



GOVERNMENT OF BELIZE

**National Road Safety  
Master Plan  
2016 – 2030**

July 2015

# Belize Long Term Road Safety Plan

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## MESSAGE FROM PRIME MINISTER

## MESSAGE FROM NATIONAL ROAD SAFETY COMMITTEE

### Co-Chairs, National Road Safety Committee

**Ms. Yvonne Hyde, Chief Executive Officer, Ministry of Finance and Economic Development**

*“Long term strategic planning for a country is crucial and the most significant approach a government can take. As we implement the first ever Belize Road Safety Project, I am committed to make road safety a fundamental pillar, now and for the future.”*

### Chair, Road Safety Operational Steering Committee

**Mr. Errol Gentle, Chief Executive Officer, Ministry of Works and Transport**

*“It is important to keep our boys and girls safe, and make Belize's road system safer for all generations, yesterday, today and tomorrow. We continue with our plan to improve the engineering works in our beloved country.”*

## COMMENTS FROM THE RELATIVE MINISTRIES

### Task Leader, Road Safety Infrastructure

**Mr. Graciano Medina, Senior Executive Engineer, Ministry of Works and Transport**

*“As an executive engineer, my duty is to create equilibrium between the needs of diplomatic, private, public and commercial transport with safety in mind. As I engage with stakeholders to develop a comprehensive road safety long term strategic plan, it has become a more important step towards achieving benefits for everyone in the country and those to come.”*

### Task Leader, Road User Education and Awareness

**Mr. Christopher Aird, Chief Education Officer, Ministry of Education, Youth and Sports**

*“The Education System is entrusted with educating our males and females, and with providing a sound education in a safe space. As safety is a priority, the team has taken an active role in road safety education and awareness campaigns with the aim to increase road user awareness and improve behaviours.”*

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## **Task Leader, Road Safety Enforcement**

**Mr. Crispin Jeffries, Chief Transport Officer, Department of Transport, Ministry of Works and Transport**

*“Enforcement is an important aspect in making our roads safer, but it is only one part of the solution. The multidisciplinary approach to addressing road safety in our country has shown great results, probably not at the pace “Towards Zero Deaths” but on that road towards zero deaths. Our team continues to support the improvement of traffic law enforcement on the highways and in the municipalities, thankfully to the provision of two highway patrol vehicles and upgraded enforcement equipment.”*

## **Task Leader, Road Accident Emergency Services**

**Dr. Michael Pitts, Director of Health Services, Ministry of Health**

*“The multidisciplinary approach to address road safety in the country is contributing to the reduction of claims and sorrows. The improvement of post-crash trauma care is vital to ensure injuries are being addressed within the shortest time possible. Beyond that simple equation, though, are the unquantifiable human benefits that safer roads bring by reducing deaths and serious injuries and saving lives.”*

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## INTRODUCTION

The Belize Road Safety Project currently underway as a demonstration corridor safety program along the George Price Highway is showing promising results as indicated through a reduction in fatalities along the corridor, which is much greater than the rest of the country. The purpose of this “demonstration project” was to:

- Implement some “quick wins”
- Foster cooperation between the primary stakeholders
- Encourage integration of engineering, enforcement and education initiatives
- Where possible, include international good practice strategy elements.

As a parallel activity to this corridor project, it is vital that a solid foundation is built for a much longer term, sustainable approach.

It is recommended that **Road Safety Vision 2030** will carry the vision of *Towards Zero Deaths* on Belize’s roads and highways. *Towards Zero Deaths* means we do not accept that fatalities and serious injuries on our roads are inevitable or acceptable. This vision can be achieved if the Belize community as a whole works together to make a fundamental change in the way it thinks about road safety and works to address the trauma caused by everyday use of the roads. Collisions may still occur as people using the road system make mistakes or poor decisions. But we should strive to create a system in which safe decisions are the easiest ones to make and mistakes are not punished with death or serious injury.

It is modeled on successful strategies in other countries and also the recommendations of the World Report on Road Traffic Injury Prevention. It also takes into consideration the lessons learned during the demonstration corridor project.

In developing the Road Safety Vision 2030, the National Road Safety Committee sought input from cross-ministry partners to answer the following questions:

- Given where we are now, what can we do better?
- How can we leverage cross-ministry/cross-sector cooperation and action to further reduce deaths and serious injuries on Belize’s roads?
- What can we do to embed the principle of shared responsibility for road safety into the culture of the Belize community?
- What can we do to further our progress towards safer roads, safer vehicles and safer drivers?

Road Safety Vision 2030 aims to give guidelines to policy makers in order that they can plan and implement road safety management in a coordinated and harmonised manner. It also serves as a guideline for Regional Governments and Cities to recommend steps of road safety management in their respective jurisdictions. This Vision has a long-term perspective, namely 15 years since this Road Safety Vision fully supports the broader Belize Horizon 2030 Vision which embodies the overall vision for Belize in the year 2030 and the core values that will guide citizen behaviour and inform the strategies to achieve

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this common vision for the future.

In order to guarantee its sustainability, Road Safety Vision 2030 has the following components, i.e. vision, mission, direction, target, strategy, policy, programme and activity.

Road Safety Vision 2030 uses the five pillars approach, as recommended in international good practice in the Decade of Action for Road Safety (2010-2020), consisting of road safety management, safe roads, safe vehicles, safe conduct of road users and post-collision care. The success of the plan will be the degree in which the pillars can work harmoniously with each other, rather than as independent silos. The achievement of Road Safety Vision 2030 targets uses a safe system approach, which accommodates human error and susceptibility of the human body, which is intended for ensuring that road collisions do not cause fatalities and serious injuries.

We believe that this Road Safety Vision 2030 will result in creating safer roads and behaviours in Belize.

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## Acronyms and Abbreviations

AAA	American Automobile Association
BYRS	Belize Youth for Road Safety
DOT	Department of Transport
GDL	Graduated Driver Licensing
GDP	Gross Domestic Product
GOBZ	Government of Belize
iRAP	International Road Assessment Program
JICC	Joint Intelligence Coordinating Centre
M&E	Monitoring and Evaluation
MOEYS	Ministry of Education, Youth and Sports
MOH	Ministry of Health
MOW	Ministry of Works
NGO	Non-Government Organization
NRSC	National Road Safety Committee
PAHO	Pan American Health Organization
PMU	Project Management Unit
SCP	Safety Conscious Planning
SIB	Belize Institute of Statistics
TWG	Technical Working Group
UN	United Nations
WHO	World Health Organization

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## 1.0 BACKGROUND

The good news is that since the introduction of the Belize Road Safety Project, there has been some improvement in the death rate from 21 per 100,000 population in 2012 down to a projected death rate of 8.36 per 100,000 population by the end of 2014. But there is no room for complacency, as this still means that in 2014 56 males and females died in traffic collisions on Belize roads and there were 94 serious injury collisions. In December 2009 PAHO assisted the Ministry of Health to prepare an Estimation of the economic impact of Road Traffic injuries in Belize which determined that the overall economic impact on the country associated with direct and indirect costs of road traffic incidents was 1.26% of GDP, which translates to roughly \$32 million/year.

Road safety is not only an issue faced on the national scale, but also as a global issue. Every year, about 1.3 million people die in traffic collisions or more than 3,000 people every day. If no immediate and effective measures are taken, it is estimated that the number of collision victims will double every year.

The *World Health Organization* (WHO) has published that deaths caused by road traffic collisions are treated as one of the non-contagious diseases with the highest rate of fatalities. In 2030, road deaths are estimated to be the fifth leading cause of death in the world after heart attack, stroke, lung disease and upper respiratory tract infections. Responding to such data, in March 2010, the UN General Assembly declared the Decade of Action for Road Safety 2011 – 2020, which aims to control and to decrease the fatality rate of road traffic victims on a global scale by improving activities carried out at the national, regional and global levels.

## 1.1 Guiding Principles

The Road Safety Vision 2030 is based on five guiding principles:

1. Adopt a comprehensive safe system approach coupled with a public health perspective.
2. Envision road safety as a collaborative effort with a focus on results.
3. Sustain successful measures and focus on new areas that need attention.
4. Encourage innovation and flexibility among partners.
5. Its foundations are sustainability, coordination, and togetherness, based on the understanding that road safety is the responsibility of each and every one of us.

## 1.2 Objective

The objective of Road Safety Vision 2030 is to provide a foundation to policy makers in order that they can plan and implement road safety management in a coordinated and harmonised manner. It also serves as a reference for regional governments to recommend steps for road safety policy, management, and implementation of initiatives in their respective jurisdictions.

## 1.3 Vision

Our vision is that Belize will have the safest roads in the Latin America and Caribbean countries and will work toward the ultimate goal of zero traffic fatalities and zero serious injuries.

## 1.4 Mission

### 1. Road safety becomes a national priority

Every party realises the large amount of national economic losses due to traffic collisions, therefore they are committed to making road safety the main subject in the determination of policies, programmes and development activities.

### 2. Nurturing road safety in road management

Every party is actively involved in generating road safety explicitly in every aspect of road management and road infrastructure.

### 3. Synergising all of the potentials in order to optimise road safety performance

Empowering the role of Government, the Business Sector, and People to make use of the resources in order to improve road safety nationally.

## 1.5 Achieving Road Safety Vision 2030

Achieving Road Safety Vision 2030 will require:

### 1. Focused safety education and law enforcement with deterrent effects

Guaranteeing the implementation of road safety education that focuses on road safety values in order to generate a culture of being safe on the road. Meanwhile, law enforcement is directed to create deterrent effects by implementing administrative sanctions, fines, and/or imprisonment.

### 2. Provision of sustainable financing to improve road safety

Formulating policies and implementing regulations in order to provide alternative sources of fund originating from the private sector, community, and road users to guarantee the sustainability of road safety programmes.

### 3. The standards for permitting drivers on Belizean roads have been improved.

Rights to drive are given strictly to driver candidates who can meet the requirements of knowledge, skill and attitude by implementing enhanced licensing principles.

### 4. Effective road safety management is supported by a comprehensive and accurate information system

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Implementing principles in the management of road safety requires an effective organisation which means that effective and efficient management and governance among the stakeholders are well implemented. It must also ensure coordination among stakeholders, with the support of an information system as a supporting device in making appropriate and accurate decisions.

## 5. Improving the safety of road infrastructure and broader transport networks

It will be vital to provide a safe and reliable transportation network across the country with consistent practices. This would include the road infrastructure, in addition to programs addressing the movement of goods by commercial vehicles and the transportation of people through the bus system.

### 1.6 Targets

Since the introduction of the Belize Road Safety Project there has been continued decline in the number of fatal road related collisions, particularly on the demonstration corridor. This figure shows the total number of fatalities between 2011 and 2014.

Year	JICC fatalities recorded	S.I.B Population	Fatality rate per 100,000
2011	57	332,089	17.16
2012	69	324,066	21.29
2013	56	349,728	16.01
2014	56	358,899	15.60

It is therefore not unreasonable that Belize could meet a target of no fatalities and serious injuries by 2030, through a continued annual reduction of these numbers, even as modest as 10% per year.

## 2.0 STRATEGY IMPLEMENTATION

This section presents a comprehensive set of initiatives and actions on which an effective long term road safety strategy can be implemented.

It is built on the experience and knowledge gained during the implementation of the Belize Road Safety Project. Particular attention is given to short, mid-, and long-term actions, which will require strong and early commitment from the Belizean organizations and without which any strategy document would only be a polite wish list. To be sustainable and effective the long-term strategy should be supported by **annual operation plans** which provide details on the specific actions and interventions that will take place in any given year, continuing to move forward towards the **vision**.

It is modeled on successful strategies in other countries and also the recommendations of the World Report on Road Traffic Injury Prevention and is aligned with the 5 Pillars of the Decade of

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Action and the Safe System Approach. In order to ensure the achievement of the long-term vision, the foundation is established as follows:

- Harmonising the direction and commitment of road safety management by implementing principles that coordinate the five pillars inclusively;
- Implementing road safety using cost-efficiency approach through curative and preventive measures in order to handle the victims, prevent injuries, and prevent collisions;
- Implementing a road safety system approach which can accommodate human error and the susceptibility of human body to ensure that traffic collisions do not cause fatalities and severe injuries.

## 3.0 ROAD SAFETY MANAGEMENT

This sub-section comprises the following program elements:

### 3.1 Lead agency, coordination and management

**Objective:** *To establish a framework identifying leadership, collaboration and accountability of departments within the government and non-government road safety stakeholders for the development, effective implementation and delivery of the road safety strategy.*

It is vital that a lead organization is responsible and accountable and has the power to make decisions, manage resources and coordinate the efforts of all participating partners and stakeholders. In addition, integrated and coordinated arrangements between the relevant agencies, both - vertically (i.e., levels of government) and horizontally (departments/ agencies within a level of government) - not as separate groups in behavioural, enforcement, infrastructure and vehicle safety activities who communicate infrequently. Coordination and management arrangements within jurisdictions between government agencies and the identification of departments' accountabilities for results are fundamental steps in building effective road safety capacity.

Linked to the establishment of the lead organization are the issues concerning coordination and management and the roles of other government agencies and partners. In addition to coordinated efforts among various levels of government, a number of important non-government partners, such as police agencies and health professionals, and other NGOs organized as a national network play significant roles in the successful delivery of road safety initiatives. A coordinated road safety strategy recognizes the inherent limitations in individual engineering, enforcement and education efforts and advocates for an integrated multi-disciplinary response. It ensures that sectoral activities which are meant to strengthen each other are implemented at the right time and according to plans.

No one organization has either the resources or the mandate to undertake all road safety projects. Furthermore, because the scope of potential projects is diverse, it needs to be addressed by a wide range of stakeholders. It is important to work with and support existing community initiatives as well as cooperatively develop new programs and initiatives. This

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requires a networking approach, promoting cooperation and resource sharing amongst stakeholders.

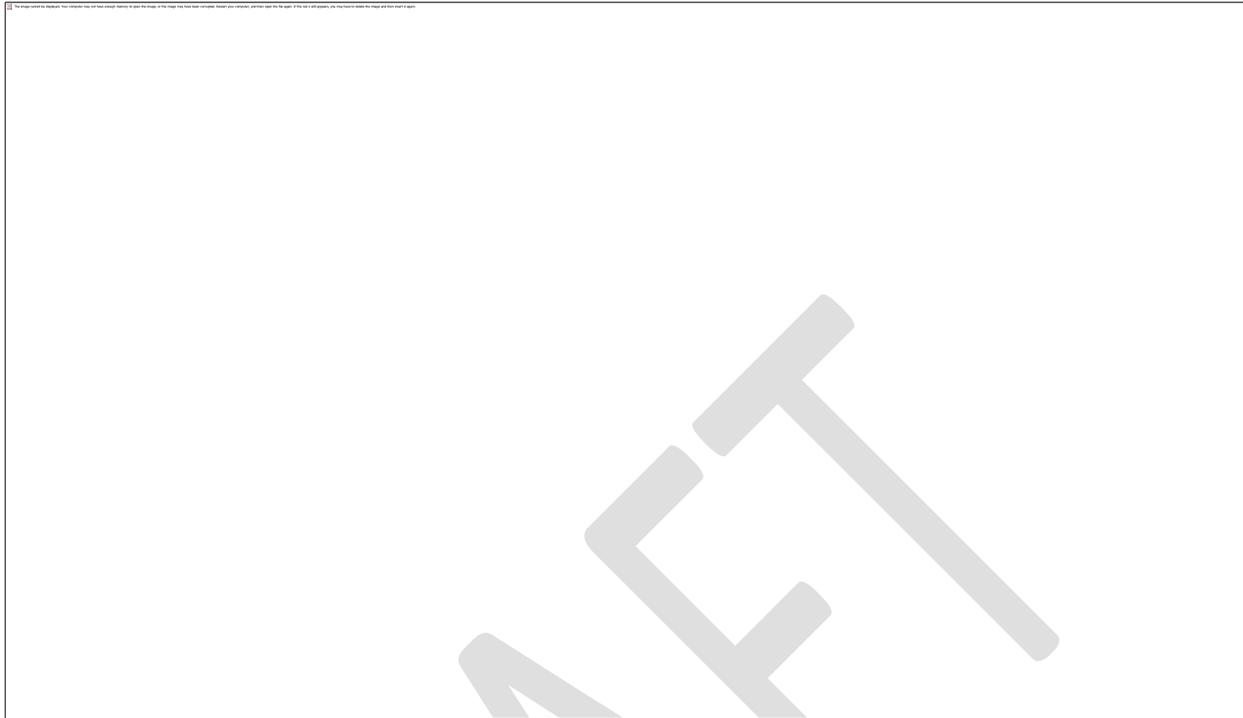
A key component of the Belize Road Safety Project was the establishment of the National Road Safety Committee which has been formally approved by the Government. Their role is to advise the appointed lead agency on all matters relating to road safety, through its implementing arm, the NRSC Secretariat (the Road Safety Unit within the Ministry of Finance and Economic Development). The mandate of the National Road Safety Committee is to establish a nationwide mechanism to provide leadership, direction, coordination and evaluation of road safety initiatives across the country. The Committee is supported by the Ministry of Finance and Economic Development (Economic Development), who leads the multi-sectoral initiative to improve road safety in the country by reducing deaths and injuries due to motor vehicle collisions. The Committee enhances collaboration among all road safety partners including law enforcement, education and engineering organisations, in addition to the private and business sector to improve road safety across the country. The National Road Safety Committee is co-chaired by the Ministry of Finance and Economic Development (Economic Development) and the Ministry of Works and Transport (Transport).

It is recommended that the NRSC maintain its leadership role in its current format and that the current PMU become the formal Road Safety Unit once the current Belize Road Safety Project comes to a close.

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The current organizational chart, which reports directly to Cabinet, is shown below.



## Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>CM1</b> Maintain inter-ministerial and stakeholder cooperation mechanisms	Ongoing	NRSC
<b>CM2</b> Develop sustainable funding for the responsible agency to ensure their programs/interventions will be undertaken	2016	NRSC
<b>CM3</b> Each stakeholder/partner to develop performance outcomes for their activities	2017	NRSC
<b>CM4</b> At the regional and local level ensure their activities are linked to the overall strategy	2017 (& annually thereafter)	NRSC
Medium And Long-term – (Beyond 2020)		
<b>CM5</b> Agencies and partners support the road safety plan through development and implementation of supporting activities	Annually	NRSC
<b>CM6</b> Partners submit annual reports focused on results rather than just outputs	Annually	NRSC
<b>CM7</b> The <i>strategic</i> road safety plan should be reviewed every five years	Review 2020 and 2025	NRSC

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## 3.2 Establishing the vision and mission for road safety

**Objective:** *Establish a common **vision** and **mission** for road safety in Belize.*

The road safety vision should be a product of underlying community values that might include the following elements:

- No one should be killed or seriously injured in motor vehicle collisions on our roadways
- Protecting vulnerable road users such as children should be a priority
- There should be limits to the disadvantage experienced by road users due to actions taken to protect other road users
- Mobility should be maximized within the limits of safe operation.

The **Vision** for the Belize Road Safety Project was established as follows: “Through an integrated and comprehensive approach along the pilot safety corridor, together with demonstrated respect among all road users, the frequency and severity of traffic collisions (road trauma) will be reduced.” It is now recommended that the Vision is “*that Belize will have the safest roads in the Latin America and Caribbean countries and will work toward the ultimate goal of zero traffic fatalities and zero serious injuries*”.

The **Mission** concentrates on the present, defining purpose, roles etc in support of achieving the vision. (See Section 1.4 above)

### Recommended strategic interventions

Improvement area		
Short-term – (2016-2020 )		
	Timeline	Coordinating agency
V1 The vision and mission should be confirmed.	2016	NRSC

## 3.3 Road safety data management and analysis (Intelligence)

**Objective:** *An appropriate national system of data collection, storage, retrieval and analysis which leads to better identification of the safety situation and from which focused and appropriate remedial measures can be devised. This must include road data where collisions have never been recorded but are nevertheless dangerous.*

If possible the data should extend to other factors, including:

- Demographic data; traffic volume data (by mode);

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- Safety performance indicators such as rates of seat belt and standard helmet use, overloading, speeding and red light running;
- Infrastructure factors (road length by crash risk, mean travel speed, etc.)
- Enforcement (violation) data (tickets/charges, etc.)
- Injury data from hospitals.

Accurate data is also necessary to: identify traffic safety issues and devise countermeasures; implement and adjust coordinated strategies; undertake cost/benefit analyses; prioritize high collision locations and corridors; develop targeted education and enforcement campaigns; develop safety performance functions; and, monitor and evaluate the effectiveness of improvements.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>RSD1</b> Develop electronic national collision database	2016-2017	NRSC/ Data TWG (representing related ministries)
<b>RSD2</b> Traffic Officers and Police Officers have been trained in collision investigation	2016	DOT/Police
<b>RSD3</b> Confirm mechanisms for sharing data are operating efficiently with management agencies and research organizations	2016	NRSC with support from MOH/DOT/Police/SIB
<b>RSD4</b> The database for road safety should include information on infrastructure, traffic collisions, vehicle registration and vehicle inspection	2016-2018	NRSC with support from Police/MOW/DOT/SIB
<b>RSD5</b> All agencies should support and use the database to ensure that the most effective countermeasures are developed	2018	NRSC with support from Police/MOW/DOT/MOH/SIB
<b>RSD6</b> The data is used in all decision making (ongoing)	2018 (ongoing)	NRSC with support from Police/MOW/DOT/SIB
Medium-term – (2021-2026)		
<b>RSD7</b> Assessment of effectiveness of new collision database on quality of data and on enforcement practices	2021 (ongoing)	NRSC
<b>RSD8</b> Collision prediction models should be developed for all national highways	2023-2024	MOW
<b>RSD9</b> Collision prediction models should be developed for all intersections	2024-2026	MOW
Long-term – (beyond 2026)		
<b>RSD10</b> Establish Road Safety Observatory	2027-2028	NRSC with support from Police/MOW/DOT/MOH/SIB (in collaboration with University of Belize.)

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## 3.4 Social costs of collisions

**Objective:** *Using the methodology and costing of road collisions previously used by the Ministry of Health and PAHO, determine the social costs associated with road crashes in Belize.*

A strong economic analysis is critical for road safety managers to effectively juggle the complex array of competing budget priorities, the ever increasing demand for improved safety performance and the acceptability constraints inevitably associated with safety options. The following items might be considered as contributing costs:

- emergency medical services;
- publicly funded health services - hospitalization, physician services (including mental health services, psychologists, psychiatrists and mental health counselors) and other services delivered by health authorities (such as long-term rehabilitation and home care);
- private insurance plans and employer benefits;
- police and municipal services;
- workplace productivity costs (such as staff replacement);
- increased public assistance costs as a result of taxpayers being unable to engage in the paid workforce;
- legal and court costs;
- lost income and foregone taxes;
- disability and workers compensation payments;
- lost household productivity;
- property damage, including automobiles and automobile insurance payouts.

In August 2010 a report on the costs of crashes was produced by the Ministry of Health and PAHO. This report should be reviewed and updated.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2017)		
	Timeline	Coordinating agency
SCC1 Review and update 2010 report on social costs of road collisions	2016/2018	NRSC/MOH

**3.5 Monitoring and Evaluation** (Setting appropriate targets, establishing performance indicators)

**Objective:** *System for monitoring and evaluation that is able to measure progress and current status; allows feedback and encouragement to the organizations involved; identifies under-performance; identifies emerging problems; monitors a range of indicators and must be able to predict likely future adverse trends, as far in advance as possible.*

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The systematic and ongoing measurement of road safety outputs and outcomes and evaluation of interventions in terms of achieving the desired results is a key component of any strategic road safety plan. Monitoring and evaluation are undertaken for a range of purposes and the system developed must be able to perform these tasks.

The purposes of monitoring and evaluation include:

- To measure progress
- To allow feedback and encouragement to the organizations involved
- To identify under-performance so that it can be addressed
- To identify emerging problems.

Each of these purposes demands that the system for monitoring and evaluation has particular characteristics:

- To be able to measure progress, the system must be able to measure current status which includes reviewing several databases
- To allow feedback and encouragement to the organizations involved, the system must produce outputs that are readily understood, have face value and be provided in a timely manner and compare this to previous status in a way that identifies the effects of the Strategy
- To be able to identify under-performance, the system must incorporate some form of comparison with a performance target and provide feedback in a timely manner to allow corrections to be made
- To identify emerging problems, the system must monitor a range of indicators and must be able to predict likely future adverse trends, as far in advance as possible.

In order for any funds invested in road safety to be effectively used, a comprehensive measurement and evaluation system will need to be established.

## Recommended strategic interventions

Improvement Area		
Short- and medium-term – (2016– 2020)		
	Timeline	Coordinating agency
<b>ME1</b> Identify all databases that are available and are current, consistent, complete and available from a variety of sources	2016-2017	NRSC
<b>ME2</b> Develop a national road safety monitoring and evaluation system	2016-2017	NRSC
<b>ME3</b> Annually conduct monitoring and evaluation to ensure progress continues towards targets	Ongoing	NRSC

### 3.6 Target setting

**Objective:** *Establish ambitious, achievable and empirically derived road safety targets.*

This can be interpreted as a declaration of the desire of a jurisdiction to improve the road safety situation and is expressed in its vision, mission and goals.

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Research and experience indicate that long term goals and interim targets lead to:

- Increased political will and stakeholder accountability for road safety
- Closer management of strategies and programs, better safety programs and better safety performance, especially when the targets are ambitious
- Better use of public resource
- Increased motivation of stakeholders.

Current good practice involves a combination of top down long term goals as well as bottom up interim targets, which are soundly related to interventions, their likely effectiveness in the road safety strategy and the quality of their delivery. Results focus is the overarching function of lead agency management for road safety which defines the level of ambition for road safety and takes into account the interventions and institutional arrangements which need to be put in place in order to realize it.

## Quantitative targets

Quantitative targets represent the road safety results which the country wishes to achieve over a given time frame. The focus on results and how they are to be achieved by system-wide intervention and effective institutional management is at the core of an effective road safety strategy.

Targets for final outcomes (long and interim targets to reduce death and injury) are used widely and a key activity in all good practice countries. Targets have also been set for intermediate outcomes, e.g. reduction in mean speed, increased seat belt usage. These ensure closer management of the range of interventions needed to achieve final outcome targets.

Those countries that have had a rapid reduction in traffic fatalities, came as a result of the government in those countries making traffic safety a key priority for them and consequently investing heavily in effective and integrated interventions. Clear commitment from the agencies responsible for components of the strategy's short- to mid-term plan is a basic prerequisite in addition to further allocation of resources (budgetary or human). These will be vital to its success.

## Recommended strategic interventions

Improvement area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>TS1</b> Establish targets for the Belize's long-term road safety strategy Vision 2030	2016-2017	NRSC supported by M&E TWG
Medium-term – (2021-2026)		
<b>TS2</b> As the ability to undertake RS research improves the targets can be "modeled" to confirm that they are achievable	2021-2022	NRSC
<b>TS4</b> Annually review progress being made with targets	Annually	NRSC

## 3.7 Performance Indicators

**Objective:** *Establish appropriate road safety performance indicators.*

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Safety performance indicators help illustrate how well road safety programs are doing in meeting their objectives or achieving the desired outcomes. They are a means of monitoring, assessing and evaluating the processes and operations of road safety systems.

A component of the road safety strategy should be the development of safety performance indicators which should include:

- Outcome measures – usually collision numbers or rates
- Intermediate measures – safety-related behaviours and attitudes which are expected to influence the likelihood of being involved in a collision (such as rates of seat belt and standard helmet use, overloading, speeding and red light running)
- Process (effort) measures – the type and amount of resources being expended to tackle road safety issues (e.g. speed camera hours, amount of advertising, number of blackspots treated)

## Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>PI1</b> Develop baseline measures for key risk factors, e.g. Seat belt usage (Rural & Urban surveys), travel speeds (Rural & Urban surveys), collisions involving impaired drivers, collisions involving distracted drivers, etc.	2016	NRSC supported by M&E TWG.
<b>PI2</b> Ensure that official performance indicators are based on reliable data	2016-2018	NRSC
Medium and long-term – (2021-2030)		
<b>PI3</b> Annually review progress being made with targets	Annually	NRSC

## 3.8 Legislative reviews

**Objective:** *To provide current and relevant legislation in addition to an efficient judicial system to process and penalize offenders.*

This implementation measure is highly important. New laws and a revision of existing ineffective laws are needed. This includes examining laws to ensure ease of enforceability. This is necessary to increase deterrence to make the laws **work in a better manner**. Laws must also be revised to improve regulation along the length of the regulatory chain from standard setting, inspection and certification to enforcement. Minimum mandatory penalties must also be examined for certain offences to improve deterrence.

A common challenge in all countries is the need for constant updating of road traffic laws. This challenge also exists in Belize. The reasons include (a) a need to update standards on vehicle road worthiness, certification, etc. due to technological advances, (b) greater use of technology to enforce traffic rules (cameras, alcohol testing) and (c) the need to progressively impose stricter rules to improve safety. Another reason is that gaps or deficiencies in legislation are

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often discovered once provisions are implemented, requiring corrections to the law. To meet these challenges, most countries structure their road traffic laws so that provisions that may change frequently (or are potentially difficult to implement) are contained in subsidiary laws. Subsidiary laws normally only require cabinet or ministerial approval. Hence, they can be prepared and adopted more rapidly than laws that require parliamentary approval.

As shown in the figure below, road traffic legislation has three primary **focus areas**. The first establishes the institutions required to administer various parts of the traffic system and allocates them specific duties and functions. The second imposes safety and other standards with which vehicle owners, drivers, vehicles and infrastructure must comply. The third area regulates compliance with standards through training requirements, testing, certification, enforcement and audits.

### Role of Legislation in Road Traffic Safety



A comprehensive legal framework for traffic safety must cover all three focus areas.

Improvement is also needed in administrative procedures for handling traffic violations. While the use of administrative violations is common in many countries, the existing system in Belize imposes a number of constraints which hinder enforcement and compromise traffic safety. Related to this is the need to expand the role of the courts in dealing with serious traffic offences.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>LEG1</b> Complete review of the Road Traffic Law and subsidiary laws to enable rapid revision and updating of legislation when required	2016 onwards	NRSC
<b>LEG2</b> Review speed limits to simplify limits, introduce flexibility in setting limits and introduce a basic speed law. Prepare implementation strategy	2016	MOW/DOT
<b>LEG3</b> Review current regulations related to stopping at pedestrian crossings, STOP and Yield signs and make	2016	DOT

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Improvement Area		
recommendations for improvement.		
<b>LEG4</b> Review fines and penalties for traffic offences including moving violations, such as approaching pedestrian crossings and not stopping; failing to stop at Yield and STOP signs and amend accordingly.	2016	DOT
<b>LEG5</b> Review regulations related to the consumption of alcohol on public transportation and make necessary amendments.	2016	DOT
<b>LEG6</b> Develop policy to prosecute traffic offences involving death and serious injury and reckless driving through the courts. Assess institutional capacity requirements.	2017	Min. of Justice Belize Police and DOT
<b>LEG7</b> Review rules on illegal overtaking and draft new rules to support enforcement	2018	DOT
<b>LEG8</b> Revise provisions of Road Traffic Law related to helmet use on bicycles and motorcycles	2018	DOT
<b>LEG9</b> Improve regulations to introduce operator licensing system for commercial transporters	2018	DOT
<b>LEG10</b> Review measures to improve enforcement of overloading, supervise weighing operations and audit fine collection. Substantially increase fines for overloading	2019	DOT/MOW
<b>LEG11</b> Establish policies/procedures to deliver administrative justice, through sanctions and fines, including a penalty point system	2020	DOT/MOJ
<b>Medium-term – (2021-2026)</b>		
<b>LEG12</b> Strengthen and improve the legal organizational structure and activities of motor vehicle inspectors	2018	DOT
<b>LEG13</b> Review and penalize overloading offenders. Screen applicants for transport licenses based on overloading records	2021	DOT
<b>Long-term – (Beyond 2026)</b>		
<b>LEG14</b> Review and refine legislative strategy	Annually	NRSC/DOT
<b>LEG15</b> Complete the regulations on traffic organization and control and urban traffic management	2025	NRSC/DOT

## 3.9 Planning, funding and resources

**Objective:** *Adequate and sustainable funding resources to enable the development, management, implementation and monitoring of safety interventions necessary to achieve the targets established in the National Road Safety Strategy.*

The financing of interventions and related road safety management functions on a sustainable basis and the allocation of appropriate resources to achieve the results are keys to the strategy's effectiveness and success.

Ideally there should be a number of streams of income to avoid the over dependency on a single source.

In many jurisdictions, government revenues are re-invested in road safety initiatives. These might include: fuel taxes; tire/battery disposal/environmental oil, oil filter and containers; motor

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vehicle licenses (and surcharges from offenders); traffic fines; victims of crime surcharge; and auto insurance premiums.

In good practice countries responsibility for annual funding rests with central government and there is access to sustainable and annual sources of road safety funding. At the same time there are established procedures to guide the allocation of resources cost-effectively across safety programs to ensure safety measures compete successfully with projects serving other societal aims. General good practice is to separate the funder, provider and delivery functions, to promote accountability and improve efficiency.

A variety of funding sources may be available however the challenge is to balance the advantages and disadvantages of each, as in the chart below.

### Typical Advantages and Disadvantages of Different Sources of Financing for Road Safety

Sources of Funding	Advantages	Disadvantages
Value-added to National/State budget from transport	Large amount	New concept and difficult to evaluate
Surcharge for ensuring traffic safety in addition to funds collected from fines	Related directly to traffic safety and flexible enough for actual conditions of localities	Some requirements in institutional aspects
Surcharges on motor fuel	Low level of evasion, low collection fee	Difficulty to raise fuel prices
Surcharges on weight-distance charges	Accepted as user-charge	Potential for high level of evasion
Surcharges on compulsory vehicle insurance	Best related to road safety	Potential for high level of evasion
Surcharges on vehicle license fees	Low collection fee	Potential for high level of evasion
Surcharges on toll fees from roads	Low level of evasion, accepted as user charges	Toll roads form only a small part of the road network
Contribution by private sector	Can complement road safety financing and can make use of private sector management and efficiency	Can only provide limited amounts and may not be sustainable
Development loans and grants	Can initiate effective road safety programs and financing schemes	Not sustainable

Source: JICA Study Team (2008) and ESCAP document No. E/ESCAP/CMG(4/I)/7 dated 30 July 2007.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>PFR1</b> Identify financial and human resources required to establish lead organization and the national road safety strategy	2016	NRSC
<b>PFR2</b> Identify list of potential funding sources	2016	NRSC

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<b>PFR3</b> Initiate feasibility study for road safety fund	2016	NRSC
<b>PFR4</b> Publish main government agencies annual RS action plans and budgets on NRSC web site	2017	NRSC
<b>PFR5</b> Through various budget mechanisms seek sustainable funding sources for road safety	2016-2017	NRSC
<b>PFR6</b> Ensure individual government departments have secured dedicated and sustainable funding for road safety related engineering and enforcement initiatives	2016-2017	GOBZ/NRSC
<b>Medium- and long-term - (Beyond 2020)</b>		
<b>PFR7</b> Confirm annual budget and present through government budget cycle	Annually	GOBZ/NRSC

### 3.10 Research and development

**Objective:** *Create and implement a research strategy that promotes partnerships for collaborative road safety research and to track, adapt and utilize relevant research and good practices, ensuring that the content of the road safety strategy is in line with international good practice.*

Road safety research should provide the framework against which safety policy decisions can be made so that a systematic scientific approach is applied to the problem. It is important to track, adapt and utilize research and best practices and to share innovations and “lessons learned” with other jurisdictions.

In this field it is important to have the participation/support of the universities that should be engaged to undertake research, to implement courses (undergraduate and graduate level), to train professors and to provide consulting to the government on issues concerning traffic safety.

Research needs to be performed under the auspices of the government for the findings to be credible. There is a need to see traffic safety research as a comprehensive program. A formal research institute or Road Safety Observatory is much needed. It could also carry out training activities and collect relevant international information.

#### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>RS1</b> Review and publish all road safety and injury prevention research undertaken in universities and institutions in Belize and other Caribbean countries	2016	NRSC
<b>RS2</b> Improve collaboration between Ministries, universities and other research institutions by working together	2016	NRSC
<b>RS3</b> Identify gaps in road safety/ injury prevention research	2017	NRSC
<b>RS4</b> Develop a research agenda	2018	NRSC
<b>RS5</b> Explore opportunities to establish a formal road safety	2018-2019	NRSC

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Improvement Area		
research centre (Road Safety Observatory) in Belize.		
<b>RS6</b> Identify sustainable funding sources for research centre	2019	NRSC
<b>RS7</b> Establish a traffic safety research centre	2020	NRSC
<b>RS8</b> Establish linkages with other traffic safety research centres and Road Safety Observatories	2020	NRSC
Medium-term – (2021-2025)		
<b>RS9</b> Undertake research that supports or identifies the road risk priorities	2021 (ongoing)	NRSC
<b>RS10</b> Review research agenda and identify research priorities that focus on road safety targets, performance outcomes and monitoring and evaluation	2021 (& annually thereafter)	NRSC
<b>RS11</b> Potential activities in the road safety plan should be “modeled” to determine potential collision reduction	2022	NRSC
Long-term – (Beyond 2026)		
<b>RS12</b> Continue to undertake key research to ensure that the road safety strategy remains focused on road safety priorities	Annually	NRSC

## 3.11 HR development

**Objective:** *Develop a comprehensive Human Resources plan that ensures the staff managing the strategy is knowledgeable and competent to ensure effective delivery of the strategy.*

The successful transfer of knowledge requires not only its transmission but also its absorption and ultimate use. It includes:

- Continuous development (training)
- Promotion/ succession planning
- Knowledge transfer strategy

It is vital that all staff undertake continuous development in the relatively new area of road safety. Similarly, knowledge transfer must be grounded in actual practice in a “learning by doing” model.

Knowledge transfer should be viewed as an ongoing process that transfers existing knowledge and creates new knowledge to achieve continuous improvement. This is why it should rely on a stable supply and availability of road safety specialists.

A pool of permanent road safety specialists in all government ministries (and at the local government level) should be developed. This will involve extensive training initially. There is also a need to provide better and more systematic training to volunteers in the networks participating in road safety implementation at the local level.

### Recommended strategic interventions

Improvement Area		
Short term – (2016-2020)		
	Timeline	Coordinating

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		<b>agency</b>
<b>HR1</b> Create a pool of permanent road safety specialists	2016-2018	NRSC
<b>HR2</b> Strengthen human resources development and traffic safety guidelines to develop Police personnel with skills and a higher level of understanding of new enforcement measures and methods	2016	DOT/Police
<b>HR3</b> Develop police resources to ensure quantity, quality and professional ethics	2017 onwards	DOT/Police
<b>HR4</b> Conduct training and development of human resources for transport planning, organization and management	2017 onwards	DOT
<b>HR5</b> Strengthen the Transport Inspection human resources at all levels. Complete a system of initial and advanced training for the transportation inspectors at different levels and ranks	2017 onwards	DOT
<b>HR6</b> Provide training for medical staff and police in traffic collision emergency/trauma management	2017 onwards	MOH
<b>HR7</b> Conduct training for management and operation of databases including statistical analysis	2016	NRSC supported by M&E TWG
<b>HR8</b> Strengthen human resources in transportation planning and road infrastructure engineering	2017	MOW
<b>HR9</b> Establish training and education opportunities after graduation including international programs	2019	NRSC
<b>HR10</b> Deliver traffic safety courses to all people working in road safety/injury prevention including undergraduate and graduate work	2017 onwards	NRSC
<b>HR11</b> Develop a “knowledge transfer” strategy that provides new information and research to all agencies, partners and stakeholders	2018 onwards	NRSC

### 3.12 Promotion/media – developing a Traffic Safety Culture

(not to be confused with Public Awareness Campaigns (section 6.5 )

**Objective:** *Improvement of road safety through more effective publicity and advocacy campaigns, in addition to government announcements expressing their vital support for programs that reduce the severity and frequency of traffic crashes.*

This includes sustained communication of road safety as a core business for government and society emphasizing the shared societal responsibility to support the delivery of the interventions required to achieve positive results. Promotion of the benefits of safer vehicles, of safer behaviours and safer roads, roadsides and speed limits is an important role for government and government agencies. But promotion of road safety is more than specific campaigns. It requires a clear strategy and program and agreed upon resources to become an everyday part of the community's life.

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The creation of a supportive climate for road safety management requires increased public and professional understanding that the level of death and serious injury in using roads is disproportionate compared with the risks of other everyday activities. The aim is to decrease public acceptance of large numbers of road deaths and increase support for cost-effective measures to decrease the frequency and severity of fatal and serious injuries from motor vehicle collisions.

Governments have an obligation to educate the public through public information campaigns about road safety risks, and to promote enforcement campaigns being carried out by police in order to deter illegal, unsafe behaviours. There is also a need for government to be made aware of the powerful impact that police enforcement supported by publicity can have in changing behaviours and the benefits this will provide in reduced traffic collisions. A strategic communications plan should be developed which supports the road safety strategy. The media should be engaged in the development and delivery of the road safety strategy.

High-level promotion and propaganda programs should be developed that promote the safety strategy.

The AAA Foundation for Traffic Safety in the US has described Traffic Safety Culture as “a social climate in which traffic safety is highly valued and rigorously pursued”. However, my brief review of many articles on this topic indicates that there does not appear to be any consensus on a definition; that no society reflects one homogenous culture; and that safety culture is multi-dimensional. There do appear to be some common themes:

- Traffic safety is a priority
- Social institutions are held accountable for traffic safety
- Traffic safety is valued
- Traffic safety is monitored
- Individuals engage in behaviours that promote traffic safety
- Policies that promote traffic safety receive broad public support.

These are supported by concrete actions, such as:

- Increased government attention to traffic safety
- Strict monitoring and control of impaired drivers and other limits on freedom for the sake of traffic safety
- Unlikely to drive aggressively
- Would not condone speeding, distracted driving or fatigued driving
- Engaged in advancing local traffic safety issues
- Supports photo enforcement for traffic safety laws
- Willing to invest in traffic safety
- Expect evidence-based traffic policies
- Supports seat belt use and seat belt laws
- Believes schools should promote traffic safety
- Supports restrictions on teen driving
- Would not drive while impaired and would prevent others from doing so
- Interested in traffic safety information
- Supports police enforcement and traffic calming

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- Expects the corporate sector to do more.

A cornerstone of an effective road safety strategy would be the development of a healthy traffic safety culture shared by its members.

## Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>PM1</b> Develop strategic communication plan for road safety	2016	NRSC
<b>PM2</b> Enhance road safety propaganda through public media	Ongoing	NRSC
<b>PM3</b> Promote the dissemination of road safety in schools, communities, road transport dealers and within political and social organizations with appropriate methods	Ongoing	NRSC
<b>PM4</b> Promote the health consequences, burden of injury and scope of traffic collisions in the community	Ongoing	NRSC
Medium – and long-term - (Beyond 2020)		
<b>PM5</b> Build a traffic safety culture for all road users	Ongoing	NRSC

## 4.0 SAFER ROADS

**Objective:** To provide a safe and reliable transportation network across the country with consistent practices.

Improving the safety of the roads has the potential to reduce the incidence and severity of collisions, whatever other factors are involved. Such improvements are beneficial for all road users, not just vehicle occupants. Improving the safety of roads is a particularly important component in addressing rural road collisions where higher speeds and lower road qualities contribute to increased risks of death and serious injury.

It is vital to provide a safe and reliable transportation network across the country with consistent practices. This would include the road infrastructure, in addition to programs addressing the movement of goods by commercial vehicles and the transportation of people through the bus system. This section therefore includes the following components:

- Intersection Safety
- Rural Roads
- Safer Travel Speeds
- Transportation of goods and services and people

The most significant message of a safe system approach is that everybody is responsible for improving road safety. It requires road users, road authorities, planners, policy makers, enforcers and vehicle manufacturers and distributors to all work together. It challenges “system

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designers” to achieve a balance in the three key factors on the physical network – the road and roadside safety, the travel speed as influenced by speed limits and the primary and secondary safety features of vehicles in order to achieve safe conditions, which result in non-fatal collision outcomes.

*Safer travel speeds* – Research concludes that in some cases when average speed has increased, there has been a corresponding rise in road fatalities. Where the speed has decreased there has been a drop in road fatalities. Most jurisdictions that have imposed lower speed limits have had safety benefits. Promoting safer travel speeds is particularly important where major highways go through cities and towns and there is significant pedestrian and bicycle traffic.

*Improving road infrastructure* – Collision rates vary with road alignment, road width and road lanes, roadside and median treatment and with intersection type and design. Rural road collisions are generally more severe than collisions on urban roads, particularly on undivided highways. Appropriate designs for each road type are needed to maximize safety through the network taking into consideration the limitations of human capacity.

## Leading practice

In the Netherlands, the leading philosophy is *Sustainable Road Safety*. The key issues are:

- man is the reference standard: physical (humans are vulnerable) as well as psychological (humans are error prone, humans do not always obey rules)
- prevention is preferred to a curative approach
- de-centralized approach where possible, central approach where needed.

This vision leads to the following safety principles:

- functionality of roads
- homogeneity of masses and/or speed and direction
- predictability of road course and road user behaviour by a recognizable road design
- State awareness (judgement of own capacity compared to the demands of the driving task)
- Forgivingness of the environment and of road users.

As a consequence, complete re-classification and re-design of the road network was required in residential areas and traffic roads (five categories: urban and rural access roads, urban and rural distributor roads and urban arterials / rural freeways).

## 4.1 Intersection safety

Collisions occur at intersections because motor vehicles are in conflict with each other when crossing or turning in traffic. Improving the engineering of intersections is the first step toward reducing collisions because vehicle conflicts - combined with less than optimal highway/street design or signage - often result in collisions of vehicles with roadside objects, pedestrians and

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other vehicles. Replacing intersections with modern roundabouts is recognized as one of the effective tool for reducing the severity of collisions at intersections.

The objectives for an intersection safety plan should be to develop a program for improving safety through:

- balancing the considerations of road safety with those of mobility and the promotion of alternative modes in intersection projects
- reviewing and refining current practice to reflect evolving road safety knowledge such as promoting the use of modern roundabouts due to their outstanding performance when compared to conventional intersections in many applications
- equipping jurisdictions with the policies, procedures, skills and resources required for intersection safety
- improving intersection safety through improved planning, design, rehabilitation and operation of infrastructure
- improving the behaviour of all road users at intersections.

Most intersection improvement programs focus on improving infrastructure. However, collision data often highlights the extent to which driver behaviour contributes to collisions (e.g. following too close, unsafe left turns, etc.). This emphasizes the need for an integrated approach of engineering, education and enforcement (the three Es) to intersection safety.

## 4.2 Rural roads

Many traffic collisions occur in busy city areas where the speed limit is 50km/h or less, yet most of these collisions are not serious enough to cause death. On the other hand, many more serious collisions occur on rural roads, where speed limits are generally higher and the roads may not be as well lit as they are inside urban areas. While the “engineering” of rural roads should be an important priority, it is often the unsafe behaviour (or condition) of drivers that needs to be addressed. Issues such as excessive speeding or driving too fast for the road/weather conditions, failing to comply with the 'rules of the road', driver impairment, fatigue and the lack of use of occupant restraints may all be contributing factors to collisions and their outcomes on rural roads.

Despite the progress made during the infrastructure component of the Belize Road Safety Project there is still the need for training in Road Safety Audits and Blackspot techniques if Belize wishes to meet international standards in these areas.

*Blackspot treatment* is one of the most urgent traffic safety measures which directly help to reduce road collisions. A Blackspot is defined as a risky location where collisions happen with a high frequency. The word “spot” can be understood as a location or a section in the junction area.

Blackspot treatment procedures consist of 8 steps:

1. Identification and preliminary prioritization
2. First visual inspection
3. Further data collection and analysis
4. Second site inspection (for causes identification)

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5. Treatment options selection
6. Responsibilities of blackspot treatment agency
7. Blackspot treatment
8. Monitoring and evaluation of results

It is recommended that the Ministry of Works maintain an annual blackspot calendar, ensuring that the top priorities continue to be identified and dealt with.

*Road safety audits* can prevent collisions or reduce the severity of the crashes and improve the overall safety during the construction and operation of a road project.

iRAP provides valuable information for road and safety authority organizations of countries where data and information on road infrastructure and traffic collisions and causal factors are not readily available or do not exist at all. It is perhaps best used to help prioritize corridors or sections of highway for upgrading and giving an indication of the most cost-effective remedial work and an estimate of the likely crash reduction and cost savings.

In 2011 iRAP Belize surveyed 370 miles of Belizean roads, including nearly all paved national highways. The key recommendations in the report focused on:

- Widening shoulders to provide a recovery area for vehicles that begin to run off the road and providing a safe location for disabled vehicles to stop out of the traffic flow
- Reducing the severity of run-off-road crashes by installing roadside barriers and making other roadside improvements
- Installing pavement markings and other delineation improvements
- Reducing the likelihood and severity of pedestrian crashes by installing crossing facilities and sidewalks.

(These recommendations provided the foundation for the infrastructure component of the Belize Road Safety Project).

In addition a *proactive* approach, which undertakes to prevent unsafe situations developing, through such programs as the *countermeasures approach*, *network screening*, and *safety conscious planning* should be considered.

A *Countermeasures* approach can be used to address blackspots or to implement on a corridor-wide basis to improve safety along the corridor. A countermeasure is a device or a feature that reduces the risk of a certain type of crash from occurring, e.g. roadside barriers reduce the risk of off-road crashes. A countermeasure program introduces such measures on an area-wide basis. The motivation for introducing these area-wide measures is that:

- they are known to be generally cost effective, or
- they address crash types or contributing causes that are over-represented in an area.

This approach complements the blackspot program.

Examples of successful countermeasures are:

stop / yield sign infill	installing stop or yield signs at previously uncontrolled intersections
sign upgrades	replacing lower-grade sheeting on stop signs with highly reflective sheeting,

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	and installing fluorescent yellow-green school zone signs
signal head upgrade	replacing 200-mm signal heads with 300-mm heads with backboards (at selected locations), and increasing the number of signal heads
highly reflective pavement markings	using highly reflective pavement markings to improve visibility at night and in poor weather
anti-skid surfacing	to prevent rear-end collisions on wet pavement
left turn lanes	To prevent left-turn opposing and left-turn rear-end collisions
painted or raised medians	to prevent head-on and overtaking collisions
amber/red flashing beacons	to prevent “failing-to-yield” at unsignalized intersections
chevron signs, improved shoulders or roadside barriers	to prevent run-off-road collisions

Consideration should be given to this type of approach.

*Network screening* can be a vital first step in the road safety improvement process. The result of network screening is a list of sites that are ranked by priority for the conduct of detailed engineering studies. Road network screening can be done at little cost because it relies on the computerized use of electronically stored collision, traffic data and location data. (Digital mapping) As the collection of data, particularly GIS based collision data improves, methodologies should be developed to undertake this process on Belize roads.

European research indicates that, in order to achieve future quantum reductions in crash levels, it is necessary to change the focus of initiatives to ones that will make it more difficult for the driver to have a crash. The improved inherent safety of the transportation system, as achieved through initiatives such as *Safety Conscious Planning (SCP)*, is a key factor in this regard.

The basic principles of SCP are to:

- reduce exposure to collisions, through reduced automobile travel
- reduce the risk of collisions occurring, for travel that does take place
- reduce the *consequences* for collisions that do occur.

For each of these, several land use and transportation planning objectives can be identified.

A good example of an effective Traffic Safety Philosophy is in Sweden. The Swedish Road Safety agenda has adopted the philosophy that there are no acceptable or threshold “levels of safety”. All opportunities to reduce the frequency and severity of collisions should be systematically pursued, regardless of their current levels. This differs from the approach used for “mobility” planning, which is directed at achieving a target level of service.

In pursuing this philosophy, it is accepted that there is no single activity that, if successfully undertaken, will achieve the desired level of safety in the network. The long term traffic safety strategy should therefore adopt a comprehensive approach considering:

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- all stages of infrastructure delivery – planning, design, construction, operations, rehabilitation and maintenance
- all subject areas – land use, network, road form, intersections, access, bicycles, pedestrians, etc.
- all levels of activity – city transportation plan, local area/neighbourhood, corridor, site and project.

Consideration should be given to undertaking Safety Conscious Planning.

In general, it is important to undertake activities that are: **proactive** (road safety audits to prevent unsafe situations from developing) and **reactive** (identifying and studying blackspot locations and high risk segments of road).

## 4.3 Safer Travel Speeds

Of the elements in the Safe System approach, speed management is critical in limiting the impact energy of crashes and underpins almost every consideration involved in the development of new and existing safety initiatives.

The Safe System approach maintains that travel speeds as well as roads, roadsides and vehicles should be designed and managed to reduce the risk of crashes and prevent serious injury or death to people in the event of a crash. This includes setting speed limits.

As speed increases, so does the risk of crashing and being seriously injured or killed. Reducing speed can result in a significant reduction in road trauma.

Speeding can be divided into three categories:

- **Excessive** – deliberate and over the limit by a large amount.
- **Low level** – the most common where drivers are marginally over the limit (usually 5km/hr). Research shows that with each 5km/hr increase in travelling speed above 60km/hr, the risk of a collision resulting in death doubles. Reducing speed by 5km/hr can result in a 15% decrease in crashes.
- **Inappropriate** – travelling at a speed risky for the conditions such as wet or unsafe roads.

Definitions of *traffic calming* vary, but they all share the goal of reducing vehicle speeds, improving safety, and enhancing quality of life. Some include all three “Es,” traffic education, enforcement, and engineering. Most definitions focus on engineering measures to change driver behavior and compel drivers to slow down.

In Belize speeding regulations date back to 1972 where the speed limits for trucks and buses in towns and cities is 15mph and for other vehicles is 25mph, and on the highways – trucks and buses is 45mph and other vehicles 55mph. Speed limits in towns/cities and on the highway need to be reviewed and appropriate changes made to regulations. There are several tools that can assist the Ministry of Works in assessing appropriate speed limits.

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It is particularly important to reduce the speed of vehicles in areas where there are a high number of vulnerable road users, especially pedestrians, in areas such as shopping centres, parks and playgrounds and schools.

## Human Tolerances to Physical Forces – Vehicle impact speeds - Fatality thresholds

- <40 km/h - pedestrians, cyclists, motorcyclists
- <50km/h - vehicle occupants in side impact crashes with other vehicles
- <70-80 km/h - vehicle occupants in head on crashes
- <30 km/h – vehicle occupants in side impact crashes with poles and trees

### 4.4 Transportation of Goods and Services and People

There are 2 major challenges that require attention over the next few years. These are:

- The aging public transport (bus) system which is a primary means of traveling around the country for many residents
- The amount of commercial vehicles, which are often overloaded, causing ongoing damage to the road infrastructure.

#### ***Issues relating to the public transport system include:***

- The operational differences (and issuing of licences) between long distance, local and school buses.
- The number of transport (bus) companies that operate through the country.
- Road safety issues related to the bus terminals in the urban areas. This has consequences on the bus schedules.
- The condition of the buses, some are very old and in seriously poor condition.
- The licensing and monitoring of bus drivers.
- Overcrowding on buses, which is a result of scheduling.
- The location (and number) of bus stops along routes. This includes the visibility of bus stops.

All of these issues need a review, leading to the development and implementation of a strategic plan to improve the whole of the system.

#### ***Issues related to Commercial vehicles***

Commercial vehicle overloading was the subject of a report for the Ministry of Works, produced by IMC Consultants in March 2013. Whilst the primary focus of this report was on the impacts that overloaded trucks have on the road infrastructure, it also outlined other safety issues, including:

- Increased severity of accidents when overloaded vehicles are involved

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- Reduced grade climbing capability and acceleration
- Greater loss of lateral stability especially when cornering
- Increased braking distance required for overloaded vehicles
- Increased vehicle emissions, noise and ground-borne vibrations.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>Eng1</b> Continue implementation of iRAP recommendations	2016-2018	MOW
<b>Eng2</b> Publish guidelines/manuals on traffic safety management (signs and markings), monitoring and maintenance policies to ensure consistent implementation	2017	MOW
<b>Eng3</b> Review iRAP demonstration project (Belize RS project) and publish lessons learned and future plans	2017	MOW
<b>Eng4</b> Review all activities related to the bus transportation system and develop strategic plan	2017	DOT
<b>Eng5</b> Review “safety” elements of overloaded vehicles (IMC report) and develop strategic plan to improve the safety of overloaded commercial vehicles	2017	MOW
<b>Eng6</b> Carry out before and after studies on blackspot program (pilot program) and apply lessons learned to current and future programs	2017	MOW
<b>Eng7</b> Develop program guidelines on “blackspot management”	2018	MOW
<b>Eng8</b> Establish continuous, sustainable road safety audit training program	2017	MOW
<b>Eng9</b> Review speed limits on rural highways and urban roads	2017	MOW
<b>Eng10</b> Establish a unit for continuous monitoring of traffic safety data on national highway and urban road network	2017	MOW supported by M&E TWG
<b>Eng11</b> Start implementing mass action remedial measures on iRAP demonstration project and other corridors	2019	MOW
Medium-term – (2021-2026)		
<b>Eng12</b> Develop road safety audit guidelines (including construction stage) at international best practice.	2020	MOW
<b>Eng13</b> Implement program to ensure consistent and effective speed limits on national highways with reduced limits at all critical locations	2020	MOW
<b>Eng14</b> Implement strategic plan for improved bus transportation	2020	MOT
<b>Eng15</b> Draft new guidelines/standards on road classification to clarify hierarchy, access management and planning controls	2022	MOW
<b>Eng16</b> Implement strategic plan related to overloaded commercial vehicles	2022	MOW
<b>Eng17</b> Draft new guidelines/standards on provision of service roads, footpaths, pedestrian, cycle and motorcycle lanes, etc.	2023	MOW
<b>Eng18</b> Publish manual on roadside hazards/safety	2023	MOW
<b>Eng19</b> Carry out review of all existing highways, including road safety	2024	MOW

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Improvement Area		
audits and publish recommendations to improve safety on existing and future projects		
<b>Eng20</b> Prepare and publish improved standards and guidelines for safety in construction zones	2023	MOW
Long-term – (Beyond 2026)		
<b>Eng21</b> Publish data led annual blackspot program funded and implemented with local resources	2026 onwards	MOW
<b>Eng22</b> Publish guidelines on intersection (roundabout) design, particularly signalization and implement national program to optimize capacity and safety at traffic signals in all cities	2026	MOW
<b>Eng23</b> National program to improve safe travel options for vulnerable road users including bus transport accessibility for elderly and children	2020	MOW

## 5.0 SAFER VEHICLES

### (This includes safety equipment, such as Occupant Restraints)

It is vital to ensure that every vehicle used on the road is of a high safety standard in that the vehicle should be able to protect its user and people involved in a collision, minimizing any injuries to themselves or other road users.

**Objective:** *Ensure that vehicles imported and sold in Belize are in line with international new car assessment standards.*

Improved road safety can be gained through periodic inspection of registered vehicles and techniques to prevent defective, road unworthy or unsafe vehicles from using public roads.

Improvements to vehicles can increase safety at two levels: by reducing the severity of the injury in the event of a crash (crash protection); and by preventing a crash altogether (crash avoidance). The benefits from these two forms of safety improvement take time to accumulate, as they depend on the rate of fleet turnover as improved vehicle designs penetrate the market.

Crash protection or secondary safety or passive safety	Protection in the event of a crash e.g. seat belts, airbags, front and side impact protection
Crash avoidance or primary safety	Devices to avoid a crash e.g. daytime running lights, electronic stability control, intelligent speed adaptation, alcohol interlocks

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The term “*active safety*” is often used to mean crash avoidance but care should be taken in its use since it can also mean deployable systems such as crash-protective pop-up bonnets for pedestrian protection.

Vehicle design is fundamental to a safer traffic system which requires safe interaction between users, vehicles and the road environment. Vehicle design, which takes account of the behavioural and physical limitations of road users, can address a range of risk factors and help to reduce exposure to risk, crash involvement and crash injury severity. To date, vehicle engineering for improved safety has usually been directed towards modifying a vehicle to help the driver avoid a crash, or to protect those inside in the event of a crash. Recently, attention in Europe has been given to crash protective design for those outside the vehicle.

Vehicle engineering improvements for safety have been achieved by modifying the vehicle to help the driver or rider avoid a crash and by modifying the vehicle to provide protection against injury in the event of a crash for those inside and outside the vehicle.

As has already been mentioned, achieving significant reductions in the overall amount of human trauma (number of fatalities and number and severity of injuries) from road crashes can be best achieved through a safer system approach involving the driver, the roadway and the vehicle. The role of the vehicle in a safe system approach cannot be overlooked.

There is an expectation that all vehicles should be inspected annually and also on re-licensing.

Many “used” vehicles imported into Belize come from the US. They are generally vehicles that have been “written” off in the US, particularly salvage vehicles which were involved in floods, etc. These vehicles are re-built and exported to countries like Belize. Any flood damaged vehicles previously “salvaged” should carry a certificate of destruction. The Government of Belize does have anti-dumping laws which means the vehicles cannot just be dumped in Belize but currently they cannot stop vehicles being imported. Any imported vehicles are subject to taxes and excise fees. Other issues related to imported vehicles include:

- The Customs Office and the Ministry of Transportation can prevent the registration of imported vehicles. There needs to be greater sharing of vehicle registration between these two organizations.
- Vehicles should not be registered if the airbag has deployed and not been replaced. The presence of seat belts (in line with manufacturer’s original installation) should be checked when registering the vehicle.
- Some vehicles are registered as “Taxis” in the Ministry of Transport, yet they were not imported as “Taxis”.
- The Bureau of Standards needs to monitor the import of sub-standard motorcycle helmets.
- There are issues with the importing of tyres, declared as “used”, which are in fact sub-standard.

## **The use of seat belts and child safety seats in Belize**

Laws presently exist for the use of seat belts for drivers and front seat passengers only **while on the highway** and there are no laws requiring the use of Child Safety Seats (to avoid parents carrying babies/toddlers on their laps). However, a Statutory Instrument is being developed. (at the time this report is being prepared) The new regulations will require all occupants to use the seat belt in the back and the front, and on all roads (highway and urban).

The introduction of Child Safety Seats will require a comprehensive education component.

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## Other vehicles

Some regions in Belize use other types of vehicles, such as 2 and 3-wheel vehicles, all-terrain vehicles and golf carts to address specific regional needs. Further investigation is required to assess the frequency and type of collisions that take place involving these types of vehicles. Local plans can then be developed and implemented to address the identified issues.

## Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>V1</b> Strengthen the management of vehicle registration by improving the technical safety quality and traffic environmental protection	2017	DOT
<b>V2</b> Improve coordination between partners for detection of dangerous vehicles	2017	DOT, Police
<b>V3</b> Investigate collisions involving other vehicles, such as ATV's, 2 & 3 wheel vehicles and golf carts	2017	DOT, Police
<b>V4</b> Improve the coordination between partners regarding the registration of “used” imported vehicles	2017	DOT, Customs & Excise, Bureau of Standards
<b>V5</b> Develop and implement a policy with respect to the <i>importation</i> of vehicle equipment, such as tyres, headlights, and motorcycle and bicycle helmets.	2017	DOT, Customs & Excise, Bureau of Standards
<b>V6</b> Develop mechanisms and database management between the Transportation Department, Customs and Excise and the Police	2018	DOT, Customs & Excise, Police
<b>V7</b> Implement the new seat belt regulations	2016	DOT, Police
<b>V8</b> Monitor the use of seat belts by all occupants	2017	Police
<b>V9</b> Confirm legislation is in place for the use of age-specific child safety seats.	2017	DOT, NRSC
<b>V10</b> Promote the purchase and use of child safety seats. Consider providing financial incentives for parents.	2018	NRSC
Medium- to Long-term – (Beyond 2020)		
<b>V11</b> Promote the importance of buying safer vehicles or vehicles with better safety equipment to consumers	2020 onwards	NRSC
<b>V12</b> Monitor the introduction and usage of child safety seats	2020	DOT, Police

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## 6.0 SAFER ROAD USERS

This section includes:

### 6.1 Driver training and testing

**Objective:** *Consistent and improved training and education of drivers through more rigorous screening of learner /novice drivers.*

There seems to be a lack of any formal driver training program throughout the country. Learners' permits can be purchased after 2 weeks studying a list of potential questions that they will be asked when they go for the written test. If they pass they get a learner's permit. A practice period of 2 weeks is then required before the driver can go to take the driver's test. This is far below international good practice.

The Government of Belize is currently finalizing a new Safe Drivers' Manual. Once this is completed it is expected that all new drivers will be questioned on its content as a requirement for getting a driver's license.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>TT1</b> Establish a committee of relevant partners and stakeholders to review current practice for training and testing of drivers with the ultimate goal of establishing a single, countywide procedure for training and testing of new drivers	2016	DOT
<b>TT2</b> Consider a program of training for commercial vehicle operators, specifically trucks, buses and taxis	2016	DOT
<b>TT3</b> Update syllabus to better fit the learner population – with a focus also on commercial drivers	2019	DOT
Medium-term – (2021—2026)		
<b>TT4</b> Establish selection, syllabus and training methods of practical driving instructors	2021	DOT
<b>TT5</b> Update selection, syllabus and training methods of examiners	2022	DOT
<b>TT6</b> Reduce the amount of time for class-room teaching of knowledge, and rely more on modern media	2023	DOT
<b>TT7</b> Focus much more on on-the-road, in real traffic, driver training	2023	DOT
Long-term – (beyond 2026)		
<b>TT8</b> Invest more in professional drivers; in- service advanced training	2026	DOT
<b>TT9</b> Fully autonomous training and testing centres should be piloted	2030	DOT

# Belize Long Term Road Safety Plan

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## 6.2 Driver licensing

**Objective:** *Establish a centralized, online, driving license registry system with facilities to print and issue license documents of international standard.*

The Department of Transport (DOT), shares responsibility with the nine municipalities for licensing and registration of motor vehicles. With these 10 agencies responsible for licensing, standards for driver training and vehicle inspection are not uniformly applied across the country. The sharing of driver licensing data and other relevant driver information is also challenging leading to good practice in the monitoring of drivers, particularly of those that have frequent violations. The driver licensing systems in place are not yet fully computerized which is another reason for the lack of sharing of data.

**Graduated driver licensing** systems (GDL) are designed to provide new drivers of motor vehicles with driving experience and skills gradually over time in low-risk environments. There are typically three steps or stages through which new drivers pass. They begin by acquiring a learner's permit, progress to a restricted, provisional or probationary license, followed by receipt of a full driver's license.

Graduated drivers' licensing generally restricts nighttime, freeway, and unsupervised driving during initial stages, but lifts these restrictions with time and further testing of the individual, eventually concluding with the individual attaining a full driver's license.

In most countries that have such schemes this process can take between 2 and 3 years. The "gold standard" that has emerged in graduated driver licensing (GDL) has been widely adopted throughout Canada, the United States, and Australasia. While GDL programs may vary across jurisdictions, research has demonstrated the safety value of the graduated licensing approach over more conventional ones (Shope 2007; Simpson 2003).

A **penalty point** or **demerit point** system is one in which a driver's licensing authority, police force, or other organization issues cumulative demerits, or *points* to drivers on conviction for road traffic offenses. Points may either be added or subtracted, depending on the particular system in use. A major offense may lead to more than the maximum allowed points being issued. Points are typically applied after driving offenses are committed, and cancelled a defined time, typically a few years, afterwards, or after other conditions are met; if the total exceeds a specified limit the offender may be disqualified from driving for a time, or the driving license may be revoked. Fines and other penalties may be applied additionally, either for an offense or after a certain number of points have been accumulated.

The primary purpose of such point systems is to identify, deter, and penalize repeat offenders of traffic laws, while streamlining the legal process.

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In jurisdictions which use a point system, the police or licensing authorities (as specified by law) maintain, for each driver, a driving score—typically an integer number specified in *points*. Traffic offences, such as speeding or disobeying traffic signals, are each assigned a certain number of points, and when a driver is determined to be guilty of a particular offence (by whatever means appropriate in the region's legal system), the corresponding number of points are added to the driver's total. When the driver's total exceeds a certain threshold, the driver may face additional penalties, be required to attend safety classes or driver training, be subject to re-examination, or lose his/her driving privileges. The threshold(s) to determine additional penalties may vary based on the driver's experience level, prior driving record, age, educational level attained, and other factors. In particular, it is common to set a lower threshold for young, inexperienced motorists. In some jurisdictions, points can also be added if the driver is found to be significantly at fault in a traffic collision. Points can be removed from a driver's score by the simple passage of time, by a period of time with no violations or collisions, or by the driver's completion of additional drivers' training or traffic safety training.

Major traffic offenses, such as hit and run or drunk driving may or may not be handled within the point system. Such offenses often carry a mandatory suspension of driving privileges, and may incur penalties such as imprisonment.

In British Columbia, Canada an **administrative driving prohibition** is a 90-day driving prohibition issued to impaired drivers under the Motor Vehicle Act. It is separate from any Criminal Code charges that may result from the same incident. These prohibitions are issued by the Office of the Superintendent of Motor Vehicles.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>DL1</b> Establish a committee of relative partners and stakeholders to review current processes for licensing drivers	2016	DOT
<b>DL2</b> Establish a committee of relative partners and stakeholders to review good practice Graduated Driver License programs	2016	DOT
<b>DL3</b> Develop a strategic plan to introduce a single driver license database for Belize	2017	DOT
<b>DL4</b> Determine the appropriate requirements of a graduated driver license program for Belize	2018	DOT
<b>DL5</b> Research international good practice as it relates to driver licensing sanctions	2017	DOT
Medium-term – (2021-2025)		
<b>DL6</b> Implement graduated driver license program	2021	DOT

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<b>DL7</b> Introduce consistent driver licensing standards that meet international standards	2022	DOT
<b>DL8</b> Establish a single/on-line driver licensing database shared by all regions	2024	DOT
<b>DL9</b> Develop a program of driver licensing sanctions	2022	MOT
<b>Long-term – (beyond 2026)</b>		
<b>DL10</b> Introduce sanctions for drivers	2026	DOT
<b>DL11</b> Continue to monitor and improve driver licensing system	ongoing	DOT

### 6.3 Police Enforcement

**Objective:** *More efficient, consistent and effective traffic police enforcement by the use of better enforcement tactics, effective deployment of police personnel and the upgrading of equipment in line with international good practice.*

One of the major roles of enforcement in traffic safety is deterring unsafe behaviours. The level of deterrence is related not only to the *actual* level of enforcement but also to the *perceived* level of enforcement. The success of enforcement is dependent on its ability to create a meaningful deterrent threat to road users. To achieve this, the primary focus should be on increasing surveillance levels to ensure that perceived apprehension risk is high. Significantly increasing the actual level of enforcement activity is the most effective means of increasing the perceived risk of apprehension. Publicity related to enforcement can increase the perceived level of enforcement and thus further reduce unsafe behaviours.

The use of periodic, short-term intensive enforcement operations (blitzes) can be a more cost effective enforcement option; however, the effect on road user behaviour may be reduced.

The use of selective enforcement strategies, designed to specifically target high risk road user behaviour and high crash locations is another cost effective alternative.

In addition, if the risk of apprehension is high then the use of legal sanctions, such as licence suspension and revocation procedures can be an effective deterrent.

In 2014 a Strategic Enforcement Plan was developed by the Ministry of Transportation which articulates the Road Safety Corridor Project Traffic Enforcement Program priorities over the next three years. As road safety is an evolving issue, this Plan is meant to be flexible and to enable partners to proactively respond to emerging issues or new opportunities to address road safety in Belize. The Plan is a guide for program resource allocation and the development of traffic enforcement operational plans. It also provides the framework for establishing annual priorities and plans for enhanced enforcement within the context of the national highway and road network, road safety efforts being undertaken by the Ministry of Works, the Department of Transport, The Police Department, the two Municipalities at each end of the Corridor, in addition

## Belize Long Term Road Safety Plan

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to other Ministries, partners and stakeholders. Improved communication and collaboration supports program priorities and the evolutionary process, through which the program will remain focused, relevant and effective.

This Plan ensures that traffic enforcement priorities can be identified, addressed and delivered within budgetary allocation and is aligned with national and municipal traffic enforcement and road safety partner priorities. The Strategic Enforcement Plan is accountable, performance-based and evidence-led and works in an integrated manner with national enforcement priorities, and road safety stakeholders.

The Plan's guiding principles are:

- Participatory, Respectful & Inclusive
- Research-driven, Intelligence-led
- Data Driven
- Alignment with Stakeholder Goals

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# Belize Long Term Road Safety Plan

The Plan includes training, communication and implementation as key activities.

## STRATEGIC PLAN AT A GLANCE

### Mandate

Reduce traffic accidents and change driver behavior in Belize through targeted enforcement and awareness efforts

### Underlying Principles

- Ensure the appropriate allocation of human and financial resources to achieve the mandate and objectives
- Ensure the necessary infrastructure is provided and maintained to deliver tactics and meet objectives
- Foster and facilitate collaborative working relationships with partners/stakeholders to leverage existing initiatives and to assess emerging or new initiatives
- Articulate program priorities supported by data research, and support best practices and appropriate enforcement tools/ strategies to target behaviors (i.e campaigns, technology, legislation, awareness and driver programs)

### Goals

1. Target and Reduce High Risk User Behaviors

2. Dangerous Driving and Vehicle Crime

3. Support Road User Behavioral Change

4. Foster Communication & Collaboration

### Desired Outcomes

- Downward trend in the rate of the top causal factors that contribute to casualty crashes
- Road users have an increased perception of 'risk of apprehension'
- Impaired fatality rate has been studied

- Rates of vehicle crime are reduced
- Surveyed support for vehicle crime enforcement initiatives
- Road Rage

- Road users are aware of communications that support targeted traffic enforcement campaigns
- Road users change behaviour(s) as a result of awareness messaging

- Balanced budget supports key priorities
- Partners' resources are satisfied with program communication and demonstrate an understanding of the program's key messages
- Stakeholders support DOT and use key messages when communicating to public

## Belize Long Term Road Safety Plan

Ultimately, this Plan will guide the development, delivery and evaluation of tactics and initiatives to help make Belize roads the safest roads in Central America and the Caribbean.

Discussion should take place with the goal of delivering a consistent and comprehensive traffic enforcement program involving all enforcement agencies at the National and local levels.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>EN1</b> Confirm enforcement strategic planning team with representatives from all levels of police	2016	DOT
<b>EN2</b> Identify communication needs to ensure optimal communications between all police agencies	2016	DOT with NRSC
<b>EN3</b> Improve coordination mechanisms and implement enforcement campaigns as an essential part of traffic safety public awareness campaigns	2017	DOT
<b>EN4</b> Improve coordination mechanisms and establish a protocol for police action at a collision site	2017	DOT
<b>EN5</b> Agree on the specifications and design of an electronic, integrated driver, vehicle and violation information system	2018	DOT
<b>EN6</b> Review potential and details of automated enforcement programs, such as for speeding and red-light running	2018	DOT
<b>EN7</b> Develop protocols and procedures related to electronic enforcement to ensure consistency	2019	DOT
Medium-term – (2021-2025)		
<b>EN8</b> Introduce a pilot (intelligence-led) targeted enforcement program	2021	DOT
<b>EN9</b> Develop a career structure and training needs for traffic enforcement police	2021	Police
<b>EN10</b> Gain support from senior police officers of the importance of traffic enforcement that they will provide adequate resources	2022	Police
<b>EN11</b> Identify modern equipment needs including police vehicles and develop a staged purchase of new equipment	2023	DOT/Police
<b>EN12</b> Improve regulations related to enforcement	2023	DOT
<b>EN13</b> Establish a benchmark for police attendance at collisions	2023	Police
<b>EN14</b> Develop and implement a monitoring and evaluation protocol of enforcement activities	2024	DOT/Police
<b>EN15</b> Improve role of police in monitoring unsafe and old vehicles through mobile enforcement	2024	DOT
<b>EN16</b> Develop a national major incident plan	2024	Police

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## 6.4 Road Safety Education

**Objective:** *Improve child, teenage and young adults' capability of coping with the dangers of traffic by teaching them safer road user behaviour and survival skills.*

In countries that are considered to be good practice, formal education and lifelong learning are encouraged and materials developed for school age children. Wherever possible, road safety education should be integrated into other subjects, rather than being taught as a stand-alone subject. This cross-curricular teaching approach is a more effective way of reinforcing road safety messages. Children need frequent and small amounts of teaching to be able to develop the desired road safety skills, knowledge and attitudes. Ideally, all new materials produced should provide teaching resources for both subject specific and cross- curricular teaching.

The objective of the **Curriculum Consultancy** (during the Belize Road Safety Project) was to assist the Ministry of Education, Youth and Sports strengthen the focus of road safety in the curricula for Early Childhood, Primary and Secondary education. This has been achieved through the development of a Road Safety Curriculum that is supported by pedagogical resources and materials that have been developed to provide guidance and instruction to teachers and to facilitate interactive and practical learning. The Road Safety Curriculum will not be a stand-alone subject within the national education framework; rather it will be integrated into the delivery of the Health and Family Life Education and Social Studies curricula. Over 170 teachers, education officers, traffic officers and other delivery partners have been trained to ensure effective delivery of the Road Safety Curriculum.

### **Belize Youth for Road Safety (BYRS)**

The BYRS was established in 2014. Its mission is: *"Youths encouraging, empowering and inspiring others to become advocates of road safety by generating awareness, using innovative and interactive activities to reduce the numbers of road traffic deaths and injuries in Belize"*.

Their main objective is targeting a minimum of 2000+ youth between the ages of 16-29 to disseminate workshops with a youthful vibe/ youth friendly manner that will assist in the learning of Drunk Driving, Distracted Driving, Speeding and get them to understand the concept of the importance of Road Safety in Belize.

They play a key role in teaching road safety in schools as part of the newly established School Curriculum Program.

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## Recommended strategic interventions

<b>Improvement Area</b>		
<b>Short term - (2016-2020)</b>		
	<b>Timeline</b>	<b>Coordinating agency</b>
<b>RSE1</b> Pilot study complete and Road Safety Curriculum implemented nationally.	2016	MOEYS/NRSC
<b>RSE2</b> Toolkit includes mock pedestrian training equipment to support off-road training.	2016	MOEYS/NRSC
<b>RSE3</b> The road safety toolkit should be disseminated to all schools to support delivery of the Road Safety Curriculum.	2016	MOEYS/NRSC
<b>RSE4</b> Conduct training for all traffic officers supporting schools in the delivery of the Road Safety Curriculum.	2017	MOEYS/NRSC/DOT
<b>RSE5</b> Implement recommendations into the Associate of Arts in Primary Education and provide training for relevant university lecturers.	2017	MOEYS/Teacher Training Institutions
<b>RSE6</b> Each school should appoint a Road Safety Champion who coordinates and facilitates road safety education in the school.	2017-2018	MOEYS
<b>RSE7</b> Annual refresher training is provided for teachers and traffic officers.	2017-2018	MOEYS/NRSC/DOT
<b>RSE8</b> Establish a national School Road Safety Patrol programme and train volunteer students and teachers.	2019	MOEYS/NRSC
<b>RSE9</b> Develop and implement minimum safety requirements for school buses in line with international best practice.	2020	MOEYS/NRSC/DOT
<b>Medium term – (2021-2025)</b>		
<b>RSE10</b> Introduce road safety questions into relevant academic examinations.	2021	MOEYS
<b>RSE11</b> Develop and implement a national road safety education policy specifying a minimum of 10 hours of road safety teaching per academic year.	2021	MOEYS
<b>RSE12</b> A national road safety education conference should take place to showcase good practice and review progress to date.	2021	MOEYS/NRSC
<b>RSE13</b> Develop a road safety education web portal that provides online information and interactive support for parents, students and teachers.	2021-2022	MOEYS/NRSC
<b>RSE14</b> Establish a formal Safer Routes to School Programme.	2023	MOEYS/NRSC/ MOW/DOT
<b>RSE15</b> Undertake a comprehensive review of the Road Safety Curriculum and consider expanding it to ensure	2025	MOEYS

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integration through all curricula subjects.		
<b>Long term - (Beyond 2026)</b>		
<b>RSE16</b> Develop an online tool to support the monitoring and evaluation of road safety education.	2025	MOEYS/NRSC

## 6.5 Road Safety Campaigns

**Objective:** *Improvements in road safety through more effective and coordinated publicity and advocacy campaigns.*

A cornerstone of any road safety strategy is an educational program to positively influence drivers (of all types of vehicles), motorcyclists and vulnerable road users including pedestrians, cyclists and mature/experienced road users. In addition it should:

- influence road user culture and attitudes towards road safety;
- raise awareness of what constitutes safer behaviour; and
- remind road users when their behaviour is unsafe.

Education and behavioural change are incremental processes. Significant and sustainable improvements will not be achieved overnight.

A road safety publicity campaign is part of a set of activities which aim to promote safe road use. Mass media advertising is often the most visible component of a campaign, however to be effective, this must be combined with visible government and/or community support, particularly law enforcement. The effectiveness of publicity campaigns when they are combined with highly visible enforcement has led to substantial reductions in drunk driving in Australia and Europe.

For example, publicity about the number of deaths and injuries caused by speeding, combined with information about how lower speeds reduce the number of deaths and injuries, may change attitudes to speeding, or make lower speed limits and higher penalties for infringements more acceptable. While the presence of traffic law enforcement is essential, supporting campaigns are vital in elevating the profile of speeding as an issue which is legitimate for the police to pursue and to make drivers aware of the consequences of this activity.

Research in many countries has shown that a publicity campaign by itself has only a modest impact on attitudes and behaviour. Campaigns work best when combined with other interventions, such as enforcement of traffic laws and regulations, or provision of other safety services and products. A “behaviour change” campaign must include enforcement.

It is vital to evaluate the effectiveness of road safety campaigns. There should be a strong and obvious link between the evaluation to be conducted and the campaign objectives which must be measurable.

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Assessing changes in knowledge, attitude and behaviour targeted by a media campaign is an essential element of the evaluation process.

In the early part of 2015 a comprehensive communications and campaign strategy was developed, from which many recommendations were made.

## **Long-term strategy for communications.** (From consultant report)

There are some important strategies that are recommended as part of this campaign to help strengthen future initiatives associated with road safety campaigns. First, as each campaign is delivered, the lead agency for the campaign is encouraged to document:

- > what strategies, tools and partnerships worked well;
- > what barriers were encountered and how were they overcome;
- > what features of campaigns produced the strongest and weakest responses and why; and,
- > what lessons were learned from campaign delivery that can inform future efforts.

Careful tracking of these experiences can help to identify opportunities to improve future road safety campaigns and increase efficiencies as well as outcomes associated with them.

Second, the lead agency should undertake a brief survey of all stakeholders who contributed to campaign development and dissemination in order to gauge what strategies they feel worked best and to identify any gaps or barriers that they encountered that hindered their participation.

Third, road safety stakeholders should seek opportunities to maintain and continue to build upon partnerships that were established during the campaign. To this end, once the campaign is well-established, it may provide value for road safety stakeholders to meet regularly as a road safety stakeholder committee to tackle related priority road safety issues that are an ongoing source of concern. The objective of this committee would be to develop achievable strategies, and work with politicians and leaders to pursue other road safety objectives. Based on survey and focus group results, two high demand issues are:

- > Implementing a national driver education and driver licensing program that is designed to educate drivers about road safety issues before they get behind the wheel and ensure they learn to drive under low-risk and protective conditions prior to obtaining full licensure.
- > Improve commercial vehicle licensing requirements to ensure all drivers of commercial vehicles are well-trained and adopt safe driving habits which are essential in light of the significant consequences resulting from collisions involving heavy trucks and other public transportation vehicles.

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## Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>C1</b> Review recommendations from Consultant report and commit to the long term communications and campaign strategy	2016	NRSC
<b>C2</b> Set standards and guidelines for usage of publicity and media for RS campaigns	2016	NRSC
<b>C3</b> Formalize and develop implementation plan for national strategic campaign plan	2016	NRSC
Medium-term – (2021-2025)		
<b>C4</b> Using accurate data, identify behaviours to be targeted and target audiences so that campaigns have a clearer focus	2020 onwards	NRSC
<b>C5</b> Promote traffic safety in communities, schools, state agencies and governments at all levels	2020 onwards	NRSC
<b>C6</b> Evaluate effectiveness of campaigns	2022	NRSC
Long-term – (beyond 2026)		
<b>C7</b> Raise awareness about building a traffic safety culture in society	2025 onwards	NRSC

## 6.6 Cross-Cutting Issues

### Road Safety Matrix

Some key road safety risk factors will require a combination of several interventions, working in harmony. Some of the risk factors may be required to be focused on a specific target audience, ensuring that resources are used in the most efficient and effective way.

The initiatives in the matrix are intended to address the key target groups and contributing factors that need to be addressed to improve road safety in Belize. The integration of these factors is key to its success.

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Target groups	Major Contributing factors			
	Occupant protection	Impaired driving (alcohol, drugs, fatigue, distraction)	Speed/ Aggressive driving	Infrastructure Roads/ vehicles
Young drivers				
Medically at risk drivers				
Vulnerable Road Users				
Motor Carriers				
High-risk drivers				
General population				

The key groups of drivers being targeted are defined as follows.

**Young drivers:** Drivers under the age of 25 years.

**Medically-at-risk-drivers:** Drivers whose existing medical condition may affect the safe operation of their vehicles, their occupants and the safety of other road users would be targeted under this group (e.g.: epilepsy, ischemic heart disease etc.). This includes driver performance, related to the aging process, deemed to be outside of the boundaries of normal driving behaviour (e.g.: poor cognitive or perception skills, slow reaction time to decision-making situations, visual or auditory limitations) that may result in collisions.

**Vulnerable road users:** Pedestrians, motorcyclists and cyclists and persons in personal mobilized devices (e.g.: motorized wheelchairs and scooters).

**Motor carriers:** A person or entity who is responsible for a commercial vehicle, whether transporting people or goods (e.g. driver, carrier).

**High-risk drivers:** Repeat offenders with patterned illegal driving behaviours (e.g.: recurring incidences of alcohol/drug impaired driving, traffic violations, collision involvement or suspended/prohibited drivers).

**General population:** Road users who benefit from strategies/ interventions/ regulations/ legislation introduced to make roads, vehicles and road users safer.

The key causes of collisions being targeted are defined as follows.

**Impaired Driving:** Includes all forms of impairment, such as impairment resulting from the ingestion of a substance (alcohol, drugs (prescription, over-the-counter or illicit)), as well as due to actions that result in driver impairment from natural causes (fatigue or distracted behaviours).

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**Speed & Aggressive Driving:** Includes driving at speeds beyond posted legal limits on all road types in urban and rural settings, and driver behaviours deemed outside of socially acceptable norms that put other road users at risk of injury or contribute to crashes and casualties. It also includes driving too fast for road conditions.

**Occupant Protection:** Includes issues pertaining to proper restraint use among all road users, vehicle technology enhancements (crashworthiness and crash-avoidance) and safer roads (e.g. dangerous roadside obstacles, lighting, signage, etc.).

**Environmental Factors:** Includes issues/factors that may affect the likelihood of crash occurrence (e.g. roadway configuration, roadway construction, road surface condition, road and roadside design, weather conditions, urban and rural infrastructure, etc.).

For each target group and contributing factor there may be more than one intervention or strategy. These strategies can address users, infrastructure or vehicles or some combination of these factors. In many cases, the effectiveness of some program elements can be short-lived without a simultaneous and sustained application of other elements (e.g. enforcement efforts working in concert with communication and awareness). The strategies might include any of the following components:

- Education/training
- Communication and awareness
- Enforcement
- Information/data/research
- Policy/legislation/regulation
- Technologies
- Road infrastructure

## 6.7 Post-Crash Response

**Objective:** *Building, supplementing and strengthening the emergency medical system at all levels with full capacity to handle injury accidents in general and traffic accidents in particular, in order to reduce the fatalities and their consequences, meet emergency medical requirements and reach standards similar to other regional nations.*

Injury is a major cause of premature death and disability worldwide. Most existing injury control strategies focus on primary prevention – that is, avoiding the occurrence of injuries or minimizing their severity – or on secondary prevention – providing adequate emergency medical response to enhance treatment and thereby minimise harm following an injury.

In many instances the prompt provision of emergency medical care and rapid movement of injured casualties from the scene of injury to an appropriate health-care facility can save lives, reduce the incidence of short-term disability and dramatically improve long-term outcomes.

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Many fatal injuries may be prevented or their severity reduced by adequate pre-hospital trauma care. The major benefits of pre-hospital care are realised during the second phase of trauma, when the timely provision of care can limit or halt the cascade of events that otherwise quickly leads to death or lifelong disability. Without pre-hospital care, many people who might otherwise survive their injuries may die at the scene or en-route to the hospital.

### Recommended strategic interventions

Improvement Area		
Short-term – (2016-2020)		
	Timeline	Coordinating agency
<b>PCR 1</b> System design for Basic Life Support	2016	MoH
<b>PCR 2</b> Staff Clinical Competency for Emergency Medical Technician (EMT)	2016	MoH
<b>PCR 3</b> Develop paper based Patient Report Form	2016	MoH
<b>PCR 4</b> Following assessment of initial procurement of 2 ambulances consider procurement of Emergency Ambulances for other corridors	2017	MoH
<b>PCR 5</b> Introduction of basic radio voice communications	2017	MoH
<b>PCR 6</b> Confirm standardized clinical interventions, such as Airway management, Haemorrhage control	2016	MoH
<b>PCR 7</b> Response standards to scene of the incident in <b>8 minutes 60% of the time.</b>	2016	MoH
<b>PCR 8</b> Incident response time to ER in <b>60 minutes 70% of the time</b>	2016	MoH
<b>PCR 9</b> Community support through <i>volunteers</i>	2017	MoH
<b>PCR 10</b> Control/Dispatch Centre in Multiple centres	2017	MoH
Medium-term – (2021-2026)		
<b>PCR 11</b> System design for Advanced Life Support	2022	MoH
<b>PCR 12</b> Staff Clinical Competency for Paramedic	2022	MoH
<b>PCR 13</b> Develop Electronic Patient Report Form (ePRF)	2023	MoH
<b>PCR 14</b> Procurement of Mobile Intensive Care Unit	2023	MoH

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Improvement Area		
<b>PCR 15</b> Introduction of Automatic vehicle location, digital communications	2023	MoH
<b>PCR 16</b> Confirm standardized clinical interventions, such as Intubation, infusion inter osseous injection	2024	MoH
<b>PCR 17</b> Response standards to scene of the incident in <b>8 minutes 80% of the time.</b>	2024	MoH
<b>PCR 18</b> Incident response time to ER in <b>60 minutes 90% of the time</b>	2024	MoH
<b>PCR 19</b> Community support through <i>First Responders</i>	2025	MoH
<b>PCR 20</b> Establish dedicated single EMS Control Centre	2025	MoH
<b>Long-term (beyond 2026)</b>		
<b>PCR 21</b> Staff Clinical Competency for Critical Care Practitioner (CCP)	2028	MoH
<b>PCR 22</b> Develop Clinical Data (ECG) transmission	2080	MoH
<b>PCR 23</b> Procurement for Helicopter Emergency Medical Service	2030	MoH
<b>PCR 24</b> Introduction of Highly integrated communication systems	2030	MoH
<b>PCR 25</b> Confirm standardized clinical interventions, such as Rapid Sequence Induction, enhanced pain relief	2030	MoH
<b>PCR 26</b> Response standards to scene of the incident in <b>8 minutes 95% of the time</b>	2030	MoH
<b>PCR 27</b> Incident response time to ER in <b>60 minutes 100% of the time</b>	2030	MoH
<b>PCR 28</b> Establish Integrated EMS & Health Control Centre	2030	MoH

## 7.0 CLOSING

Even with a clear mission, direction and targets that have been mutually agreed, this National Road Safety Master Plan will not be effective without any follow-up and immediate and necessary concrete steps from all the partners and stakeholders involved in the implementation of the initiatives. For that purpose, the process of dissemination of this document and the active involvement of all stakeholders should be pursued and their support confirmed.

Development of this Belize Road Safety Master Plan to 2030 has been based on the direction that has been determined for the achievement of ideals into the future. Over the period of the strategy (15 years) there may well be a fundamental change in the recommended direction and detailed interventions. If this is the case, the established targets may also need to be adjusted. It is therefore strongly recommended that this Road Safety Master Plan be assessed at least once every 5 years, to ensure the expected outcomes are still realistic. Should significant changes take place to the recommended direction contained in this long-term strategy, it may be necessary to identify and revise new targets, strategies and policies that are influenced by the identified changes in the implementation direction.

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