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Natural Resources
Canada

Ressources naturelles
Canada

Canadian Perspectives on Tire Minimum Energy Performance Standards (MEPS)

California Workshop – Tire Efficiency Program Information
February 18, 2021

Canada

Outline

- Natural Resources Canada – Fuel Diversification Division Overview
- Climate Change Policy & Regulatory Drivers
- Climate Change Action – What is Canada Doing?
- Light-duty Vehicle Tires – Current Status in Canada
- International Developments
- Tire Design Metrics and Performance Attributes
- Canada's Tire Market / Segments of Interest
- Tire Testing & Results
- Benchmarking Analysis
- MEPS Development and Regulatory Process
- Tire Performance Label Development
- Key Takeaways



NRCan-Fuel Diversification Division Overview

- Co-leading Government of Canada efforts to support fuel diversification in the transportation sector; including support for infrastructure, awareness, greening freight, greening government operations, and codes and standards (low carbon fuels and tires)
- Implementing a comprehensive Hydrogen Strategy for Canada (including delivering new programming to advance the production and use of hydrogen in Canada; and working with a diverse and broad stakeholder and intergovernmental community to deliver the Strategy)
- Providing implementation support for the Clean Fuel Standard (including developing and implementing complementary programs to increase domestic production of low carbon fuels)
- Delivering on multiple international commitments and initiatives for clean fuels and low carbon transportation, through the Clean Energy Ministerial and various country level MOUs



Climate Change Policy & Regulatory Drivers

Pan-Canadian Framework (PCF) for Clean Growth and Climate Change (2016)

- 3% energy efficiency improvement per year
 - 30% reduction in GHGs by 2030
 - Net-zero by 2050

Minimum Energy Performance
Standard (MEPS)
+
Tire Consumer Information Program
(TCIP)

International Regulatory Alignment

- Global Technical Regulations
 - UN-ECE R117
 - NHTSA FAST

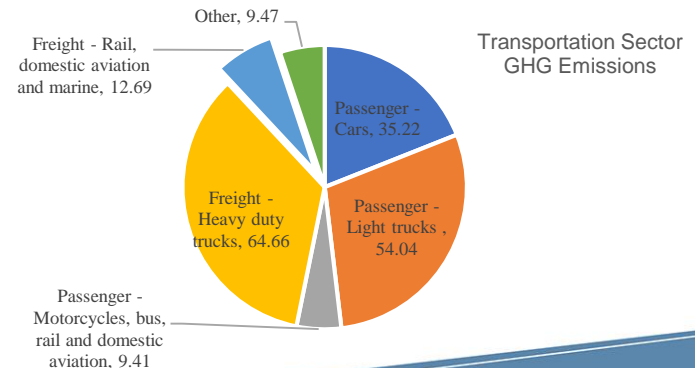
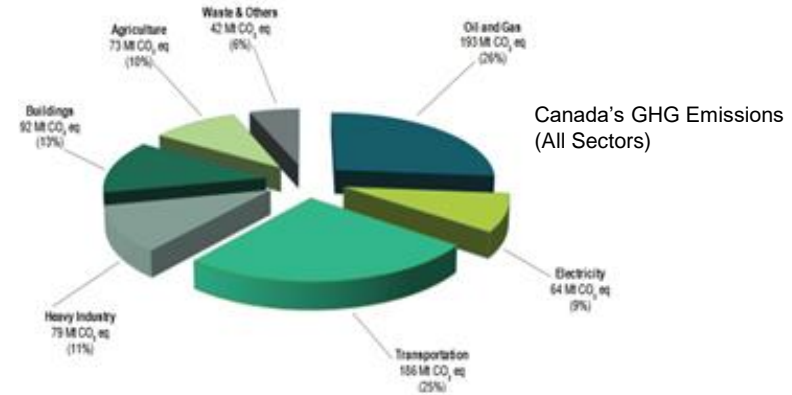
Domestic Regulatory Alignment

- Transportation 2030
 - Regulatory Reconciliation and Cooperation Table (RCT)



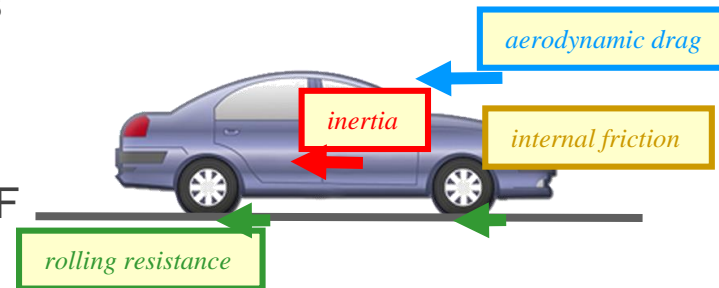
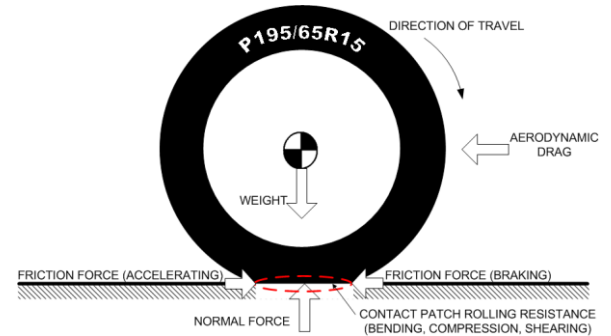
Climate Change Action – What is Canada Doing?

- The Enhanced Climate Plan “A Healthy Environment and a Healthy Economy” builds upon the “Pan Canadian Framework for Clean Growth and Climate Change”
- Includes 64 measures and \$15B in investments in addition to the Canadian Infrastructure Bank’s \$6B for clean infrastructure
- Some of the key actions under the plan include:
 - Clean Fuel Standard
 - Carbon Pricing
 - ZEV Incentives
 - Green home retrofits
 - Clean Fuels Fund



Light-duty Vehicle Tires – Current Status in Canada

- Tires are critical components that allow for control, stability, and comfort of on-road vehicles.
- Safety requirements for new or imported tires (for light-duty vehicles under 4,536 kg / 10,000 lbs) in Canada have been regulated under the Motor Vehicle Safety Act (Motor Vehicle Tire Safety Standards) since 1995.
- Currently there are no minimum energy performance standards (MEPS) or tire consumer information programs (TCIP) available to Canadian consumers to help them choose “energy efficient” light-duty vehicle replacement tires.
- However, there is a regulatory commitment under the PCF for a MEPS for light-duty tires.



International Developments

2011 (NRCan began consultations with Tire and Rubber Association of Canada)

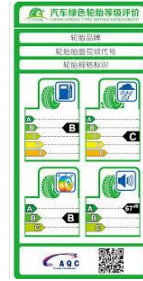
2013 South Korea



2015 Brazil (Labelling Program)



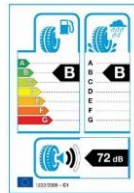
2017 China Voluntary Labeling



October 2020

2021 Canada MEPS NPRM (CGI)

2012 EU (MEPS & Label)



2014

2016 Japan (adopted GTR16)



2018 Russia MEPS only

2019

2020 USA MEPS & Labeling (Proposed)



Tire Design Metrics and Performance Attributes

Tire Design Factors

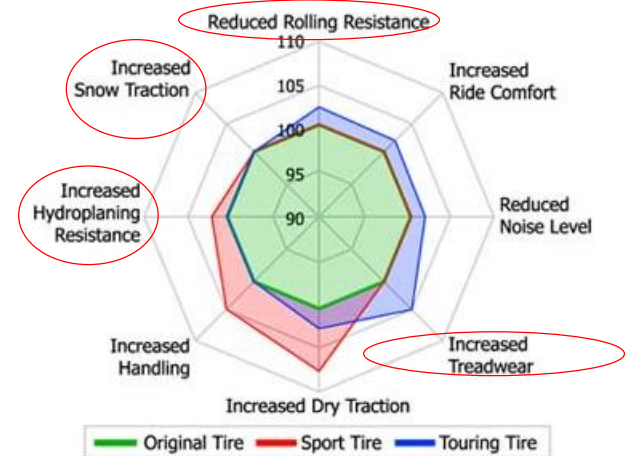
- Material composition (rubber compounds, silicates, filler)
- Size (width, aspect ratio, rim size)
- Tread dimensions (profile, void ratio, tread depth)
- Tire construction (belt overlay)
- Tread pattern (lugs, sipes, gaps)
- Speed and load index

Maintenance & Operation Factors

- Tire selection **
- Inflation pressure
- Driving surface / speed
- Vehicle load
- Surface (concrete, asphalt, other)
- Weather (wet, snow, temperature)




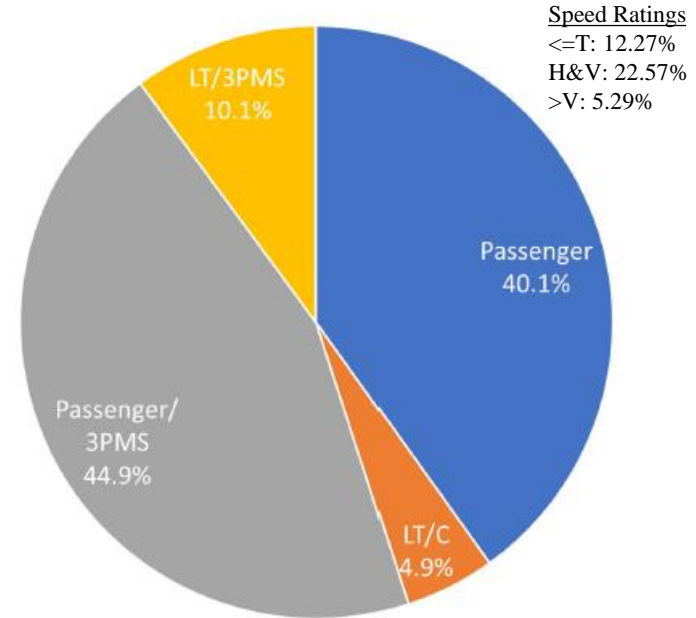
Tire Performance Characteristics



** Consumers select replacement tires based on OEM marketing material (varies between OEM) **

Canada's Tire Market – Segments of Interest

- Canada has a high percentage of winter tires denoted by the 3-Peak Mountain Snowflake (3PMSF) 
- Need to dig deeper into these segments (and sub-segments) to establish which are significant and will have an overall impact on energy efficiency
 - Passenger All-Season (speed ratings: H&V)
 - Passenger/3PMSF
- More importantly, need to establish which segments are insignificant and would only impact the tire models available for sale (segments that should be excluded from the scope of the MEPS)
 - Passenger All-season/Summer (speed ratings: >V)
 - LT, LT/3PMSF



Source: USTMA/TRAC Presentation to CSA
Technical Working Group, Feb 2, 2021



Canada's Tire Market / Segments of Interest

| | | | |
|---|---|--|---|
| “North American” All Season | | Winter Tires (3PMSF)  | |
| All-Terrain | M+S | Studless | 4-Season |
|  |  |  |  |

- A significant number of tires are classified as “All-Terrain”, both in the Passenger and Light-Truck segments
- Current challenge is that there are no globally accepted definitions for “North American All-Season”, M+S, “all-terrain”, “high-performance”, or “summer” tire segments
- There are technical specifications such as load rating, speed rating, void ratio, and tread depth that make it possible to roughly define these segments



Tire Testing

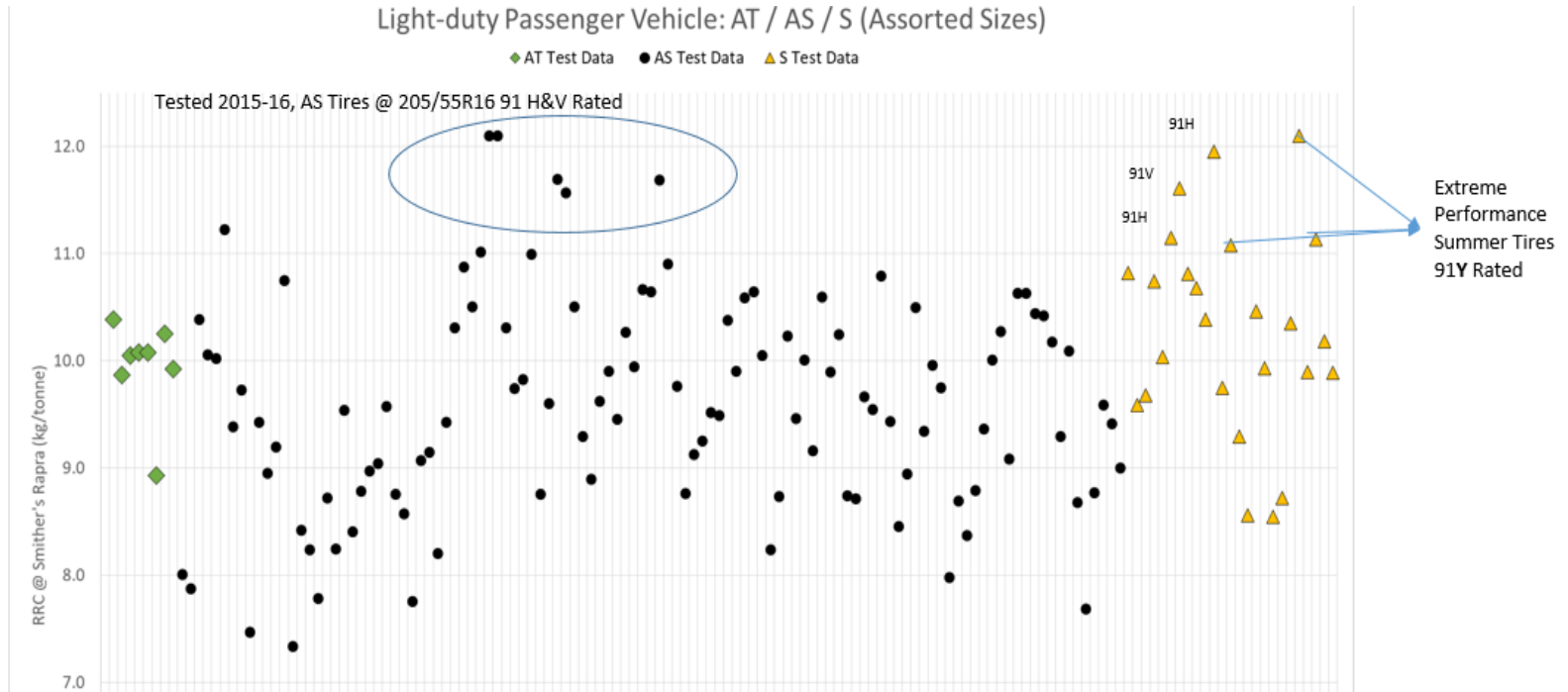


| Grp | Tire Type | Tire Size | RRC | WGI | DMA | ST | IG |
|-----|---|-------------|-----|-----|-----|----|----|
| 1 | Passenger 3PMSF | P195/65R15 | x | x | x | x | |
| 2 | Passenger All-Season/Summer (M+S/H&V) | P205/55R16 | x | x | x | | |
| 3 | Passenger 4-Season (M+S/3PMSF) | P205/55R16 | x | x | x | x | x |
| 4 | Passenger (All-Season/All-Terrain/Summer) | Various | x | x | | | |
| 5 | All-Season/All-Terrain (M+S, 3PMSF) | LT265/70R17 | x | x | | x | |
| 6 | All-Season/OE Tires | LT Assorted | x | x | | | |
| 7 | LT All-Season/All-Terrain/3PMSF | Assorted | x | x | | x | |

Testing completed at Smithers Rapra – RRC = rolling resistance coefficient (ISO 28580), WGI = wet grip index (UN-ECE R117), DMA=dynamic mechanical analysis, ST= snow traction & IG = ice grip (ASTM F1805)



Tire Test Results - RRC



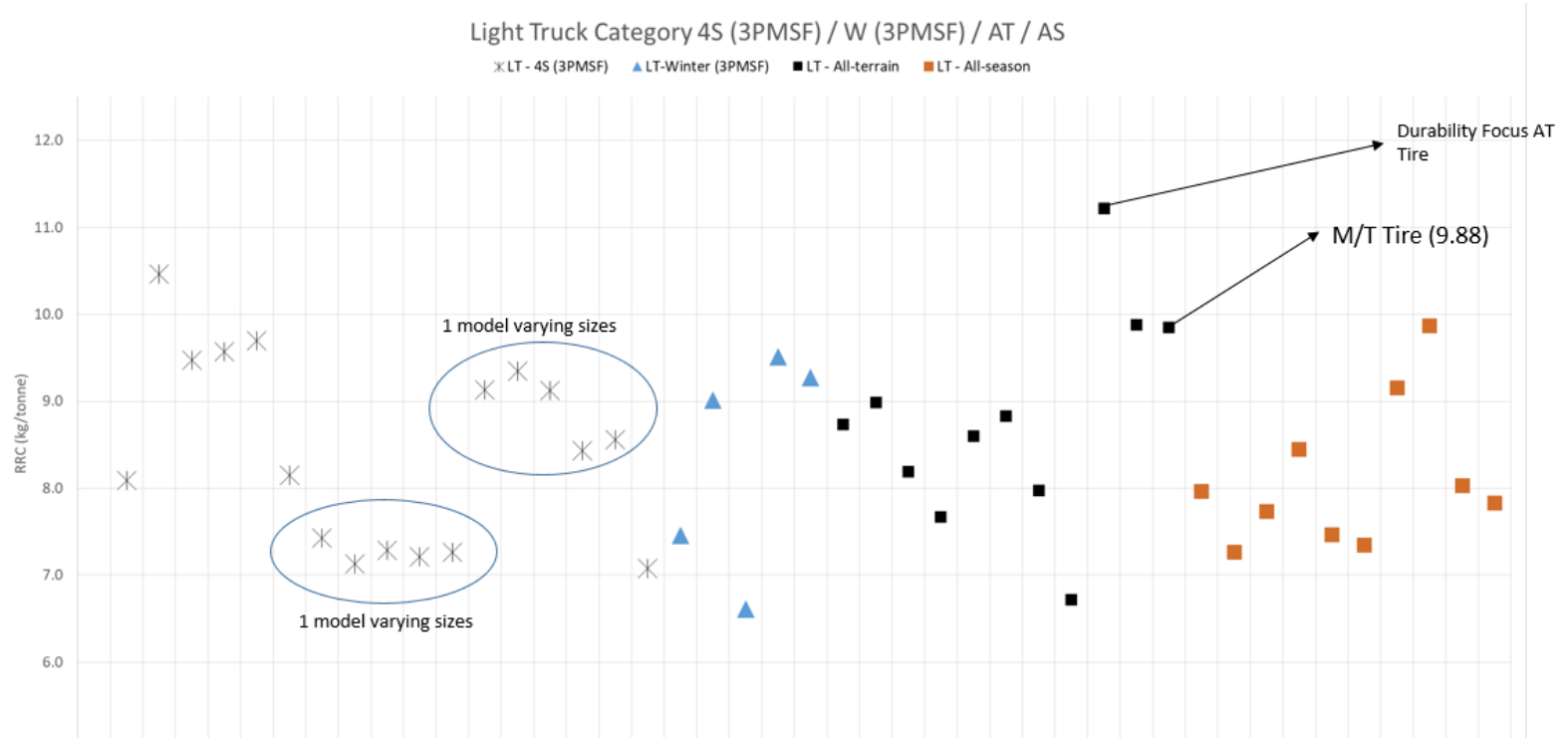
Tire Test Results - RRC

Light-duty Passenger Vehicle: 4S (3PMSF) & Winter (3PMSF) (Assorted Sizes)

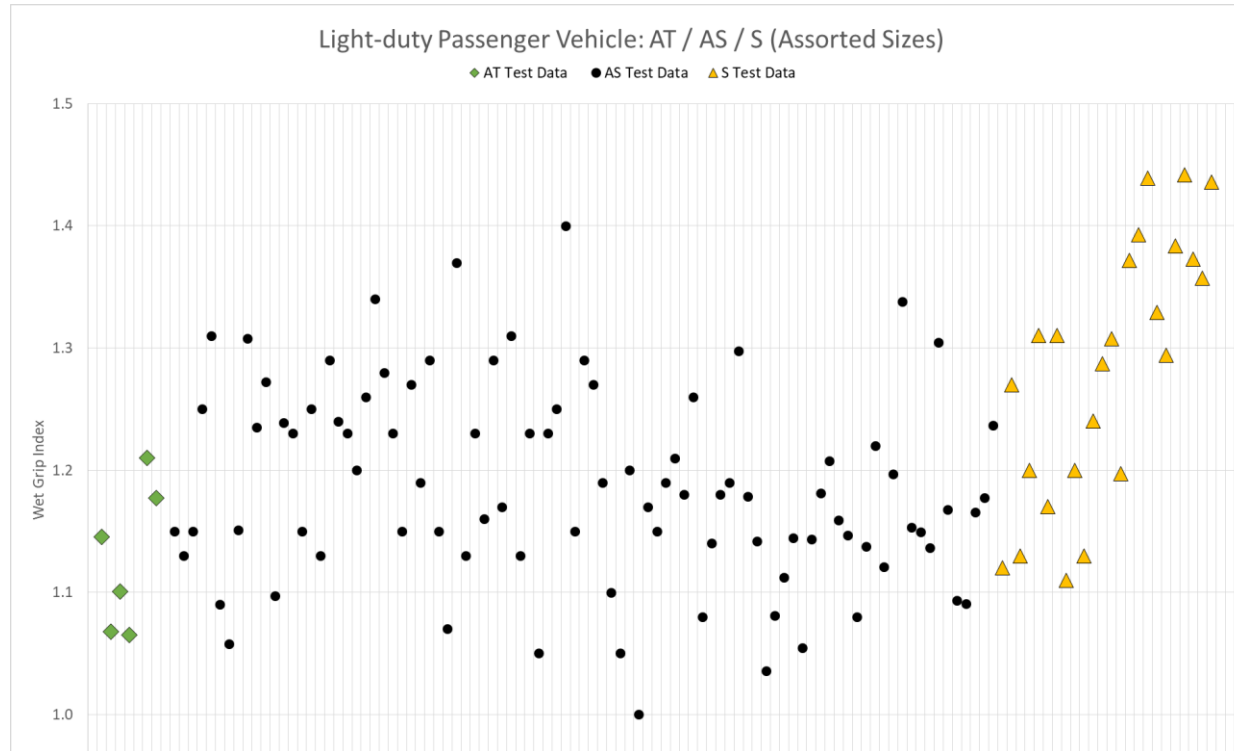
✕ 4S (3PMSF) ▲ Winter (3PMSF)



Tire Test Results - RRC



Tire Test Results – Wet Grip



Benchmarking Analysis (Preliminary)

Annual Energy Saving Assumptions

10% lower RRC results in approx. 1% lower FC

3.1536 e⁻⁸ PJ/L gasoline

2.3 kg CO₂/L gasoline

[Benchmarks for MEPS, 2019.](#)

Annual Energy Savings (approx.)

316M Litres of fuel

\$350M savings

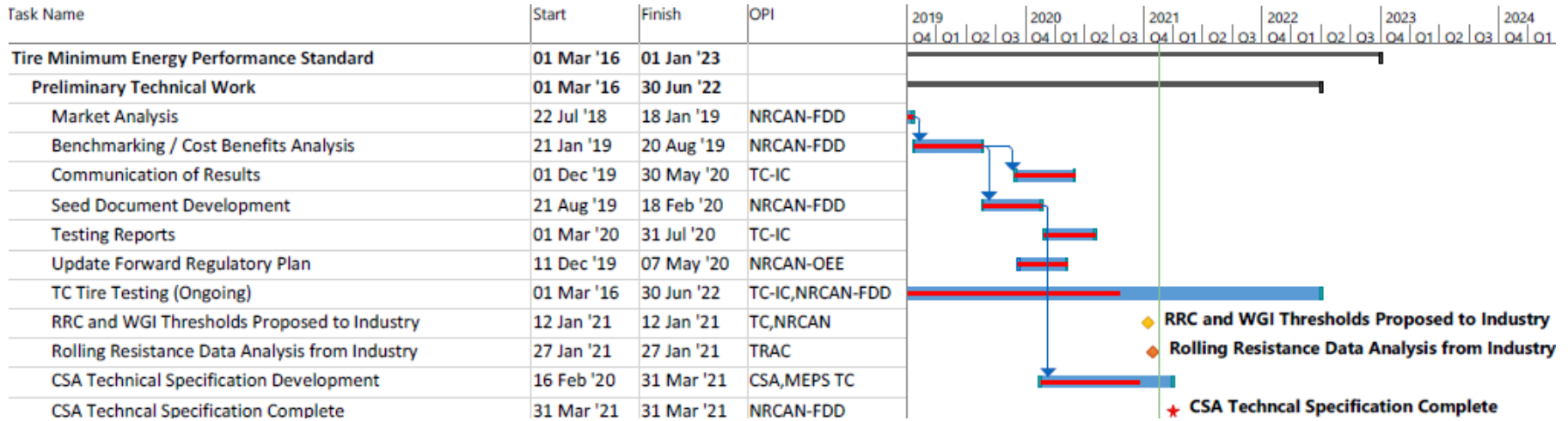
9.5 PJ of energy

0.7 MT of CO₂

[Tire Fuel Efficiency Seed Document, 2019.](#)



MEPS Development and Regulatory Process



- Tire energy efficiency regulations are dependent on complimentary wet grip regulations (Transport Canada's jurisdiction).



Tire Performance Label Development

- Literature review to compile information about global consumer information programs
 - voluntary vs. mandatory programs
 - specific design elements that can contribute to an effective energy and safety performance label (what performance criteria, how is information displayed, where is the label available to consumers)
- Consult with industry representatives from the Tire and Rubber Association of Canada (TRAC) and Tire Dealers Association of Canada (TDAC)
 - operational considerations from OEMS
 - cost considerations for consumers
- Design tire performance labels
 - Present labels to industry for their consideration and feedback



Key Takeaways

- tire energy efficiency regulations are a very small, but significant measure to meet climate change objectives
- tire energy efficiency regulations need to be complimented by wet grip regulations- not to drive performance, but to prevent degradation
- the tire market is very complex - need to know market segments and sub segments and how an energy efficiency standard would impact those markets (this will define the scope of your regulation)
- benchmarking analysis will only give an estimate of energy/GHG emissions reductions after assumptions and key metrics have been plugged in. This will need to be refined and updated as tire performance and use cases change.



Thank you

Brad Richard, P.Eng, PMP

Senior Engineer, Fuel Diversification Division / Ingénieur principale, Division de diversification des carburants

Clean Fuels Branch / Direction des carburants propres

Low Carbon Energy Sector / Secteur de l'énergie à faibles émissions de carbone

Natural Resources Canada / Ressources Naturelles Canada

Government of Canada / Gouvernement du Canada

Cell: (613) 447-2498

Fax / Télécopieur: (613) 952-8169

Email / Courriel: brad.richard@canada.ca

