

# Outlook for Electric Vehicle Sales Under the Inflation Reduction Act

---

July 2023

Colin Langan

Wells Fargo Securities Senior Equity Analyst

Autos & Mobility

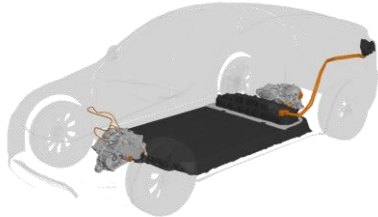
646-342-8725 | [colin.langan@wellsfargo.com](mailto:colin.langan@wellsfargo.com)

Please see page 13 for rating definitions, important disclosures and required analyst certifications. All estimates/forecasts are as of 07/07/2023 unless otherwise stated.

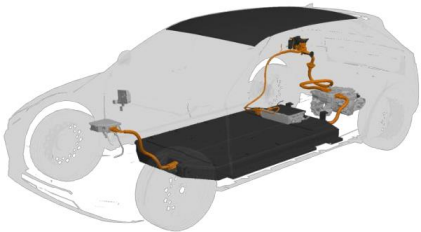
Wells Fargo Securities, LLC does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of the report and investors should consider this report as only a single factor in making their investment decision.

© 2023 Wells Fargo & Company. All rights reserved. For public use.

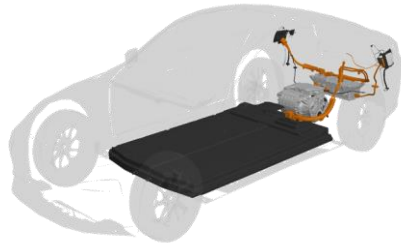
# BEV Teardown Series: What We Tore Down



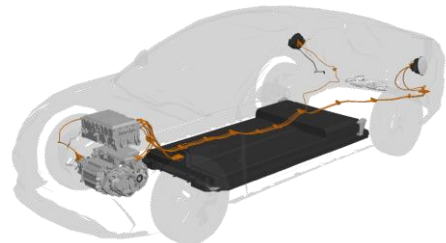
**Tesla Model Y** - Source: A2Mac1; Wells Fargo Securities, LLC



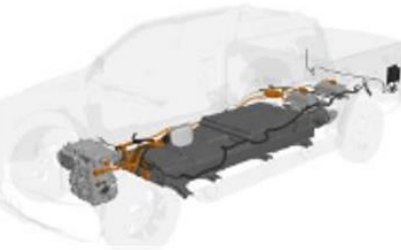
**Hyundai Ioniq 5** - Source: A2Mac1; Wells Fargo Securities, LLC



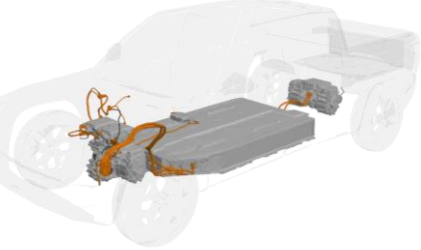
**XPeng P7** - Source: A2Mac1; Wells Fargo Securities, LLC



**BYD Han** - Source: A2Mac1; Wells Fargo Securities, LLC



**Ford Lightning** - Source: A2Mac1; Wells Fargo Securities, LLC



**Rivian R1T** - Source: A2Mac1; Wells Fargo Securities, LLC

# 1) Battery Raw Material Cost Spiked Materially

- Spike in critical BEV raw materials have severely impacted BEV economics (Nickel & Lithium)
- Raw material costs rose from \$64/kWh to \$87/kWh | Sub-\$100/kWh targets unlikely

## Mass Market EV Small SUV Cost

Size (kWh)		Curr. Battery Cost/kWh	Total Battery Cell Cost
60 kWh	x	\$112/kWh	= \$6,720
60 kWh	x	\$136/kWh	= \$8,160

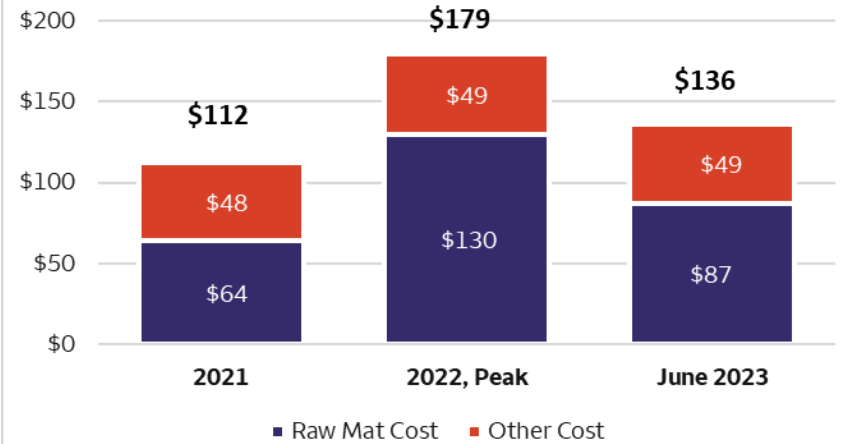
**+\$1,440  
Increase**

## Full-Size Pickup EV Cost

Size (kWh)		Curr. Battery Cost/kWh	Total EV Powertrain Cost
135 kWh	x	\$112/kWh	= \$15,120
135 kWh	x	\$168/kWh	= \$18,360

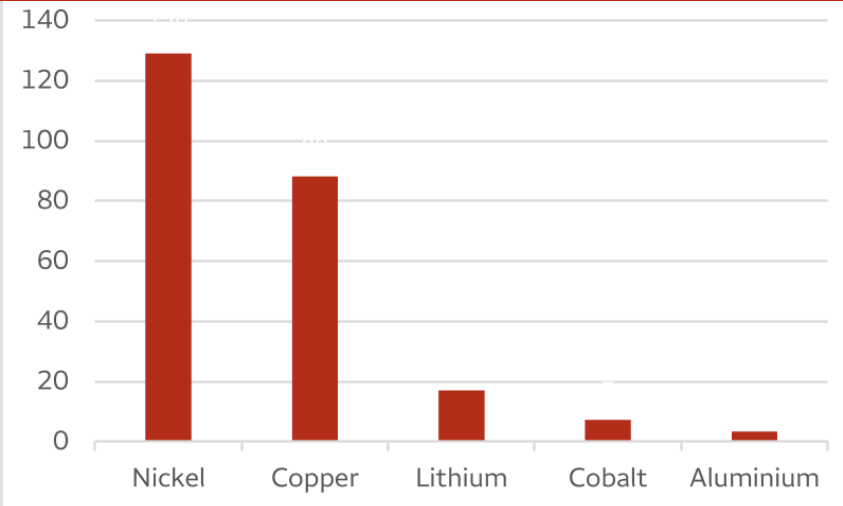
**+\$3,240  
Increase**

## Tesla NCA Battery Cost Trend (\$/kWh)



Source: A2Mac1; Wells Fargo Securities, LLC

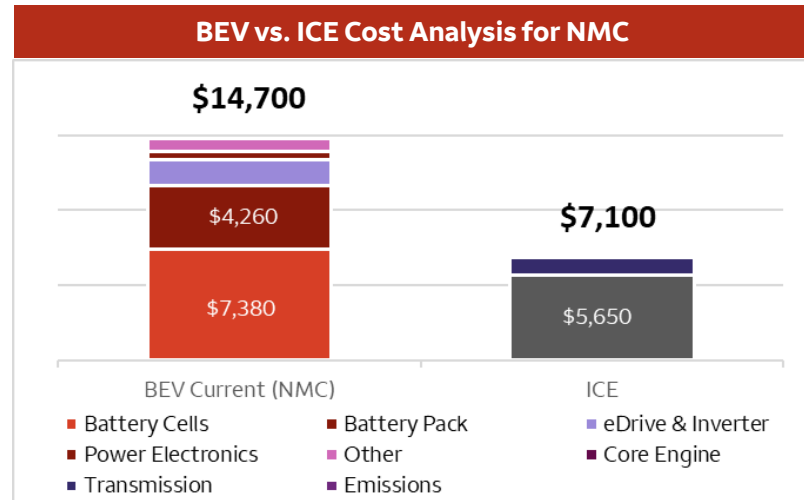
## Tesla Model Y Raw Materials In Lbs



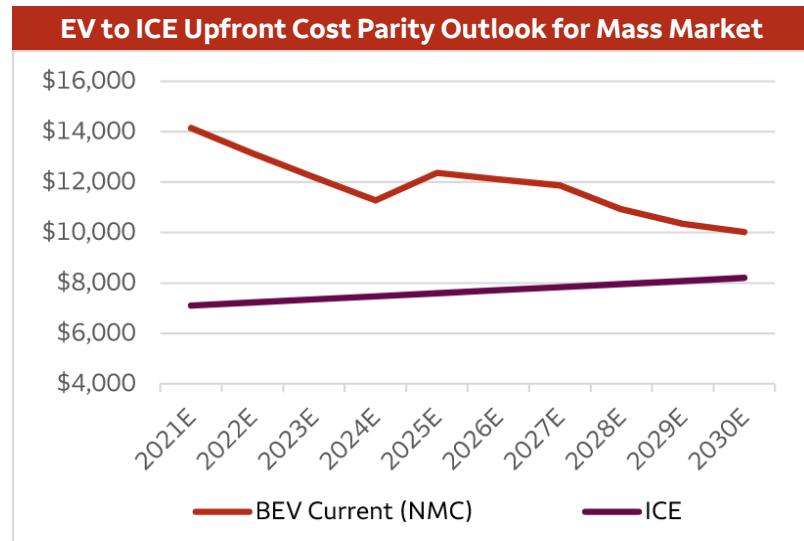
Source: A2Mac1; Wells Fargo Securities, LLC estimates

# ICE vs. BEV Cost Parity Still Far in the Distance

- Pack & E-Powertrain Also Add Cost
- All-In NMC-based BEV powertrain is ~\$7.6k more costly than ICE
- Average global OEM profit ~\$4k per vehicle.
- We estimate cost parity will not occur until after 2030



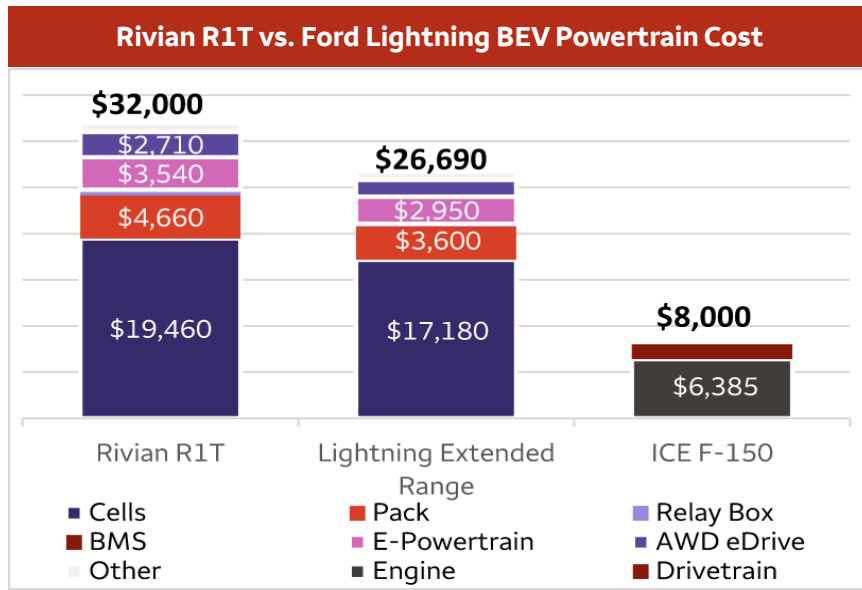
Source: A2Mac1; Wells Fargo Securities, LLC



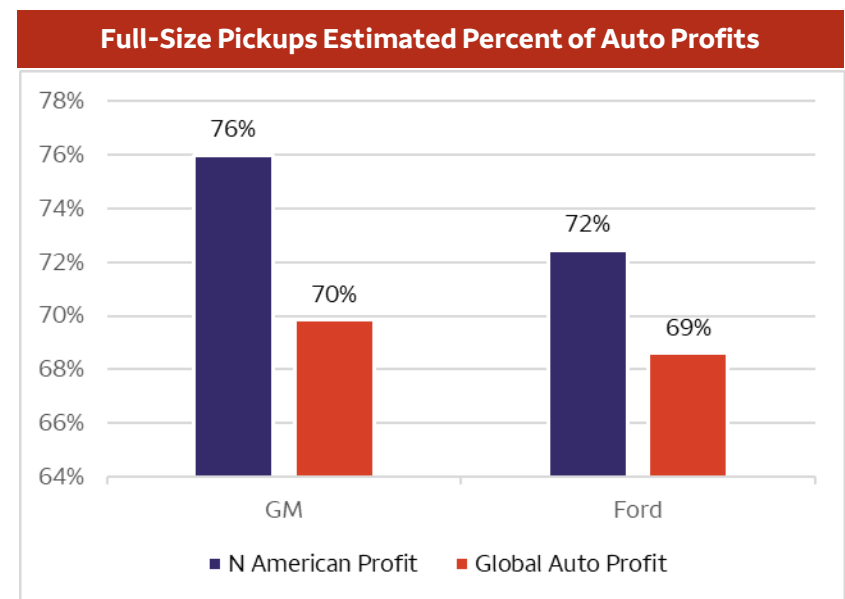
Source: A2Mac1; Wells Fargo Securities, LLC

# Pickup Profits at Risk

- BEV Economics Worse for Pickups
- Full-Size Pickups Account for Most of GM & Ford Profits
- Pickups are ~3% of Global Unit Sales, But are ~14% of Global Profits & ~41% of N America Profits



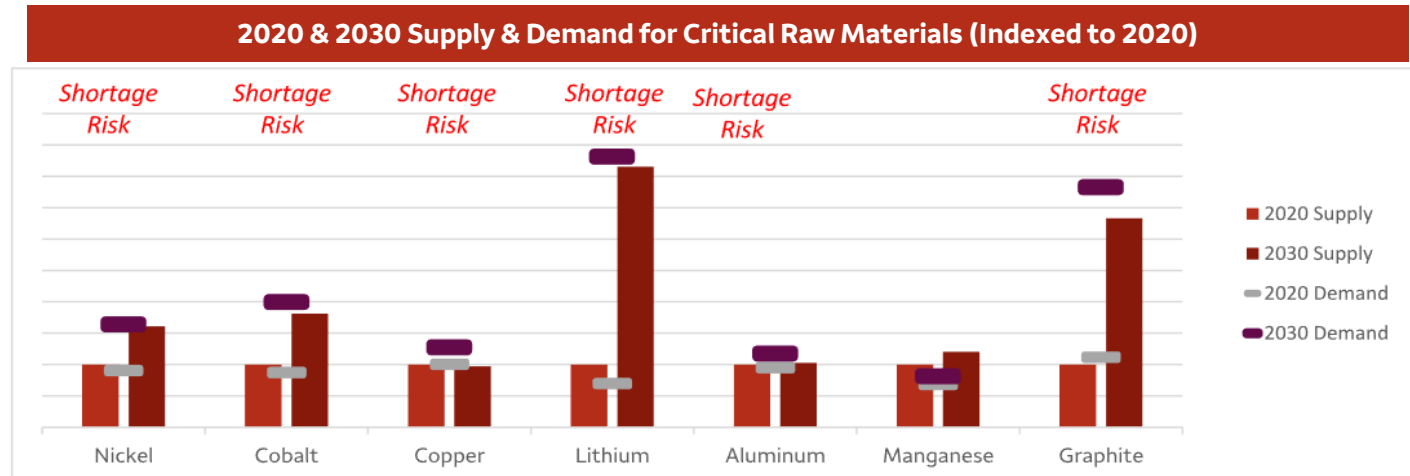
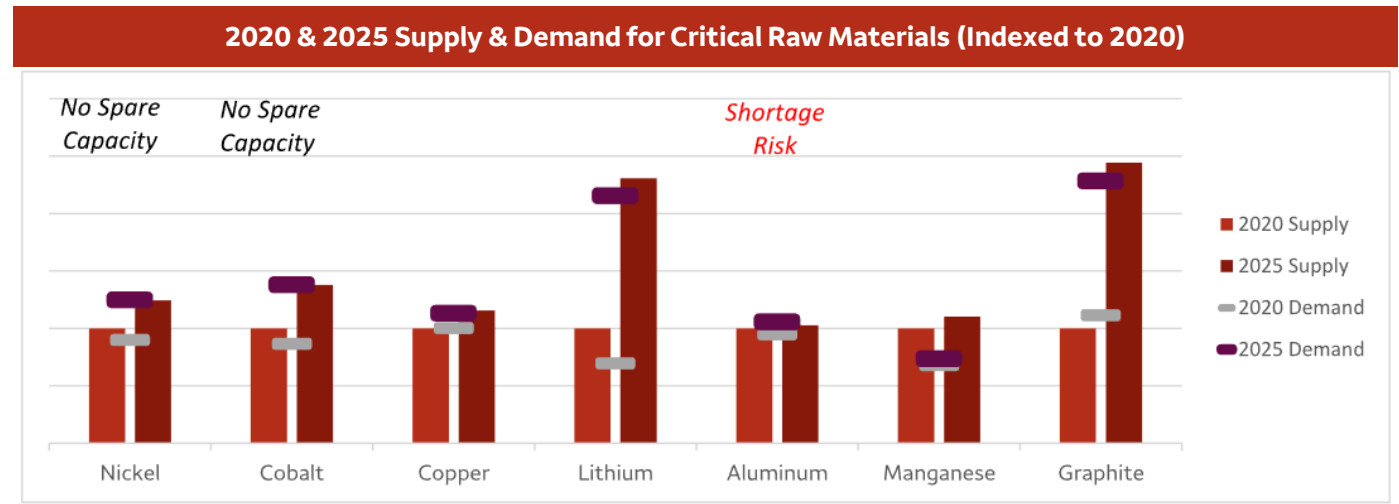
Source: A2Mac1; Wells Fargo Securities, LLC



Source: Company websites; Wells Fargo Securities, LLC

## 2.) BEV Raw Material Supply Chain Is Not Ready for Demand

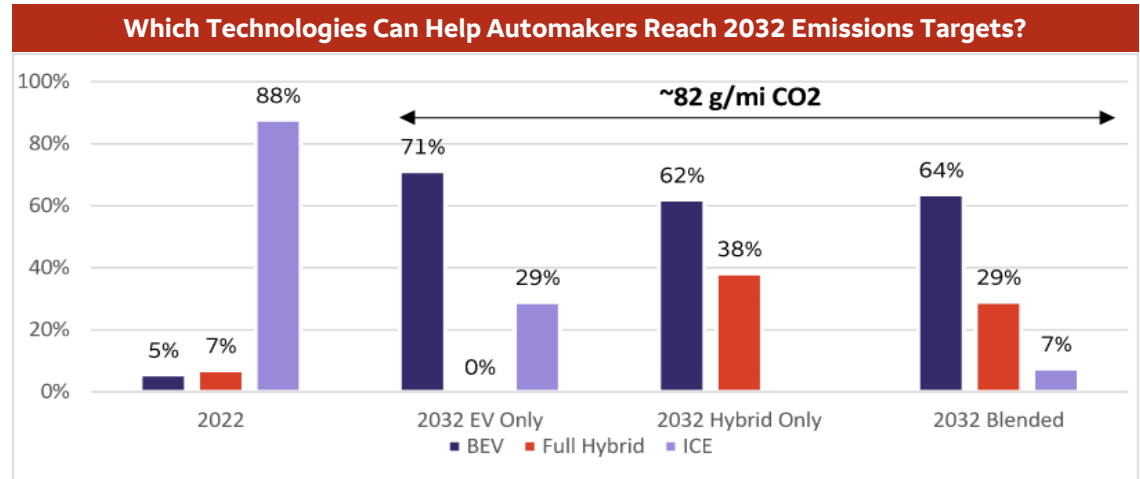
- Critical raw material analysis indicates shortage risk
- Long lead-times of over 10 years on average



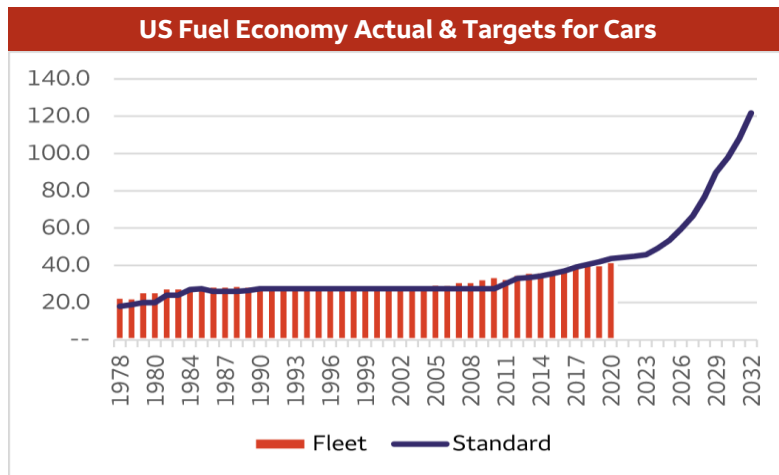
# 3.) US Regulations Force Sales of BEVs

Recent regulations have forced OEMs to build more fuel-efficient and cleaner vehicles

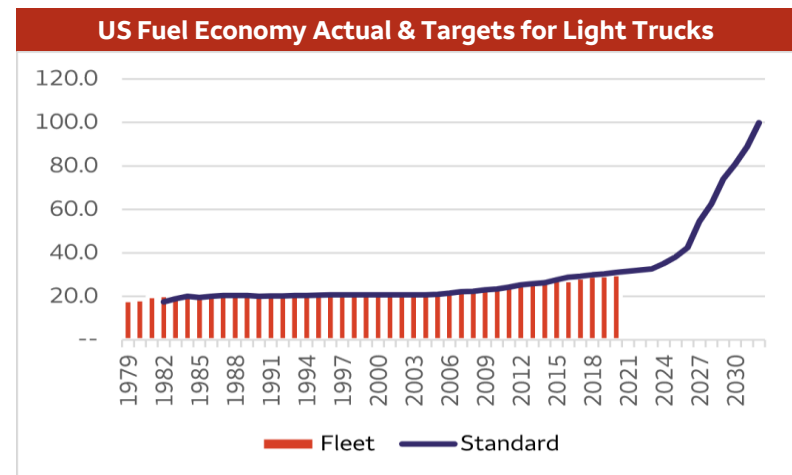
- EPA's 2023 Rule projects 67% BEV penetration
- NHTSA likely to follow EPA
- CARB targeting 35% ZEV sales in 2026; 68% in 2030; 100% in 2035



Source: Company Reports; Wells Fargo Securities, LLC estimates



Source: Wards; EPA; NHTSA; Wells Fargo Securities, LLC estimates



Source: Wards; EPA; NHTSA; Wells Fargo Securities, LLC estimates

# IRA to the Rescue

## Production Tax Credits

- \$35/kWh credit for battery cells
- \$10/kWh credit for battery module
- Made in the US
- No income, price, or sourcing requirements

## Commercial EV Buyer Credits

- \$7,500 Buyer Savings
- Made in N America
- Business must depreciate vehicle on taxes to qualify
- No income, price, or sourcing requirements
- *Limited market*

## Retail EV Buyer Credits

- Buyer Income Cap
- Price Cap (\$55K car; \$80K SUV)
- Foreign Entity of Concern

### Battery Component

- \$3,750 Buyer Savings
- >50% NAFTA before '24; 100% by '28

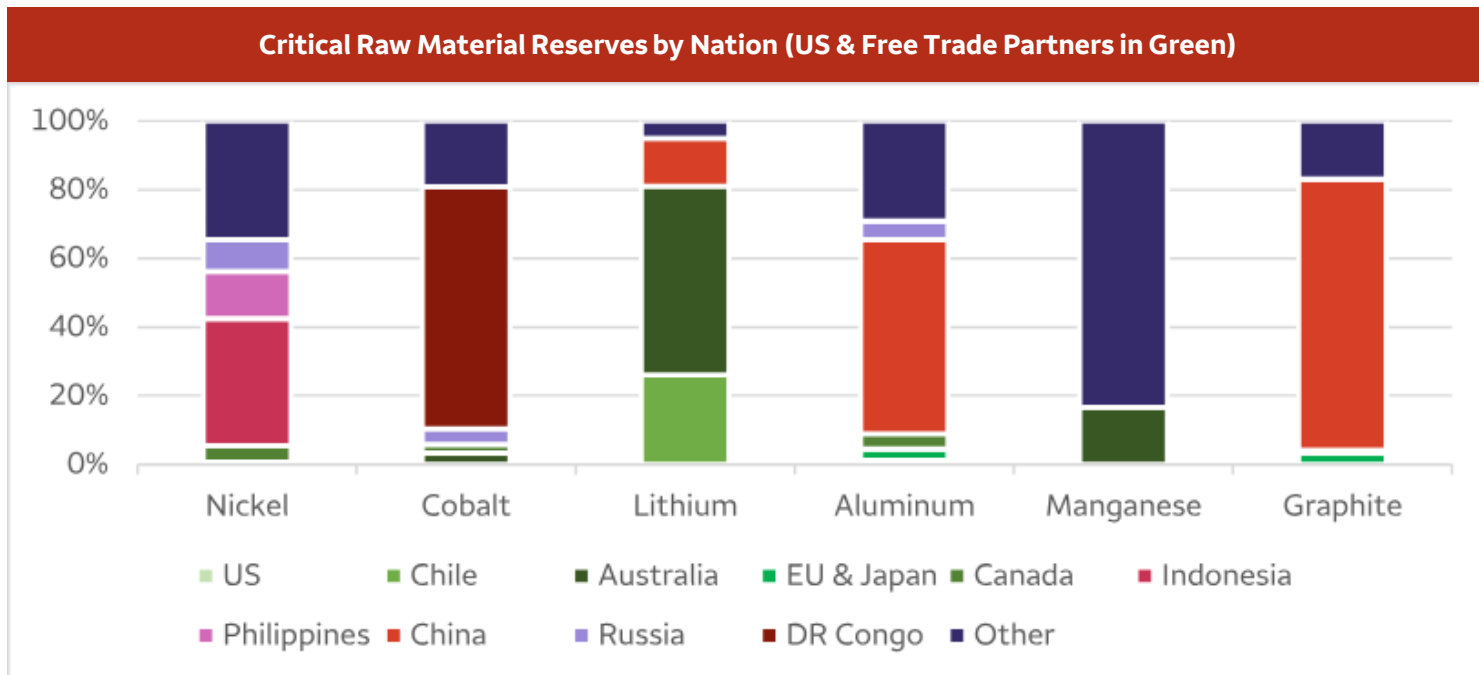
### Critical Mineral Sourcing

- \$3,750 Buyer Savings
- >40% US or FTP sourced before '24; 80% by '28



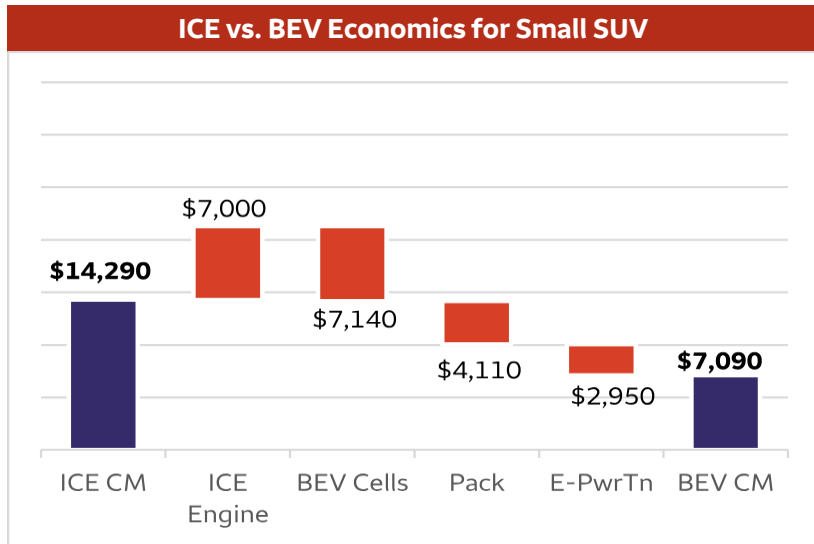
# IRA Sourcing Challenge

- Only 11% of Nickel and 6% of Cobalt **reserves** are in the US or with free trade partners.
- China dominates the **refining** of raw materials –75% cobalt, and 59% Lithium
- Limited **refining** in US or with FTP; 28% of Lithium with FTP Chile

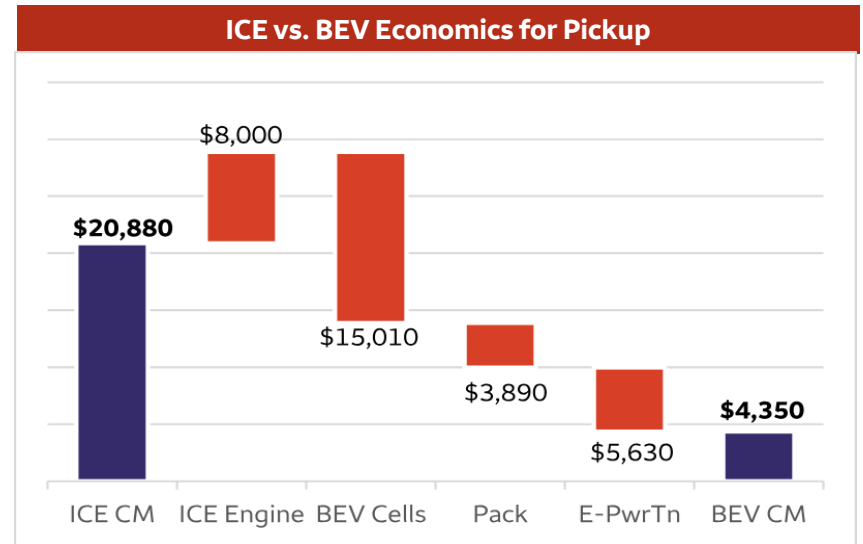


Source: USGS; Cobalt Institute; Copper Institute; Bloomberg; Wells Fargo Securities, LLC estimates

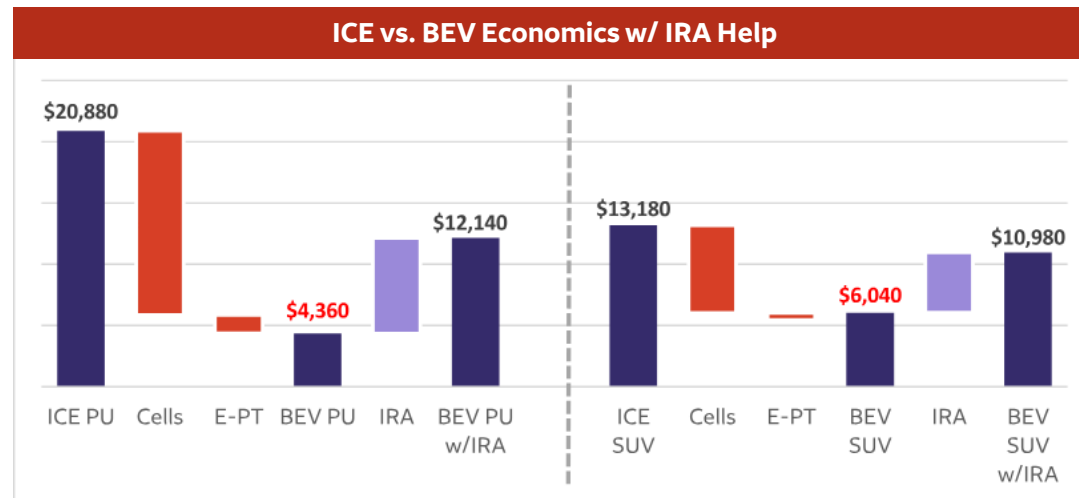
# Economics Better, but Still Worse



Source: A2Mac1; Wells Fargo Securities, LLC estimates

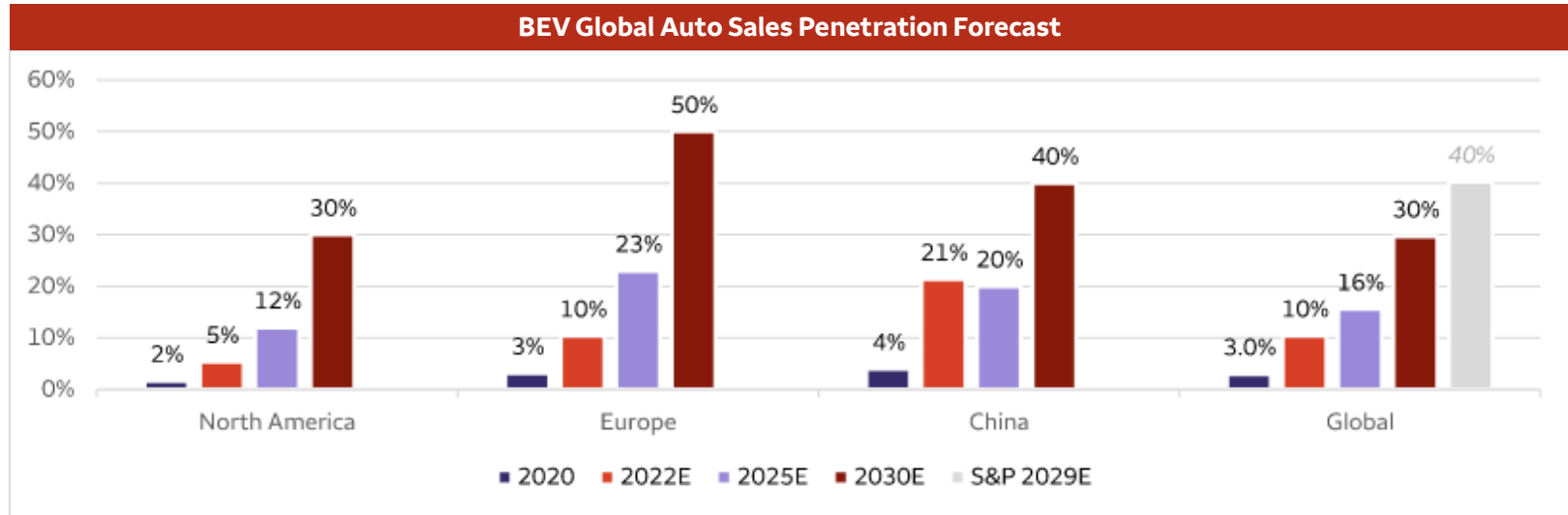


Source: A2Mac1; Wells Fargo Securities, LLC estimates



Source: A2Mac1; Wells Fargo Securities, LLC estimates

# BEV Market Outlook



Source: S&P; BNEF; Wells Fargo Securities, LLC estimates

- Outlook Driven Largely by Regulatory Push
- EPA 67% 2032 Target Likely Lowered Given Supply Chain Limits
- Ford CEO Recently Likely BEV Trajectory by 2030 is ~30%

# Impact on Auto Financing

## EV Prices Higher Than ICE

- Average MSRP of EV greater than average MSRP of ICE vehicle
- Cost of insurance of EV greater than cost to insure ICE vehicle

## More Leasing: IRA Loophole

- Foreign-made EVs qualify if they are leased (under Section 45W)
- Leases avoid the foreign entities of concern & price cap rules
- Diplomatic approach to allow international OEMs time to localize in the US
  - Hyundai-Kia already taking advantage

## BEV Depreciation Risks

- BEV battery life unknown (maybe 15 years)
- ICE vehicle lifespan >20 years
- Battery life impacted by many conditions including climate, charging process
- Since BEV market is relatively new, rate of depreciation on BEVs is unknown
- Depreciation is biggest cost of ownership

## Required Disclosures

I, Colin M. Langan, certify that:

- 1) All views expressed in this research report accurately reflect my personal views about any and all of the subject securities or issuers discussed; and
- 2) No part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by me in this research report.

Wells Fargo Securities, LLC does not compensate its research analysts based on specific investment banking transactions. Wells Fargo Securities, LLC's research analysts receive compensation that is based upon and impacted by the overall profitability and revenue of the firm, which includes, but is not limited to investment banking revenue.

## Additional Information Available Upon Request

This is a compendium report, to view current important disclosures and other certain content related to the securities recommended in this publication, please go to [Wells Fargo Disclosures](#) or send an email to [wellsfargoresearch@wellsfargo.com](mailto:wellsfargoresearch@wellsfargo.com) or a written request to Wells Fargo Securities Research Publications, 301 South College, 7th Floor, Charlotte, NC 28288.

### STOCK RATING

**OW=Overweight:** Total return on stock expected to be 10%+ over the next 12 months. BUY

**EW=Equal Weight:** Total return on stock expected to be -10% to +10% over the next 12 months. HOLD

**UW=Underweight:** Total return on stock expected to lag the Overweight- and Equal Weight-rated stocks within the analyst's coverage universe over the next 12 months. SELL

### As of July 6, 2023

50.3% of companies covered by Wells Fargo Securities, LLC Equity Research are rated Overweight.  
41.2% of companies covered by Wells Fargo Securities, LLC Equity Research are rated Equal Weight.  
8.4% of companies covered by Wells Fargo Securities, LLC Equity Research are rated Underweight.

Wells Fargo Securities, LLC has provided investment banking services for 31.1% of its Equity Research Overweight-rated companies.  
Wells Fargo Securities, LLC has provided investment banking services for 31.3% of its Equity Research Equal Weight-rated companies.  
Wells Fargo Securities, LLC has provided investment banking services for 29.9% of its Equity Research Underweight-rated companies.

### Important Disclosure for U.S. Clients

This report was prepared by Wells Fargo Securities Global Research Department ("WFS Research") personnel associated with Wells Fargo Securities, LLC ("Wells Fargo Securities").

WFS Research may, from time to time, provide clients with short-term trading views in its research reports regarding subject companies on which Wells Fargo Securities currently has equity research coverage. A short-term trading view offers a view on how the market price of a subject company's common equity may trend in absolute terms during the 30 days following the date of the short-term trading view. A short-term trading view on a subject company's common equity does not impact our fundamental investment rating or price target for that company, which reflect our view of how the subject company's common equity may perform over a one-year period. A short-term trading view may reach a different conclusion than the firm's fundamental investment rating and price target for a subject company and, therefore, short-term trading views could result in short-term price movements that are contrary to our fundamental investment rating and price target. Short-term trading views are not ratings and the firm does not intend, nor undertakes any obligation, to maintain, update or close out short-term trading views. Short-term trading views may not be suitable for all investors and have not been tailored to individual investor circumstances and objectives, and investors should make their own independent decisions regarding any short-term trading views discussed in WFS Research reports.

### Important Disclosure for International Clients

**United Kingdom** – The securities and related financial instruments described herein may not be eligible for sale in all jurisdictions or to certain categories of investors. For recipients in the United Kingdom, this report is distributed by Wells Fargo Securities International Limited ("WFSIL"). WFSIL is a UK incorporated investment firm authorised and regulated by the Financial Conduct Authority. For the purposes of Section 21 of the UK Financial Services and Markets Act 2000 (the "Act"), the content of this report has been approved by WFSIL, an authorised person under the Act. WFSIL does not deal with retail clients as defined in the Directive 2014/65/EU ("MiFID2"). The FCA rules made under the Financial Services and Markets Act 2000 for the protection of retail clients will therefore not apply, nor will the Financial Services Compensation Scheme be available. This report is not intended for, and should not be relied upon by, retail clients. For the purposes of the U.K. Financial Conduct Authority's rules, this report constitutes impartial investment research.

**EEA** – The securities and related financial instruments described herein may not be eligible for sale in all jurisdictions or to certain categories of investors. For recipients in the EEA, this report is distributed by WFSIL or Wells Fargo Securities Europe S.A. ("WFSE"). WFSE is a French incorporated investment firm authorized and regulated by the Autorité de contrôle prudentiel et de résolution and the Autorité des marchés financiers. WFSE does not deal with retail clients as defined in the Directive 2014/65/EU ("MiFID2"). This report is not intended for, and should not be relied upon by, retail clients.

**Australia** – Wells Fargo Securities, LLC and Wells Fargo Securities International Limited are exempt from the requirements to hold an Australian financial services license in respect of the financial services they provide to wholesale clients in Australia. Wells Fargo Securities, LLC is regulated under the laws of the United States and Wells Fargo Securities International Limited is regulated under laws of the United Kingdom. All such laws differ from Australian laws. Any offer or documentation provided to Australian recipients by Wells Fargo Securities, LLC or Wells Fargo Securities International Limited in the course of providing the financial services will be prepared in accordance with the laws of the United States or United Kingdom and not Australian laws.

# Disclosure

**Canada** – This report is distributed in Canada by Wells Fargo Securities Canada, Ltd., a registered investment dealer in Canada and member of the Investment Industry Regulatory Organization of Canada (IIROC) and Canadian Investor Protection Fund (CIPF). Wells Fargo Securities, LLC's research analysts may participate in company events such as site visits but are generally prohibited from accepting payment or reimbursement by the subject companies for associated expenses unless pre-authorized by members of Research Management.

**China** – Strictly Private and Confidential. For the sole use of the recipient only. Not to be copied or redistributed within the People's Republic of China.

**Brazil** - This report was not created for distribution to investors resident in Brazil or to the Brazilian public in general. Wells Fargo Securities, LLC is a broker-dealer registered in United States of America with and regulated by the U.S. Securities and Exchange Commission. Wells Fargo Securities, LLC is not registered in Brazil and its products, including this report and the securities mentioned in this report, have not been and will not be publicly issued, placed, distributed, offered or negotiated in the Brazilian capital markets, and, as a result, have not been and will not be registered with the Brazilian Securities Commission (Comissão de Valores Mobiliários, the CVM). The offer of Wells Fargo Securities, LLC's products, including this report and any securities mentioned in this report, is intended only for residents in the countries in which Wells Fargo Securities, LLC is authorized to operate.

## About Wells Fargo Securities

Wells Fargo Securities is the trade name for the capital markets and investment banking services of Wells Fargo & Company and its subsidiaries, including but not limited to Wells Fargo Securities, LLC, a U.S. broker-dealer registered with the U.S. Securities and Exchange Commission and a member of NYSE, FINRA, NFA and SIPC, Wells Fargo Prime Services, LLC, a member of FINRA, NFA and SIPC, Wells Fargo Securities Canada, Ltd., a member of IIROC and CIPF, Wells Fargo Bank, N.A. and Wells Fargo Securities International Limited, authorized and regulated by the Financial Conduct Authority.

This report is for your information only and is not an offer to sell, or a solicitation of an offer to buy, the securities or instruments named or described in the report. This report, including any ratings it contains, does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should seek professional advice, including tax advice, to determine whether any advice or recommendation in the attached research report is suitable for their particular circumstances. The information in this report is provided as of the date of the report and has been obtained or derived from sources believed by Wells Fargo Securities Global Research Department ("WFS Research"), to be reliable, but WFS Research does not represent that this information is accurate or complete. Any opinions or estimates contained in this report represent the judgment of WFS Research, at the time that the report was published, and are subject to change without notice. Certain text, images, graphics, screenshots and audio or video clips included in this report are protected by copyright law and owned by third parties (collectively, "Third Party Content"). Third Party Content is made available to clients by Wells Fargo under license or otherwise in accordance with applicable law. Any use or publication of Third Party Content included in this report for purposes other than fair use requires permission from the copyright owner. Any external website links included in this publication are not maintained, controlled or operated by Wells Fargo Securities. Wells Fargo Securities does not provide the products and services on these websites and the views expressed on these websites do not necessarily represent those of Wells Fargo Securities. Please review the applicable privacy and security policies and terms and conditions for the website you are visiting. All Wells Fargo Securities research reports published by WFS Research are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Clients may also receive our research via third party vendors. Not all research content is redistributed to our clients or available to third-party aggregators, nor is WFS Research responsible for the redistribution of our research by third party aggregators. Equity Strategists focus on investment themes across the equity markets and sectors. Any discussion within an Equity Strategy report of specific securities is not intended to provide a fundamental analysis of any individual company described therein. The information provided in Equity Strategy reports is subject to change without notice, and investors should not expect continuing information or additional reports relating to any security described therein. Wells Fargo Securities' Signature Picks is a product of the Equity Strategy team and represents a portfolio of stocks selected from the Equity Research Department's universe of Overweight rated stocks. Stocks with this designation are selected by the Signature Picks Committee based on factors such as volatility, risks, market cap and liquidity and may not represent the fundamental analysts' top-rated stock in their respective coverage universe. For research or other data available on a particular security, please contact your sales representative or go to <http://research.wellsfargosecurities.com>. Copyright © 2023 Wells Fargo Securities, LLC

SECURITIES: NOT FDIC-INSURED - MAY LOSE VALUE - NO BANK GUARANTEE