The Struggle over the Future of Combustion-Engine Vehicles in California

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On my honor as a University of Student, I have neither given nor received unauthorized aid on this assignment defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

In the early 20th century, America's transportation infrastructure radically transformed. Where horse-drawn carriages were the main mode of transport, internal combustion engine vehicles (ICEVs) swiftly took their place. By 1925, ICEVs outnumbered horses in major American cities, introducing a new era of mobility. The widespread adoption of the ICEVs transformed urban planning and promoted economic growth. While this innovation symbolized progress and innovation, its long-term environmental consequences have become increasingly apparent. Today, the sustainability of the US motor vehicle sector is a pressing concern. Vehicle emissions have significantly contributed to climate instability, accounting for 28% of total greenhouse gas emissions (California Energy Commission, 2024). In response, state governments have implemented policies to promote more sustainable alternatives. California has emerged as a leader in transportation sustainability by establishing Executive Order N-79-20. This reform policy aims to phase out the sale of new internal combustion ICEVs by 2035, reducing greenhouse gas emissions, air pollution, and reliance on fossil fuels (California Government, 2020). Since transportation contributes to 50% of California's greenhouse emissions (EPA, 2024), this policy positions Battery Electric Vehicles (BEVs) as a viable alternative to mitigate this metric.

While the executive order marks a significant milestone in environmental advancements, its passage was not inevitable. Policy changes of this magnitude often face external resistance from political, economic, and industrial stakeholders. The enactment of this policy raises an important question: How did advocates of phasing out sales of new combustion-engine vehicles in California succeed in convincing the governor to issue Executive Order N-79-20 in 2020? This paper will address the current state of research on transportation emissions and political advocacy. It will also investigate the different strategies used by advocacy groups by highlighting their usage in two historical case studies. These include coalition building throughout the Apartheid era in South Africa, and media campaigning with data-driven advocacy led by the American Cancer Society. While these studies are not topically related to BEV advocacy, each case

demonstrates a distinct strategy for overcoming opposition. By comparing these historical strategies, I will identify patterns that better explain large-scale policy change in the context of sustainability in transportation.

Literature Review

ICEVs are a significant contributor to climate change and urban air pollution. Many studies from environmental sciences and public health experts emphasize the link between public health and transportation emissions. For instance, the Environmental Protection Agency (EPA) estimates that in the US, a typical passenger vehicle emits roughly 4.6 metric tons of carbon dioxide per year, the equivalent of the growth of 76 trees. These emissions significantly contribute to health-related issues like respiratory and cardiovascular disease (EPA, 2024). Moreover, the negative impact of ICEVs extends beyond health and environmental concerns, with adverse effects on low-income and minority communities. A study in Southern California found that individuals from these communities experience more than two times the vehicle air pollution (Lu, 2023). It becomes very apparent that a need for an alternative is not just desirable but essential.

California's independence and innovation of climate policies have set precedence for ambitious sustainable reforms. Past successful policies justify California's autonomy and willingness to lead climate change regulation. The Clean Air Act of 1970 granted California the authority to request waivers to set stricter vehicle emissions. It became a longstanding success, legitimizing its independence (Carlson, 2023). From 1970 to 2017, the average levels of pollutants decreased by 73% despite the US economy tripling in size. Additionally, bipartisan support for the policy reflected a strong consensus for the need for federal action. (Schmalensee & Stavins, 2019). This legitimized the EPA's regulatory authority and established a foundation for California to pursue independent environmental initiatives. Because of this, new and ambitious policies and programs can be developed with looser restrictions.

Researchers have also explored how advocacy groups drive environmental policy reform. Sabatier first introduced the Advocacy Coalition Framework, a conceptual model

for understanding policy change over extended periods of time. The framework emphasizes that coalitions are united by their shared beliefs, which guide their actions and strategies. In addition, the framework emphasizes the idea of policy-oriented learning, where organizations selectively integrate new information that aligns with their beliefs (Sabatier, 1988). Paul Cairney's book Understanding Public Policy (2019) provides a contemporary interpretation of Sabatier's framework. His illustrations suggest that "people engage in politics to turn their beliefs into policy" (Cairney, 2019). These shared beliefs create the foundation for mass cooperation, enabling actors to coordinate their actions, learn collectively, and respond to new information. From this, policy subsystems are created, modularizing policy issues into more manageable sectors governed by experts and stakeholders within their respective domains. In the context of BEV advocacy, the formation of these subsystems led to the establishment of a wide range of organizations, each contributing to their own area of expertise. A diverse group of stakeholders were behind the advocacy of BEVs in California. Governor Gavin Newsom positioned BEV adoption as instrumental to California's climate leadership. Supporting this vision was the California Air Resources Board (CARB). This regulatory group used scientific research to justify electrification policies. Other groups, such as the California Electric Transportation Coalition, the Electrification Coalition, and the EV Charging for All Coalition, played a crucial role in shaping public discourse and influencing policy by emphasizing environmental justice, economic benefits, and infrastructure expansion.

My analysis of the success of BEV advocacy groups draws on the Advocacy Coalition Framework and comparative case study analysis. This framework allows me to understand how coalitions of actors with shared beliefs engage in long-term policy struggles. It also highlights how policies change based on the interactions of advocacy groups and their efforts to influence public opinion and regulatory bodies. Using this idea with a comparative case study analysis, I am able to identify recurring patterns and mirrored strategies across historical and modern cases. This enables me to examine how the use of media, science, and politics shapes advocacy outcomes. While current research agrees that ICEVs are less emission-efficient than BEVs, scholars have not yet considered how advocates of phasing out sales of new combustion-engine vehicles in California succeeded in convincing the governor to issue Executive Order N-79-20 in 2020. This paper argues that a combination of media influence, coalition-building, and data-driven advocacy were instrumental in ensuring the passage of this policy. Analyzing these strategies will provide insight into transportation reform and help inform future efforts to implement similar policies.

Methods

I will conduct a comparative case study to analyze how advocacy strategies have influenced policy outcomes in different socio-political contexts. My primary sources consist of published reports from the California Air Resource Board, major automobile manufacturers, the Zero-Emission Vehicle Alliance and campaigns by the Electric for All Coalition. My secondary sources consist of articles and journals from the JSTOR database relating to the Apartheid era in South Africa and the American Cancer Society. This method enables the comparison of unique cases to identify recurring patterns that BEV advocates also used to mobilize public support, influence policymakers, and overcome institutional resistance. In my review of the apartheid era in South Africa, I will analyze the impact of transnational coalition building and draw connections to its usage by BEV advocates. Similarly, in my review of the American Cancer Society, I will emphasize the usage of media campaigns and empirical evidence to undermine misconceptions published by industry stakeholders.

Analysis

Public perception plays a crucial role in shaping policy outcomes. Throughout history, industries facing regulation have used misinformation and doubt-casting tactics to counter reform efforts. In the 1950s, the American Cancer Society (ACS) campaign reshaped public understanding of tobacco-related health risks. During this time, empirical evidence linked smoking to lung cancer, threatening the profitability of major tobacco companies (Mendes, 2014). In response, the tobacco industry launched misinformation campaigns to undermine the risks of smoking to reassure the public that their products were not harmful. The Frank Statement advertisement is a prominent example in which tobacco companies discredited emerging research that linked tobacco products to health risks. Reaching over 43 million people, the ad claimed that the health effects of cigarettes were inconclusive (Kaplan, 2018). The ACS fought back by supporting scientific findings through mass media campaigns and advocating for policy changes to regulate tobacco marketing. These efforts helped set precedence for smoking restrictions and public health regulations, demonstrating the power of media in shaping long-term policy reform.

A set of stakeholders interested in shaping the pace of development and the extent of electrification were among the strongest opponents of BEV adoption. These include legacy manufacturers such as Aston Martin, McLaren, and Honda. Together, these groups worked towards changing public sentiment and policymaking against electrification. These organizations funded private research to cast doubt on BEVs. One of their notable funded projects, *Decarbonising Road Transport (2020)*, claimed that BEVs would need to be driven nearly 78,000 kilometers before their lifecycle carbon footprint became less than ICEVs. Similar to how the ACS used research to link tobacco with lung cancer, BEV advocates have leveraged environmental data and public health arguments to push for systemic change. CARB's Annual Air Quality Trends Report details pollution levels and their health impacts across California, highlighting ICEVs as a significant pollution source (CARB, 2024). Like health reformers in the 20th Century, BEV advocates have also used robust media campaigns to counter misinformation and drive systemic change. The 'Electric for All' campaign debunked industry misconceptions by emphasizing the affordability, accessibility, and long-term economic benefits of BEVs. A notable example within the campaign is "Myths Busting Myths," a satirical ad that addresses common concerns of BEVs. Using humor and familiar cultural icons, the campaign reframed BEVs as practical by dispelling the myths of limited driving range and expensive costs. This media effort proved highly effective, generating over 150 million impressions and 58 million combined views and listens (Electric For All, 2024). Just as public health advocates changed the perception of smoking, proponents of BEVs used the same strategy to promote sustainable alternatives through media campaigns.

Collaboration has been crucial in tackling complex issues across various fields. Coalitions unite a diverse group of people and organizations with a common purpose. They strengthen advocacy efforts by expanding resources and expertise. To better understand how BEV advocates leveraged coalition building, the Apartheid era in South Africa is an example of mass collaboration being crucial in achieving reform. Coalition building was a crucial aspect that led to the downfall of the Apartheid infrastructure. Local organizations within the political community of South Africa, such as the African National Congress (ANC) and the Pan African Congress (PAC), formed partnerships to abolish apartheid laws. Additionally, global organizations, such as the International Defence and Aid Fund (IDAF), the Commonwealth, and the United N, were formed to combat this oppression (Thörn, 2006). Whilst the ANC and PAC were rallying local support, the IDAF, UN, and Commonwealth were helping victims of apartheid by inciting anti-apartheid culture, encouraging people to give active support, and calling for sanctions against the apartheid government (Aftab, 1991). As a result, these collaborative efforts grew in scale, applying pressure through economic sanctions and public awareness campaigns. This approach was significant in overcoming social barriers to promote social change. This transnational collaboration is a modern parallel in California's push to phase out ICEVs

The advocacy of BEVs in California involved various local stakeholders, such as government agencies, environmental groups, and social organizations. At the forefront of this was CARB's Zero-Emission Vehicle (ZEV) Program, a regulatory initiative designed to reduce air pollution and greenhouse gas emissions by promoting sustainable alternatives (CARB, 2024). This built the foundation for collaboration across sectors by combining policy tools and economic incentives. Other states, such as New York and Massachusetts, adopted similar ZEV mandates. Moreover, global alliances, such as the International ZEV Alliance, have been crucial in scaling California's sustainability efforts. By sharing data, coordinating policy frameworks, and aligning long-term decarbonization goals, California's partnerships with members of the alliance have helped achieve its sustainable goals. For instance, Quebec and British Columbia have adopted ZEV mandates inspired by California, in addition to complementary carbon pricing and fuel standards (Long, 2020). This alignment expanded California's influence, making the passing of the executive order more feasible. Just as the anti-apartheid movement strengthened with transnational collaboration, the success of BEV coalitions was contingent on shared political goals, resources, and strategy.

While BEV advocates were successful based on their strategic use of media framing, coalition-building, and scientific reasoning, this perspective may overlook unresolved ongoing challenges. Despite the policy's intentions, California continues to struggle with severe climate-related issues, such as devastating wildfires, prolonged droughts, and extreme weather events. Moreover, the rate of decline in the sale of ICEVs is not progressing at the rate to meet the state's target (Lazo, 2025). Even with accelerated BEV adoption, the transition will not absolve the broader environmental challenges. Critical questions surrounding the recycling of BEV materials and their lifecycle remain unanswered. The current recycling infrastructure in the US cannot supply large amounts of lithium-ion batteries. There are concerns about hazardous waste, inefficient material recovery, and potential environmental leakage. While some advances in battery recycling are underway, such as closed-loop systems and mechanical shredding, these practices are still in the early stages and remain inconsistently regulated (Rezaei, 2025). Without a comprehensive, standardized strategy for battery reuse and recycling, Executive Order N-79-20 risks becoming more symbolic than transformative, exposing the complexities of achieving impactful environmental reform.

Conclusion

Ultimately, the successful passage of Executive Order N-79-20 reflects a broad pattern of persistent advocacy. Successful reform efforts are contingent on advocacy groups to counter misinformation, reshape public narratives, and use empirical evidence. The BEV advocacy case in California highlights how scientific credibility, strategic media framing, and coalition-building can overcome influential stakeholders and redefine technological transitions. Understanding these dynamics highlights the passing of successful policies and offers a roadmap for future sustainability reform in similar political and technological cases. The significance of this research helps reframe our understanding of the politics behind sustainability. Rather than portraying environmental progress as a matter of technological innovation, this case highlights that coordinated advocacy can shift political views despite industrial and political resistance. Advocacy groups, policymakers, and innovators can draw crucial insights from California's success. Future research should build on this case by examining how advocacy strategies adapt to different political cultures, especially in areas where climate action is underrepresented. Gaining a better understanding of the unique pathways to coalition-building and public persuasion in a diverse context will be crucial in scaling sustainability reforms nationwide and globally.

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