Impact of Eliminating the Zero-Emissions Vehicle Tax Credit on the Georgia State Economy

PREPARED FOR:
Securing America's Future Energy and
The Electrification Coalition

PREPARED BY:
Robert F. Wescott, Ph.D.
Katie Archer
Cameron Egan

February 18, 2015

Keybridge is a boutique economic and public policy consulting firm. Keybridge provides technical analysis and strategic advice to a diverse clientele that includes leading non-profit organizations, global financial institutions, multinational corporations, premier trade associations, and federal government agencies. Our principals serve as economists, policy experts, and strategic advisers on issues that reside at the forefront of public policy economics.

For more information, please visit us at www.keybridgedc.com.

TABLE OF CONTENTS

[THIS PAGE INTENTIONALLY LEFT BLANK]

EXECUTIVE SUMMARY

Georgia currently offers a $5,000 personal income tax credit to support the purchase of zero-emissions, or all-electric vehicles. The credit has played a significant role in boosting Georgia's EV penetration rate to one of the highest rates in the country—1.9 percent of all new light duty-vehicle sales in 2014. This study, commissioned by Securing America's Future Energy (SAFE) and the Electrification Coalition, examines the economic effects of a possible elimination of the tax credit on the Georgia state economy.

The study evaluates two scenarios – a "baseline" scenario in which Georgia's tax credit remains in place through 2019 and a "policy shock" scenario in which the state credit is eliminated in 2015. It quantifies the impact on state GDP of removing the tax credit by comparing the two scenarios. The study starts with an accounting of the household-level response to the removal of the tax credit and aggregates up to the state-level. The study's micro-level consumer cost model is based on the Electric Power Research Institute's (EPRI) 2013 and 2014 reports on the economics of EV ownership, which provide detailed estimates of the cost of owning and operating electric vehicles (EVs) relative to a comparison set of conventional vehicles. The study's macroeconomic modeling of the state-level impacts relies on a 70-sector model of Georgia's economy developed by REMI, Inc., a leading supplier of regional economic models.

The study finds that the elimination of Georgia's $5,000 tax credit would reduce Georgia's real GDP (or aggregate state income) each year between 2015 and 2030.

- The cumulative 5-year loss in Georgia's GDP is $107 million, and the cumulative 16-year loss totals $252 million, assuming that consumers respond to the elimination of the tax credit by purchasing conventional internal combustion engine vehicles instead of EVs. This overall loss of Georgia GDP occurs despite the repurposing of "saved" EV tax credits on other forms of state government spending.
- Further, the study finds that without the state tax credit, Georgia car owners would pay an additional $155 million in gasoline bills over the next five years and an additional $714 million through 2030 (only partially offset by saving $261 million in electricity bills).
- Additionally, it finds that if the state EV tax credit were eliminated, Georgia would be giving up a type of future economic insurance policy for its consumers. If the credit were eliminated (and there were fewer EVs on Georgia roads) and gasoline prices were to spike by $1.50 a gallon in 2020 due to an oil shock, Georgia drivers would have to spend $28 million more per year for fuel.

Two key factors account for the reduction in state GDP. With significantly fewer EVs on the road in the absence of the state tax credit, Georgia drivers would have to pay more for transportation fuel over the coming years, because EVs are cheaper to operate than conventional vehicles. This would cause reduced spending on other Georgia-produced goods and services. Second, the elimination of the state's tax credit would reduce current cash inflows to Georgia households from the federal $7,500 electric vehicle income tax credit.

I. INTRODUCTION

In an effort to increase electric vehicle penetration, the Georgia state government currently offers an income tax credit of up to $5,000 to individuals who purchase or lease a new all-electric vehicle (also known as battery electric vehicles, or BEVs). This Zero Emission Vehicle (ZEV) tax credit does not apply to vehicles that can run off a standard combustion engine; therefore, pure-electric vehicles qualify for the credit, while plug-in hybrids (PHEVs) do not. The credit has played a significant role in boosting Georgia's EV penetration rate to one of the highest rates in the country—1.9 percent of all new light duty-vehicle sales in 2014.[1]

Recently, several Georgia lawmakers have called for the tax credit to be eliminated, arguing that the cost to the state budget outweighs the benefits. This study, commissioned by Securing America's Future Energy (SAFE) and the Electrification Coalition, quantifies the economic impact of a possible elimination of Georgia's ZEV income tax credit on the state economy. It essentially asks what the likely impact would be on Georgia's economy if people currently purchasing all-electric vehicles in response to the state tax incentive purchased conventional vehicles instead?

The study adopts a detailed consumer model of the economics of electric vehicle ownership and operation conducted by the Electric Power Research Institute's (EPRI) in 2013 and 2014. For the macroeconomic modeling component, the study relies on a 70-sector model of Georgia's economy developed by REMI, Inc., a leading supplier of regional economic models.

The report is organized as follows: Section II provides policy context behind the rationale behind the current discussion regarding tax credits for EVs; Section III outlines the study's technical approach and core assumptions; Section IV describes the study's main findings; and Section V offers key conclusions from the modeling exercise. Four technical appendices present the study's detailed results, a full list of its modeling assumptions, a description of the model used to conduct the study, and references.

II. POLICY CONTEXT

Over the past five years, car manufacturers have begun to introduce electric vehicles (EVs) into the American light-duty vehicle market. The potential advantages of increased EV ownership are numerous: electric vehicles provide an opportunity to reduce household spending on transportation over the long-run, insulate consumers from gas price fluctuations, improve U.S. energy diversification, and emit minimal to zero tailpipe pollutants.[2] Despite these benefits, EVs account for only a small segment of U.S. vehicle purchases each year. One likely reason for this is that EVs can still be considered an "infant industry". In other words, EVs represent a relatively new technology that may have difficulty gaining market share in an industry dominated by an older technology (in this case, the traditional combustion engine). This may be due to a variety of factors, including entrenched consumer habits, an extensive conventional infrastructure (like

[1] Polk Automotive, Vehicle Sales by State, January 2011 – October 2014

[2] Congressional Budget Office (2012). "Effects of Federal Tax Credits for the Purchase of Electric Vehicles."

fueling infrastructure), and the relatively higher cost of younger technologies, which typically lack the economies of scale in production enjoyed by older technologies.

Given these factors, and in light of the benefits associated with increased EV penetration, the federal government has established an income tax credit of $7,500 in order to incentivize the uptake of EVs. Because policymakers expect the EV industry to mature over time and compete with conventional internal combustion engine (ICE) vehicles without government support as economies of scale improve, the federal credit is available for the purchase of the first 200,000 EVs sold by each auto manufacturer and is set to phase out once sales quotas are hit.

At the state level, lawmakers can amplify the effect of the federal credit by offering their own EV tax credit. This can allow them to capture the immediate economic benefits associated with federal funds flowing into the state as well as the long-term, sustained benefits of higher EV penetration. More state residents driving EVs translates into reduced spending on gasoline and vehicle maintenance, which frees up a larger share of household budgets to be spent on other goods and services. In Georgia, policymakers have attempted to capture these benefits by establishing a $5,000 state income tax credit for zero-emissions BEVs, which has been highly effective at increasing the state's EV penetration rate. While critics of the tax credit emphasize its cost to the state budget, proponents assert that the benefits of reduced gasoline consumption create positive ripple effects throughout Georgia's economy.

III. METHODOLOGY

3.1 TECHNICAL APPROACH

This study evaluates two core scenarios – a "baseline" scenario in which Georgia's $5,000 ZEV income tax credit remains in place through 2019 and a "policy shock" scenario in which the state credit is eliminated in 2015 – and quantifies the impact on state GDP of removing the tax credit, relative to the baseline. The study considers a 16-year time horizon, which spans the five years during which the state tax credit is assumed to be available and is intended to coincide with the average lifetime of new vehicles (i.e., vehicles purchased in the program's fifth and final year are assumed to be taken off the road in the last year of the modeling time horizon).

The study begins with a "bottom up" approach, starting with an accounting of the household-level response to the removal of the tax credit and aggregates up to the state-level. The study's micro-level consumer cost model is based on the Electric Power Research Institute's (EPRI) 2013 and 2014 reports on the economics of EV ownership, which provide detailed estimates of the cost of owning and operating electric vehicles relative a set of comparison alternate vehicles. To perform the macroeconomic analysis the study then relies on a 70-sector model of Georgia's economy developed by REMI, Inc., which is based on a U.S. Bureau of Economic Analysis input-output database that captures the specific structure of the Georgia state economy and captures the inter-industry flows in activity within the state.

Finally, given the inherent uncertainty in any modeling exercise, this study considers the impacts of eliminating Georgia's ZEV tax credit under several different scenarios. First, the study includes high and low gas price scenarios in addition to its "baseline" gas price assumption. Second, the study adopts the EPRI study's approach and reports two sets of results: one that assumes would-be EV purchasers buy a conventional ICE vehicle when the state tax credit is eliminated, and another that assumes they buy a hybrid ICE vehicle.

3.1.1 Micro-Level Georgia Consumer Model

Removing Georgia's ZEV tax credit will cause a number of consumers who would have purchased a BEV to purchase an ICE vehicle instead. This behavioral change in response to the change in the incentive structure regarding BEVs will increase the share of consumers' budgets spent on gasoline, leaving less disposable income to be spent on other goods and services throughout the state. It will also reduce the number of Georgia households receiving the $7,500 federal EV tax credit, which can be applied to the cost of a new EV purchase, or to purchasing additional "other" goods and services.

In order to quantify these changes, this study develops a consumer cost model that represents an individual, "average" Georgia consumer. The consumer model quantifies the impact of owning and operating a conventional or hybrid ICE vehicle instead of an all-electric vehicle on the average Georgia consumer's household budget. The development of the consumer model relies heavily on EPRI's 2013 and 2014 reports on the economics of EV ownership. Specifically, the consumer cost model is built around four key cost drivers: vehicle purchase price; electricity cost; gasoline cost; and operating and maintenance costs.

In order to translate the impact of the policy shock on a single consumer's budget into state-level macroeconomic impacts, the study multiplies the results of the consumer model by the number of Georgians who would likely be affected by the elimination of the tax credit. In order to determine the number of Georgia consumers impacted by this policy shock, the study evaluates EV penetration rates in Georgia and its neighboring states and applies 2014 sales numbers and consumer behavior to the baseline and policy shock scenarios.

Currently, Georgia has one of the nation's highest penetration rates for all-electric vehicles in new vehicle sales. In 2014, 1.9 percent of all vehicle sales were BEVs, well-above the national average of just 0.2 percent. Specifically, BEV sales in Georgia totaled approximately 9,323 in 2014, and the baseline scenario assumes that this level of sales continues for the modeled duration of the tax credit, until 2019. Conversely, the policy shock scenario assumes that the tax credit's elimination would result in 8,706 fewer BEV sales annually, roughly a 90% reduction in sales. This sharp expected drop in BEV purchases is based on the evidence from a comparison group of states in the same region as Georgia: North Carolina, Virginia, and Florida. All three states lack state-level EV tax credit programs, but have at least one large urban area and climates similar to Georgia's. Based on these similar characteristics, the study assumes that – in the absence of a state-level tax incentive – the BEV penetration rate in Georgia would fall to a level equivalent to rates in North Carolina, Virginia, and Florida, which are significantly lower.[3]

[3] See Appendix B for a more detailed discussion of the methodology surrounding the Georgia consumer's demand-response to the elimination of the state tax credit.

3.1.2 Macro-Level Georgia State Model

The results of the consumer cost model, scaled up to account for the number of Georgia consumers affected by the presence of the state tax credit in the baseline scenario and the absence of the credit in the policy shock scenario, were used as the first of two key assumptions for the study's macroeconomic model:

(1) **Consumer Spending:** The REMI model uses the aggregate change in the amount and distribution of consumer spending – the output of the micro-level Georgia consumer model – to calculate the impact of the policy shock on Georgia's economic output. The modeling assumes that household budgets are fixed. That is, increases or decreases in specific spending categories (e.g., gasoline) are offset by reciprocal increases or decreases in other spending. An exception to this assumption is the treatment of the federal and state tax credits. Because the tax credits are, in effect, additional income to consumers, they result in spending increases — primarily on motor vehicles — which are not offset by a decrease in other spending. For this reason, the elimination of the Georgia tax credit results in a net reduction in consumer spending.

(2) **Government Spending:** The second key assumption for the macroeconomic modeling is the change in Georgia state government spending as a result of the tax credit's elimination. The study assumes that the elimination of the EV tax credit allows the state of Georgia to ramp up its purchases of other goods and services by the same amount as the "saved" EV tax expenditures. That is, the study explicitly assumes that the net budget position of state of Georgia is unchanged with or without the ZEV tax credit.

Based upon these two key modeling assumptions, and a range of other assumptions (discussed briefly below and more fully in Appendix B), the macro model is used to estimate the impact of eliminating Georgia's ZEV tax credit on state economic output annually from 2015 through 2030.

3.2 CORE TECHNICAL ASSUMPTIONS

The results of both the micro-level consumer model and the macro-level state model are dependent upon a set of core assumptions regarding vehicle characteristics, consumer behavior, and economic and price variables.

Regarding vehicle characteristics and the costs of vehicle ownership and operation, most of the study's assumptions are taken from the EPRI's 2013 and 2014 studies on the total cost of EV ownership, which provide detailed estimates of the capital, fuel, and maintenance costs of electric vehicles and a group of comparator conventional and hybrid ICE vehicles. However, this study makes several adjustments to EPRI's assumptions in order to incorporate more recent information regarding the characteristics of EVs and vehicle and fuel prices. A review of the study's core assumptions is included below and a more detailed discussion is contained in Appendix B.

Vehicle Model: As a simplifying assumption this study takes the price and characteristics of the Nissan Leaf as representative of all BEVs sold in Georgia during the modeling period. The study does not assume a particular model for conventional or hybrid ICE vehicles, but rather relies on the average vehicle characteristics for EPRI's comparator groups of conventional and hybrid vehicles.

Vehicle Lifetime & Miles Driven: This study assumes that all vehicle types – electric vehicles, hybrids, and conventional vehicles – have a 12-year lifetime. This assumption is based on EPRI's assumption of 150,000 lifetime miles for all vehicle types, and data from the Oak Ridge National Laboratory's 2014 Transportation Energy Book suggesting that vehicles travel an average of 12,500 miles per year. Vehicle lifetime is important in the context of the study because it affects the amount of money that consumers must spend to fuel their vehicles over time, and therefore the relative affordability of operating BEV versus ICE vehicles.

Gasoline Prices: Gasoline price assumptions are based on regional historical prices reported in the Energy Information Administration's (EIA) January 2015 Short-Term Energy Outlook, and regional price forecasts reported in the EIA's 2014 Annual Energy Outlook. This approach grounds the model in recent gasoline price trends while allowing prices to increase gradually over time. The study assumes a gasoline price of $2.31 per gallon in 2015, $2.92 in 2020, $3.40 in 2025, and $3.87 in 2030.

Acknowledging the uncertainty and volatility inherent in predicting gasoline prices, the model also conducts sensitivity analysis around the gasoline price assumption. The high gasoline price scenario adds $1 to the reference case gasoline price assumption for each year, while the low price scenario subtracts $1 each year. Under the low price scenario, prices stay below $3.00 per gallon throughout the entire 2015-2030 modeling period, while under the high price scenario gasoline prices reach almost $5.00 per gallon in 2030.

Electricity Prices: Electricity price assumptions are based on state-specific historical prices reported in the EIA's December 2014 Monthly Electricity Review and regional price forecasts reported in the EIA's 2014 Short Term and Annual Energy Outlooks. Specifically, state-specific prices from the MER were used as the jumping-off point and were increased gradually over time according the regional growth rates forecast in the STEO and AEO. This approach accounts for the significant variation in electricity prices across states, due to different generation sources, while allowing prices to fluctuate over time.

Tax Credit "Capture": For several reasons, this study assumes that Georgia consumers who purchase a BEV capture 100% of both the federal and state income tax credits. First, survey data indicate that the vast majority of national EV purchasers have household incomes that result in federal tax liabilities above $7,500 — the threshold needed to capture the full federal tax credit.[4] Second, because Georgia's tax credit has a five-year carry-forward provision, Georgia consumers have five years to capture the full $5,000 refund. Finally, many BEVs in Georgia are leased and leasing companies are organized to be able to fully capture (and pass on to lessees) tax credits associated with vehicle purchases. It is possible, of course, that some BEV purchasers may not receive the full tax credit amount.

---

[4] The EV Project (August 2013). "Who are the Participants in the EV Project?" http://www.theevproject.com/cms-assets/documents/128842-80098.devproj.pdf

Consumer Behavior: It is assumed that all EV purchasers put the full $7,500 federal tax credit toward the vehicle purchase, but that a subset of Georgia consumers spend a portion of the state tax credit on goods and services other than the vehicle, and save the remainder. This reflects the assumption that roughly 10 percent of Georgia consumers would purchase an EV without the existence of the state tax credit, and that they therefore treat the state credit as additional income rather than a necessary incentive to make the purchase.

IV. RESULTS

The study finds that the elimination of Georgia's $5,000 tax credit would reduce Georgia's real GDP each year between 2015 and 2030. Specifically, it finds that the cumulative 5-year GDP loss to the state economy is $107 million, and the cumulative 16-year loss totals $252 million, assuming that consumers respond to the elimination of the tax credit by purchasing conventional internal combustion engine vehicles instead of electric vehicles. This overall loss of Georgia GDP occurs despite the recycling of "saved" EV tax credits on other forms of state government spending.

Two key factors account for this reduction in state GDP, both of which contribute to a net decline in aggregate consumer spending. With significantly fewer EVs on the road in the absence of the state tax credit, Georgia drivers would have to pay more for transportation fuel over the coming years, given that conventional vehicles cost more to operate than BEVs. Second, the elimination of the state's tax credit would cause a substantial reduction in the number of electric vehicles sold in Georgia, which would reduce cash inflows from the federal $7,500 electric vehicle income tax credit. Currently, this credit represents a form of additional after-tax income to Georgia households. Importantly, this net decline in consumer spending holds true across all gas price scenarios and regardless of whether consumers choose to purchase a conventional or hybrid vehicle instead of an all-electric vehicle.

The sections below report these results in more detail. Section 4.1 details the impact of removing Georgia's ZEV tax credit on consumer spending, Section 4.2 describes the impact on the state budget, and Section 4.3 details the impact macro impact of eliminating the tax credit on the state economy. Note that all results reported below are consistent with a scenario in which Georgia consumers purchase conventional ICE vehicles instead of BEVs when the state credit is removed. The core conclusions, do not change significantly depending upon whether consumers are assumed to purchase a conventional or a hybrid vehicle instead of a BEV. For this reason, Section IV does not report results for the hybrid alternate vehicle scenario. Appendix A provides complete results tables relative to both the conventional and the hybrid alternate vehicle scenarios.

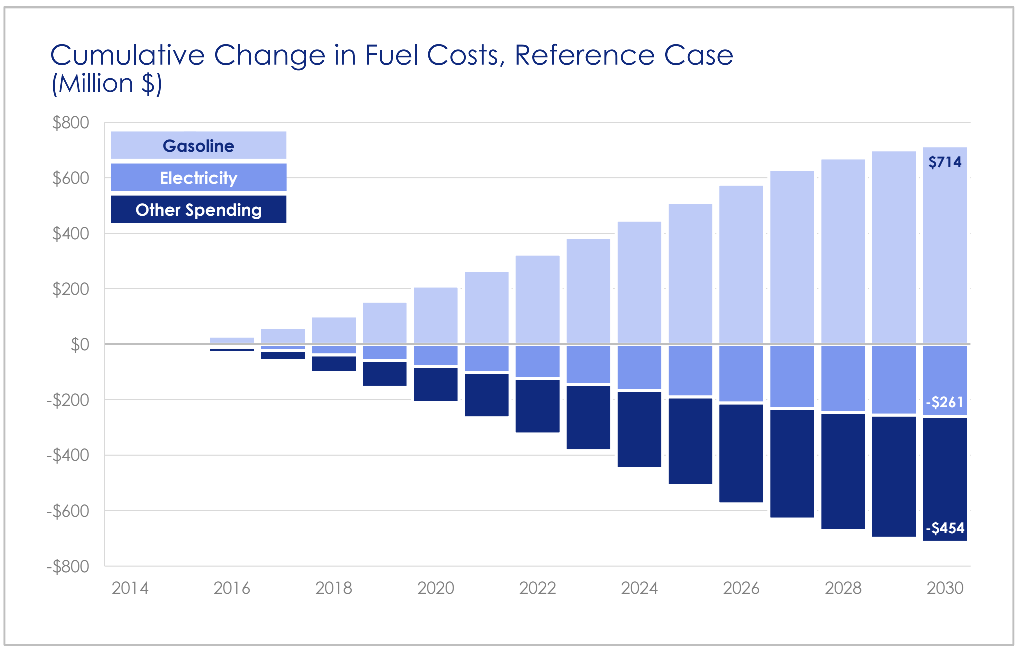
4.1 IMPACT ON CONSUMER SPENDING

Shifts in Georgia consumer spending in response to the elimination of the tax credit and the differences between EVs and alternative vehicles affect several major spending categories:

- **Motor Vehicles:** Spending on motor vehicles declines by $73 million each year between 2015 and 2019, resulting in a cumulative $389 million drop in motor vehicle spending. This shift accounts for the "would-be" EV purchasers who decide to buy a conventional ICE vehicle in the absence of the state tax credit, as the purchase price of a conventional vehicle is lower than that of an EV.

- **Motor Fuel:** Spending on electricity falls by a total of $261 million over the modeling period, while gasoline spending increases by $714 million. These spending shifts reflect lower fuel costs for BEVs than for conventional vehicles. With the elimination of Georgia's ZEV credit, consumers would spend more on gasoline and less on other goods and services (given the study's fixed household budget assumption). Importantly, if the state tax credit is removed Georgia households would spend more on motor fuel regardless of the future trajectory of gas prices. According to the study's low gas price scenario, total spending on gasoline increases by $489 million; under the high price scenario, spending increases by $939 million.

Figure 1. Shifts in Georgia Motor Fuel Spending



- **Vehicle Maintenance & Operation:** Reflecting higher maintenance costs for conventional vehicles compared to BEVs, spending on motor vehicle maintenance increases by $208 million over the modeling period, while general spending declines by a reciprocal $208 million. However, based on the assumption that BEV owners must pay to rent a replacement vehicle on days that require a greater driving range than the BEV is able to provide, the elimination of the tax credit lowers this "maintenance and replacement" cost to BEV consumers by a total of $213 million, freeing up $213 million for general consumer spending.

The Impact of an Oil Price Shock

In addition to the low and high gas price scenarios, the study also examined the impact of an oil price shock on gasoline spending. In the event that unforeseen economic or political events prompt a severe and sustained oil supply shock – simulated in this study as a sudden $1.50 spike in gas prices in 2020 and 2021 – Georgia consumers would spend an additional $28 million per year on fuel. This $28 million is *on top of* the roughly $76 million in additional gasoline spending as a result of the removal of the tax credit under more typical gas prices. In essence, removing the state tax credit would take approximately 44,000 BEVs off the road by 2019, thereby giving up a type of future economic insurance policy against oil price spikes for its consumers.

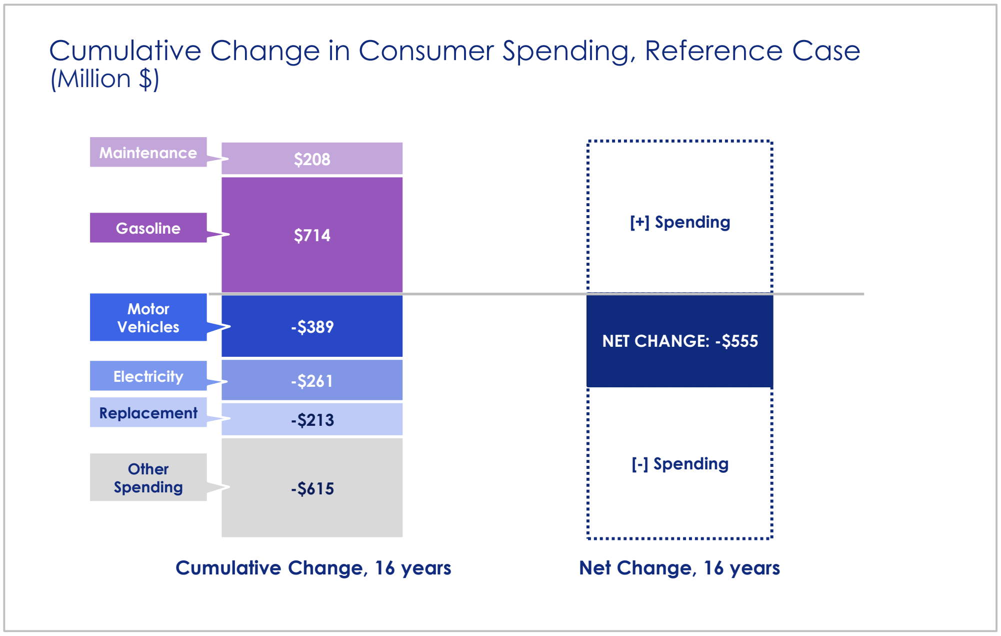
Table 1. Change in Aggregate Consumer Spending, Reference Case (Million $)

Consumer Spending	1 Year	5 Years	16 Years
Motor Vehicle Spending	-$73	-$389	-$389
Electricity Spending	-$4	-$60	-$261
Gasoline Spending	$9	$155	$714
Maintenance Spending	$0	$33	$208
Replacement Spending	-$3	-$46	-$213
Other Consumer Spending	-$40	-$247	-$614
Net Change	**-$111**	**-$555**	**-$555**

On net, these shifts in consumer spending categories reduce total consumer spending in the state by $555 million over the 16-year modeling period. Importantly, the net decline in consumer spending holds true across all gas price scenarios, regardless of whether consumers choose to purchase a conventional or a hybrid vehicle instead of a BEV.

This decline reflects the loss of additional income to Georgia households from the federal and state tax credits. Currently, the federal credit represents a form of additional after-tax income to Georgia households that choose to purchase an EV. The impact of eliminating the state credit and forgoing the additional household income from the federal credit is to reduce total consumer spending, mainly due to lower spending on motor vehicles. However, "other" consumer spending also declines by $165.8 million, as there is no longer any left-over" tax credit income (i.e., the amount left after purchasing the BEV) to increase household budgets.

Figure 2. Net Change in Aggregate Consumer Spending



4.2 IMPACT ON THE STATE BUDGET

The removal of the state tax credit frees up government finances to be spent elsewhere. Specifically, government purchases increase by $47 million annually from 2015 to 2019, totaling $233 million. This result reflects the study's "balanced budget" assumption for state government spending.

4.3 IMPACT ON THE STATE ECONOMY

The study finds that the elimination of the $5,000 ZEV tax credit would reduce Georgia's real GDP each year between 2015 and 2030 (real GDP is equal to aggregate state income and also equal to total state economic output, adjusted for inflation). The cumulative 5-year GDP loss to the state economy is $107 million, and the cumulative 16-year loss totals $252 million. Again, this overall loss of Georgia GDP occurs despite the recycling of "saved" EV tax credits on other forms of state government spending.

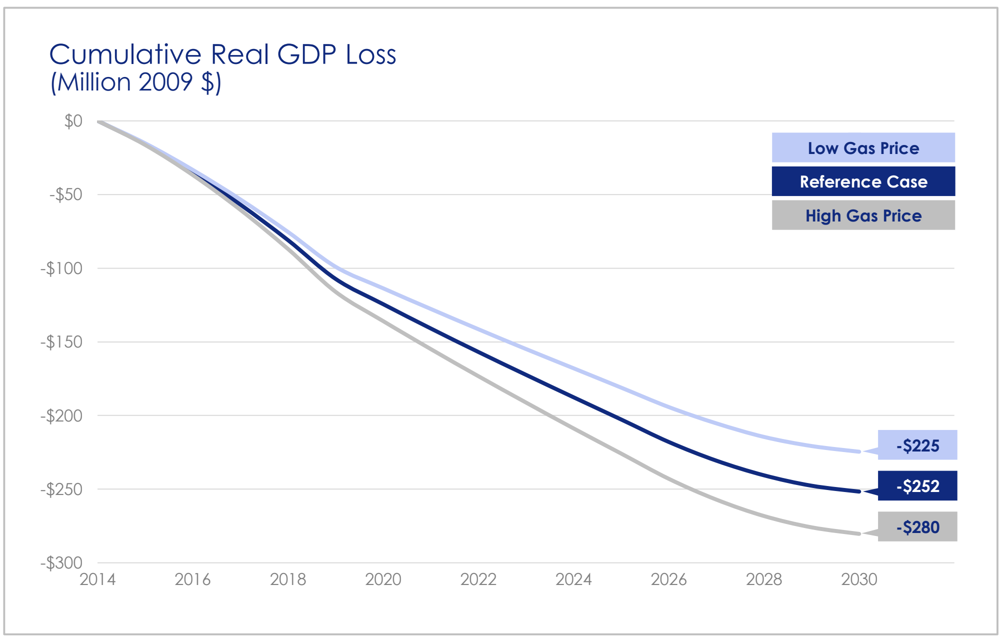
Table 2. Change in Georgia Government Spending & GDP, Reference Case (Million $)

State-Level Impacts	1 Year	5 Years	16 Years
Government Purchases	$47	$233	$233
Real GDP (2009 $)	-$16	-$107	-$252

Two key factors drive this decline in Georgia's economic output: foregone fuel savings, and lost after-tax income from the federal and state tax credits. First, Georgia consumers spend more of their budget on fuel when the state tax credit is removed, leaving them with less money to spend on other goods and services produced within the state (gasoline is predominately imported from outside Georgia), which negatively impacts state GDP. A second negative impact on Georgia's economy would be the loss of the $7,500 federal tax credit given to EV purchasers.

The core finding — that the elimination of the tax credit results in a GDP loss in each of the 16 years — remains intact in all gasoline price scenarios and regardless of whether Georgia consumers purchase conventional or hybrid vehicles instead of BEVs. In the low gasoline price scenario, GDP falls by a cumulative $99 million in the first 5 years and by $225 million over the 16-year horizon. In the high gasoline price scenario, GDP declines by $116 million over 5 years and by $280 million over 16 years.

Figure 3. Real Georgia GDP Loss



While consistently negative, the economic impact of the tax credit's removal is relatively modest compared to Georgia's roughly $450 billion economy. This finding is expected, given that EVs are a new technology and that they play a modest role in the overall state economy.

V. CONCLUSION

Eliminating the $5,000 EV tax credit in the state of Georgia would reduce state GDP by $252 million over the period from 2015 to 2030. This result would be slightly more negative if gasoline prices were to increase substantially over the next 16 years, and slightly less negative if gasoline prices were to continue to decline. However, state GDP would be steadily reduced each year over the next 16 years for any plausible gasoline price profile.

There are two key channels through which elimination of the state's EV tax credit would hurt the economy. First, without the tax credit, there would be substantially fewer EVs on Georgia roads, and Georgia households would have to spend substantially more each year for their transportation fuel because conventional gasoline vehicles cost more to operate per mile driven than EVs. Second, without the state tax credit, fewer EVs purchased by Georgia households would mean significantly lower inflows of the $7,500 federal tax credit to state residents.

Given the state of play in Georgia and the likely impacts of significantly reducing the number of electric vehicles sold in the state over the next five years, policymakers must weigh a number of factors as they seek to craft an effective policy concerning EVs. These include the degree to which the electric vehicle industry has traditional "infant industry" qualities; the degree to which the state will benefit from leveraging existing federal incentive programs; the degree to which electric vehicles provide an opportunity to reduce household spending on gasoline, and the degree to which they might view the attractiveness of insulating consumers from potential future oil price volatility.

APPENDIX A: DETAILED MODELING RESULTS

Reference Case (Million $)

EV vs. Conventional ICE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
Model Inputs																
Motor Vehicle Spending	-$73	-$76	-$78	-$80	-$83	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Electricity	-$4	-$8	-$12	-$16	-$21	-$21	-$21	-$21	-$22	-$22	-$23	-$23	-$19	-$14	-$10	-$5
Gasoline	$9	$21	$31	$42	$53	$55	$56	$58	$60	$62	$64	$65	$54	$41	$28	$15
Maintenance	$0	$3	$6	$10	$13	$17	$18	$18	$19	$19	$20	$21	$17	$13	$9	$5
Maintenance & Replacement	-$3	-$6	-$9	-$12	-$16	-$16	-$17	-$17	-$18	-$18	-$19	-$20	-$16	-$12	-$9	-$4
Government Purchases	$47	$47	$47	$47	$47	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
General Consumer Spending	-$40	-$46	-$50	-$54	-$58	-$35	-$36	-$38	-$40	-$41	-$42	-$43	-$36	-$28	-$19	-$10
Macro Results																
Real GDP (2009 $)	-$16	-$19	-$22	-$24	-$26	-$17	-$17	-$16	-$16	-$15	-$15	-$15	-$13	-$10	-$7	-$4

EV vs. Hybrid ICE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
Model Inputs																
Motor Vehicle Spending	-$21	-$21	-$22	-$22	-$23	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Electricity	-$4	-$8	-$12	-$16	-$21	-$21	-$21	-$21	-$22	-$22	-$23	-$23	-$19	-$14	-$10	-$5
Gasoline	$6	$14	$21	$28	$36	$37	$38	$39	$41	$42	$43	$44	$36	$28	$19	$10
Maintenance & Replacement	-$3	-$6	-$9	-$12	-$16	-$16	-$17	-$17	-$18	-$18	-$19	-$20	-$16	-$12	-$9	-$4
Maintenance	$0	$1	$2	$3	$4	$6	$6	$6	$6	$6	$7	$7	$6	$4	$3	$2
Government Purchases	$47	$47	$47	$47	$47	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
General Consumer Spending	-$90	-$91	-$91	-$91	-$92	-$5	-$6	-$7	-$7	-$8	-$8	-$8	-$7	-$5	-$4	-$2
Macro Results																
Real GDP (2009 $)	-$30	-$34	-$38	-$41	-$43	-$21	-$19	-$18	-$18	-$18	-$18	-$18	-$15	-$12	-$8	-$4

Low Gasoline Price Case (Million $)

EV vs. Conventional ICE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
Model Inputs																
Motor Vehicle Spending	-$73	-$76	-$78	-$80	-$83	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Electricity	-$4	-$8	-$12	-$16	-$21	-$21	-$21	-$21	-$22	-$22	-$23	-$23	-$19	-$14	-$10	-$5
Gasoline	$5	$13	$20	$27	$34	$36	$38	$40	$42	$43	$45	$47	$39	$30	$21	$11
Maintenance & Replacement	-$3	-$6	-$9	-$12	-$16	-$16	-$17	-$17	-$18	-$18	-$19	-$20	-$16	-$12	-$9	-$4
Maintenance	$0	$3	$6	$10	$13	$17	$18	$18	$19	$19	$20	$21	$17	$13	$9	$5
Government Purchases	$47	$47	$47	$47	$47	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
General Consumer Spending	-$36	-$38	-$38	-$39	-$40	-$16	-$17	-$19	-$21	-$22	-$23	-$25	-$21	-$16	-$12	-$6
Macro Results																
Real GDP (2009 $)	-$15	-$18	-$20	-$22	-$24	-$15	-$14	-$14	-$13	-$13	-$13	-$13	-$11	-$9	-$6	-$4

EV vs. Hybrid ICE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
Model Inputs																
Motor Vehicle Spending	-$21	-$21	-$22	-$22	-$23	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Electricity	-$4	-$8	-$12	-$16	-$21	-$21	-$21	-$21	-$22	-$22	-$23	-$23	-$19	-$14	-$10	-$5
Gasoline	$3	$9	$13	$18	$23	$24	$25	$27	$28	$29	$30	$31	$26	$20	$14	$7
Maintenance & Replacement	-$3	-$6	-$9	-$12	-$16	-$16	-$17	-$17	-$18	-$18	-$19	-$20	-$16	-$12	-$9	-$4
Maintenance	$0	$1	$2	$3	$4	$6	$6	$6	$6	$6	$7	$7	$6	$4	$3	$2
Government Purchases	$47	$47	$47	$47	$47	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
General Consumer Spending	-$87	-$86	-$84	-$81	-$79	$7	$7	$6	$5	$5	$5	$4	$3	$2	$1	$1
Macro Results																
Real GDP (2009 $)	-$29	-$33	-$36	-$39	-$41	-$19	-$18	-$17	-$16	-$16	-$17	-$17	-$14	-$11	-$8	-$4

High Gasoline Price Case (Million $)

EV vs. Conventional ICE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
Model Inputs																
Motor Vehicle Spending	-$73	-$76	-$78	-$80	-$83	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Electricity	-$4	-$8	-$12	-$16	-$21	-$21	-$21	-$21	-$22	-$22	-$23	-$23	-$19	-$14	-$10	-$5
Gasoline	$12	$28	$42	$57	$72	$73	$75	$77	$79	$81	$83	$84	$69	$53	$36	$18
Maintenance & Replacement	-$3	-$6	-$9	-$12	-$16	-$16	-$17	-$17	-$18	-$18	-$19	-$20	-$16	-$12	-$9	-$4
General Consumer Spending	-$43	-$53	-$61	-$69	-$77	-$53	-$55	-$57	-$58	-$60	-$61	-$62	-$51	-$39	-$27	-$14
Maintenance	$0	$3	$6	$10	$13	$17	$18	$18	$19	$19	$20	$21	$17	$13	$9	$5
Government Purchases	$47	$47	$47	$47	$47	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Macro Results																
Real GDP (2009 $)	-$16	-$20	-$24	-$27	-$29	-$20	-$19	-$18	-$18	-$18	-$17	-$17	-$14	-$11	-$8	-$4

EV vs. Hybrid ICE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
Model Inputs																
Motor Vehicle Spending	-$21	-$21	-$22	-$22	-$23	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Electricity	-$4	-$8	-$12	-$16	-$21	-$21	-$21	-$21	-$22	-$22	-$23	-$23	-$19	-$14	-$10	-$5
Gasoline	$8	$19	$28	$38	$49	$50	$51	$52	$53	$55	$56	$57	$46	$35	$24	$12
Maintenance & Replacement	-$3	-$6	-$9	-$12	-$16	-$16	-$17	-$17	-$18	-$18	-$19	-$20	-$16	-$12	-$9	-$4
Maintenance	$0	$1	$2	$3	$4	$6	$6	$6	$6	$6	$7	$7	$6	$4	$3	$2
General Consumer Spending	-$92	-$96	-$99	-$102	-$104	-$18	-$19	-$19	-$20	-$20	-$21	-$21	-$17	-$13	-$9	-$5
Government Purchases	$47	$47	$47	$47	$47	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Macro Results																
Real GDP (2009 $)	-$30	-$35	-$39	-$42	-$45	-$23	-$21	-$20	-$20	-$19	-$19	-$19	-$16	-$12	-$8	-$5

APPENDIX B: TECHNICAL ASSUMPTIONS

Vehicle-Specific Assumptions			
INPUT	**VALUE**	**SOURCE**	**NOTES**
Battery Electric Vehicle (Nissan Leaf)			
Purchase Price	$35,222	Nissan MSRP	Average of 3 Leaf Model MSRP (includes GA combined sales tax)
Vehicle Sales Tax	6.97%	Tax Foundation	Average combined local sales tax plus Georgia state Ad Velorem tax
Miles Per Gallon	N/A	EPRI (2014)	
kWh per Mile	0.30	DOE	Fueleconomy.gov reported for 2015 Leaf
Share of Miles Using Gasoline	0%	EPRI (2014)	
Annual Maintenance Cost	$88	EPRI (2014)	
Annual Replacement Cost	$325	EPRI (2014)	The costs incurred by EV owners when they have transportation needs beyond the range of an EV and must procure a "replacement" vehicle.
Annual Battery Costs	$0	EPRI (2014)	All EV's experience some battery decline after 8-12 years. However, the EPRI study concludes that there is not yet enough evidence to support a specific cost assumption, and so assumes $0 battery replacement costs. (Note: depending upon the state, vehicle manufacturers have committed to a 100-150,000 mile battery pack warranty)
Conventional ICE Vehicle			
Purchase Price	$26,800	EPRI (2014)	Includes 7.2% sales tax, a weighted average of state sales tax
Miles Per Gallon	29	EPRI (2014)	Reflects a "blended" conventional model
kWh per Mile	N/A	EPRI (2014)	
Share of Miles Using Gasoline	100%	EPRI (2014)	
Annual Maintenance Cost	$440	EPRI (2014)	
Hybrid ICE Vehicle			
Purchase Price	$32,866	EPRI (2014)	Includes 7.2% sales tax, a weighted average of state sales tax
Miles Per Gallon	43	EPRI (2014)	Reflects a "blended" hybrid model
kWh per Mile	N/A	EPRI (2014)	
Share of Miles Using Gasoline	100%	EPRI (2014)	
Annual Maintenance Cost	$205	EPRI (2014)	

General Assumptions			
INPUT	**VALUE**	**SOURCE**	**NOTES**
Gasoline Price (per gallon)	--	EIA STEO, AEO	No single value; varies by year
Electricity Price (per kWh)	--	EIA MER & AEO	No single value; varies by year
Inflation Rate	3.0%	EPRI (2013, 2014)	
Interest Rate	2.0%	EPRI (2013, 2014)	
Discount Rate (1-5 yr)	2.0%	EPRI (2013, 2014)	
Discount Rate (>5 yr)	5.0%	EPRI (2013, 2014)	
Vehicle Miles	150,000	EPRI (2013, 2014)	EPRI cites NHTSA (2006) Vehicle Survivability and Travel Mileage Schedules
Vehicle Miles Per Year	12,500	ORNL	ORNL 2014 Transporation Energy Data Book estimates annual VMT for light-duty vehicles at 12,928. This number has been rounded down, acknowledging that EV's may be driven slightly less on average than comparative conventional vehicles.
Life of Vehicle (yrs)	12	KBR calc	= Lifetime Miles / Miles per Year; Rounded up to nearest whole year
Baseline EV Sales	9,323	Polk Database	2014 sales (Jan-Oct actual sales*12/10)
Federal Tax Credit on EV	$7,500	DOE	Alternative Fuels Data Center
State Tax Credit on EV	$5,000	GA	Georgia Department of Natural Resources
EV Sales After Policy Shock	617	Keybridge calc	See description below for more detail
Demand Response (EV Sales)	-8,706	Keybridge calc	See description below for more detail
Marginal Propensity to Consume	70.0%	Keybridge calc	See description below for more detail
Length of EV Program	5 years	--	

Marginal Propensity to Consume (MPC) – Detailed Methodology

According to economic theory, households tend to save a portion of a temporary income, such as a tax credit. The proportion of income spent depends on several factors, including income, wealth, and financial liquidity.[5] This study's assumption concerning the marginal propensity consume for Georgia households affects the size of the policy shock's GDP impact. However, the MPC assumption only affects a small subset of Georgia BEV-owners.[6]

- The "treatment group" of Georgia BEV purchasers includes those consumers who are assumed to require the full state incentive in order to purchase a BEV. The MPC assumption does not apply to them, given that they are assumed to apply the full state credit to the vehicle purchase.
- The "control group" of Georgia BEV purchasers includes consumers who are assumed to purchase a BEV even without a state tax credit. The MPC assumption applies to this group, given that they are thought to view the state tax credit as "extra" money.

This study adopts a three-step income-based approach in order to calculate MPC of Georgia BEV purchasers:

(1) The U.S. 2013 Census Bureau's Consumer Expenditure Survey (CEX) reports average propensity to consume by income quintile. These data were used to calculate the MPC for each quintile: [change in consumption between quintiles / change in after-tax income between quintiles]

(2) 2013 survey data from The EV Project, funded by the Department of Energy, indicate that the majority of EV owners tend to have income in the top fourth and fifth quintiles. These data were applied to the CEX-based MPCs by quintile to develop a weighted average MPC: 65%.

(3) Finally, it is important to note that many consumers in Georgia lease rather than purchase their BEV, and consumers who lease vehicles are assumed to have somewhat lower income than consumers who purchase vehicles. It is also assumed that household income levels of BEV purchasers will tend to decline somewhat over the next 5 years as these vehicles are viewed as more mainstream purchases. For these reasons, this study rounds up the calculated 65% MPC assumption to 70%.

[5] In general, recent literature puts the U.S. MPC in the range of 40-90%. See Parker (2014).

[6] The division of Georgia EV-purchasers is based on Polk vehicle sales data. The share of consumers in the "control group" is based on PHEV (predominantly Chevrolet Volt) sales in the state, which receives the federal incentive but does not qualify for the state incentive.

Demand Response – Detailed Methodology

Due to the limited literature on the relationship between electric vehicle tax incentives and sales, this study estimates Georgia consumers' response to the tax credit's elimination using historical vehicle sales data from a set of comparator states. While EV penetration rates are generally higher in states with EV tax incentives currently in place, there is a wide range of EV penetration rates among both states with tax incentives and those without. That is, factors other than tax incentives (e.g., population density, climate, EV manufacturers' marketing strategies, access to high-occupancy vehicle highway lanes) also impact the level of EV sales in each state.

Therefore, instead of simply comparing Georgia to all states without a BEV tax incentive, a comparison group of three states – North Carolina, Virginia, and Florida – was selected. Like Georgia, all three states are in the Southeast and have at least one major urban area. Furthermore, all four states have similar PHEV penetration rates for new vehicle sales, suggesting that, in the absence of the state ZEV tax credit, BEV sales in Georgia would roughly match sales in the other three states (and also PHEV sales rates in Georgia).

Specifically, the study assumes that the elimination of the tax credit would cause Georgia's BEV sales to drop from 1.9 percent of total vehicle sale to just 0.1 percent of sales - the average across the three comparison states. Thus, EV sales in Georgia would be 8,706 lower each year in response to the removal of the tax credit, a roughly 90% drop from 2014 levels.

APPENDIX C: REMI MODEL DESCRIPTION

To perform this analysis, Keybridge relied upon an economic model of Georgia produced by Regional Economic Modeling Inc. (REMI). The REMI PI+ model is a structural economic forecasting and policy analysis model. It integrates input-output, computable general equilibrium, econometric and economic geography methodologies. The model is dynamic, with forecasts and simulations generated on an annual basis and behavioral responses to compensation, price, and other economic factors. The model consists of thousands of simultaneous equations with a structure that is relatively straightforward. The exact number of equations used varies depending on the extent of industry, demographic, demand, and other detail in the specific model being used. The overall structure of the model can be summarized in five major blocks: (1) Output and Demand, (2) Labor and Capital Demand, (3) Population and Labor Supply, (4) Compensation, Prices, and Costs, and (5) Market Shares.

The Output and Demand block consists of output, demand, consumption, investment, government spending, exports, and imports, as well as feedback from output change due to the change in the productivity of intermediate inputs. The Labor and Capital Demand block includes labor intensity and productivity as well as demand for labor and capital. Labor force participation rate and migration equations are in the Population and Labor Supply block. The Compensation, Prices, and Costs block includes composite prices, determinants of production costs, the consumption price deflator, housing prices, and the compensation equations. The proportion of local, inter-regional, and export markets captured by each region is included in the Market Shares block.

Models can be built as single region, multi-region, or multi-region national models. A region is defined broadly as a sub-national area, and could consist of a state, province, county, or city, or any combination of sub-national areas. Single-region models consist of an individual region, called the home region. The rest of the nation is also represented in the model. However, since the home region is only a small part of the total nation, the changes in the region do not have an endogenous effect on the variables in the rest of the nation.

Block 1. Output and Demand

This block includes output, demand, consumption, investment, government spending, import, commodity access, and export concepts. Output for each industry in the home region is determined by industry demand in all regions in the nation, the home region's share of each market, and international exports from the region.

For each industry, demand is determined by the amount of output, consumption, investment, and capital demand on that industry. Consumption depends on real disposable income per capita, relative prices, differential income elasticities, and population. Input productivity depends on access to inputs because a larger choice set of inputs means it is more likely that the input with the specific characteristics required for the job will be found. In the capital stock adjustment process, investment occurs to fill the difference between optimal and actual capital stock for residential, non-residential, and equipment investment. Government spending changes are determined by changes in the population.

Block 2. Labor and Capital Demand

The Labor and Capital Demand block includes the determination of labor productivity, labor intensity, and the optimal capital stocks. Industry-specific labor productivity depends on the availability of workers with differentiated skills for the occupations used in each industry. The occupational labor supply and commuting costs determine firms' access to a specialized labor force.

Labor intensity is determined by the cost of labor relative to the other factor inputs, capital and fuel. Demand for capital is driven by the optimal capital stock equation for both non-residential capital and equipment. Optimal capital stock for each industry depends on the relative cost of labor and capital, and the employment weighted by capital use for each industry. Employment in private industries is determined by the value added and employment per unit of value added in each industry.

Block 3. Population and Labor Supply

The Population and Labor Supply block includes detailed demographic information about the region. Population data is given for age, gender, and race, with birth and survival rates for each group. The size and labor force participation rate of each group determines the labor supply.

These participation rates respond to changes in employment relative to the potential labor force and to changes in the real after-tax compensation rate. Migration includes retirement, military, international, and economic migration. Economic migration is determined by the relative real after-tax compensation rate, relative employment opportunity, and consumer access to variety.

Block 4. Compensation, Prices and Costs

This block includes delivered prices, production costs, equipment cost, the consumption deflator, consumer prices, the price of housing, and the compensation equation. Economic geography concepts account for the productivity and price effects of access to specialized labor, goods, and services.

These prices measure the price of the industry output, taking into account the access to production locations. This access is important due to the specialization of production that takes place within each industry, and because transportation and transaction costs of distance are significant. Composite prices for each industry are then calculated based on the production costs of supplying regions, the effective distance to these regions, and the index of access to the variety of outputs in the industry relative to the access by other uses of the product.

The cost of production for each industry is determined by the cost of labor, capital, fuel, and intermediate inputs. Labor costs reflect a productivity adjustment to account for access to specialized labor, as well as underlying compensation rates. Capital costs include costs of nonresidential structures and equipment, while fuel costs incorporate electricity, natural gas, and residual fuels.

The consumption deflator converts industry prices to prices for consumption commodities. For potential migrants, the consumer price is additionally calculated to include housing prices.

Housing prices change from their initial level depending on changes in income and population density.

Compensation changes are due to changes in labor demand and supply conditions and changes in the national compensation rate. Changes in employment opportunities relative to the labor force and occupational demand change determine compensation rates by industry.

Block 5. Market Shares

The market shares equations measure the proportion of local and export markets that are captured by each industry. These depend on relative production costs, the estimated price elasticity of demand, and the effective distance between the home region and each of the other regions. The change in share of a specific area in any region depends on changes in its delivered price and the quantity it produces compared with the same factors for competitors in that market. The share of local and external markets then drives the exports from and imports to the home economy.

APPENDIX D: REFERENCES

Center for Sustainable Energy (2015). California Air Resources Board Clean Vehicle Rebate Project, "EV Consumer Survey Dataset." Available athttp://energycenter.org/clean-vehicle-rebate-project/survey-dashboard.

Congressional Budget Office (2012). "Effects of Federal Tax Credits for the Purchase of Electric Vehicles." Available at http://www.cbo.gov/sites/default/files/09-20-12-ElectricVehicles_0.pdf.

Electric Power Research Institute (2013). "Total Cost of Ownership Model for Current Plug-in Electric Vehicles." Available at http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002001728.

Electric Power Research Institute (2014). "Total Cost of Ownership Model for Current Plug-in Electric Vehicles: Update to Model 2013 and 2014 Model Year Vehicles." Available at http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?productId=000000003002004054.

The EV Project (August 2013). "Who are the Participants in the EV Project?". Supported by the U.S. Department of Energy.

The International Council on Clean Transportation (2014). "Evaluation of State-Level U.S. Electric Vehicle Incentives." Available at http://www.theicct.org/evaluation-state-level-us-electric-vehicle-incentives.

Oak Ridge National Labratory (2014). "2014 Transportation Energy Data Book." Available at http://cta.ornl.gov/data/index.shtml.

Parker, Jonathan (2011). "On Measuring the Effects of Fiscal Policy in Recessions." National Bureau of Economic Research. Available at http://www.nber.org/papers/w17240.

Shaprio and Slemrod (2008). "Did the 2008 Tax Rebates Stimulate Spending?" National Bureau of Economic Research. Available at http://www.nber.org/papers/w14753.

Sierzchula et al (2014). "The Influence of Financial Incentives and Other Socio-Economic Factors on Electric Vehicle Adoption." Available athttp://urpl.wisc.edu/lecturers/Sierzchula1.pdf.

The Tax Foundation (2014). "Facts and Figures 2014." Available at http://taxfoundation.org/article/facts-figures-2014-how-does-your-state-compare.

www.fueleconomy.gov

http://www.nissanusa.com/electric-cars/leaf/

http://www.georgiaair.org/airpermit/html/mobilearea/engines/Alternativefuels.htm

http://www.afdc.energy.gov/laws/409