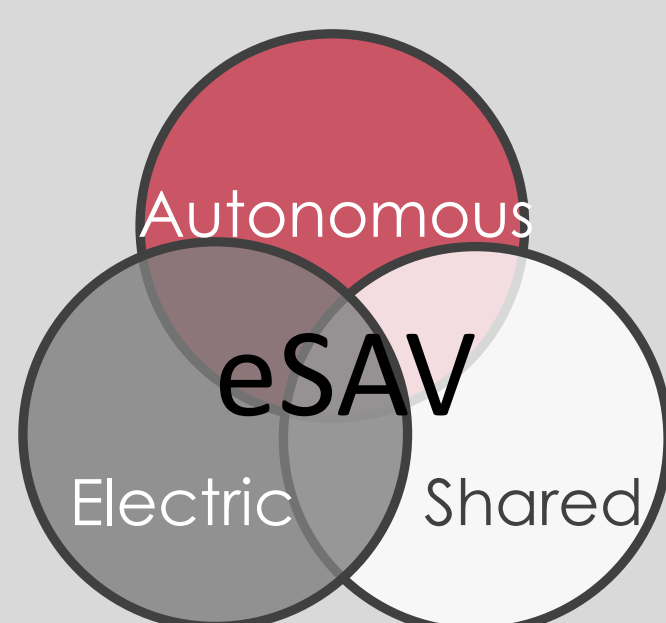


### Introduction

The personal mobility sector accounts for 13% (97 Mt) [1] of Canada's GHG emissions (see chart below). It also influences the energy use and emissions in other sectors including fossil fuel production and built spaces.

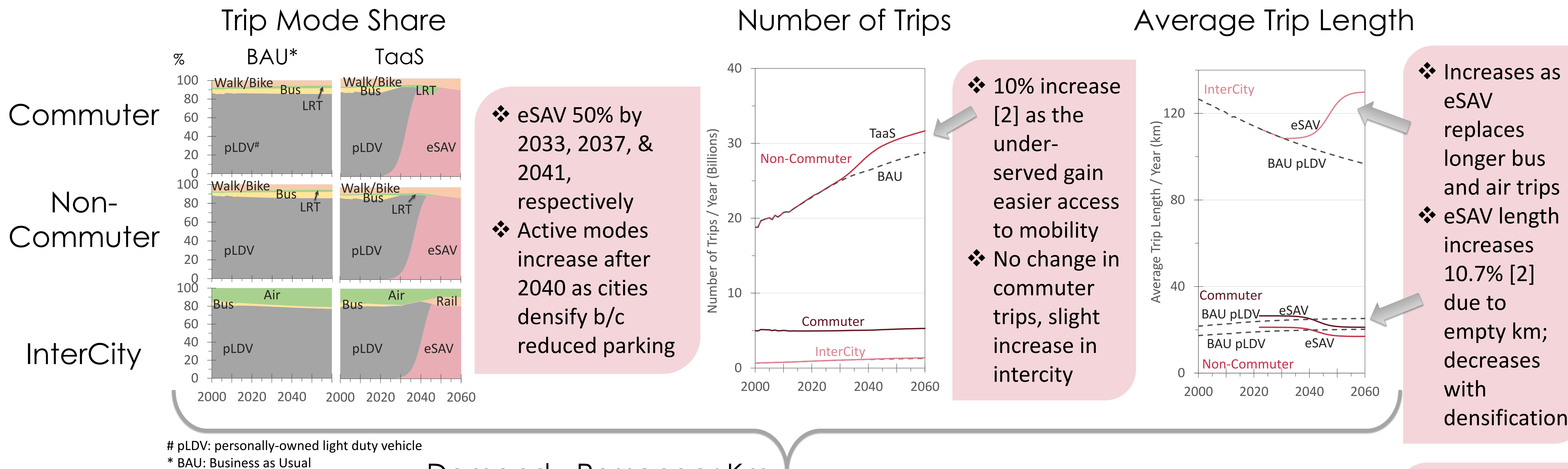
To meet Canada's 2030 and 2050 GHG commitments disruptive changes are needed in this sector. Electric, autonomous, and shared vehicle (eSAV) technologies are converging to create Transportation-as-a-Service (TaaS).



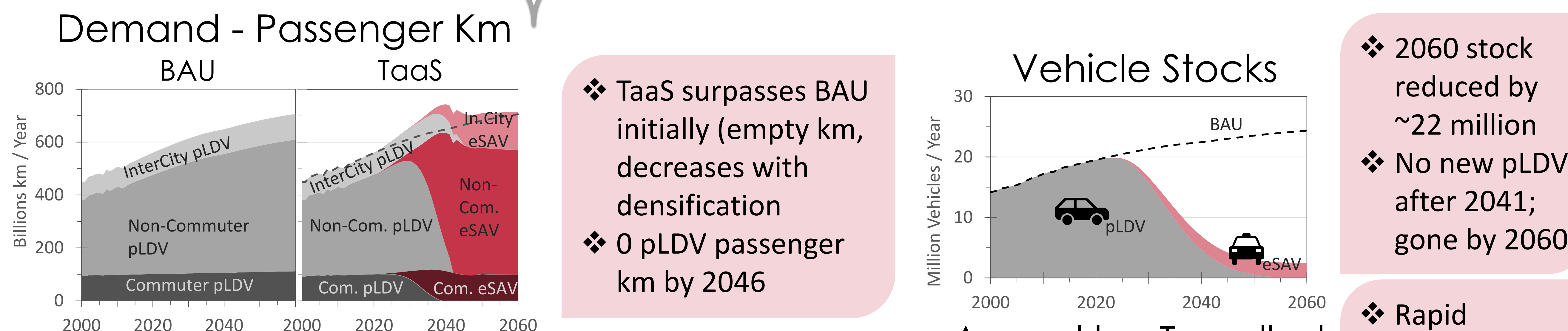
Together, these technologies have the potential to not only reduce emissions, but also accidents, congestion, pollution, and mobility costs.

This poster illustrates how the CESAR Pathways Project uses technology-rich exploratory modelling to quantify the impact of TaaS on fuel and electricity demand and GHG emissions in Canada.

### Defining the Scenarios – TaaS vs BAU

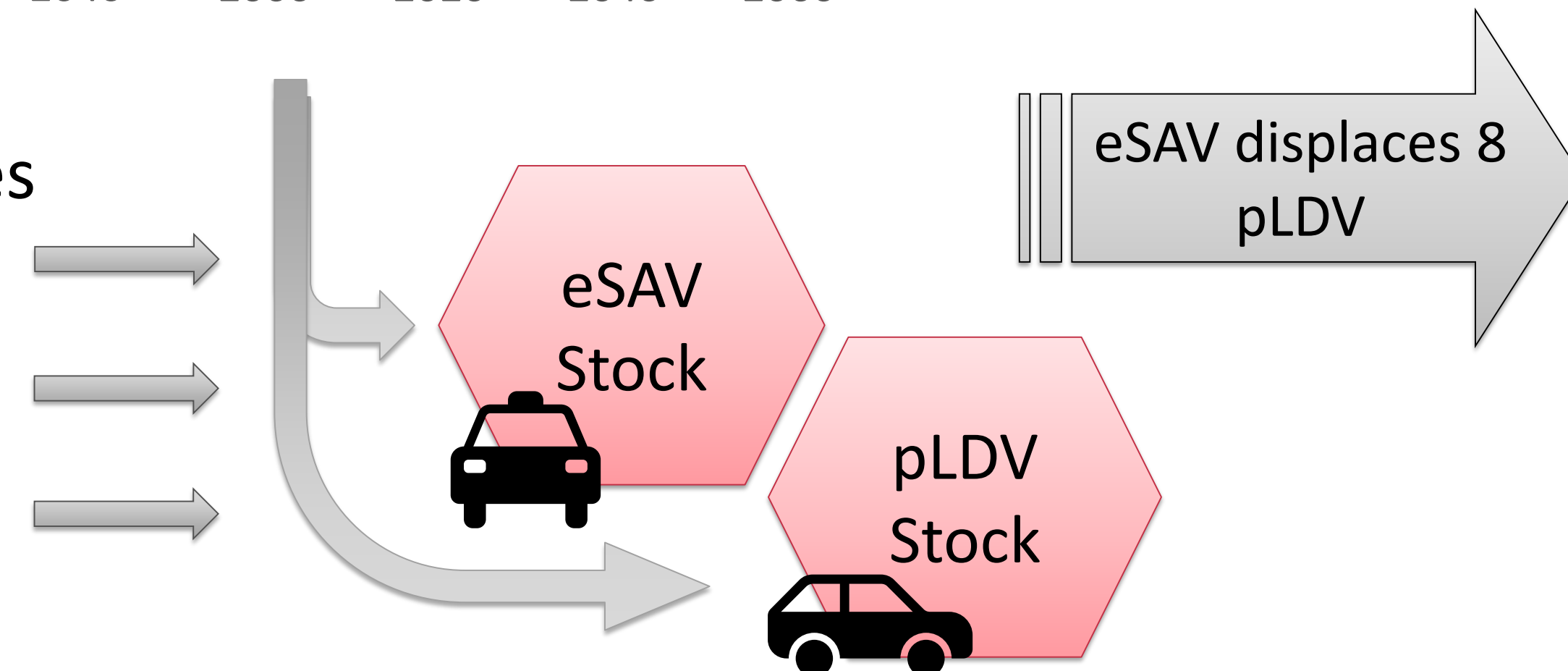


### Impacts on Vehicle Stocks

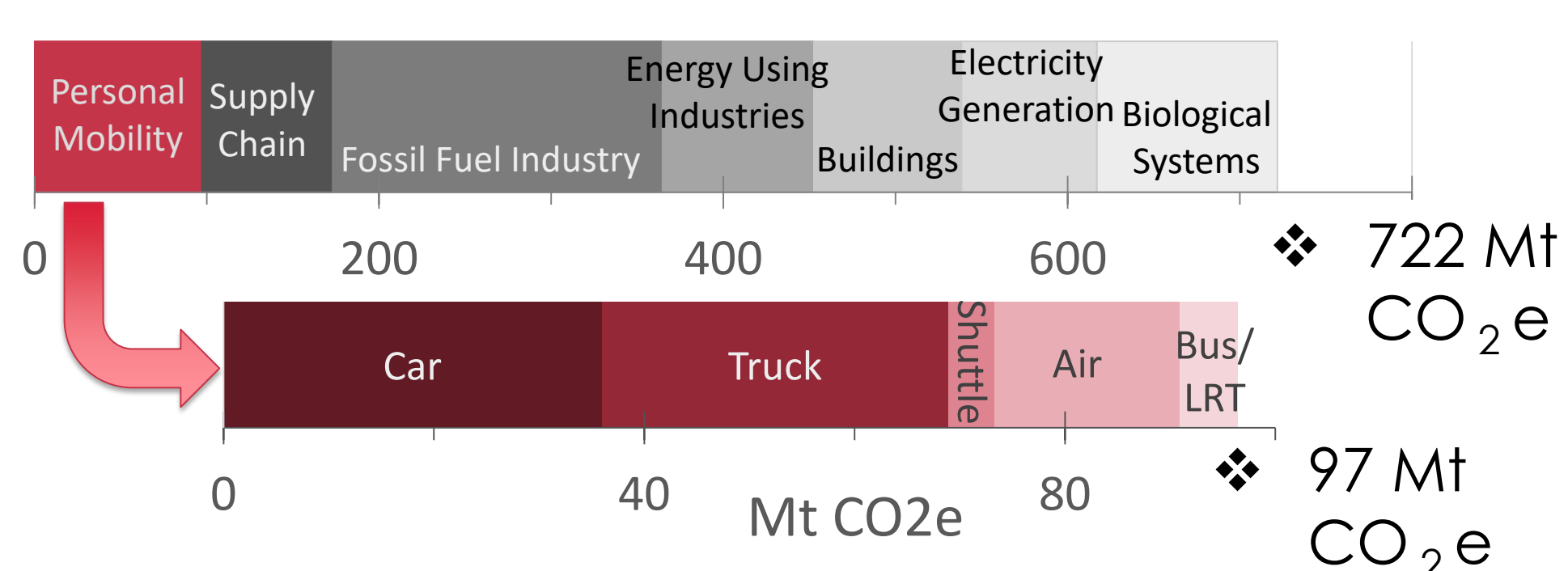


#### Assumptions

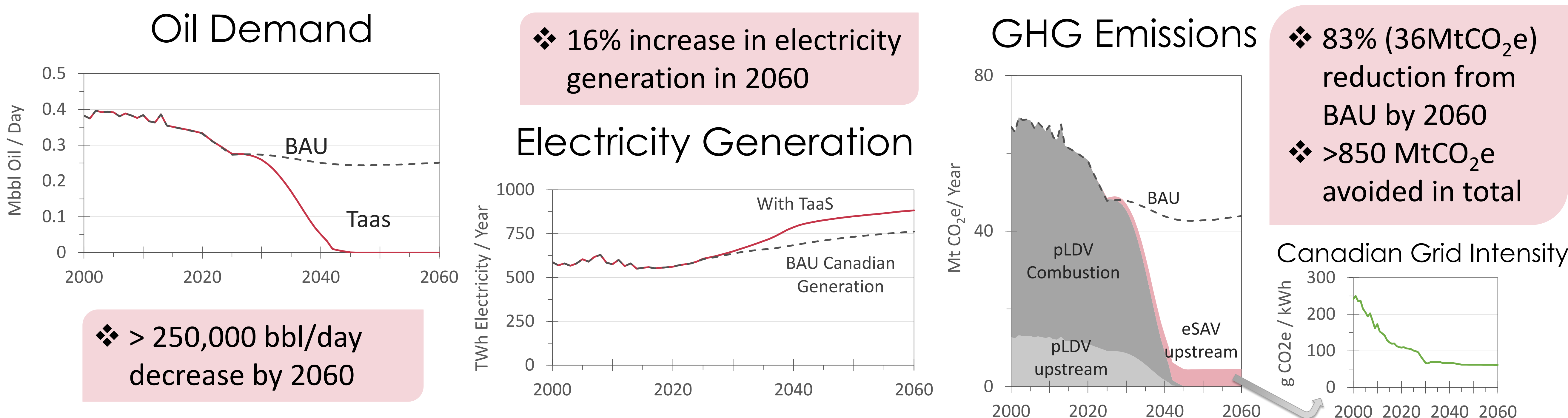
- Fuel efficiencies, load factors, and fuel types are used to calculate energy requirements
- No pLDVs are retired early
- eSAVs retire faster: 6 years vs 12



### 2015 Canadian Emissions



### Energy Demand & GHG Emissions



### Conclusion

TaaS has significant potential to reduce GHG emissions in the personal mobility sector; as shown, switching pLDV to eSAV can save >850 Mt CO<sub>2</sub>e by 2060. Further reductions will be realized as parking spaces are converted, which will increase walking/biking, and reductions in resource demand with fewer vehicles on the road.

### Acknowledgments

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### References

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- Wadud Z, D. MacKenzie D, and Leiby P. 2016. "Help or hindrance? The travel, energy and carbon impacts of highly automated vehicles," Transp. Res. Part Policy Pract., vol. 86, pp. 1-18, Apr. 2016

