

March 3, 2021

The Honorable Joseph R. Biden Jr.  
President of the United States of America  
The White House  
1600 Pennsylvania Ave, N.W.  
Washington, DC 20500

Dear Mr. President:

On behalf of IPC and its member companies, congratulations on becoming the 46<sup>th</sup> President of the United States of America. We look forward to working with your administration to “Build Back Better.”

Headquartered in Bannockburn, Illinois, [IPC](#) is the global trade association for electronics manufacturing. IPC represents more than 3,000 member-companies in all segments of the industry including designers, printed circuit board (PCB) manufacturers, contract and assembly companies, suppliers, and original equipment manufacturers in aerospace, defense, medical, automotive, and other industrial sectors reliant on electronics. Our industry [supports](#) more than 5 million U.S. jobs and drives more than \$700 billion in U.S. GDP.

IPC works with industry to “Build Electronics Better.” Your administration aims for the U.S. to “Build Back Better.” Our shared language suggests we have a shared vision of creating skilled, well-paying jobs in a cleaner economy that renews and extends U.S. leadership in electronics manufacturing.

The last 25 years have been a turbulent period for U.S. electronics manufacturers, marked by significant contraction and financial instability. Thousands of electronics manufacturers have closed their doors, and the number of U.S. PCB manufacturers and assemblers has ebbed. Asia now produces more than 70 percent of all electronics manufactured globally. The U.S. printed circuit board industry, which once accounted for more than 30 percent of total global production, today accounts for less than 5 percent. Furthermore, all electronics and products with electronics in them are reliant upon electronics manufacturing services (EMS), but only four of the top 20 EMS companies are based in the United States. The upshot is a dramatic weakening of the nation’s industrial base.

The erosion of the domestic industrial base for electronics did not come without warnings. A slew of industry reports and government studies have tracked the decline of the industry, even as policymakers during this period prioritized the growth of the global marketplace over the strength and resiliency of the domestic industrial base. Segments of the electronics industry were viewed as expendable so long as U.S. companies led the innovation and owned the intellectual property.

That view has turned out to be short-sighted as geopolitical developments and the COVID-19 pandemic have reinforced the need for secure and resilient supply chains. At the outset of the pandemic, U.S. manufacturers could not sufficiently ramp up production of badly needed emergency medical equipment, including ventilators, due to a shortage of PCBs. In other cases, PCBs were manufactured domestically, but assembled in Asia, only to be shipped back to customers in the United States. Invoking

the Defense Production Act was not without complications given the U.S. Government's lack of visibility into the electronics supply chain.

The electronics manufacturing industry is at the heart of the modern economy. It is a large, vertical industry in its own right, but it is also a horizontal industry that cuts across every sector of the economy. Electronics are critical in the performance of automobiles, aircraft, medical equipment, retail, industrial operations, IT and telecom, consumer technologies, and more. And yet, government initiatives often focus on bolstering competitiveness in certain components, such as semiconductors, or verticals, such as autos, without appreciating that electronics manufacturing is an essential driver for innovation and growth across the economy.

IPC applauds the ambitious aims of your "Made in All of America" plan, which is the most expansive and detailed manufacturing strategy ever produced by a presidential campaign. Your call for a resurgence in U.S. manufacturing signals a federal commitment that is sorely needed and long overdue. The U.S. Government needs to move beyond rhetorical support and provide meaningful and tangible programs that collectively constitute a coordinated, bipartisan vision for the future of manufacturing.

We also commend you for your Executive Order on America's Supply Chains, which requests review of industrial supply chains critical to U.S. economic growth, innovation, and security. Electronics manufacturing is one such supply chain, and we have more to say on that below. As your administration seeks to spur U.S. economic recovery, growth, and long-term competitiveness, please consider our industry an enthusiastic partner in your efforts to engage industry and build support in Washington and across the country. In this vein, we would like to encourage you and your administration to pursue the following goals.

### **Strengthen the Defense Electronics Industrial Base**

In 2000, there were more than 1,500 PCB companies in North America. Today, there are fewer than 199, and the number is expected to fall further. Electronics assembly has experienced a similar trajectory. Among other negative impacts, the loss of U.S. electronics manufacturing is detrimental to military capabilities and readiness, creating unnecessary risks to U.S. national security.

According to the [FY 2020 Industrial Capabilities Report to Congress](#), prepared by OSD A&S Industrial Policy, "the number of small and medium [PCB] manufacturers supplying the DoD continued to diminish in 2020, falling by 16.3 percent and 25.6 percent in the last five years, respectively. The DoD is at risk of losing capability due to the mergers and acquisitions of small domestic [PCB] manufacturing companies that are purchased by larger companies. The small companies' niche products and services necessary for national defense systems may not provide sufficient revenue or opportunity for growth for their new, larger owners. This growth will further edge out the small [PCB] manufacturers who provide essential products and services for national defense systems."

The report also identified a four-part program of a defense industrial strategy that IPC supports.

1. "Reshore our defense industrial base and supply chains to the United States and to allies, starting with microelectronics, and restore our shipbuilding base."
2. "Build a modern manufacturing and engineering workforce and research and development (R&D) base."
3. "Continue to modernize the defense acquisition process to fit 21st century realities."

4. “Find new ways to partner private sector innovation with public sector resources and demand.”

Furthermore, IPC encourages federal support of “trusted supplier” programs in domestic and international supply chains for critical sectors of national security, as there is a need for greater supply chain visibility and transparency. Additionally, IPC urges your administration to consider establishing metrics for defense electronics industrial base resiliency, with capacity, capabilities, security, and geographic diversity as key factors.

IPC specifically recommends the following:

- **Implement Section 841 of the FY21 National Defense Authorization Act.** Section 841 of the recently enacted FY21 National Defense Authorization Act (NDAA) included provisions that will bolster the security and resiliency of the U.S. defense electronics supply chain. IPC encourages your administration to implement Section 841 of the NDAA, which includes signing an agreement with a Federally Funded Research and Development Center (FFRDC) to conduct a study on commercial-off-the-shelf electronics and expanded implementation of Section 224 of the FY20 NDAA. Section 224 directs the Secretary of Defense to apply the trusted supplier requirements to the acquisition of covered PCBs and printed circuit board assemblies (PCBAs).
- **Leverage IPC-1791 as part of Section 224 Implementation.** As highlighted in the FY 2020 Industrial Capabilities report to Congress, IPC worked with the Department of Defense (DoD) and created a certification program called IPC-1791 – Trusted Electronic Designer, Fabricator and Assembler Requirements. IPC-1791 outlines requirements, policies, and procedures for printed board design, fabricating and assembly organizations and companies to become trusted sources for markets requiring high levels of confidence in the integrity of delivered products, such as military and aerospace. This standard is a valuable tool in certifying electronics manufacturers as a trusted source, and we encourage your administration to leverage this standard in implementation of Section 224 to ensure trusted sourcing for critical military and national security applications.
- **Utilize the Newly Established Defense Electronics Consortium.** In 2020, IPC established an independent subsidiary, the [U.S. Partnership for Assured Electronics \(USPAE\)](#), to support industry partnerships with the U.S. Government that will help ensure access to resilient and trusted electronics supply chains. Last month, the DoD [awarded](#) USPAE a contract to establish and manage a Defense Electronics Consortium (DEC) with a mission of strengthening the economic and force posture of the U.S. defense electronics industrial base.

The new consortium is designed to address the defense risks created by the contraction of the U.S. electronics manufacturing sector over the last 25 years. The DEC provides a vehicle for the DoD to contract with trusted partners in industry and academia, including small and medium-sized innovators that typically do not do business with the DoD. Through a variety of programs such as conferences, networking events, white papers, and collaboration projects, the DEC will tackle numerous defense electronics challenges and innovations. We encourage your administration to use the DEC to strengthen and address the critical needs of the defense electronics industrial base.

- **Address Concerns with the Cybersecurity Maturity Model Certification (CMMC).** The CMMC is an ambitious, ongoing DoD effort to better protect the cyber security of the defense industrial

base. The electronics industry supports this initiative, although the new cyber security standards are generating significant costs and uncertainties for electronics manufacturers. In a recent industry survey, 62 percent of respondents said the CMMC is likely to shrink the defense manufacturing base further, due to these added costs. IPC urges your administration to work with the electronics manufacturing industry to ensure that CMMC does not erode the defense electronics industrial base in the process of making it more secure.

## **Develop and Implement a Robust Manufacturing Strategy**

Electronics manufacturing is on the cusp of tremendous change, driven by technological advancements in artificial intelligence, automation, and machine-to-machine communications. The factories of the future will be the basis for a manufacturing resurgence in the United States, creating new opportunities for a skilled workforce. The U.S. should develop a strategy to support the industry's migration to factories of the future. U.S. manufacturing competitiveness over the next 25 years and beyond depends upon U.S. companies operating more efficiently and intelligently to produce the increasingly sophisticated electronics-based systems of the future.

- **Establish an Interagency Manufacturing Policy Lead.** The U.S. government has individual programs to support manufacturers but there is very little coordination among agencies, nor is there a compelling national, interagency strategy that identifies clear goals and initiatives to meet those goals. If manufacturing is a top priority for the United States, then an individual who reports to the president should be given the responsibility for developing and implementing a federal strategy, and that individual should possess budgetary authority.
- **Invest in Factories of the Future.** Electronics manufacturing is a thin-margin business, making it difficult to upgrade costly manufacturing equipment. And yet, such upgrades will be necessary to perform the sophisticated work expected of U.S. manufacturers by their customers, including the DoD. These equipment upgrades are also imperative to achieving the capabilities, quality standards and cost-efficiency necessary to compete in the global economy. IPC encourages you to consider robust investments in Defense Production Act Title III funds to support industry modernization. Likewise, the Department of Commerce should explore funding mechanisms to support capital equipment upgrades through federal subsidies and no-interest loans. Commerce Department authorities have never been fully leveraged to support an ambitious U.S. manufacturing strategy.

We are also interested in plans to implement new credit facilities and other funding sources and tax incentives, including an extension of the bonus depreciation tax credit expiring in 2023, to help U.S. manufacturers revitalize manufacturing facilities, an effort which aligns with IPC's [Factory of the Future initiative](#).

- **Invest in R&D for the Entire Electronics Ecosystem.** Industry funds for research and development (R&D) are also constrained by the industry's thin profit margins. Companies in Asia and Europe—with the support of national governments—are undertaking research that will enable them to lead the world in PCB fabrication and assembly. Meanwhile, in the United States, the focus is almost singularly on one or two segments of the electronics industry to the exclusion of others. For example, the United States is rightly investing billions of dollars in microelectronics and semiconductors, but those sectors and others would also benefit from sizable investments in PCB fabrication and assembly. The DoD should undertake a specific

initiative to study and pursue research on the areas of PCB fabrication and assembly that are necessary to support advancements in microelectronics.

The Tax Cuts and Jobs Act (TCJA) is changing the treatment of R&D tax costs. Currently, companies can fully deduct R&D costs from taxable income in the year that those costs occur, but starting in 2022, companies will be required to amortize their R&D costs over five years. IPC supports maintaining full expensing to avoid discouraging investment and economic growth.

Furthermore, IPC supports the current corporate income tax rate as it levels the playing field with other countries and provides greater opportunities for companies to invest in R&D and in their workforce. We urge your administration to support maintaining the current rate.

- **Bring Back the U.S. Supply Chain.** A robust manufacturing strategy requires a more localized ecosystem for raw materials, components, and parts. The United States has allowed much of the supply chain to go offshore, making U.S. manufacturing less nimble. As your administration undertakes its 100-day review of critical U.S. supply chains, IPC urges it to recognize that the electronics supply chain is an ecosystem, and all segments of the industry must be strong for the entire ecosystem to thrive. Praiseworthy investments in one segment, such as semiconductor manufacturing, also require investments in other segments of the industry.

IPC also encourages the administration to explore development of and access to rare earth minerals, as well as new initiatives to reshore production of raw materials critical to electronics manufacturing. The most sophisticated manufacturing capabilities cannot be leveraged without the parts and materials necessary to their operations.

- **Support Industry-Driven Standards.** Industry is developing standards to accelerate the migration to factories of the future, and industry should continue to drive this process. The U.S. Government can help by encouraging U.S. participation in global standards-setting as other countries do.

According to the [U.S.-China Economic and Security Review Commission's 2020 Report to Congress](#): "The Chinese government views technical standards as a policy tool to advance its economic and geopolitical interests. It has systematically tried to expand its influence in international standards-setting organizations by installing Chinese nationals in key leadership and functionary positions and pushing standards backed by its industrial policies." In contrast, the laissez-faire approach historically practiced by the U.S. government unwisely relies on the market dominance of U.S. companies.

IPC supports the Commission's idea that a Committee on Technical Standards be created to coordinate U.S. government policy and priorities on international standards, with support from Congress. The committee would consist of high-level government officials from executive departments, agencies, and other government stakeholders with relevant jurisdiction to ensure common purpose and coordination within the executive branch on international standards.

### **Expand and Upskill the Workforce**

One of the most difficult challenges facing today's electronics industry is a chronic shortage of adequately skilled workers. More than two-thirds of IPC's U.S. members report that an inability to find

and retain skilled workers is limiting their growth and competitiveness. Part of this challenge is due to the rapid rate at which technology evolves.

IPC is taking significant strides to address this challenge through its workforce development programs, a growing series of online, job-based training courses that are designed, built, and tested in conjunction with the electronics industry. In addition, the industry has expanded its recruitment to traditionally under-employed communities, offering careers with strong earning and learning potential. Diversity is a key issue in our sector, as it is in others; many electronic manufacturing facilities boast a higher percentage of women than men among their workers, and the workforce is highly diverse ethnically, with immigrant communities disproportionately represented.

This diverse workforce is taking the reins from an aging workforce that is fast retiring. The pressure is on our industry to tap the institutional and technical knowledge of the aging workforce to train the next generation of workers, even as they also learn the skills required for the factories of the future.

- **Support Industry-Recognized Credentials.** IPC applauds your pledge to invest \$50 billion in high-quality workforce training. IPC's credentialing programs are built around industry-driven standards, ensuring their real-world relevance. In 2020, IPC awarded 50,000 certifications in the United States, and IPC is growing its training and credentialing programs for the industry through in-person and online platforms.

To align job training with job growth and to spur broader uptake of industry-recognized credentials, we urge your administration to encourage this type of training through:

1. Business tax credits for expenditures on training and certification offered by industry associations.
  2. Tax incentives for training and certification at the individual level, focused on post-secondary education expenditures.
  3. Grants for industry-based organizations to help cover costs of industry training program development and upskilling workers who may be displaced due to automation.
  4. Partnering with trade associations to identify critical training and certification programs in key industries and ensure that federal contracting requirements contain language supporting these programs, which would increase workforce quality and reliability while ensuring workers are ready for the technological challenges of tomorrow.
  5. Federal funding for trade associations to develop "next-gen" or "future-facing" training programs to keep U.S. industries competitive.
- **Reduce Burden for Apprenticeship Program Implementation.** IPC agrees with workforce experts that well-crafted apprenticeship programs offer individuals, especially those not planning to pursue higher education, an effective means of gaining the skills and mentoring necessary to thrive in certain fields, including electronics. However, the United States has failed to cultivate an environment in which apprenticeship programs flourish, except in a few industries. The current structure of the existing apprenticeship program in the United States is onerous for employers, which is likely the reason that apprenticeships have not caught on as they have in European countries.

IPC believes that the private sector is best suited to identify the occupational skills that workers need to succeed, and we encourage your administration to work with industry to find less

burdensome ways for industry to implement apprenticeship programs. H.R. 447 - National Apprenticeship Act of 2021, recently passed by the House of Representatives, is a step in the right direction, but could use refinement as it goes through the legislative process.

Meanwhile, our [IPC Education Foundation \(IPCEF\)](#) is taking action to introduce students to the electronics manufacturing industry and help them prepare for excellent careers in the industry. IPCEF and its members around the country have been partnering with primary and secondary schools to help students develop their skills, knowledge, and technical capabilities. IPCEF also has established more than 30 student chapters at universities and community colleges to serve as bridges between local IPC member companies and students.

In this vein, IPC was pleased to learn of your plans for promoting educational attainment, especially for historically underrepresented groups, and to establish grants for participation in credentialing and job training programs. We encourage your administration to work with industry and invest in new 21st century workforce opportunities, online learning platforms, and apprenticeship programs.

### **Rebuild Trade Relationships**

IPC supports a fair, open, and rules-based international trading system. We are concerned about the negative impacts of ongoing tariff battles among the world's leading trade powers, which disrupt the industry's highly complex supply chains and inject uncertainty into already narrow profit margins. However, we do respect the right of countries to pursue remedies to trade disputes, and we encourage those remedies to be pursued through established bilateral and multilateral mechanisms, including the World Trade Organization.

- **Revive Multilateral Trade Pacts.** IPC encourages a more strategic approach with China, underpinned by clear, values-based goals and strong partnerships with the world's other leading economies. We also are hopeful that the United States will rebuild trade relationships with its allies, including a possible revival of multilateral trade pacts with Europe and Asia. These relationships are critical to building trusted, resilient global supply chains.
- **Endorse and Implement a North American Manufacturing Initiative.** IPC supported the U.S.-Mexico-Canada Agreement (USMCA), and we continue to call for a complementary [North American Manufacturing Initiative](#) to focus on the pandemic response and the region's manufacturing competitiveness. In an era of increasingly localized supply chains, the United States should look to Mexico and Canada as economic partners in a bold endeavor to make North America a global hub for advanced manufacturing. The resurgence of U.S. manufacturing is more closely tied to the industrial capabilities in Mexico and Canada than U.S. policymakers often recognize, and yet relations among the three countries have frayed. On the heels of USMCA, the United States should lead the region in creating the ecosystem necessary to support high volume manufacturing.
- **Modernize World Trade Organization's (WTO) Agreement on Government Procurement (GPA).** IPC supports the strengthening and modernization of the World Trade Organization's (WTO) Agreement on Government Procurement (GPA). A 2016 [report](#) from the Government Accountability Office found that the GPA and existing free trade agreements provide more market access for U.S. industries than the United States has been required to provide in exchange. The 61 foreign countries from which U.S. businesses can receive procurement

contracts represent a foreign procurement market worth [\\$4 to \\$6.2 trillion](#)—compared to the U.S. federal procurement market of approximately \$600 billion per year. IPC supports the leveraging of the GPA to promote partnership among allies and strategic trade partners to bolster resilient and connected industrial bases in the U.S. and allied countries.

- **Reevaluate the Department of Commerce interim final rule “Securing the Information and Communications Technology and Services (ICTS) Supply Chain” (86 FR 4909).** The interim final rule (IFR) implementing Executive Order 13873 allows the Secretary of Commerce to intervene in substantially all ICTS transactions between U.S. companies and foreign parties that the Secretary determines “pose an undue risk to the U.S.’s critical infrastructure, digital economy, national security, or the safety of U.S. persons.” IPC is supportive of the federal government in seeking to achieve our common goal of safeguarding national security while strengthening the nation’s economy and technological leadership. We also share a commitment to ensuring that ICTS transactions do not pose undue risks to national security. However, we believe that the IFR in its current form will not provide the level of security intended and may, in fact, undercut U.S. competitiveness abroad. We urge your administration to conduct a review pursuant to the Regulatory Freeze Pending Review memorandum issued by White House chief of staff Ronald A. Klain on January 20, 2021 to reevaluate the policy articulated in the underlying EO 13873, and develop a coordinated strategy for managing legitimate national security risks related to ICTS.

### **Protect Human Health and the Environment through Practical Policies and Regulations**

U.S. electronics manufacturers—the vast majority being small- and medium-sized businesses—take seriously the health of their workers, their local communities, and the diverse communities that make up the supply chain. Driven by a desire to be good neighbors, to protect human health and the environment, and to achieve the quality standards demanded by their customers, electronics manufacturers have revolutionized their production processes. In fact, the advancements in electronics manufacturing have far outpaced regulatory change, making many federal rules obsolete, unnecessarily burdensome, or inordinately costly.

- **Structure Regulations to Build on Industry Best Practices.** IPC has worked closely with the Environmental Protection Agency (EPA) for many years to inform them about the chemicals and processes essential to electronics manufacturing. We have secured more effective chemical data reporting requirements, resulting in part from on-site engagement between EPA and industry experts at PCB manufacturing facilities. Additionally, we have welcomed more practical approaches to collecting fees to support chemical risk evaluations, once again resulting from industry interaction with policymakers.

Working together creates opportunities for stronger public health protections. We encourage your administration to explore how policies, best practices, standards, or regulations can be better structured to build on existing industry practices and incentivize public-private partnerships.

- **Work with Industry to Ensure Policies and Regulations are Based on Existing Data and Information.** Electronics enable innovation generally, and that includes advancements in greener energy and transportation. Electronics enable the U.S. to create well-paid, skilled jobs in multiple industrial sectors including the clean energy sector. Electronics enable communication of data throughout the supply chain that improves our understanding of life cycle environmental



impacts and helps us to minimize these impacts through a more circular economy. There is interesting alignment between many technological, economic, and environmental goals. U.S. strategies to address climate change and achieve a circular economy should seek to leverage electronics to make progress to achieve these shared goals.

We urge your administration to work with our industry to use data and information to ensure that new policies and regulatory proposals are practical, cost-effective, and prioritized according to actual levels of environmental and human health risk. We look forward to working constructively with your administration on this front and sharing our members' considerable expertise.

### **Partnering with Government to Build Back Better**

Mr. President, IPC looks forward to the opportunity to work with you, your administration, and Members of Congress to help our industry "Build Electronics Better" and help America "Build Back Better." We will support initiatives that enhance the competitiveness and resiliency of electronics manufacturers, expand and upskill our workforce, and protect human health and the environment.

Please let us know if we can be of assistance to you. We look forward to engaging with your team.

Our VP of Global Government Relations is Chris Mitchell, who can be reached on 202-661-8097 or [ChrisMitchell@IPC.org](mailto:ChrisMitchell@IPC.org).

Sincerely,

A handwritten signature in black ink, appearing to read "John Mitchell". The signature is fluid and cursive, with a large initial "J" and "M".

John Mitchell  
President and CEO