Appendix B

APPENDIX

Appendix B: 2022-2023 NEEA Supply Chain Memos (3)

Memorandum

December 21, 2021

TO: NEEA Coordinating and Advisory Committee Members

FROM: Jon Clark, Market Channel Manager

SUBJECT: 2021 Supply Chain Challenges: Market Evidence & Impact on Energy Efficiency Technologies

Brief Context:

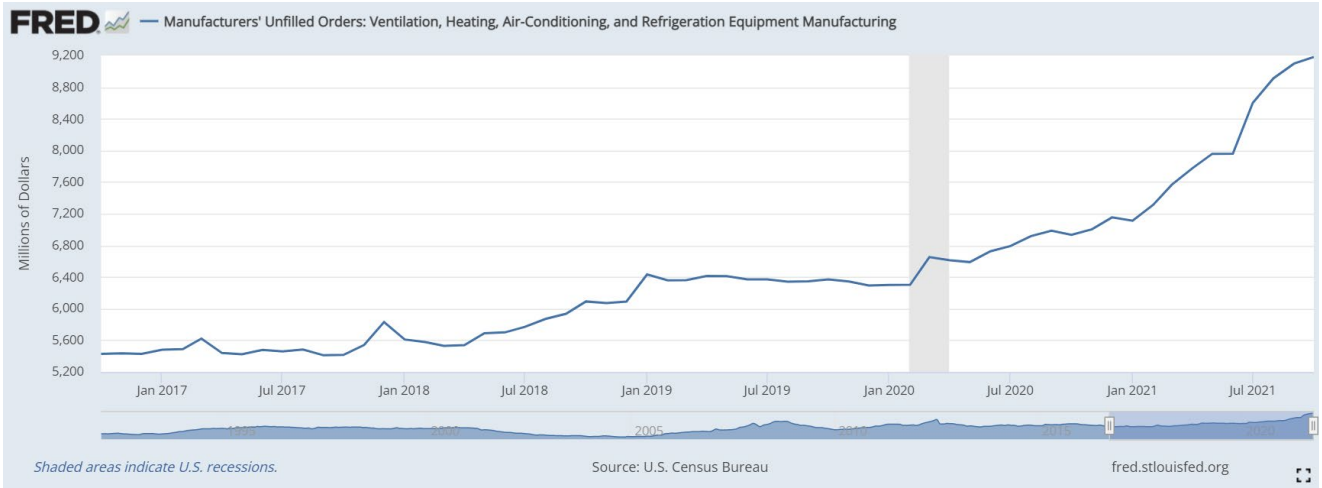
The Covid-19 pandemic has caused disruptions across every link in the global supply/demand chain resulting in product shortages and increasing prices in many industries. An example of this disruption occurred in early 2020 when panic-buying depleted the supply of toilet paper. Similar disruptions are being felt in product categories that are often part of utility energy-efficiency programs including HVAC, water heaters, and consumer electronics/appliances, resulting in increasing prices and limited availability.

Overview:

NEEA market partners involved in the manufacture and distribution of HVAC, water heaters, and consumer electronics/appliances have all indicated that they are experiencing supply chain disruptions. While the disruptions vary across industries – a shortage of microchips used in electronics/appliances; a shortage of compressors used in HVAC; a shortage of steel used in the manufacture of water heaters – the result of these disruptions are similar - higher prices, reduced selection, delayed shipments, and overall reduced product availability.

NEEA partners involved in the sale of these products have indicated that they have had to pass along the price increases to purchasers and that availability issues are causing a shift in what is being purchased. Oddly, increased prices and limited availability haven't reduced sales as many of these partners are reporting record sales volumes in 2021.

The results of reduced availability from suppliers and increased sales can be seen in this Federal Reserve graph of manufacturers of HVAC and refrigeration equipment that shows unfulfilled orders at a 5-year high.



Impact Example:

The water heater industry is being impacted by many of the global disruptions. AOSmith, the largest manufacturer of water heaters in the U.S., recently reported that they have passed along five price increases in 2021 primarily due to increases in the price of steel and logistics. AOSmith's heat pump water heater (HPWH) business is being further interrupted due to a shortage of microprocessor chips that are required for general control of the unit, and for CTA-2045 connectivity significantly reducing the number of units that can be manufactured. This is happening at the same time that states like Washington are implementing administrative codes that require electric storage water heaters to be CTA-2045 enabled.

Wholesalers of HPWHs that work with NEEA indicate that their builder customers aren't slowing construction, and due to the lack of product, they are asking for alternative products including tankless water heaters. Wholesalers are concerned because it has taken a great deal of effort, in some cases years, to get their customers used to and comfortable with HPWHs. While product shortages have the potential to impact near-term HPWH unit goals, the shortages may have longer-term impacts on the view of HPWHs in the market resulting in challenges in achieving energy-efficiency goals.

In an effort to keep HPWHs top of mind, NEEA worked with water heater manufacturers that represent over 90% of unit sales to provide comments to the State of Washington supporting a delay on CTA2045 implementation requirements (click HERE to read the comments letter). While the document outlines how supply chain disruptions are impacting our work in the HPWH arena, they can easily be applied to our collective HVAC and consumer electronics/appliance energy-efficiency efforts.

Please contact **Jon Clark** (JClark@neea.org) or **Jeff Mitchell** (JMitchell@neea.org) if you have questions about this memo.

Memorandum

April 13, 2023

TO: NEEA Coordinating and Advisory Committee Members

FROM: Jon Clark, Strategic Accounts Manager, Retail and Wholesale

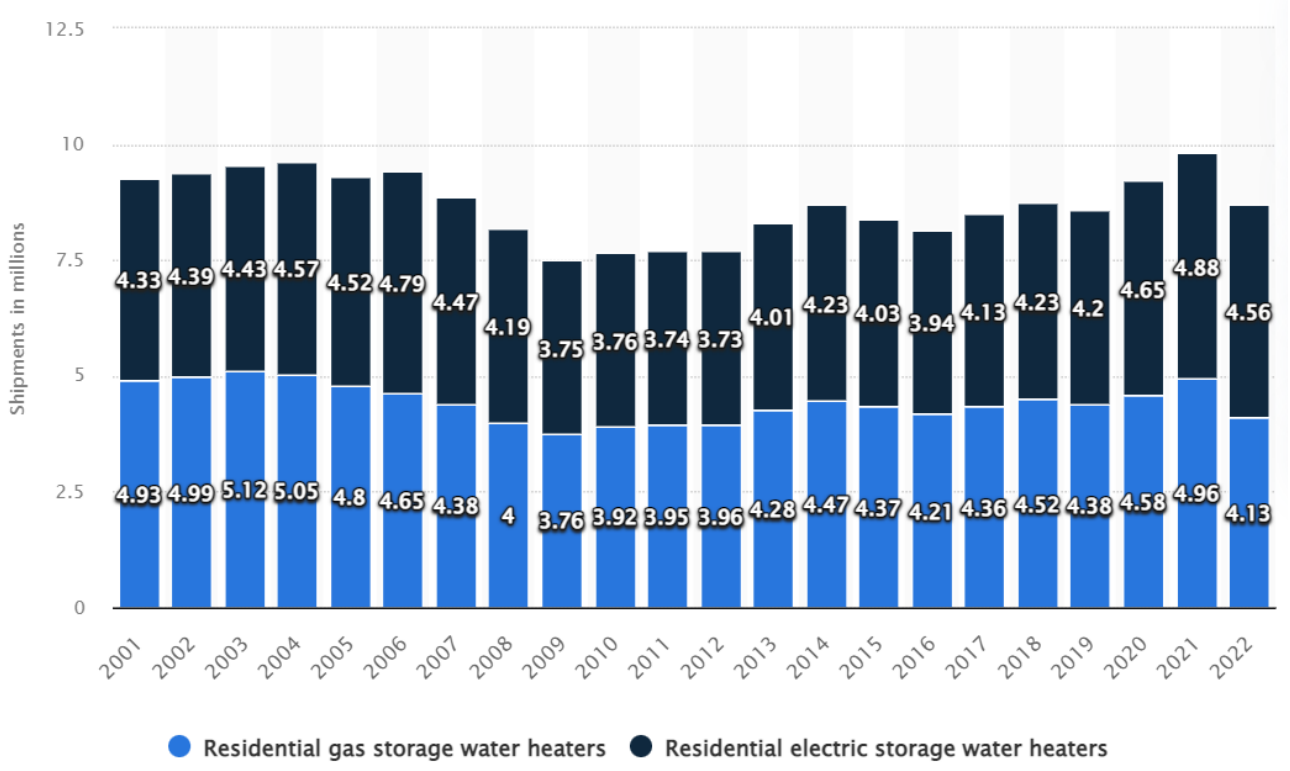
SUBJECT: Supply Chain Challenges: Market Evidence & Impact on Energy Efficiency Technologies

Brief Context:

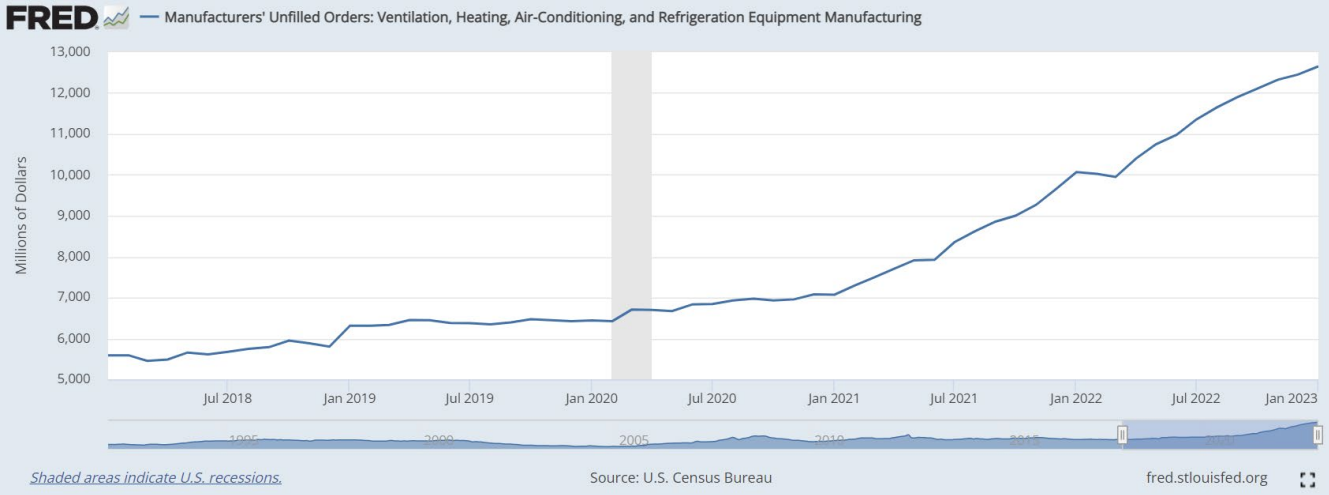
This is an update to a similar memo provided to NEEA funders in Dec 2021. The Covid-19 global pandemic caused numerous disruptions to the supply chain resulting in the lack of product availability described in the December 2021 memo, and in particular, increased prices and lower volume of water heating and HVAC units shipped/sold in North America in 2022. While product availability is improving, these pandemic-driven shortages are forecasted to continue causing challenges to availability.

Overview:

Supply chain constraints caused shortage in raw materials and components resulting in fewer units built with higher price tags. In their Q4 2022 financial filings, AO Smith, one of the world's leading manufacturers of water heating solutions and the largest seller of residential water heaters in the U.S. reported record sales for the year. They provide additional clarity on the performance: "*Higher North American sales due to pricing actions partially offset by lower residential water heating volumes.*". Higher prices, lower volumes. In a report AO Smith forecast the U.S. residential water heater business to range +2% to -5% for 2023. Price increases for water heaters have been well documented by NEEA's market partners and the following graph from the Air Conditioning, Heating, & Refrigeration Institute (AHRI), the trade association representing manufacturers of heating, ventilation, air conditioning, commercial refrigeration (HVACR), and water heating supports the unit decline.



The HVAC industry is seeing similar results to the water heating industry. The results of reduced availability from suppliers continues and can be seen in this Federal Reserve graph of manufacturers of HVAC and refrigeration equipment that shows unfulfilled orders continuing to grow and at a 5 year high.



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Please contact **Jon Clark** (JClark@neea.org) if you have questions about this memo.

Memorandum

March 7, 2024

TO: NEEA Coordinating and Advisory Committee Members

FROM: Jon Clark, Strategic Accounts Manager, Retail and Wholesale

SUBJECT: Supply Chain Challenges: Market Evidence & Impact on Energy Efficiency Technologies

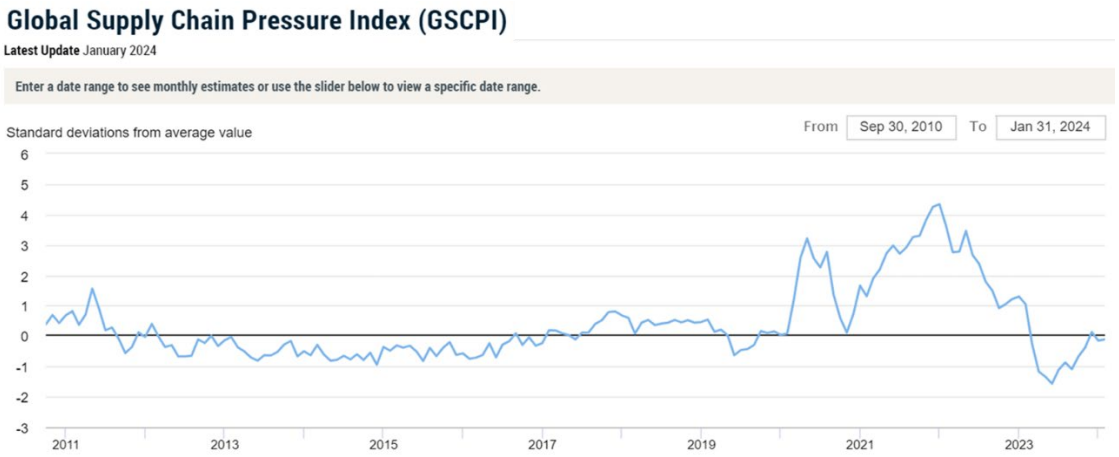
Brief Context:

This is an update to a similar memo provided to NEEA funders in April 2023; this update is based on 2023 data and market partner feedback for the January to December, 2023 timeframe. The Covid-19 global pandemic caused numerous disruptions to the supply chain resulting in the lack of product availability and in particular, increased prices and lower volume of water heating and HVAC units shipped/sold in North America in 2022. Pandemic supply chain challenges have mostly been resolved; product availability is improving, and price increases are slowing.

Overview:

Anecdotal feedback from our manufacturing and market partners in HVAC, home appliances, and consumer electronics is that the supply chain issues have mostly been resolved and are having little impact on product availability. Their supply chains went through significant change over the last couple of years and, for the most part, the dust has settled and created a "new normal". Backlog orders have mostly been addressed and prices are stabilizing (increases have slowed and there have been a few minor price decreases). Regarding prices, it is unlikely they will decrease in any significant manner as manufacturers have seen that price increases in the last couple of years have been absorbed by the consumer and, in some cases, resulting in record profits. Consumer Electronics and appliance industries are projecting flat to small single-digit unit volume growth thru 2025. This flat growth is mostly due to the spike in purchases experienced during the pandemic rather than pricing.

Market partner feedback is supported by industry data. While individual product categories will vary, overall, they are experiencing similar trends. The chart below from the Federal Reserve Bank of New York is an index used to monitor pressures to the global supply chain. This index incorporates several commonly used metrics including shipping and materials cost, orders and delivery times and survey data with purchasing managers. The index shows a return to a more normal pattern.



Federal Reserve Bank of New York, Global Supply Chain Pressure Index, https://www.newyorkfed.org/research/policy/gscpi.

The reduced pressure on the supply chain can be seen in consumer durable goods orders which appear to be tracking back to historical trends.

An example of how the macro trends shared above are impacting business can be seen in the 2023 annual report from A. O. Smith, the largest water heater manufacturer in the U.S.; report excerpt and income statement snapshot below.

"We saw improvement in our supply chain during 2022, particularly in the second half of the year, which continued through 2023. We remain in close contact with our suppliers and logistics providers to resolve supply chain constraints as they arise. In our North America segment, we saw resilient demand in the residential water heater industry in 2023 after three years of uneven growth, primarily related to the impacts of COVID-19-related supply chain constraints. Proactive replacement remained above historical levels in 2023 and we project that will continue in 2024. We believe that new home construction remains in a deficit and we expect it will be flat in 2024 compared to 2023. Considering these factors, we project 2024 industry residential unit volumes will be approximately flat after approximately six percent growth in 2023. We believe that commercial water heater industry volumes will grow low single digits in 2024 compared to 2023 as demand for commercial electric water heaters greater than 55 gallon continues a positive trend toward pre-2022 levels."

Resulting in record earnings:

	Years Ended December 31,		
(dollars in millions)	2023	2022	2021
Net sales	$ 3,852.8	$ 3,753.9	$ 3,538.9
Cost of products sold	2,368.0	2,424.3	2,228.0
Gross profit	1,484.8	1,329.6	1,310.9
Gross profit margin %	*38.5 %*	*35.4 %*	*37.0 %*
Selling, general and administrative expenses	727.4	670.9	701.4
Restructuring and impairment expenses	18.8	—	—
Interest expense	12.0	9.4	4.3
Other (income) expense-net	(6.9)	425.6	(20.4)
Earnings before provision for income taxes	733.5	223.7	625.6
Provision for (benefit from) income taxes	176.9	(12.0)	138.5
Net Earnings	$ 556.6	$ 235.7	$ 487.1

Please contact Jon Clark (JClark@neea.org) if you have questions about this memo.