

An analysis of B.C.'s Climate Leadership Plan

December 5, 2016

Table of Contents

- Collaboration
- Purpose
- Methods
 - Approach
 - Scenarios
 - Assumptions
- Results
 - Greenhouse Gas Emissions
 - Abatement
 - Renewable Energy
- Conclusion and Next Steps



Collaboration

PEMBINA
i n s t i t u t e



Pacific Institute
for Climate Solutions
Knowledge. Insight. Action.

 CLEAN ENERGY CANADA

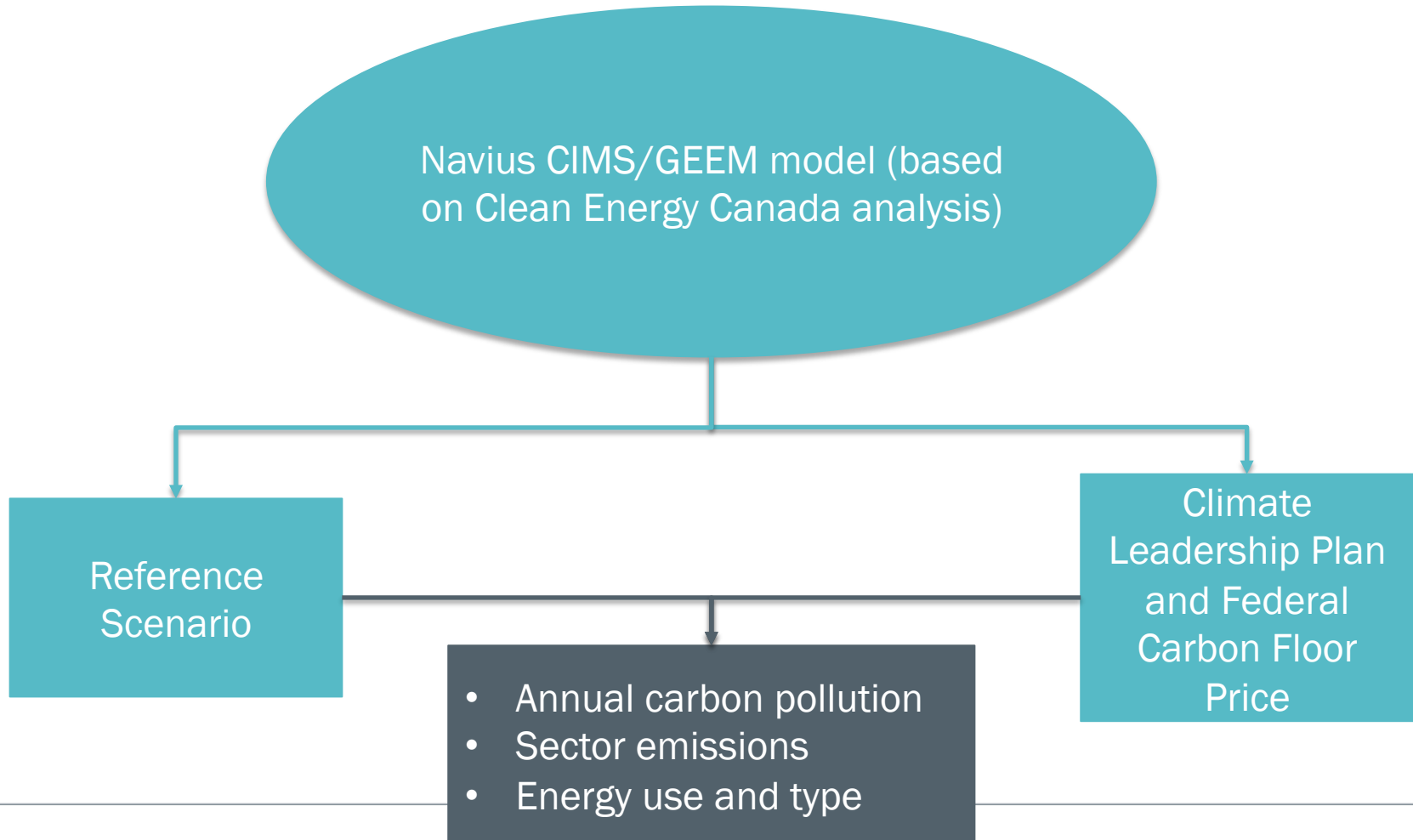
Commissioned

navius
research

Purpose

- Our aim is to determine and make publicly available:
 - A reference case on provincial carbon pollution to 2050
 - Provincial carbon pollution with climate leadership plan policies and the federal carbon price floor to 2050
 - Sector by sector emissions and compare with the climate leadership plan to 2050
 - Renewable energy and energy efficiency for both the reference case and under the climate leadership plan and federal carbon price
 - We also would like to support next steps with the province
-

Methods - Approach



Methods - Scenarios

Reference Scenario

- Existing policies including:
 - Carbon tax \$30 t/CO_{2eq}
 - Clean Energy Act – 93% non-emitting sources
 - Low-carbon fuel standard, 10% by 2020
 - Existing building codes
 - Clean Energy Vehicle Program @ \$5000 per vehicle, to 2020
 - LNG performance standard – met at the facility
 - Landfill Gas
 - 45% diversion organic waste by 2020
 - Federal light and heavy duty vehicle standard

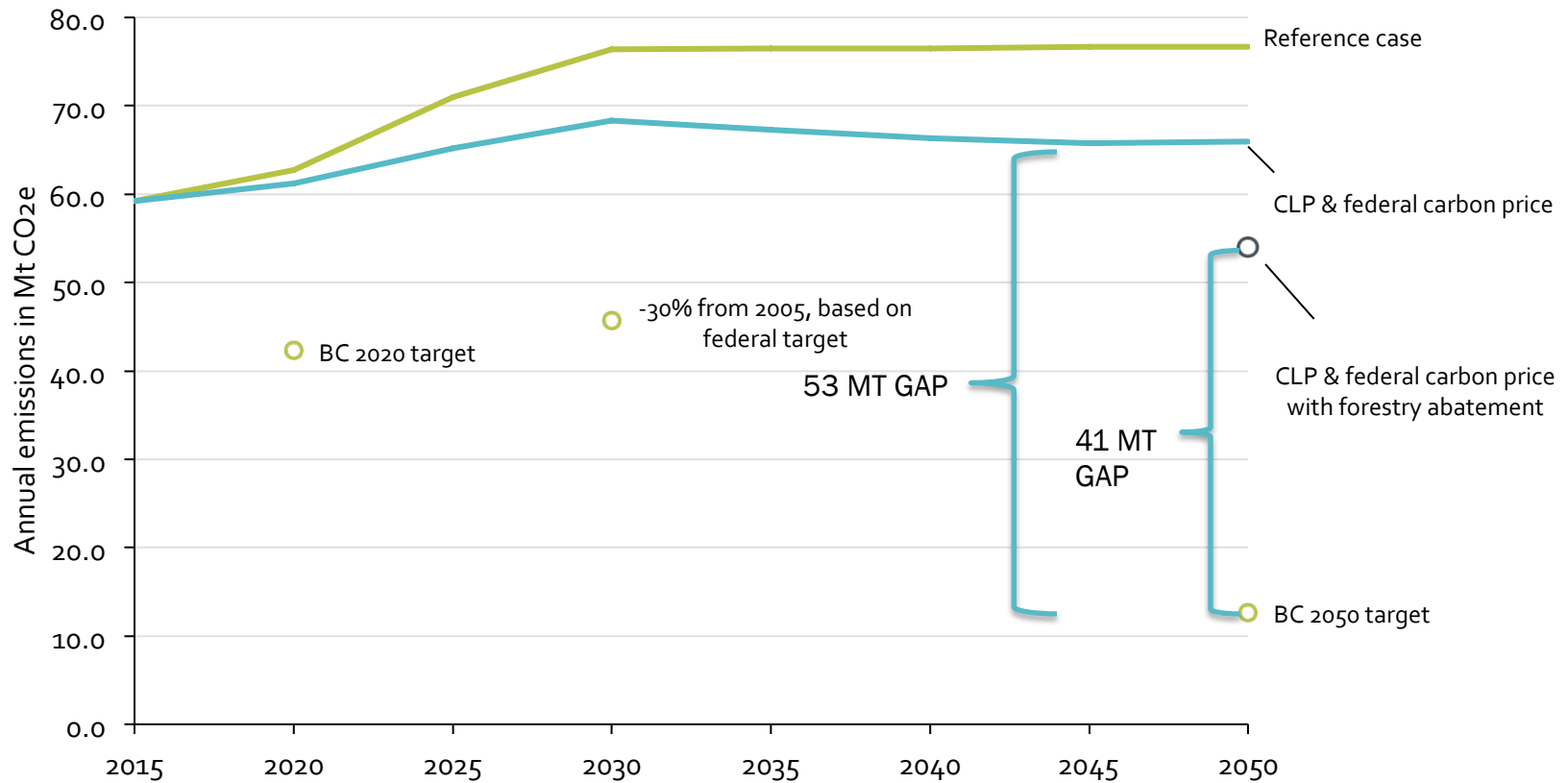
Climate Leadership Plan & Fed. Price

- Existing policies, plus:
 - Carbon tax \$50 by 2022
 - 45% methane emission reduction
 - Low-carbon fuel standard increased to 15% by 2030
 - Regulations that require more efficient natural gas equipment
 - Net-zero ready building standard after 2032
 - Upstream natural gas electrification
 - Industrial boilers post 2020 90% efficient
 - 90% diversion of organics by 2030
 - Extend clean energy vehicle program to 2030 and incentives for freight natural gas
 - 100% clean energy on incremental additions

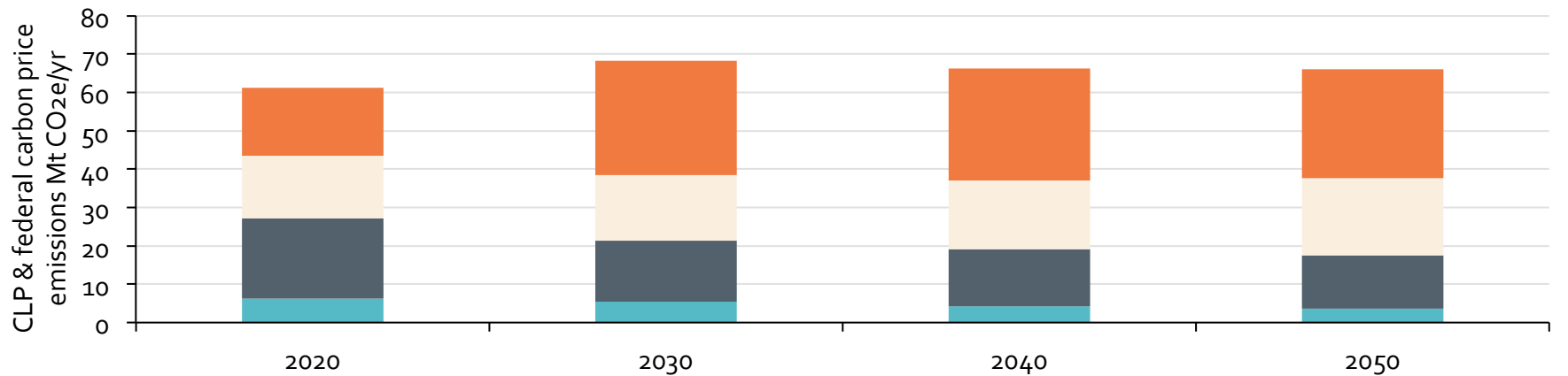
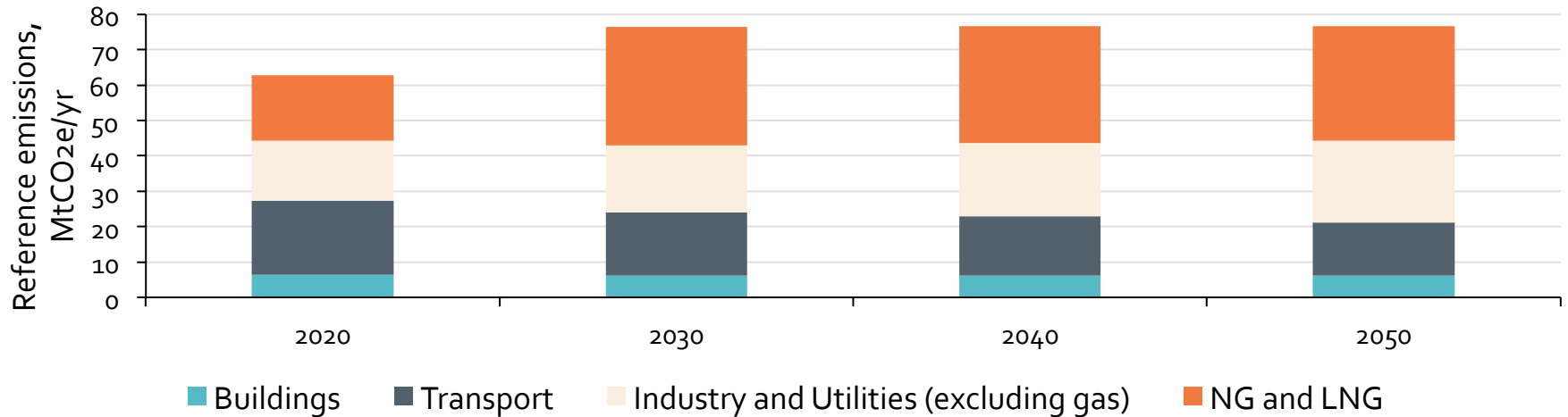
Methods - Assumptions

- **Forestry:** Deforestation, afforestation and forest management activities are not included in the model, but we do include the B.C. government's estimates of these activities in 2050.
 - **LNG:** LNG production reaches 12 MT/yr in 2020, 36 MT/yr in 2025 and 48 MT/yr in 2030
 - **Natural Gas:**
 - Natural gas production for LNG comes 75% from B.C. 25% from Alberta
 - Natural gas production rises to 5.4 bcf/day in 2020 and plateaus at 9.1 bcf/day
 - Natural gas production not for LNG remains flat at 4.2 bcf/day
 - Methane losses account for 0.5% of natural gas production
 - **Other excluded policies**
 - Carbon neutral government – Model can't account for commitments
 - Federal clean fuel standard – Announced after final drafts & insufficient detail
-

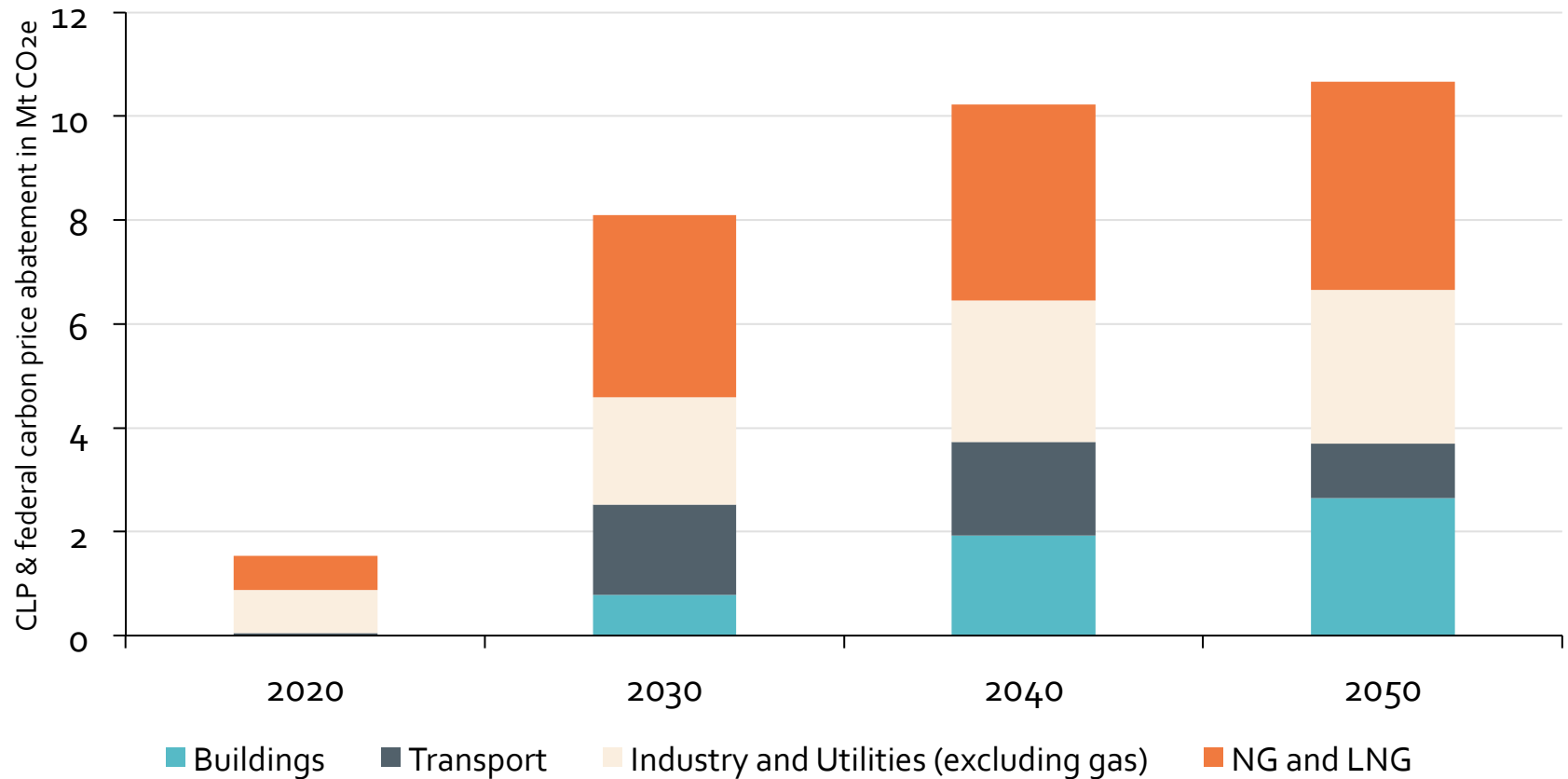
Results – Carbon Pollution



Results – Carbon Pollution



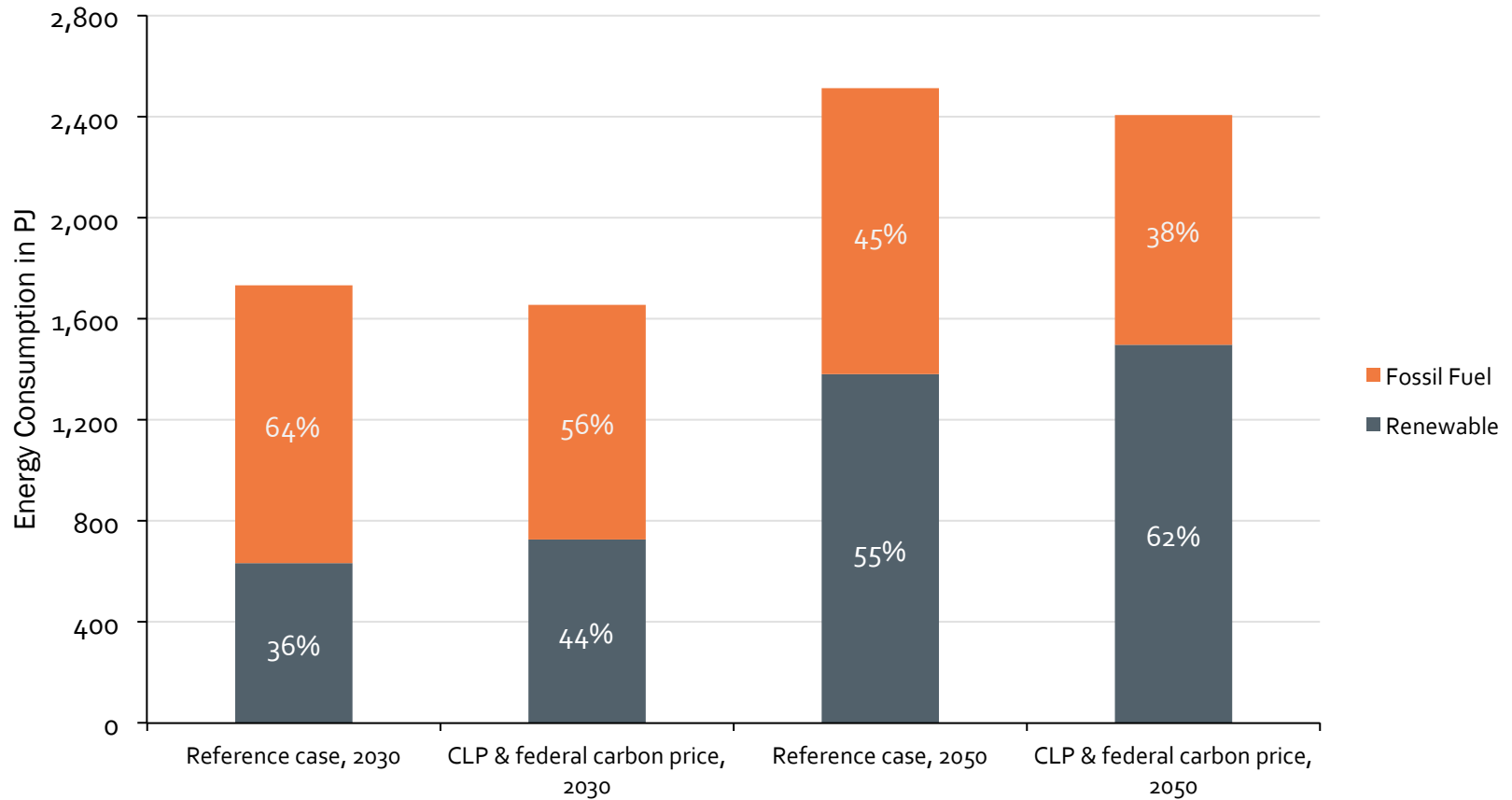
Results – Reductions relative to reference case



Results – Comparison between climate leadership plan and this analysis - 2050

	Climate Leadership Plan (MTCO _{2eq})	This Analysis (MTCO _{2eq})
NG & LNG	5.0	4.0
Industry & Utilities	2.0	2.9
Transport	3.0	1.0
Buildings	2.0	2.7
TOTAL	12.0	10.6

Results – Renewable Energy and Energy Efficiency



Conclusion and Next Steps

- **Emissions continue to grow:** Emissions are expected to grow from today out to 2030, by 8 MTCO_{2eq} excluding potential forestry sequestration.
 - **Reduction gap:** There remains a 53 MTCO_{2eq} gap in 2050, 41 MTCO_{2eq} if government estimates of forest sequestration are included
 - **Fossil fuels remain dominant:** Fossil fuel use remains 56% of energy supply in 2030.
 - **Next steps – policy details and new actions:**
 - Existing commitments in the climate leadership plan require details and funding and implementation
 - Additional action is needed to reduce emissions in-line with B.C. legislated 2050 target
 - Going forward, PICS, Pembina and Clean Energy Canada are committed to supporting the development and implementation of these next steps.
-

Contacts

Sybil Seitzinger – PICSDir@uvic.ca

Matt Horne – matth@pembina.org

Jeremy Moorhouse – jeremy@cleanenergycanada.org

Climate Plan and Our Analysis Sector Policy Coverage

Sector	CLP Policies	This analysis policies
Natural gas and LNG	Methane, upstream natural gas electrification	Methane, upstream natural gas electrification
Industry & Utilities	Energy efficiency gas boilers, incentives gas equipment, 100% RE electricity	Energy efficiency gas boilers, 100% RE electricity, waste strategy
Buildings	Energy efficient building equipment, net-zero ready buildings, waste strategy	Energy efficient building equipment, net-zero ready buildings
Transportation	LCFS, Clean Energy Vehicle Program, LNG ferries, NG freight,	LCFS, Clean Energy Vehicle Program, LNG ferries and renewable NG freight