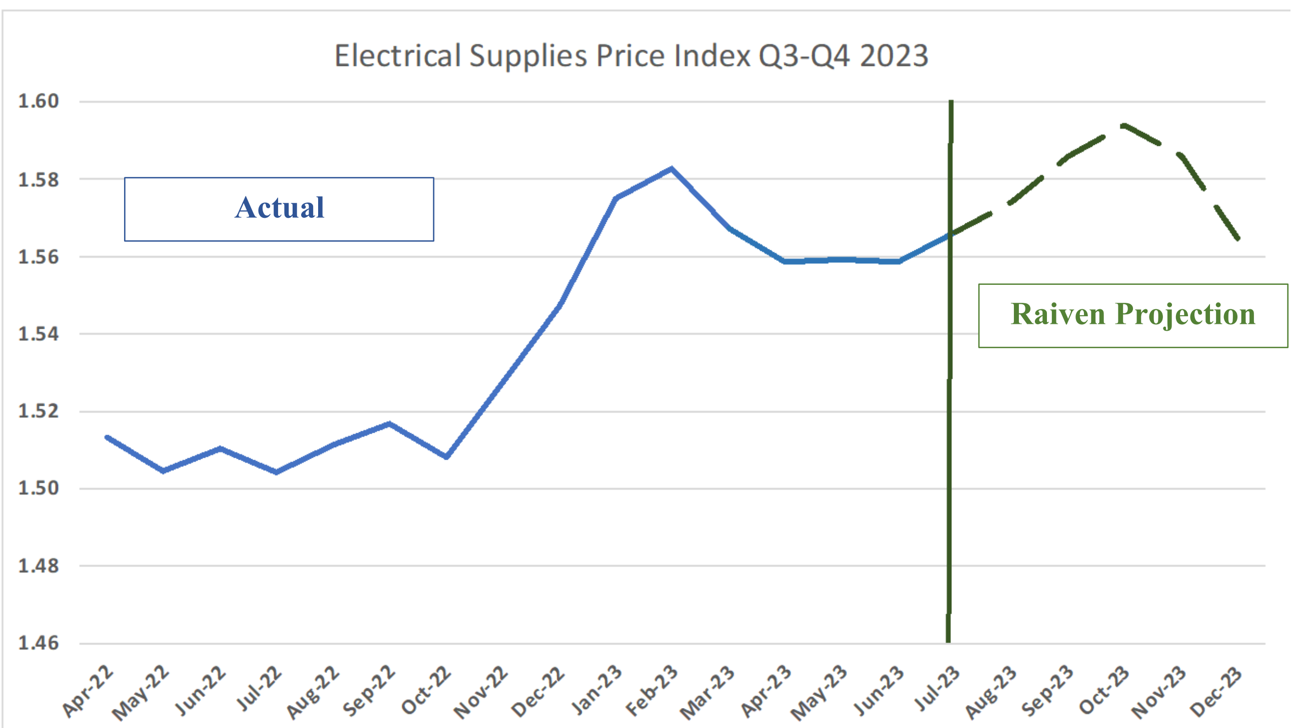
Q3 2023 Electrical Supply Chain Outlook

Q3: An Inflection Point in Materials Pricing?

Irvine, California, August 2023 – The second quarter tracked exactly to our projections with the materials index remaining flat across our 24 product categories. While Q2 did see circuit breakers, panels and switchgear still register 3% price gains, wire fell 1% on average across all categories. The question everyone is asking is which way will pricing go after the Q2 pause?

The Raiven Electrical Supply Index includes a weighting of 24 product categories and uses a regression analysis to project future movements given key variables that have proven to materially impact the index. The graph below reflects the flattening of price change for Q2 2023 as contractionary monetary policy and surprising employment statistics continue to battle for influence in the overall economy. In this report, we share our projections for the pricing index for the balance of Q3 and Q4 2023.



Falling oil prices, higher interest rates, and slower than expected Chinese economic recovery all contributed to flattening prices in H1 of 2023, however expected increases in crude oil pricing through Q3 should lift the index marginally higher before seasonal impacts and project backlog declines pull the index down toward the end of the year.

Copper Watch

Copper's ten largest copper mines are currently on average 95 years old, and as previously reported, are seeing exponential declines in ore grade. The projected demand for copper, though, is still slated to nearly double in the next 10 years, from 21MT to 49MT in 2035. The average time it takes from discovery to production of new mines is nearly 18 years, so there is little doubt we will experience a growing disconnect between demand and supply. Without dramatic investment in new and existing mining and associated infrastructure, long-term prices have no room but to continue an upward trend. So why did Q2 see a slight easing on wire prices?

1. Storage levels of copper, as measured by the London Metals Exchange stabilized and slightly increased from its historic lows throughout Q2, 2023, with an average of 72,500 tons of 30-day warehouse supply reported through most of the quarter. While these levels are still trending at all-time lows, the fact that inventories are increasing suggests a lull in short-term demand. Net effect: Softening of short-term pricing.

2. Copper pricing has a 70-75% correlation to crude oil prices, which saw a double-digit decline across the quarter. Net effect: Softening of short-term pricing.

3. Peru's energy and mining minister has re-confirmed that they are on track for a 15% increase in YoY copper production, easing pricing tensions that were felt when social uprisings were perceived as a growing threat in Q1 2023.

4. With China recently finalizing it's Made in China 2025 initiative, over $1.4trillion in copper intensive infra-structure programs, are beginning to funnel into the economy, albeit somewhat slower than projected.

5. Bearish views on continued U.S. interest rate increases and the slowest consumer price index in China since the end of 2020 both contributed to downward pricing pressure for Copper. The 9th consecutive month of manufacturing contraction in the electrical materials sector only echoes recessionary sentiments and contributed to price easing.

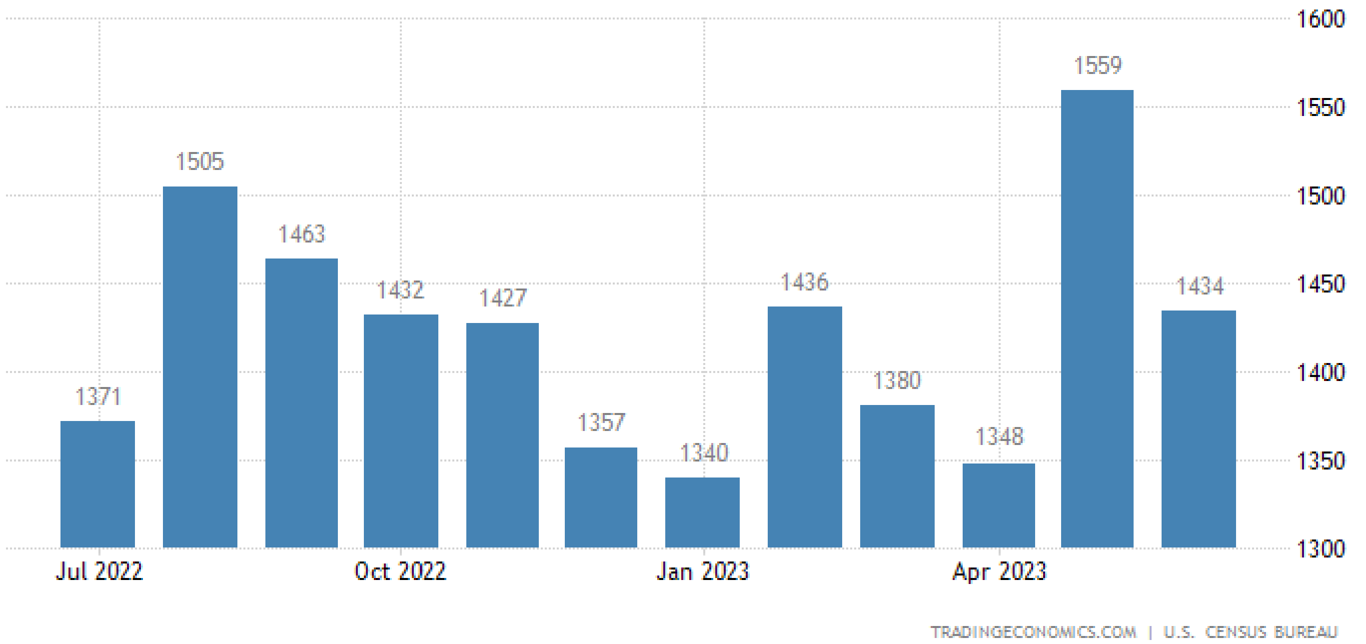
6. In spite of these downward pressures, copper wire pricing only declined by 1.3% in Q2, suggesting that we are near or at a floor of copper pricing, pending some further geo-political or dramatic economic news that would further impact short-time movements.

Q2 2023			
Key Variables	Change	Copper Price Impact	Q3/Q4 Proj.
Supply	↑	↓	↔
Demand	↓	↓	↓
Inventory	↑	↓	↔
Oil Price	↓	↓	↑
China Economy	↔	↔	↔

Have Material Lead Times Improved?

An average of distributors surveyed suggest that overall lead times are still 60-70% higher than existed in Q1 2020 before COVID rattled the supply chain. However, there continues to be a very modest declining trend for a number of products. That said, the surprising increases in new-home construction starts in May and June may combine with the ongoing strain of utility and infrastructure projects that continue to carry 12-18 months lead time on critical gear including transformers and high-voltage switchgear.

United States Housing Starts (000s)



Switchgear and Product Lead Time Updates

Bucking the generally flat pricing Q2 trend, transformers, switchgear, breakers and panels all saw a 3% price increase during the quarter and in line with announced 4-7% increases to occur through Q3, 2023. There has been little reported change in lead times, with 15KV still averaging 60-70 weeks, while substation transformers, and other key utility infrastructure lead times remain even 20-40% higher. Relief does continue to come in the low voltage categories with sample lead times shown below:

Sample Low Voltage Lead Times

Cat6 Cable	4 - 6 Weeks	**ISP Fiber (Plenum Rated)**	6 - 8 Weeks
Cat6A Cable	4 - 6 Weeks	**High Pair Count Copper**	20 Weeks
Jacks / Panels	4 - 6 Weeks	**Access Control Panels**	7 - 10 Weeks
Closet Metals	7 Weeks	**Door Locking Hardware**	2 - 20 Weeks
OSP Fiber	20 Weeks	**Power Supplies**	1 - 3 Weeks

Additional Utility Issues

It is now well documented that the associated lead times discussed above are largely due to the scale of utility-based infrastructure projects that are underway and accelerating under initiatives associated with the Inflation Reduction Act. These demand-driven programs have supplanted COVID supply chain issues as the leading cause for gluts in supply for key materials. There is no sense that the demand or the associated lead times will ease for the rest of 2023. In fact, the premiums manufacturers are asking to receive in exchange for "premium" product runs of switchgear is a further indication that neither pricing nor availability metrics will ease in the short to mid-term.

Aluminum pricing continued its commodity pricing decline, falling 12% off its year highs to end the second quarter at its lowest point for 2023. Aluminum's lighter weight relative to copper and nominally lower conductivity have long-contributed to its use by utilities in high-voltage power lines. While price easing is occurring in this key utility commodity, the lack of availability of supporting transformer and switchgear infrastructure will continue to see projects run for a longer duration and at a higher cost basis, translating into a projection of 8-15% increases in power costs through 2024.

Critical Market Conditions to Watch in Q3/Q4

While our forecasts utilize regression analysis covering a variety of economic and geo-political variables, there can always be "shock" events that can create sudden movements in pricing and availability of products that are harder to project. Below you will find our assessment of events to watch for in Q3-Q4 2023 that could have such impacts on supply chain and pricing:

1. <u>Mounting Election Issues.</u> Fitch's downgrade of U.S. credit coupled with former President Trump's indictments related to January 6th are examples of tremors that could ripple more broadly into the investment community. More risk and uncertainty around elections traditionally yields declines in key investment decisions, both by consumers and corporations.
2. <u>Ukraine / Russia</u>. Major movements in the progression of the war and changes in involvement by NATO and/or China could play a major role in a variety of commodity access and consequently pricing that would affect electrical markets, most notably the short-term supply of Nickel.
3. <u>Continued Manufacturing Contraction</u>. As interest rates do not yet seem to have peaked, and manufacturing enters its tenth consecutive month of retraction, labor strikes, significant swings in consumer confidence or corporate financing costs could materially accelerate further contraction. While this could create a short-term upward pricing pressure as currently financed jobs continue to roll off the "COVID backlog", it points to potential declines in both availability and in price in the mid-longer term.
4. <u>SE Asia Geo-Political events</u>. While the immediate tension between China / United States / Taiwan are not headline news, the underlying issues that fuel animosity and retaliation linger. Any negative movement in these positions would likely trigger even greater trade restrictions, likely tightening supply more than quelling short-term demand.
5. <u>Oil pricing</u>. One can never forget the correlation of crude oil to copper-product prices. The relative quieting of oil prices in Q2 could easily spike with any seismic geo-political activity and/or radical swings in economic projections for the balance of 2023.

Final Thoughts

Current conditions support a continued stabilization of pricing through the end of the year, notwithstanding a possible 1-2% increase in Q3. 2024 appears to favor deeper market softening over expansion given the ripple effects of interest rates on project decisions and associated backlogs. Election years traditionally see a hesitation for large investment, however, the Inflation Reduction Act initiatives that are gaining traction could serve to generate net growth in the electrical sector.