

OPTA ZEB Committee

Work Stream 2
ZEB Engineering

2023 DRAFT WORK PLAN

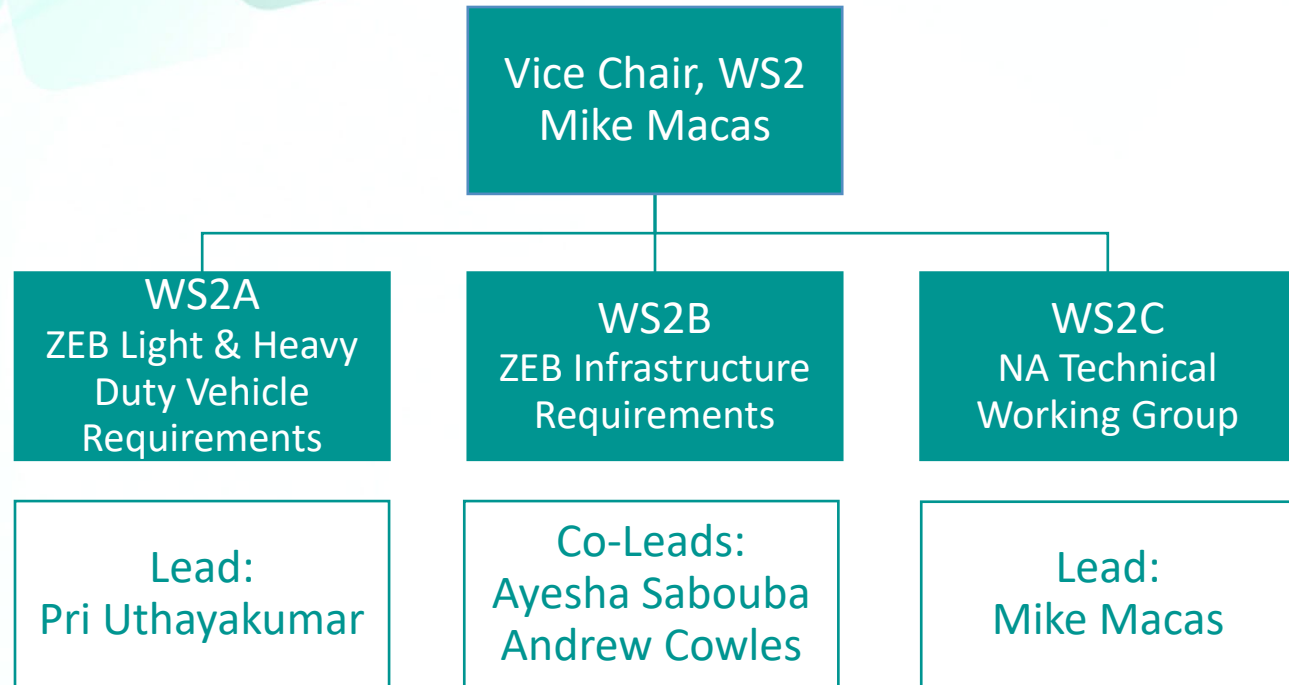
December 6, 2022

Work Stream 2 > ZEB Engineering

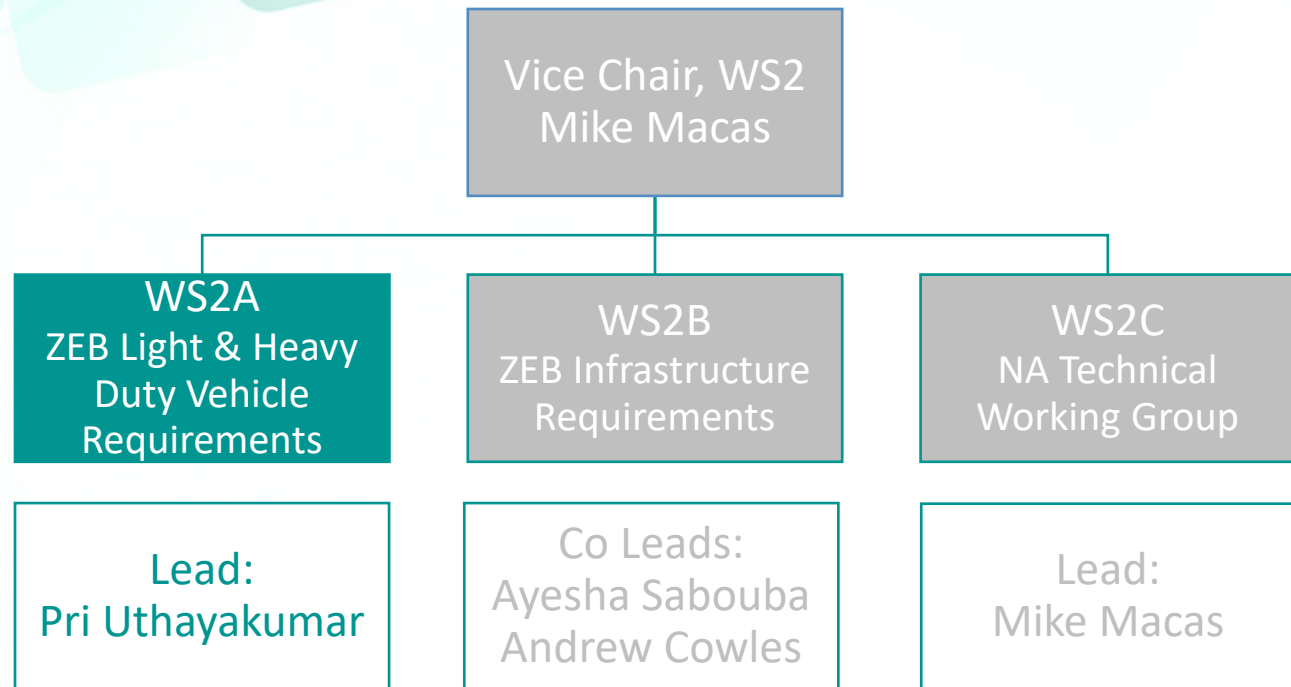
Mandate

This work stream will use a cross-section of representatives from the public and private sectors of the public transit industry to develop technical standards that guide transit agencies in the procurement of electric vehicles (buses, paratransit, non-revenue) as well as electrification infrastructure and energy management systems to ensure a successful procurement, minimizing risk associated with the adoption of these new technologies and complex systems while considering Ontario transit agency specific challenges and requirements

Work Stream 2 > ZEB Engineering



WS2A > ZEB Light & Heavy Duty Vehicle Requirements



WS2A > ZEB Light & Heavy Duty Vehicle Requirements

WS2A-1 | Technical Guidelines Scan:

- ✓ Technical Guidelines: published industry documents review
 - ✓ APTA Whitebook/Guidelines
 - ✓ CUTA Guidelines
 - ✓ ZEBRA Guidelines
 - ✓ Etc...
- ✓ Gap Identification: identify Ontario specific gaps ie: weather, duty cycle etc...

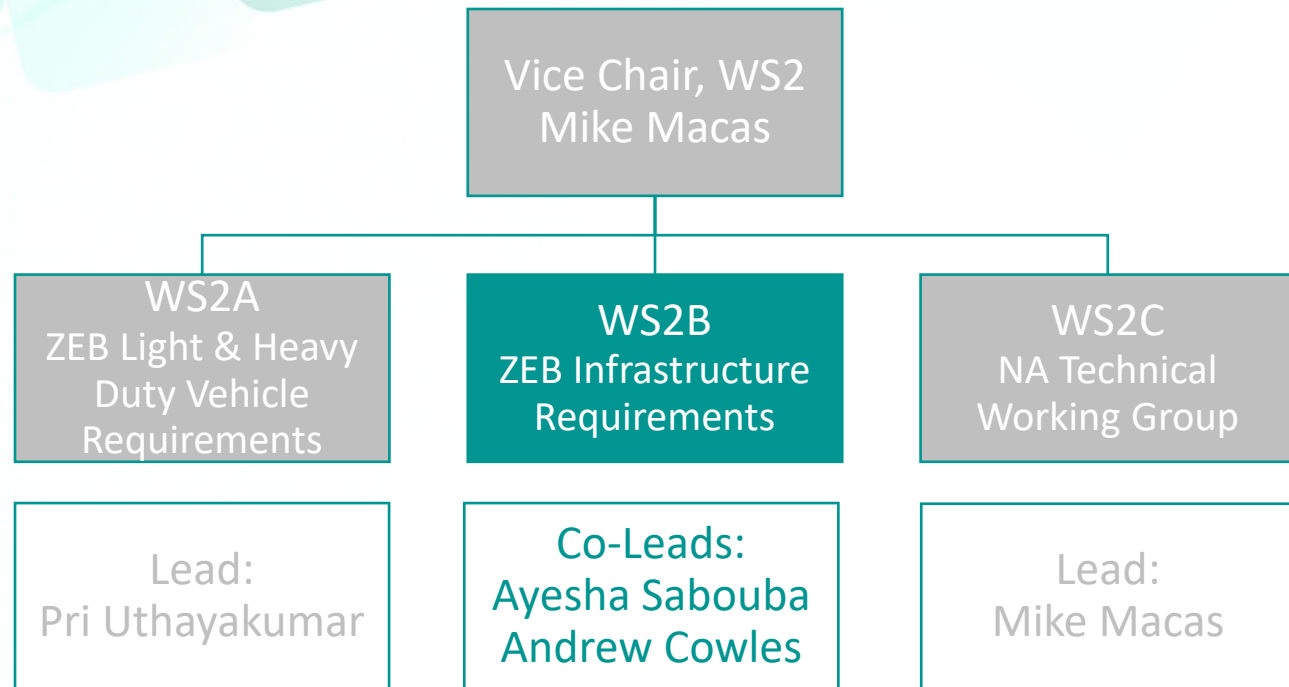
WS2A-2 | Support WS1A-3 Operations: commissioning, dispatching, operations, safety, KPI's

- ✓ Interoperability Testing & Commissioning: produce commissioning templates

WS2A-3 | Support WS1B-1 ZEB Safety: HV Work, Battery Thermal & EMI

- ✓ HV Safety: arc flash testing, lock-out-tag-out
- ✓ Battery Thermal: battery testing, risk mitigation, temp monitoring strategies
- ✓ Electromagnetic Interference: Theory, risks, impact to medical devices

WS2B > ZEB Infrastructure Requirements



WS2B > ZEB Infrastructure Requirements

WS2B-1 | Technical Guidelines Scan:

- ✓ Technical Guidelines: published industry documents review
 - ✓ SAE Guidelines
 - ✓ CSA Guidelines
 - ✓ Etc...
- ✓ Gap Identification: identify Ontario specific gaps ie: weather, duty cycle etc...

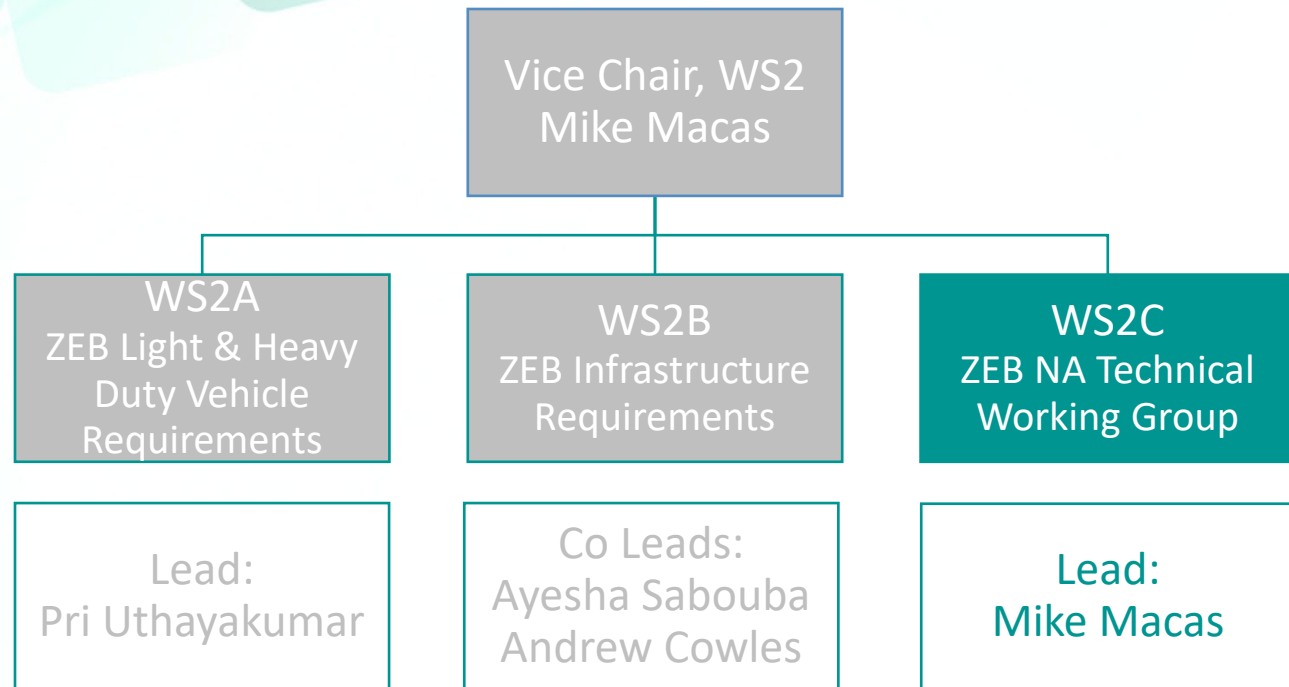
WS2B-2 | Energy Management System:

- ✓ Smart Charging: functional scope guidelines
- ✓ Energy Management: cost optimization strategies, peak shaving & GA

WS2B-3 | Support WS1A-1 ZEB Planning:

- ✓ Opportunity Charging: Charger location/cluster optimization
- ✓ Charger installation: best practices, site constraint considerations

WS2C > ZEB NA Technical Working Group

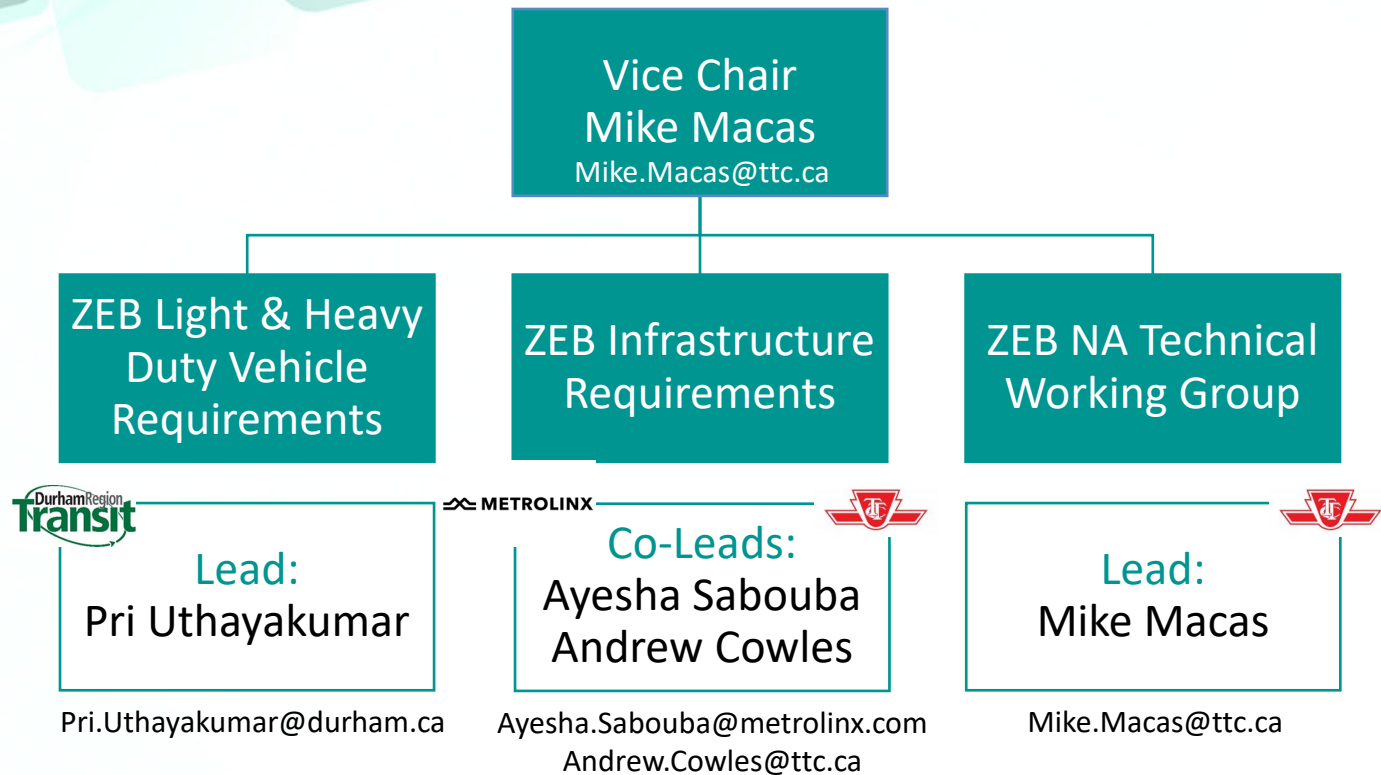


WS2C > ZEB NA Technical Working Group

WS2C | North American Technical Working Group:

- ✓ Bus Technical Discussions: quarterly reporting/sharing of key discussions
- ✓ Charger Technical Discussions: quarterly reporting/sharing of key discussions
- ✓ Problem Discussion Logs: grant access to OPTA ZEB Members
- ✓ Quarterly Call: extend invitation upon agency request

Work Stream 2 > Key Contacts



Work Stream 2 > Next Steps

1. Industry Guideline Reviews
 - ✓ Identify Gaps specific to Ontario
 - ✓ Identify addition sub-streams
 - ✓ Create sub-stream groups – Ontario agency volunteers
 - ✓ Define crossovers and collaborations with other WS's
 - ✓ High level scheduling and costing of the work
2. Regular meetings of the WS
 - ✓ Confirm participation interest for the various sub streams and work
3. Progress updates to future Committee meetings.