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May 13, 2024

The Honorable Shailen Bhatt
Administrator
Federal Highway Administration
1200 New Jersey Avenue SE
Washington, D.C. 20590-0001

Submitted electronically at: www.regulations.gov

**RE: Request for Information on the Use of Manufactured Products in Highway Projects
(Docket No. FHWA-2023-0040)**

Dear Administrator Bhatt,

Electric Era Technologies, Inc. (Electric Era) is a US-based EV charging company that produces intelligent, battery-backed DCFC systems, and we appreciate the opportunity to provide information on Lithium Iron Phosphate (LFP) Battery Energy Storage Systems (BESS) – or LFP BESS – for FHWA’s consideration for a time-limited and targeted waiver from Buy America requirements (Docket No. FHWA-2023-0040).

BACKGROUND

Founded and based in Washington State, Electric Era aims to make EV fast-charging accessible and affordable for all. We are pursuing this goal by solving a key reason that has kept Level 3 charging stations scarce, costly, and time-consuming to install: grid impact.

Our patented system stacks power from the grid and the charging station’s LFP BESS (lithium iron phosphate battery energy storage system) to provide charging power beyond the grid’s limit. The charging station also intelligently (and continuously) calibrates how much power to draw from either or both sources to reduce grid impact and operational costs.

These capabilities mean that Electric Era’s charging stations are ideally suited for grid-constrained areas and rural America, where the cost and time required for utility upgrades can be prohibitive. By reducing the need for utility upgrades, Electric Era is able to unlock vast swaths of the country where it would be otherwise economically infeasible to install a typical DCFC station due to outdated grid infrastructure.

As a fully-integrated provider, Electric Era provides customers with a one-stop-shop solution for their DCFC needs, including design, installation, hardware, software, and operations & maintenance. We work with leading suppliers to source the various required components (such as charging dispensers, inverters, payment terminals, and LFP BESS), before assembling the charging station at our Seattle facilities and selling the charging station as a single discrete product. To meet growing demand, we plan to expand our manufacturing in the United States in the coming years.

Our company has also been proud to participate in the Administration's historic clean-energy efforts ever since we commercially launched our charging station in 2023. In partnership with our customers, Electric Era has sought and been awarded NEVI funds for sites in multiple states, and we are committed to installing the charging stations as quickly as practicable and to help deliver on the Administration's commitment to fighting climate change and establishing US leadership in the EV industry.

GENERAL COMMENTS

As currently contemplated, the NPRM (Docket No. FHWA-2023-0037) would mean that Electric Era's charging station would no longer be eligible to receive FHWA funding (including NEVI), because there are no domestic sources of LFP BESS – a key component of our charging station. The NPRM would not only threaten our NEVI-funded projects that are already in the pipeline but also negatively impact our ability to continue producing our charging stations in general, as more and more customers seek NEVI-compliant charging stations as a standard or baseline requirement (even if the project does not involve federal funding). As such, we respectfully ask FHWA to consider two different ways to mitigate the potential negative impacts of the NPRM:

First, Electric Era respectfully requests that the EV charging station/system itself be considered as a single, discrete manufactured product for purposes of Buy America requirements.

This would be in line with FHWA's original proposal for the EV Charger Waiver, before FHWA narrowed the waiver's scope to just the "EV charger" unit itself in the Final Rule.¹ Because the LFP BESS is just one component of our charging station, we would be able to meet the 55% domestic content threshold as long as our charging station is considered by FHWA to be a single discrete product.

Expanding the definition of the existing EV Charger Waiver so that it encompasses the EV charging station/system would not only align with how Electric Era manufactures and sells our charging station – as a single discrete product – but it would also better reflect the EV charging industry. The EV charging industry is in the midst of rapid evolution and technological advancements, and it is increasingly the case that the charging dispenser – which is the only element subject to FHWA's

¹ FHWA, *Waiver of Buy America Requirements for EV Chargers*, [88 FR 10619](https://www.federalregister.gov/documents/2023/02/21/2023-03498/waiver-of-buy-america-requirements-for-electric-vehicle-chargers) (February 21, 2023): <https://www.federalregister.gov/documents/2023/02/21/2023-03498/waiver-of-buy-america-requirements-for-electric-vehicle-chargers>

existing EV Charger Waiver – is usually just one component of the charging station/system and does not sufficiently capture the various configurations of charging systems being developed and sold.

Second, if FHWA is unable to consider the charging station/system itself as a single discrete product for purposes of Buy America, then Electric Era would respectfully urge FHWA to issue a time-limited and targeted waiver for LFP BESS.

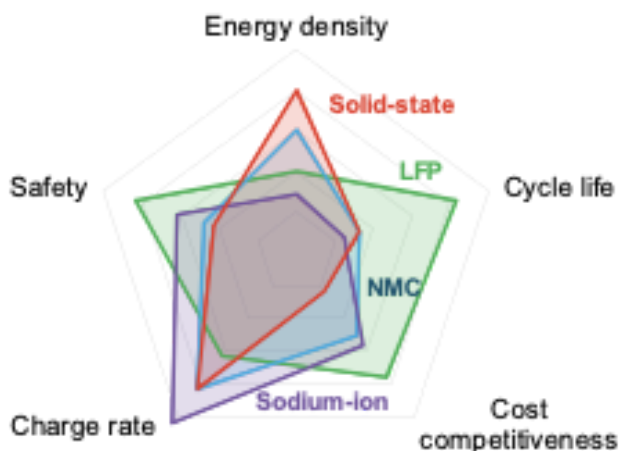
Since early 2023, we have been surveying manufacturers to identify domestic sources for LFP BESS without success, and we do not expect a domestic source that can manufacture Buy America-compliant LFP BESS for at least another five years.

Issuing a waiver for LFP BESS would allow domestic manufacturers – some of which have received federal grants and are actively working on LFP batteries – sufficient time to build and scale their manufacturing capabilities. Not issuing a waiver for LFP BESS, in our opinion, would be counterproductive to the long-term goal of fostering a thriving domestic manufacturing industry, by undercutting the Administration’s historic investments in the domestic battery and EV sectors, forcing the use of non-existent or substandard products, and discouraging investments in our country’s domestic manufacturing.

PRODUCT DESCRIPTION

LFP BESS is a BESS that is made of LFP batteries, a type of lithium-ion batteries. LFP batteries are the safest, cheapest, and most sustainable type of lithium-ion batteries, and they are the ideal battery chemistry for use in stationary energy storage.

STATUS OF BATTERY PERFORMANCE METRICS IN 2022²



² BloombergNEF, *Long-Term Electric Vehicle Outlook 2023 – Data* (June 8, 2023).

	Energy density	Cycle life	Cost competitiveness	Charge rate	Safety
	(Wh/kg)	(Cycles)	(\$/kWh)	(C-rate)	(TR °C)
LFP	0.4	0.83	0.76	0.63	0.83
NMC	0.6	0.33	0.51	0.83	0.48
Sodium-ion	0.29	0.25	0.56	1.04	0.62
Solid-state	0.8	0.33	0.24	0.83	0.43

We recommend that FHWA consider LFP BESS as the manufactured product for a waiver (as opposed to, say, LFP battery cells), because it is the LFP BESS that receives the necessary certifications, is UL listed, and is sold to us as a finished manufactured product for use as a component of our charging station.

RFI QUESTIONS

1. Domestic Materials Sourcing and Manufacturing

a. For each of the products or categories of products you identified above, please specify whether the product meets the Manufactured Product NPRM's proposed standards for being considered "produced in the United States," as described above. (Yes or No).

No. A recent analysis by the Fraunhofer Institute confirmed the non-existence of US sources for LFP batteries or LFP BESS.³

b. If you answered "Yes" to Topic 1(a), to the best of your knowledge:

i. Please identify all manufacturers that can either meet the Manufactured Products NPRM's proposed requirements or can currently manufacture products or categories of products you specified in the United States. For products that meet the condition of being manufactured in the United States, please identify the manufacturing location and percentage of components manufactured in the United States, as calculated by cost of components (if known).

ii. What is the current production capacity of the products that can meet the Manufactured Products NPRM's proposed requirements?

iii. What is the anticipated growth in capacity to produce products that are compliant with the Manufactured Products NPRM's proposed requirements over the next 5 years? Please explain.

iv. For products able to meet the Manufactured Products NPRM's proposed requirements, what is the estimated lead time from purchase order to delivery to the project site? Has this lead time increased or decreased in recent years?

N/A.

c. If you answered "No" to Topic 1(a):

³ Fraunhofer Institute for Systems and Innovation Research, *Analysis of global battery production: production locations and quantities of cells with LFP and NMC/NCA cathode material* (June 12, 2023): <https://www.isi.fraunhofer.de/en/blog/themen/batterie-update/globale-batterieproduktion-analyse-standorte-mengen-zellen-lfp-nmc-nca-kathoden.html>

i. What actions are manufacturers taking or could take to increase the manufacturing of products that will meet the Manufactured Products NPRM's proposed requirements?

While Electric Era cannot speak on behalf of battery manufacturers, we have been proactively surveying and conducting outreach to battery manufacturers over the past year and a half to identify domestic sources for LFP BESS. Unfortunately, we are not aware of any domestic sources for Buy America-compliant LFP BESS.

Battery manufacturers in the United States are actively working to onshore or build domestic manufacturing capabilities, helped by the Administration's efforts to incentivize domestic battery manufacturing and establish US leadership in the sector. However, these efforts – especially for LFP batteries – are still in infancy and simply require more time and investment. LFP BESS, which is a finished manufactured product that is several integration steps above the battery cell level, will need additional time even once domestic manufacturing of LFP battery cells at scale is achieved.

The US battery industry has historically prioritized another type of lithium-ion battery – nickel manganese cobalt (NMC) – that is better suited for on-board EV storage due to its higher energy density and cycling characteristics. As such, we ask that FHWA recognize that the US battery industry is starting its LFP efforts from a non-existent supply-chain or manufacturing foundation and will need more time than other types of lithium-ion batteries like NMC.

ii. What additional support or incentives (e.g., financial, rulemaking certainty) are needed to ensure that a sufficient supply of products that meet the Manufactured Products NPRM's proposed requirements will be available to meet the demand for compliant products on Federal financial assistance projects?

We would defer to the battery manufacturing industry to gauge what, if any, additional support or incentive may be needed. However, one potential idea could be LFP-focused support or incentives, as the United States has historically focused on other types of lithium-ion batteries. Even with additional support or incentives, the industry will still require significant time before it can domestically produce LFP BESS at scale.

iii. How long might it take to implement the steps needed to increase or begin production of manufactured products that are compliant with the Manufactured Products NPRM's proposed requirements?

While Electric Era cannot provide company-specific information due to NDAs, it is our general understanding that the most optimistic timeline for producing Buy America-compliant LFP cells is late-2026. Getting from certified LFP battery cells to a certified LFP BESS will likely require an additional 1-2 years at a minimum.

Overall, we expect that it will take four years under the most optimistic scenario for the battery industry to be able to produce Buy America-compliant LFP BESS. As such, we recommend that FHWA consider at least a five-year waiver for LFP BESS.

iv. If a plan is in place to manufacture products compliant with the Manufactured Products NPRM's proposed requirements, what is the volume of specific products that will be in compliance with these requirements and in what time frame?

While we cannot speak for the battery industry, our conversations with battery manufacturers make clear that it will take significant time before Buy America-compliant LFP BESS can be manufactured in the United States.

Of the battery manufacturers with which we have communicated, the most optimistic timeline is an initial annual production of several GWh of Buy America-compliant LFP cells starting in late 2026, which would represent a small fraction of what would be required to meet expected US annual demand for energy storage (119 GWh in 2030).⁴ As previously mentioned, domestic production of LFP BESS would probably take an additional 1-2 years minimum after that.

v. Will the volume of manufactured products that are compliant with the Manufactured Products NPRM's proposed requirements be ramped up over time, and, if so, at what annual growth rate?

We would need to defer to the battery industry, but we note that a recent analysis by the Fraunhofer Institute finds that US manufacturing of LFP batteries is essentially nonexistent today but may eventually reach ~5% of global production by 2030. Please see the following chart from that report.⁵

⁴ Solar Energy Industries Association, *Energizing American Battery Storage Manufacturing* (November 2023):

<https://www.seia.org/research-resources/energizing-american-battery-storage-manufacturing>;

PV Magazine, *US battery storage demand to surge within this decade, says SEIA* (January 3, 2024):

<https://www.pv-magazine.com/2024/01/03/us-battery-storage-demand-to-surge-within-this-decade-says-seia/>

⁵ Fraunhofer Institute for Systems and Innovation Research, *Analysis of global battery production: production locations and quantities of cells with LFP and NMC/NCA cathode material* (June 12, 2023):

<https://www.isi.fraunhofer.de/en/blog/themen/batterie-update/globale-batterieproduktion-analyse-standorte-mengen-zellen-lfp-nmc-nca-kathoden.html>



vi. What are the limiting factors for the product's ability to meet criteria for compliance under the Manufactured Products NPRM? For example, are there particular components of these products that cannot be mined, produced, or manufactured in the United States, and which make up a significant portion of the cost of the manufactured product? If so, please describe each component separately, and indicate approximately what percent of the total cost of all components of the manufactured products it represents.

Currently, production of LFP battery cells is virtually non-existent in the United States, and the raw-material pipeline to support a Buy America-compliant LFP cell is even further out.

The major components of LFP cells are the electrodes (cathode and anode), electrolytes, and separators. While several companies are working to establish limited final-production capabilities in the United States for LFP cells starting in 2025, the US base of electrode supply (cathodes being the most challenging aspect) is lagging even further behind this. The electrodes are a significant portion of the total cost of the battery cell, and the manufacturers that we are in touch with that are establishing US-based LFP production do not believe they can meet the domestic content threshold requirements of Buy America until the US manufacturing base for cathodes is established.

While estimates vary, the most optimistic estimates we have heard for initial production of final assembly of LFP cells in the United State is late 2025, and the most optimistic estimate we have heard for rolling in domestically sourced cathodes (and, thus, allowing the LFP cell to meet Buy America's 55% domestic content threshold) is late 2026. We fully expect the date for Buy America-compliant LFP cells to slip past 2026, based on the complexity of the on-shoring efforts required and historical precedent of the date already

slipping out by more than a year over the last 1.5 years (from our previous surveys of, and discussions with, battery manufacturers).

2. Market Readiness

a. For each product you identified above, please provide your observations on the current and near-term domestic demand expected for these products or categories of products. Does this estimate of future demand take into account increases in Federal funding amounts for infrastructure under the BIL, enacted as the Infrastructure Investment and Jobs Act (Pub. L. 117–58) and the Inflation Reduction Act (Pub. L. 117–169)? Please explain.

We expect domestic demand for LFP BESS for stationary storage to grow significantly over the next several years, driven by our nation's stressed grid infrastructure, growing use of renewable energy sources, and electrification of our transportation sector. Of course, one of the primary drivers of this demand is the Administration's historic policies and investments in clean energy and to fight climate change, accelerating the need for BESS solutions. According to a report from SEIA, US demand for BESS is expected to grow sixfold by 2030.⁶ While stationary BESS can consist of different lithium-ion chemistries, we expect LFP to make up the bulk of this expected growth in BESS demand, as LFP batteries offer the safest, cheapest, and most sustainable form of lithium-ion chemistry.

b. Please provide information regarding whether the current and/or near-term domestic manufacturing capacity would be adequate to meet the expected market demand. Please specify any factors helping or preventing domestic manufacturing industry from meeting the expected demand today and in the near-term and provide information on the current and expected availability or unavailability of key components or sub-components of the product or category of products you specified.

There is currently no domestic manufacturing capacity for LFP BESS at scale, and the expected capacity in the near term is wholly insufficient to meet US storage needs over the next decade.

A recent report by SEIA suggests that annual demand for energy storage in the United States will grow from 18 GWh in 2023 to 119 GWh in 2030.⁷ While other lithium-ion chemistries may support some of this demand, LFP is the safest, most mature, and most able to scale to meet the country's expected needs.

In contrast to current and expected demand for BESS in the United States, the manufacturers we have communicated with are planning initial annual production of just a few GWh of Buy America-compliant LFP cells starting in late 2026, meaning that their planned future production will be insufficient to meet current demand and casting doubt on their ability to meet US demand for at least several more years.

⁶ Solar Energy Industries Association, *Energizing American Battery Storage Manufacturing* (November 2023):

<https://www.seia.org/research-resources/energizing-american-battery-storage-manufacturing>;

PV Magazine, *US battery storage demand to surge within this decade, says SEIA* (January 3, 2024):

<https://www.pv-magazine.com/2024/01/03/us-battery-storage-demand-to-surge-within-this-decade-says-seia/>

⁷ Ibid.

c. Are there external factors affecting the supply of product that makes it difficult to credibly communicate the existence of increased demand, or to credibly commit that such demand will be forthcoming? If so, please describe those challenges as specifically as possible.

N/A.

3. Timing

a. Where known, for each product or category of products for which you are providing information, please specify the current range of expected product delivery timeframes. Are any existing supply chain delays applicable or anticipated for the product or critical components of the product(s)?

The most optimistic timeline we have heard, based on our communications with the battery industry, is initial production of final assembly of LFP cells in the United States in mid-/late-2025. However, as explained earlier, these LFP cells will not be Buy America-compliant. In order to achieve Buy America-compliant LFP cells, domestically sourced cathodes will be required, which is not expected to occur until late-2026. We expect this date to slip past 2026, based on the complexity of the on-shoring efforts required and historical precedent of the date already slipping out by more than a year over the last 1.5 years (from our previous surveys of, and discussions with, battery manufacturers).

b. Please provide information, if available, on expected delivery timeframe outlooks through the near-term future. Include information, if known, on whether current timing delivery concerns are related to any temporary disruption.

N/A. There are currently no domestic sources of LFP cells at sufficient scale, nor are there any sources for Buy America-compliant LFP cells or Buy America-compliant LFP BESS.

c. Provide information on the current and expected near-term average customer delivery time.

N/A. There are currently no domestic sources of LFP cells at sufficient scale, nor are there any sources for Buy America-compliant LFP cells or Buy America-compliant LFP BESS.

d. Provide information regarding global supply chain constraints, local permitting, safety requirements, and needs that may affect delivery timeframes or extend installation time.

Stationary storage batteries contain huge amounts of energy and must be carefully designed and certified at the cell, module, unit, and installation level to ensure safe and reliable operation. Both NEC (National Electric Code) and IFC (International Fire Code), widely adopted in the United States, specify that energy storage at the scale required to support FHWA-funded infrastructure must be UL-listed and have undergone extensive full-scale fire testing at the cell, module, unit, and, occasionally, installation level, on top of a large number of other requirements.

These design, certification, testing, and permitting processes take years to complete and are gated until sufficient quantities of listed LFP cells are being produced to support the development and testing operations. As such, it is critical that FHWA allows for additional time after LFP cell

production begins for those cells to be designed and converted into BESS that are allowed to be installed by code.

4. Pricing

a. For each product identified above as being may be available only at higher prices than from foreign sources or from non-compliant domestic sources list the price differential in percentage terms between foreign and domestic sources of the product.

N/A. There are no domestic sources of LFP cells, not to mention Buy America-compliant LFP cells or Buy America-compliant LFP BESS. As such, it is not possible to gauge potential pricing of non-existent products from non-existent sources.

5. Other Considerations

a. If you answered "No" to Topic 1(a), are the quantities of the project typically used on FHWA-assisted projects small enough that they might fall below the thresholds specified in the De Minimis and Small Grants Waiver and thus be subject to that waiver?

No. The cost of the LFP BESS component of a battery-supported charging station is more than 5% of the total project cost, and the typical NEVI award for a charging station is greater than \$500,000.

b. Are there any other considerations that FHWA should take into account regarding production, products, product quality, or components of manufactured products used in FHWA-funded projects that are not covered by questions 1 through 3?

N/A.

CONCLUSION

Thank you for the opportunity to respond to FHWA's RFI on time-limited and targeted waiver from Buy America requirements in lieu of a general waiver. As detailed above, there are currently no domestic sources of LFP BESS, and, based on our conversations with the battery industry, we do not expect Buy America-compliant LFP BESS to become available for at least five years. We respectfully request that FHWA consider the two potential solutions outlined under "General Comments" to prevent disruption of NEVI-funded projects already in the pipeline and to avoid delays of critically needed EV charging infrastructure.

Sincerely,



Sam Reineman
Chief Technology Officer
Electric Era