Transportation Association of Canada

Projects
In Progress

September 2017

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Introduction

The Transportation Association of Canada provides a fertile environment for the development and conduct of cooperative projects by providing:

- a variety of fora for transportation professionals to share perspectives and identify projects or issues of mutual interest,
- a network of leading experts in the transportation sector to contribute to or validate projects,
- an institutional mechanism for pooling resources, contracting and managing collaborative initiatives,
- professional staff to manage or undertake projects, and
- a recognized, credible "name" in the Canadian and international transportation community.

Projects conducted through TAC can be designed to exploit some or all of the preceding assets. TAC's role in the project can range from a "full service" approach (including consultant contracting, project management, accounting, production and publication) to a more limited role (e.g. assembling and managing pooled funding) for some projects not bearing the TAC name.

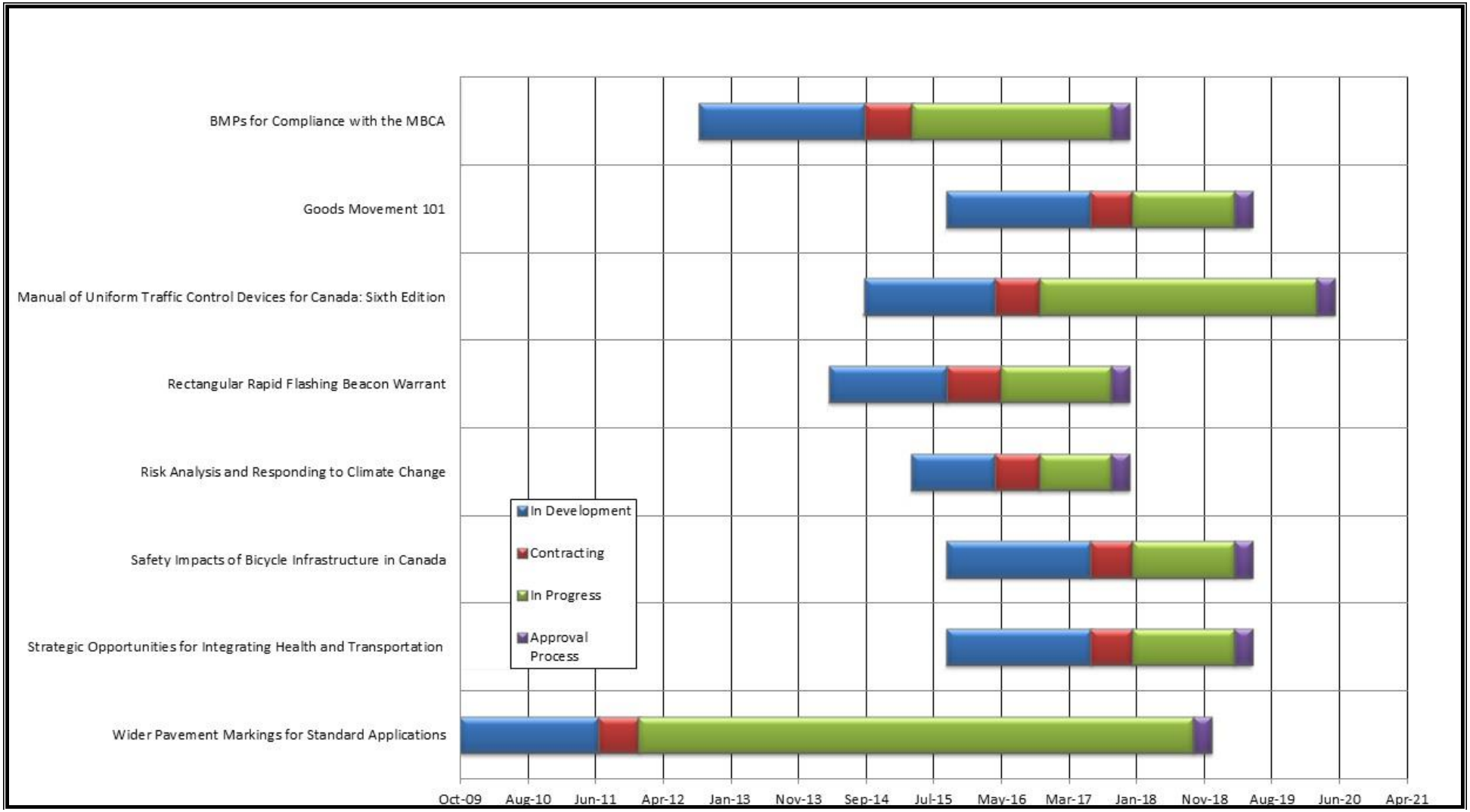
At any one point in time, TAC has numerous projects in progress covering a broad range of topics. Projects are considered to be in development if they have received support in principle from relevant council(s) and are considered by the TAC Board of Directors or its Executive Committee to conform to TAC policies. While in development, funding partners are sought and some preliminary research work may be conducted by TAC secretariat staff. Information about projects in development and seeking funding is available on TAC's website at http://tac-atc.ca/en/projects/seeking-funding

Projects are considered to be in progress once sufficient funding has been secured to cover all costs associated with the conduct of the project (including consultant assignments, project management and translation of all or part of the project deliverables). As of September 2017, eight projects, supported by almost 40 different funding partners, are in progress. These projects are described in the following pages. More information on the projects can be obtained by referring to the TAC website or by contacting the staff person identified for each project.

Funding Partners

	BMP's for Compliance with Migratory Birds Act	Goods Movement 101	MUTCDC 6th Edition	Rectangular Rapid Flashing Beacon Warrant	Risk Analysis and Responding to Climate Change	Safety Impacts of Bicycle Infrastructure in Canada	Strategic Opportunities for Integrating Health and Transportation	Wider Pavement Markings
TAC Members (Federal/Prov./Terr.)								
Transport Canada	■		■		■			
Alberta	■	■	■	■			■	■
British Columbia			■	■		■		■
Manitoba	■		■		■	■		■
New Brunswick	■		■	■		■	■	■
Nova Scotia	■		■	■				
Newfoundland and Labrador			■					
Northwest Territories			■					
Ontario	■	■	■	■	■	■	■	■
Prince Edward Island			■		■			
Québec		■	■	■	■		■	■
Saskatchewan		■	■					■
Yukon	■		■					
TAC Members (Municipal)								
Burlington			■					
Calgary	■		■	■		■	■	■
Durham					■			
Cambridge								■
Edmonton	■		■	■			■	■
Halifax			■	■			■	
Kelowna			■					
Moncton			■					
Montreal		■	■	■	■	■	■	
Ottawa			■			■	■	■
Region of Peel		■					■	
Region of Waterloo						■	■	
Saskatoon			■					
Surrey				■				
Toronto			■		■			
Town of Oakville			■		■	■		
Vancouver			■			■		
Winnipeg		■	■			■		
York							■	■
TAC Members (Other)								
Bunt & Associates						■		
ICBC				■		■		
CITE				■		■		
IMSA - International			■	■				
IMSA - Ontario Trillium Section			■	■				
Metrolinx		■						
TransLink					■	■		
Total Committed Funds	**$127,500**	**$77,000**	**$1,033,572**	**$126,000**	**$135,000**	**$142,000**	**$200,000**	**$67,500**

Project Timelines



Best Management Practices for Compliance with the Migratory Bird Convention Act and Regulations

Research Area: Environmental Protection
Responsible Committee: Environmental Issues Management Standing Committee / Environmental Advisory and Legislation Standing Committee
Responsible Council: Environmental Council

Start Date: December 2014
Expected Completion: September 2017
Research Agency: McIntosh Perry Consulting Engineers Ltd.

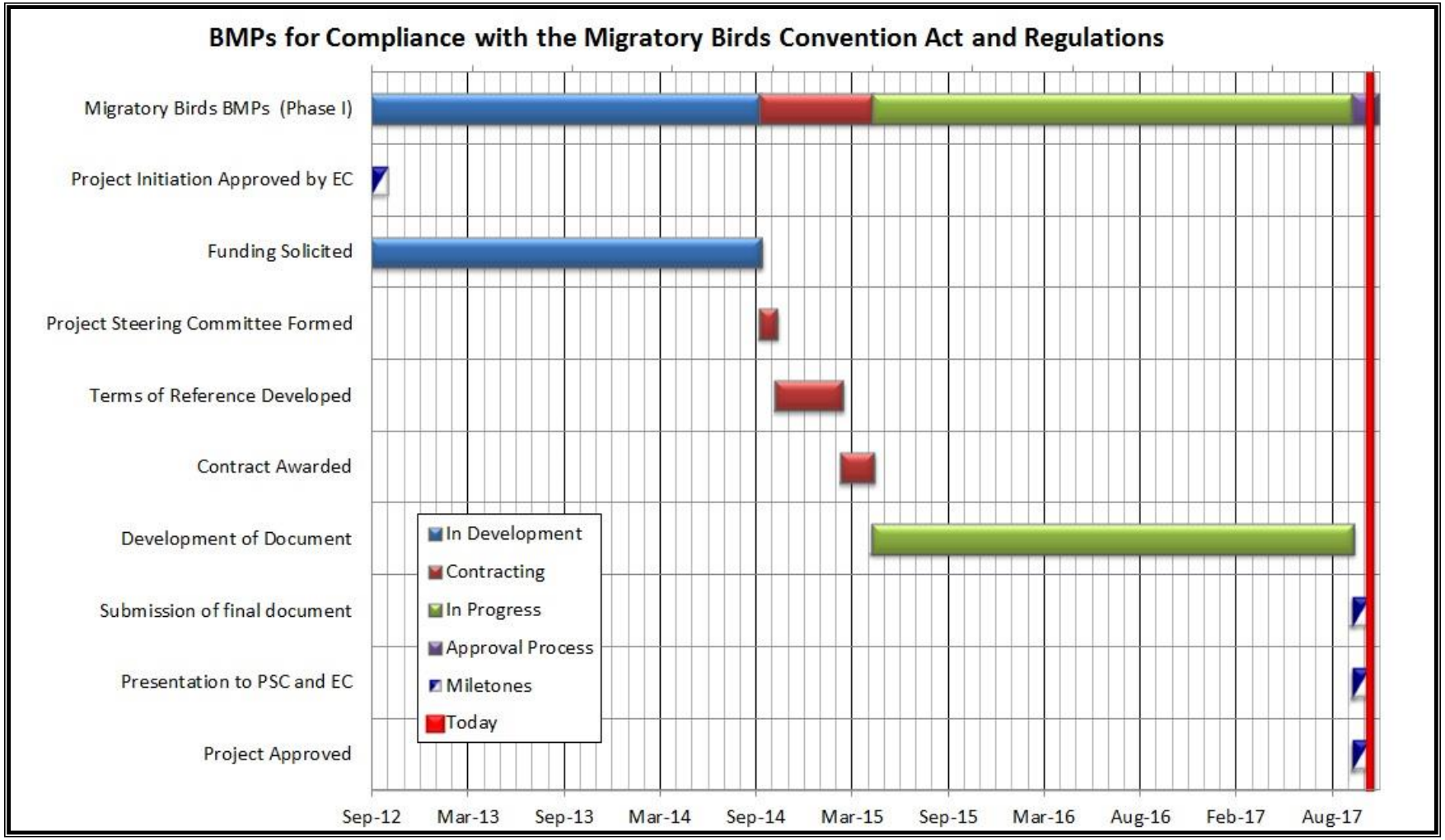
Over the past decade, various approaches to applying the provisions of the *Migratory Bird Convention Act and Regulations* were considered by the federal government. In 2010, it was determined that new permitting provisions in regulation to allow limited take of migratory birds in certain circumstances would not be further considered at this time. Permitting was being considered where avoidance guidelines had been followed and where permit conditions supported migratory bird conservation. Environment and Climate Change Canada (Canadian Wildlife Services) has since sought to encourage proponents responsible for infrastructure and other sectors where a risk of incidental take exists, to develop beneficial management plans (best management practices) in consultation with the Canadian Wildlife Service.

In April 2016, a project about beneficial practices for compliance with *the Migratory Birds Convention Act* (MBCA) and its supporting *Regulations* project was completed. The report provides an overview of legislation, a primer on migratory bird biology, case studies to illustrate actions taken to reduce the risk of incidental take, and a synthesis of beneficial practices that aligns with the Act and Regulations.

Additional work is required to develop operational procedures for structural maintenance and rehabilitation as well as land clearing, forestry and vegetation management.

Status: The final report will be presented to the Environment Council in September 2017.

Staff Contact: Luay Mustafa


BMPs for Compliance with the Migratory Birds Convention Act and Regulations
Migratory Birds BMPs (Phase I)
Project Initiation Approved by EC
Funding Solicited
Project Steering Committee Formed
Terms of Reference Developed
Contract Awarded
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Presentation to PSC and EC
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Goods Movement 101

Research Area: Goods Movement
Responsible Committee: Transportation Planning and Research Standing Committee
Responsible Council: Urban

Start Date: May 2017
Expected Completion: May 2019
Research Agency: TBD

Despite the significant impact of goods movement on the road system and on the economy, there is a need to raise awareness and understanding of how goods are transported in urban areas and how to best plan for goods movements. There is a widely acknowledged gap in the training and education of urban and transportation planners, engineers, and other professionals on the subject of goods movement. Sharing best practices and learning how to best engage the goods movement industry in planning, engineering and policy development would benefit many professionals and it would provide a forum for discussing anticipated future trends. It would also enhance understanding of the issues that have an impact on the industry and how they interface with the needs of other road users as well as how innovative approaches can address those issues.

The major project objectives are to:

- develop and share best practices and strategies for consulting with commercial road, rail, marine and air freight users;
- deliver a 'goods movement 101' course to advance understanding of goods movement issues by transportation professionals;
- raise awareness among stakeholders about the importance of goods movement, its significance to the transportation network, a region's economy and issues facing the industry;
- ensure that future planning and related activities reflect the importance of goods movement and adequately address issues facing freight activities, access to consumer goods, and other issues such as safety; and
- explore issues and trends that may arise in the future.

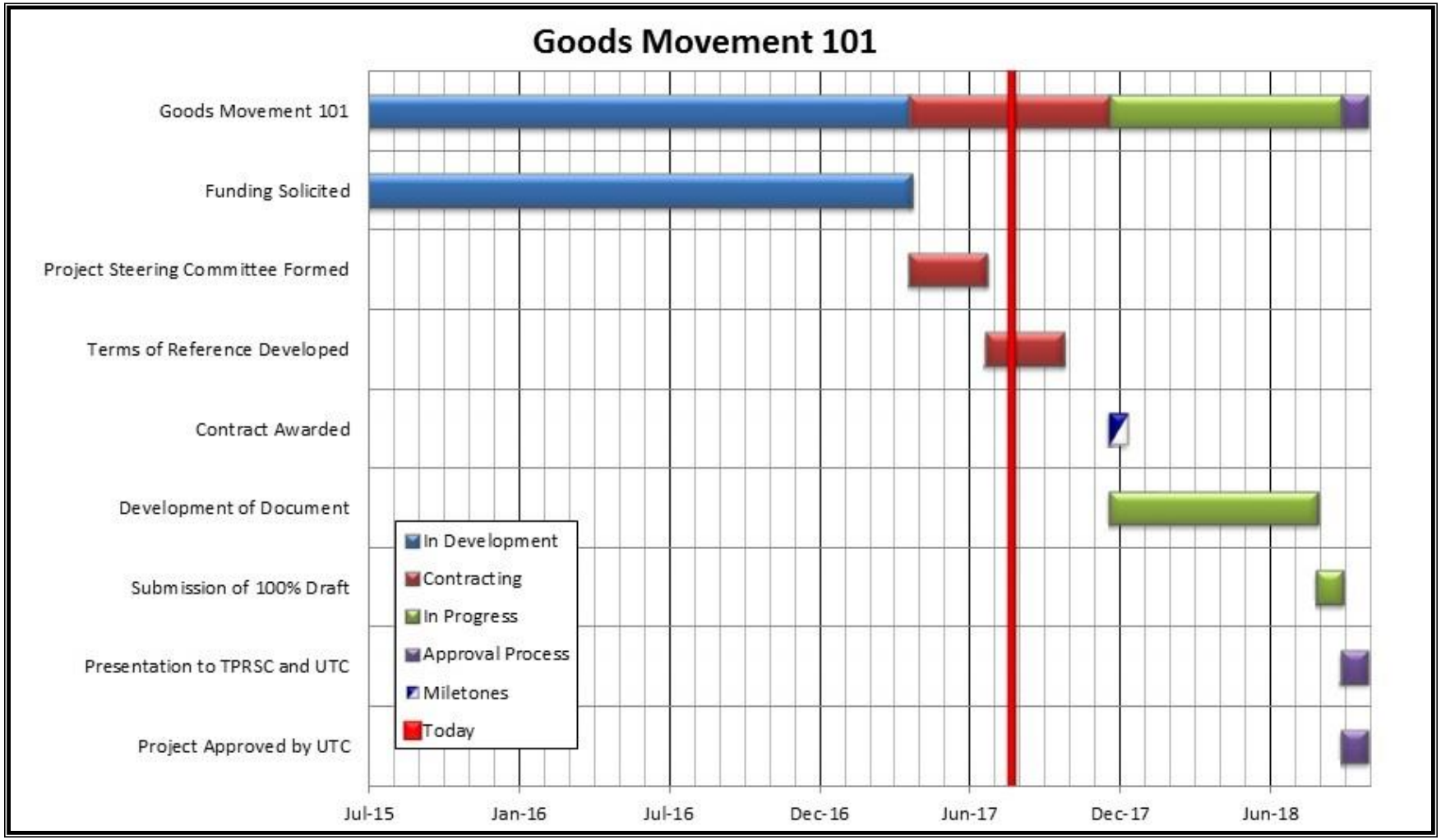
Key tasks to accomplish the project objectives will include:

- Review of key background information and documents (e.g., various federal/provincial/ territorial memoranda of understanding on truck weights and dimensions).
- Identification and development of best practices and key issues based on research and stakeholder experiences.
- Determination of the most appropriate delivery mechanism(s) for a course (e.g., on-line, in-class, webinar, etc).

The project deliverables will be a synthesis of best practices and key issues, as well as course curriculum, related materials and delivery notes.

Status: Project terms of reference are being developed.

Staff Contact: Luay Mustafa


Goods Movement 101
Goods Movement 101
Funding Solicited
Project Steering Committee Formed
Terms of Reference Developed
Contract Awarded
Development of Document
Submission of 100% Draft
Presentation to TPRSC and UTC
Project Approved by UTC
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Manual of Uniform Traffic Control Devices for Canada: Sixth Edition

Research Area: Traffic Control
Responsible Committee: Traffic Operations and Management Standing Committee
Responsible Council: Chief Engineers' Council

Start Date: August 2016
Expected Completion: September 2020
Research Agency: CIMA Canada Inc.

The *Manual of Uniform Traffic Control Devices for Canada* (MUTCDC) is a flagship document for the Transportation Association of Canada and one of the most important documents for Canadian traffic engineering practitioners. It offers guidance on traffic control device types, use, and placement for a variety of road authorities and jurisdictions across the nation. The last complete rewrite of the MUTCDC was completed in 1998. An interim fifth edition of the MUTCDC was released in 2014, addressing updates and modifications that had been recommended since 2008, but it is not considered to be a true rewrite or full update of the Manual.

In 2012, a project was launched to determine the scope of the update for the sixth edition of the MUTCDC so as to meet the day to day needs of the users as well as encompassing the latest research, technology and usage relating to traffic control devices.

The objective of this project is to prepare a new edition of the *Manual of Uniform Traffic Control Devices for Canada*. In addition to refreshing the entire MUTCDC to ensure consistency in content, writing style and format, the project will involve specific updates for many sections of the manual, as listed below and as recommended in the MUTCDC update scoping study.

<u>Introductory Material</u>
Contents about standards and guidelines will be updated and enhanced. New sections will be added to address safety aspects of traffic control devices and impact on road users.

<u>Signs</u>
General aspects, regulatory signs, guide and information signs contents will receive updates and enhancements to ensure consistency in wording and content. Warning signs content will be updated to provide greater consistency and cross-referencing to other TAC documents on warning devices. Warning signs are particularly critical for road safety; therefore the contents will be revised to reflect this intent, and more guidance will be provided for signs where it is deemed to be lacking. Contents about freeway signs, pedestrian crossing control and roundabouts will be re-distributed to other appropriate sections in the Manual. A new section will be created for dynamic message signs which will clearly describe the diversity of signs available for use in Canada.

<u>Roundabouts</u>
Material from this section will be re-distributed to other appropriate sections in the Manual.

<u>Traffic Control Signals</u>
Contents in this section will be reviewed to determine what new devices should be included and where existing contents could be more appropriately contained in other TAC documents.

Pavement Markings
This section will be updated and enhancements made, particularly with respect to typical applications and layouts as well as active transportation.

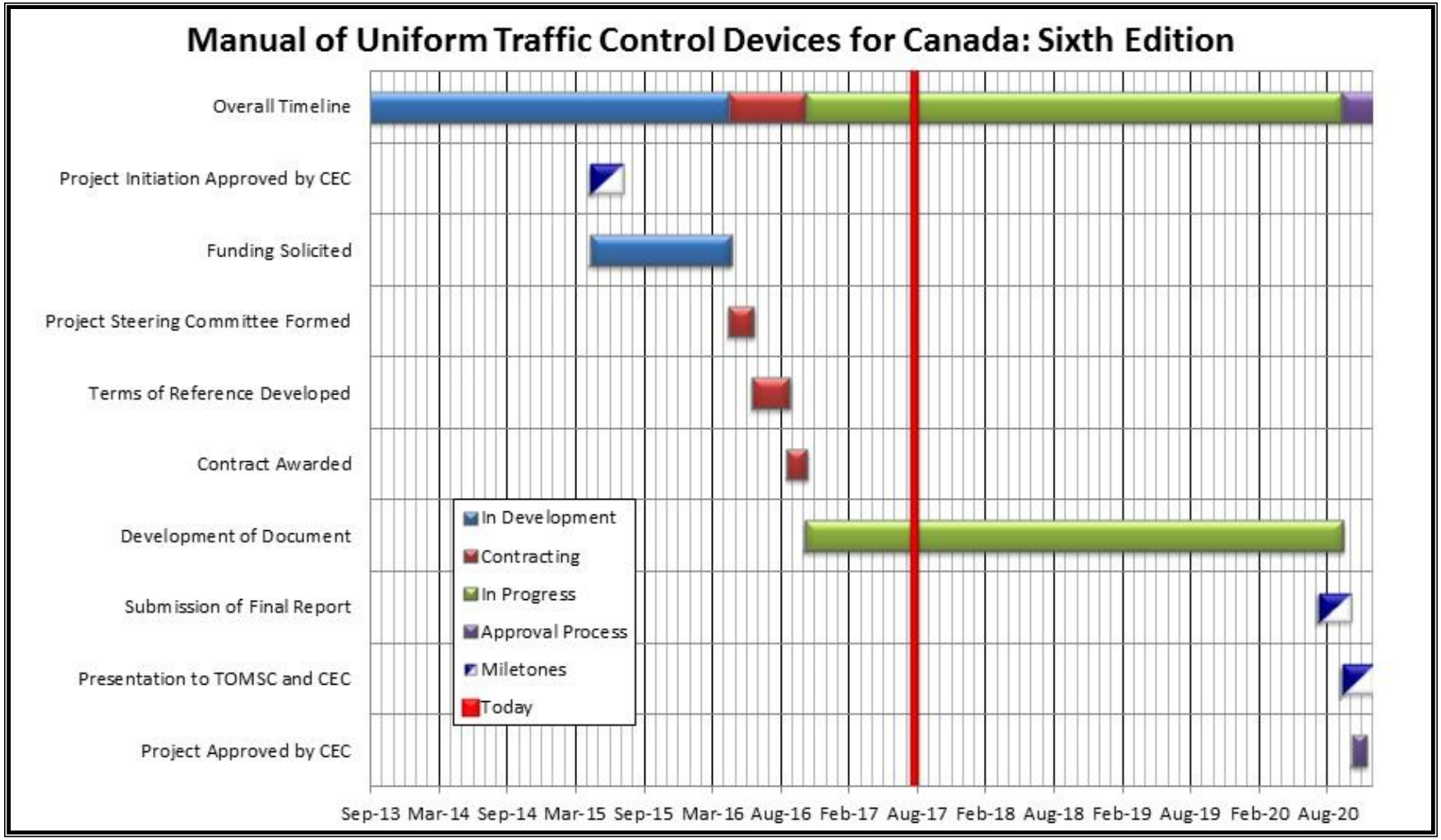
Typical Applications
A new section of the MUTCDC will be developed to respond to user-demand for examples on application of devices, when they are considered as part of a system of devices.
Typical situations will include but not necessarily be limited to: intersections and interchanges, passing and climbing lanes, pedestrian crossings, toll and border crossings, at-grade rail crossings, horizontal curves, and school zones.

The major deliverables for this project will be the 6th edition of the Manual of Uniform of Traffic Control Devices for Canada and accompanied Sign Pattern Manual.

In keeping with its responsibility for the maintenance of the MUTCDC, the Traffic Operations and Management Standing Committee regularly conducts projects that evaluate the design and application of signs and other traffic control devices. A web-based sign comprehension testing tool will be developed as part of the project for testing of future signs.

Status: Work is in progress.

Staff Contact: Craig Stackpole and Sandra Majkic


Manual of Uniform Traffic Control Devices for Canada: Sixth Edition
Overall Timeline
Project Initiation Approved by CEC
Funding Solicited
Project Steering Committee Formed
Terms of Reference Developed
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Rectangular Rapid Flashing Beacons Warrant

Research Area: Traffic Operations
Responsible Committee: Traffic Operations and Management Standing Committee
Responsible Council: Chief Engineers' Council

Start Date: December 2015
Expected Completion: September 2017
Research Agency: MORR Transportation Consulting

Pedestrians are among the most vulnerable road users in a transportation system. TAC's manuals and guidelines include an array of traffic control devices that are intended to facilitate safe crossing at crosswalks. Rectangular rapid flashing beacons (RRFB) have recently been used in a number of North American cities to reinforce signs and markings at pedestrian crossings and could provide a cost effective method to improve pedestrian safety at crosswalks.

RRFB are pedestrian-activated, high-intensity flashing beacons that warn drivers of the presence of a pedestrian in the crosswalk. RRFB consist of two rapidly and alternately flashed rectangular amber indications having LED-array based pulsing light sources. RRFB have been approved as a traffic control device by the TAC Chief Engineers' Council and it will be included in the *Manual of Uniform Traffic Control Devices for Canada*.

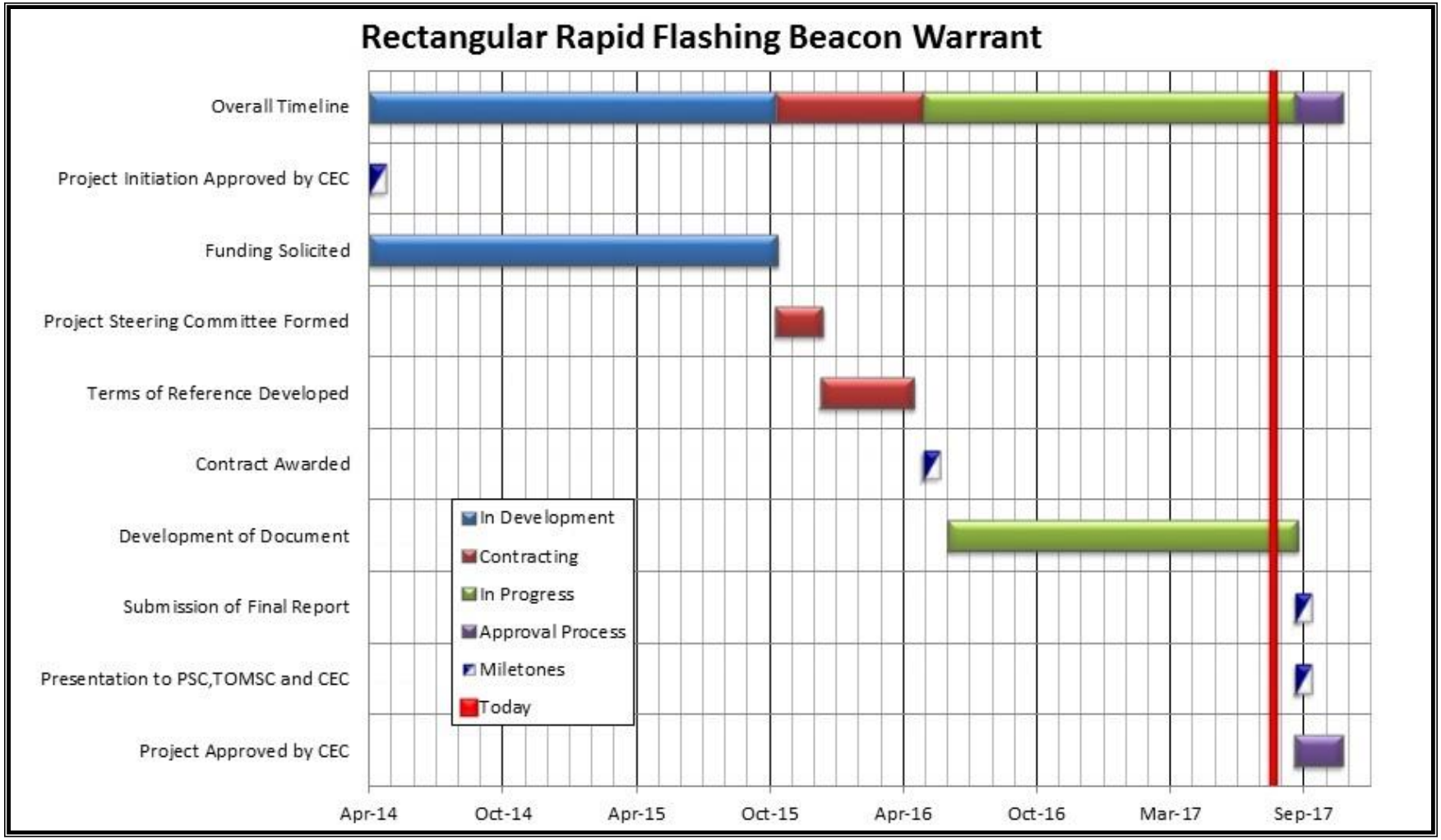
A warrant system and guidance for the use of RRFB will be needed to ensure harmonized application in Canada. The objective of this project is to review the decision support tool for pedestrian crossing control (provided in TAC's *Pedestrian Crossing Control Guide*) to include RRFB as appropriate.

The final deliverable from this project will be an updated edition of the *Pedestrian Crossing Control Guide.*

Related TAC Publications: *Pedestrian Crossing Control Guide (2012)*
Manual of Uniform Traffic Control Devices for Canada

Status: The final report will be presented to the Chief Engineers' Council in September 2017.

Staff Contact: Luay Mustafa


Rectangular Rapid Flashing Beacon Warrant
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Risk Analysis and Responding to Climate Change

Research Area: Environmental protection
Responsible Committee: Environmental Issues Management Standing Committee
Responsible Council: Environment Council

Start Date: July 2016
Expected Completion: September 2017
Research Agency: Associated Environmental

Transportation infrastructure, including highways, roads and bridges as well as transit and traffic control systems is critical to the mobility needs of Canada's population and economy. It is vitally important to maintain this infrastructure in a state of good repair, but it is also incumbent on owners and operators of this infrastructure to protect against the effects of more frequent severe weather events resulting from climate change. With limited funding, this challenge requires a rational solution to address the highest priorities and risks.

It is forecast that climate change will increase significantly in the coming decades. Decisions made today regarding capital investments, program delivery and relationships with key partners will be important in ensuring that risks are reduced and resilience to climate change is improved. While TAC, through its councils, standing committees and the Climate Change Task Force, has developed some insight into how a changing climate might affect transportation infrastructure and services, a standardized approach to determine risks and possible solutions would bring a greater understanding of what is at risk, why it is important to act, and what could be done.

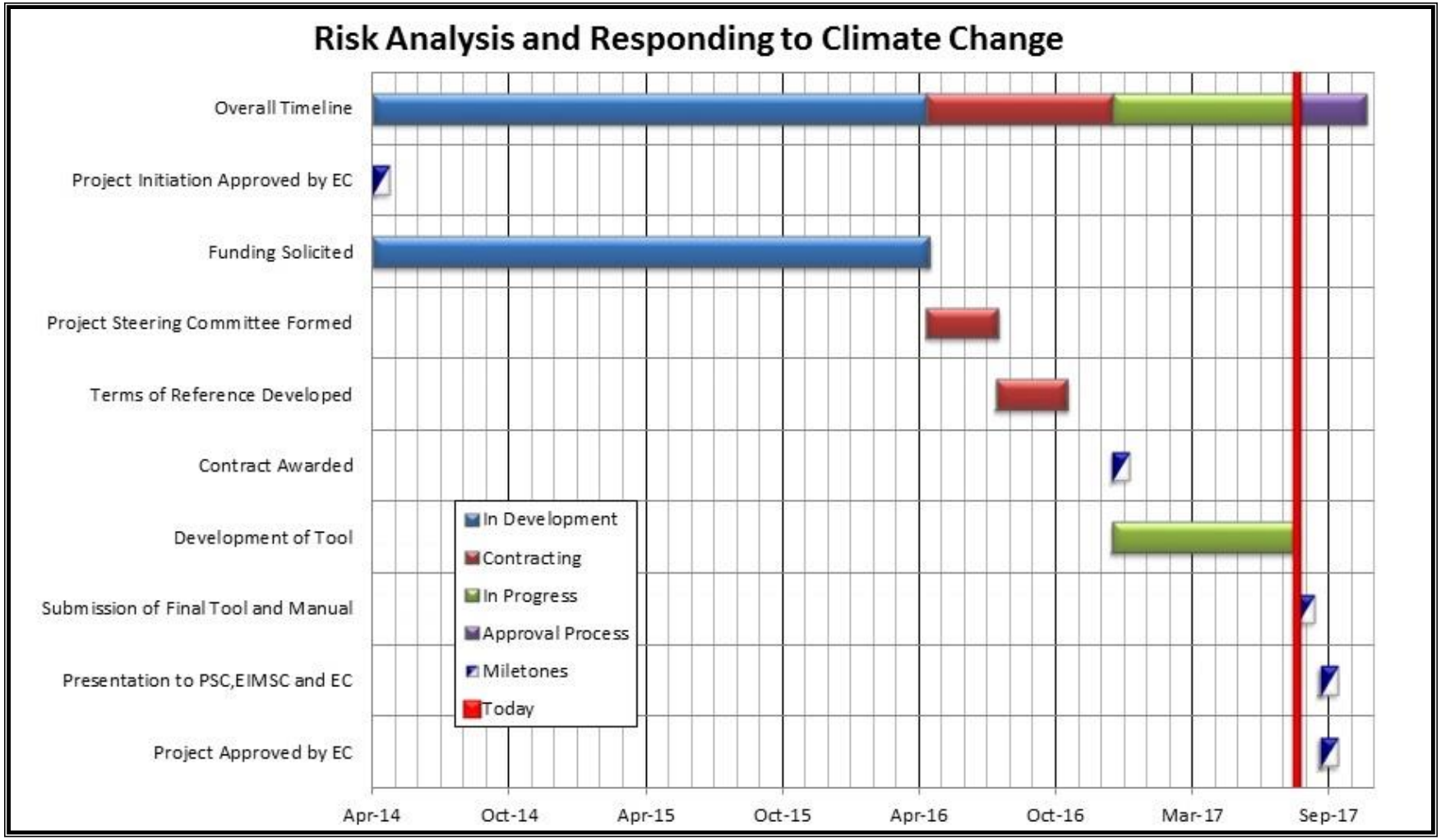
Development of a climate change risk assessment process and tool is recommended to allow transportation agencies to determine the risks to their infrastructure, services or operating practices related to climate change. Using the City of Toronto's Climate Change Risk Assessment Tool as a foundation, the objective of the project would be to customize this tool to help identify environmental and climate change risks and assess benefits of various mitigating and adaptive actions.
Key tasks in the project will include:

- Review of the City of Toronto's Climate Change Risk Assessment Tool (built on a MS Access platform) with respect to data availability and applicability;
- Further development and customization of the risk assessment process and tool suitable for evaluating transportation infrastructure assets and services in Canada; and
- Development of a user guide to enable agencies to easily understand and apply the proposed tool

The project deliverables will be a nationally applicable climate change risk assessment tool and a user guide for transportation agencies in Canada.

Status: The final deliverable will be presented to the Environment Council in September 2017.

Staff Contact: Luay Mustafa


Risk Analysis and Responding to Climate Change
Overall Timeline
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Funding Solicited
Project Steering Committee Formed
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Submission of Final Tool and Manual
Presentation to PSC,EIMSC and EC
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Safety Impacts of Bicycle Infrastructure in Canada

Research Area: Road Safety
Responsible Committee: Road Safety Standing Committee
Responsible Council: Chief Engineers' Council

Start Date: June 2017
Expected Completion: May 2019
Research Agency: TBD

The increasing popularity of cycling as a mode of travel in Canada is leading many municipalities to develop new bicycle infrastructure. The goal is to improve the safety and mobility of cyclists without adversely impacting the safety and mobility of other road users such as motorists and pedestrians.

Several bicycle facility planning and design guidelines and resources already exist, including the *Traffic Signal Guidelines for Bicycles* (2014) and *Bikeway Traffic Control Guidelines for Canada* (2012) published by TAC. However, there is a lack of understanding of the specific safety impacts of different bicycle facilities in the Canadian context.

For example, the use of the "elephants' feet" markings has been gaining popularity, but safety implications for road users in Canada have not been fully evaluated. Examples of other bicycle facilities and associated traffic control devices to be evaluated are: protected bicycle lanes, separated bicycle paths, shared streets, cycling boulevards, pavement markings (e.g., sharrows), traffic signs and traffic signals for bicycles.

The major project objectives are to:

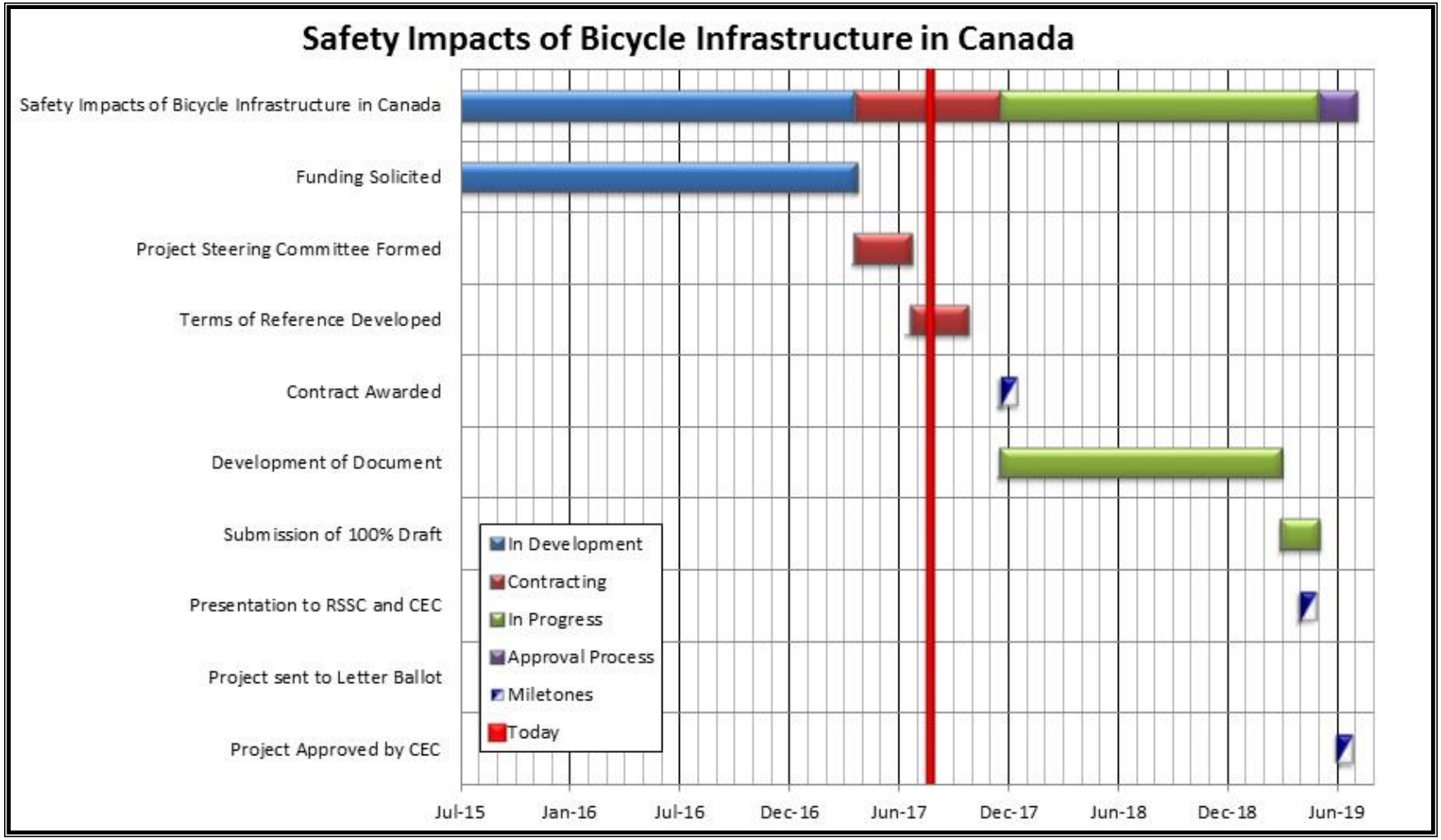
- Identify methods and/or measures to evaluate the safety of bicycle facilities, including the impact on all road users, such as legislative changes to police reporting requirements to include bicycle collisions with other bicycles, pedestrians, and motor vehicles.
- Identify the data requirements to undertake the evaluation so the Canadian road authorities can determine the safety performance of future bicycle facilities.
- Identify major bicycle infrastructure projects that have been undertaken in Canadian cities over the past decade to improve conditions for cyclists.
- Document the impacts on numbers of cyclists that use roads or ride in neighbourhoods following infrastructure improvements.
- Quantify the impacts on the safety of cyclists, and other road users, following the implementation of the bicycle infrastructure improvements.

Key tasks to accomplish the project objectives will include:

- Literature review to determine the best practices for measuring safety performance of bicycle facilities, identify data requirements, and bicycle collision trends in Canada.
- Jurisdictional surveys and interviews to identify data sources and needs as well as to identify candidate bicycle facilities for evaluation.
- Data collection and analysis to quantify the safety performance of different bicycle facilities in Canada.

The work will culminate in a report on study findings and help practitioners evaluate the safety performance of different bicycle facilities within their jurisdiction. The project deliverable will be a supplement to the *Traffic Signal Guidelines for Bicycles* (2014) and *Bikeway Traffic Control Guidelines for Canada* (2012) and it will provide the basic requirements for evaluating bicycle facilities, case studies documenting the safety performance of various types of bicycle facilities, and safety heuristics for the associated bicycle facilities.

Status:	Project terms of reference are being developed.
Staff Contact:	Luay Mustafa


Safety Impacts of Bicycle Infrastructure in Canada
Safety Impacts of Bicycle Infrastructure in Canada
Funding Solicited
Project Steering Committee Formed
Terms of Reference Developed
Contract Awarded
Development of Document
Submission of 100% Draft
Presentation to RSSC and CEC
Project sent to Letter Ballot
Project Approved by CEC
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Strategic Opportunities for Integrating Transportation and Health

Research Area: Health, Active Transportation, Transportation Planning
Responsible Committee: Transportation Planning and Research
Responsible Council: Urban Transportation Council

Start Date: April 2017
Expected Completion: April 2019
Research Agency: TBD

Transportation systems have been traditionally designed primarily for motorized vehicles and goods movement. This nature exerts a significant influence on the way Canadians travel in their daily lives to the point where it may increase their risk of numerous negative health outcomes, including obesity, chronic and respiratory disease, and injury. Health status can be improved when transportation systems facilitate public and active transportation, whereby physical activity would be safely integrated into daily life. Furthermore, such an approach can result in reduction of greenhouse gas emissions and congestion as well as improved productivity and sustainability.

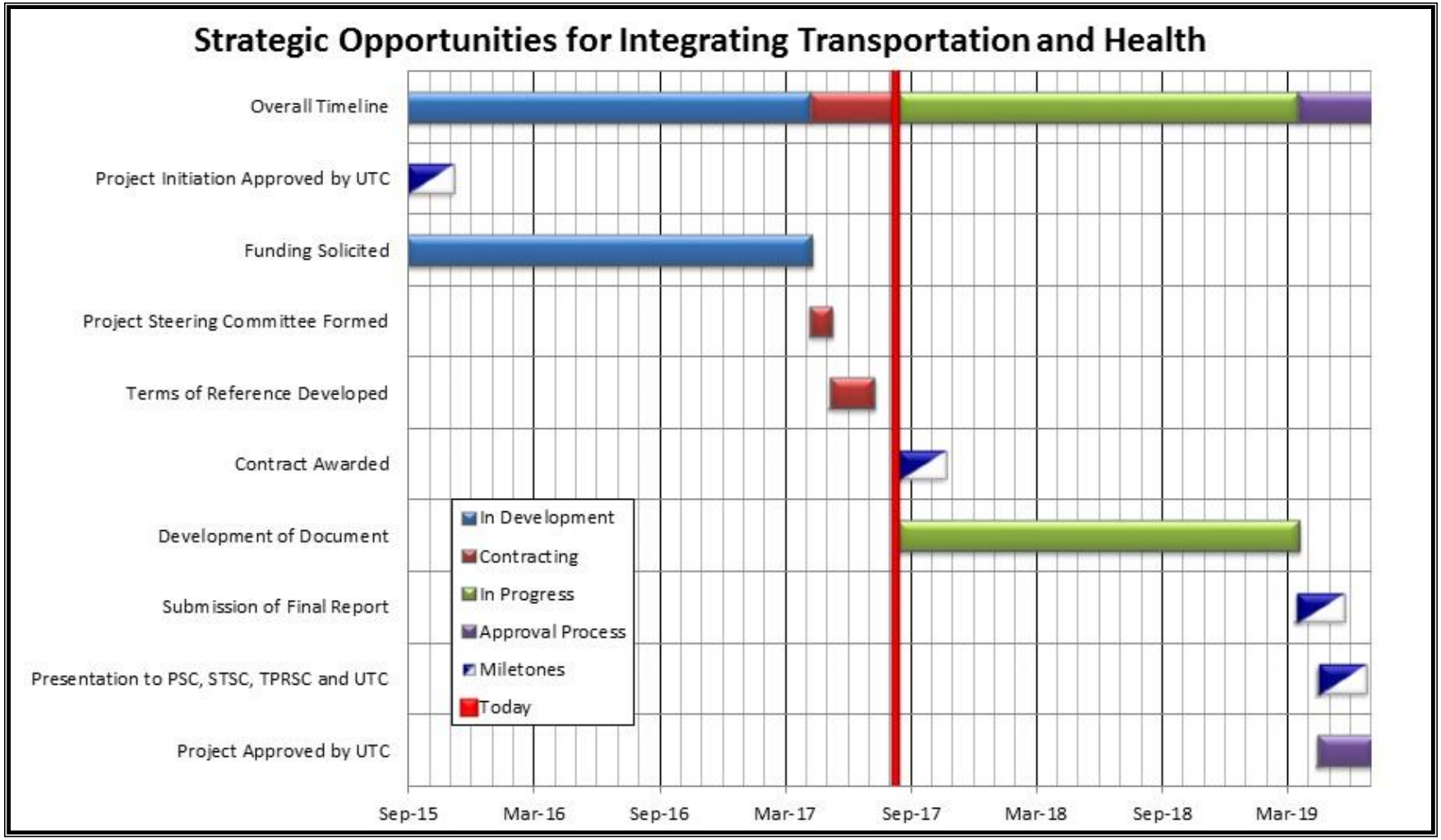
The link between health and transportation system planning has been recognized in a number of studies promoting potential health benefits of active transportation. Furthermore, health elements are beginning to be considered in a range of local, regional, provincial transportation strategies and plans, technical documents and guidelines. The paradigm has begun to shift towards health-promoting transportation systems and environments. There is an opportunity to further build health considerations into transportation policies, planning, investment and design decisions.

Work in this project includes best practices of various jurisdictions and/or organizations in addressing the health implications associated with transportation, including any relevant documents, standards and designs that have been developed. Building on this research, recommendations/guidance to address the identified gaps and strengthen the integration between health and transportation will be developed.

The major deliverable for this project is guidelines that identify gaps and provide recommendations for strengthening the integration between health and transportation.

Status: Work is underway to select a consultant to conduct the work.

Staff Contact: Craig Stackpole


Strategic Opportunities for Integrating Transportation and Health
Overall Timeline
Project Initiation Approved by UTC
Funding Solicited
Project Steering Committee Formed
Terms of Reference Developed
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Submission of Final Report
Presentation to PSC, STSC, TPRSC and UTC
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Wider Pavement Markings for Standard Application

Research Area: Traffic management
Road safety
Responsible Committee: Traffic Operations and Management Standing Committee
Responsible Council: Chief Engineers' Council

Start Date: June 2011
Expected Completion: September 2018
Research Agency: De Leur Consulting Ltd

It is suggested that visibility of longitudinal pavement markings may be enhanced if jurisdictions used the upper line width limit of 150 mm. Providing an increased longitudinal pavement marking area (and thus greater visibility) will likely be of particular benefit to aging drivers. Therefore, there is a need to investigate whether the longitudinal line visibility would be increased if minimum line width was 150mm.

The major objective of this project would be to investigate the applicability and potential benefits of using wider longitudinal pavement markings and determine if 150 mm would be an appropriate minimum line width for centerlines and/or edge lines. Based on the findings, national guidelines for the application of wider longitudinal pavement markings in Canada will be developed and amendments to the MUTCDC will be prepared as necessary.
Tasks will include:

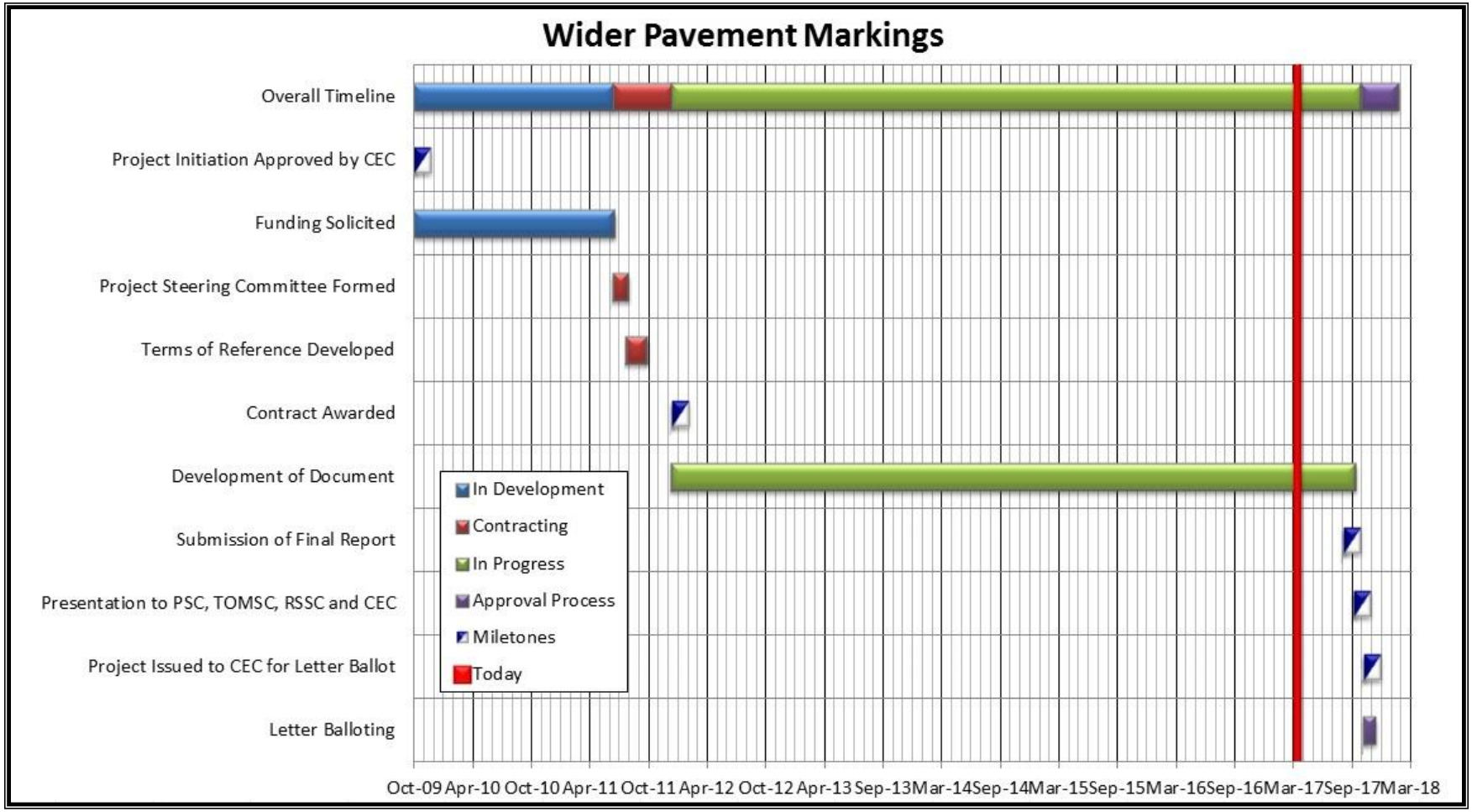
- Review of existing research studies on the use of wider longitudinal pavement markings to evaluate their usage for standard applications.
- Survey on existing practices and experiences from jurisdictions in Canada and selected North American jurisdictions where wider pavement markings are used.
- Development of a strategy/framework and conduct of a pilot before and after study for wider pavement applications.
- Formulating a set of detailed guidelines that should be used when applying wider longitudinal pavement markings in Canadian jurisdictions, including such considerations as: minimum line lengths, use of wider line for all pavement markings on a given section, etc.
- Identifying and preparing the necessary changes to the MUTCDC.

Major deliverables of this project will be guidelines for applying wider longitudinal pavement markings in Canada and recommended revisions to the MUTCDC to reflect those guidelines.

Related TAC Publications: *Manual of Uniform Traffic Control Devices for Canada*

Status: Work is in progress to collect before and after pilot study data.

Staff Contact: Sandra Majkic


Wider Pavement Markings
Overall Timeline
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