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## 經濟部投資業務處 函



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主旨：有關西維吉尼亞州刻全力推動半導體製造業赴該州投資建廠事，檢送該州提供之招商投資優惠資訊(如附件)，惠請轉知會員廠商參考，至紉公誼。

說明：

一、西維吉尼亞州說明該州地理位置居美東交通中心，且州內陸運、河運及空運交通網絡四通八達，為製造業提供絕佳運輸網路，提供之租稅優惠額度比例為美國各州GDP之冠，近年來提倡運用酸礦水渠萃取稀土金屬及關鍵材料生產相關產品，另該州亦出產半導體供應鏈的重要原料矽砂，有關半導體製造業於該州設廠之優惠措施，摘要如次：

(一)租稅優惠(tax incentives)：提供高科技製造業抵免、製造業庫存抵免、投資抵免、經濟機會稅收抵免、免除製造業消費稅及免除「機會特區(opportunity zone)所得稅等多項稅務優惠方案，達一定投資金額、創造就業機會等特定條件後，可獲得相應之稅務抵免。

(二)生產優惠(production incentives)：

1、採用新技術自酸礦水渠(acid mine drainage)、萃取稀土金屬(rare earth elements)及關鍵材料(critical

materials);生產之矽砂(silica sand)質量精良豐富，  
係半導體製造之重要原料。

2、勞力成本低廉，係全美第3低；高等教育及技職學校系統  
發達，可提供優質之技術勞工。

(三)合適建廠場址眾多：該州參考台積電(TSMC)於亞利桑納州  
投資之廠址規格，對該州數個類似規模地點進行勘查，目  
前已有幾處地點適宜興建大型製造廠，多數可便捷銜接州  
內現有基礎交通設施。

二、倘貴會會員廠商有意進一步瞭解該州投資環境或優惠措施，  
本處可轉請駐美國轄區經濟組協助洽繫當地州政府。

正本：台灣半導體產業協會

副本：駐美國代表處經濟組、經濟部國際貿易局、經濟部工業局

經濟部投資業務處

# Benefits of Establishing Semiconductor Manufacturing in West Virginia

July 2021

## Executive Summary

West Virginia provides an abundance of tax credits and incentives to encourage businesses to locate within the state, ranking first among states in percent of GDP spent on incentives for businesses and directly improving the bottom line of businesses choosing to operate there. Recent developments in the processing of acid mine drainage have created new opportunities for the state to produce hundreds of tons of rare earth elements and critical materials each year; combined with surrounding states, this production could yield several thousand tons per year and would increase economic security and secure domestic supply chains of important raw materials. Additionally, West Virginia is already a producer of silica, enabling local supply chains for semiconductors' necessary raw inputs. West Virginia also boasts access to a wide transportation network; there are six interstate highways which run through the state, affording access to the entire Eastern United States. Furthermore, the state has extensive rail networks as well as six airports throughout the state which provide commercial service. Finally, the Ohio River, which forms the majority of the state's western border, serves as a major waterborne transportation route.

## Tax Incentives

The West Virginia Economic Development Office have produced several publications which outline a host of tax incentives available to businesses considering locating in West Virginia. In this section, we summarize the ones we have deemed potentially relevant for the establishment of a semiconductor manufacturing complex.

### **High-Tech Manufacturing Credit**

Companies that manufacture certain computers, electronic workings or semiconductors that also create at least 20 new jobs within one year of placement of qualified investment, can receive a tax credit to offset 100% of the corporate net income tax, and personal income tax on certain pass-through income for 20 consecutive years.

The jobs created must have a median compensation of \$55,800 (for 2020) adjusted for inflation each year.

### **Manufacturing Inventory Credit**

Offsets the corporate net income tax in the amount of property tax paid on raw materials, goods in process, and finished goods manufacturing inventory.

### **Manufacturing Investment Credit**

A tax credit is allowed against up to 60% of corporate net income tax and based on investment in eligible manufacturing property, with no new job creation required.

### **Economic Opportunity Tax Credit**

Companies that create at least 20 new jobs and make a qualified investment in a business facility may offset up to 80% of the corporate net income tax attributable to that qualified investment. If the jobs pay more than the statewide average, the company may offset up to 100% of the corporate net income tax attributable to the qualified investment.

### **Manufacturing Sales Tax Exemption**

Material and equipment purchases to be used directly in manufacturing are exempt from the 6% sales and use tax and 1% municipal sales tax, including building materials and process equipment purchased for construction of a manufacturing facility.

### **Opportunity Zone Income Tax Exemption**

Business income of a business located in a WV opportunity zone is exempt from corporate net income tax and personal income tax for 10 years. This exemption applies to both direct and flow through income. The business must be newly registered with the state before January 1, 2024.

### **The Freeport Amendment**

This amendment exempts property from the West Virginia ad valorem property tax in two ways.

1. Manufactured products produced and then stored in state for a short period before being moved by interstate commerce are exempt from property tax.
2. Goods transported into West Virginia from outside of the state and held in a warehouse and shipped to a destination outside of the state are exempt from property tax.

The exemption does not apply to inventories of raw materials or goods in process and manufacturing is one of several businesses that qualify.

### **Five for Ten Program – Manufacturing Facilities**

Investments of \$50 million or more in a manufacturing facility having \$100 million or more of preexisting investment in place prior to the new investment are valued at 5% of cost to the new investment for property tax purposes.

For capital additions certified on or after July 1, 2011, the value of the land before any improvements is subtracted from the value of the capital addition. The unimproved land value is not given salvage value treatment.

### **Production Incentives**

The domestic production of rare earth elements (REE) and critical materials (CM) has been widely recognized in recent years as both an economic and security concern. Given lower labor costs and less stringent environmental relations, China currently produces more REE/CM than all over countries combined. This has led to significant investment by the United States into technologies which could help to narrow this gap. One such investment has paid off and will allow West Virginia to begin producing REE/CM commercially within the next three years.

The West Virginia University Water Research Institute has been developing in contract with the National Energy Technology Laboratory a process by which REE/CM can be recovered from acid mine drainage, a byproduct from water flowing out of West Virginia's coal mines. While a pollutant and environmental concern on its own, this newly developed technology will allow REE/CM to be extracted from the acid mine drainage leaving clean water as the byproduct.

Furthermore, this technology is both theoretically as well as commercially viable. Indeed, the process at present can produce REE/CM at a profit of approximately \$10/kg REE/CM. The West Virginia Department of Environmental Protection is constructing a full-scale pilot near the Mt. Storm Power Plant in Grant County, West Virginia. This facility should be operational before the end of September 2021 and ready to commercialize in three years. According to the WVU Water Research Institute, acid mine drainage in West Virginia and the surrounding states of Maryland, Ohio, and Pennsylvania could produce up to 2,200 tons of REE/CM per year.

Silica is also an important input in the production of semiconductors and, again, West Virginia has abundant local supply. As an example, U.S. Silica's facility in Berkeley Springs, West Virginia produces a wide variety of silica products from high-purity sandstone. This facility is by no means an exception; the National Park Service has studied the cliffs of the New River Gorge, finding they are primarily composed of Nuttall sandstone and shale, the former being 98% quartz. The formations that these cliffs are part of extend throughout the state, and indeed the entire Appalachian Mountain range, demonstrating that large amounts of high-purity sandstone exist throughout the state, providing access to an abundant source of necessary raw materials.

According to WalletHub's 2021 Best & Worst States to Start a Business, West Virginia has the third least-expensive labor costs as well as the highest total spending on incentives as a percentage of GDP. The combination of these and other factors ranks West Virginia third overall in the "Business Costs" category. This combination of access to REE/CM, silica, and affordable labor costs makes West Virginia an ideal location to locate a semiconductor manufacturing complex.

Regarding training a skilled workforce, West Virginia's higher education system is composed of 44 colleges and universities. 22 of these are public, 11, non-profit private, and 11 for-profit private institutions. West Virginia touts a 45.6% graduation rate in six-years which is higher than our neighboring states. There are a wide variety of universities and technical schools within the state that offer degrees in engineering which would be useful in this STEM based industry. The two largest universities both offer a wide variety of engineering degree options (WVU with 38 and Marshall with 13).

Marshall University is also home to the Robert C. Byrd institute. This is West Virginia's Manufacturing Technology center that encourages growth in the manufacturing industry. They offer specialized training and equipment use for large Fortune 500 companies and individuals alike. The goal of RCBI is to use their centers across our state to provide resources that can be used to create, sustain, and expand businesses by providing leading-edge equipment, workforce development programs, quality management implementation, and customized workforce training. The technologies at RCBI are some of the best in the world and have been beneficial to companies across the Mid-Atlantic region.

Nine of 44 of our colleges and universities are Community and Technical schools with satellite campuses all throughout the state. These schools are very important to West Virginia's workforce. They offer partnerships to businesses and industries to help them meet their workforce demands, educate specifically to company needs, and locate grants and programs that would assist with company training. In the last decade, these Community and Technical Colleges have created nearly 150 new customer training programs, many of which were a joint effort between the companies and business investors.

#### **Geographic Advantages**

Given West Virginia's location, it should be no surprise that our transportation infrastructure is expansive and provides access to the entirety of the eastern United States. This is especially important for manufacturing businesses which need to transport products to their consumers. Additionally, nearly 60% of the United States' population lives east of the Mississippi River, meaning that for large-scale manufacturing West Virginia represents the ideal location for establishing operations from a geographical point of view.

Of course, location alone is not a sufficient guarantor of market access. It is also vital that transportation infrastructure be well developed to meet the needs of both residents and business. In West Virginia's case, it has well developed road, rail, air, and water transportation networks. Six interstate highways (64, 68, 70, 77, 79, and 81) run throughout West Virginia keeping the different parts of the state connected with each other as well as the regional and national markets. West Virginia also has favorable railway conditions, with 11 freight railroads and 2,141 of rail miles. According to the Association of American Railroads, both figures place West Virginia above average on a per population and per area basis. The Ohio River is an important artery for waterborne transportation in the United States and would provide an additional method of transportation for both raw materials and outputs. Finally, West Virginia has six airports throughout the state which provide commercial services should need arise for travel or expedited shipping.

Numerous sites currently exist within the state that could be suitable for a large manufacturing facility. Using the Taiwan Semiconductor Manufacturing Co LTD's recent investment in its 1,100-acre Arizona site as a guide, we have done preliminary investigations of the number of sites that could support a facility of at least that size using resources available from the West Virginia Economic Development Office. Seven such sites are located throughout the state and would

provide the necessary size and terrain for development of large-scale manufacturing facilities. Additionally, many of these sites are readily accessible to the state's current infrastructure.