

Reshaping Steel Demand From Government Policy Initiatives

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Government Policies Affect Steel Markets

Recent major policy initiatives

- 2021 Infrastructure Investment and Jobs Act (Infrastructure Bill)
- 2022 Inflation Reduction Act (IRA)
- 2022 Creating Helpful Incentives to Produce Semiconductors & Science Act (CHIPS Act)

Don't forget other government actions

- Trade actions – AD/CVD & Section 232
- ESG and decarbonization
- USMCA and regional value content

Purpose of today

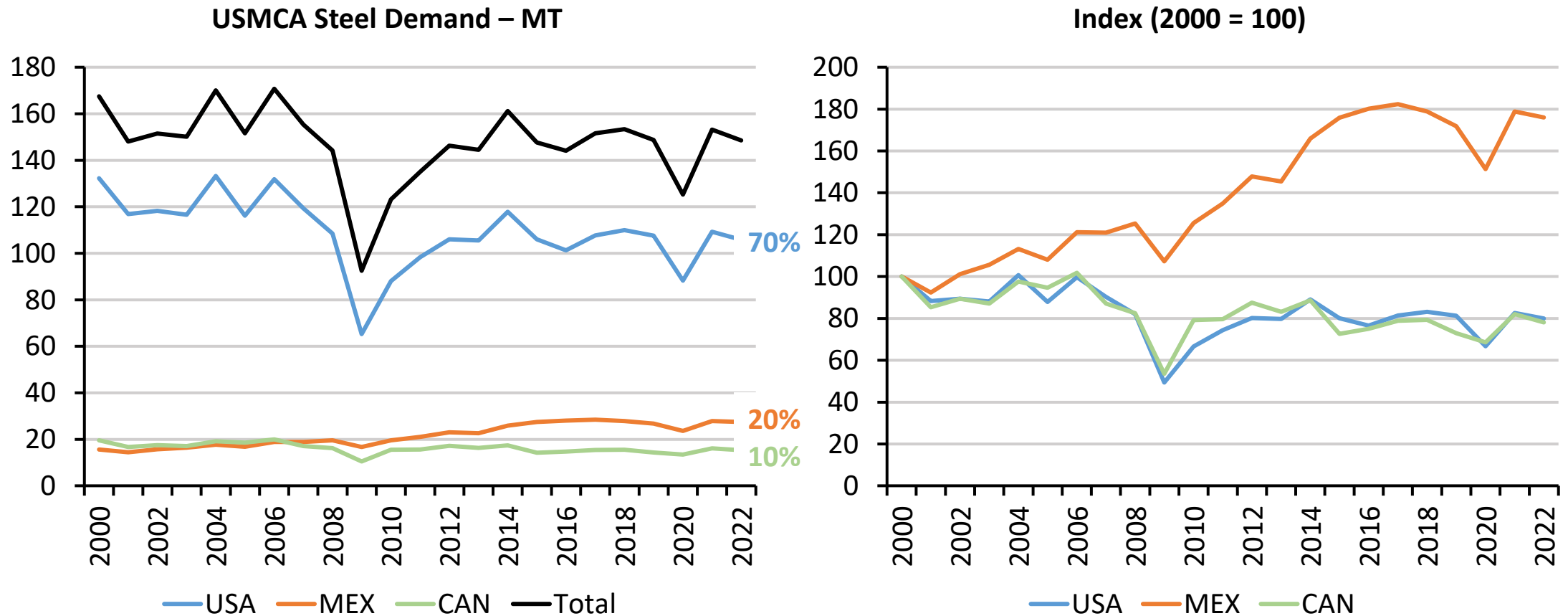
- An analysis of the impact on steel markets
- Not a review of the various bill provisions

Present four mini case studies

- Solar
- Wind
- Automotive
- Infrastructure

Current Situation

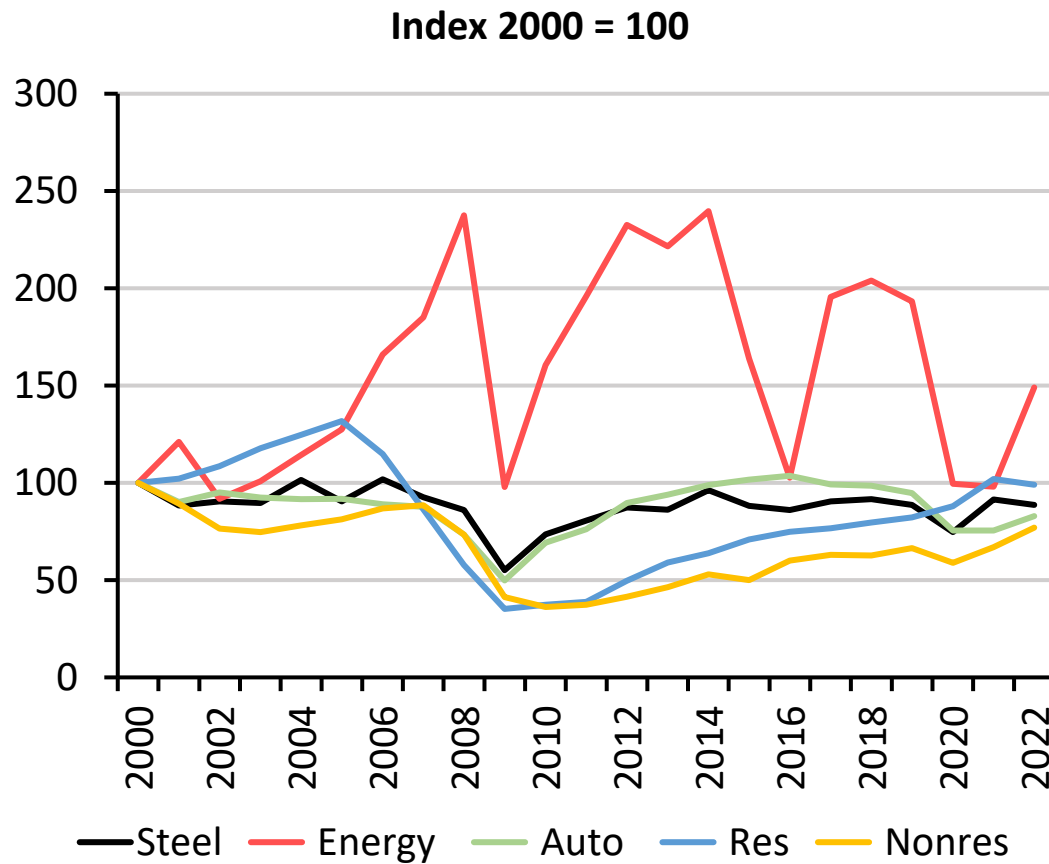
Mexico is the only USMCA country with growing steel demand



Source: WSA

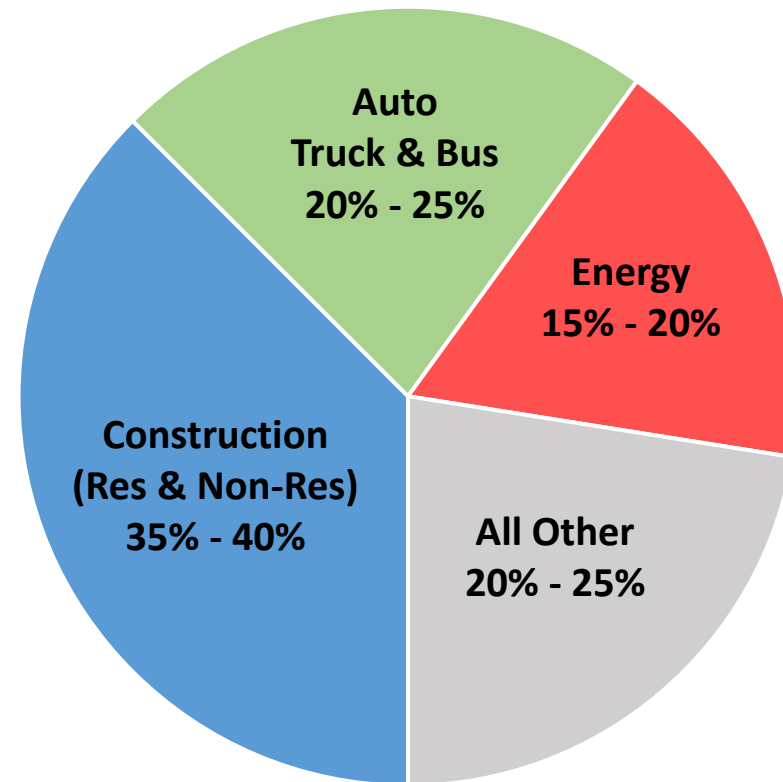
Current Situation

Major demand drivers are not on the same business cycles



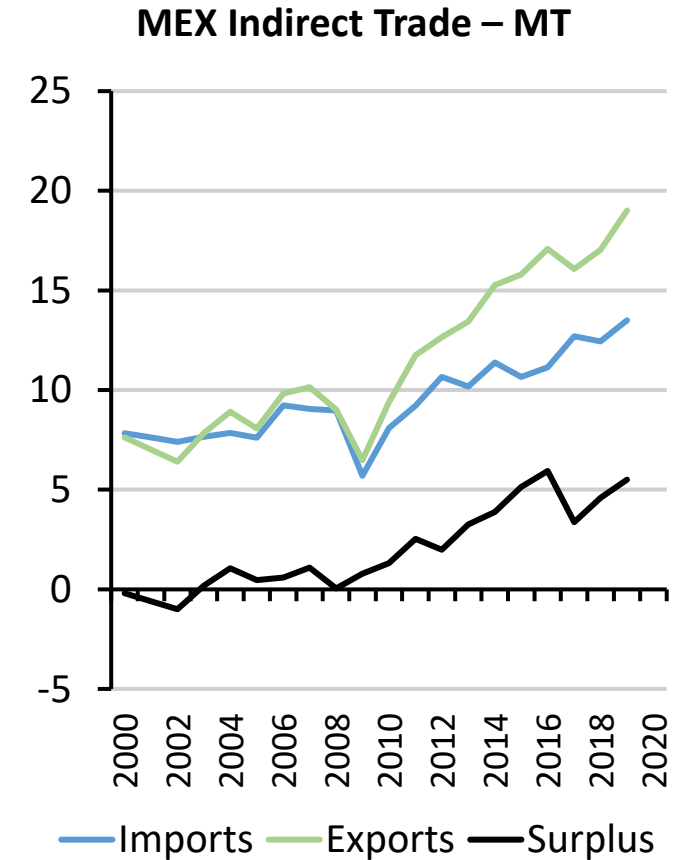
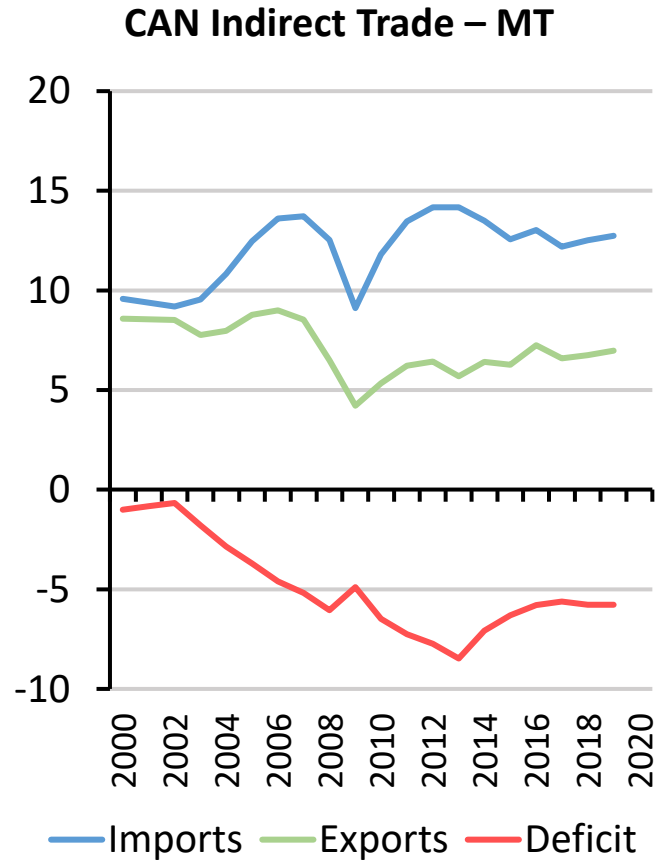
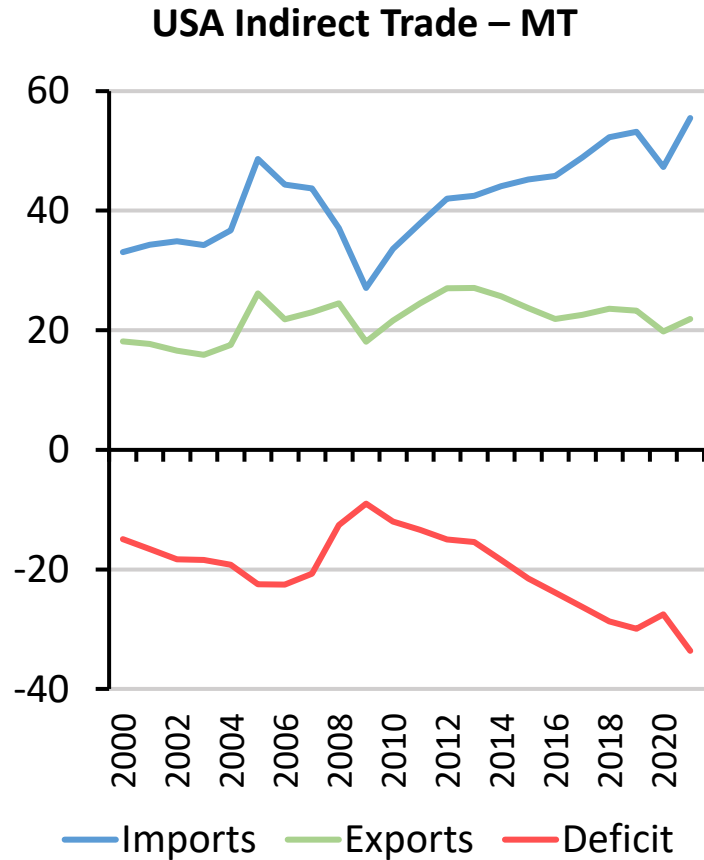
Source: Industry trade publications, SRA analysis & estimates

Est. Share of Steel Market



Current Situation

Mexico is the only USMCA country with an indirect trade surplus

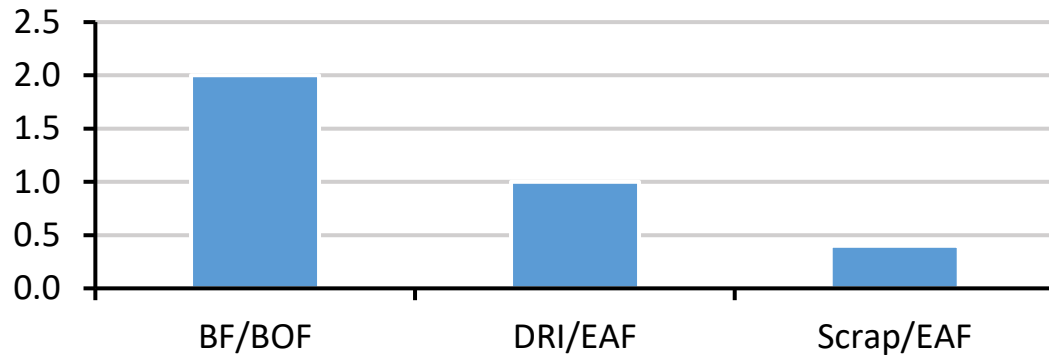


Source: AISI, WSA. Indirect trade = steel content of finished good imports & exports (auto, appliances, etc.)

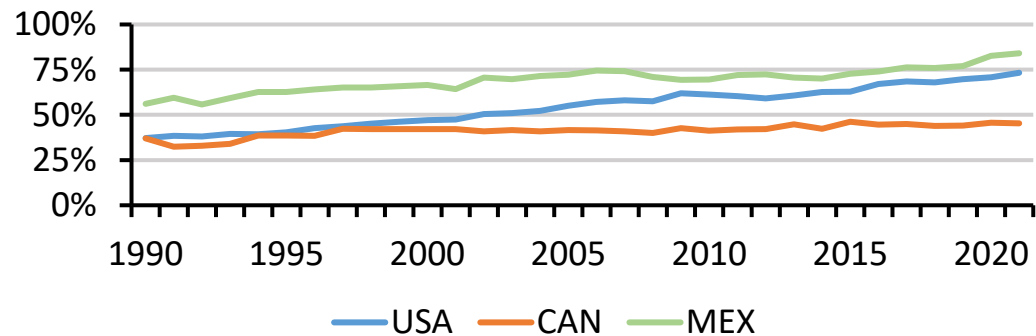
Current Situation

Decarbonization favors North American steel and CBAM

Tons of CO₂ Emissions per Ton of Steel

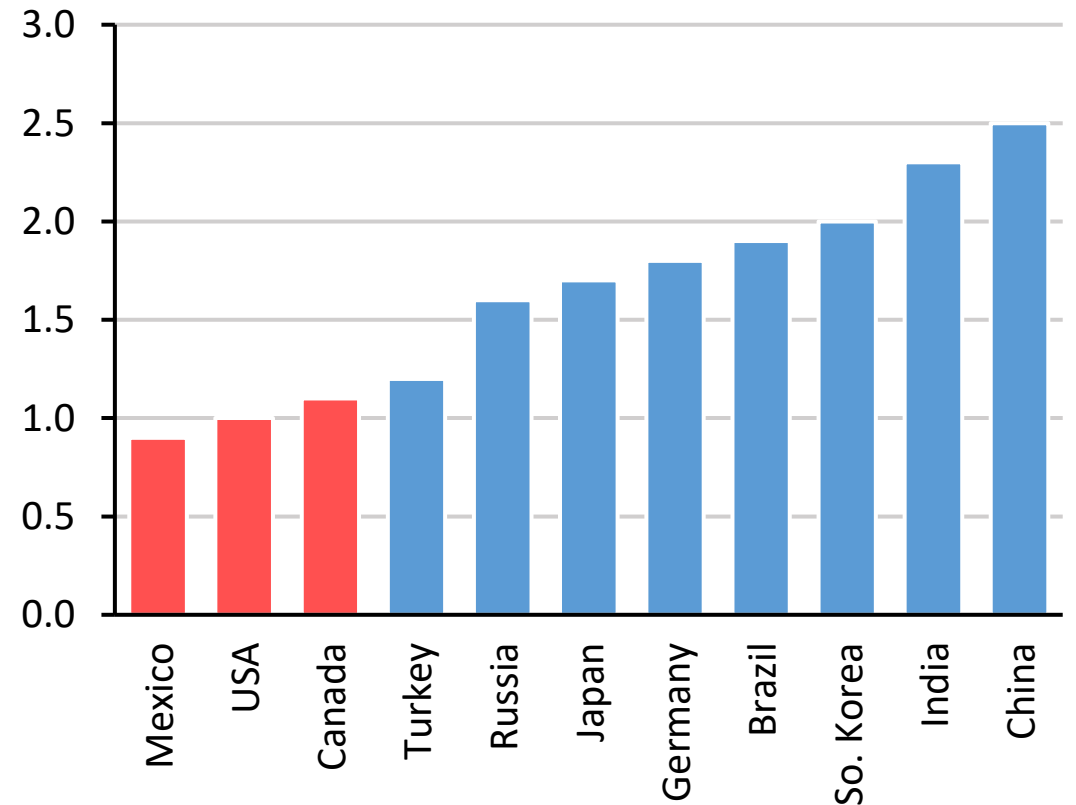


USMCA EAF Production - %



Source: WSA

Tons CO₂ per Ton of Steel – Major Countries



Source: Global Efficiency Intelligence 2019 Report



Solar Energy Case Study

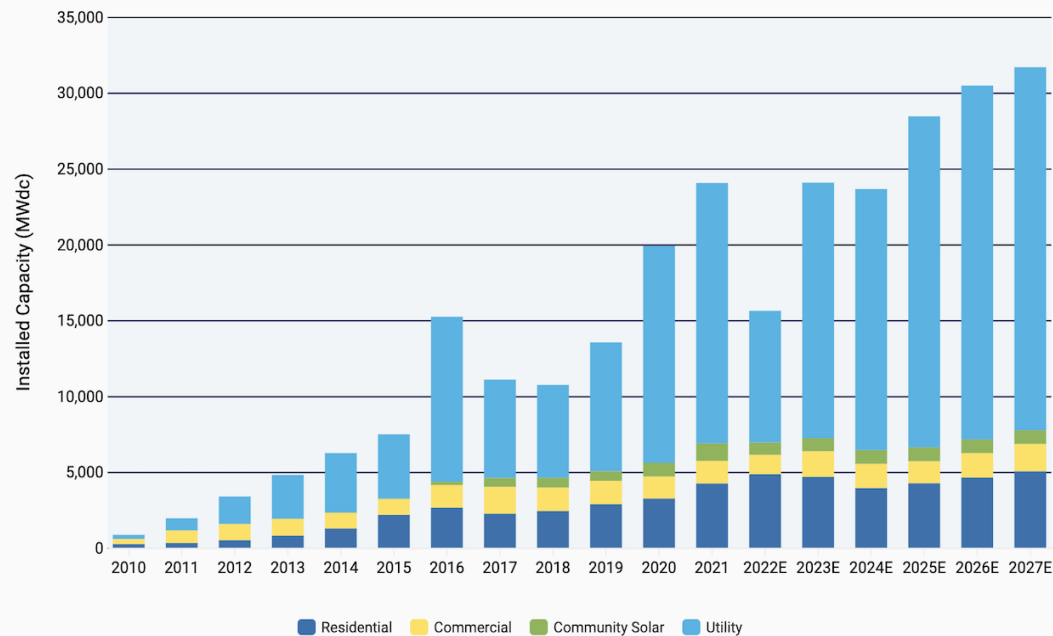
Solar Energy Case Study

Solar installations are growing rapidly

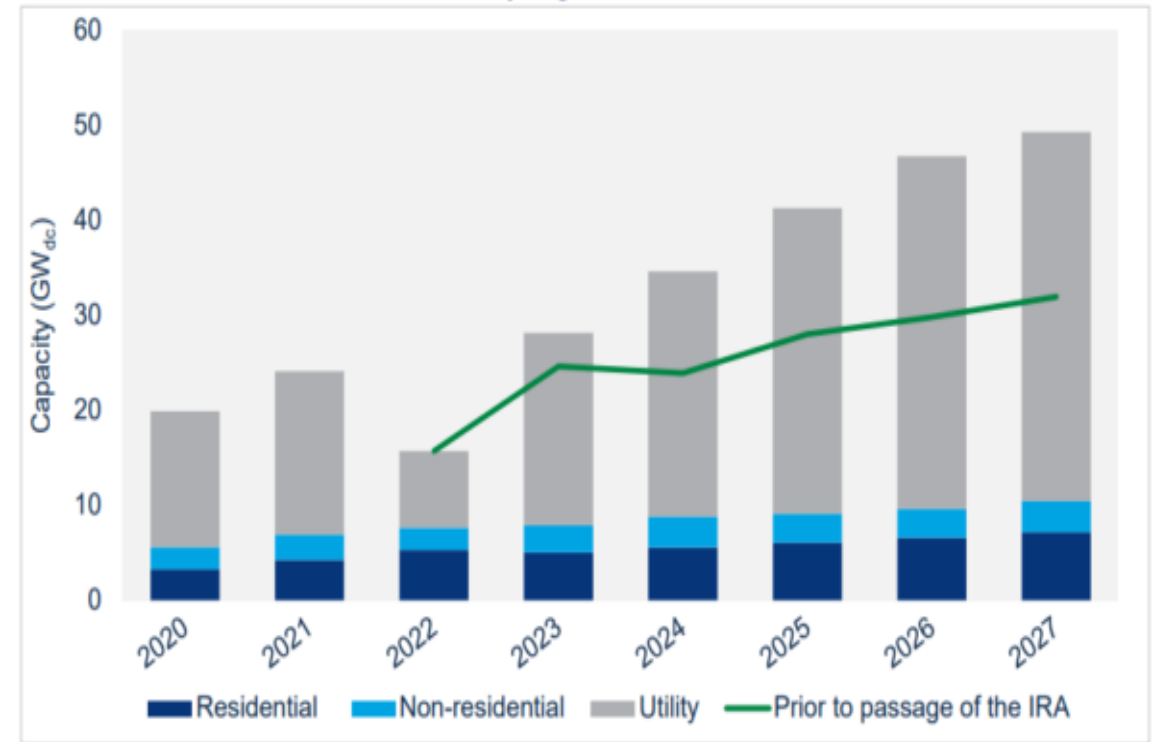
Pre-IRA Forecast

Post-IRA Forecast

U.S. Solar PV Deployment Forecast



US solar PV installations and forecasts by segment, 2020-2027



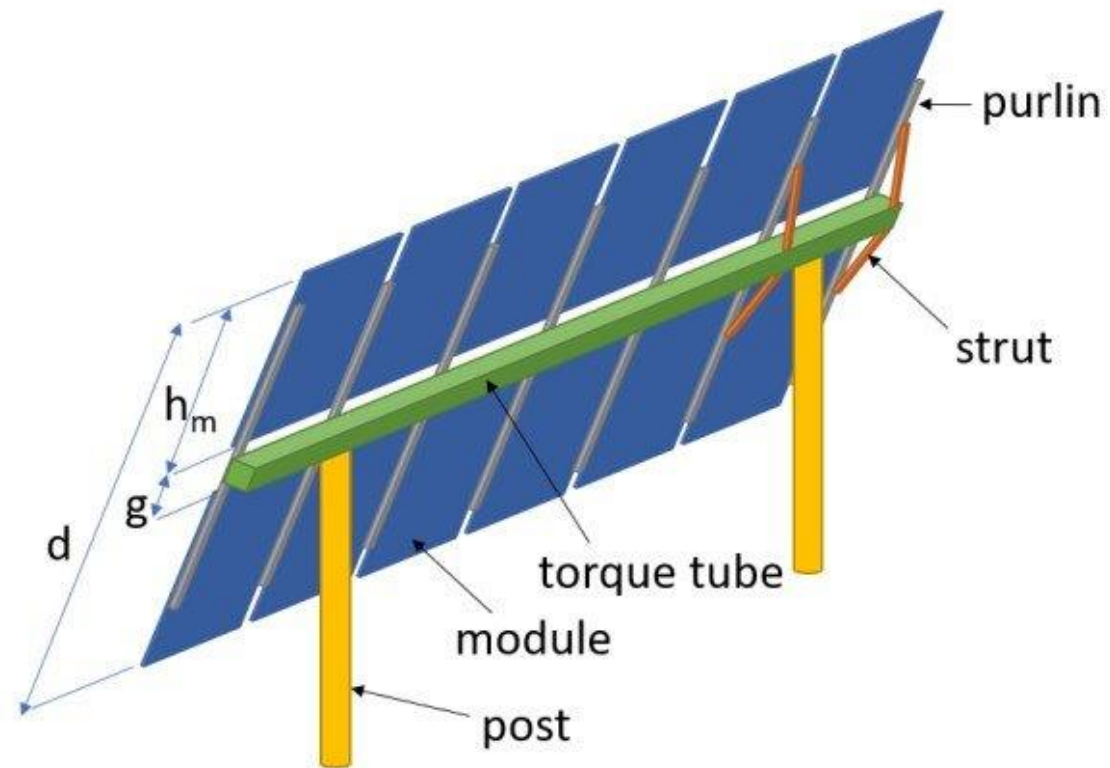
SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight Q2 2022



Source: Solar Energy Industries Association

Solar Energy Case Study

Steel components of a utility-scale solar array

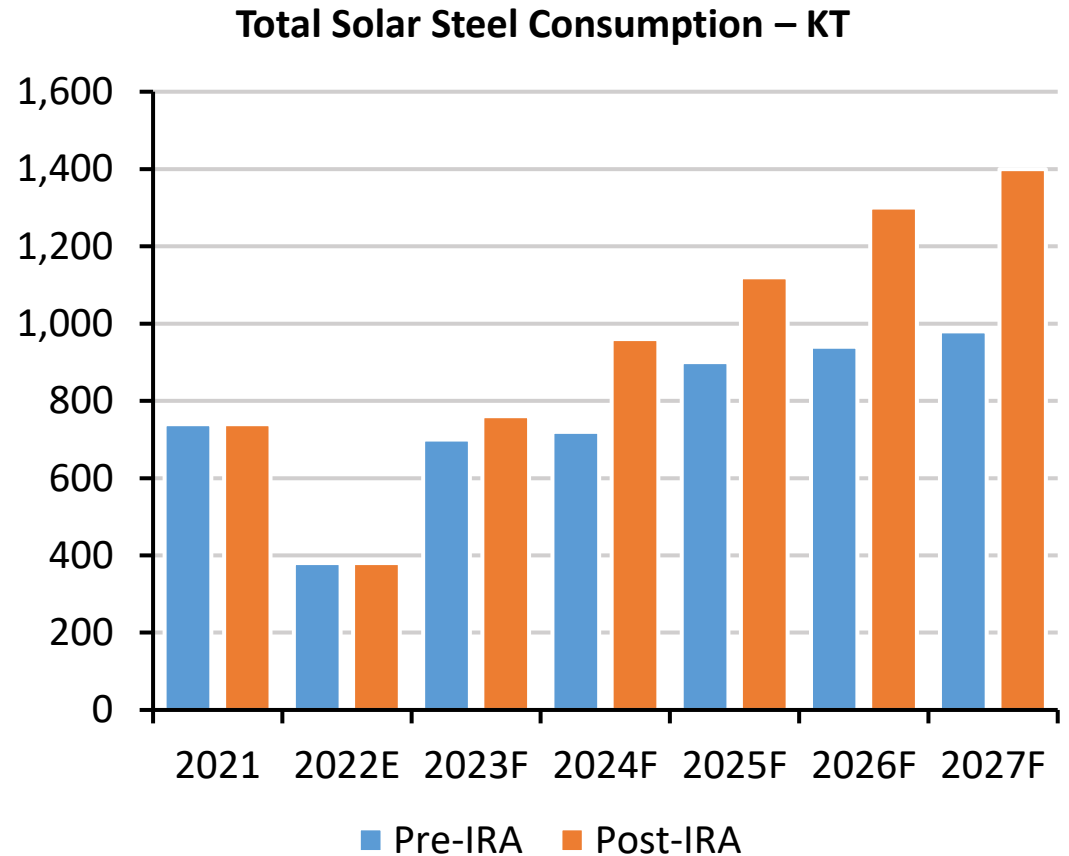


- Post/foundation
 - Beams
 - Tubular
- Torque tube
 - Tubular
- Purlin/frame & parts
 - Mostly roll formed
 - Some merchant bar
- Ancillary
 - Perimeter fence – fence post & chain link
 - Rebar/mesh – where concrete is used

Solar Energy Case Study

Steel usage could increase significantly under the IRA

- Utility-scale installations
 - Includes direct steel applications
 - Excludes ancillary applications
- Steel content – producer estimates
 - Nucor 40 – 70 tons/MW
 - AM 35 – 45 tons/MW
 - Cliffs 40 tons/MW
- Forecast
 - MW SEIS (pre & post IRA)
 - Steel 40Tons/MW



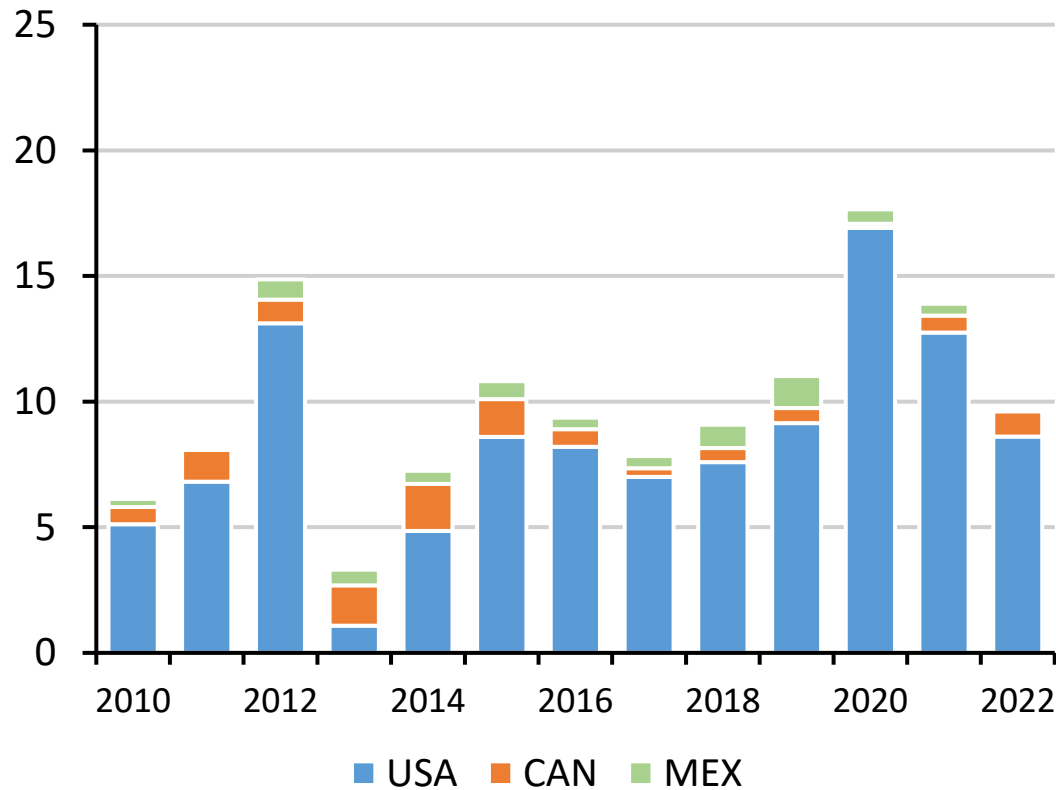


Wind Energy Case Study

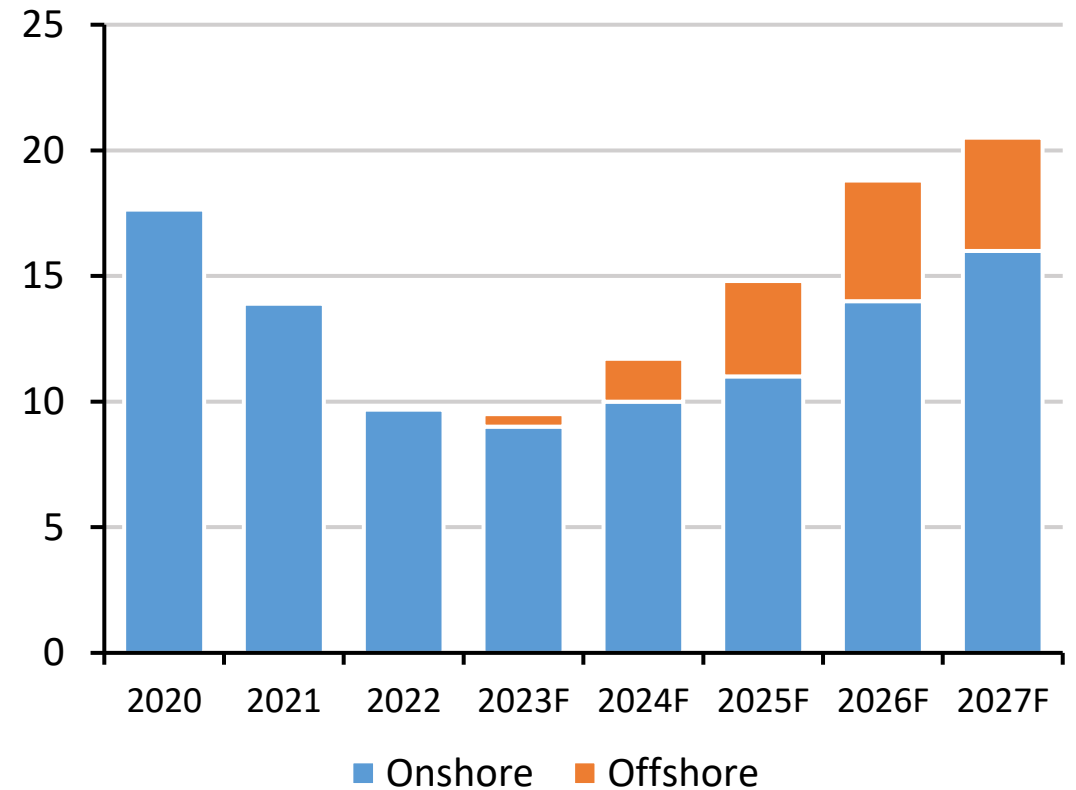
Wind Energy Case Study

Wind energy growth is poised for a rebound

USMCA New Installations History – GW



USMCA New Installations Forecast – GW

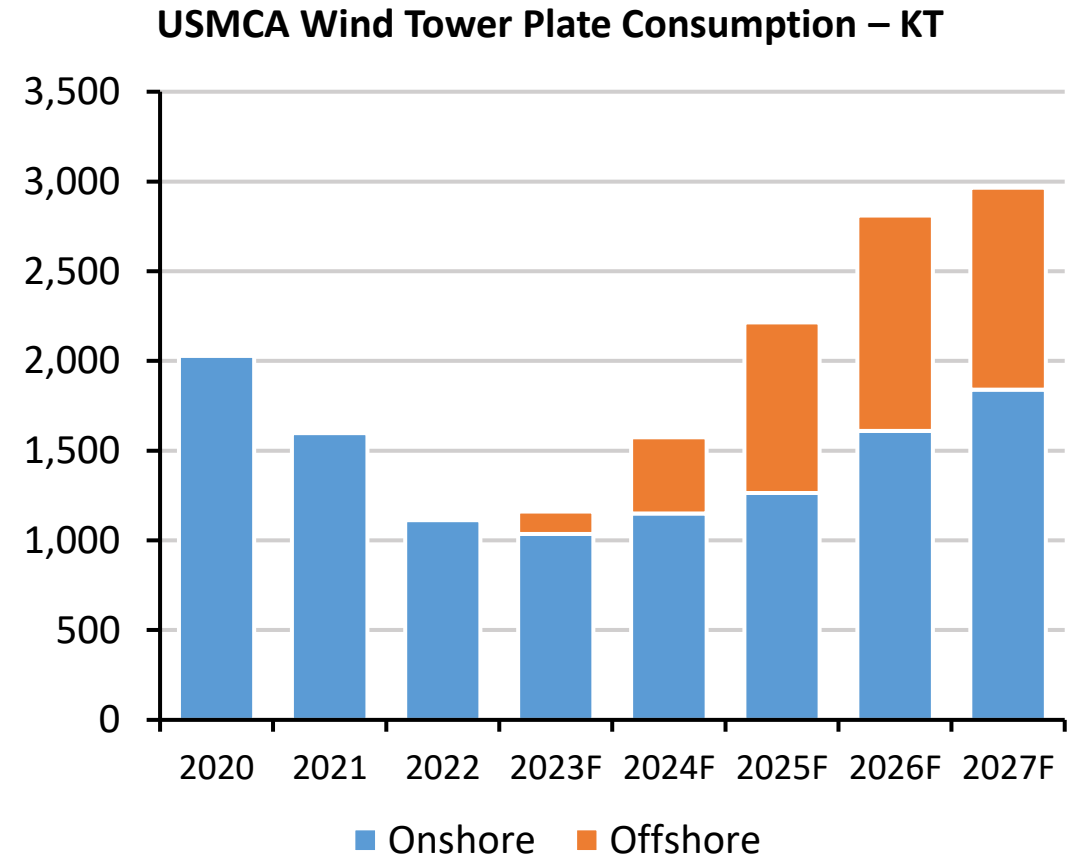


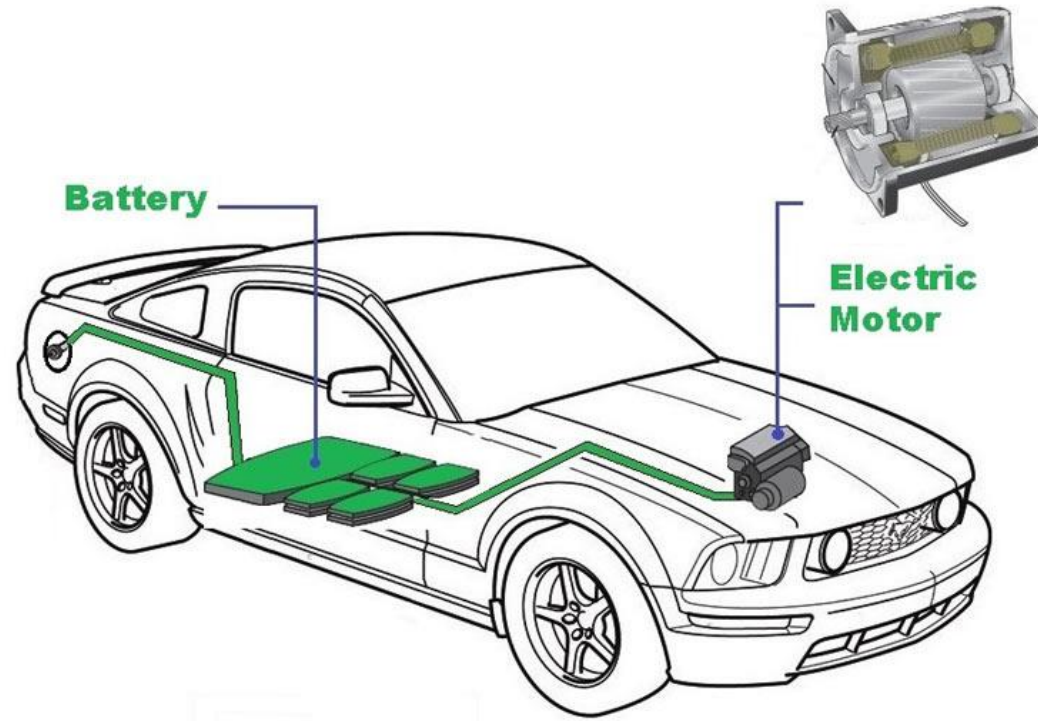
Source: Global Wind Energy Council

Wind Energy Case Study

Steel usage will be boosted by offshore installations

- Steel content – producer estimates
 - Nucor 100 tons/MW onshore
 - Cliffs 130 tons/MW onshore
 - Nucor 250 tons/MW offshore
- Forecast
 - MW Global Wind Energy Council
 - Onshore 115 tons/MW
 - Offshore 250 tons/MW
- 2027 forecast steel usage
 - Onshore 62%
 - Offshore 38%

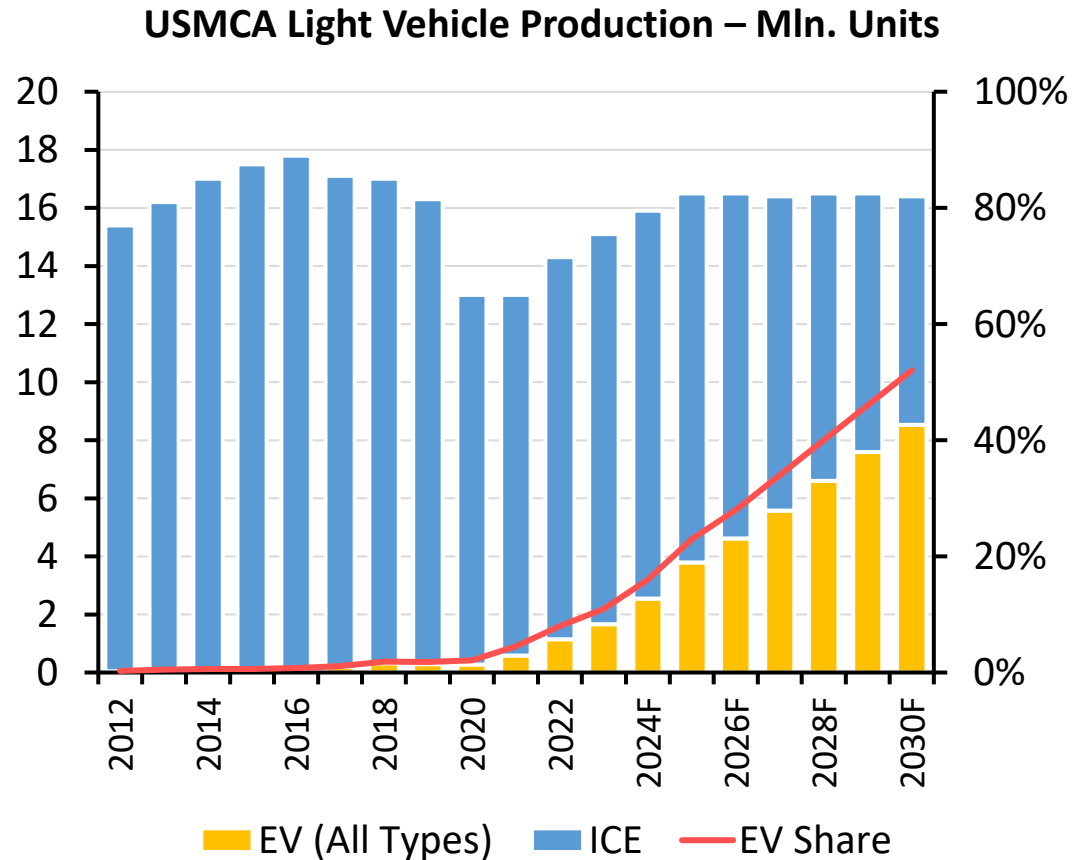




Automotive Case Study

Automotive Case Study

EV forecasts are around 50% market share by 2030



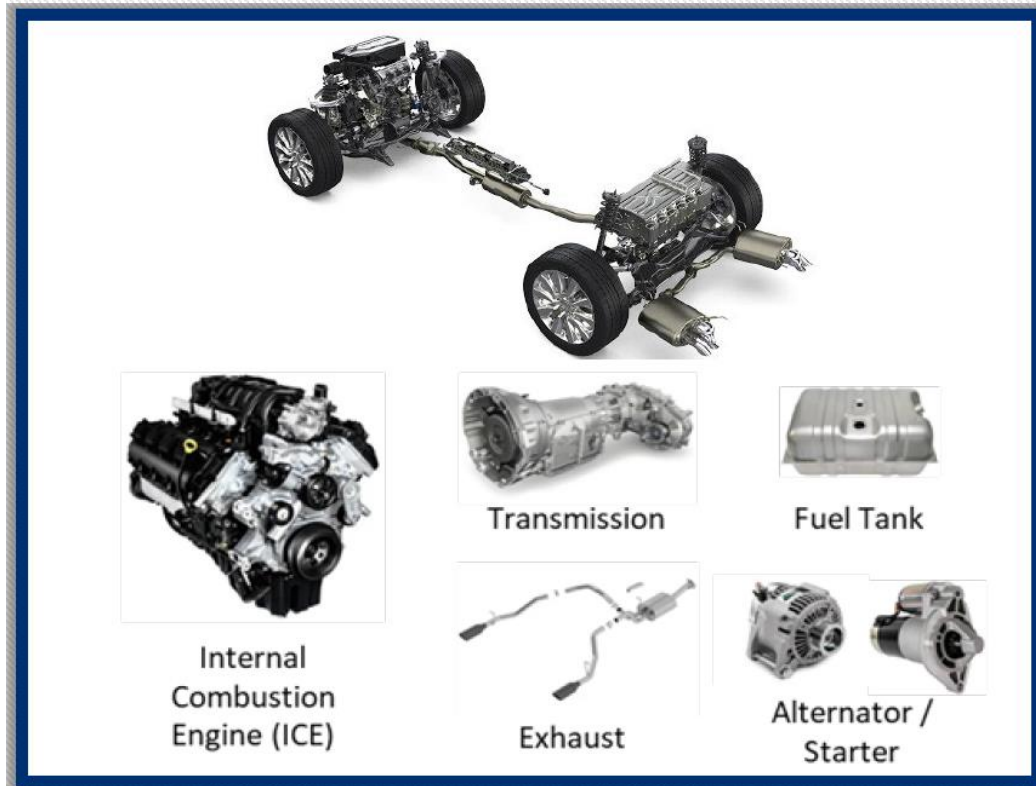
Sources: Cliffs, IHS, Bloomberg

- EVs types include
 - HEV – hybrid electric vehicle
 - BEV – battery electric vehicle
- EV forecasts by type vary, but generally are
 - HEV > 50% currently
 - Around 50/50 split in the mid-term
 - BEV > 50% in the long term
- Electrical steel content of EV motors vary
 - HEV around 50 pounds per motor
 - BEV around 150 pounds per motor

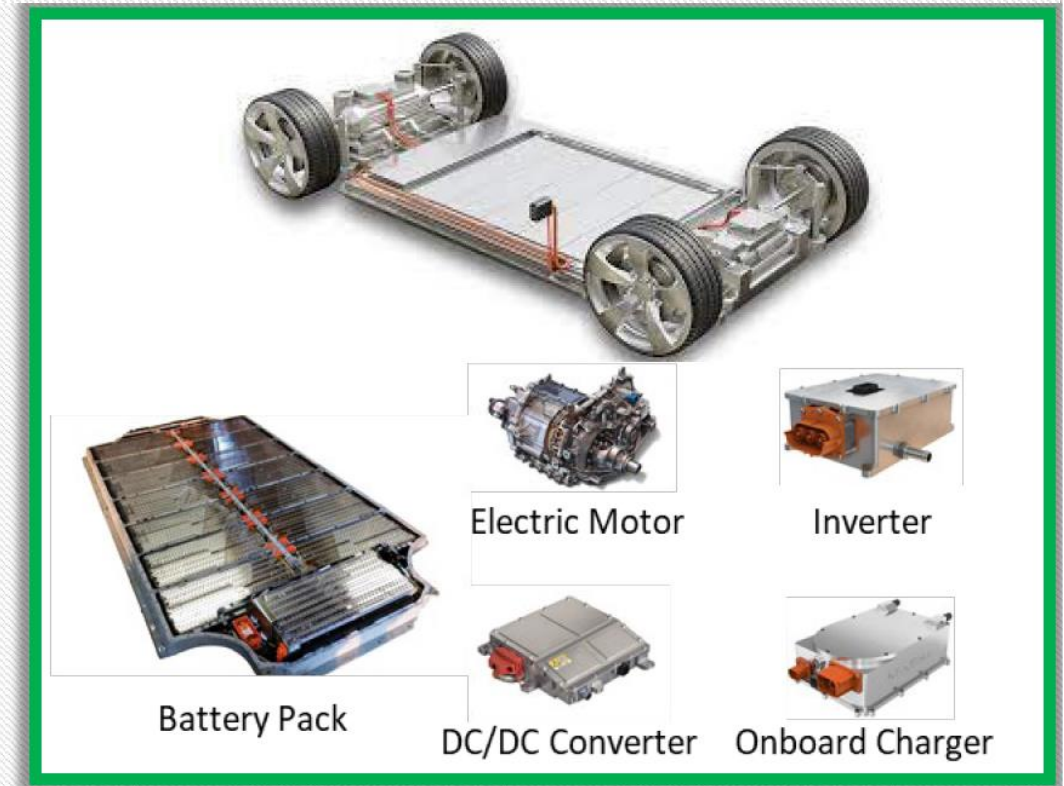
Automotive Case Study

Powertrain & drivetrain component differences – ICE vs. EV

● Internal Combustion Engine Vehicle (ICE)
~1,400 components



● Battery Electric Vehicle (BEV)
~200 components

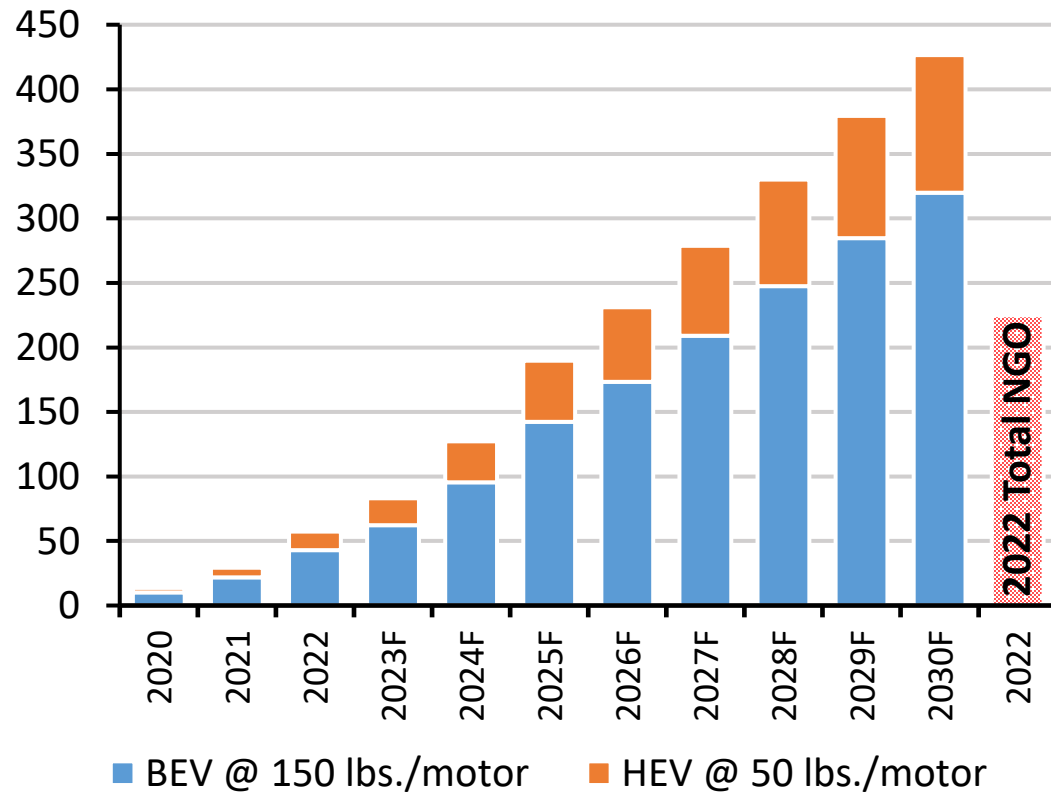


Source: UHY LLP Automotive Outlook

Automotive Case Study

EV growth will strain non-grain oriented (NGO) electrical steel supply

Est. USMCA NGO Requirement for EVs – KT



Source: SRA analysis & estimates

- 2030F USMCA NGO demand
 - 2022 USMCA production 60 KT
 - 2022 Offshore imports 165 KT
 - 2022 Total 225 KT (all applications)
 - 2030F EV 425 KT (EV requirement only)
 - 2030F demand 650 KT (EV + all other)
- Estimated USMCA NGO capacity
 - Cliffs current 60 KT
 - Cliffs new 2023 70 KT
 - USS new 2023 200 KT
 - Total 330 KT
- 2030F considerations
 - More USMCA NGO capacity
 - More offshore imports (USA NGO AD/CVD in place)
 - Imported EV motors

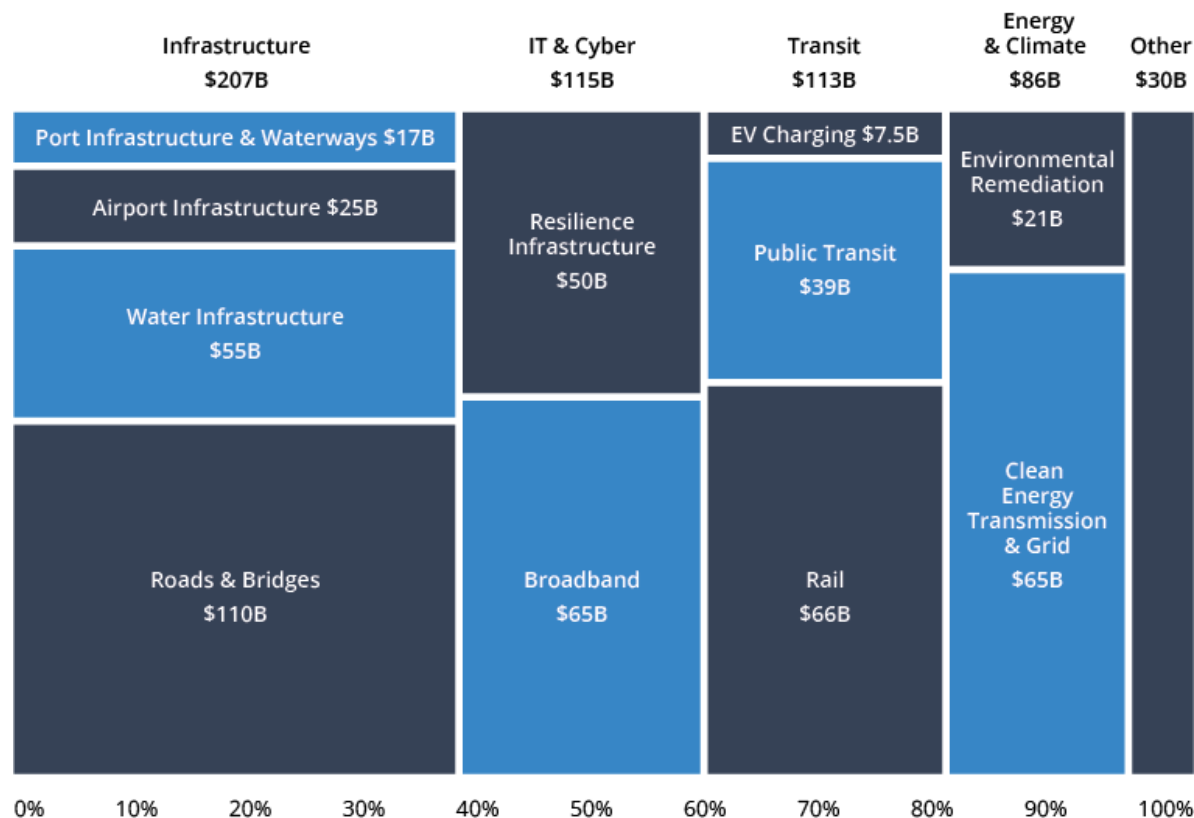


Infrastructure Case Study

Infrastructure Case Study

2021 Infrastructure Bill provides \$550B in new spending

New Spending in Infrastructure Investment and Jobs Act (\$550B)



Source: White House Facts Sheet

- 2021 Infrastructure Bill \$1.2 trillion
 - \$650B previously passed spending
 - \$550B new spending
- Implications for steel are wide ranging
 - Types of products & applications
 - Buy America requirements
- Difficult to translate to steel demand
 - AISI estimates 50 KT per \$1B in spending
 - \$550B = 27.5 MT over 5 years
 - 5.5 MT per year, but not all spending is steel intensive
 - Nucor estimates 3.0 to 5.0 MT per year

Infrastructure Case Study

Examples of steel products used in transportation infrastructure

Roads
Rebar & Wire Mesh



Steel Girder Bridges
Beams & Plate



Concrete Girders
PC Strand



Railroads
Rail & Tie Plates



Retaining Walls
Steel Piling



Highway Structures
Steel Poles



Infrastructure Case Study

Examples of steel products used in electric grid modernization

**Power Transformer
GOES**



**Distribution Transformer
GOES**



**EV Charging Stations
GOES**



**Transmission Towers
Bar Products**



**Utility Poles
Steel Poles**



**Utility Substations
Steel Poles & Other**



Concluding Remarks

Offshoring of manufacturing may be peaking

- Government policy initiatives are driving change
 - Needed infrastructure investments
 - "Buy America" provisions
 - Incentives for manufacturing – chip plants, battery plants, EV plants, etc.
- Private sector reshoring has started and needs to go further
 - Reduce geopolitical risks of supply
 - Reduce supply chain disruptions
 - Use North American steel – it's the cleanest in the world
- How far might a potential Carbon Border Adjust Mechanism (CBAM) go?
 - Imports of steel mill products
 - Imports of steel-intensive goods (indirect trade)
- It's a great time to be in the steel industry – opportunities abound!