<table>
<thead>
<tr>
<th><strong>Docket Number:</strong></th>
<th>21-IEPR-06</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Title:</strong></td>
<td>Building Decarbonization and Energy Efficiency</td>
</tr>
<tr>
<td><strong>TN #:</strong></td>
<td>239143</td>
</tr>
<tr>
<td><strong>Document Title:</strong></td>
<td>Presentation - CEC Working Group Presentation</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>S2.3B Scott Starr, California Steel Industries</td>
</tr>
<tr>
<td><strong>Filer:</strong></td>
<td>Raquel Kravitz</td>
</tr>
<tr>
<td><strong>Organization:</strong></td>
<td>California Steel Industries</td>
</tr>
<tr>
<td><strong>Submitter Role:</strong></td>
<td>Public</td>
</tr>
<tr>
<td><strong>Submission Date:</strong></td>
<td>8/2/2021 11:27:57 AM</td>
</tr>
<tr>
<td><strong>Docketed Date:</strong></td>
<td>8/2/2021</td>
</tr>
</tbody>
</table>
### CSI: Strong Company and a Strong Employer

| Company       | - An American corporation, nearly 37 years in business  
                 - On site of former Kaiser Steel Co. which operated here for 40 years  
                 - World-class environmental and safety performance  
                 - On-site amenities and professional development opportunities |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>- More than 2 million tons per year rolling capacity – largest in the Western U.S.</td>
</tr>
<tr>
<td>Products</td>
<td>- Flat rolled steel and electric resistance welded pipe</td>
</tr>
<tr>
<td>Customers</td>
<td>- 200+, California and surrounding Western states, construction-based</td>
</tr>
</tbody>
</table>
| Site          | - 430 acres, with 115 acres “under roof”  
                 - > $1 Billion in capital investments since 1992                                                     |
| Workforce     | - ~900 employees  
                 - 50% minorities  
                 - 11% Veterans  
                 - CSI has never had a layoff in its history!                                                     |
CSI Has Invested >$1 Billion since 1992

- #4 HSM Reheat Furnace
  - $28 million
- Five Stand Cold Reduction Mill $64 million
- #2 Galvanizing Line
  - $73 million
- #5 HSM Reheat Furnace
  - $70 million

1994
- Continuous Pickle Line $68 million

1997
- Coil Handling System & Cooling Pond $14 million

1998
- Hydrogen Annealing $14 million

2001
- #2 Pipe Mill $150 million

2009

2013/14
CSI’s Slab-Based Business Model

Converted to:

- Hot Rolled Coil
- Pickled & Oiled Coil
- Galvanized Coil
- Cold Rolled
- Annealed Coil

Slabs (Imported; minimal domestic)

Hot Rolled coil formed into...

Electric Resistance Welded Pipe
Slabs: 7.8” to 9” thickness

Reheat Furnace (2)

Hot Strip Rolling Mill

Hot Rolled Sheet (also sold to customers as finished product)

Continuous Pickling Line

5 Stand Cold Reduction Mill

#1 & #2 Galvanizing Lines

Hydrogen Annealing & Temper Rolling

Galvanized Sheet

Cold Rolled Sheet

ERW Pipe

CSI's two pipe mills make its only finished product
Heating of Slabs – High Intensity Heating

- Slab Dimensions
  - On average, each slab weighs 25 tons
  - 9” thick x up to 74” wide x up to 432” length
  - 350-400 slabs / day are heated to ~2300°F
Carbon Intensity: CO$_2$ per Ton of Steel Produced

1990-1991: 0.204
2011-2019: 0.127

38% decrease
California manufacturers pay 97% higher electricity rates than the U.S. average

Industrial rates by state - 2019

California MFG pays 13.40 cents per kWh, 97% more than the U.S. average, and 100% more than western states avg.

United States avg. = 6.81 cents per kWh
Western states avg. = 6.69 cents per kWh

Source: U.S. Energy Information Administration, latest annual rate report released October 2020
CSI “Energy Cost Premium” to be in California

$100 / MwH

CSI Cost from Edison

$50 / MwH

Cost for Same Demand in Typical State

$15 million+ per year average cost gap for electricity, vs the cost to operate CSI in most other states
EPA GHG Study – Iron and Steel

- **EPA Study released in September 2012**
- CSI employs 9 of the 11 recommendations made for hot rolling GHG reduction
- The 9 adopted strategies include: temperature and process control, recuperative burners, insulation, walking beams, and waste heat recovery
- 2 recommendations are currently not feasible within CSI’s hot rolling process
  - “Hot charging” slab
  - Oxy-fuel vs. natural gas

• As part of work conducted with CARB staff, third-party study was conducted related to investigating the technology & cost of full electrification of the process to eliminate the use of natural gas
• Full electrification would increase the cost of production heating by 600%
• Full electrification would increase GHG emissions by 27%

<table>
<thead>
<tr>
<th>Annual Production Rate (Steel Tons)</th>
<th>Natural Gas</th>
<th>Electric Induction-Based on CEC 15 Year GHG TOU Emission Metric for Industrial Sector</th>
<th>Electric Induction-Based on CEC 30 Year GHG TOU Emission Metric for Industrial Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,458,074</td>
<td>130,119</td>
<td>165,487</td>
<td>157,991</td>
</tr>
</tbody>
</table>
CSI – Future Plans

• Continue to explore technology improvements to burner technology
  – Reheat furnaces
  – Galvanizing line furnaces
  – Boiler sources

• Evaluation of alternate fuels
  – Natural gas from renewable sources
  – Hydrogen
  – Oxy-fuels

• Electrification of Transportation Fleet