



STANDING COMMITTEE ON ENVIRONMENT, CLIMATE CHANGE AND BIODIVERSITY  
MARISA PATERSON MLA (CHAIR), ANDREW BRADDOCK MLA (DEPUTY CHAIR), LEANNE CASTLEY MLA

**Inquiry into referred 2019–20 Annual and Financial Reports and Budget Estimates 2020-21**  
**ANSWER TO QUESTION TAKEN ON NOTICE**  
**4 March 2021**

Asked by LEANNE CASTLEY MLA:

In relation to:

**MS CASTLEY:** I will be test driving one myself. It sounds like a great plan.

I do have some questions about the lithium. My understanding is that lithium is one of the most dangerous metals in the environment. And to extract it, it harms the soil and air, et cetera. So what is the environmental impact of lithium that is used in electric cars?

**Mr Barr:** Okay. Gee that is a—I will take full detail of that on notice. But it is a question that does get asked.

As I understand the science here, that yes there certainly is more energy and more emissions from battery electric vehicles—battery BEVs, B-E-Vs, than a internal combustion engine vehicle, in terms of production. But within a very short timeframe of the usage of the car, an EV comes out ahead, in terms of its total life emissions.

So that—there are numerous studies that have demonstrated this—

**MS CASTLEY:** Could you—

**Mr Barr:** This is a question that some people like to pose on social media when I have posted about electric vehicles. It is a legitimate question.

**MS CASTLEY:** Yes.

**Mr Barr:** And the answer is that over the reasonable lifetime of the vehicle, being 15-20 years, a zero-emission vehicle comes out way ahead. And it starts being ahead of an internal combustion engine, particularly if your electricity is renewably sourced, often within the first 24 months of its use—

**MS CASTLEY:** Right.

**Mr Barr:** So they are certainly better for the environment. There is not—but they do not come at zero environmental costs, of course not.

**MS CASTLEY:** Yes.



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**Mr Barr:** And I do not think anyone is making that claim. But there are also equally environmentally damaging elements of internal combustion engine, both production and then operation, as you are drilling for oil, and the emissions that come from petrol.

**MS CASTLEY:** Yes. I would really appreciate if you could share with me those—

**Mr Barr:** Yes. Yes.

**MS CASTLEY:** Where I could read about it—

**Mr Barr:** Sure, yes.

**MS CASTLEY:** Because that is a question I have been asking since—

**Mr Barr:** Yes, okay.

**MS CASTLEY:** —given this portfolio—

**Mr Barr:** Well, if I get a moment, I will send you a couple of links—

ANDREW BARR MLA: The answer to the Member's question is as follows:—

There is an emerging body of evidence to indicate that battery electric vehicles (BEVs) will have a lower environmental impact than internal combustion vehicles (ICEVs) when whole of life impacts are considered. However, there are important factors which can impact this; for example, the emissions intensity of the electricity generation source used to charge BEVs.

In 2021, a study by [Transport & Environment](https://www.transportenvironment.org/sites/te/files/publications/2021_02_Battery_raw_materials_report_final.pdf)<sup>1</sup> concluded that under the EU's current recycling recovery rate target, around 30 kilograms of metals are not recovered from BEV batteries compared to close to 17,000 litres of petrol which is burnt in the operation of the average internal combustion engine vehicle.

In 2020, the [Congressional Research Service](https://fas.org/sgp/crs/misc/R46420.pdf)<sup>2</sup> concluded that a review of the literature shows in most cases BEVs have lower life cycle greenhouse gas (GHG) emissions than ICEVs. In general, GHG emissions associated with the raw materials acquisition and processing and the vehicle production stages of BEVs are higher than for ICEVs, but this is typically more than offset by lower vehicle in-use stage emissions, depending on the electricity generation source used to charge the vehicle batteries. One study found that the carbon intensity of the electricity generation mix could explain 70% of the variability in life cycle results.

<sup>1</sup> Can be viewed at [https://www.transportenvironment.org/sites/te/files/publications/2021\\_02\\_Battery\\_raw\\_materials\\_report\\_final.pdf](https://www.transportenvironment.org/sites/te/files/publications/2021_02_Battery_raw_materials_report_final.pdf)

<sup>2</sup> Can be viewed at <https://fas.org/sgp/crs/misc/R46420.pdf>



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In 2015, the [Union of Concerned Scientists](https://www.ucsusa.org/sites/default/files/attach/2015/11/Cleaner-Cars-from-Cradle-to-Grave-full-report.pdf)<sup>3</sup> concluded that, on average, BEVs result in less than half of the emissions produced by ICEVs, even with manufacturing processes taken into consideration. It purports that this difference will increase as the electricity used to power BEVs further shifts to renewable sources. The Union of Concerned Scientists is a US-based not-for-profit founded out of the Massachusetts Institute of Technology.

With the ACT powered by 100% renewable electricity, we can anticipate lower environmental impacts for BEVs than in other economies where electricity generation produces greenhouse gas emissions. Further, as the technology underpinning BEVs continues to develop, production processes can be expected to become more efficient, reducing the greenhouse gas emissions associated with this.

Approved for circulation to the Standing Committee on Environment, Climate Change and Biodiversity

Signature: *Andrew Barr*

Date: 17.3.21

By the Minister for Climate Action, Andrew Barr MLA

<sup>3</sup> Can be viewed at <https://www.ucsusa.org/sites/default/files/attach/2015/11/Cleaner-Cars-from-Cradle-to-Grave-full-report.pdf>

