SEMICONDUCTOR INDUSTRY ASSOCIATION

FROM MICROCHIPS TO MEDICAL DEVICES

SEMICONDUCTORS AS AN ESSENTIAL INDUSTRY DURING THE COVID-19 PANDEMIC

FALL 2020

The Semiconductor Supply Chain is Essential to Pandemic Response & Recovery

The COVID-19 pandemic highlighted the importance of information and communication technologies (ICT) in supporting essential activities in a crisis, and the role of an ever-widening range of digitized services, from commerce to education to healthcare, in building a resilient society. It also exposed unique challenges facing the ICT supply chain, however, in which operating restrictions and regulatory barriers in one region create disruptions and shortages throughout the global supply chain. As governments around the world continue to adjust strategies to recover from and respond to the current pandemic, as well as formulate policies to respond to future global public health crises, it is critical policymakers maintain open and connected supply chains of essential goods – including semiconductors – as part of their crisis-response strategies. By recognizing and specifying ICT components like semiconductors as "essential infrastructure," policymakers can avoid shortages and disruptions of ICT components that go into other essential goods needed for medical care, food distribution, remote work, and infrastructure.

This paper outlines the many ways – both obvious and non-obvious – that semiconductors are supporting governments' responses to the COVID-19 pandemic; lessons learned from the pandemic's impact on the semiconductor supply chain; and some immediate steps policymakers can take to maintain production and shipments of essential ICT goods in preparation for future public health crises.

I. Semiconductors as "Essential" in Public Health Crises

Semiconductors are the "brains" of electronic devices crucial to pandemic response and recovery of the global economy. They provide user input, display, wireless connectivity, processing, storage, power management, and other essential functions to a wide array of essential products, life-saving equipment and critical infrastructure. This includes healthcare and medical devices, telecommunications, energy, finance, transportation, agriculture, manufacturing, aerospace and defense. Semiconductors also underpin the IT systems that make remote work possible and provide access to essential services across every domain, including medicine, finance, education, government, food distribution, and more.

Throughout this global pandemic, semiconductor-rich devices have become increasingly prevalent in developing solutions for numerous problems in the economic and public health sphere. The ability of semiconductors to drive performance in these critical sectors is tied to "Moore's Law," the observation that the capabilities of semiconductor chips will double roughly every two years, while the price goes down. As of 2019, the most advanced microprocessors contain nearly 40 billion transistors.[1] To put this into perspective, Dan Hutcheson of VLSI Research has underscored this feat by noting the capability *"needed to make today's chips are a tenth or smaller than the size of the coronavirus*."

The following section highlights just a handful of ways in which the semiconductor industry is essential to life-saving equipment and critical infrastructure needed to battle the global pandemic.

A. Medical Devices

Semiconductors are an integral component of many medical devices used in hospitals and doctors' offices today, including many devices that are critical to treating COVID-19 patients, as displayed in the chart below. Any medical device that can be plugged into an electric socket or has batteries depends on semicondutors to operate. Semiconductors provide functions such as operations control, data processing and storage, input and output management, sensing, wireless connectivity and power management. By enabling functions previously performed by non-semiconductor devices, semiconductors have often lowered costs and improved performance at the same time. This has proved critical to the COVID-19 response and improving health care in general. Two specific examples of semiconductors in medical devices are below:

1. Portable Ultrasound Devices -- In a hospital setting, the first line of detection for COVID-19 is identifying recognizable symptoms of the virus such as lung lesions. Quickly identifying this trait of the severe acute pneumonia associated with the virus allows doctors to treat afflicted patients without having to wait for tests on viral infection. This rapid response is possible with handheld ultrasound devices and temperature screening. In mid-February,

[1] IC Insights, Inc. – the McClean Report 2020, Page 14

Chinese physicians detailed the importance of ultrasound imaging of the extent of damage to a patient's lungs and other internal organs in the rapid "diagnosis, treatment and efficacy evaluation of severe acute pneumonia."[2] These portable ultrasound devices have transitioned from utilizing piezoelectric crystals to semiconductor chips, greatly reducing the cost and improving performance.[3] Now, due to the utilization of semiconductors, hospitals have access to vastly more affordable and efficient technologies to assess internal injuries in patients.

2. Ventilators -- Ventilators are utilized to treat patients with severe lung damage by assisting breathing and are controlled by semiconductor chips. The ventilator system uses semiconductor sensors and processors to monitor vital signals, determine the rate, volume, and amount of oxygen per breath, and accurately adjust oxygen levels according to the needs of the patient. These signals are read and interpreted by the machine's semiconductor processers, which control the speed of the motor that translates to mechanized breathing to support a patient.[4]

Exhibit 1: Examples of Medical Devices that Rely on Semiconductor Technology

Medical Device End-Market for Semiconductors

In 2019, the medical end use market accounted for $5.6 billion in total semiconductor sales, roughly 11% of the global industrial semiconductor market, and 1.3% of the total semiconductor market. The medical semiconductor segment is growing faster than the overall industrial semiconductor market, driven by long-term trends such as the aging population, the rise of telehealth, the move to portable and wearable devices, and the rise of artificial intelligence. (Source: OMDIA)

[2] https://spectrum.ieee.org/the-human-os/biomedical/imaging/portable-ultrasound-proves-potent-weapon-fight-against-covid19
[3] https://becominghuman.ai/ultrasound-on-a-chip-supercharged-with-ai-the-most-disruptive-technology-in-radiology-b2684b0421aa
[4] https://www.onsemi.com/blog/innovation-forum/on-semiconductor-ventilators

B. Public Testing and Tracing

Accurate and timely testing for COVID-19 is a vital part of assessing risk and determining treatment needs for the public, and semiconductor enabled medical instruments show promise for advancing testing efforts. Testing for COVID-19 has several different fronts, including analysis of biological information and identifying symptoms of severe cases. Reducing the rate of transmission is key for reopening strategies, and there are a variety of methods to test and monitor populations without significant invasions of privacy. Temperature screening is highly beneficial for any workplace hoping to reopen their spaces to larger amounts of employees. A quick temperature scan upon entry can determine if someone is feverish and guide leaders in preventing transmission of any sickness. This can be done through thermal cameras or non-contact forehead infrared thermometers and has been part of several re-opening efforts.[5] One semiconductor company has been hired to manufacture chips for a temperature monitoring skin-patch that synchronizes with mobile applications to help assess early COVID-19 signs. This patch is designed to be compatible with digital tracing efforts that are being spearheaded by companies like Google and Apple.[6]

C. Accelerating Vaccine Development

The pandemic has rapidly generated data researchers can use to develop a COVID-19 vaccine, but the sheer volume of this data makes it difficult for scientists to find the specific data they need. During the 2003 SARS outbreak, only 7% of scientific articles addressing epidemiological research into the disease were published during the height of the epidemic.[7] Today, cutting-edge technologies are streamlining the research process for present-day developers. For example, an engineer from a U.S. semiconductor company has develop a platform called Deep Search, which uses natural language processing to mark-up research papers for more accurate discovery by search engines. So far, this platform has 460 active users and nearly 46,000 processed scientific articles.[8]

In addition to individual technologists, cooperative research organizations maximize development capacity by leveraging economies of scale. The COVID-19 High-Performance Computing (HPC) Consortium is a cooperative network designed to join the computing capacities and data collection of groups including industry, academia, federal agencies, and international government agencies.[9] Early in the pandemic, a semiconductor member of this consortium deployed its AI technology to help universities, companies, and clinics lower the time required to model and run different potential treatments from weeks to minutes. This significantly saved time and resources needed to develop hypothetical solutions in wetlabs. With so many institutions using its technology, the company also created a mutually reenforcing network effect with the data generated by each client lab.[10]

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[5] http://www.mhtc.org/wp-content/uploads/2020/05/MHTC-COVID-19-Briefing-5.5.20-MCK-MEDIA.pdf
[6] https://www.vlsiresearch.com/wevision/semiconductor-solutions-to-the-coronavirus
[7] https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1000272
[8] https://spectrum.ieee.org/news-from-around-ieee/the-institute/ieee-member-news/ibms-new-ai-tool-parses-a-tidal-wave-of-coronavirus-research
[9] https://covid19-hpc-consortium.org/who-we-are
[10] https://fortune.com/2020/07/07/covid-19-coronavirus-vaccine-ibm-watson/

D. Remote Healthcare and Vulnerable Populations

A critical aspect of safely reopening economic sectors is protecting vulnerable populations such as the elderly, diabetic, and hearing impaired. Managing contact with these populations is the first step, but real-time monitoring systems allow physicians access to information regarding the daily status of their patients both in house and remotely. Semiconductors play an important role in this.

Remote healthcare, or telemedicine, is necessary and highly beneficial during the COVID-19 crisis, and semiconductors are vital to IT infrastructure and to wearable medical technology for patient monitoring. This technology is especially helpful to the elderly population and patients with underlying health conditions. Prior to the coronavirus outbreak, issues already existed in treating immobile patients in remote locations such as nursing homes.

People with diabetes are also at higher risk from the coronavirus. This risk can be mitigated with new technologies that make use of advanced sensors such as continuous glucose monitoring (CGM) and wearable insulin pumps.[11] CGM works by placing a sensor on your skin which transmits information to a device that will alert you if your blood sugar fluctuates greatly. Similarly, insulin pumps will manage your glucose levels by releasing small doses of insulin according to your programmed schedule.[12] For diabetic COVID-19 patients, access to such technologies could prevent life-endangering complications.

Semiconductors also improve COVID-care for underserved and vulnerable populations in less well-known ways. Hearing impaired patients are at a distinct disadvantage during the COVID-19 crisis, as medical masks degrade speech quality, making it difficult for hearing impaired patients to understand the advice given by health care professionals. A study in Hearing Review concluded "many of the people who have fallen victim to the virus have hearing loss, are unaccompanied by family members, are frail, have multiple chronic conditions and are likely without hearing assistance."[13] Hearing aids use semiconductors to filter, process, and amplify sound, all in a small package that fits discretely on or in the ear. To help patients acquire hearing aids, several hearing care firms have launched platforms to allow remote patient care. Other telemedicine platforms have seen more than 700% increase in users in areas highly affected by the virus.[14]

E. Virtual Everything

Semiconductors underpin the IT infrastructure necessary for maintaining communication networks between colleagues and classmates outside of a traditional office and school setting. Firms that can conduct business remotely have quickly reacted to the pandemic by shifting resources to digital communication, and the trend may be here to stay. With network usage

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[11] https://diabetes.diabetesjournals.org/content/68/Supplement_1/938-P

[12] https://www.diabetes.org/diabetes/device-technology

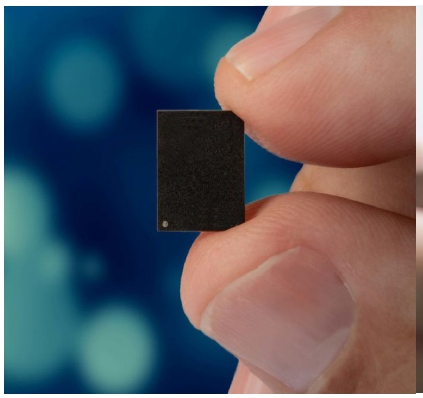
[13] Alexander Goldin, PhD, Barbara Weinstein, PhD, and Nimrod Shiman; "How do Medical Masks Degrade Speech Reception?", The Hearing Review, April 1, 2020.

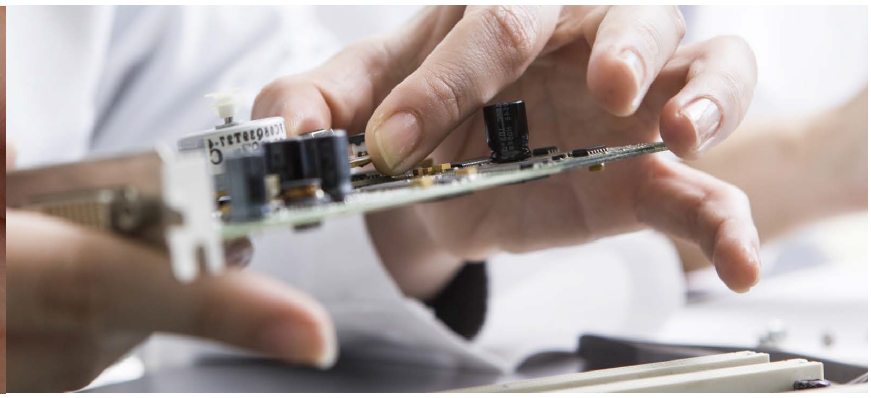
[14] https://www.forbes.com/sites/leahrosenbaum/2020/03/26/the-coronavirus-has-created-a-surge-of-telemedicine-demand-goodrx-now-lets-consumers-compare-services/#5ee364e347f5

growing between 30 to 50 percent for top providers, communication infrastructure has strained to support stable connection and enable improved remote connectivity at sufficient bandwidths to support real-time video.[15] Access to the internet varies between people of different income and education levels, but most adults today can utilize the internet through various methods. Households that lack access to broadband connections at home are dependent on smartphone usage and mobile data plans.[16]

Wifi 6 is the newest generation of wireless local area network (WLAN) technology, and promises a revolutionary improvement to connectivity, latency, and data transmission in wireless connectivity. Implementing new Wifi 6 semiconductor chips will improve noise immunity and enable powerful multi-gigabit connectivity that is critical for daily use in schools, hospitals, law enforcement, and first responders. The Federal Communications Commission ("FCC") voted in April 2020 to open 1200MHz of spectrum for 6GHz bands, tripling the available bandwidth for devices to access the internet.[17] This momentous decision by the FCC paves the way for technologies such as Wifi 6 and 5G to move into a previously untouched spectrum. Rapid adoption of advanced telecommunications networks will further enhance the ability of people to work from home. Strong wireless connections allow many industries to diversify and expand their reach. Telecommunication platforms have seen unprecedented growth in traffic for the utility it provides many organizations for conducting business remotely.

Delivery and transportation services are heavily dependent upon rapid communication capabilities. Some examples are the large fleets of truck drivers that operate long shifts and require coordinated support from fleet managers. Both pick-up and delivery options for store items, groceries, and restaurant food have been popular because mobile phone apps have made the transactions easy and safe. Grocery delivery companies utilize the ubiquity of smartphones to connect shoppers and customers, and these services have seen massive increase in application downloads and order quantities.[18]





[15] https://www.forbes.com/sites/markbeech/2020/03/25/covid-19-pushes-up-internet-use-70-streaming-more-than-12-first-figures-reveal/#49f336aa3104

[16] https://www.pewresearch.org/internet/fact-sheet/internet-broadband/

[17] https://www.theverge.com/2020/4/23/21231623/6ghz-wifi-6e-explained-speed-availability-fcc-approval

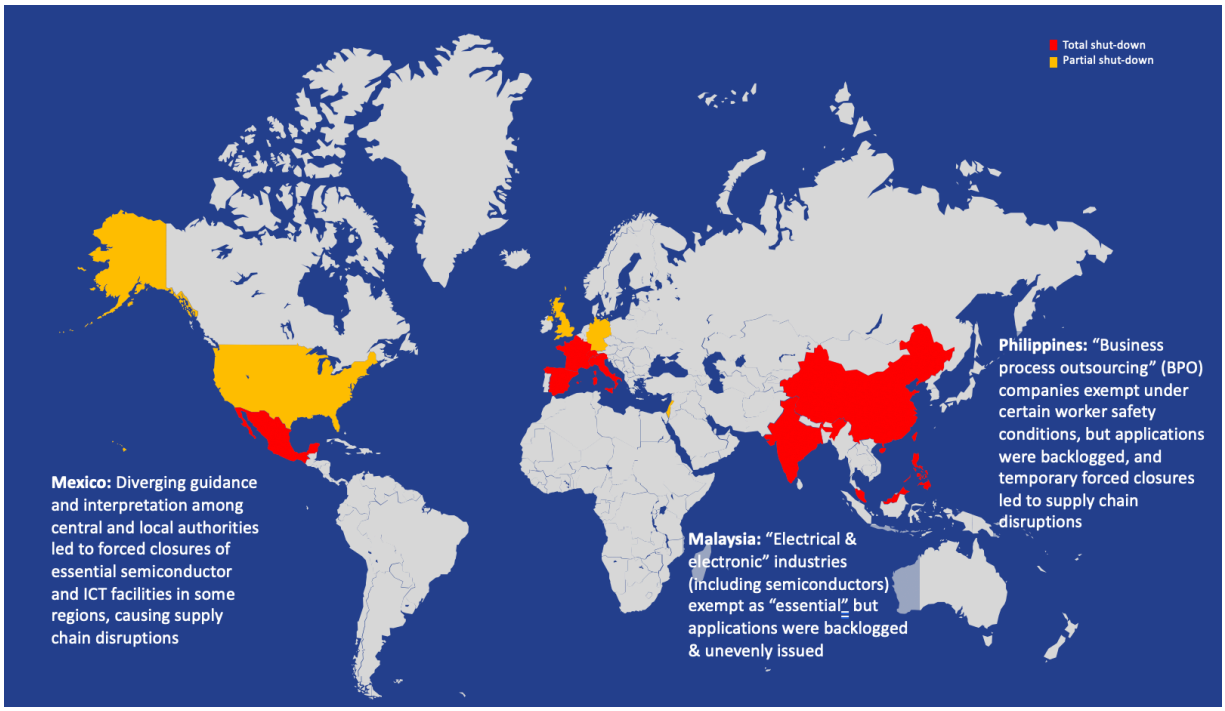
[18] https://www.uschamber.com/co/good-company/launch-pad/coronavirus-pandemic-food-delivery-businesses

II. The Importance of Prioritizing Semiconductor Supply Chain Operations

As the COVID-19 outbreak evolved into a global pandemic, government officials around the world imposed border closures, business-shutdowns, shelter-in-place orders, and other restrictions on business and social activity to slow the spread of the virus. The vast majority of governments with a strong semiconductor footprint recognized the semiconductor industry, its supply chain, and workers as "essential" for the purpose of the public health crisis, allowing companies to stay operational while practicing strict minmal staffing, social distancing and sanitization measures.

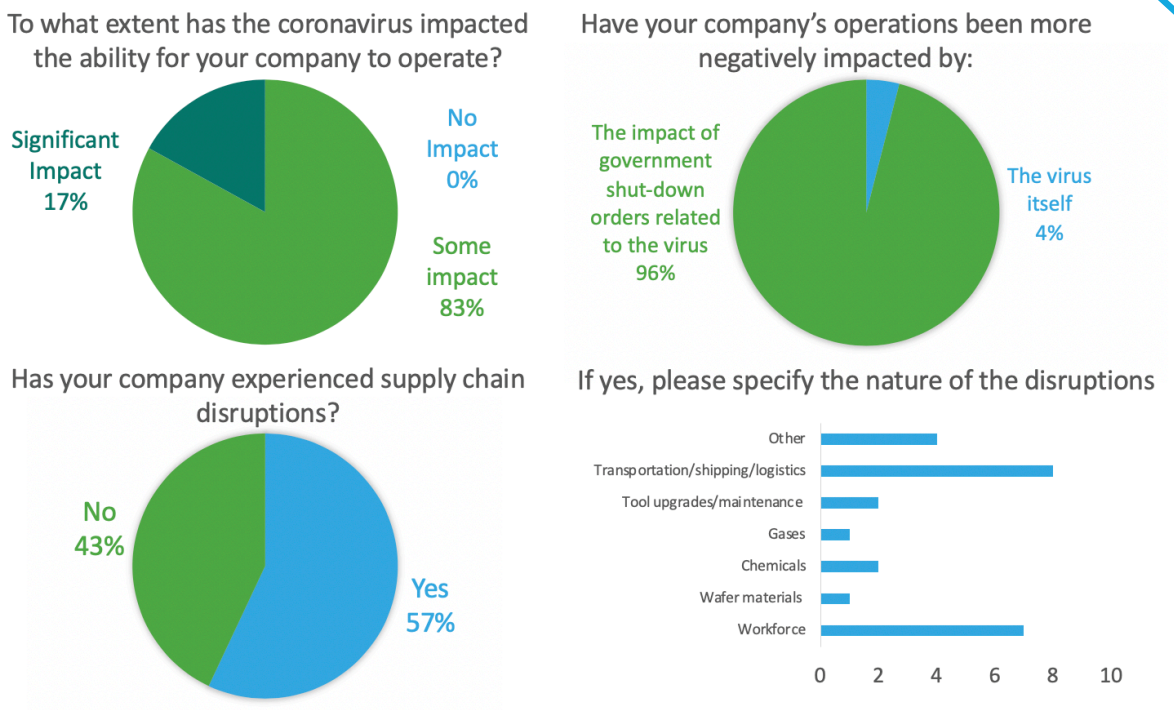
However, some countries did not explicity recognize the semiconductor industry as essential, which led to closures of semiconductor operations in some regions. Even among countries that issued national guidance exempting the ICT industry as essential, diverging guidance and interpretation between federal and local jurisdictions, as well as back-logged applications for exemptions, created an uncertain and uneven operating environment for semiconductor companies. Because the semiconductor supply chain is highly integrated and globalized, semiconductor shortages created by operating restrictions in one region can lead to bottlenecks in other regions.

Exhibit 2: COVID-19 Shut-Downs Impacted Semiconductor Supply Chains



A Semiconductor Industry Association (SIA) member survey conducted in March 2020 revealed 83% of surveyed firms faced disruptions in operations, research and development as a result of the coronavirus, primarily due to government ordered closures of facilities.

Exhibit 3: SIA Member Survey Impact of COVID-19 (March 2020)



Furthermore, many semiconductor devices used in medical equipment are designed for specific applications. They are not commodities and cannot be easily substituted or replaced in the event of a supply shortage. Thus, shortages caused by production restrictions in one region can lead to line-down situations in important downstream industries. One observable shortage was seen in the unmet demand for semiconductor parts by manufacturers of medical ventilators. In April 2020, ventilator producers signaled shortages of necessary semiconductor components, totaling over 9 million parts.[19]

Even in jurisdictions where semiconductor facilities are recognized as essential and operations are specifically allowed to continue, restrictions on cross-border mobility can also lead to production stoppages. As stated above, semiconductor production is an incredibly complex process that requires sophisticated equipment, materials, and expertise that are often not present in-country. For example, technicians from semiconductor equipment companies must travel to semiconductor factories to install or repair specialized tools in situations that are beyond the expertise of local employees and too complicated to handle by video conference. Cross-border travel by key technical personnel and business continuity decision-makers is thus essential to effective manufacturing operations.

[19] In April 2020, SIA received a request from a consultant working on behalf of several ventilator manufacturers to help locate and identify semiconductor inventory not available on the open market. The ventilator manufacturers reported difficulties in finding specific components in necessary quantities, leading to bottlenecks in ventilator production.

Exhibit 4: Semiconductor Industry Experience in Areas with COVID Shut-Downs

China: Semiconductor facilities throughout the country (including in the epicenter of Wuhan) were allowed to operate non-stop throughout the nation-wide lock-down, allowing China to maintain high-capacity utilization rates. China also negotiated with South Korea and other countries to "fast track" essential business travel, including semiconductor technicians.

Europe: Guidelines issued by the European Commission identified "Information and Communications Technology Professionals" as well as "Information and Communications Technicians and other technicians for essential maintenance of the equipment" as essential. Under Italy's order, the definition of essential business included "scientific research and development."

Malaysia: "Electrical and electronics (E&E) (including semiconductors)" companies were allowed to apply for exemptions from the movement control order, for approval on a case-by-case basis. At the height of the pandemic, applications were backlogged by the thousands, during which time local jurisdictions unevenly interpreted and enforced the national guidance. "E&E" companies continued uninterrupted in some regions, but forced closures (police barred entry of employees to plants) and supply chain disruptions were reported in other regions.

Mexico: Essential business guidance issued in early April provided exemptions for "the manufacture of medical supplies, equipment, and technologies for health care," but did not specify ICT supply chain facilities as essential. Significant supply chain disruptions were reported from the forced closure of semiconductor and other ICT operations in certain localities.

India: Guidance from India's Ministry of Home Affairs exempts "IT and IT enabled Services" from business closure, but only for vaguely defined "essential services." The guidance also exempts "manufacturing units of essential commodities," and industrial establishments in which production requires "a continuous process," after obtaining required permission from the State government.[1]

Philippines: Official guidance exempted IT and "business process outsourcing" (BPO) companies from mandated business closures on the condition that the company provide temporary housing near client sites and limit physical presence to a skeletal workforce. Sites were closed until companies could fulfill these conditions, leading to supply chain disruptions.

Singapore: Singapore excplicitly recognized semiconductor companies and "their critical suppliers" as essential in its "circuit breaker" restrictions.

United States: The Department of Homeland Security's Cybersecurity and Infrastructure Agency (CISA) issued national guidance identifying semiconductors and microelectronics as part of the essential critical infrastructure workforce. 15 states also have essential services lists that specify semiconductors or manufacturing critical to technology supply chains as essential.

III. Recommendations for Policymakers

As governments grappled with keeping their populations as safe as possible during the peak of the pandemic, semiconductor companies took immediate action to understand the risks and take steps to protect employees while maintaining factory operations. The semiconductor industry considers the health and safety of its employees to be paramount, and actively implemented and shared industry best practices for minimizing risk, including strict controls on travel and movement of employees between facilities, reducing the on-site workforce, quarantines for employees who traveled abroad or showed cold/flu symptoms, and social distancing. SIA's separate White Paper, "COVID-19 and the Semiconductor Industry," outlines the extraordinary measures many semiconductor companies around the world have taken to guard against COVID-19 while ensuring continuity of essential operations. Because many semiconductor companies have operations in China, they were also able to adopt best practices in all their worldwide operations before industries that were more regionally focused. Higher levels of automation and the cleanroom environment on the factory floor were also important for minimizing the risk of virus transmission.[20]

To mitigate and prevent supply chain disruptions, 10 industry associations representing semiconductor and semiconductor equipment makers from China, Europe, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan, and the U.S. issued two joint statements calling on governments to prioritize essential supply chain operations during COVID-19 and to facilitate essential travel of essential semiconductor personnel (see Exhibit 5).

Per these global statements, and given the important foundational role of semiconductors to pandemic response and recovery, policymakers should take steps to ensure continued operations of the entire semiconductor supply chain during future waves of the COVID-19 pandemic and any other global public health crisis. **Specific steps policymakers can take include:**

1. Adopt guidelines for essential infrastructure workers and industries that specifically identifies semiconductor design and manufacturing, as well as all of its supply chain operations, as essential;

[20] Semiconductor industry cleanroom operations minimize the risk of virus transmission due to higher levels of automation and the cleanroom environment on the factory floor. Cleanrooms, which can cover thousands of square meters, are specially constructed facilities where contaminants, including airborne particulates, are eliminated through specialized filtration and tight controls of air flow, air pressure, temperature and humidity. Strict rules and procedures are followed to prevent contamination. Workers that operate in cleanrooms must enter and leave through airlocks, and wear full protective clothing, including hoods, face masks, gloves, boots, and coveralls. While ambient air in a typical urban area contains *35 million* particles per cubic meter in the size range of .5 micrometers, the highest-level cleanroom will have 0 particles of that size, and a maximum of only 10 particles per cubic meter in the size range of .1 micrometer.1 For reference, the average size of the COVID-19 microbe is .125 micrometers. These strict controls and conditions position semiconductor production facilities to be more resistant to the impact of COVID-19.

2. Work with local governments to ensure any necessary registrations for essential business is issued in a timely manner, along with distribution of worker passes, as needed;

3. Increase customs capacity with expedited service availability to transport semiconductor and supply chain goods;

4. Allow semiconductor manufacturers and their supply chains to take reasonable steps necessary to ship finished goods, preserve the value of equipment and inventory, and secure their investments;

5. Provide accommodations for and safely allow international travel of essential workers in the semiconductor industry; and

6. Eliminate tariffs on essential goods, including medical supply components like semiconductors.

These measures will help ensure the continued operations of semiconductor companies and their suppliers that in turn are essential to the production and function of other essential businesses, including medicine, telecommunications, ICT infrastructure, critical manufacturing, aerospace and defense.

Exhibit 5: Global Semiconductor Industry Statements to Policymakers on Prioritizing Essential Semiconductor Supply Chain Operations & Essential Worker Travel

Global Semiconductor Industry Calls on Nations to Prioritize Essential Supply Chain Operations During COVID-19

As government authorities craft public health measures to battle the COVID-19 pandemic, including mandatory business closures, **we call on all governments to specify semiconductor industry operations as "essential infrastructure" and/or "essential business" to allow continuity in operations of an industry that powers our global digital infrastructure and underpins vital sectors of the economy.**

In response to the global coronavirus pandemic, the semiconductor industry is focused on ensuring the health and safety of its workers and the continuity of its research, design, and manufacturing operations. Semiconductors are essential components of the technologies that control and enable essential infrastructure and life-critical equipment such as health care and medical devices, water systems and the energy grid, transportation and communication networks, and the financial system.

Semiconductors also underpin the IT systems that enable remote or on-line work, education, and shopping for essential supplies, as well as access to services across every domain, including medicine, finance, education, government, food distribution and more. Semiconductor and related supply chains will be necessary to support the greater range of services that will be digitized in the coming weeks and months in order to keep the global economy productive and to accelerate the recovery.

As the semiconductor supply chain is highly integrated and globalized, semiconductor shortages created by operating restrictions in one region cannot be readily made up by production in other regions. Such shortages lead to line-down situations at electronics factories downstream, and have a ripple effect in our digital economy. We therefore call on all global governments at all levels – central, states/provinces, and localities – to prioritize continued operations for their domestic semiconductor companies and their suppliers by defining the semiconductor industry, its R&D and manufacturing operations and its supply chain as "essential infrastructure" and/or "essential business."

The semiconductor industry is committed to taking all necessary steps to ensure its essential workers remain healthy and safe and to use its critical technologies to assist in the effort to battle the global pandemic.

American Malaysian Chamber of Commerce (AmCham Malaysia), Semiconductor Industry Association in China (CSIA), Semiconductor Industry Association in EU (ESIA), Semiconductor Industry Association in Japan (JSIA), Semiconductor Industry Association in Korea (KSIA), Semiconductor & Electronics Industries in the Philippines, Inc. (SEIPI), SEMI, Semiconductor Industry Association in U.S. (SIA), Singapore Semiconductor Industry Association (SSIA), Semiconductor Industry Association in Chinese Taipei (TSIA)

March 27, 2020

Global Semiconductor Industry Calls on Nations to Facilitate Essential Travel by Essential Workers During COVID-19

The undersigned associations express our gratitude to governments around the world that have designated the semiconductor and microelectronics industry essential during their response to the COVID-19 pandemic, allowing continued operation of key manufacturing and operational functions within safety protocols. By designating semiconductor and microelectronics industry workers "essential," governments have contributed significantly to the industry's ability to continue to produce and deliver critical components for every nation's essential infrastructure and life-critical equipment such as health care and medical devices, water systems and the energy grid, transportation and communication networks, and the financial system.

As nations take steps toward returning to business conditions prior to the pandemic, **we call on all governments to provide accommodations for and harmonize policies to safely allow essential international travel for essential workers.** Cross-border mobility in the semiconductor and microelectronics industry is vital to maintain critical manufacturing operations producing devices that are the foundation of our modern economy, countless economic sectors and each nation's response to this pandemic. Microelectronics produced in global supply chains enable the medical technology, cloud computing, and remote working capabilities that are invaluable to efforts to defeat this pandemic and more quickly recover.

Global supply chains require cross-border travel by key technical personnel and business continuity decision-makers to ensure that essential industry manufacturing and operations remain effective. While the industry continues to implement safety protocols and minimize non-essential travel, incredibly sophisticated equipment sets and materials usage from a variety of different nations will at times require specialized expertise that is not present in-country. For example, technicians from a semiconductor manufacturing equipment company typically must travel to semiconductor factories in other countries to install or repair specialized tools in situations that are beyond the expertise of the local field office and too complicated to handle by video conference. Similarly, at times semiconductor-based solutions, such as cloud computing, must be implemented or optimized on-site for the equipment to achieve full capacity.

We call on governments around the world to safely allow such essential travel for essential workers to ensure that this essential industry can maintain key manufacturing production and operations.

American Malaysian Chamber of Commerce (AmCham Malaysia), Semiconductor Industry Association in China (CSIA), Semiconductor Industry Association in EU (ESIA), Semiconductor Industry Association in Japan (JSIA), Semiconductor Industry Association in Korea (KSIA), Semiconductor & Electronics Industries in the Philippines Foundation, Inc. (SEIPI), SEMI, Semiconductor Industry Association in U.S. (SIA), Singapore Semiconductor Industry Association (SSIA), Semiconductor Industry Association in Chinese Taipei (TSIA)

June 1, 2020