



Total Economic Impact of INZONE to the City of Las Vegas and Surrounding Clark County

October 2021



EXECUTIVE SUMMARY

As Clark County navigates the Fourth Industrial Revolution (Industry 4.0), it seeks opportunities to fortify its established industries, expand its high-tech sector, and diversify its economy. The county has already made strategic investments in critical areas such as smart cities and autonomous systems, which are paying dividends. County leaders have underpinned these investments with commitments to drive economic growth and prosperity with digital technologies.

Industry 4.0 is disrupting virtually every industry with use-cases that require high-performance connectivity and edge computing infrastructure. To succeed with Industry 4.0, local governments and their policymakers must ensure that their regions have state-of-the-art digital infrastructure in place. Investments in digital infrastructure act as a force multiplier to a region's economic development. They catalyze the economic growth of existing industries, while also making the region more attractive to new growth industries and capital investments.

Vapor IO's INZONE program channels digital infrastructure investment to a specific geographic region in service of Industry 4.0 use cases. The city of Las Vegas and surrounding Clark County are home to the world's first INZONE, formally unveiled in October 2021. INZONE is built upon Vapor IO's Kinetic Grid platform, a high-performance connectivity and edge computing infrastructure solution, specifically designed address Industry 4.0 use-cases. INZONE partners, such as VMware, Amazon Web Services, Lenovo, Terranet and others, bring key component technologies that become part of the delivered solutions.

The INZONE program relies, in part, on architectural reference designs created by the Open Grid Alliance, an organization of industry leaders in edge computing and networking technology. The INZONE program also engages with local public and private stakeholders with complementary specialties to accelerate infrastructure deployments.

Tolaga research conducted a study to estimate the potential economic value of INZONE for the City of Las Vegas and surrounding Clark County, a summary of which is primary purpose of this document. The study looked at Industry 4.0 use-cases in key industry verticals, including smart cities, autonomous systems and casinos, gaming and entertainment, conventions and events, healthcare and retail services, manufacturing, and warehousing and logistics.

The study concludes that INZONE has the potential to unlock USD 28.9 billion in cumulative GDP contributions to Clark County over the five years between 2021 and 2025 and \$115.8 billion over the ten years between 2021 and 2030. These estimates predict a 3.8 percent CAGR in Clark County's GDP with INZONE and a 2.5 percent CAGR without INZONE.

INZONE CONTRIUTION TO CLARK COUNTY GDP (USD BIL.)



THERE'S A NEW GAME IN TOWN

The Fourth Industrial Revolution (Industry 4.0) is upon us. As this revolution takes hold, it will relentlessly drive innovation to support the insatiable digital appetites of enterprises and consumers. Carefully crafted digital transformation strategies are crucial for local governments and policymakers to seek future competitive advantage for their regions with digitally-led economic diversity. The gaming and entertainment industry dominates the economy of Clark County. Clark County recognizes the importance of economic diversification and has been capitalizing on Industry 4.0 to position itself as a digital leader with targeted investments in autonomous systems and smart cities, manufacturing, smart healthcare, warehousing, and logistics. The County has rolled out several smart city solutions and underground and autonomous transportation systems for its citizens and the over 40 million visitors it receives each year.

The stakes are high for Clark County as it competes against other regions for high technology investments and pursues digital strategies that require state-of-theart networking and edge computing infrastructure for Industry 4.0 services.

"

Let's do things here that people aren't doing elsewhere. We are that iconic city. We are that iconic leader in technology and smart city technology.

- Michael Sherwood

chief innovation officer for the City of Las Vegas June 2021

THE INZONE PROGRAM

Networking and edge computing solutions that bring together best-of-breed infrastructure with the right endto-end technical architectures and commercialization strategies are crucial for scaling and driving long-term economic prosperity.

INZONE (or Industry Zone) is a structured program that assembles industry leaders in edge computing and networking technology and other public and private stakeholders with complementary specialties to collaborate and develop end-to-end solutions and joint go-to-market activities. INZONE brings the technical and commercial fabric needed to effectively create dense engines of economic activity, attract public and private investments, and accelerate the rollout of highperformance networking and edge computing solutions. The INZONE program is spearheaded by Vapor IO, but also includes industry-leading companies such as VMware and Amazon Web Services. Collectively, the INZONE partner companies have extensive experience in bringing successful high-performance networking and edge computing solutions to market. The program aims to benefit industries by providing digital transformation capabilities. It also aims to help solution suppliers and local communities bridge historical digital divides, stimulate high technology investments, and create job opportunities.

INZONE'S ECONOMIC POTENTIAL

Tolaga Research conducted a study and developed an economic model to investigate the potential Gross Domestic Product (GDP) impact of INZONE to the City of Las Vegas and surrounding Clark County. The study focused on key use cases in seven strategically important industries for the region, including:



In aggregate, it is forecast that the INZONE program can potentially unlock \$28.9 billion in the next five years and \$115.8 billion in the next ten years of cumulative GDP contributions. With these contributions, the GDP in Clark County is forecast to have a 3.8 percent cumulative annual growth rate (CAGR) between 2021 and 2030. Without the contributions, a 2.4 percent GDP CAGR was forecast over the same 2021-2030 period.



INZONE GDP CONTRIBUTION TO CLARK COUNT"Y BY VERTICAL

USD Bil. Source: Tolaga Research, 2021

CASINOS, GAMING AND ENTERTAINMENT

Companies like MGM International and Caesar's Entertainment are investing heavily in digital transformation. In July 2021, MGM International hired Talik Mandadi from Disney to drive its digital technology strategies. At a September 2021 JP Morgan event, MGM's CEO, William Hornbuckle indicated that MGM had committed a USD 300-400 million budget to invest in digital services over the next couple of years.

In its second-quarter 2021 financial announcements, Caesar's International indicated that it had budgeted USD 1 billion to develop its digital capabilities for the next two to three years.

The INZONE program is well suited for casinos, gaming, and entertainment by enabling real-time digital capabilities, such as business continuity support, security, and surveillance, and augmented and virtual reality (AR/VR) for 'livetables' and entertainment services. In addition, the INZONE program could also provide a platform for technology developers in Clark County to produce digital casino, gaming, and entertainment solutions for other markets.

It is estimated that INZONE can potentially create USD 7.1 billion in cumulative GDP contributions for casinos, gaming, and entertainment in Clark County between 2021 and 2025 and USD 22.7 billion between 2021 and 2030.



Frankly our future in the digitization of the business is in Las Vegas

– William Hornbuckle

MGM International CEO at JP Morgan Gaming, Lodging, Restaurant, and Leisure Management Access Forum – September 2021

SMART MANUFACTURING

lark County has a vibrant and diverse manufacturing sector, contributing 4-5 percent to its GDP. Since manufacturers throughout the United States and worldwide are aggressively pursuing smart manufacturing strategies, we believe that it is vital that manufacturers in Clark County follow suit.

High-performance connectivity and low latency edge computing are needed to enable key smart manufacturing capabilities, such as operational automation, predictive maintenance, anomaly detection, and condition monitoring. These capabilities can significantly improve manufacturing efficiencies and output yields. For example, the American Productivity and Quality Center (APQC), estimates that manufacturing product rejection rates typically range between 1.0 and 1.5 percent. Approximately 95 percent of product rejects are caused by human error. Effective real-time condition monitoring and anomaly detection solutions can significantly reduce product rejection rates, improve manufacturing efficiencies, and potentially better position manufacturers for expanded operations.

The INZONE program can provide real-time networking and computing resources needed for smart manufacturing. It is estimated that INZONE can potentially create USD 3.7 billion in cumulative GDP contributions for smart manufacturing in Clark County between 2021 and 2025 and USD 18.7 billion between 2021 and 2030.



AUTONOMOUS Systems

Clark County is successfully pursuing a strategy to embrace autonomous transportation solutions to reduce traffic congestion and improve the experiences for its local population and 40+ million annual visitors. For example, the county is one of the first to enable The Boring Company to deploy its revolutionary underground electric vehicle transportation corridor to and from the Las Vegas Convention center. In addition, the County is embracing both public and private autonomous vehicle solutions. For example, by February 2020, the ridesharing company Lyft had provided over 100 thousand rides in self-driving vehicles operating in Clark County. In addition, between 2011 and 2019, the number of jobs in Southern Nevada for autonomous systems increased by 34.2 percent from 6,476 to 8,689.

Globally the autonomous vehicle market is forecast to grow between 2020 and 2030 with a 10 percent CAGR. Clark County is well-positioned to capitalize on this growth by creating a center of excellence for autonomous systems. These systems depend on INZONElike networking and edge computing technology for reliable and low latency services. It is estimated that INZONE can potentially contribute USD 3.5 billion in cumulative GDP between 2021 and 2025 for autonomous systems in Clark County, and USD 12.6 billion between 2021 and 2030.

SMART HEALTHCARE

Smart healthcare is a strategic pillar for Clark County. Interest in smart healthcare has accelerated in response to the Covid pandemic. Globally the smart hospital market is forecast with a CAGR of 15 percent over the next five years, buoyed by various solutions, such as robotic automation, medical imaging, patient record management, real-time systematic healthcare, and remote patient monitoring.

Since many smart-healthcare use-cases require secure, highly reliable, and near-real-time performance, they are well suited to INZONE-type capabilities. It is estimated that INZONE can potentially create USD 2.2 billion in cumulative GDP contributions for smart healthcare in Clark County between 2021 and 2025 and USD 7.2 billion between 2021 and 2030. Of these contributions, it is forecast that 57.3 percent will come from remote patient care, 28 percent from medical imaging, 13.7 percent from patient record management and real-time systematic healthcare, and 1 percent from healthcare robotics.

CLARK COUNTY: INZONE HEALTHCARE HDP CONTRIBUTIONS



Source Tolaga Research (2021)

SMART WAREHOUSING AND LOGISTICS

Clark County has a well-established warehousing and logistics industry that contributes between 5 and 6 percent to the County's GDP. Global interest in warehousing and logistics has accelerated in response to the supply chain challenges during the Covid pandemic. The global smart warehousing market is forecast with an 11 percent CAGR over the next five years. It heralds various technologies, including autonomous vehicles and robotics, computer vision and surveillance, and real-time analytics to reduce operational costs and supply chain friction.

Clark County depends on investment commitments from logistics companies to construct their warehouses and distribution centers in the region. As logistics companies continue to advance their digital technologies for smart warehousing capabilities, they are likely to favor regions where INZONE-like capabilities are readily available. It is estimated that INZONE can potentially create USD 1.6 billion in cumulative GDP contributions for warehousing and logistics in Clark County between 2021 and 2025, and USD 8.6 billion between 2021 and 2030.



SMART RETAIL

The retail industry contributes 20-25 percent to Clark County's GDP. The industry has come under tremendous pressure to innovate, as online shopping relentlessly cannibalizes traditional brick-and-mortar retail. Many smart retail initiatives aim to embrace real-time digital technologies, such as augmented reality, to improve customer shopping experiences. The global smart retail market is forecast to have a 27 percent CAGR over the next five years, which will drive tremendous digital innovation.

Many digital innovations that aim to improve retail customer experiences depend on INZONE-like networking and computing capabilities for near-real-time services. Even if modest increases in retail sales are achieved through smart retail solutions, they will significantly contribute to GDP. For example, suppose INZONEenabled capabilities allow retailers to increase their annual sales growth by 0.5 percent in Clark County. In that case, the cumulative GDP will increase by USD 1.5 billion over the five years between 2021 and 2025, and USD 8.1 billion over ten years between 2021 and 2030.



CONCLUSION

As Industry 4.0 takes hold, Clark County is well-positioned to capitalize on the INZONE program to create incremental economic value and to support the county as it fortifies its current economy, develops its high-tech sector, and accelerates economic diversification.

Casinos, gaming and entertainment, conventions and events will continue to be significant contributors to Clark County's GDP for the foreseeable future. As these industries accelerate their Industry 4.0 initiatives, the County must have the advanced digital infrastructure in place to support their needs.

Clark County has been pursuing smart city initiatives for several years and has established a range of services to improve city operations and the wellbeing of its visitors and citizens. The County is likely to benefit from the INZONE program as smart city solutions mature and increasingly require secure, reliable, and low-latency performance capabilities. Furthermore, a smart city with state-of-the-art connectivity and edge computing equipment will likely bolster the county's high technology sector by providing the resources that high-tech companies need to be competitive in a global marketplace.

As Clark County expands its autonomous systems, it will require INZONE-like capabilities for secure and reliable connectivity and low latency edge computing. In addition, comparable demands for INZONE are likely for other industries such as manufacturing, retail, and warehousing and logistics, as companies in the region pursue their respective Industry 4.0 strategies.

The stakes are high for Clark County as it navigates the disruptive force of Industry 4.0. The INZONE program offers a compelling solution for current and emerging Industry 4.0 use-cases that will drive economic opportunities in Clark County for the foreseeable future.

