



Submitted to ARB Portal

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RE: Comments by California Steel Industries, Inc., on
Potential Amendments to ARB's Cap-and-Trade Regulation

Dear Ms. Sahota and Mr. Sippola:

We appreciate the opportunity to provide comments regarding potential reduction strategies for Industrial Sector Greenhouse Gas (GHG) emissions. As the California Air Resources Board (ARB) reviews options to meet the state's GHG reduction goals, we thought it was important to point out that hard-to-decarbonize industries like California Steel Industries, Inc. (CSI) will have a hard time making additional GHG reductions. As detailed below, CSI has taken every practical measure that we can to be an efficient producer and minimize GHG emissions, including electrification. Without question, these efforts have placed CSI among the lowest GHG emitters for steel production facilities with the same processes around the globe. This accomplishment is due, in no small part, to environmental requirements in California. We have chosen to meet or exceed those California-only regulations rather than leave the state as other steel producers have done.

Given our difficulties in making further reductions in GHG emissions due to our required heat-intensive combustion processes, we ask that ARB work with companies like CSI to explore practicable options that might allow us to potentially lower our GHG emissions while avoiding leakage, as mandated by AB32.

Background on CSI

California Steel Industries (CSI) is a Nucor-JFE company operating in San Bernardino County since 1984. CSI is jointly owned by Nucor Corporation and JFE Steel and is on the site of the former Kaiser Steel Mill in Fontana, California. CSI has the capacity to produce more than 2 million tons of rolled steel per year and is the largest facility in the Western United States. We produce Flat Rolled Steel (Hot Rolled, Picked & Oiled, Cold Rolled & Galvanized) and electric resistance welded pipe from steel slabs. CSI sells to over 200 California and Western customers.

CSI's nearly 900 teammates enjoy great wages, benefits, and profit sharing, and CSI has never had a layoff in its 39-year history. Our team members are comprised of 50% minorities and 11% veterans. We have multiple generations of families working at the site. The average annual total compensation is approximately \$110,000 per full-time team member (salary plus 10-year average profit sharing, plus benefits). Additionally, CSI provides onsite craft training and educational degree programs through the InTech Center operated by Chaffey College, an onsite recreation center, and a CSI Family Health Center with \$0 co-pay and wellness programs.

The Industrial Technical Learning Center (InTech) is a regional training center designed to train and upskill a workforce pipeline for business and industry in the Inland Empire region and provides training at no cost to all individuals. The InTech Center provides in-demand technical training and professional development programs that include nationally recognized stackable certifications and lead to good-paying careers.

We have invested well over a billion dollars in safety, environmental, quality, and productivity performance at our California facility and have put to effective use the tax incentives that have been available during that time. CSI wants to grow our business in California and across the Western U.S. by investing more and producing more in California. However, California presents many obstacles, such as high electricity rates and increasing GHG emission reduction requirements, while few technology options are available to reduce these emissions.

Leakage:

The risk of leakage for the steel industry is real. California has lost all but one of its steel operations. CMC closed operations at its mill in Rancho Cucamonga at the end of 2020, stating the decision was made due to the increasingly high cost of doing business in California and the excessive regulatory environment imposed by the state. UPI has announced the closure of its Pittsburgh, CA facility at the end of 2023, stating many of the same reasons as CMC for its decision. After the closure of UPI, CSI will be the last steel manufacturing facility left in the state. With the closure of both of these operations in excess of 700 jobs were lost in areas that are identified as Disadvantaged Communities (DAC's) by the state of California. Additionally, it is estimated that over 4900 jobs will be lost by related upstream and downstream industrial sectors that are dependent on the materials produced by CMC and UPI.

The leakage that has happened so far has been based on cap-and-trade costs, environmental regulations, and the cost of electricity. Just the cost of electricity is significantly higher than other steel facilities pay. CSI's costs are \$10 - \$15 million dollars more per year and the cost of electricity is

increasing significantly every year. All these cost pressures will increase over the coming years. As the availability of cap-and-trade allowances decreases and the cost of purchasing the allowance increases, the steel industry in California will face significant challenges and have few options to mitigate them.

CSI Has Made Significant Improvements in Emissions Reductions

CSI, as an Energy Intensive, Trade Exposed (EITE) facility under Cap-and-Trade, has invested significant efforts to reduce GHG and criteria emissions, including:

- Installing high efficiency motors for rolling mill (in progress, \$36MM) (electricity)
- Installing high efficiency boilers (NOx, CO, SOx, PM, GHG) (in progress, \$2.2MM)
- Installing Selective Catalytic Reduction (NOx) (in place and in progress)
- Making facility wide fuel efficiency improvements (NOx, CO, SOx, PM, GHG)
- Installing a waste heat steam generator (NOx, CO, SOx, PM, GHG)
- Installing afterburners to ensure complete combustion (CO)
- Switching mobile equipment to cleaner burning or electric units (NOx, CO, SOx, PM)
- Reducing VOCs through product approval program
- Installing Wet Scrubbers (PM, Toxics)
- Installing Baghouses, filtration and carbon absorber units and other various controls (PM, VOCs, Toxics)

We are committed to continuing to make improvements when technology is commercially available and it is feasible to install.

Additionally, CSI employs all federal EPA “best practice” recommendations for reheat furnace carbon emission reduction that can be employed without building an entirely new hot rolling plant.

In addition to these improvements, CSI has been analyzing alternatives to natural gas that might be incorporated into its processes. However, all of these options are unproven at the scale that CSI would need, and they have issues that make them impracticable for adoption now.

- Alternative Fuels – Replace Natural Gas (NG) with Blend of RNG (Renewable Natural Gas) and/or Hydrogen and NG
 - Hydrogen - We understand that there have been a few small-scale projects that use hydrogen in steel production. CSI has had discussions with our provider of industrial hydrogen in an effort to evaluate the potential for future development as a combustion fuel in our processes. We understand that to achieve meaningful hydrogen usage as a replacement for natural gas, hydrogen production must be heavily dependent upon renewable energy, which is still not a widespread practice. Otherwise, there is little chance for net carbon emission reduction. Additionally, the use of hydrogen would appear to face significant logistical and transportation barriers, likely requiring pipeline conversions or replacement. The price of fuel is also an issue for companies that use large amounts of fuel in their processes. To date, CSI has not found hydrogen to be economically feasible, nor is the technology available at the scale CSI needs. Additionally, CSI is concerned about the transmission of

hydrogen, metal embrittlement, and the potential for the use of hydrogen to increase NOx emissions.

- RNG – It is possible to use RNG as a replacement for NG. However, the cost of the fuel is a concern, as it is significantly higher than the cost of NG. Additionally, CSI is concerned that RNG will not be available in the amount needed for CSI to run its reheat furnaces. The obstacles to using RNG for industrial gas customers such as CSI are (1) the continuing high cost of utilizing RNG vs. natural gas at scaled volumes; and (2) the diffuse geographical locations of RNG production sites, which are also typically relatively small sources. These issues are particularly challenging for serving a large industrial natural gas consumer such as CSI. Without cost-competitive, substantial volumes of RNG and an effective transportation system, there will be no significant GHG emissions reduction at CSI's burners.
- Electrification – Replace NG Combustion in 2 Furnaces with Electricity
 - CSI is not aware of any steel production operation in the world that employs electrification rather than combustion for processes similar to those at CSI. However, CSI elected to look deeper into electrification, going so far as to engage a professional engineering firm to conduct a third-party, independent study. The study found that the cost of such a project would be untenable; the availability of the massive amounts of required electricity would be questionable (according to Southern California Edison); and greenhouse gas emissions would actually be increased in total based on current and anticipated fossil fuel electricity generation by the utility, required to support the demand level of production. CSI concluded that electrification was not possible because the cost to replace the furnaces would require a total investment of over \$1 Billion, and it was estimated that indirect GHG emissions would significantly increase.
- Heat pumps and Solar Thermal heating –
 - Some have suggested that California's industry can replace the use of natural gas with heat pumps and solar thermal heating. This may be an option for some manufacturers, but it is not possible for CSI's level of manufacturing. The heat demands of CSI's operations are too great for this technology.
- Solar & Energy Storage –
 - It is feasible to offset some electricity use at CSI by installing solar and energy storage, but these resources cannot replace the use of natural gas in the reheat furnaces. CSI's reheat furnaces use approximately 10,000 MMBtus of NG per day. As discussed in the section on electrification, the electricity needs would be significant since CSI's process is heat intensive. A small microgrid would not be able to provide the electricity needs of CSI, and the cost to replace the reheat furnaces would be over \$1 Billion. It is not feasible.
- Carbon Capture Utilization and Storage (CCUS) –

- CSI is open to further information sharing on this technology. At this point, it is not commercially available to CSI, and the scale of the technology does not meet CSI's needs at this point.

Compliance Options for Hard-to-Decarbonize, Heat-Intensive Industries

As we discussed in the prior section, further reductions in the steel industry and other heat-intensive industries will be difficult to achieve because the technology to enable the reductions is not available. Companies like CSI need an alternative compliance option or a combination of options and incentives to install technology that is not yet ready to be installed at the scale needed for large industries.

We look forward to the opportunity to further these discussions as we work together for a sustainable solution.

Best regards,



Zach Moon
General Manager
California Steel Industries, Inc
A Nucor-JFE-CSI Corporation