



**Copper Development
Association Inc.**
Copper Alliance

Matt Morris
Office of Governor Brian Sandoval
State Capitol Building
101 N. Carson Street
Carson City, NV 89701

SUBJECT: Committee on Energy Choice

Dear Committee on Energy Choice,

The Copper Development Association (CDA) is the North American based not-for-profit association of the global copper industry, influencing the use of copper and copper alloys through research, development, and education, as well as technical and end-user support. Copper is an integral part of sustainable energy initiatives because of its reliability, efficiency, and performance. The same physical properties are vital in the collection, storage, and distribution of energy from solar, wind, and other renewable sources that are impacting the grid and its supporting infrastructure.

There is a new electrical infrastructure being built across America, which can be seen through advancements in and the adoption of smart grids, solar technology, wind technology, and electric vehicles (EVs). These innovations have stimulated the movement towards distributed energy resources (DERs,) which in turn have demonstrated improved reliability and resiliency.

This modernization of electrical infrastructure is especially prevalent at the state level, and copper is proud to play a key role in its development. CDA would like to commend the State of Nevada for its public policy and regulatory policy efforts with respect to expanding energy choice and fostering markets that benefit the economy as a whole.

Renewable Energy & Energy Storage

Two rapidly developing technologies that are on track to dramatically impact the electrical infrastructure landscape are renewable energy generation sources and energy storage; both of which require substantial volumes of copper and copper alloys. Copper's conductivity and durable properties continue to elevate the resource's role within the core of renewable energy and energy storage equipment and systems; plate, wire, cable, and tube.

The United States wind industry now employs a record-breaking 105,500 people across 50 states and four states source at least 30% of their electrical needs from a wind energy source.¹ Job creation is not limited to the expansion of wind as demonstrated by energy efficiency which provided 2.2 million jobs in 2016, according to the January 2017 report from the Department of Energy.² The expansion of these renewable markets is having a positive impact on local communities and their economies.

¹ <https://www.awea.org/2017-market-reports>

² http://www.bcse.org/wp-content/uploads/2018-Sustainable-Energy-in-America-Factbook_Executive-Summary.pdf



For example, in 2016 energy efficiency provided 2.2 million jobs according to the January 2017 report from the Department of Energy.³

Expanding Electrical Infrastructure

As one of the few materials that can be recycled 100 percent over and over again without a loss in performance, we are proud to contribute towards the advancement of an efficient and reliable electrical infrastructure. CDA supports Nevada working to advance the transportation sector and supporting infrastructure towards a more sustainable and energy efficient future.

Electric Vehicles

The market for electric vehicles has continued to advance and expand as a result of leading manufacturers launching new, longer range models, the continued trend of decreasing battery prices, and government incentives at the state level. This is supported by Bloomberg New Energy Finance's "Sustainable Energy in America: 2018 Factbook," which found that in 2017, sales of electric vehicles in the United States increased by 23% which translates into an additional 194,000 EVs on the road.⁴ As a result of this expansion, the number of public charging sites grew by 18%.⁵

CDA supports the State of Nevada prioritizing access to EVs and working towards developing the infrastructure that has the capacity to support this expanding market. It is estimated that there will be approximately 7 million plug-in electric vehicles on U.S. roads by 2025, which will be 3% of the total number of vehicles registered in the U.S. during the same time period.⁶ This will directly impact the demand for copper since electric vehicles use about four times more copper than gasoline-powered vehicles.⁷ Copper is also essential to the entire energy generation and transmission system, including the development of energy efficient motors and transformers.

As the electrification of the transportation sector continues to expand this will have a direct impact on the demand for copper since it is present in the batteries, windings, wiring, and rotors found in EVs. More specifically conventional cars have 18-49 pounds of copper, hybrid electric vehicles (HEV) contain approximately 85 pounds, plug-in hybrid electric vehicles (PHEV) use 132 pounds, battery electric vehicles (BEVs) contain 183 pounds, a hybrid electric bus contains 196 pounds, and a battery electric bus contains 814 pounds.⁸

We look forward to the ongoing dialogue, evolution and implementation of public and regulatory policies that aim to foster the growth and expansion of the aforementioned clean energy technologies across Nevada's economy.

³ http://www.bcse.org/wp-content/uploads/2018-Sustainable-Energy-in-America-Factbook_Executive-Summary.pdf

⁴ <http://www.bcse.org/wp-content/uploads/2018-Sustainable-Energy-in-America-Factbook-Brochure.pdf>

⁵ <http://www.bcse.org/wp-content/uploads/2018-Sustainable-Energy-in-America-Factbook-Brochure.pdf>

⁶ http://www.edisonfoundation.net/iei/publications/Documents/IEI_EEI%20PEV%20Sales%20and%20Infrastructure%20thru%202025_FINAL%20%282%29.pdf

⁷ <http://www.mining.com/impact-electric-cars-medium-term-copper-demand-overrated-experts-say/>

⁸ https://www.copper.org/publications/pub_list/pdf/A6191-ElectricVehicles-Factsheet.pdf



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Sincerely,

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