Welcome
Introductions

- MQO Research
- Department of Transportation and Infrastructure Renewal, Government of Nova Scotia
- CBCL Limited Consulting Engineers
Consultation Process

- Presentation by TIR to give an overview of the Highway Twinning Project to date (5 mins)
- Presentation by CBCL on the Highway Twinning Feasibility Study (15 mins)
- Individual review of questions (10 mins)
- Round table discussions (20 mins)
- Open dialogue (40 mins)
- Q and A (30 mins)
- Wrap up (5 mins)

Note: Copies of the presentation available upon leaving
Questions

1. What is your opinion of the current condition of the province’s 100-series highways included in the study? (consider safety, traffic congestion, travel time)

2. Do you think twinning is the only option to improve the province’s 100-series highways?

3. If twinning is the preferred option to improve the condition of the 100-series highways, do you support using tolls to twin highways sooner than would otherwise be possible given our current budget?

4. Do you have any other comments or questions?
Nova Scotia Highway Twinning Feasibility Study
Nova Scotia’s Highway System

- 23,000 kilometres of provincial roads and highways
- 4,100 bridges
- 90% of all roads in Nova Scotia are maintained by the Province
- Nova Scotia has some of the oldest highways and bridges
Provincial Highway Spending 2016/17

Expenditure Versus Revenue ($ millions)

- Operations
- Capital
- Gas Tax
- RMV Revenue

Expenses:
- $397 Million
  - $200M Highway Construction
  - $197M Summer and Winter Maintenance and Operations

Revenue:
- $367 Million
  - $95M Vehicle Registration and License Fees
  - $272M Gas Tax

Gap: $30 Million
Nova Scotia Highway Construction

Current Highway Projects Under Consideration

- Amherst
- Middleton
- Digby
- Yarmouth
- Bridgewater
- Halifax
- Antigonish
- Port Hawkesbury
- Baddeck
- Sydney
- Truro
- New Glasgow

$400 Million

Nova Scotia Highway Construction

Need and Demand

- Amherst
- Middleton
- Digby
- Yarmouth
- Bridgewater
- Halifax
- Antigonish
- Port Hawkesbury
- Baddeck
- Sydney
- Truro
- New Glasgow

$2.4 Billion
Current Safety Initiatives

- Safety studies on Highways 101, 103, 104, and 105
- Rumble Strips
- Wider paved shoulders
- Better signage
- Improved guardrails
- Resurfacing rutted sections
- High visibility pavement markings
- Speed feedback signs
Nova Scotia Highway Construction

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Nova Scotia Highway Construction

Need and Demand

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$2.4 Billion
Highway Twinning Feasibility Study

Detailed Feasibility Study
Project Summary

Audrey Muir, Project Manager
January, 2017
Study Objectives

- The Province is examining the feasibility of twinning 300 km of our 100-series highways.
- This project could be delivered via a partnership approach similar to that of the Cobequid Pass and include tolling on highway sections.
- This would result in these twinned highways being available decades earlier than could be achieved using conventional approaches.
Highway Corridors Examined

Potentially new highway

Total length = 304.1km

Corridors identified

1. Hwy 101 - Three Mile Plains to Falmouth, 10.8 km
2. Hwy 101 - Hortonville to Coldbrook, 23.7 km
3. Hwy 103 - Exit 5 at Tantallon to Exit 12 Bridgewater, 68.1 km
4. Hwy 104 - Sutherlands River to Antigonish, 37.8 km
5. Hwy 104 - Taylors Road to Auld’s Cove, 39.5 km
6. Hwy 104 - Port Hastings to Port Hawkesbury, 7.0 km
7. Hwy 104 - St. Peter’s to Sydney, 83.9 km
8. Hwy 107 - Porter’s Lake to Duke Street, Bedford, 33.3 km
Summary of Tasks Completed for Study

- Safety - examine reductions in the number of collisions
- Examination of environmental constraints
- Estimate the cost to build twinned highways
- Calculate the revenue generated by future tolls
- Calculate/compare range of tolls required to fund twinned highways
- Undertake matrix assessment of each corridor
Total Number of Collisions by Severity (5-Year Data, 2010 to 2014)

- **Fatal**
- **Injury**
- **Property Damage Only**

<table>
<thead>
<tr>
<th>Highway Corridor</th>
<th>Number of Collisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corridor 1</td>
<td>101 (10.8km)</td>
</tr>
<tr>
<td>Corridor 2</td>
<td>101 (23.7km)</td>
</tr>
<tr>
<td>Corridor 3</td>
<td>103 (68.1km)</td>
</tr>
<tr>
<td>Corridor 4</td>
<td>104 (37.8km)</td>
</tr>
<tr>
<td>Corridor 5</td>
<td>104 (39.5km)</td>
</tr>
<tr>
<td>Corridor 6</td>
<td>104 (7.0km)</td>
</tr>
<tr>
<td>Corridor 7</td>
<td>104 (83.9km)</td>
</tr>
<tr>
<td>Corridor 8</td>
<td>107 (33.3km)</td>
</tr>
</tbody>
</table>

*New Corridors - collision data based on parallel trunk highway 4*
Safety

**Estimated Collision Reduction (Year of Opening)**

**Existing Average Collisions per year (2010-2014)**

**Estimated Number of Collisions after Reduction (2020 opening year)**

<table>
<thead>
<tr>
<th>Highway Corridor</th>
<th>Number of Collisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corridor 1 Hwy 101 (10.8km)</td>
<td>-9.2</td>
</tr>
<tr>
<td>Corridor 2 Hwa 101 (23.7km)</td>
<td>-11.2</td>
</tr>
<tr>
<td>Corridor 3 Hwy 103 (68.1km)</td>
<td>-21.6</td>
</tr>
<tr>
<td>Corridor 4 Hwy 104 (37.8km)</td>
<td>-11.6</td>
</tr>
<tr>
<td>Corridor 5 Hwy 104 (39.5km)</td>
<td>-14.6</td>
</tr>
<tr>
<td>Corridor 6 Hwy 104 (7.0km)</td>
<td>-4.2</td>
</tr>
<tr>
<td>Corridor 7 Hwy 104 (83.9km)</td>
<td>-16.4</td>
</tr>
<tr>
<td>Corridor 8 Hwy 107 (33.3km)</td>
<td>-7.6</td>
</tr>
</tbody>
</table>
Travel distance and travel time savings

The proposed twinning will offer travel distance and travel time cost savings. This table summarizes the estimated auto travel time / distance differences.

For example, a Bridgewater to Halifax return trip would be approximately 18 minutes shorter. A Coldbrook to Halifax return trip would be approximately 10 minutes shorter.

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Route</th>
<th>Approx. One Way Time Savings vs. Existing (mins)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hwy 101 - Three Mile Plains to Falmouth, 10.8 km</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Hwy 101 - Hortonville to Coldbrook, 23.7 km</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Hwy 103 - Exit 5 at Tantallon to Exit 12 Bridgewater, 68.1 km</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Hwy 104 - Sutherland's River to Antigonish, 37.8 km</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Hwy 104 - Taylors Road to Auld's Cove, 39.5 km</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Hwy 104 - Port Hastings to Port Hawkesbury, 7.0 km</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Hwy 104 - St. Peter's to Sydney, 83.9 km</td>
<td>22</td>
</tr>
<tr>
<td>8</td>
<td>Hwy 107 - Porter's Lake to Duke Street, Bedford, 33.3 km</td>
<td>21</td>
</tr>
</tbody>
</table>
# Construction Costs

## Cost Estimates

### Class C Construction Estimate (+/- -15% to +20%)

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Highway</th>
<th>Description</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>101</td>
<td>Exit 5 Windsor to West of Exit 8</td>
<td>$131,600,000</td>
</tr>
<tr>
<td>2</td>
<td>101</td>
<td>Hortonville to Coldbrook</td>
<td>$168,500,000</td>
</tr>
<tr>
<td>3</td>
<td>103</td>
<td>Tantallon to Bridgewater</td>
<td>$448,000,000</td>
</tr>
<tr>
<td>4</td>
<td>104</td>
<td>Sutherland's River to Antigonish</td>
<td>$285,100,000</td>
</tr>
<tr>
<td>5</td>
<td>104</td>
<td>Taylor Road to Auld's Cove</td>
<td>$279,200,000</td>
</tr>
<tr>
<td>6</td>
<td>104</td>
<td>Port Hastings to Port Hawkesbury (Major Arterial)</td>
<td>$87,100,000</td>
</tr>
<tr>
<td>7</td>
<td>104</td>
<td>St. Peters to Sydney (Major Arterial)</td>
<td>$491,300,000</td>
</tr>
<tr>
<td>8</td>
<td>107</td>
<td>Duke Street Bedford to Porters Lake</td>
<td>$331,600,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$2,222,400,000</strong></td>
</tr>
</tbody>
</table>
Corridor 1
Highway 101 - Three Mile Plains to Falmouth

Construction Cost
$131,600,000

Corridor Length
10.8 km

Possible Toll Range
$0.65 to $1.08

ADT = Average Daily Traffic

14,000 ADT
Corridor 2
Highway 101 - Hortonville to Coldbrook

Construction Cost
$168,500,000

Corridor Length
23.7 km

Possible Toll Range
$1.42 to $2.37

ADT = Average Daily Traffic

12,000 ADT
Corridor 3

Highway 103 - Exit 5 at Tantallon to Exit 12 Bridgewater

Construction Cost
$448,000,000

Corridor Length
68.1 km

Possible Toll Range
$4.08 to $6.81

ADT = Average Daily Traffic

10,500 ADT
8,500 ADT
8,900 ADT
Corridor 4

Highway 104 - Sutherland River to Antigonish

- Construction Cost: $285,100,000
- Corridor Length: 37.8 km
- Possible Toll Range: $2.27 to $3.78

ADT = Average Daily Traffic
Corridor 5
Highway 104 Taylors Road to Auld’s Cove

Construction Cost
$279,200,000

Corridor Length
39.5 km

Possible Toll Range
$2.37 to $3.95

ADT = Average Daily Traffic

8,000 ADT
Corridor 6

Highway 104 - Port Hastings to Port Hawkesbury

- Construction Cost: $87,100,000
- Corridor Length: 7.0 km
- Possible Toll Range: $0.42 to $0.84

ADT = Average Daily Traffic

8,000 ADT
Corridor 7 Highway 104 - St. Peter’s to Sydney

Construction Cost
$491,300,000

Corridor Length
83.9 km

Possible Toll Range
$5.03 to $21.81

ADT = Average Daily Traffic

2,000 ADT

3,500 ADT
Corridor 8

Highway 107 - Porter’s Lake to Duke Street, Bedford

- Construction Cost: $331,600,000
- Corridor Length: 33.3 km
- Possible Toll Range: $2.00 to $3.33

ADT = Average Daily Traffic
We estimated future traffic volumes for each corridor using 5 year increments over the 30 year life of the project.

We estimated future revenue using a range of toll rates between 6 and 10 cents per kilometre.
“Willingness to Pay” Survey Results

• 1,027 Nova Scotians surveyed

• The estimated median toll rate people were willing to pay was 6 cents per kilometre
Break even toll required for each corridor

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Toll (cents/km)</th>
<th>Length (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corridor 1</td>
<td>6 cents</td>
<td>10.8</td>
</tr>
<tr>
<td>Corridor 2</td>
<td>4 cents</td>
<td>23.7</td>
</tr>
<tr>
<td>Corridor 3</td>
<td>4 cents</td>
<td>68.1</td>
</tr>
<tr>
<td>Corridor 4</td>
<td>6 cents</td>
<td>37.8</td>
</tr>
<tr>
<td>Corridor 5</td>
<td>6 cents</td>
<td>39.5</td>
</tr>
<tr>
<td>Corridor 6</td>
<td>12 cents</td>
<td>7.0</td>
</tr>
<tr>
<td>Corridor 7</td>
<td>26 cents</td>
<td>83.9</td>
</tr>
<tr>
<td>Corridor 8</td>
<td>5 cents</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Poor financial viability
Good financial viability
Criteria used for Assessment Matrix

- Safety
- Traffic volumes
- Cost vs Revenue
- Travel Time and Travel Cost Savings
- Environmental Concerns
- Land Acquisition

Ranking:
1st
2nd
3rd
4th
5th
6th
7th
8th
Questions

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4. Do you have any other comments or questions?
Next Steps

• Complete 12 public meetings

• Share “What We Heard” document once complete

• Government will carefully review and consider all comments
Highway Twinning Feedback

For more information, locations and times of other sessions, or to send additional feedback online, visit:

- [novascotia.ca/twinning](http://novascotia.ca/twinning)
- Tweet us at: @NS_TIR #NSHighways

Or send us feedback by mail at:
Feedback-Highway Twinning
NSTIR
PO Box 186,
Halifax, Nova Scotia
B3J 2N2
Thank You