



# CALIFORNIA METALS COALITION

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Dear Dr. Sippola:

The California Metals Coalition (CMC) is the nation's largest state trade association servicing the metals sector. Our membership encompasses nearly all sectors of the metals industry, including foundries, die casters, CNC (computer numerical control) machine shops, forging operations, laser cutting, fabricators, heat treaters, metal stampers, metal formers, metal extruders, wire metal, recyclers, shredders, and suppliers and consultants to the industry. This includes California's primary manufacturers of seamless rolled rings, Carlton Forge Works (CFW) in Paramount, California, and Schlosser Forge Company (Schlosser) in Rancho Cucamonga, California. CMC respectfully requests that, as California Air Resources Board (CARB) staff develop proposed revisions to the Cap-and-Trade Regulation to implement recently enacted legislation [e.g., AB 1279, (Muratsuchi, 2022)] and CARB's 2022 Scoping Plan for Achieving Carbon Neutrality, CARB include a critical update to the benchmark for the seamless rolled ring manufacturing sector.

In its 2013 amendments to the Cap-and-Trade Program,<sup>1</sup> CARB established a product-based emissions efficiency benchmark of 3.14 allowances per short ton of seamless rolled ring.<sup>2</sup> We understand that CARB based this benchmark on 2010 and 2011 data from a single facility (CFW), during a time period when production levels across the industry were rebounding from recession and were relatively high. At the time, CARB's decision to rely on data from only one facility for

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<sup>1</sup> The 2013 amendments were approved by CARB and took effect in 2014. (See CARB, Cap-and-Trade Regulation website, available at <https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/cap-and-trade-regulation>.)

<sup>2</sup> Cal. Code Regs, tit. 17, § 95891, Table 9-1.

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this short time period was understandable because it did not have access to data from multiple facilities that would be more representative of average production in this sector over time.<sup>3</sup> However, because of this extremely limited data, CARB could not account for the unique decarbonization challenges faced by the seamless rolled ring industry sector, including the high-heat processes required to meet strict product specifications such as Aerospace Quality Management Systems (QMS) requirements, and the inability of manufacturers in this sector to scale emissions based on production volume.

The result of these limitations is a benchmark that is not representative of average production efficiency in the industry. Apart from a few exceptionally high production years, both CMC member facilities have generally operated above the benchmark, and since production levels dropped industry-wide in 2020, they have been operating at roughly twice the current benchmark. Moreover, technical and regulatory limitations substantially constrain the ability of facilities in this sector to attain further greenhouse gas (GHG) emissions reductions.

The MRR production and emissions data CARB has collected from both facilities in this sector over the past 12 years resolves the data gaps that prevented CARB from establishing a representative benchmark in the 2013 regulations. The data now available to CARB demonstrates that application of the current benchmark disproportionately increases the cost of emissions allowances for these facilities relative to other sectors and the overall cost of regulatory compliance relative to facilities in other jurisdictions. Thus, the current benchmark increases the risk of GHG emissions leakage from this sector.

In prior amendments to the Cap-and-Trade regulation, CARB staff noted that they have “already demonstrated the ability to make mid-course correction as needed to industrial allocation,” including establishing “revised industry benchmarks as appropriate.”<sup>4</sup> Such course correction is needed here. The additional data available to CARB since 2014 provides the opportunity to prevent the above-noted unintended adverse outcomes and to further the overarching goals of the Cap-and-Trade statutes and regulations by revising the benchmark in a manner consistent with the benchmarks CARB developed for most other sectors.

#### Background on Seamless Rolled Ring Manufacturing in California

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<sup>3</sup> The California Greenhouse Gas Reporting Tool (Cal e-GGRT) indicates that CARB has access to data reported under the Cap-and-Trade Mandatory Greenhouse Gas Reporting Regulation (MRR) beginning in calendar year 2011.

<sup>4</sup> CARB, 2017 Cap-and-Trade Final Statement of Reasons (FSOR), p. 138, fn. 104.

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Seamless rolled rings are widely used in a variety of industries and are the foundation of transportation, electricity generation, manufacturing, and other systems that are vital to public health, safety, and economic security. For example, they play an indispensable role in aerospace manufacturing, meeting stringent industry and federal government specifications. The manufacturing process used to produce seamless rolled rings yields products with precise tolerances that enable aerospace systems to perform reliably in unforgiving conditions where there is no margin for error.

In California, there are only two facilities subject to the Cap-and-Trade regulation that manufacture seamless rolled rings – Carlton Forge Works (CFW) in Paramount, California, and Schlosser Forge Company (Schlosser) in Rancho Cucamonga, California. Both facilities produce seamless rolled rings primarily for commercial and national defense applications in the aerospace industry. Their products are also used in the gas turbine, industrial, commercial, and nuclear energy industries. The manufacturing of seamless rolled rings is subject to strict regulations to ensure performance, efficiency, safety, and reliability. As organizations operating within the aerospace sector, CFW and Schlosser are required to have a robust Aerospace Quality Management System (QMS) in place.<sup>5,6</sup>

Manufacturing seamless rolled rings requires a heat-intensive, multi-cycle process in which titanium and other alloys are heated to temperatures approaching their recrystallization point during configuration and formation. This process requires sustained temperatures in excess of 2,000 degrees Fahrenheit, which can only be achieved through natural gas-fired combustion technology. A post-forging heat treatment step alters the microstructure of the metal, increasing surface hardness, temperature resistance, ductility, and strength, making seamless rolled rings more fatigue-resistant and well-suited for components subject to high torque, pressure, and temperature. The heat-intensive manufacturing process for seamless rolled rings is necessary to create products that meet regulatory and QMS requirements for aerospace and other similarly demanding applications.

Moreover, the energy required to forge seamless rolled rings is not dependent on production volume. A facility's production volume can be drastically reduced, and yet the process furnaces

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<sup>5</sup> An aerospace QMS is a set of processes and procedures designed to ensure that aerospace products and services meet the highest quality and safety standards.

<sup>6</sup> Facilities in this industry sector periodically audited and certified as meeting the requirements for Nadcap accreditation and the QMS standards in AS9100:D and ISO 9001:2015. (See Performance Review Institute (PRI) website, Nadcap, available at <https://www.p-r-i.org/nadcap> [Nadcap is a cooperative program that provides independent certification of manufacturing processes for the aerospace and defense industry]; SAE International website, AS 9100D, available at <https://www.sae.org/standards/content/as9100d/> [AS9100D, a QMS setting requirements for aviation, space, and defense organizations, includes ISO 9001:2015 QMS requirements].)

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must still be heated to and maintained at the same temperatures and must run for the same length of time regardless of batch size. Continuous operation of the furnaces is also required to pre-heat ferrous toolings and dies used in the forging process before they come into contact with hot parts to prevent fracturing from thermal shock. It is also necessary to meet customer product specifications requiring surveys to ensure uniform temperatures in the working zone of the furnace. As a result, fuel usage and corresponding GHG emissions are not strongly correlated with production levels.

### CARB Established the Current Benchmark Based on Limited Data that Is Not Representative of the Industry Sector

A product-based benchmark is intended to be “a performance standard used to evaluate GHG emissions efficiency between and amongst similar facilities or operations in the same industrial sector.”<sup>7</sup> To enable this comparison, CARB generally develops product-based benchmarks “by evaluating each industrial sector’s production-weighted average emissions intensity during a historical base period and targeting the benchmark to allocate 90 percent of this level per unit product.”<sup>8</sup> Where this approach would set the benchmark at a level that is more stringent than the current emissions intensity of any existing California facility, CARB selects a benchmark based on the “best-in-class” value, which CARB defines as the emissions intensity of the most GHG-efficient California facility.<sup>9</sup>

The historical base period selected by CARB in the initial Cap-and-Trade rulemaking covered data years 2008 to 2010.<sup>10</sup> This period spanned a portion of the Great Recession and a small portion of the subsequent economic recovery,<sup>11</sup> reflecting some ebb and flow in production over time. In the 2013 rulemaking, CARB confirmed that, “[u]nless any abnormal events are identified, data years 2008-2010 should be used” to establish later product benchmarks because doing so “levels

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<sup>7</sup> Cal. Code Regs., tit. 17, § 95802; CARB, Appendix B: Development of Product Benchmarks for Allowance Allocation (Jul. 2011), p. 1, available at

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2010/capandtrade10/candtappb.pdf>.

<sup>8</sup> CARB, Appendix B: Development of Product Benchmarks for Allowance Allocation (Jul. 2011), p. 3, available at

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2010/capandtrade10/candtappb.pdf>.

<sup>9</sup> *Id.*

<sup>10</sup> CARB, Appendix A: Additions and Amendments to Product-Based Benchmarks in the Cap-and-Trade Regulation (Mar. 2014), p. 2, available at

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2013/capandtrade13/2appabenchmarks.pdf>.

<sup>11</sup> See U.S. Dept. of Commerce, Economics and Statistics Administration, Manufacturing Since the Great Recession (May 2017), pp. 3-4 [noting that monthly manufacturing output decreased by 27 percent between July 2008 and May 2009, and followed by a rebound of more than 30 percent between 2009 and 2013], available at

<https://www.nist.gov/system/files/documents/2017/05/09/manufacturingsincetherecession2014-06-10final-1.pdf>.

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the playing field with the sectors with existing benchmarks for which 2008-2010 data were used.”<sup>12</sup>

When CARB established the seamless rolled ring benchmark in 2014, it only had access to two years of MRR data from a single facility. Because CARB only evaluated data from the CFW facility, it could not compare the emissions intensity of the CFW and Schlosser facilities. It also could not calculate a performance-weighted average for the sector. Instead, CARB had to rely on CFW’s actual emissions intensity during the subject period, effectively developing a “best-in-class value.”

CARB’s use of data years 2011 and 2012 for the seamless rolled ring benchmark is outside of the data window used for the majority of regulated sectors, and it does not include any years of economic recession,<sup>13</sup> causing CARB to base the benchmark on an exclusively high-production period. At the time, CARB did not have seamless rolled ring sector data from 2008 to 2010 or another equivalent historical timeframe that spanned both periods of economic recession and economic expansion. With only the 2011 and 2012 data available, a period of marked economic recovery, CARB was unable to account for variability in production over time. It was therefore unable to level the playing field between the seamless rolled ring industry sector and those sectors for which 2008 to 2010 data were used, uniquely disadvantaging this industry sector relative to others in terms of allowance allocation in future compliance periods.

CFW recognizes and appreciates that CARB did the best it could with the available data to establish a product benchmark to minimize leakage risk for this industry sector. However, since CARB was unable to establish a representative baseline allocation using data from 2008 to 2010, and since more recent data indicates that the 2014 benchmark is not set at the best performing existing facility’s average emissions intensity (and is therefore not a “best-in-class” value),<sup>14</sup>

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<sup>12</sup> CARB, Appendix A: Additions and Amendments to Product-Based Benchmarks in the Cap-and-Trade Regulation (Mar. 2014), p. 2, available at <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2013/capandtrade13/2appabenchmarks.pdf>.

<sup>13</sup> See U.S. Dept. of Commerce, Economics and Statistics Administration, Manufacturing Since the Great Recession (May 2017), pp. 3-4, fn. 8 [noting a more than 30 percent increase in sales of manufactured goods between 2009 and 2013, and that “indices for machinery, motor vehicles, and aerospace manufacturing [] reached record highs in the first part of 2014”], available at <https://www.nist.gov/system/files/documents/2017/05/09/manufacturingsincetherecession2014-06-10final-1.pdf>.

<sup>14</sup> The facilities in this industry sector have been operating at an average emissions intensity that is approximately two times higher than the 2014 benchmark for at least the past four years, and they expect that differential to persist for the foreseeable future.

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CARB must now use available MRR data to establish a more representative baseline.<sup>15</sup> The data constraints that previously impeded CARB from establishing a representative baseline following its normal benchmarking process no longer exist. CARB now has at least 10 years of verified MRR data collected from both facilities, including data from a period of above average production following the Great Recession (2011 to 2019) and from a period of below average production following the outbreak of COVID-19 in 2020.<sup>16</sup> To establish a representative baseline allocation, CARB can use the entire body of available data, or it can select data years that are representative of average production for all facilities over time, either of which would be consistent with CARB's use of the 2008 to 2010 data years for other industrial sectors. It is no longer reasonable to continue applying a benchmark that is inconsistent with CARB's ordinary practice for all industry sectors to the disadvantage of the seamless rolled ring manufacturing sector.

### More Than 10 Years of Production and Emissions Data Reported to CARB Show that the Current Benchmark Is Too Low

A key part of CARB's process of setting benchmarks involves "acquir[ing] a sound technical understanding of manufacturing process."<sup>17</sup> The data CARB has collected from the facilities since it established the current seamless rolled ring benchmark in 2014, provides important new evidence to inform CARB's technical understanding of the seamless rolled ring manufacturing process and enables CARB to develop a robust benchmark that is reasonably representative of the average production efficiency in this industry sector.

A technical understanding of the production process for seamless rolled ring manufacturing requires an understanding that a facility's energy needs and resulting GHG emissions are not strongly correlated to fluctuations in production levels. Regardless of the quantity produced, the same heat-intensity and heat cycle duration is required to manufacture seamless rolled rings

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<sup>15</sup> See CARB, 2017 Cap-and-Trade Final Statement of Reasons (FSOR), p. 138, fn. 104 [noting CARB's ability to make "mid-course correction as needed to industrial allocation, including "revis[ing] industry benchmarks"]; see also, e.g., Cal. Code Regs., tit. 17, § 95891(c)(1) [for energy-based allocations, CARB "will solicit additional data to establish a representative baseline allocation" if necessary].

<sup>16</sup> The COVID-19 pandemic had a significant and ongoing effect on aerospace manufacturing. (See, e.g., U.S. Government Accountability Office, Report to Congressional Requesters, "Commercial Aviation Manufacturing, Supply Chain Challenges and Actions to Address Them," (Mar. 2024), p. 2, available at <https://www.gao.gov/assets/d24106493.pdf> ["Aircraft manufacturers and their suppliers have faced headwinds in recent years, including steep declines in orders for new aircraft and supply chain disruptions brought on by the COVID-19 pandemic in 2020. As airlines respond to the rebound in demand for air travel that began in 2021, aviation manufacturers' ability to provide new aircraft and parts is key to airlines' efforts to maintain and grow their operations."].)

<sup>17</sup> CARB, Appendix A: Additions and Amendments to Product-Based Benchmarks in the Cap-and-Trade Regulation (Mar. 2014), p. 2, available at <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2013/capandtrade13/2appabenchmarks.pdf>.

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that meet the aforementioned exacting technical, regulatory, and customer specifications. Fuel use and GHG emissions per furnace do not linearly correlate with changes in production levels, causing facility GHG emissions intensity to increase as production levels drop and to decrease as production levels increase. Based on an analysis presented by CFW to CARB in April 2024, the correlation coefficient between production of seamless rolled ring and GHG emissions is approximately 0.45, indicating a moderate-to-weak positive correlation. For this sector, a benchmark based only on data from high production years (such as the current benchmark) will be too low, and a benchmark based only on data from low performance years will be too high. Neither would be representative of actual GHG emissions intensity in the industry sector. Thus, the technical realities of this manufacturing process necessitate development of an updated benchmark based on a data set that includes both higher and lower production years.

As noted above, CARB was unable to establish a representative baseline in 2014 because the available 2010 and 2011 data does not account for fluctuations in production levels over time. CARB established the baseline using only two years of relatively high production volume data for a single facility, which caused the benchmark to be too low to be representative of GHG emissions intensity in this industry sector. And, as discussed in further detail below, because the benchmark is not representative of the sector, its continued use is imposing significant cost burdens on Cap-and-Trade-regulated seamless rolled ring manufacturing facilities that place them at a greater competitive disadvantage relative to out-of-state seamless rolled ring manufacturers, significantly increasing the risk of GHG emissions leakage for this sector.

#### The Ability of Facilities in This Sector to Attain Meaningful Additional GHG Emissions Reductions Through Technology Improvements Is Limited

In the seamless rolled ring manufacturing industry sector, process emissions are a natural and unavoidable result of production, and options for reducing GHG emissions are limited. As noted above, due to the physical properties of the alloys, electric heating technology is unable to heat the furnaces to the temperatures required to produce seamless rolled rings, much less meet aerospace quality and safety specifications. More importantly, the heat required to produce seamless rolled rings in compliance with all applicable standards is the same whether a furnace is heated to produce a single ring or dozens of rings. While production levels in the industry necessarily fluctuate in response to market conditions, because manufacturers are unable to scale their energy inputs based on production levels, GHG emissions are not strongly correlated with changes in production levels. For example, in 2020, the facility sustained a 60% decline in production volume, but only observed a 40% decline in GHG emissions.

Even with substantial capital investments in more energy efficient combustion technology and operational improvements, facilities in this industry sector are still expected to operate well above the existing benchmark for the foreseeable future. For example, an evaluation by CFW concluded that anticipated reductions in fuel usage resulting from retrofitting older furnace burners with high-efficiency Low-NOx units and upgrading process control software to optimize furnace heating cycles will yield only small reductions in facility GHG emissions intensity. It is simply not technologically possible for the industry to attain further meaningful GHG emissions reductions with currently available and foreseeable technology, while still meeting rigorous statutory, regulatory, and customer specifications.

### The Current Benchmark Increases Leakage Risk in this Sector

AB 32 (Nunez, 2006)<sup>18</sup> requires CARB, in the course of adopting regulations to establish market-based compliance mechanisms such as the Cap-and-Trade program, to minimize “leakage,”<sup>19</sup> defined as “a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside the state.”<sup>20</sup>

When CARB added the seamless rolled ring industry sector classification and existing product benchmark to the Cap-and-Trade regulation in the 2013 amendments, it classified the sector as “low” leakage risk. Leakage risk estimates are based on proxy data for emissions intensity and trade exposure. As described above, despite investments in more efficient combustion devices and system controls, emissions intensity has increased since this benchmark was first calculated due to a sustained recessionary period in this sector. The trade exposure metric is intended to “measure the level of competition from entities outside the jurisdiction of the Cap-and-Trade Program and the ability of covered entities to pass through compliance costs.” Appendix B of the 2013 amendments to the Cap-and-Trade regulations stipulate that trade exposure data for newly added sectors, including seamless rolled ring forging, was averaged from 2003 to 2008. However, due to changes in the market for seamless rolled rings and related shifts in production, this time-period no longer represents the current and anticipated future trade share in this sector, and therefore is not indicative of the level of competition from entities outside of California or the ability of the in-state regulated entities to pass their Cap-and-Trade compliance costs on to their customers.<sup>21</sup> Correcting the emissions intensity and trade exposure metrics for

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<sup>18</sup> Health & Saf. Code, § 38500 *et seq.*

<sup>19</sup> Health & Saf. Code, § 38562(b)(8).

<sup>20</sup> Health & Saf. Code, § 38505(j).

<sup>21</sup> The aerospace industry has not returned to pre-pandemic production volumes, and recent events suggest that this trend is likely to continue for the foreseeable future. For example, the Boeing Company’s widely publicized



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this sector using more representative data would likely result in a higher leakage risk classification.

Presuming that the 2014 classification remains valid reduces the urgency of actions CARB can take now that would meaningfully reduce leakage risk in this sector. Precision Castparts Corporation (PCC), the parent company of CFW, has already demonstrated an ability and a willingness to shift production from California to lower cost regulatory jurisdictions. In 2016, PCC permanently closed a Central California facility in response to increasing regulatory cost pressures, moving all contracted work to other PCC facilities located outside of California. In 2017, a PCC facility in Southern California relocated half of their furnaces and corresponding production volume to another PCC facility located in Texas.

While AB 398 (E. Garcia, 2017) set industry assistance factors at 100% through 2030 regardless of leakage risk classification, we are concerned that the outdated leakage risk estimate for seamless rolled ring forging could bias CARB's opinion regarding the adequacy of the existing benchmark, which both California facilities have exceeded by a factor of approximately two for at least the past four years. This disconnect between the average sector efficiency predicted in 2013 based on the historical data available to CARB and actual sector efficiency is not an anomaly. Rather, it is a sustained market condition that is expected to continue for the foreseeable future. The greater costs imposed on these facilities by virtue of having to purchase more allowances than would be freely allocated under a more representative benchmark places them at a greater competitive disadvantage relative to seamless rolled ring manufacturers in other jurisdictions, and at a higher risk of leakage relative to Cap-and-Trade-regulated facilities in other sectors that can achieve their sector benchmarks.

In-state seamless rolled ring manufacturing options are increasingly limited, but there are a number of out-of-state manufacturers and suppliers operating in jurisdictions that do not regulate GHG emissions.<sup>22</sup> In the near term, the expected market response would be for some volume of production to shift to these out-of-state facilities, as price-sensitive customers seek lower cost suppliers. As the above PCC examples indicate, at some point, the cost burden for facilities that cannot completely decarbonize their operations, such as CFW and Schlosser, will force them to choose between moving their production out of state or shuttering their

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quality issues and more recent employee strikes and layoffs have substantially reduced demand for its products, which in turn has reduced demand for seamless rolled rings, resulting in smaller customer orders. These market conditions have also increased customer price sensitivity, increasing leakage risk for companies producing seamless rolled rings in higher cost regulatory environments.

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operations, or both. In any case, production will shift to out-of-state facilities that are not subject to California's climate laws and regulations, resulting in GHG emissions leakage from this sector. This leakage risk will increase over time as the number of available allowances declines and allowances become proportionally more expensive.

CMC respectfully requests that CARB take advantage of the opportunity provided by the current rulemaking process to revise the seamless rolled ring manufacturing benchmark to make it consistent with other product benchmarks, including by utilizing a true industry average based on data from multiple facilities spanning periods of both economic recession and expansion. In Appendix C of the 2013 Cap-and-Trade regulations, CARB has recognized the potential need to update sector benchmarks based on more extensive and detailed data to ensure they are representative of "normal operation years." Failure to do so for seamless rolled ring forging would definitively increase leakage risk in this sector, violating CARB's statutory mandate to minimize leakage risk under the Cap-and-Trade program. This is precisely the outcome the Legislature directed CARB to avoid in designing and implementing market-based mechanisms to reduce GHG emissions.

Thank you for your time and consideration of our concerns. We look forward to further engaging with you on this issue.

Sincerely,



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