

Comments of the Semiconductor Industry Association

NIST IR 8546 Comment Portal
National Institute of
Standards and Technology
9700 Great Seneca Highway
Rockville, MD 20850

Re: Comments on NIST IR 8546, Semiconductor Manufacturing Profile

The Semiconductor Industry Association (SIA) appreciates the opportunity to comment on the draft NIST IR 8546, Cybersecurity Framework, Semiconductor Manufacturing Profile Initial Public Draft (the “Draft” or “NIST IR 8546”).

SIA has been the voice of the U.S. semiconductor industry for nearly half a century. Our member companies, representing more than 99 percent of the U.S. semiconductor industry by revenue, as well as major non-U.S. chip firms, are engaged in the full range of research, design, manufacture, and back-end assembly, test, and packaging of semiconductors. SIA’s members design and produce all major advanced and mature-node semiconductor types, including logic, memory, analog, microprocessors, and optoelectronics. The semiconductor was invented in America more than 65 years ago, and the U.S. semiconductor industry remains the global leader in semiconductor technology and innovation, driving America’s economic strength, national security, and global competitiveness in a range of downstream industries. More information about SIA and the semiconductor industry is available at www.semiconductors.org.

Cybersecurity is a top priority of the semiconductor industry and an important area of work for SIA and our member companies. We have been pleased to engage with NIST and other U.S. government agencies on cybersecurity issues impacting the semiconductor industry over the years.

SIA shares the Trump Administration’s goal to position the United States as a global manufacturing superpower, particularly for semiconductors. SIA member companies have announced more than \$600 billion (and counting) in private investments to manufacture and develop semiconductors in the U.S., with over 130 projects across 28 states. These announced projects will create and support over 500,000 American jobs.

In February 2024 NIST published an updated version of the Cybersecurity Framework, CSF 2.0,¹ which provides guidance to industry, government agencies, and other organizations to manage cybersecurity risks. SIA member companies design and assess their cybersecurity risk management programs informed by NIST's CSF 2.0 to protect the confidentiality, integrity, and availability of their critical systems and information. Our companies also perform cybersecurity and privacy assessments for key vendors and suppliers to ensure those entities meet requisite security requirements, which are also informed by the CSF 2.0. The Chief Information Security Officers (CISOs) of SIA member companies routinely brief company management and Board of Directors on their cybersecurity risk management programs, and report on these activities in Annual Reports and regular filings to the U.S. government.

In May 2024, through the “National Cybersecurity Strategy Implementation Plan” (NCSIP)², the Biden Administration tasked NIST to develop guidance for securing development and manufacturing of semiconductors, in collaboration with the semiconductor industry. According to this document, the NIST-developed guidance was to include a Cybersecurity Framework Profile tailored to the semiconductor manufacturing industry. NIST subsequently published IR 8546, the Draft Semiconductor Manufacturing Profile, pursuant to this Biden-era directive.

Unfortunately, in developing IR 8546, NIST did not engage with the CISOs and the teams responsible for designing and maintaining information technology (IT) infrastructure and information security management systems for semiconductor manufacturing companies. Rather, NIST partnered with and relied upon an outside industry group to draft IR 8546.³ This outside group does not appropriately represent the intended audience for IR 8546, and paid membership was a prerequisite to participation in the working group⁴ that developed and drafted IR 8546, which is now published as a NIST document with the imprimatur of the U.S. government.

After extensive engagement with the CISOs of our member companies – which span across the semiconductor design and manufacturing ecosystem – we are of the view that, as written, IR8546 detracts from good semiconductor manufacturing security practice, does not add value to the NIST Cybersecurity Framework 2.0 (CSF 2.0) which informs cybersecurity practices at semiconductor manufacturing companies, and is not consistent

¹ NIST “Cybersecurity Framework (CSF) 2.0”, February 26 2024.

<https://nvlpubs.nist.gov/nistpubs/CSWP/NIST.CSWP.29.pdf>

² The White House, “National Cybersecurity Strategy Implementation Plan (Version 2)”, May 2024.

<https://bidenwhitehouse.archives.gov/wp-content/uploads/2024/05/National-Cybersecurity-Strategy-Implementation-Plan-Version-2.pdf>

³ See NIST Cybersecurity Center of Excellence, “Cybersecurity Framework Profile for Semiconductor Manufacturing.” <https://www.nccoe.nist.gov/projects/cybersecurity-framework-profile-semiconductor-manufacturing>

⁴ See Article III of SEMI, “Bylaws: SMCC Semiconductor Manufacturing Cybersecurity Consortium”, February 28, 2024. https://www.semi.org/sites/semi.org/files/2024-06/SMCC_Bylaws_0228.pdf

with the Trump Administration’s policy outlined in Executive Order 14192.⁵ Further, SIA member company CISOs expressed the view that the NIST’s current CSF 2.0 is both used and useful, and already covers their manufacturing operations. SIA and the CISOs do not currently see a need for a dedicated CSF semiconductor manufacturing profile. The CSF 2.0 already brings significant value to semiconductor CISOs, companies, and their Boards of Directors.

Making suggestions around the edges of the current IR 8546 draft will not address or mitigate the fundamental problems with the current approach, text in each subsection, or lack of insight into existing security and quality control practices implemented by semiconductor manufacturing companies. For these reasons, SIA respectfully requests NIST to withdraw IR 8546, and consult with security leaders in the target audience, namely semiconductor manufacturing companies engaged in semiconductor fabrication and packaging, to determine whether an additional semiconductor-specific cybersecurity profile, building on CSF 2.0, is necessary, is useful, or will be used. Following such consultation, should NIST determine that such a document is indeed necessary, **SIA stands ready to assist NIST in working with recognized security leaders from semiconductor companies in drafting a risk-based, flexible, NIST CSF 2.0 tiered (1-4), non-prescriptive Draft that will add security value to semiconductor manufacturing operations.**

With that said, we have compiled a list of detailed comments to illustrate the shortcomings of the published draft, which we include in the attached. Part A of the attached comments contains general comments and our request for NIST to withdraw and rewrite IR 8546 and Part B contains detailed comments on sections 4 and 5 of IR 8546.

SIA has a long history of constructive collaboration with NIST and looks forward to working closely with NIST on the path forward for IR 8546.

PART A: GENERAL COMMENT AND REQUEST

We respectfully request NIST to withdraw, and if it still decides to create a new CSF framework, rewrite IR 8546, and launch a new consultation process with the community of semiconductor manufacturing companies (“Fabs”, “Foundries”, and “Packagers”), their CISOs, and other relevant experts to develop a replacement to IR 8546 that reflects the expertise and needs of semiconductor companies that operate wafer fabrication facilities. Semiconductor manufacturers are deeply committed to cybersecurity to protect their enterprises, operations, supply chains, product security, intellectual property, and business processes. SIA member companies already use NIST’s CSF 2.0 framework, including in their manufacturing operations. Any additional NIST framework for

⁵ The White House, Executive Order 14192, “Unleashing Prosperity through Deregulation,” January 31, 2025. <https://www.whitehouse.gov/presidential-actions/2025/01/unleashing-prosperity-through-deregulation/>

semiconductor manufacturing must assess the gaps between the NIST CSF 2.0 framework and find some yet to be determined area that might provide additional value for the semiconductor manufacturing unique operating environment.

While we recognize that representatives from the semiconductor ecosystem were involved in drafting IR 8546, of the 17 authors involved in drafting the document, only 3 listed authors represent companies that operate semiconductor wafer fabrication facilities, but none were in a position of leadership within their company's security organization.

This lack of security expertise from semiconductor manufacturing enterprises is reflected in the draft IR 8546, which:

- does not recognize the existing use of the NIST CSF 2.0 Framework;
- does not follow the requisite NIST framework approach of risk-based, flexible, non-prescriptive and Tiered (1-4 per CSF) framework that can be tailored to address unique risks, technologies, and mission considerations;
- fails to recognize the security attributes and checks through existing quality control practices and testing;
- does not have a real world understanding of the semiconductor fabrication and packaging processes;
- was not informed by a gap analysis between what companies are already doing and what might be needed to be additive;
- interferes with contractual arrangements negotiated by parties; and
- asserts incorrect legal conclusions.

It is our strong view and recommendation that any Cybersecurity Profile specific to semiconductor manufacturing must be directly informed by senior security leaders who actually secure systems within the semiconductor manufacturing environment. Unfortunately, IR 8546 does not meet this bar.

PART B: DETAILED COMMENTS ON IR 8546 SECTIONS 4 AND 5

I. Comments on Section 4: “Applying Business and Mission Objectives to Profile Creation”

IR 8546 uses the Business and Mission Objectives from the general NIST Manufacturing Profile, NISTIR 8183 (Manufacturing Profile). Semiconductor manufacturing – e.g. fabrication and packaging – operations are specialized. The current use of the generalized Business and Mission Objectives (Objectives) should be removed from the Draft. Although some of the business and mission objectives may be similar, the CISOs from companies that would be subject to the NIST Cybersecurity Profile for Semiconductor Manufacturing

should meet, debate, and inform the Objectives. We recommend the current provisions be removed.

The Draft also assigns ‘criticality’ rankings to each business and mission objective, mirroring the style and structure of the Manufacturing Profile. Most of the approximately 400 rankings are deemed ‘Critical.’ Deeming most everything critical adds little to risk management. In addition, the current text in many of the profile subcategories uses language indicating that the use of a practice will eliminate cyber risk, where the reality is it will not, and the risk in the subcategory will still need to be managed. For use in Semiconductor fabs and packaging facilities, both these structures are antithetical to the CSF 2.0 concept of prioritized risk management, and the widely adopted NIST Cybersecurity Framework (CSF) Tiers (1-4) maturity model, which helps companies manage risk and mature their risk management approaches. The Objectives also fail to understand the security benefits and assurances provided by existing quality control practices in fabrication and packaging, which test and confirm along the production supply chain that finished semiconductors have indicia of integrity. While the Manufacturing Profile approach to risk management may meet the needs of other use cases, it does not meet the needs or desires of the semiconductor manufacturing community, which needs the discipline of careful and thoughtful risk management, and needs to understand and adjust for quality assurance and test practices. The CISO community within the semiconductor industry broadly should meet, discuss, find consensus, and draft the right structural approach to management for IR 8546. We recommend the ‘criticality’ sections and approach be removed from IR 8546.

II. Comments on Section 5: Semiconductor Manufacturing Community Profile Subcategory Guidance

Below are comments and recommendations on each of the categories in the Draft. Each comment is subject to the caveat that the comments and suggestions in each category may be necessary but are not sufficient to address our concerns. The Draft should be rethought and rewritten in its entirety. Therefore, each comment below is subject to this CAVEAT that these specific comments are being given because NIST has not engaged in a rewriting process and is requesting comments on the current Draft. Each comment below is subject to this Caveat (the “Caveat”).

5.1 Govern

- **GV.OC-01**, subject to the Caveat

If Caveat not implemented, we recommend:

- Ecosystem Rationale: This section be removed. Companies using the CSF 2.0 have already employed prioritized risk-based practices for all subcategories in the Draft. For companies using CSF 2.0, this already includes addressing the facilities in those practices. The Draft would either not likely add to existing practices or could conflict with existing CSF 2.0 practices and plans. In order to determine if there is conflict or a gap, the semiconductor manufacturer CISO community itself would have to get together and do a gap analysis between what they do under CSF 2.0, and what a NIST document on semiconductor manufacturing could add. It appears that a semiconductor manufacturer CISO community gap analysis has not been done.
- Ecosystem Guidance: This section be removed. In a risk management framework, items should be addressed in terms of prioritized risk management, not in the first instance be deemed to be ‘crucial,’ ‘critical,’ or ‘essential’ for every manufacturing facility operator. A tiered (1 to 4 as set out in NIST CSF 2.0) maturity model, the hallmark of the CSF 2.0, allows for informed and rational choices by the CISO who can manage and prioritize the importance of any particular item to the subcategory, category, and overall risk management. Throughout the Draft, change the language to prioritized, risk-based language.

- **GV.OC-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, insert ‘may’ before ‘prioritize,’ change ‘can’ to ‘could.’ In second sentence, insert ‘and considering’ before ‘the cybersecurity,’ change ‘essential’ to ‘important.’ In third sentence, change ‘can’ to ‘could.’ Fourth sentence, Delete sentence as repeats content of third sentence which already makes clear there are different parties. Fifth sentence, Delete, as both GV.OC-02 and GV.SC speak for themselves, and in any case GV.SC addresses the supply chain holistically. Sixth sentence, Delete as content is already in the first three sentences, and it changes the charge in GV.OS-02 that security expectations of external stakeholders are ‘considered’ to semiconductor manufacturers ‘meeting the cybersecurity requirements’ of external third parties like their suppliers. These are contractual and legal arrangements negotiated between the parties. Further, third-party expectations may be unreasonable. Delete the fifth, sixth, and seventh sentences.

- Ecosystem Guidance: First bullet, Delete, does not add anything to bullet two and does not relate specifically to the Fab. Bullet two, change ‘management commitment’ to ‘management involvement.’ Bullet three, insert ‘as needed to manage risk’ and Delete ‘at least annually’ as this mandates a specific time for every Fab and this is not an appropriate risk management practice (further Delete all mandatory time frames in the Draft).

- **GV.OC-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Delete the first sentence as it makes extraneous and incorrect legal judgments and assumptions (e.g. ‘increasing organizational liability’) and does not add to the GV.OC-03 charge to understand and manage legal, regulatory and contractual requirements – or different than or specific to semiconductor manufacturers. Delete the second and third sentences for the aforementioned reasons. The final sentence notes “Where these external expectations are formalized through laws, regulations, or contracts, there is overlap with GV.OC-02.” sentence is true, adding to reasons why section should be Deleted, and extraneously refers to unknown ‘external expectations’ set by third parties, not semiconductor manufacturers.
- Ecosystem Guidance: Second bullet, insert “Using a prioritized, risk-management approach’ before “Review’ as semiconductor manufacturers have many third-party relationships, and review should be prioritized by risk.

- **GV.OC-04** subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, Delete ‘all,’ change ‘expectations’ to ‘considerations,’ change ‘enhance’ to ‘address.’

- **GV.OC-05** subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘essential’ to ‘important.’ Second sentence define or Delete ‘It.’

- **GV.RM-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Guidance: Clarify or Delete this section. It is unclear what beyond the contractual relationship between the semiconductor manufacturer and the organization employing the field service engineer this text is trying affect or achieve, and who is to ‘clearly’ define and govern the role of the field service engineer, and how and why this sits outside of all other risk management objectives.

- **GV.RM-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘are essential to keeping’ to ‘help to keep.’

- **GV.RM-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘ensures’ to ‘helps ensure,’ change ‘all incident response activities’ to ‘cyber risk management activities and outcomes are considered’, and Delete ‘financial, regulatory, reputational, and other.’ Second sentence, change ‘ensures’ to ‘can result in,’ change ‘are maintained’ to ‘being considered. Third sentence, insert ‘Consider’ before ‘Incorporating, and Delete ‘is essential.’

- **GV.RM-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, insert 'options' before 'with,' Delete 'with specific ... [to] ... immediate,' and insert 'can help manage' before 'risk management.'

- **GV.RM-05**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First and second sentences Clarify or Delete 'These standards' and 'This setup.' In any case, in the first sentence change 'ensures' to 'can assist' and 'robust' to 'are established.' In the second sentence, change 'systematically includes' to 'could include as warranted' change 'fosters' to 'could assist in creating.'
- Ecosystem Guidance: Delete the Guidance. The first and only sentence is confusing, the relation to the subcategory – lines of communication across the organization - uncertain, and guidance not clear. To the extent the sentence is about information sharing, good corporate practice is to have those issues governed and determined by the CISO and counsel and often negotiated in contract. Delete the Guidance.'

- **GV.RM-06**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'ensures' to 'can help ensure.'

- **GV.RR-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: This section be removed. Generally, this section attempts to mandate specific corporate governance obligations and liabilities on corporate officers. Companies have determined their own corporate governance policies and decided their own management responsibilities. If this comment is not implemented, in first sentence Delete 'all' and 'collectively responsible and accountable.' In second sentence, Delete 'needs to.' In third sentence, delete 'equally vital.' In forth sentence, delete

‘shared responsibility.’ In fifth sentence, delete ‘demands’ and Delete ‘accountability’ and Delete ‘every leader.’”

- **GV.RR-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘ensures’ to ‘can help’ and change ‘strengthens’ to ‘can strengthen.’

- **GV.RR-03**, subject to the Caveat..

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘ensures’ to ‘helps ensure.’
- Ecosystem Guidance: Delete, text does not relate to subcategory topic.

- **GV.RR-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Fab Considerations: Second paragraph, first sentence, change ‘necessary’ to ‘important.’
- Equipment Considerations: Change ‘crucial’ to ‘important.’ Second sentence, change ‘is essential to ensure’ to ‘can help provide.’ Third sentence, insert ‘help’ before ‘secure, and insert ‘help to’ before ‘ensure.’

- **GV.PO-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, Clarify what ‘domains’ the facility owner needs to enforce policy against, and if outside of the ownership of the party owning the facility, Delete the second sentence.

- Fab Guidance: Second sentence, change ‘ensures that’ to ‘can account for,’ and insert ‘that can’ before ‘adequately.’
- Equipment Considerations: First sentence, Delete ‘which are usually inherited from enterprise IT.’ Second sentence, Delete ‘that are heavily influenced by external standards and requirements,’ as that is not a distinguishing feature.

GV.OV-01, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘swiftly integrate to ‘incorporate.’ Second sentence, change ‘is crucial for ensuring’ to ‘can help.’ Third sentence, change ‘evolves’ to ‘can evolve.’

GV.OV-03, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, change ‘ensures that the’ to ‘can lead to an,’ and change ‘are’ to being.’ Third sentence, insert ‘can’ before ‘enhance.’

- **GV.SC-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘is essential’ to ‘can help.’ Third sentence, change ‘requires approval’ to ‘should consider input, change ‘to’ to ‘and,’ and change ‘ensuring’ to ‘to help build.’
- Fab Considerations: First sentence, change ‘is critical for enhancing’ to ‘can help enhance.’ Second sentence, change ‘plays a vital role in this context’ to ‘for single points of failure could help manage that risk.’ Forth sentence, change ‘are integral’ to ‘can be useful,’ change ‘ensuring’ to ‘that may help ensure,’

- Equipment Considerations: First sentence, change 'is crucial' to 'can help manage risk. Second sentence, change 'is vital for ensuring' to 'may assist with.' Third sentence, change 'are essential for' to 'can be useful in.'

- **GV.SC-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'Aligning' to 'Establishing,' and 'expectations and incentives' to 'roles and responsibilities' (the subject of the subcategory), change 'crucial' to important for managing operational risk,' and Delete the rest of the sentence. Second sentence, change 'This strategic alignment' to 'Establishing roles and responsibilities,' and change 'ensures' to 'can help ensure.' Third sentence, change 'Such a unified approach' to 'Understanding roles,' and 'enhances' to 'can enhance,' and change 'mitigate' to 'manage.'
- Equipment Guidance: Change 'Ensure that' to 'Consider whether,' and Delete 'can.'

- **GV.SC-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, Delete 'annual' (as mandates do not meet the match the flexible prioritized risk management nature of NIST frameworks, or enterprise specific needs and priorities), change 'essential' to 'important.'
- Ecosystem Guidance: Delete 'at least annually,' see above.

- **GV.SC-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, change ‘ensures’ to ‘helps manage risk so,’ can ‘are’ to ‘can be’ insert ‘help’ before ‘align.’ Third sentence, change ‘cannot,’ to ‘might not.’

- **GV.SC-05**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, insert ‘Understanding cybersecurity risks can help supply chain parties address security risks in contracts and other types of agreements.” at the beginning of the sentence, and delete the rest of the sentence (this is the topic of the subsection). . as they arise ‘This comprehensive assessment’ to ‘these considerations’ ‘ensures’ to ‘helps ensure.’
- Ecosystem Guidance: In each of the two bullets change ‘Implement’ to ‘Consider’ as the parties need to discuss and negotiate these contract terms.
- Fab Considerations: First sentence Delete ‘rigorously’ (unclear what non-rigorously would be, and in any cases the parties are the ones who negotiate these contracts). Second sentence, change ‘there should be clear’ to ‘understand and consider’ and change ‘ensure that’ to address whether.’ (flow down warranties and requirements are contractual matters for the parties to negotiate).
- Equipment Considerations: First sentence, insert ‘can’ before ‘provide.’ Second sentence, change ‘ensures that all’ to ‘can assist in understanding,’ Delete ‘are known,’ change ‘be’ ‘can be’ to ‘being.’

- **GV.SC-06**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence insert ‘and risk’ after ‘criticality’ (as the subsection is about due diligence before entering supplier contracts) created by change ‘ensures that’ to ‘can help in creating,’ insert ‘that’ before ‘are’ change ‘precisely’ to ‘prioritized.’ Second sentence, change ‘mitigates’ to ‘helps manage risk and.’
- Fab Considerations: Change ‘critical’ to ‘important.’

- **GV.SC-07**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘is crucial for maintaining’ to ‘can help to manage risk to’ change ‘a secure’ to ‘security, and change ‘reliable’ to reliability.’
- Ecosystem Guidance: Change ‘An annual review is the minimum recommendation’ to ‘Undertake periodic prioritized risk-based reviews of’ (as discussed throughout, mandatory non-risk and priority based dates are not a NIST risk-based approach), change ‘critical’ to ‘impose risk.’ Second sentence change ‘criticality’ to ‘importance.’

- **GV.SC-08**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘Integrate’ to ‘Include’ (as that is the topic of the subcategory and the nature of the relationship).
- Ecosystem Considerations Delete ‘these, Delete ‘both’ and change ‘at least annually’ to ‘as needed.’
- Ecosystem Guidance: Fifth bullet, change ‘include’ to ‘consider’ and ‘ensure’ to ‘assist with’ (contacts are negotiated by the parties and advised by legal, the outcome of those discussions cannot be predetermined).

- **GV.SC-09**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘criticality’ to ‘importance.’

- **GV.SC-10**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘explicitly include’ to ‘consider the inclusion of’ (these are contract negotiation and legal issues and cannot be predetermined). Second sentence, insert ‘can’ before ‘involves’ and change ‘ensuring that’ to addressing treatment of.’ Third sentence, change ‘should’ to ‘can.’
- Ecosystem Guidance: First bullet, change ‘Include’ to ‘Consider.’ Fourth bullet, change ‘at least annually’ to ‘on a prioritized risk-based basis’ or Delete bullet.
- Fab Considerations: Second sentence, change ‘address’ to ‘consider’ and ‘mitigation’ to ‘risk management.’ Third sentence, change ‘provide’ to ‘consider.’
- Equipment Considerations: Change ‘Assess’ to ‘When appropriate consider.’

5.2 Identify

- **ID.AM-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘to enable’ to ‘can assist with.’
- Fab Considerations: Delete text (text is not related to subcategory).

- **ID.AM-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘to ensure’ to ‘assist with.’ Third sentence, Delete text (it speculates about legal obligations, and companies are required to follow the law in any case).
- Ecosystem Guidance: Third bullet, in first sentence insert ‘As reasonable’ before ‘Develop,’ Delete ‘all’ (text appear to apply to the whole enterprise, and although a complete list would be good, often not reasonably achievable).

- Enterprise IT Considerations: Change “Maintain clear” to ‘Capture,’ insert ‘of and’ before ‘between’ (text unclear and boundary segregation may not exist).

- **ID.AM-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, insert ‘help’ before ‘secure.’ Second sentence, Delete (text is unrelated to representations of data flows and too generalized to assist risk management of data flows).
- Ecosystem Considerations: Change ‘includes’ to ‘could include.’
- Ecosystem Guidance: Third bullet, insert ‘representations’ before ‘between,’ change ‘should be established, particularly for, to ‘may assist.’

- **ID.AM-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, change ‘ensures’ to ‘can assist with.’
- Ecosystem Guidance: Third bullet, insert ‘Where feasible,’ before ‘Inventory,’ and Delete ‘all’ (this bullet applies to the whole enterprise, and a full inventory may not be reasonably possible).

- **ID.AM-05**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘essential’ to ‘important.’

- **ID.AM-07**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale; Change ‘crucial’ to ‘important.’
- Enterprise Guidance: Insert ‘Seek to’ before ‘Ensure.’

- **ID.AM-08**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘essential to’ to ‘important for,’ change ‘maintain’ to ‘maintaining.’
- Fab Considerations: Third sentence, change ‘can’ to ‘could.’
- Enterprise Considerations: First sentence, change ‘which’ to ‘with.’
- Equipment Considerations: First sentence insert ‘seek to’ before ‘manage.’
- Equipment Guidance: Second sentence, insert ‘Consider whether’ before ‘Legacy,’ and change ‘require’ to ‘need.’

- **ID.RA-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘crucial’ to ‘important.’
- Enterprise Guidance: Insert, change ‘Regularly’ to ‘As determined through a prioritized risk-based methodology.’
- Equipment Guidance: Clarify who is perform, and prior to release of what, or Delete.

- **ID.RA-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘crucial’ to ‘important.’

- **ID.RA-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘crucial’ to ‘important.’ In second sentence, change ‘first’ to ‘in order of priority.’

- **ID.RA-05**, subject to the Caveat.

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- If Caveat not implemented we recommend:

- Reference: Delete citation to EU CRA. Draft should assume companies will follow the law, and the Draft should not make legal judgements about the applicability of the law to semiconductor companies, or any particular Subcategory or Guidance.
- Apply the above comment to all References to laws and Delete that Reference.

- **ID.RA-06**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘critical’ to ‘important.’
- Equipment Considerations: Second sentence, change ‘crucial for’ to ‘can assist in.’

- **ID.RA-07**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘crucial’ to ‘important.’ Second sentence, change ‘ensures’ to ‘assists in.’

- Fab Considerations: Second sentence change ‘are necessary to prevent’ to ‘can help avoid.’
- Enterprise Considerations: Change ‘essential’ to ‘important,’
- Equipment Considerations: Change ‘critical’ to ‘important.’
- Reference: Delete EU CRA (see ID.RA-05 comments).

- **ID.RA-08**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘crucial’ to ‘important.’ Second sentence Delete ‘meets regulatory demands’ (as this is a legal conclusion and judgment, and change ‘enhances’ to ‘can enhance.’
- Fab Considerations: Second sentence, insert ‘Depending on the vulnerability disclosed,’ before ‘Coordination’ and change ‘crucial’ to ‘may be important.’
- Enterprise Considerations: Change ‘typically has’ to ‘may have.’
- Reference: Delete EU CRA (see ID.RA-05 comments).

- **ID.RA-09**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, insert ‘Authenticity assessments can help manage’ before ‘This is,’ Delete ‘This is critical for preventing,’ change ‘attacks’ to ‘risk,’ change ‘ensuring’ to ‘aid in the’ insert ‘help manage system risk to the manufacturing system.’ before ‘supporting’ and Delete the rest of the sentence.
- Fab Considerations: Second sentence, change ‘Ensuring’ to ‘Assessing,’ change ‘components’ to ‘products,’ change ‘is crucial’ to ‘could be important.’
- Fab Guidance: Insert ‘useful, available, effective, and’ before ‘possible’ insert ‘attempt to’ before ‘detect’ and change ‘components’ to ‘products.’

- Enterprise Considerations: Insert 'Where applicable' before 'Enterprise,' change 'verify' to 'assess.' Second sentence insert 'Where applicable' before 'This,' change 'includes' to 'may include' and change 'verifying' to 'assessing.'
- Equipment Considerations: Change 'verify' to 'assess' and change 'prevent' to 'help manage the risk of.'

- **ID.RA-10**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'essential' to 'important,' Delete 'effectively', and Delete text after 'risks. It is unclear who or what the 'they' is in the rest of the text. The point about assessing critical suppliers (who might be located down the street) has already been made.
- Fab Considerations: Second sentence insert 'prior to acquisition' before 'is' (that is the subject of the subcategory) and can 'is crucial' to 'can be important.'
- Enterprise Considerations: Insert 'Using a prioritized risk-based process,' before 'Enterprise,' insert 'critical' before suppliers, change 'evaluating' to 'where applicable assessing prior to acquisition.'
- Equipment Considerations: Insert 'critical' before 'suppliers,' and change 'components' to 'products.'

- **ID.IM-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'is crucial for' to 'can help in.'
- Fab Guidance: First bullet, change 'to protect' to 'manage the risk to.'
- Enterprise Guidance: Change 'and' to 'or.'
- Equipment Considerations: First sentence change 'Identified Improvements' to 'The impact of identified risk management process improvements' (as that

is the subject of the subsection), change ‘carefully vetted’ to ‘understood to help.’

- Equipment Guidance: Change “Establish criteria to determine” to ‘Consider the’ and change ‘ROI required’ to ‘costs and benefits.’

- **ID.IM-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘especially’ to ‘including. Insert ‘can’ before ‘help’ and insert ‘can’ before ‘improves.’
- Fab Considerations: Change ‘crucial’ to ‘important.’
- Fab Guidance: First bullet, change ‘Identify and address barriers to’ to ‘Consider best practices for.’ Second bullet, delete ‘extreme.’
- Enterprise Considerations: Second sentence, at the beginning of the sentence insert ‘Use a prioritized risk-based methodology to determine testing, and as warranted’, and change ‘should to ‘can.’
- Enterprise Guidance: At beginning of the sentence insert ‘As warranted,’ Delete ‘both’, and change ‘and’ to ‘or.’
- Equipment Considerations: First sentence, change ‘minimize’ to ‘manage the risk of.’

- **ID.IM-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence change ‘crucial’ to ‘important.’ Second sentence, change ‘enables’ to ‘helps the.’
- Fab Considerations: At beginning of the sentence insert ‘Some.’ Second sentence insert ‘, where appropriate’ after ‘tested and.’
- Fab Guidance: Delete ‘non-disruptive’ (it’s possible a disruptive enhancement should be prioritized).

- Equipment Considerations: First sentence, at the beginning of the sentence, insert 'Impacts of implementing' change 'carefully vetted' to 'understood to help', and insert 'unintentionally' before 'disrupt.'
- **ID.IM-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'crucial' to 'important.' Second sentence, change 'ensure' 'can assist with', insert 'when warranted' before 'that could.'
- Ecosystem Guidance: Delete first bullet (it does not relate to this subsection).

5.3 Protect

- **PR.AA-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'enables' to 'helps enable', and change 'ensuring' to 'trying to ensure.' Second sentence, Delete 'supports compliance with regulatory requirements' (remove legal judgment), change 'enhances' to 'can enhance.'
- Ecosystem Guidance: Fifth bullet, insert 'may' before 'require.'
- Fab Considerations: Insert 'attempt to' before 'detect.'
- Enterprise Considerations: First sentence, insert 'if appropriate can' after 'environments', change 'provides' to 'provide.' Second sentence, Delete 'supports compliance with data protection regulations and' (remove the legal judgment and assertion), insert 'can' and change 'improves' to 'improve.'
- Equipment Considerations: First sentence, change 'critical' to 'important', and change 'ensuring' to 'helping to ensure.' Second sentence, change 'helps prevent' to 'can help manage the risk of.'

- **PR.AA-02**, subject to the Caveat.

If Caveat not implemented, we recommend deleting all Rationale/Guidance / Considerations text in PR.AA-02.

If Caveat not implemented we recommend:

- Ecosystem Considerations: First sentence, change 'ensures' to 'attempts to ensure', and insert 'attempt to' after 'credentials.'
- Fab Consideration: Change 'enables' to 'helps enable.'
- Equipment Considerations: Insert 'could' before 'provides' and change 'provides' to 'provide.'

- **PR.AA-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'ensures' to 'helps ensure,' change 'preventing' to 'helping to manage the risk of.' Second sentence, change 'verifies' to 'attempts to verify.' Third sentence, change 'ensures' to 'attempts to ensure.'
- Fab Considerations: First sentence change 'ensures' to 'attempts to ensure.' Second sentence, change 'prevents' to 'attempts to prevent', change 'enhances' to 'can enhance' and Delete 'supports compliance with industry standards' (should not include legal judgments).
- Enterprise Considerations: First paragraph, first sentence, insert, 'where desired and appropriate,' after 'patterns)' and change 'strengthens security' to 'may help manage risk.' Third sentence, at the beginning of the sentence insert 'In the proper use case, and depending on deployment,' insert 'could' before 'protects' and change 'protects' to 'protect', change supports' to 'could support', and change 'enables' to 'could enable.'
- Enterprise Considerations: Second paragraph, first sentence, insert 'Where applicable and desired,' at the beginning of the sentence, and insert 'could' before 'strengthen.' Second sentence, change 'protects' to 'could protect', change 'supports' to 'could support' and change 'enables' to 'could enable,'

- Equipment Considerations: First sentence, change 'ensures' to 'attempts to ensure.' Second sentence, change 'prevents' to 'attempts to prevent', change 'enhances' to 'can enhance' and Delete 'supports compliance with industry standards' (should not include legal judgments).

- **PR.AA-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, change 'ensures' to 'attempts to ensure.' Third sentence, change 'ensures' to 'attempts to ensure.'
- Ecosystem Guidance: First bullet, change 'Ensure' to 'Attempt to ensure.' Second sentence, clarify 'updated' by what entity, NIST?
- Fab Considerations: First sentence change 'ensures' can help ensure.'
- Fab Guidance: Second bullet, insert 'where available,' after MFA.
- Enterprise Considerations: Change 'enables' to 'may assist with.' Second sentence, change 'supports' to 'may support', change 'reduces' to 'may reduce', change 'enhances' to 'may enhance', and change 'while maintaining' to 'may maintain.'
- Equipment Considerations: Change 'to' to 'that can' and change 'increases' to 'can increase.'

- **PR.AA-05**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change 'essential for' to 'important for managing and.'
- Fab Guidance: First sentence, change 'enhances' to 'where appropriate can enhance.' Second sentence, Delete 'supports compliance with industry regulations' (legal judgment), replace 'reduces' with 'may reduce.'
- Fab Guidance: Insert 'Where appropriate' at beginning of sentence, change 'though' to 'although.'

- Enterprise Considerations: Change ‘Establishing’ to ‘Consider establishing’, change ‘ensures’ to ‘to help manage’, Delete ‘protects’, Delete ‘supports regulatory compliance (legal judgment), and change ‘enhances’ to ‘might enhance.’
- Equipment Considerations: Change ‘enhances’ to ‘may enhance.’

- **PR.AA-06**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘essential’ to ‘important.’ Second sentence change ‘effectively prevent’ to ‘manage the risk of.’
- Fab Considerations: First sentence, change ‘protects’ to ‘can help protect’, change ‘prevents’ to ‘helps manages the risk of,’ and Delete ‘and supports compliance with industry standards (legal judgment).
- Enterprise Considerations: First sentence change ‘Ensuring’ to ‘Managing’, and change ‘protects’ to ‘help protects.’ Second sentence, Delete ‘supports compliance with data protection regulations (legal judgment).
- Equipment Considerations: Insert ‘access to’ after ‘physical’, Delete ‘tamper resistance and detection features in’, Delete ‘design.’ (subcategory is about managing physical access to assets, not equipment product security).

- **PR.AT-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Considerations: First sentence, Delete ‘As the first line of defense against cyber threats.’ Third sentence, change ‘should’ to ‘can.’
- Fab Considerations: Change ‘enhances’ to ‘can enhance’, change ‘reduces’ to ‘can reduce’ and Delete ‘and supports compliance with industry standards’ (legal judgment).
- Fab Guidance: Second bullet, insert ‘Depending on the circumstances’ at the beginning of the sentence.

- **PR.AT-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Fab Considerations: Change ‘enhances’ to ‘can enhance’, ‘improves’ to ‘can improve’ and ‘supports’ to ‘can support.’
- Enterprise Considerations: Change ‘enables’ to ‘can help enable’ (unclear to which employees the Draft is applying this to, identify the employees or Delete).
- Equipment Considerations: Change ‘vital’ to ‘may help manage cyber risk.’

- **PR.DS-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘ensures’ to ‘can help ensure.’
- Fab Considerations: First sentence, change ‘critical to ‘important.’
- Enterprise Considerations: First sentence, change ‘vast’ to ‘significant’, and second sentence, change ‘ensures’ to helps ensure’ and Delete ‘and avoids legal repercussions from data breaches (legal judgement).
- Equipment Considerations: Change ‘essential for preventing’ to ‘important for managing risk of.’

- **PR.DS-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Considerations: First sentence, change ‘essential’ to important. Second sentence, Delete ‘particularly.’
- Fab Considerations: Second sentence change ‘ensures’ to ‘can help maintain’, change ‘preventing’ to ‘managing the risk of.’

- Enterprise Considerations: First sentence, change ‘crucial’ to ‘important.’

- **PR.DS-10**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Considerations: First sentence, change ‘crucial’ to ‘important’, change ‘ensuring’ to ‘help ensure.’ Second sentence, Delete ‘particularly.’ Third sentence, change ‘prevent’ to ‘help manage the risk of.’
- Fab Considerations: Second sentence, change ‘ensures’ to ‘helps ensure.’
- Enterprise Considerations: Change ‘critical to preventing’ to ‘important to help manage risk of.’
- Equipment Considerations: Second sentence, change ‘ensures’ to ‘helps ensure’ and change ‘prevents’ to ‘helps manage the risk of’, Delete ‘from.’ Third sentence, clarify what and which customers and owners ‘should not be able to access’ IP, address relation to this subcategory on data in use, and address why the parties cannot contract for IP rights – or Delete.

- **PR.DS-11**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘ensure’ to ‘can help ensure.’ Second sentence, change ‘enable’ to ‘may help enable’
- Fab Considerations: First sentence, change ‘ensures’ to ‘may help ensure.’
- Enterprise Considerations: First sentence change ‘vital’ to ‘important.’ Second sentence, change ‘ensuring’ to ‘attempting to ensure’, change ‘ensures’ to ‘can improve’, Delete ‘and compliance with regulations (e.g. data protections laws)’ (legal judgement), and change ‘protecting’ to ‘may protect.’
- Equipment Considerations: Change ‘product’ to ‘equipment’ and change ‘can be’ to ‘may be able to be’

- **PR.PS-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'prevent' to help prevent.'
- Fab Considerations: First sentence, change 'critical' to 'useful.'
- Enterprise Considerations: Change 'requires' to 'may benefit from.'
- Equipment Considerations: Change 'need for' to 'benefits of' and change 'to prevent' to 'manage the risk of.'

- **PR.PS-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'protects' to 'helps protect.' Second sentence, change 'reduces' to 'can reduce.' Third sentence, change 'minimizes' to 'can reduce' and change 'lowers' to 'can lower.'
- Ecosystem Guidance: Last bullet, first sentence, insert 'prioritized risk-based' after 'formal', change 'ensuring' to 'and considers', change 'mitigate' to helps mitigate', and insert 'uses a risk-based methodology to' before 'maintain.'
- Fab Considerations: First sentence, clarify where 'there should be timely updates' from, or Delete the first sentence.
- Enterprise Considerations: First sentence, insert 'Prioritized risk-based' at the beginning of the sentence, and change 'critical' to 'important.'
- Equipment Considerations: First sentence, insert 'Prioritized risk-based' at the beginning of the sentence, change 'critical' to important', change 'ensuring' to 'helping to ensure.' In second sentence change 'requires' to 'can require.'

- **PR.PS-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘mitigate’ to ‘can help mitigate’, and change ‘enhance’ to ‘can enhance.’ Second sentence change ‘reduces’ to ‘can reduce’ and change ‘prevents’ to ‘helps manage the risk of’.
- Fab Considerations: First sentence, change ‘critical’ to ‘important.’ Second sentence, insert ‘a prioritized’ before ‘risk’, and change ‘ensures’ to ‘can help ensure.’
- Enterprise Considerations: First sentence, insert ‘prioritized risk-based’ before ‘maintenance’, Delete ‘the timely’, change ‘ensure’ to ‘helps ensure.’ Third sentence, Delete ‘and non-compliance with data protection regulations’ (legal judgement).
- Equipment Considerations: First sentence, insert ‘prioritized risk-based’ before ‘structured.’ Second sentence, change ‘timely’ to ‘risk-based’, and Delete ‘contractual obligations, vendor support agreements, and warranty term’ (these are legal agreements between parties and should not be attached to a NIST document).

- **PR.PS-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘enabling’ to ‘which may aid in the.’ Second sentence, change ‘ensures’ to ‘may assist with’, and change ‘allows’ to ‘may allow.’
- Fab Considerations: Last sentence, change ‘essential’ to ‘important.’
- Equipment Considerations: Second sentence, Delete ‘ensuring the’

- **PR.PS-05**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, change ‘strict’ to ‘appropriate role based’, change ‘minimize’ to ‘help manage’, change ‘ensure’ to ‘help ensure.’

- Ecosystem Guidance: Delete fourth bullet, or limit to particular function, as some roles and innovation may not be best suited for an enforced ‘deny all’ software policy across the ecosystem (see Enterprise Considerations text).
- Enterprise Considerations: Change ‘preventing’ to ‘attempting to prevent.’
- Equipment Considerations: Change ‘ensuring’ to ‘attempting to ensure.’

- **PR.PS-06**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘vital’ to ‘important’ and change ‘producing’ to ‘can help to produce.’ Second sentence, insert ‘may’ before ‘include’, insert ‘can’ before ‘help’, change ‘mitigate’ to ‘manage the risk of’ and insert ‘may’ before ‘reduce.’
- Fab Considerations: Describe who can and should ‘Ensure that legacy systems used in fabs are integrated with secure software updates’ and under what contract arrangements – and if not possible or desirable Delete text in section. If described in any case, change ‘Ensure to ‘Seek to ensure’, Delete ‘secure’, and insert ‘assess whether’ before ‘third-party.’
- Enterprise Considerations: Change ‘ensuring that’ to ‘ability to attempting to assess whether.’
- Equipment Considerations: Change ‘ensuring to ‘attempting to ensure.’

- **PR.IR-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Enterprise Rationale: First sentence, insert ‘attempt to’ before ‘prevent,’ change ‘by’ to ‘through.’ In second sentence, insert ‘can’ before ‘further’ and change ‘reinforces’ to ‘reinforce,’ change ‘secure’ to ‘secured,’ and change ‘ensuring’ to ‘seeking to ensure.’
- Fab Considerations: First sentence, change ‘poses’ to ‘would pose.’ In second sentence, change ‘Protecting’ to ‘Tools for protecting,’ change ‘requires’ to ‘include.’

- Enterprise Considerations: First sentence, change ‘ensure’ to ‘helps ensure.’
- Equipment Considerations: First sentence, change ‘can’ to ‘could.’

- **PR.IR-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Fab Considerations: First sentence, change ‘threats’ to ‘harm.’

- **PR.IR-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, add ‘can’ before ‘help.’ Second sentence change ‘can’ to ‘may.’
- Fab Considerations: First sentence, change ‘Ensuring’ to ‘Planning for’ and ‘key’ to ‘important.’
- Enterprise Considerations: Second sentence, change ‘to ensure that’ to ‘that may help.’
- Equipment Considerations: First sentence, change ‘critical’ to ‘important.’

- **PR.IR-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, change ‘ensures’ to ‘can ensure.’
- Fab Considerations: Change ‘Ensuring’ to ‘Maintaining’, and change ‘crucial’ to ‘important.’
- Enterprise Considerations: Second sentence, change ‘ensuring’ to ‘planning for.’

- Equipment Considerations: Change ‘ensures’ to ‘help ensure.’

5.4 Detect

- **DE.CM-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, insert ‘possible’ before ‘detection.’ Second sentence change ‘critical nature’ to ‘importance,’ change ‘is critical for the’ to ‘can assist with.’
- Fab Considerations: Fifth sentence, insert ‘try to’ before ‘detect.’
- Enterprise IT: Insert ‘Risk-based use of’ at beginning of first sentence, change ‘should’ to ‘can,’ Delete ‘all.’

- **DE.CM-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘is essential for’ to ‘may assist in.’ Second sentence, change ‘are vital to ensuring’ to ‘can help manage risks to.’
- Ecosystem Guidance: If second bullet relates to the Fab, move to Fab section, if not Delete. Forth bullet, if this relates to Fabs, move to Fabs.
- Enterprise Considerations: Change ‘protects’ to ‘can protect.’

- **DE.CM-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘is vital for’ to ‘assists in.’

- Equipment Considerations: Change ‘should be’ to ‘can be,’ and change ‘to prevent’ to ‘manage the risk of.’

- **DE.CM-09**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, insert ‘can’ before ‘proactively,’ change ‘and’ to ‘or,’ and change ‘to prevent’ to ‘which can help.’
- Ecosystem Guidance: Last bullet, Clarify who verifies what software, and how, or Delete.

- **DE.AE-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘is vital for detecting’ to ‘can help detect,’ and insert ‘help’ before ‘ensure.’
- Equipment Considerations: First sentence, Delete ‘; largely due to customer demand not driving this requirement.’

- **DE.AE-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change ‘is crucial for developing’ to ‘helps to develop.’
- Equipment Consideration: First sentence, change ‘Assessing’ to ‘Predicting potential,’ change ‘is essential’ to ‘helps manage adverse event risk.’ Second sentence change ‘critical’ to ‘important.’

- **DE.AE-07**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Fab Consideration: Change 'are' to 'can be' and insert 'when that function exists and is beneficial' after 'tools.'

- **DE.AE-08**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change 'ensures' to 'can assist with.'
- Fab Guidance: Change 'are' to 'can be.'
- Equipment Guidance: Clarify what thresholds are, or should be, configurable, and on which equipment, or Delete.

5.5 Respond

- **RS.MA-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Enterprise Considerations: Change 'Enterprise IT Managers' to 'Incident manager,' or Clarify what type of incident applies to IT managers in the section.

- **RS.MA-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, change 'is critical for determining' to 'is required to determine the potential.'
- Fab Considerations: Second sentence, change 'ensure the validity' to 'understand the history.'
- Enterprise Considerations: Insert 'to' after triaged.

- **RS.MA-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale; Change ‘critical’ to ‘specific.’

- **RS.MA-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Equipment Considerations: Second sentence, insert ‘when appropriate, vendors should provide and’ before ‘operators,’ change ‘consult,’ to ‘consider.’

- **RS.MA-05**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, insert ‘help to’ before ‘ensure.’

- **RS.AN-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, insert ‘help’ before ‘ensure.’
- Equipment Considerations: Insert ‘when implicated’, before ‘to.’

- **RS.AN-06**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change ‘critical’ to ‘may be helpful.’

- Equipment Considerations: Insert 'may' before 'require.' Generally, CISOs and legal counsel make determination about actions including data and evidence collection, sharing, and preservation during an incident, response and recovery.

- **RS.AN-07**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Insert 'when desired and appropriate can be' before 'critical.'
- Ecosystem Guidance: Insert 'When desired and appropriate' before 'Collect,' and insert 'when recommended' before 'in.'
- Equipment Considerations: Change 'requires' to 'can require.' Generally, CISOs and legal counsel make determination about actions including data and evidence collection, sharing, and preservation during an incident, response and recovery.

- **RS.AN-08**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change 'are crucial' to 'is important.'
- Equipment Considerations: Insert 'can' before 'require.'

- **RS.CO-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change 'critical to' to 'can be important.'

- **RS.CO-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'is essential' to 'can be important,' second sentence, insert "When appropriate," before 'Detailed,' and change 'should' to 'can,' change 'effectively' to 'when needed to.'
- Equipment Guidance: Change 'can' to 'may,' and insert 'attempt to' before 'provide.' Generally, CISOs and legal counsel make determination about actions including data and evidence collection, sharing, and preservation during an incident, response and recovery.

- **RS.MI-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change 'is critical' to 'can be important.'

- **RS.MI-02**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change 'is vital' to 'can be helpful.'
- Equipment Guidance: Change 'Ensure that' to 'Consider any,' change 'are' to 'which are,' insert 'or' after 'identified,' change 'reported' to 'consider reporting,' change 'necessary' to 'appropriate.' Generally, CISOs and legal counsel make determination about actions including data and evidence collection, sharing, and preservation during an incident, response and recovery.

5.6 Recover

- **RC.RP-01**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Equipment Considerations: Second sentence, change 'would' to 'may.'

- **RC.RP-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Change 'ensuring' to 'achieving,' and second sentence change 'vital' to 'important.'
- Fab Considerations: Change 'critical' to 'important.'
- Enterprise Consideration: Add 'Where appropriate,' before 'Verification.'
- Equipment Consideration: First sentence change 'should' to 'can help.' Second sentence, change 'include' to 'consider,' and change 'to ensure' to 'which can help, and change 'to prevent' to 'with the prevention of.'

- **RC.RP-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'While there may be intense pressure to restart production, establishing' to 'When restarting production, maintaining,' and change 'is essential to preventing' to 'to manage the risk of.'

- **RC.RP-05**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Fab Considerations: Change 'ensuring' to 'checking.'
- Enterprise Considerations: Second sentence, insert 'Where appropriate' before 'Critical,' change 'ensure' to 'help achieve.'
- Equipment Consideration: Insert 'Where appropriate,' before 'Verifying' and change 'ensuring' to 'checking.'

- **RC.RP-06**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: Second sentence, change 'is essential to' to 'helps assure,' change 'prevent' to 'the prevention of.'
- Fab Considerations: Change 'ensures' to 'should be based on reasonable criteria indicating.'
- Enterprise Considerations: First sentence, change 'is crucial' to 'should be based on reasonable criteria indicating' and second sentence, change 'is essential' to 'can assist with' and change 'ensuring' to 'checking.'
- Equipment Consideration: First sentence change 'involves verifying' to 'should be based on reasonable criteria indicating,' in second sentence, change 'is essential for' to 'can assist with,' and change 'ensuring that' to 'and recording,' and Delete 'recorded.'

- **RC.CO-03**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, change 'is crucial for ensuring' to 'assists with.' Second sentence, change 'prioritize' to 'consider and address,' change 'over' to 'and,' and Delete 'these.' Generally, CISOs and legal counsel make determination about actions including data and evidence collection, sharing, and preservation during an incident, response and recovery.
- Fab Considerations: First sentence, change 'is essential for' to 'can assist with.' In second sentence, insert 'can' before 'help.'
- Enterprise Considerations: First sentence, change 'focus on' to 'follow an incident response plan, including guidelines for.' In second sentence, change 'helps' to 'can help.'
- Equipment Considerations: First sentence, insert 'As and when appropriate' before 'Progress.' Second sentence, change 'helps' to 'can help.' Third

sentence, insert 'updates to' before 'equipment,' Delete 'may need updates,' insert 'may be helpful to' before 'to expedite.'

- **RC.CO-04**, subject to the Caveat.

If Caveat not implemented, we recommend:

- Ecosystem Rationale: First sentence, insert 'should follow the company incident response plan' after 'recovery' and Delete the rest of the sentence. Second sentence insert 'Attempt to' before 'Failure,' then Delete 'Failure' and insert 'about incident recovery,' and Delete the rest of the sentence.
- Fab Considerations: First sentence, Delete 'Public,' and in the second sentence, insert 'Follow corporate communications policies.' At the beginning of the sentence and Delete the rest of the sentence.
- Enterprise Considerations: First sentence, insert 'Follow corporate communications policies.' At the beginning of the sentence, Delete the rest of the sentence, and Delete the second sentence.

III. Conclusion

SIA appreciates the opportunity to share our comments and concerns with NIST regarding IR 8546. We look forward to continuing to work with NIST on the full range of cybersecurity issues relevant to the semiconductor industry and stand ready to partner with NIST in developing an appropriate "Semiconductor Manufacturing Profile". We look forward to discussing these comments with you. Thank you.