



City of Arts & Innovation

City Council Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL **DATE:** NOVEMBER 28, 2023

FROM: COMMUNITY & ECONOMIC DEVELOPMENT DEPARTMENT **WARDS:** ALL

SUBJECT: AGREEMENT WITH OHMIO, INC. TO ESTABLISH ITS INTERNATIONAL HEADQUARTERS, ADVANCED MANUFACTURING FACILITY, POINT OF SALE, AND RESEARCH AND DEVELOPMENT CENTER FOR ALL-ELECTRIC, AUTONOMOUS VEHICLE SHUTTLES IN THE CITY OF RIVERSIDE, AND TO DEPLOY THREE (3) ALL-ELECTRIC AUTONOMOUS SHUTTLES FOR A TWO-YEAR PILOT PROGRAM IN THE CITY OF RIVERSIDE

ISSUE:

Consider an agreement between the City of Riverside and Ohmio, Inc. to establish its international headquarters, advanced manufacturing facility, point of sale, and research and development center for all-electric, autonomous vehicle shuttles in the City of Riverside, and to deploy three, (3) all-electric, autonomous shuttles for a two-year pilot program.

RECOMMENDATIONS:

That the City Council:

1. Approve the Agreement between the City of Riverside and Ohmio, Inc.
2. By at least five affirmative votes, authorize the Chief Financial Officer, or designee, to record a supplemental appropriation in the amount of \$525,000 from General Fund reserves for FY 2023/24 costs; and
3. Authorize the City Manager, or his designee, to execute the agreement with Ohmio, Inc. including making minor and non-substantive changes.

BACKGROUND:

The City of Riverside is focused on creating an environment of innovation, entrepreneurship, and investment in new technology. Building on the 2021 grand opening of the California Air Resource Board (CARB) Southern California headquarters, an ecosystem supporting research and development in sustainability and clean and green technology continues to grow. CARB is a state-of-the-art facility located on a 19-acre campus with 402,000 square feet of space to support the state's clean air efforts, transition to zero emissions technology and climate initiatives in the goal of reaching carbon neutrality. As the largest Zero-Net Energy building in the United States CARB is a catalyst project attracting similar innovative clean and green technology businesses such as Ohmio, Inc., to Riverside.

Ohmio is a leader in the development and deployment of all-electric autonomous shuttles. Ohmio shuttles operate globally, including in New Zealand, Australia, South Korea, Luxembourg, and New York, and the company has recently secured new contracts in the Netherlands, the United Kingdom, and Finland. Ohmio develops and builds the shuttle's shell, software, and robotics system. The shuttles manufactured by Ohmio in Riverside will be the first end-to-end, all-electric autonomous shuttles manufactured from the ground up in the United States. The shuttle, as currently designed can seat up to 8 passengers and has standing room for an additional 6 passengers. The future design is projected to accommodate additional seated passengers. All vehicles also are equipped to accommodate accessibility needs of riders.

Beginning in May 2023, the City began discussions with Ohmio, related to a three (3) shuttle, two-year, pilot program sponsored by the City, and to establish Ohmio's international headquarters in the City. The relocation of this business to Riverside offers advanced manufacturing jobs, designates Riverside as the point-of-sale for future business transactions, and establishes a research and development center in the City. These meetings and discussions led to the preparation of a Conceptual Framework Proposal outlining potential terms of an Agreement between the City and Ohmio advancing City Strategic Priorities in Economic Opportunity, Environmental Stewardship, as well as Infrastructure, Mobility and Connectivity.

In August 2023, the Economic Development, Placemaking, and Branding/Marketing Committee (EDPB/M) met to consider the Conceptual Framework Proposal and provided direction to staff regarding the preparation of a Draft Agreement based on the terms outlined in the Proposal. Several questions were addressed related to the operation of the shuttles, dedicated lanes, number of shuttles, and shuttle speed.

The Committee recommended the item go to the City Council for consideration including information related to the purchase of the shuttles in addition to the option to lease; and extending their building lease term to five years instead of three.

On September 5, 2023, the City Council considered the recommended Conceptual Framework Proposal from the EDPB/M Committee authorizing a supplemental appropriation in an amount not to exceed \$2.5 million inclusive of a \$1.5 million capital lease or \$1.4 million purchase for three (3) all-electric, autonomous shuttles, safety operators not to exceed \$400,000, and related costs including the maintenance and repair, electricity, and insurance for the program. City staff confirmed a purchase option for the shuttles was available. The purchase of the vehicles presents an overall cost savings of approximately \$100,000 to the City. However, it would require an upfront payment of \$1.4 million. The lease option allows the \$1.5 million in payments be spread over the term of the agreement. Ohmio confirmed they were open to extending the initial lease term to five years to ensure a longer time frame for the City to capture return on investment.

The City Council directed staff to return to the Council with a final negotiated agreement for consideration and some additional information including:

- Safety and collision data;
- Role of the safety operator;
- Workforce and local hire;
- Impacts to Riverside Transit Authority (RTA) ridership and support from its union;
- Location of the international headquarters;
- Point of sale revenue; and
- Potential partnerships and sponsorships.

DISCUSSION:

Safety and Collision Data

California is at the forefront of autonomous vehicle regulation, having enacted the first state law to specifically address the technology in 2012. Senate Bill 1298, required the Department of Motor Vehicles (DMV) to establish a framework for the testing and deployment of autonomous vehicles on public roads. All regulations regarding testing and public use have been established since 2016. The only new legislation anticipated relates to heavy-duty autonomous truck testing.

Manufacturers who are testing autonomous vehicles must report any collision resulting in property damage, bodily injury, or death within 10 days of the incident. As of October 27, 2023, the DMV has received 669 Autonomous Vehicle Collision Reports. Ohmio has not had an accident in the history of the company, maintaining a clean record with zero incidents. Safety is of utmost importance to them. They continue to implement strict measures and best practices to maintain this record.

The National Highway Traffic Safety Administration (NHTSA) governs autonomous vehicles at the Federal level and have issued several guidance documents and proposed rules. Ohmio LIFT shuttles are classified as Level 4 vehicles, as defined by the Society of Automotive Engineers, meaning:

- do not need assistance to perform tasks;
- do not need a human present to take over in case of an emergency;
- a driver can take over operations at any time; and
- typically limited to specific geographic locations and routes and cannot travel outside designated service areas.

Level 4 vehicle shuttles are equipped with a variety of safety features not found in human-driven vehicles including:

- lidar sensors to detect objects up to 300 meters away;
- cameras that can see 360 degrees around the vehicle;
- sophisticated software that can predict the behavior of other vehicles and pedestrians; and
- multiple backup systems in place creating redundancies in case of a failure.

The Ohmio shuttles integrate an additional suite of safety features including a safety operator and a communication link between the vehicle and remote operator providing location, status, and two-way communication between operator and passengers. These shuttles will be limited to specific locations and routes within the city.

Safety Operator Role

Ohmio will be responsible for ensuring the vehicles operate correctly, safely, and efficiently. This includes real-time monitoring of vehicle status, route adherence, and any potential maintenance or operational issues. Additionally, Ohmio will manage the required training of all personnel, including safety operator. The purpose of the safety operator is to:

- Take control of the vehicle if needed including situations where manual intervention is required due to unforeseen circumstances or technical issues;
- Provide communication: providing a link between the monitoring center and the shuttle, direct communication to the passengers, contact the operation base for necessary information, instructions, reporting incidents or seeking guidance,
- Assist Passengers: leave the vehicle and provide additional assistance to special needs passengers to get into or off the vehicle;

- Vehicle charging each day after operation to prepare it for the next day;
- Perform a daily safety check prior to operating the vehicles; and
- Monitoring the vehicle's systems, reporting any irregularities, and ensuring the overall safety and comfort of the passengers.

Workforce and Local Hire

Ohmio has committed to hire locally and anticipates adding 7 jobs in the first year of operation and at least 25 jobs by year three. These positions include the following:

- R&D Engineer, \$120,000 to \$160,000 per year; or \$57.69 to \$76.92 per hour: research and development of new technologies, improving existing products, and collaborating to bring projects from concept to completion.
- Electronic Technician, \$75,000 to \$95,000 per year; or \$36.05 to \$45.67 per hour: assembling, installing, testing, and maintaining electronic equipment and systems, diagnosing, and repairing faults, and assisting engineers with the development and testing of new products.
- Mechanical Technician, \$75,000 to \$95,000 per year; or \$36.05 to \$45.67 per hour: assembling, installing, and maintaining mechanical systems, diagnosing, and repairing faults, and assisting engineers with the development and testing of new production.
- Production Engineer, \$110,000 to \$135,000 per year; or \$52.88 to \$64.90 per hour: overseeing the manufacturing process, working to improve efficiency and quality, and collaborating to ensure products are produced on time and to specification.
- Production Technician, \$70,000 to \$90,000 per year; or \$33.65 to \$43.26 per hour: assembling and testing products, maintaining equipment and machinery, and assisting with the implementation of new manufacturing processes.
- Administrative Support Person, \$65,000 to \$80,000 per year; or \$31.25 to \$38.46 per hour: managing office tasks, organizing and maintaining files and records, and providing support.

Future employment needs are anticipated to include:

- Factory Manager: \$160,000 to \$200,000 per year; or \$76.92 to \$96.15 per hour.
- Quality Control Engineer: \$110,000 to \$145,000 per year; or \$52.88 to \$69.71 per hour.
- Factory Technicians: \$65,000 to \$95,000 per year; or \$31.25 to \$45.67 per hour.
- Field Technicians: \$85,000 to \$105,000 per year; or \$40.86 to \$50.48 per hour.

The Milken Institute estimates that for every job created in advanced manufacturing, 2.5 jobs are created in other sectors. Since these are advanced manufacturing jobs there is an indirect economic benefit with the creation of additional jobs because of the multiplier. It is estimated the seven jobs in the first year and 25 new jobs in year three will create 80 additional jobs in the supporting sectors. This translates to the potential creation of approximately 112 new jobs. In addition, Ohmio values internships as a crucial part of its workforce development and can accommodate one intern for every Engineer or Technician employed. Therefore, as Ohmio grows in Riverside, the number of interns accommodated can also increase making additional contributions to workforce development in the city.

Riverside Transit Agency (RTA), Riverside County Transportation Commission (RCTC) and Amalgamated Transit Union (ATU)

Staff has held meetings with Riverside County Transportation Commission (RCTC) and RTA leadership who have expressed support for Ohmio vehicles in the City and understand the initial routes for the pilot program will operate in specific areas not competing with existing RTA routes, unless authorized by RTA. City departments will work with Ohmio and agency partners to identify parameters for potential public routes, work with RTA to identify possible first and last mile services and other routes and other opportunities for collaboration and partnership.

Staff held a meeting with representatives of the Amalgamated Transit Union (ATU) leadership to keep them informed of the proposed pilot program. The meeting was positively received.

International Headquarters Location

Since the last Council meeting, Ohmio visited other sites to potentially locate their International Headquarters and has provided the City with a letter of intent on the property on the west side of the City.

Point of Sale Revenue

The estimated price of an Ohmio LIFT is \$300,000. The sales tax in the City of Riverside is 8.75% or \$26,250 per vehicle. The City's share is 1% or \$3,000 of the tax collected after State and County allocations are taken. The following is an estimate of sales tax generation to the City of Riverside based on projected sales by Ohmio. The estimated amount shown at year five is dependent on various factors including the size of the manufacturing facility, the availability of raw materials, workforce, and the efficiency of the production line and demand.

Production Year	Shuttles Manufactured	Tax Generation
1	50	\$150,000
2	50 - 100	\$150,000 - \$300,000
3	100 - 150	\$300,000 - \$450,000
4	150 - 200	\$450,000 - \$600,000
5	200 - 250	\$600,000 - \$750,000
Total:	550 - 750	\$1,650,000 - \$2,250,000

Proposed Routes

The Ohmio shuttles are designed to operate on low-speed roads. The specific travel capabilities and permissions for the shuttles will be determined based on the route, the approval from the NHTSA, California DMV, City of Riverside and any other relevant local regulations or restrictions. The maximum speed capability of the Ohmio shuttles is 31 mph, but the typical maximum speed on deployment is 15.5 mph. However, the actual speed, type of traffic, and areas where the shuttles will operate (e.g., mixed traffic, closed roads, neighborhoods only, etc.) will be defined based on the route selection, regulatory approvals, and the safety considerations of each specific deployment scenario.

City staff have identified potential shuttle routes on roadways rated at 25 MPH. Additional considerations in the selection of the routes include "first-mile/last-mile" connection for transit riders, college campuses, healthcare facilities, downtown, parks, senior and community centers, designated food deserts, commercial shopping centers, proximity to EV charging infrastructure and avoiding impacts to RTA's existing route system. It is proposed that there will be regular evaluations of the routes to ensure a high level of ridership and if not, alternative routes will be selected since there is flexibility with route selection because the shuttles do not operate on a fixed track.

Strategic Partnerships and Sponsorships

Greater Riverside Chamber of Commerce (GRCC): In August 2023, staff made a presentation on the Ohmio Conceptual Framework Proposal to the GRCC Economic Development Council. Board

Members representing the business community expressed excitement for the project and voted unanimous on a motion to support the project.

Educational Institutions: The following institutions have expressed enthusiasm and support for Ohmio coming to Riverside and have provided letters of support (Attachment 3):

- University of California, Riverside (UCR)
- La Sierra University
- Riverside Community College District
- Riverside Unified School District

Each institution expressed a variety of partnership opportunities to develop a workforce to meet the myriad needs of the emerging green transportation sector, including but not limited to:

- Internships and apprenticeships;
- Grant proposal collaboration;
- Course development;
- Degree expansion programming;
- Certificates in multiple disciplines including automotive, engineering, data science, and business and management among others for a skilled workforce.

Conferences and Events: The leadership at Ohmio has strong connections with the Intelligent Transport System (ITS) World Congress and can play a crucial role in encouraging the organization to hold an international event in Riverside. Additionally, being part of the International Standards Organization (ISO), Ohmio can also attract similar international events to Riverside. Ohmio is also willing to partner with the City and serve as an exhibitor at the Advanced Clean Technology (ACT) Expo annual conferences.

Hosting and participation in these types of events helps to raise the profile of the city and showcases the innovation, entrepreneurship, and investment taking place in the fields of sustainability and clean and green technology while contributing to the growth and development of the autonomous ecosystem in Riverside.

External Funding Opportunities: There are multiple federal and state grants being offered that may assist in funding partnership opportunities with Ohmio. While many of the currently advertised grants have application deadlines occurring prior to Ohmio's establishment in Riverside, it is assumed that similar funding opportunities will be available in 2024 and beyond. Funding areas include:

- Community technology demonstration projects
- Planning and capacity building
- Roadway capital retrofit construction
- Electric vehicle charging infrastructure
- Workforce training programs
- Purchase of zero emission vehicles

Additional funding opportunities include revenue generation from the branding of the shuttles, the potential to collect fares for shuttle rides, and potential partnership agreements with private partners

to help defer the costs.

STRATEGIC PLAN ALIGNMENT:

This item contributes to **Strategic Priority 3 – Economic Opportunity** (Access to Transportation, Choices, Green Fleet and Systems and Smart City Ecosystem); **Strategic Priority 4 – Environmental Stewardship** (Implement proactive policies and measures to ensure all residents breath healthy and clean air, Implement the requisite measures to achieve citywide carbon neutrality no later than 2040); and **Strategic Priority 6 – Infrastructure, Mobility and Connectivity** (Access to Transportation, Choices, Green Fleet and Systems and Smart City Ecosystem).

This item aligns with each of the five Cross-Cutting Threads as follows:

1. **Community Trust** – The agreement allows for the testing and validation of safety and efficient transportation management. Autonomous vehicles, with their precision and consistent performance, have the potential to reduce traffic accidents caused by human error, enhancing safety for all road users, and contributing to a safer Riverside. Autonomous shuttles can contribute to better traffic management and congestion reduction in the city, improving overall transportation efficiency.
2. **Equity** – Ohmio's all-electric autonomous shuttles have climate and air quality benefits. The shuttles have zero tail pipe emissions and cleaner transportation means cleaner air and better health for all.
3. **Fiscal Responsibility** – The agreement includes Ohmio locating its international headquarters, advanced manufacturing facility, point of sale, research and development center, which includes the City receiving tax revenue for each shuttle sold in California.
4. **Innovation** – The agreement positions Riverside as a testbed for new and emerging technology. The Ohmio all-electric, autonomous shuttles provide an inventive and sustainable solution to meet the need for “first-mile/last-mile” connection for transit riders in the community.
5. **Sustainability & Resiliency** – The deployment of a zero-emission shuttle adds to the changing transportation needs of the community. With the addition of autonomous vehicles, Riverside will have the opportunity to rethink urban design and planning, leading to more efficient use of road space and potentially reducing the need for parking infrastructure. Using all-electric vehicles will also help to reduce greenhouse gas emissions positively contributing to air quality and support sustainability efforts like reaching carbon neutrality.

FISCAL IMPACT:

The estimated total fiscal impact of this action is up to \$2,500,000 for the purchase or lease of three shuttles for a two-year period, plus other related costs as previously detailed. Cost refinement is ongoing for various pieces of this project, but the expectation is that the total two-year cost will not exceed \$2,500,000. The General Fund is expected to serve as the primary funding source, offset by funds obtained from other sources as staff continue to explore alternative funding opportunities. This initial investment is expected to be offset over time by sales tax revenue generated by Ohmio.

Beyond the initial investment, the partnership with Ohmio, Inc. offers a variety of economic opportunities and revenue streams that stand to benefit the City:

- **Point of Sale Revenue and Scaling Production** is estimated to generate approximately \$150,000 in the first year of Ohmio's operations, ramping up to potential revenue in excess of \$1,650,000 by the fifth year of operations.
- **Job Creation and Workforce Development** will lead to increased local employment, higher consumer spending, job multiplier effects, and the attraction of a skilled workforce. These factors contribute to a more robust and dynamic local economy, generating revenue, fostering business growth, and enhancing the overall quality of life for Riverside residents.
- **Strategic and Promotional Partnerships** established through the collaboration with Ohmio are anticipated to create avenues for increased business activity and investment, potentially leading to job creation, enhanced consumer spending, and greater tax revenues.
- **External Funding Opportunities:** The partnership with Ohmio opens doors to multiple federal and state grants, further aiding funding opportunities for initiatives related to green technology, workforce development, and electric vehicle infrastructure. These grants, combined with potential revenue from shuttle branding, fares, and private partnerships, offer avenues to defray costs and enhance economic sustainability.

The FY 2023/24 fiscal impact is \$525,000 for Phases 1 through 3 as outlined in the Lease Payment Schedule in Exhibit B of the agreement. Sufficient funds are available in General Fund reserves; the supplemental appropriation, if approved, is ultimately anticipated to be offset by personnel savings resulting from the City's high vacancy rate in the General Fund. Upon Council approval, the supplemental appropriation will be recorded in the General Fund, Community and Economic Development department non-personnel budget. The balance of \$1,975,000 of the total fiscal impact of \$2,500,000 will be included in budget submissions for future fiscal years to be presented to the City Council for approval.

In coordination with: Public Works Department
 General Services Department

Prepared by: Jennifer A. Lilley, Community and Economic Development Director
Certified as to
availability of funds: Kristie Thomas, Finance Director/Assistant Chief Financial Officer
Approved by: Rafael Guzman, Assistant City Manager
Approved as to form: Phaedra A. Norton, City Attorney

Attachments:

1. Agreement
2. Presentation
3. Ohmio Health and Safety Report