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# Break-even Analysis of Production Subsidies for Stellantis-LGES and Volkswagen



OFFICE OF THE PARLIAMENTARY BUDGET OFFICER  
BUREAU DU DIRECTEUR PARLEMENTAIRE DU BUDGET



The Parliamentary Budget Officer (PBO) supports Parliament by providing economic and financial analysis for the purposes of raising the quality of parliamentary debate and promoting greater budget transparency and accountability.

This report provides a break-even analysis of the support for Stellantis-LG Energy Solutions and Volkswagen to estimate the period over which government revenues generated from their EV battery manufacturing plants will be equal to the total amount of production subsidies announced by the governments of Canada and Ontario.

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**Parliamentary Budget Officer**

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# Highlights

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The federal government and the government of Ontario recently announced production subsidies of up to \$15 billion for Stellantis-LG Energy Solutions (LGES). Based on the federal government's estimates, this brings announced production subsidies for Stellantis-LGES and Volkswagen to \$28.2 billion by the end of 2032.

PBO estimates that federal and provincial government revenues generated from the Stellantis-LGES and Volkswagen EV battery manufacturing plants over the period of 2024 to 2043 will be equal to the total amount of production subsidies (\$28.2 billion)—a break-even timeline of twenty years.

# Summary

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In April, the federal government announced funding support to Volkswagen for their electric vehicle (EV) battery manufacturing plant, including an estimated \$13.2 billion in production subsidies. At the time of the announcement, the Prime Minister indicated that “projections show that the full economic impact of the project will be equal to the value of government investment in less than five years.”

In July, the federal government and the government of Ontario announced production subsidies for the Stellantis-LG Energy Solutions (LGES) EV battery manufacturing plant, subject to an overall cap of \$15 billion. Based on the federal government’s estimates, this brings announced production subsidies for Stellantis-LGES and Volkswagen to \$28.2 billion by the end of 2032.

At the same time, the federal government announced a cost-sharing agreement with the Ontario government. Under this agreement, the federal government will now cover two-thirds of the production subsidies for Stellantis-LGES and Volkswagen (\$18.8 billion), while Ontario will now provide one-third (\$9.4 billion).

The federal government has not announced a break-even timeline for the Stellantis-LGES production subsidies.

This report first details the federal government’s break-even analysis of the production subsidy provided to Volkswagen. Next, using the same data source, we provide a break-even analysis of the support for Stellantis-LGES and Volkswagen.

Given the uncertainty surrounding the future geographic location of investments and production related to other nodes of the EV supply chain, such as EV assembly and battery material production, PBO’s estimate represents only the government revenues generated by cell and module

manufacturing, upon which the production subsidies are based. This contrasts with the federal government's break-even analysis for Volkswagen, which included investments and assumed production increases in other nodes of the EV supply chain.

PBO estimates that federal and provincial government revenues generated from the Stellantis-LGES and Volkswagen EV battery manufacturing plants over the period 2024 to 2043 will be equal to the total amount of production subsidies. That is, the break-even timeline for the \$28.2 billion in production subsidies announced for Stellantis-LGES and Volkswagen is estimated to be twenty years.

# Background

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In June, PBO released [a report](#) that examined Canada's support for Volkswagen's electric vehicle (EV) battery manufacturing plant.<sup>1</sup> The federal funding included a production subsidy to match the U.S. *Inflation Reduction Act's* (IRA) Advanced Manufacturing Production Credit (AMPC) and a contribution through the Strategic Innovation Fund to support the plant's construction.

Since PBO's June report, new announcements have been made regarding Canada's automotive sector. On July 6, the federal government announced funding support for the Stellantis-LG Electric Solutions (LGES)<sup>2</sup> EV battery manufacturing plant.<sup>3</sup> The Stellantis-LGES plant, announced on March 23, 2022, is the first large-scale EV battery manufacturing plant to be built in Canada.<sup>4</sup>

The production subsidy that will be provided to Stellantis-LGES for battery cells is the same as that offered to Volkswagen—equivalent to US\$35 per kilowatt-hour (kWh). Stellantis-LGES will also receive a production subsidy for battery modules equivalent to US\$10 per kWh. These production subsidies match the IRA's AMPC and are subject to an overall cap of \$15 billion.

Based on the federal government's estimates, this brings announced production subsidies for Stellantis-LGES (of up to \$15 billion) and Volkswagen (of \$13.2 billion) to \$28.2 billion by the end of 2032. After 2032, the production subsidies will be eliminated.<sup>5</sup>

In addition to the new agreement with Stellantis-LGES, the federal government also announced a cost-sharing agreement with the government of Ontario. Under this agreement, the federal government will now cover two-thirds of the production subsidies for Stellantis-LGES and Volkswagen (\$18.8 billion), while Ontario will now provide one-third of

funding (\$9.4 billion). No changes have been made to the existing agreement between the federal government and Volkswagen.

Further, following the release of PBO's June report, the Minister of Finance clarified that the production subsidies provided to Volkswagen will not be subject to taxation.<sup>6</sup>

This report first details the federal government's break-even analysis of the production subsidy provided to Volkswagen. Next, using the same underlying data source, we provide a break-even analysis of the support for Stellantis-LGES and Volkswagen to estimate the period over which government revenues generated from their EV battery manufacturing plants will be equal to the total amount of production subsidies announced by the governments of Canada and Ontario.



# Break-even Analysis

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## The federal government's break-even analysis of the Volkswagen production subsidy

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When the federal government announced the Volkswagen agreement in April, the Prime Minister indicated that “projections show that the full economic impact of the project will be equal to the value of government investment in less than five years.”<sup>7</sup> This timeline was echoed by the Minister of Innovation, Science and Industry, stating the “payback” of the investment would occur within five years.<sup>8</sup>

At the time of the announcement, no underlying detail was provided on the break-even timeline. To understand the analysis supporting the government's timeline, the PBO sent an [information request](#) to the Minister of Innovation, Science and Industry.

In response to the PBO's request, Innovation, Science and Economic Development (ISED) indicated that to estimate the break-even timeline, they relied on modeling done by the Trillium Network for Advanced Manufacturing (Trillium Network) and Clean Energy Canada in their 2022 report, [Canada's New Economic Engine](#). The report presents four potential scenarios for Canada's electric vehicle battery supply chain in 2030 based on various degrees of government support (not quantified) and estimates the economic impacts under each scenario.

ISED identified two scenarios of interest for their analysis: scenarios 1 and 3. The first scenario (“Off-Target EV Adoption”) includes only EV battery-related investments announced in Canada at the time of the report, including the Stellantis-LGES facility, and assumes EV sales across Canada and the U.S. fall short of government announced targets. ISED characterized

scenario 1 as the most likely scenario had the federal government not announced the production subsidy for Volkswagen.

Scenario 3 (“Continued Momentum”) includes the addition of another major battery cell facility, as well as achieving government announced EV sales targets in Canada and the U.S., and includes additional investments and assumed increases in production in other nodes of the EV supply chain.

ISED then used the difference between scenarios 3 and 1 to represent the incrementality of the Volkswagen EV battery manufacturing plant and other investments in the EV supply chain.<sup>9</sup> To estimate a break-even timeline for the production subsidy announced for Volkswagen, ISED calculated the difference in combined federal and provincial government revenues in 2030 between scenario 3 (\$6.7 billion) and scenario 1 (\$2.7 billion) shown in Table 1.

**Table 1**  
Government revenues in millions of dollars, 2030

EV supply chain node:	Scenario 3	Scenario 1	Difference
Mineral exploration	83	18	65
Mining	315	69	246
Battery materials	1,159	425	734
Battery components	325	55	270
Cell manufacturing	771	424	347
Module manufacturing	153	67	86
Pack assembly	184	83	101
Vehicle assembly	3,683	1,507	2,176
Recycling	58	37	21
<b>Total</b>	<b>6,730</b>	<b>2,685</b>	<b>4,045</b>

Source:  
Trillium Network for Advanced Manufacturing.

Note:  
Government revenues include both federal and provincial government revenues.

Assuming an additional \$4 billion annually in government revenues at full production, ISED estimated that government revenues (that is, federal and provincial), on a cumulative basis, would be equal to the value of the production subsidy (of \$13.2 billion) in 3.3 years—consistent with the “less than five years” timeline announced by the Prime Minister and Minister of Innovation, Science and Industry.<sup>10</sup>

Modeling done by the Trillium Network encompasses the entire EV supply chain. As shown above in Table 1, government revenues in the report include revenues generated from all supply chain nodes.<sup>11</sup> Cell manufacturing, which will occur at the Volkswagen plant, only represents a fraction of incremental revenues (8.6 per cent) across the supply chain. ISED confirmed to PBO that the additional government revenues in their analysis are “due not only directly to the PowerCo. [Volkswagen] investment, but to other anticipated investments made through the supply chain.”<sup>12</sup>

The federal government has not announced a break-even timeline for the Stellantis-LGES production subsidies.

## PBO’s break-even analysis of the Stellantis-LGES and Volkswagen production subsidies

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Based on the same Trillium Network report used by ISED, we estimate a break-even timeline for the \$28.2 billion in production subsidies announced for Stellantis-LGES and Volkswagen.<sup>13</sup>

However, given the uncertainty surrounding the future geographic location of investments and production related to other nodes of the EV supply chain, such as EV assembly and battery material production, our estimate represents only the government revenues generated by cell and module manufacturing, upon which the production subsidies are based.<sup>14</sup> This contrasts with the federal government’s break-even analysis for

Volkswagen, which included investments and assumed production increases in other nodes of the EV supply chain.

For this report, the break-even timeline refers to the period over which government revenues generated by the Stellantis-LGES and Volkswagen EV battery manufacturing plants, on a cumulative basis, are equal to the amount of the production subsidies announced by the governments of Canada and Ontario (\$28.2 billion). Further, our break-even timeline begins the first year of planned production (2024 for Stellantis-LGES).

PBO's break-even analysis is not a cost-benefit analysis. The analysis does not include public debt charges that would be incurred to finance the production subsidies, nor does it discount future government revenue and expenditure amounts (that is, a present-value calculation).<sup>15</sup>

With the inclusion of both the Stellantis-LGES and the Volkswagen EV battery manufacturing plants, we judge scenario 3 in the Trillium Network report to be the most relevant scenario. Using the government revenues and production levels for both cell and module manufacturing from scenario 3, we calculated revenue yields in terms of dollars per gigawatt-hour (GWh) for both nodes (Table 2).

**Table 2**

Government revenue yield assumptions, 2030

	Revenues* (Scenario 3)	Production (Scenario 3)	Annual revenue yield*
<b>Cell manufacturing</b>	\$771 million	90.0 GWh	\$8.57 million per GWh
<b>Module manufacturing</b>	\$153 million	55.6 GWh	\$2.75 million per GWh

Sources:

Trillium Network for Advanced Manufacturing and Office of the Parliamentary Budget Officer.

Note:

\* Government revenues and revenue yields include both federal and provincial governments.

Government revenue yields were then applied to projected annual production levels of both plants to estimate government revenue on an annual basis, starting the first year of planned production in 2024.

As the government revenues in the Trillium Network report are projected in 2030, we increased the revenue yields by projected growth in nominal GDP for years beyond 2030 based on PBO's July 2023 [Fiscal Sustainability Report](#). For years 2024 to 2029, we assumed that the 2030 revenue yields would be realized.<sup>16</sup>

Production of battery cells and battery modules from 2024 to 2032 are based on estimates provided in the Stellantis-LGES and Volkswagen agreements. Beyond 2032, we assumed that full production levels of cells and modules would be maintained.<sup>17</sup>

We estimate that federal and provincial government revenues generated from the Stellantis-LGES and Volkswagen EV battery manufacturing plants over the period 2024 to 2043 will be equal to the total amount of production subsidies (Table 3). That is, the break-even timeline for the \$28.2 billion in production subsidies announced for Stellantis-LGES and Volkswagen is estimated to be twenty years.

**Table 3**

Cumulative government revenues from 2024 to 2043, billions of dollars

	Federal and provincial	Federal	Provincial
<b>Government revenues</b>	28.8	19.2	9.6
<b>Production subsidies</b>	28.2	18.8	9.4

Source:

Office of the Parliamentary Budget Officer.

# Notes

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<sup>1</sup> Volkswagen Group and its subsidiary PowerCo SE.

<sup>2</sup> NextStar Energy is a joint venture between Stellantis and LGES.

<sup>3</sup> Innovation, Science and Economic Development Canada, [Canada and Ontario Establish An Auto Pact to Secure Stellantis-LGES and Volkswagen deals.](#)

<sup>4</sup> Innovation, Science and Economic Development Canada, [Government of Canada welcomes largest investment in Canada's auto industry with the first large-scale domestic EV battery manufacturing facility.](#)

<sup>5</sup> Details on the conditions of the production subsidy can be found in PBO's [June 2023 report.](#)

<sup>6</sup> The Globe and Mail. [Freeland disputes PBO report saying Volkswagen support will cost \\$3-billion above original estimate.](#)

<sup>7</sup> Prime Minister of Canada, [Volkswagen's new electric vehicle battery plant will create thousands of new jobs.](#)

<sup>8</sup> CBC News. [VW deal a 'game changer' for Canada: Champagne.](#)

<sup>9</sup> With the inclusion of another major electric vehicle battery manufacturing plant in scenario 3, the annual battery cell production doubles from 45 gigawatt-hours (GWh) to 90 GWh (see the Trillium Network's supporting [technical report](#)).

Although the Volkswagen plant is expected to have an annual production capacity of 90 GWh at completion, the difference in additional production between scenarios 3 and 1 is only 45 GWh. ISED indicated that they chose to use the difference between scenarios 3 and 1 to maintain a more

conservative estimate. Since the subsidy is based on full battery cell production levels, this is consistent with discounting government revenues generated from investments and assumed production increases in other nodes of the EV supply chain.

<sup>10</sup> While government revenues in the Trillium Network report include both provincial and federal revenues, the production subsidy of \$13.2 billion used in ISED's analysis is strictly federal. When the government's break-even timeline was announced, the cost-sharing agreement with Ontario was not yet in place, though ISED did not exclude the provincial proportion of revenues from its analysis.

<sup>11</sup> Trillium Network for Advanced Manufacturing. [Developing Canada's Electric Vehicle Battery Supply Chain: Quantifying the Economic Impacts and Opportunities](#).

<sup>12</sup> Innovation, Science and Economic Development Canada in response to [PBO information request IR0698](#).

<sup>13</sup> PBO acknowledges, without endorsement, the analysis done by the Trillium Network in its report, "Developing Canada's Electric Vehicle Battery Supply Chain: Quantifying the Economic Impacts and Opportunities".

The Trillium Network report acknowledges the limitations of its input-output-based analysis and references the publication compiled by the Northwest Territories Bureau of Statistics, [NWT Input-Output Model: An Overview](#).

One of the key limitations of input-output analysis is that there are no supply constraints. Consequently, estimated impacts based on input-output analysis overstate their incrementality since supply constraints do exist and resources from other sectors/industries would have to be shifted to meet increased demand.

As EV adoption increases and economies transition away from internal combustion engine vehicles (ICEVs), incremental impacts will be more closely tied to the difference in value added between EV and ICEV supply chains, all else equal.

<sup>14</sup> That said, the estimated impacts at each node in the EV supply chain in the Trillium Network report capture direct, indirect and induced economic impacts. Further, their results obtained for each node were adjusted “to avoid overestimating economic contributions found in related nodes of the supply chain.”

<sup>15</sup> Discounting the profiles of government revenues and subsidies would increase the break-even timeline.

<sup>16</sup> Deflating the revenue yields prior to 2030 does not impact the break-even timeline of twenty years.

<sup>17</sup> In their public statements, [Volkswagen announced an annual production capacity of up to 90 GWh in the final expansion stage](#) and [Stellantis-LGES announced an annual production capacity in excess of 45 GWh](#).



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