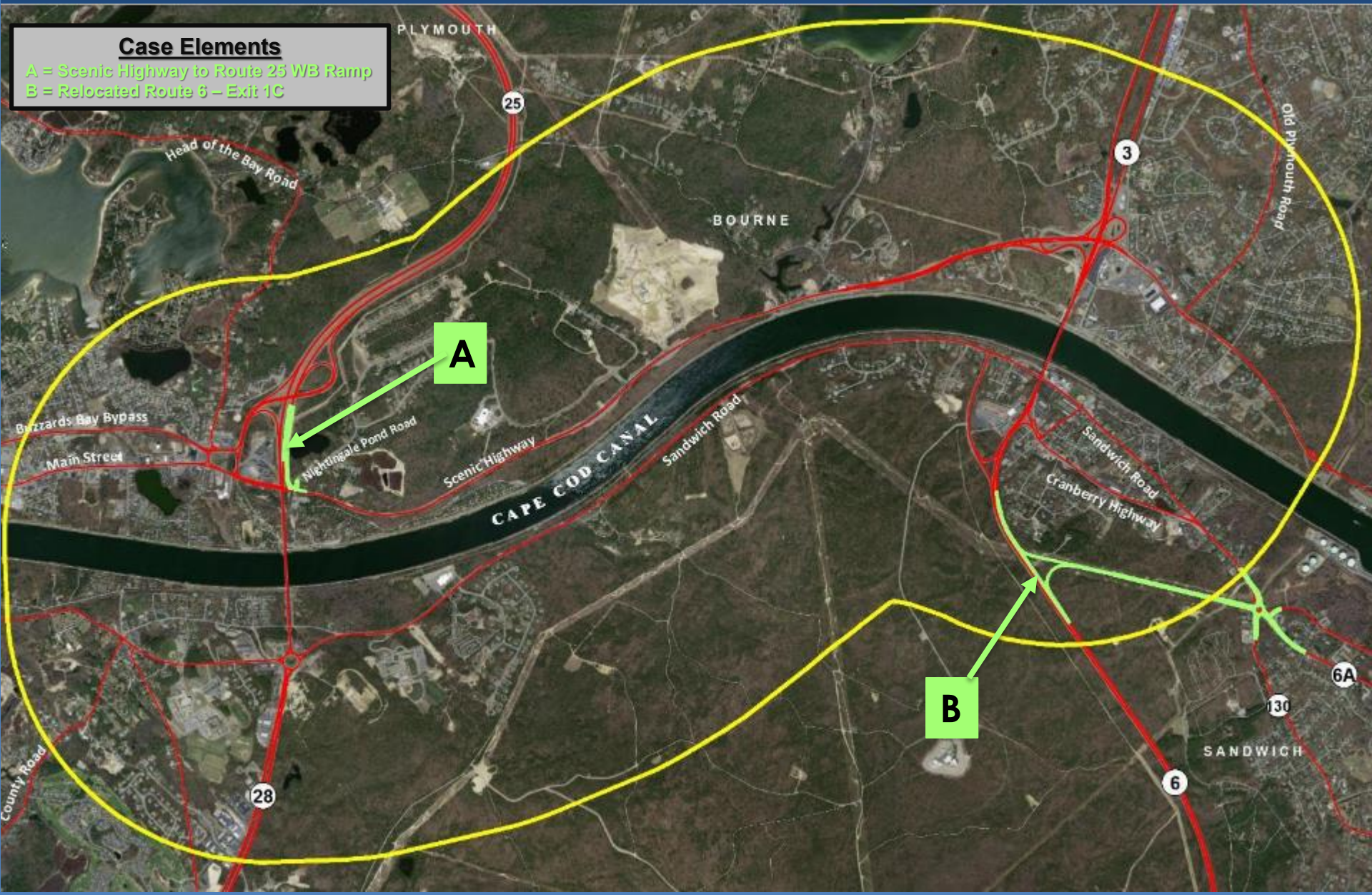
1. Scenic Hwy to Route 25 westbound ramp.
2. Relocated Route 6 Exit 1C.

Travel Model Case 1 (Mid-Term Alternatives).

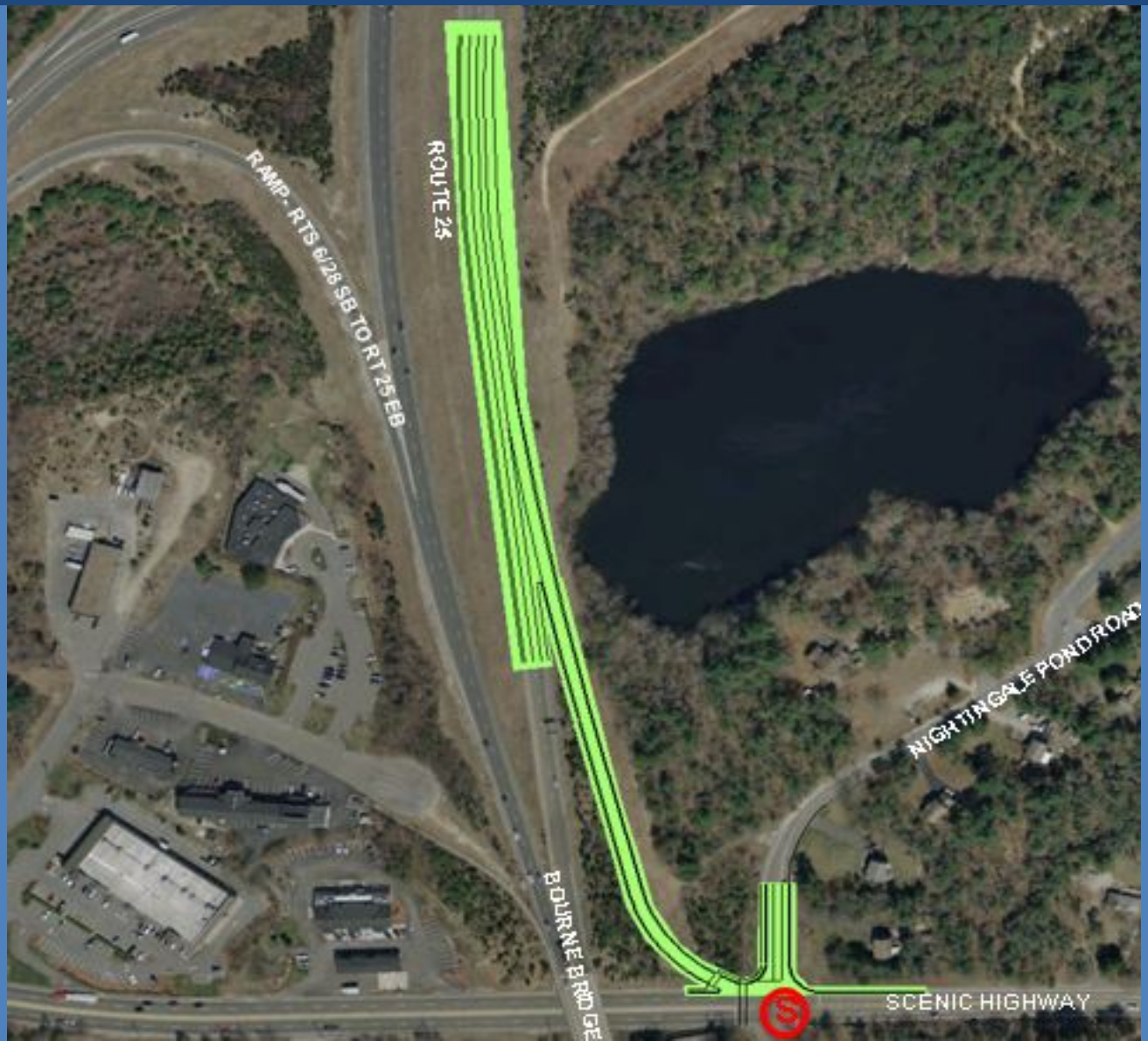
Case 1 improvements would address primarily off-cape movements.

Case 1 improvements could potentially be developed in the mid-term without a major environmental study.

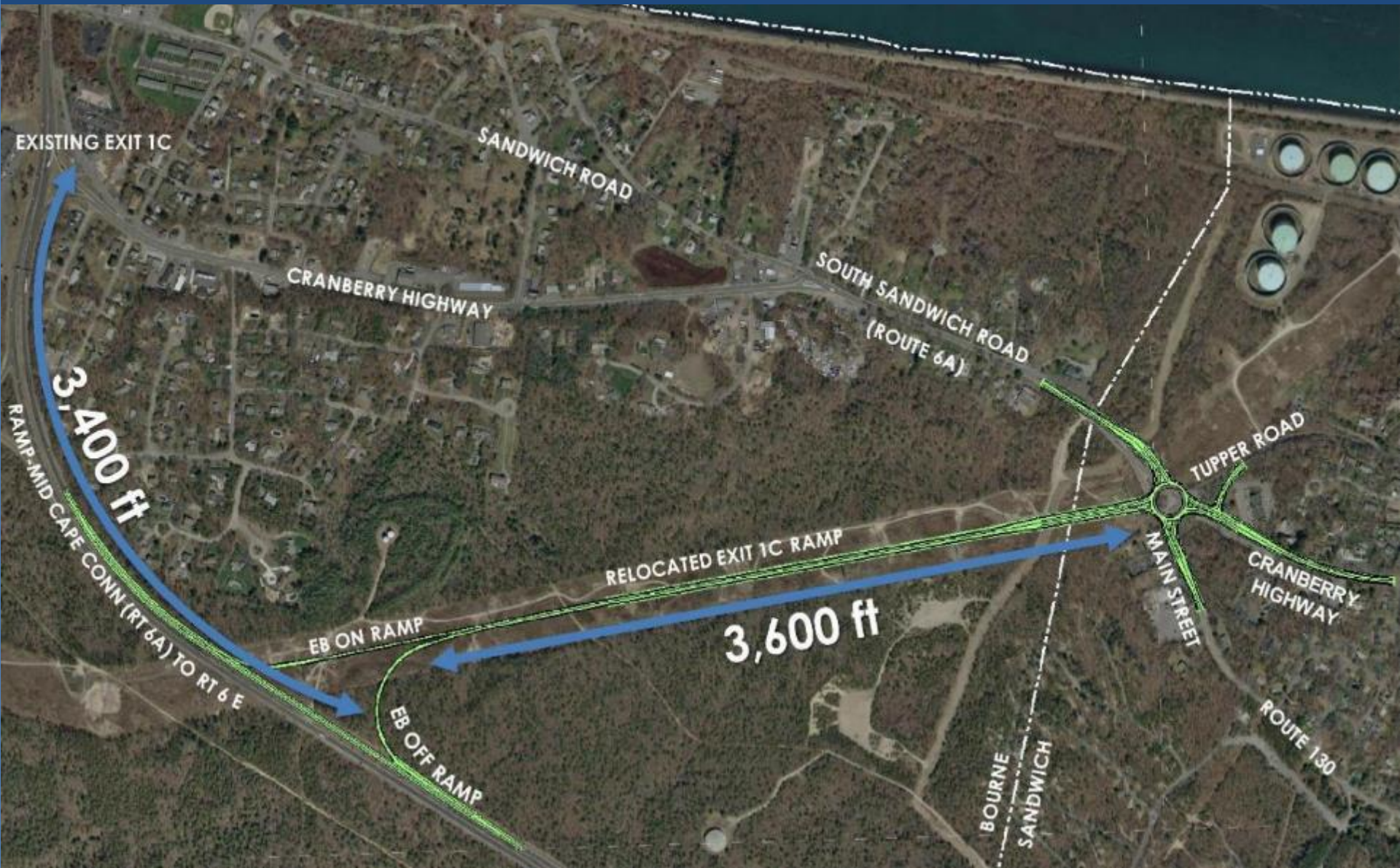
Travel Model Case 1.



Case 1 – Scenic Hwy to Route 25 Westbound Ramp.



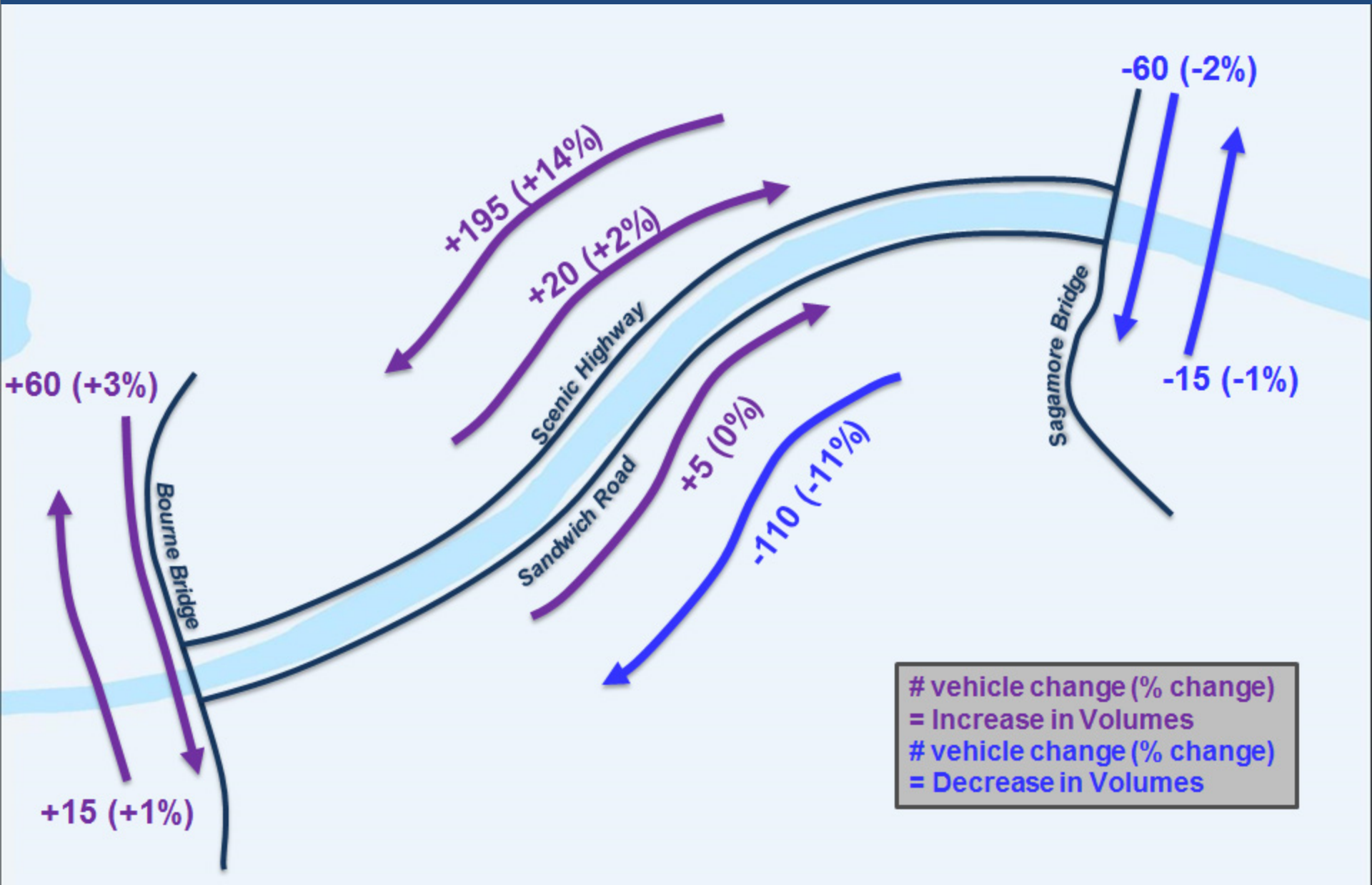
Case 1 – Relocated Route 6 Exit 1C.



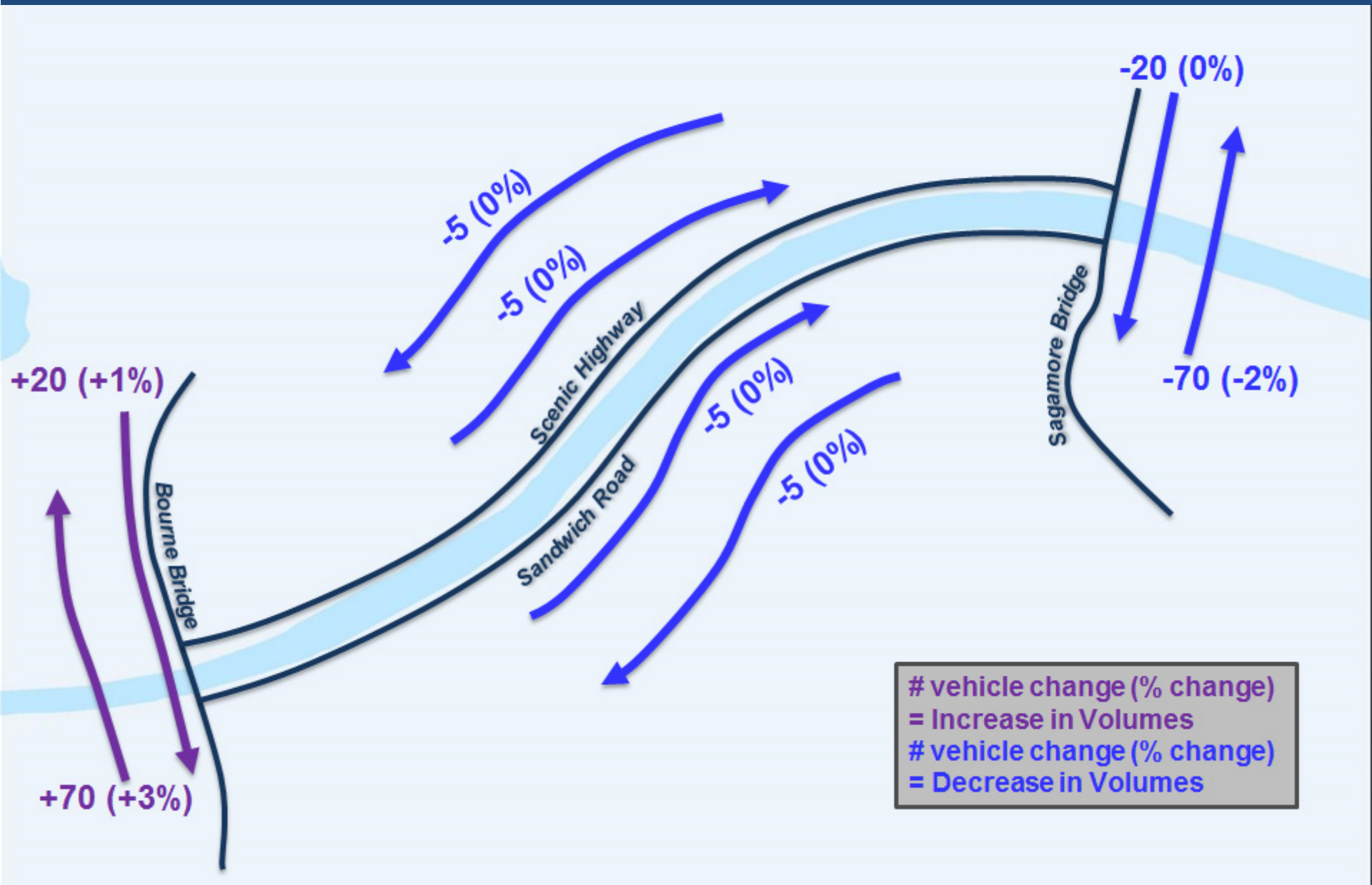
Travel Model Case 1 – Traffic Diversions.

- Traffic Diversions.
  - Minor shift from Sagamore Bridge to Bourne Bridge (more in Fall than Summer).
  - Notable shift to Scenic Hwy from Sandwich Road in Fall.
  - Diversion partly result of attractiveness of new Scenic Hwy to Route 25 WB ramp.

Travel Model Case 1 – Fall PM Traffic Diversions.



Travel Model Case 1 – Summer Saturday Traffic Diversions.



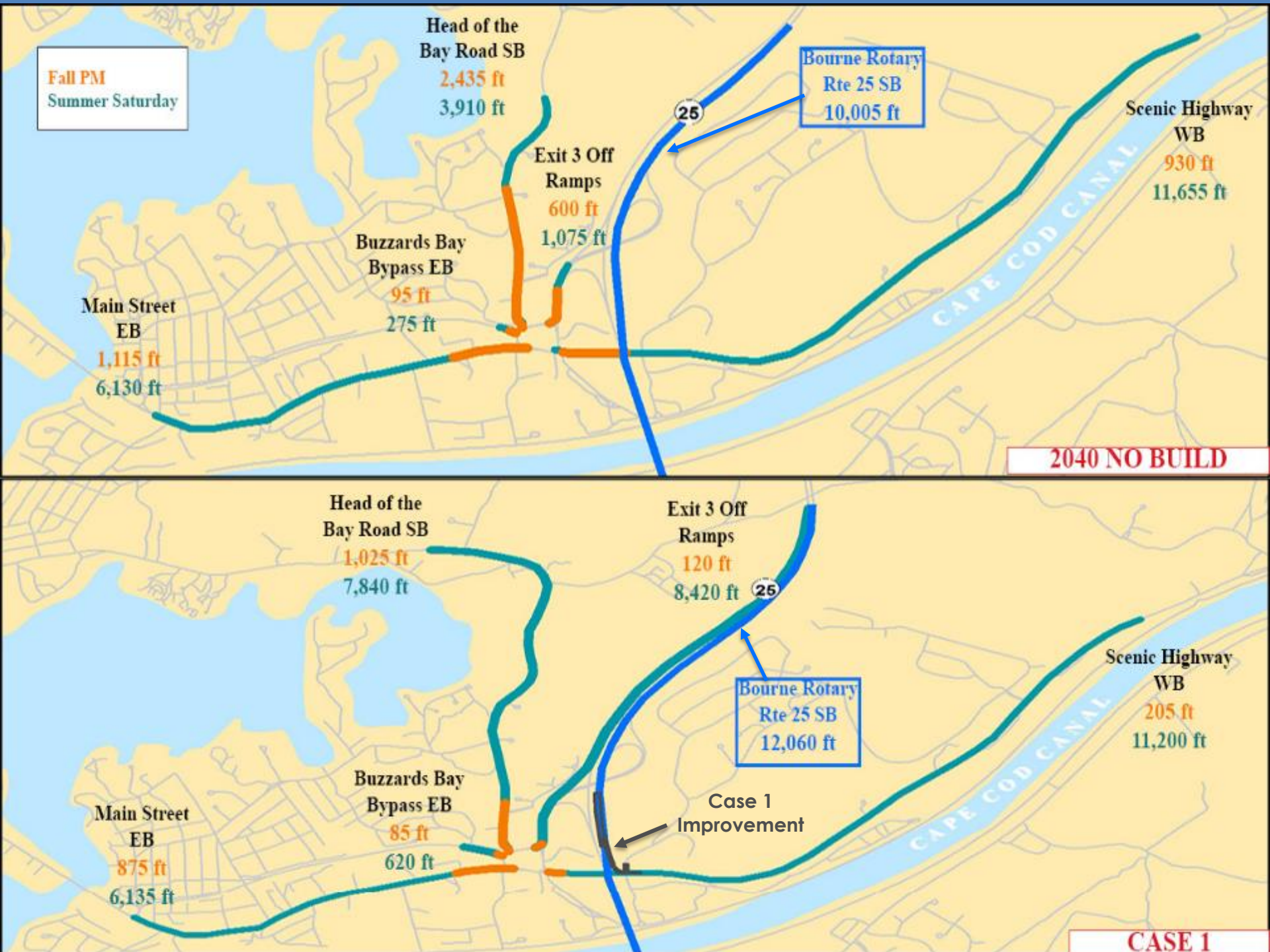
Case 1 – Belmont Circle Queues Comparison of Future (2040) No-Build and Case 1 Improvements

Travel Model Case 1 – Belmont Circle Traffic Operations.

BELMONT CIRCLE OPERATIONS								
Street Name /Approach	2040 NO BUILD				2040 CASE 1			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM								
Exit 3 Off Ramps	5	600	3	A	0	120	2	A
Head of the Bay Road SB	1,120	2,435	369	F	255	1,025	85	F
Buzzards Bay Bypass EB	0	95	3	A	0	85	2	A
Main Street EB	130	1,115	23	C	80	875	18	C
Scenic Highway WB	140	930	20	C	10	205	7	A
Summer Saturday								
Exit 3 Off Ramps	35	1,075	4	A	5,200	8,420	37	E
Head of the Bay Road SB	2,495	3,910	817	F	4,240	7,840	2,314	F
Buzzards Bay Bypass EB	30	275	13	B	100	620	31	D
Main Street EB	3,140	6,130	130	F	4,455	6,135	198	F
Scenic Highway WB	4,825	11,655	165	F	4,190	11,200	205	F

Improves

Worsens

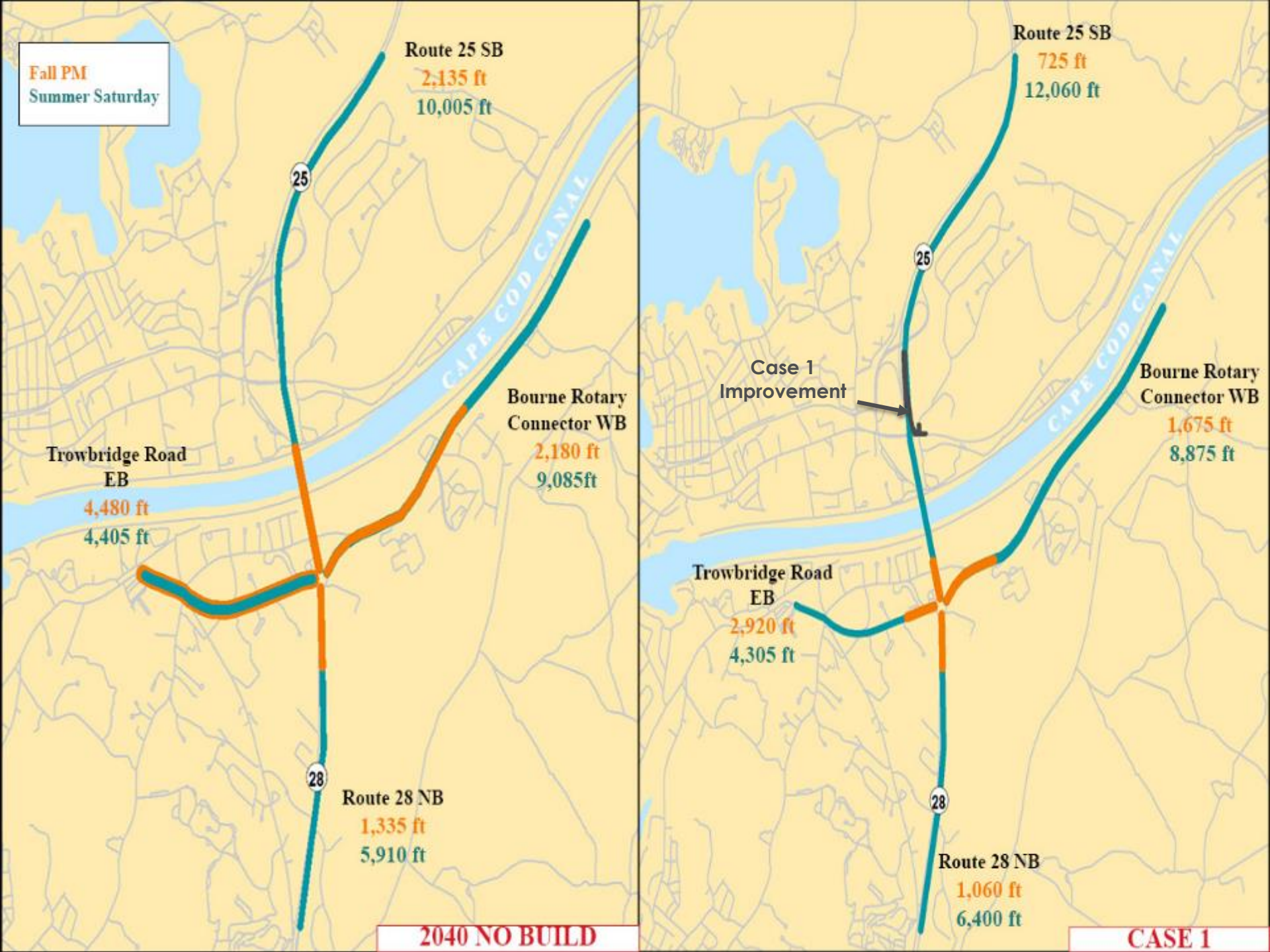

Fall PM
Summer Saturday
Head of the Bay Road SB
2,435 ft
3,910 ft
Bourne Rotary
Rte 25 SB
10,005 ft
Scenic Highway
WB
930 ft
11,655 ft
Exit 3 Off Ramps
600 ft
1,075 ft
Buzzards Bay Bypass EB
95 ft
275 ft
Main Street
EB
1,115 ft
6,130 ft
CAPE COD CANAL
25
2040 NO BUILD
Head of the Bay Road SB
1,025 ft
7,840 ft
Exit 3 Off Ramps
120 ft
8,420 ft
Bourne Rotary
Rte 25 SB
12,060 ft
Scenic Highway
WB
205 ft
11,200 ft
Buzzards Bay Bypass EB
85 ft
620 ft
Case 1 Improvement
Main Street
EB
875 ft
6,135 ft
CASE 1

Case 1 – Bourne Rotary Queues Comparison of Future No-Build and Case 1 Improvements

Travel Model Case 1 – Bourne Rotary Traffic Operations.

BOURNE ROTARY OPERATIONS

Street Name /Approach	2040 NO BUILD				2040 CASE 1			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM								
Route 25 SB	790	2,135	82	F	210	725	29	D
Trowbridge Rd EB	1,765	4,480	345	F	1,025	2,920	210	F
Route 28 NB	395	1,335	81	F	325	1,060	68	F
Bourne Rotary Connector WB	480	2,180	38	E	340	1,675	39	E
Summer Saturday								
Route 25 SB	6,505	10,005	341	F	6,900	12,060	337	F
Trowbridge Rd EB	1,920	4,405	398	F	1,955	4,305	390	F
Route 28 NB	2,885	5,910	264	F	3,275	6,400	287	F
Bourne Rotary Connector WB	4,025	9,085	149	F	4,020	8,875	148	F


Fall PM
Summer Saturday
Route 25 SB
2,135 ft
10,005 ft
25
CAPE COD CANAL
Bourne Rotary
Connector WB
2,180 ft
9,085ft
Trowbridge Road
EB
4,480 ft
4,405 ft
28
Route 28 NB
1,335 ft
5,910 ft
2040 NO BUILD
Route 25 SB
725 ft
12,060 ft
Case 1
Improvement
Bourne Rotary
Connector WB
1,675 ft
8,875 ft
Trowbridge Road
EB
2,920 ft
4,305 ft
Route 28 NB
1,060 ft
6,400 ft
CASE 1

Travel Model Case 1 – Overall Findings.

- Traffic Improvements.
  - Reduced Fall Queues at both Belmont Circle and Bourne Rotary. Queues in summer do not improve.
  - Favorable traffic operations at new Route 6A/Route 130/Route 6 ramp roundabout (LOS A).
- Remaining problem locations.
  - Increased queues in Belmont Circle at Route 25 ramps and Head of the Bay Road because of fewer gaps between vehicles in Circle. Vehicles currently heading to Route 25 westbound create gaps for incoming vehicles.

Travel Model Case 1 – Overall Findings.

- May reduce crash rates for vehicles, bikes and pedestrians.
  - Diversion of traffic from Belmont Circle reduces conflict from vehicles merging.

Travel Demand Model
Case 2
Mid-Term Alternatives
(5-8 years For Design and Permitting)

January 29, 2017

Photo: Sagamore Bridge; BobBernier.com

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Travel Demand Model – Case 2 (Mid-Term Alternative).

Case 1 PLUS:

- Belmont Circle Reconstruction (Alternative 1 – 4 leg roundabout and signalized intersection).
- Bourne Rotary Reconstruction (Alternative 2 – 3 signalized intersections).

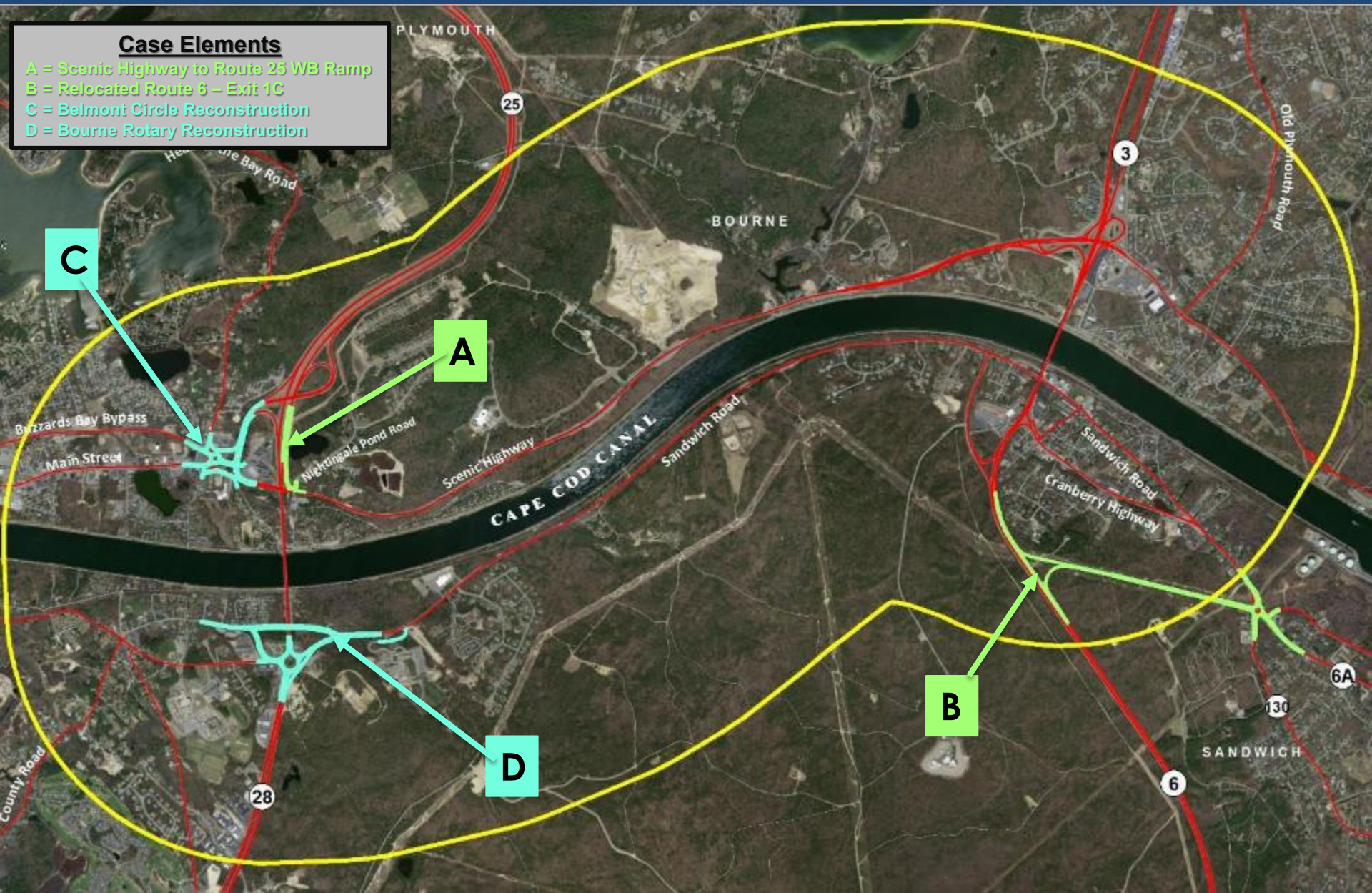
Travel Demand Model – Case 2 (Mid-Term Alternative).

- Case 2 includes improvements to both Belmont Circle and Bourne Rotary.
- Separate cases (with one or the other) not evaluated. So close that traffic at one location affects the other.
- Case 2 improvements are more complex and costly. Due to potential impact, a major environmental study may be required.

Travel Demand Model – Case 2 (Mid-Term Alternative).

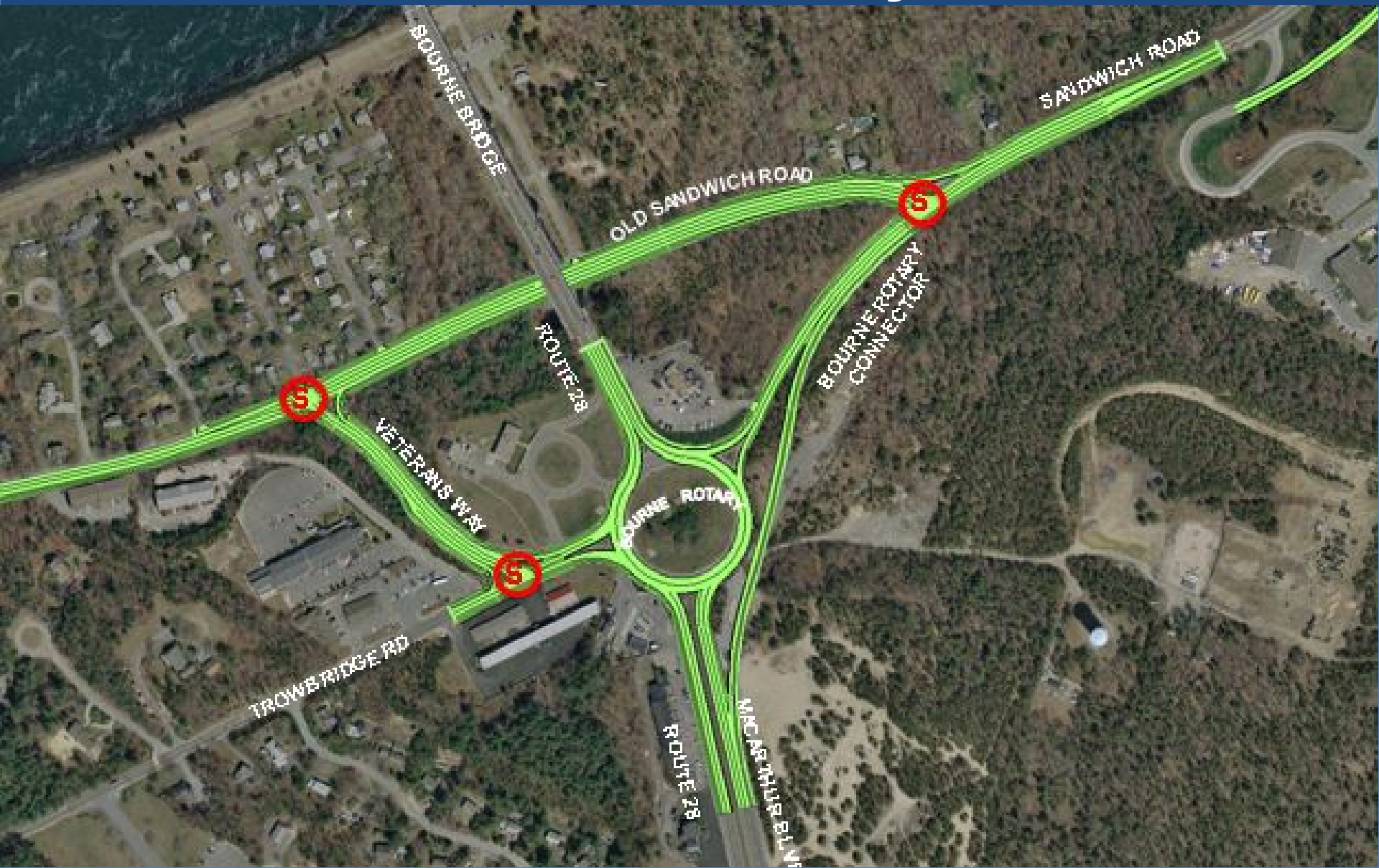
Mid-Term Improvements to Belmont Circle and Bourne Rotary would also be compatible with the anticipated location of the new canal bridges.

Travel Demand Model
Case 2.



Case 2 – New Elements: Belmont Circle.

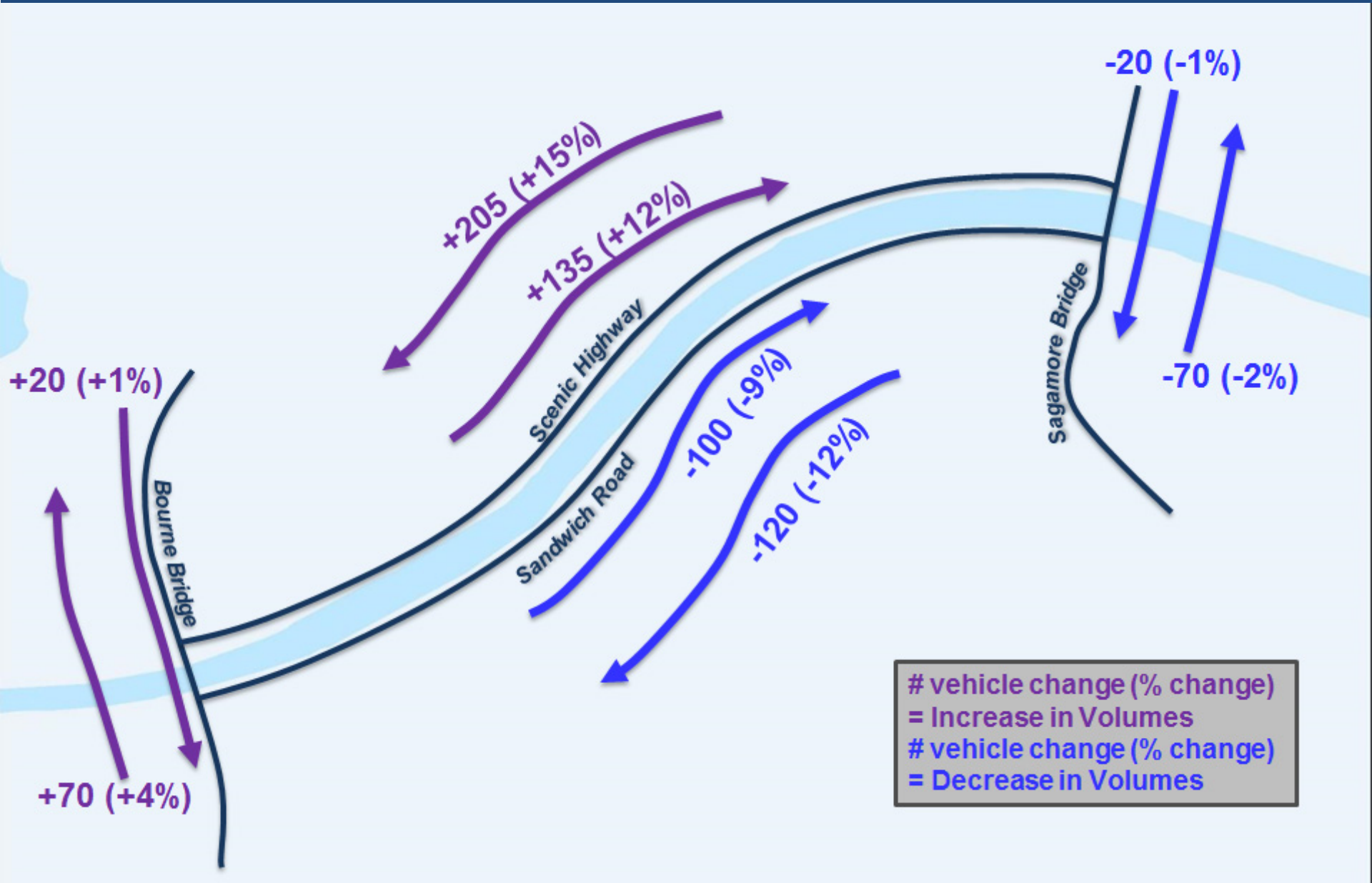
Case 2 – New Elements
Bourne Rotary.



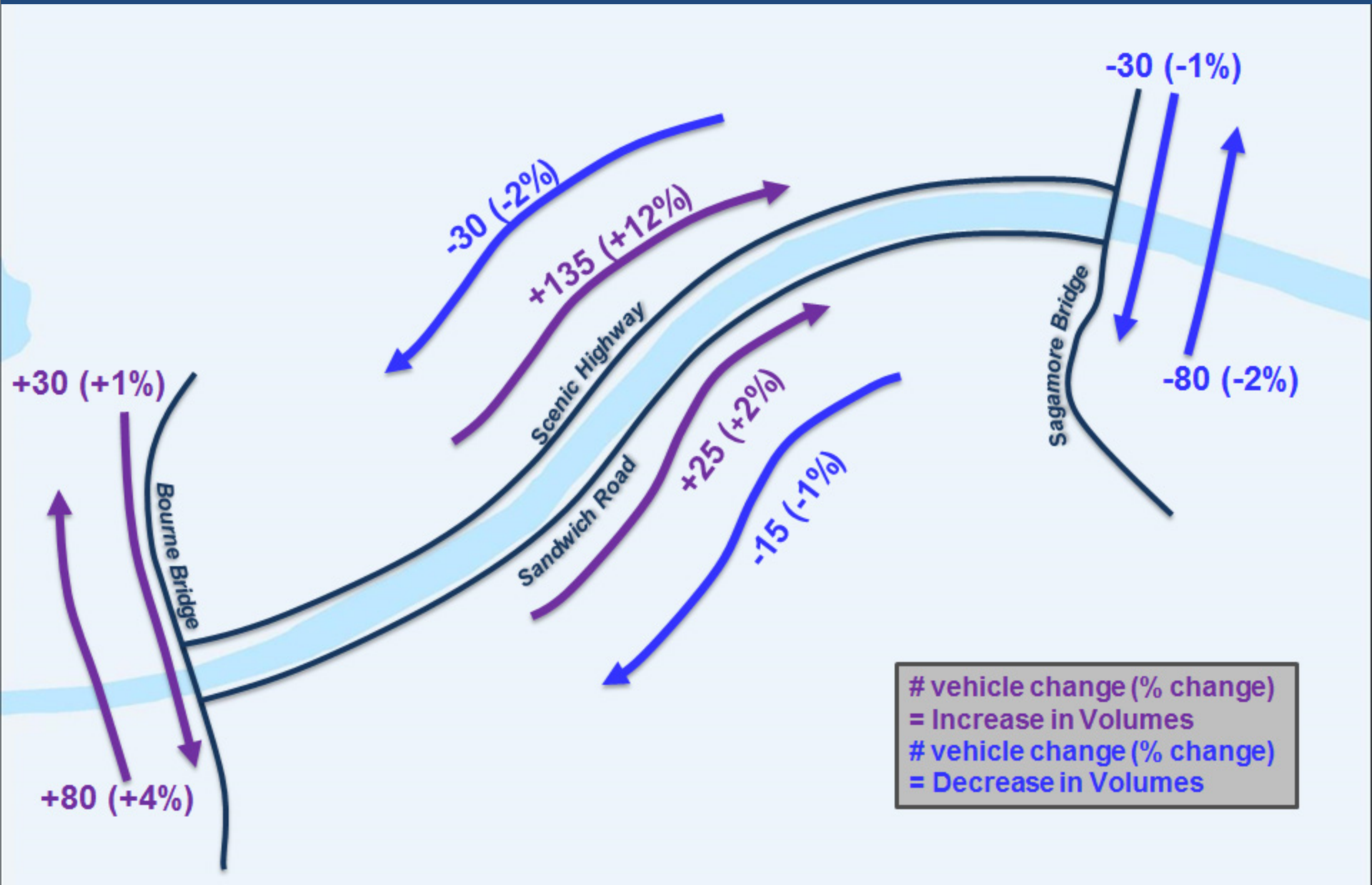
Travel Model Case 2 – Traffic Diversions.

- Traffic Diversions.
  - Minor shift from Sagamore Bridge to Bourne Bridge (more in Fall than Summer).
  - Notable increase in Scenic Hwy volumes during Fall.
  - Minor summertime increase in eastbound volumes on Scenic Hwy and Sandwich Road.

Travel Model Case 2 – Fall PM Traffic Diversions.



Travel Model Case 2 – Summer Saturday Traffic Diversions.



Case 2 – Belmont Circle Queues Comparison of Future No-Build and Case 2 Improvements

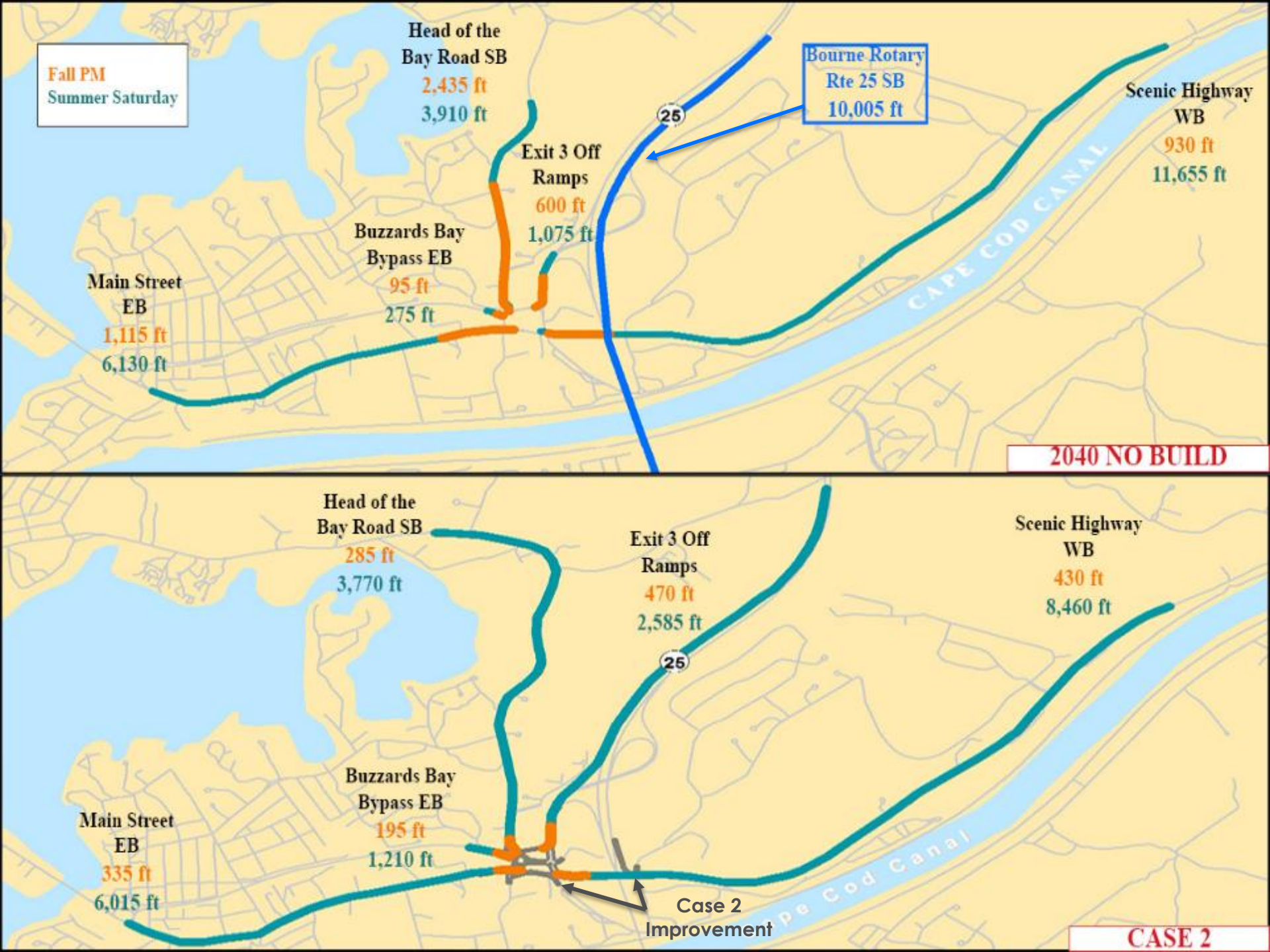
Travel Model Case 2 – Traffic Operations.

BELMONT CIRCLE OPERATIONS

Street Name /Approach	2040 NO BUILD				2040 CASE 2			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM								
Exit 3 Off Ramps	5	600	3	A	100	470	27	C
Head of the Bay Road SB	1,120	2,435	369	F	10	285	7	A
Buzzards Bay Bypass EB	0	95	3	A	5	195	4	A
Main Street EB	130	1,115	23	C	25	335	13	B
Scenic Highway WB	140	930	20	C	85	430	29	C
Summer Saturday								
Exit 3 Off Ramps	35	1,075	4	A	765	2,585	83	F
Head of the Bay Road SB	2,495	3,910	817	F	1,790	3,770	240	F
Buzzards Bay Bypass EB	30	275	13	B	505	1,210	145	F
Main Street EB	3,140	6,130	130	F	5,685	6,015	333	F
Scenic Highway WB	4,825	11,655	165	F	4,415	8,460	257	F

Improves

Worsens

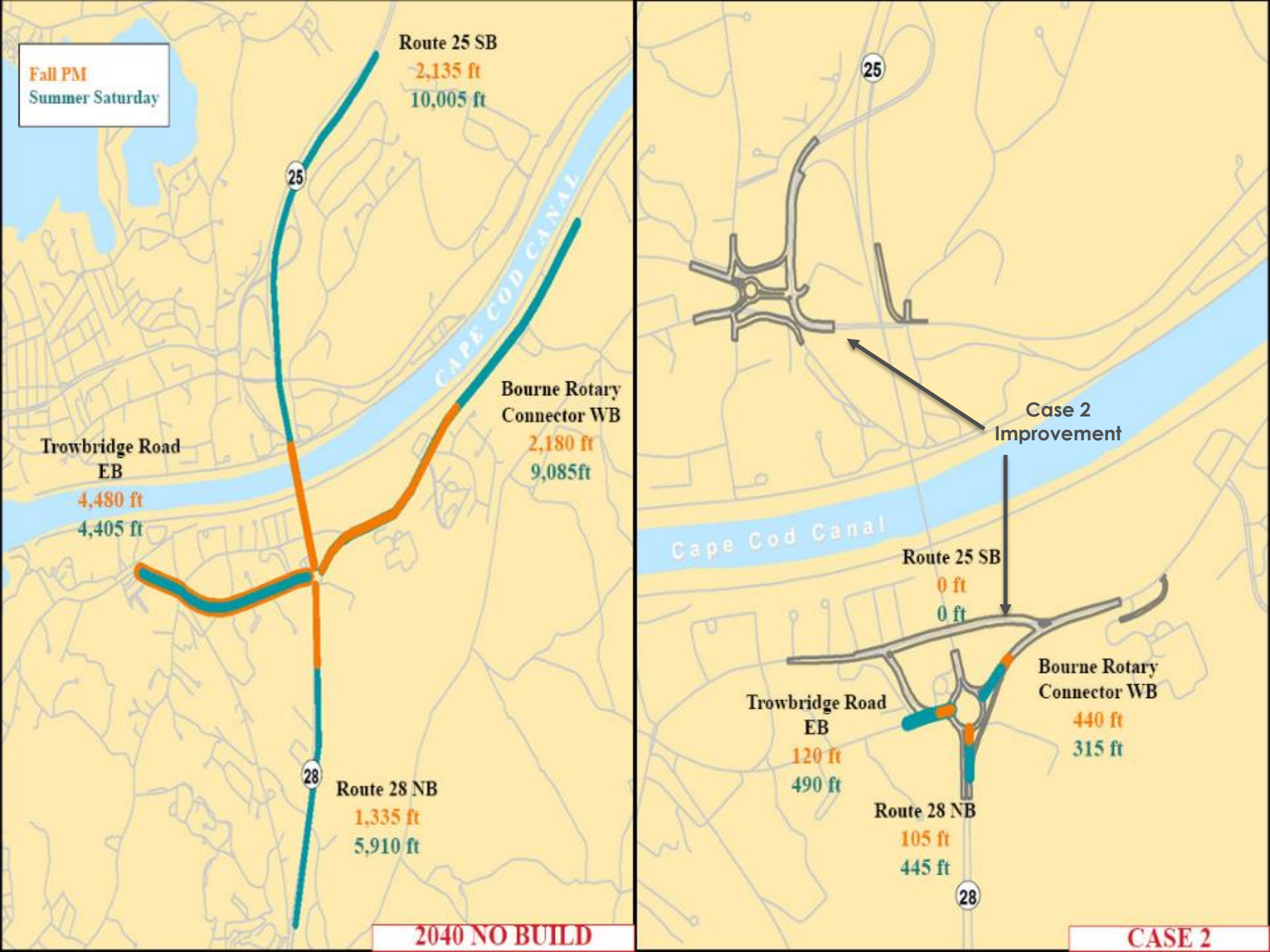

Fall PM
Summer Saturday
Head of the
Bay Road SB
2,435 ft
3,910 ft
Bourne Rotary
Rte 25 SB
10,005 ft
Scenic Highway
WB
930 ft
11,655 ft
Exit 3 Off
Ramps
600 ft
1,075 ft
Buzzards Bay
Bypass EB
95 ft
275 ft
Main Street
EB
1,115 ft
6,130 ft
25
CAPE COD CANAL
2040 NO BUILD
Head of the
Bay Road SB
285 ft
3,770 ft
Exit 3 Off
Ramps
470 ft
2,585 ft
Scenic Highway
WB
430 ft
8,460 ft
Buzzards Bay
Bypass EB
195 ft
1,210 ft
Main Street
EB
335 ft
6,015 ft
25
Case 2
Improvement
CASE 2

Case 2 – Bourne Rotary Queues Comparison of Future No-Build and Case 2 Improvements

Travel Model Case 2 – Bourne Rotary Traffic Operations.

BOURNE ROTARY OPERATIONS

Street Name /Approach	2040 NO BUILD				2040 CASE 2			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM								
Route 25 SB	790	2,135	82	F	0	0	2	A
Trowbridge Rd EB	1,765	4,480	345	F	10	120	17	C
Route 28 NB	395	1,335	81	F	5	105	3	A
Bourne Rotary Connector WB	480	2180	38	E	40	440	28	D
Summer Saturday								
Route 25 SB	6,505	10,005	341	F	0	0	2	A
Trowbridge Rd EB	1,920	4,405	398	F	75	490	38	E
Route 28 NB	2,885	5,910	264	F	80	445	15	C
Bourne Rotary Connector WB	4,025	9,085	149	F	20	315	27	D


Fall PM
Summer Saturday
Route 25 SB
2,135 ft
10,005 ft
25
CAPE COD CANAL
Bourne Rotary
Connector WB
2,180 ft
9,085ft
Trowbridge Road
EB
4,480 ft
4,405 ft
28
Route 28 NB
1,335 ft
5,910 ft
2040 NO BUILD
25
Case 2
Improvement
Cape Cod Canal
Route 25 SB
0 ft
0 ft
Bourne Rotary
Connector WB
440 ft
315 ft
Trowbridge Road
EB
120 ft
490 ft
Route 28 NB
105 ft
445 ft
28
CASE 2

Travel Model Case 2 – Belmont Circle/Bourne Rotary VISSIM Simulation Videos .

Travel Model Case 2 – Overall Findings.

- Traffic Improvements.
  - Belmont Circle - Fall weekday queues substantially reduced at most approaches.
  - Bourne Rotary – Fall weekday and Summer Saturday queues substantially reduced.
- Remaining problem locations.
  - Belmont Circle – Summer Saturday Queues worsen at Exit 3 ramps and Buzzards Bay Bypass because of greater volumes from Main Street EB to Route 25 WB.

Travel Model Case 2 – Overall Findings.

- Improvements may reduce crash rates for vehicles, bicycles and pedestrians.
  - New signalized intersections at Belmont Circle and Bourne Rotary.
  - Modern roundabout design at Belmont Circle.
  - Diversion of traffic out of Belmont Circle and Bourne Rotary, less merging conflicts.

Travel Demand Model
Case 3

Long-Term Alternatives
(8+ Years)

Photo: capecodchamberofcommerce.com

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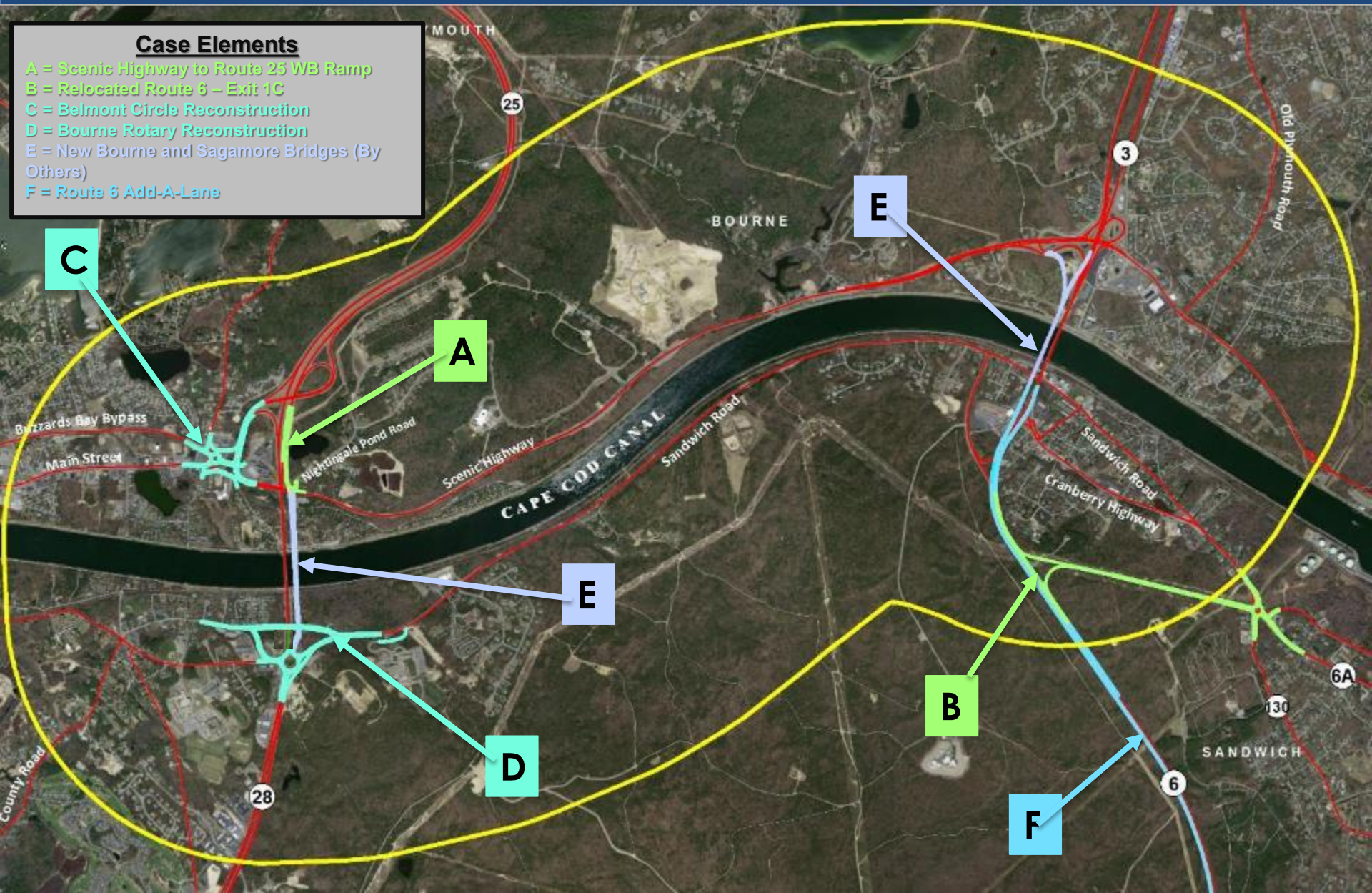
Travel Model Case 3 (Long-Term Alternative).

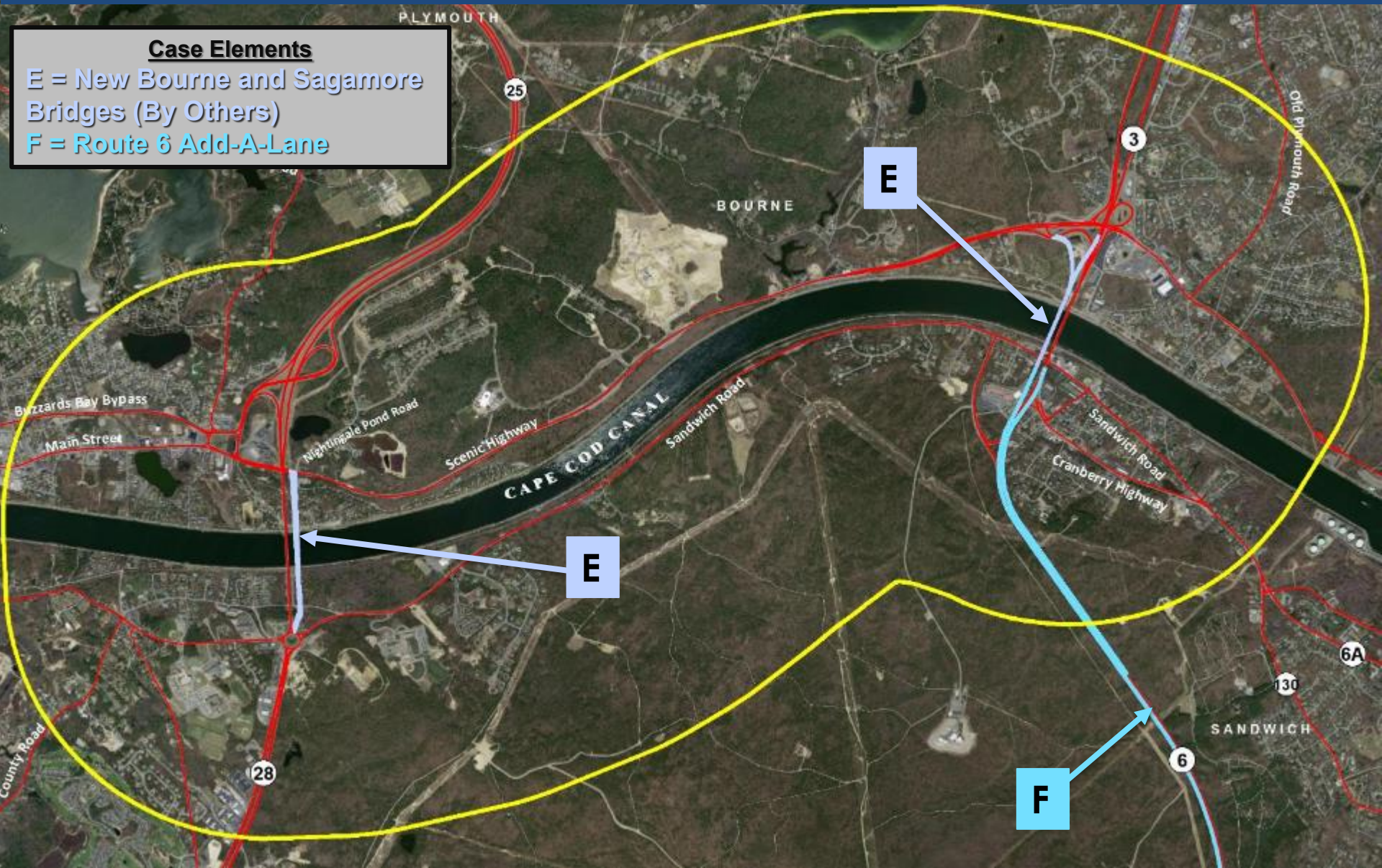
Case 2 PLUS:

- New canal bridges with related auxiliary lanes (by Army Corps).
- Route 6 - Additional eastbound lane from the new Sagamore Bridge to Exit 2.
- Case 3 evaluates the effect new canal bridges would have on traffic operations.

Travel Model Case 3.



Case 3 – New Element - New Sagamore and Bourne Bridges.

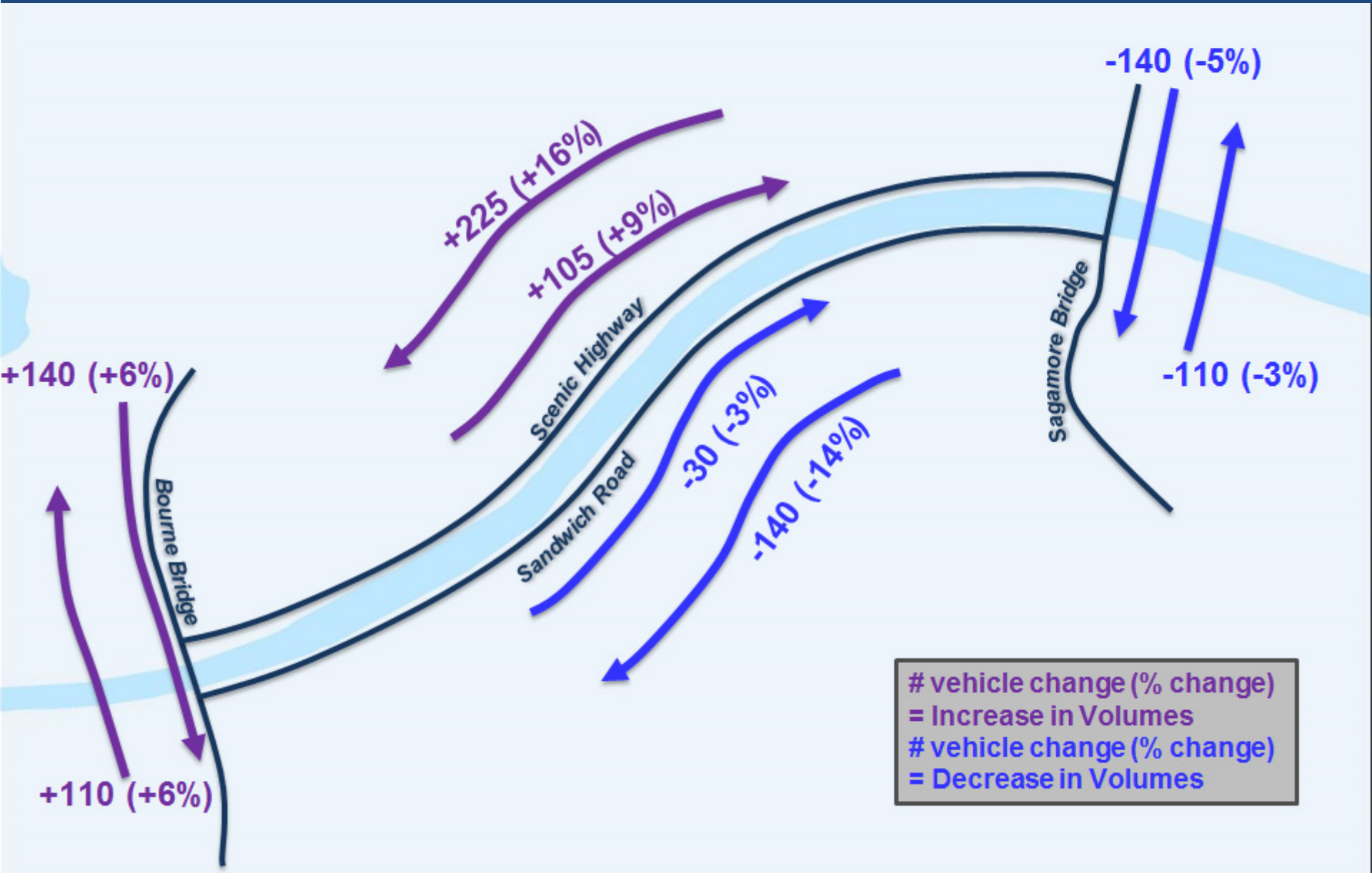


Case 3 – New Element
Route 6 Add-a-Lane.

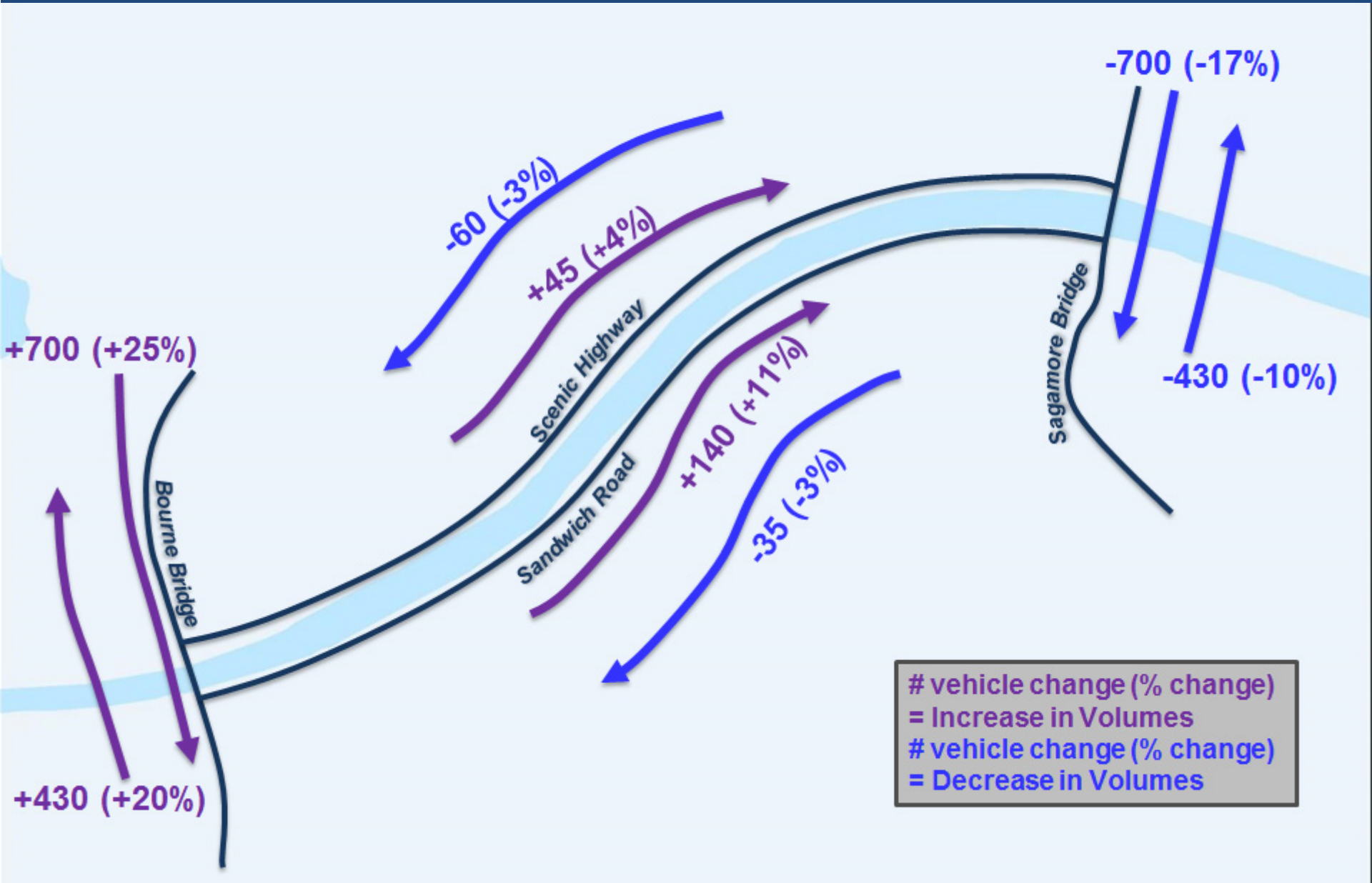
Travel Model Case 3 – Traffic Diversions.

- Shift from Sagamore Bridge to Bourne Bridge (more Summer than Fall)
- Notable shift to Scenic Hwy from Sandwich Road in Fall.
- Both diversions above because of improved operations (shorter queues) on Bourne Bridge attracting vehicles.
- Minor summertime increase in eastbound volumes on Scenic Hwy and Sandwich Road because Route 3-bound vehicles no longer avoiding Bourne Bridge area.

Travel Model Case 3 – Fall PM Traffic Diversions.



Travel Model Case 3 – Summer Saturday Traffic Diversions.



Case 3 – Belmont Circle Queues Comparison of Future (2040) No-Build and Case 3 Improvements

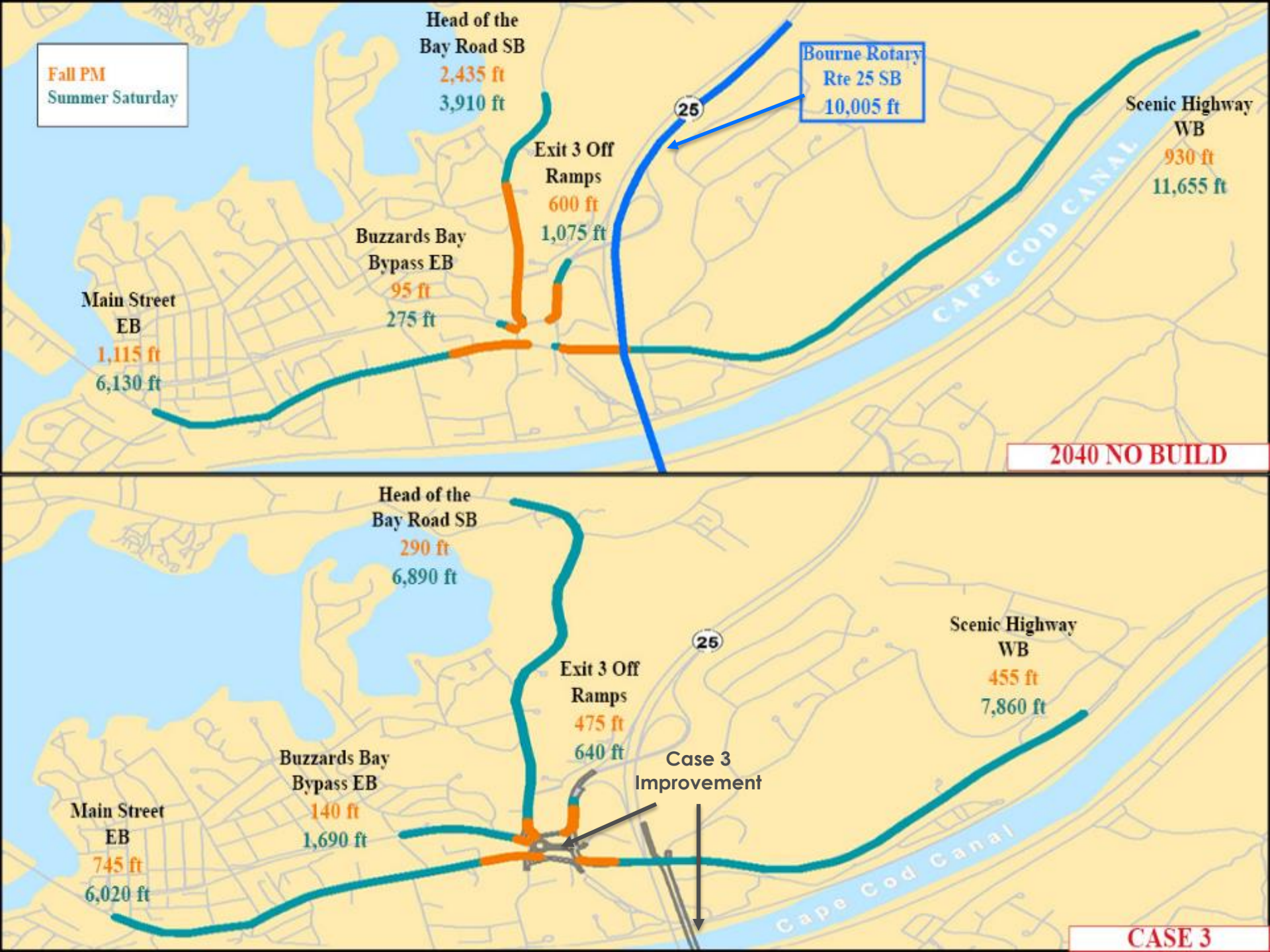
Travel Model Case 3 – Belmont Circle Traffic Operations.

BELMONT CIRCLE OPERATIONS

Street Name /Approach	2040 NO BUILD				2040 CASE 3			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM								
Exit 3 Off Ramps	5	600	3	A	100	475	27	C
Head of the Bay Road SB	1,120	2,435	369	F	10	290	7	A
Buzzards Bay Bypass EB	0	95	3	A	5	140	4	A
Main Street EB	130	1,115	23	C	35	745	14	B
Scenic Highway WB	140	930	20	C	80	455	28	C
Summer Saturday								
Exit 3 Off Ramps	35	1,075	4	A	125	640	33	C
Head of the Bay Road SB	2,495	3,910	817	F	3,200	6,890	308	F
Buzzards Bay Bypass EB	30	275	13	B	625	1,690	158	F
Main Street EB	3,140	6,130	130	F	5,700	6,020	347	F
Scenic Highway WB	4,825	11,655	165	F	4,095	7,860	247	F

Improves

Worsens

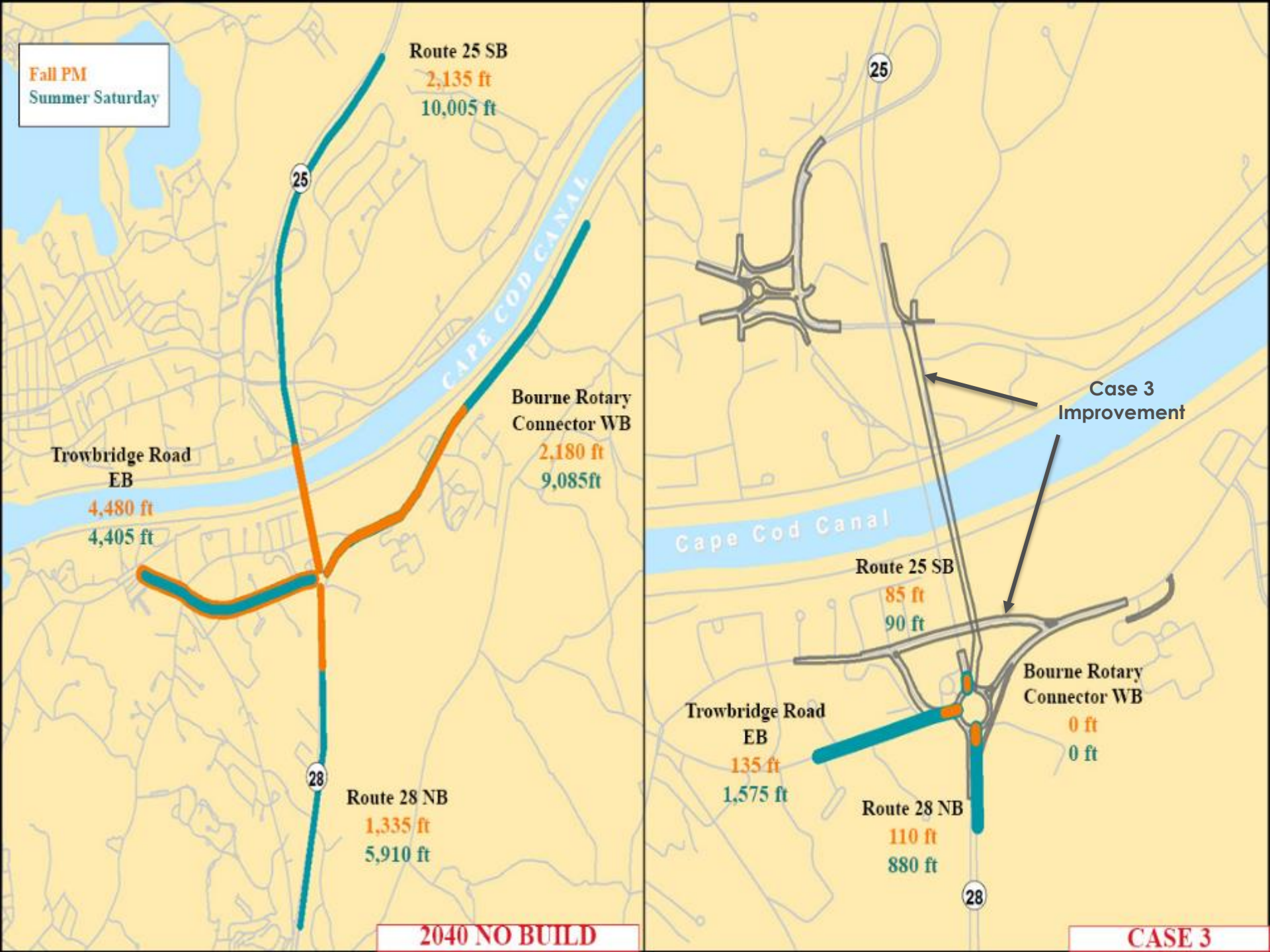

Fall PM
Summer Saturday
Head of the Bay Road SB
2,435 ft
3,910 ft
Bourne Rotary
Rte 25 SB
10,005 ft
25
Scenic Highway WB
930 ft
11,655 ft
Exit 3 Off Ramps
600 ft
1,075 ft
Buzzards Bay Bypass EB
95 ft
275 ft
Main Street EB
1,115 ft
6,130 ft
CAPE COD CANAL
2040 NO BUILD
Head of the Bay Road SB
290 ft
6,890 ft
25
Scenic Highway WB
455 ft
7,860 ft
Exit 3 Off Ramps
475 ft
640 ft
Case 3 Improvement
Buzzards Bay Bypass EB
140 ft
1,690 ft
Main Street EB
745 ft
6,020 ft
Cape Cod Canal
CASE 3

Case 3 – Bourne Rotary Queues Comparison of Future (2040) No-Build and Case 3 Improvements

Travel Model Case 3 – Bourne Rotary Traffic Operations.

BOURNE ROTARY OPERATIONS

Street Name /Approach	2040 NO BUILD				2040 CASE 3			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM								
Route 25 SB	790	2,135	82	F	0	85	1	A
Trowbridge Rd EB	1,765	4,480	345	F	5	135	17	C
Route 28 NB	395	1,335	81	F	5	110	3	A
Bourne Rotary Connector WB	480	2180	38	E	0	0	17	C
Summer Saturday								
Route 25 SB	6,505	10,005	341	F	0	90	2	A
Trowbridge Rd EB	1,920	4,405	398	F	670	1,575	180	F
Route 28 NB	2,885	5,910	264	F	220	880	48	E
Bourne Rotary Connector WB	4,025	9,085	149	F	0	0	20	C


Fall PM
Summer Saturday
Route 25 SB
2,135 ft
10,005 ft
25
CAPE COD CANAL
Bourne Rotary
Connector WB
2,180 ft
9,085ft
Trowbridge Road
EB
4,480 ft
4,405 ft
28
Route 28 NB
1,335 ft
5,910 ft
2040 NO BUILD
25
Case 3
Improvement
Cape Cod Canal
Route 25 SB
85 ft
90 ft
Bourne Rotary
Connector WB
0 ft
0 ft
Trowbridge Road
EB
135 ft
1,575 ft
Route 28 NB
110 ft
880 ft
28
CASE 3

Travel Model Case 3 – Overall Findings.

- Traffic Improvements.
  - Belmont Circle – Notable Queue reductions during Fall weekday and Summer Saturday.
  - Bourne Rotary – Substantial Queue reductions during Fall weekday and Summer Saturday.
- Remaining problem locations.
  - Belmont Circle – Summer Saturday queues at Head of the Bay Road and Buzzards Bay Bypass because of greater volumes on Main Street WB and Route 25 WB.

Travel Model Case 3 – Overall Findings.

Improvements may reduce crash rates for vehicles, bicycles, and pedestrians.

- Signalized intersections at Belmont Circle and Bourne Rotary.
- Separation of traffic flow at Bourne Rotary Connector at Sandwich Road (less merging in Rotary).
- Modern design of new bridges to include wider lanes, shoulders, sidewalks.

Travel Demand Model

Case 3A.

Long-Term Alternatives

(8+ Years to Design and Permitting).

June 29, 2017

Photo: Sagamore Bridge; BobBernier.com

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Travel Model Case 3A (Long-Term Alternative).

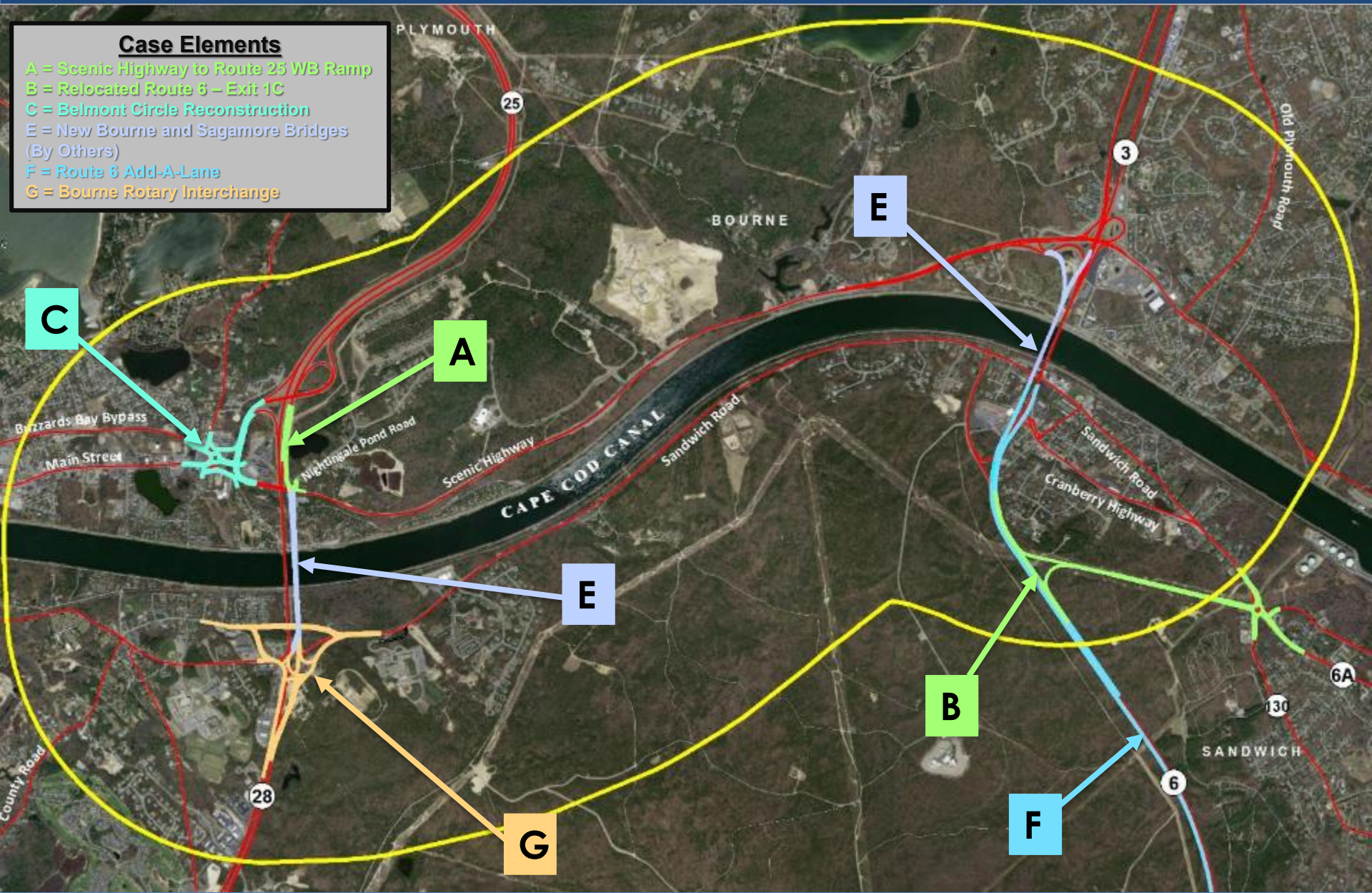
Case 3 PLUS:

- Bourne Rotary Interchange (Alternative 3A).

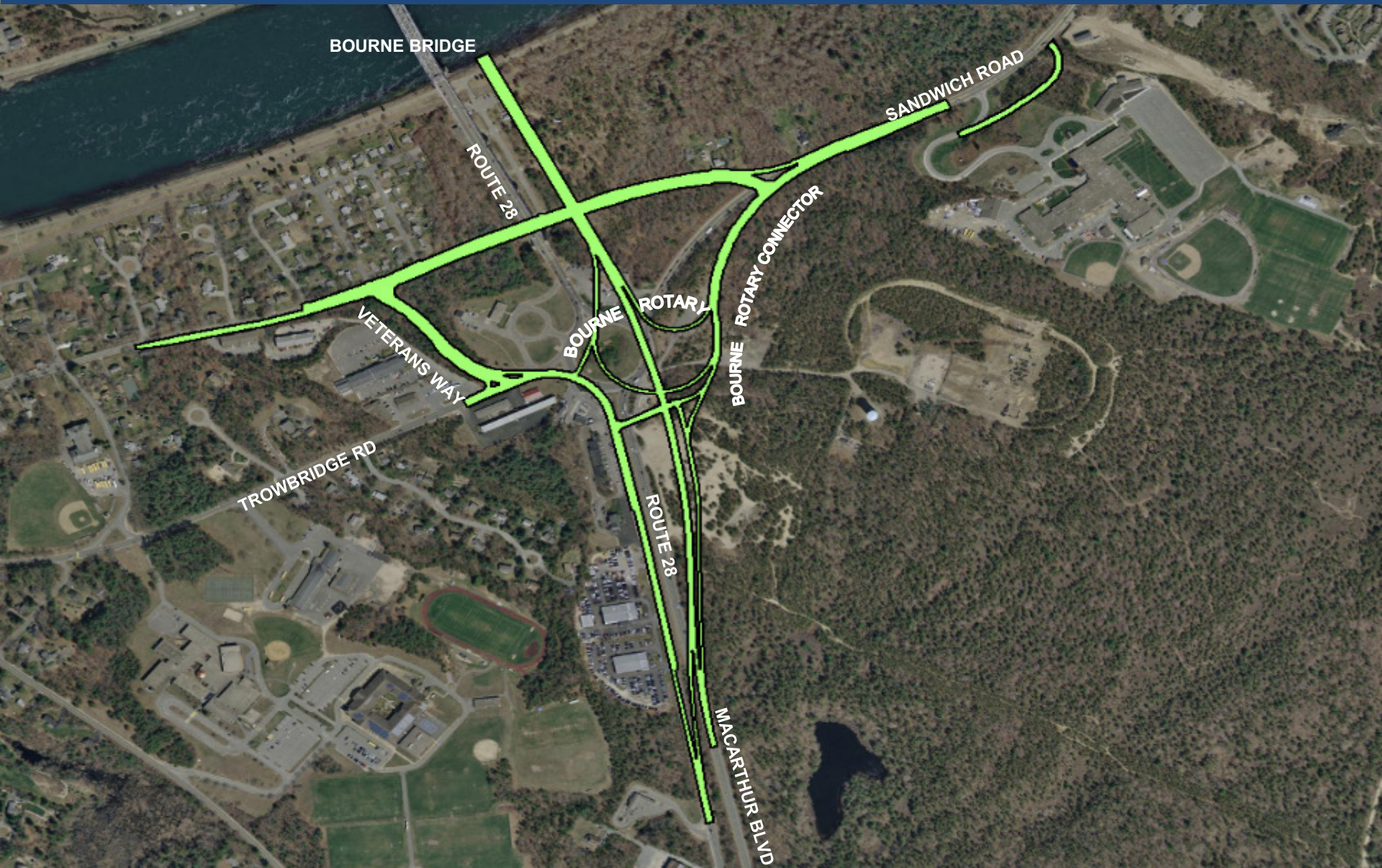
Travel Model Case 3A (Long-Term Alternative).

- New canal bridges evaluated in Case 3 may increase ease of bridge crossings.
- Additional Route 28 southbound traffic may result in failing operations at Bourne Rotary.
- Case 3A proposed to test long-term improvements at Bourne Interchange

Travel Model Case 3A.



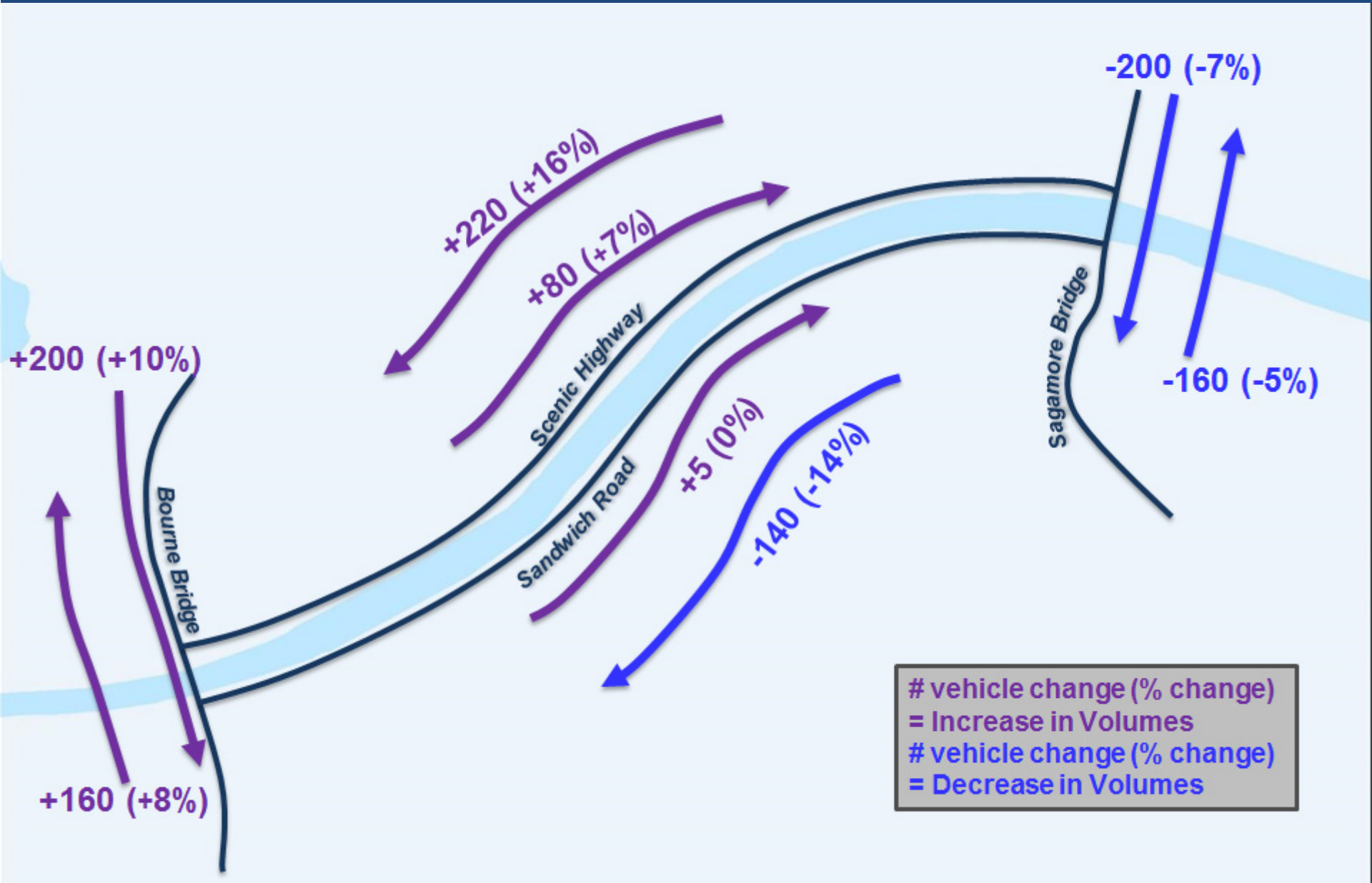
Case 3A – New Element
Bourne Rotary Interchange.



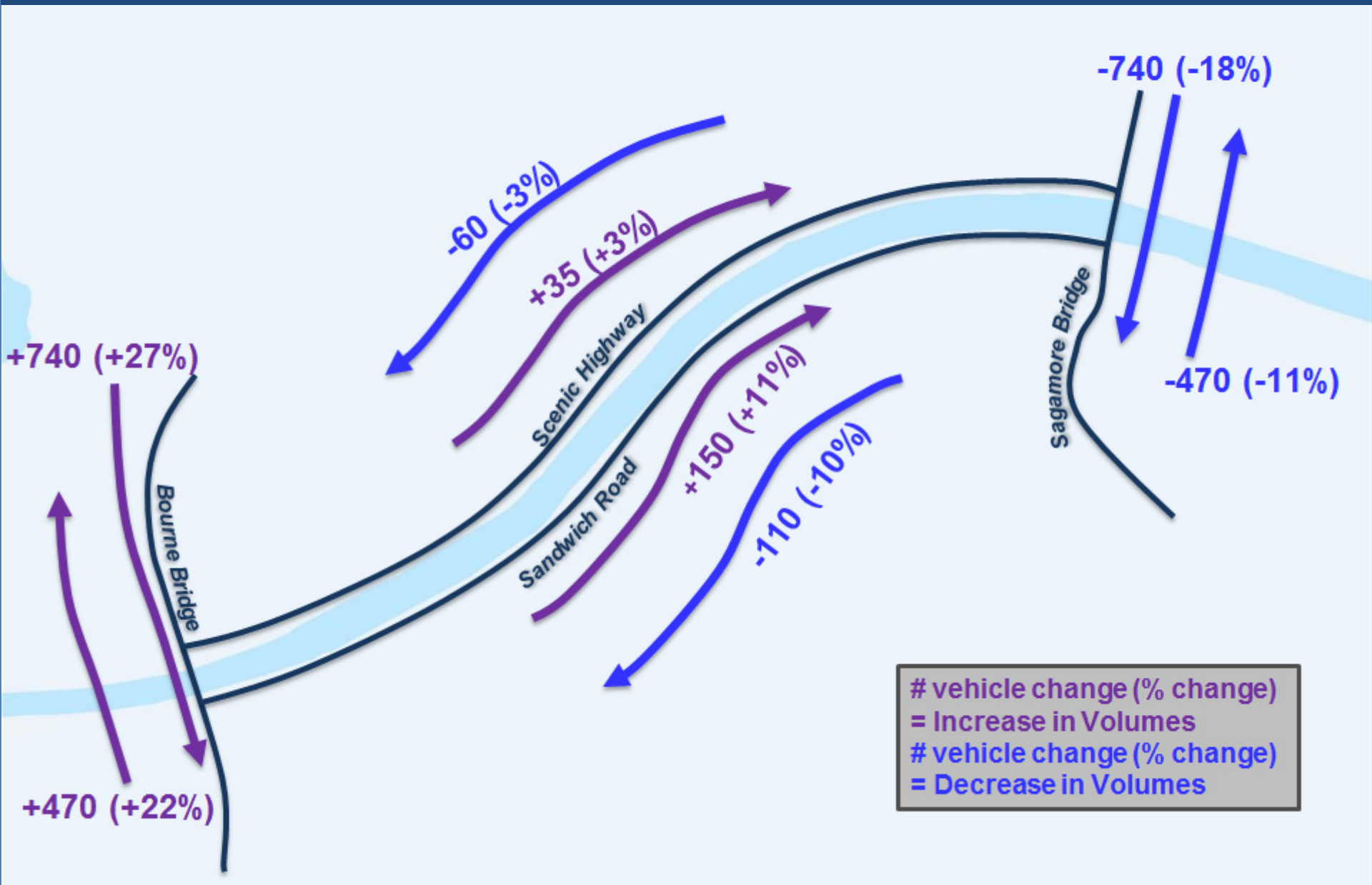
Travel Model Case 3 – Traffic Diversions.

- Traffic Diversions.
  - Shift from Sagamore Bridge to Bourne Bridge (more Summer than Fall).
  - Notable shift to Scenic Hwy from Sandwich Road in Fall.
  - Minor summertime increase in eastbound volumes on Scenic Hwy and Sandwich Road.

Travel Model Case 3A – Fall PM Traffic Diversions.



Travel Model Case 3A – Summer Saturday Traffic Diversions.



Case 3A – Belmont Circle Queues Comparison of Future (2040) No-Build and Case 3A Improvements

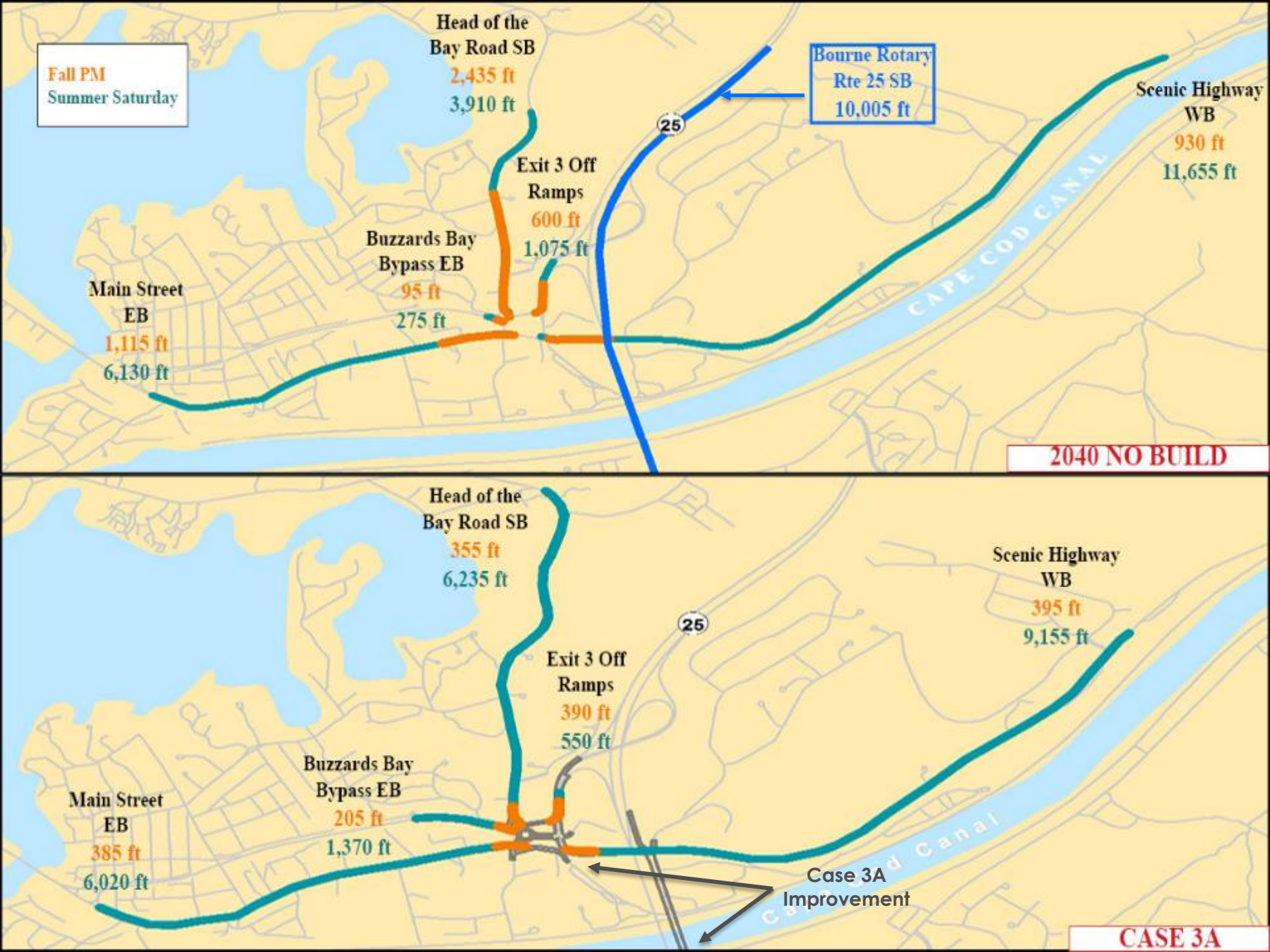
Travel Model Case 3A – Belmont Circle Traffic Operations.

BELMONT CIRCLE OPERATIONS

Street Name /Approach	2040 NO BUILD				2040 CASE 3A			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS
Fall PM								
Exit 3 Off Ramps	5	600	3	A	90	390	26	C
Head of the Bay Road SB	1,120	2,435	369	F	15	355	7	A
Buzzards Bay Bypass EB	0	95	3	A	5	205	4	A
Main Street EB	130	1,115	23	C	30	385	14	B
Scenic Highway WB	140	930	20	C	70	395	26	C
Summer Saturday								
Exit 3 Off Ramps	35	1,075	4	A	120	550	32	C
Head of the Bay Road SB	2,495	3,910	817	F	2,935	6,235	274	F
Buzzards Bay Bypass EB	30	275	13	B	610	1,370	157	F
Main Street EB	3,140	6,130	130	F	5,725	6,020	359	F
Scenic Highway WB	4,825	11,655	165	F	4,630	9,155	267	F

Improves

Worsens


Fall PM
Summer Saturday
Head of the Bay Road SB
2,435 ft
3,910 ft
Bourne Rotary
Rte 25 SB
10,005 ft
Scenic Highway WB
930 ft
11,655 ft
Exit 3 Off Ramps
600 ft
1,075 ft
Buzzards Bay Bypass EB
95 ft
275 ft
Main Street EB
1,115 ft
6,130 ft
25
CAPE COD CANAL
2040 NO BUILD
Head of the Bay Road SB
355 ft
6,235 ft
Scenic Highway WB
395 ft
9,155 ft
Exit 3 Off Ramps
390 ft
550 ft
Buzzards Bay Bypass EB
205 ft
1,370 ft
Main Street EB
385 ft
6,020 ft
Case 3A Improvement
CASE 3A

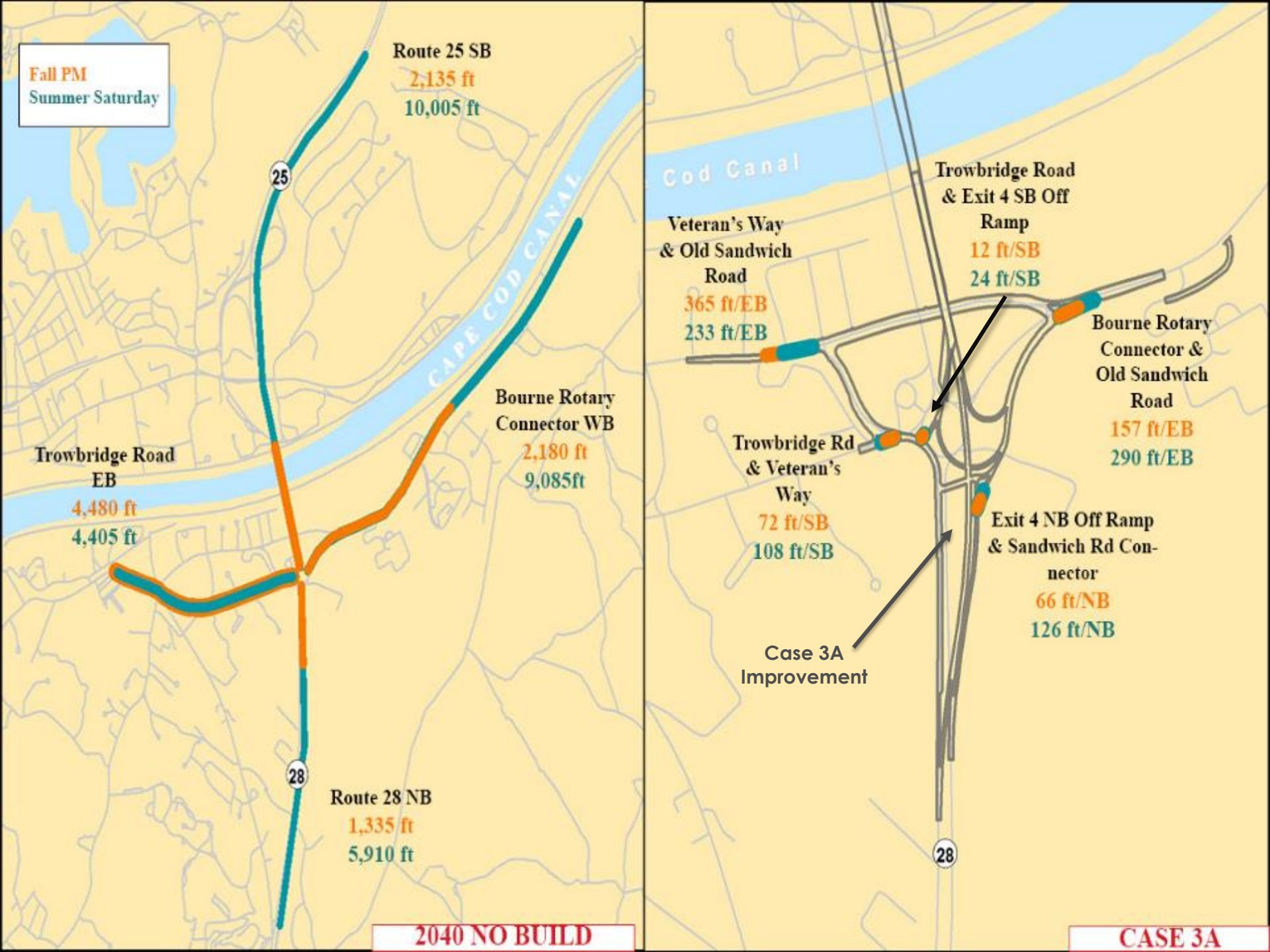
Case 3A – Bourne Rotary Queues Comparison of Future (2040) No-Build and Case 3A Improvements

Travel Model Case 3A – Bourne Rotary Fall PM Traffic Operations.

BOURNE ROTARY OPERATIONS								
Street Name /Approach	2040 NO BUILD				2040 CASE 3A			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Max. Queue/ Approach with Max. Queue (feet)	Overall Delay (sec)	Overall LOS	
2040 No Build - Fall PM								
Route 25 SB	790	2,135	82	F	--	--	--	
Trowbridge Rd EB	1,765	4,480	345	F	--	--	--	
Route 28 NB	395	1,335	81	F	--	--	--	
Bourne Rotary Connector WB	480	2180	38	E	--	--	--	
2040 Case 3A - Fall PM								
Trowbridge Rd & Veteran's Way	--	--	--	--	72/SB	6.8	A	
Bourne Rotary Connector & Old Sandwich Road	--	--	--	--	157/EB	11.0	B	
Veteran's Way & Old Sandwich Road	--	--	--	--	365/EB	22.6	C	
Exit 4 SB On Ramp/Trowbridge Road & Sandwich Rd Connector	--	--	--	--	15/SB	3.8	A	
Exit 4 NB Off Ramp & Sandwich Rd Connector	--	--	--	--	66/NB	14.0	B	
Trowbridge Road & Exit 4 SB Off Rampw	--	--	--	--	12/SB	9.3	A	

Travel Model Case 3A – Bourne Rotary Summer Saturday Traffic Operations.

BOURNE ROTARY OPERATIONS								
Street Name /Approach	2040 NO BUILD				2040 CASE 3A			
	Average Queue (feet)	Max. Queue (feet)	Vehicle Delay (sec)	LOS	Max. Queue/ Approach with Max. Queue (feet)	Overall Delay (sec)	Overall LOS	
2040 No Build - Summer Saturday								
Route 25 SB	6,505	10,005	341	F	--	--	--	
Trowbridge Rd EB	1,920	4,405	398	F	--	--	--	
Route 28 NB	2,885	5,910	264	F	--	--	--	
Bourne Rotary Connector WB	4,025	9,085	149	F	--	--	--	
2040 Case 3A - Summer Saturday								
Trowbridge Rd & Veteran's Way	--	--	--	--	108/SB	8.0	A	
Bourne Rotary Connector & Old Sandwich Road	--	--	--	--	290/EB	10.0	B	
Veteran's Way & Old Sandwich Road	--	--	--	--	233/EB	25.2	C	
Exit 4 SB On Ramp/Trowbridge Road & Sandwich Rd Connector	--	--	--	--	3/WB	10.8	B	
Exit 4 NB Off Ramp & Sandwich Rd Connector	--	--	--	--	126/NB	15.7	C	
Trowbridge Road & Exit 4 SB Off Ramp	--	--	--	--	24/SB	9.7	A	


Fall PM
Summer Saturday
Route 25 SB
2,135 ft
10,005 ft
25
CAPE COD CANAL
Bourne Rotary Connector WB
2,180 ft
9,085ft
Trowbridge Road EB
4,480 ft
4,405 ft
28
Route 28 NB
1,335 ft
5,910 ft
2040 NO BUILD
Cod Canal
Veteran's Way & Old Sandwich Road
365 ft/EB
233 ft/EB
Trowbridge Road & Exit 4 SB Off Ramp
12 ft/SB
24 ft/SB
Bourne Rotary Connector & Old Sandwich Road
157 ft/EB
290 ft/EB
Trowbridge Rd & Veteran's Way
72 ft/SB
108 ft/SB
Exit 4 NB Off Ramp & Sandwich Rd Connector
66 ft/NB
126 ft/NB
Case 3A Improvement
28
CASE 3A

Travel Model Case 3A – Overall Findings.

- Traffic Improvements.
  - Belmont Circle – Notable Queue reductions during Fall weekday and Summer Saturday.
  - Bourne Rotary – Substantial Queue reductions during Fall weekday and Summer Saturday.
- Remaining problem locations.
  - Belmont Circle – Summer Saturday queues at Head of the Bay Road and Buzzards Bay Bypass.

Travel Model Case 3A – Overall Findings.

Improvements may reduce crash rates for vehicles, bicycles, and pedestrians.

- Crash rates may be reduced because:
  - Signalized intersections at Belmont Circle and Bourne Rotary.
  - Separation of traffic flow at Bourne Rotary Interchange (less merging).
  - Modern design of new bridges to include wider lanes, shoulders, sidewalks.

Schedule and Next Steps.

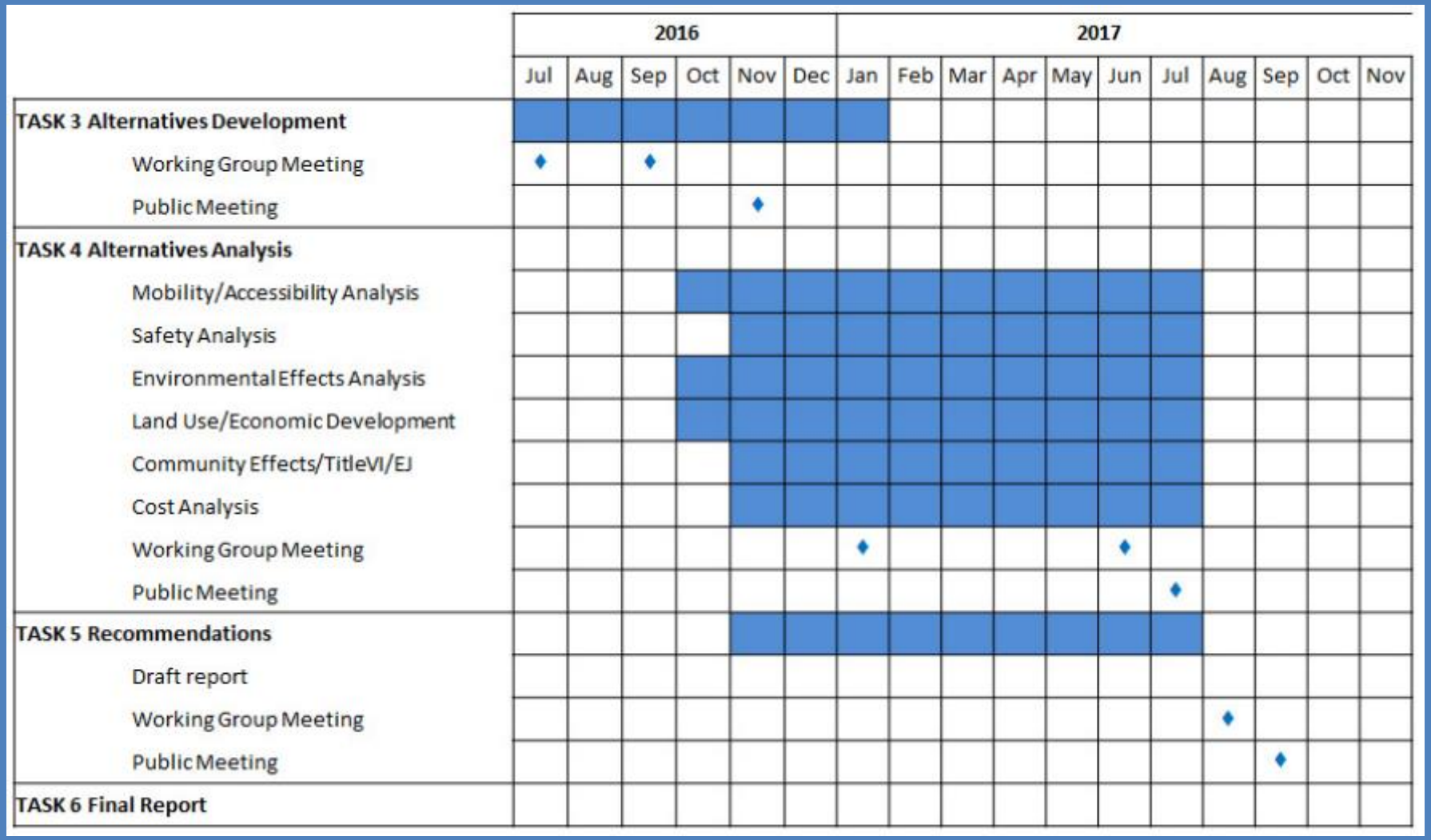
June 29 , 2017

Photo: Sagamore Bridge; BobBernier.com

Next Steps.

- Solicit Input from the Working Group
- Complete Alternatives Analysis/Evaluation Criteria Matrix
- Working Group Meeting in August 2017

Study Schedule.



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Questions?

Comments and feedback can be emailed to:

Ethan Britland – ethan.britland@state.ma.us.

End of Presentation.