MINUTES OF THE MEETING
OF THE
ASSEMBLY COMMITTEE ON GROWTH AND INFRASTRUCTURE

Eighty-Second Session
February 14, 2023

The Committee on Growth and Infrastructure was called to order by Chair Howard Watts at 1:31 p.m. on Tuesday, February 14, 2023, in Room 3143 of the Legislative Building, 401 South Carson Street, Carson City, Nevada. The meeting was videoconferenced to Room 4406 of the Grant Sawyer State Office Building, 555 East Washington Avenue, Las Vegas, Nevada. Copies of the minutes, including the Agenda [Exhibit A], the Attendance Roster [Exhibit B], and other substantive exhibits, are available and on file in the Research Library of the Legislative Counsel Bureau and on the Nevada Legislature's website at www.leg.state.nv.us/App/NELIS/REL/82nd2023.

COMMITTEE MEMBERS PRESENT:

Assemblyman Howard Watts, Chair
Assemblywoman Tracy Brown-May, Vice Chair
Assemblyman Max Carter
Assemblywoman Jill Dickman
Assemblywoman Danielle Gallant
Assemblyman Bert Gurr
Assemblywoman Heidi Kasama
Assemblywoman Elaine Marzola
Assemblywoman Brittney Miller
Assemblyman Cameron (C.H.) Miller
Assemblywoman Sarah Peters
Assemblywoman Shondra Summers-Armstrong

COMMITTEE MEMBERS ABSENT:

None

GUEST LEGISLATORS PRESENT:

None

STAFF MEMBERS PRESENT:

Jann Stinnesbeck, Committee Policy Analyst
Jessica Dummer, Committee Counsel
Connie Barlow, Committee Manager

Kathy Biagi, Committee Secretary
Connor Schmitz, Committee Secretary
Garrett Kingen, Committee Assistant

OTHERS PRESENT:

Tracy Larkin Thomason, Director, Department of Transportation
David Goldwater, representing Nuro, Inc.
Katie Stevens, Head of State and Local Policy, West-Nuro, Inc.
Samuel Wempe, Director, Government Relations and Public Policy, Motional
Anand Nandakumar, Founder and CEO, Halo.Car
Aileen Zhong, Director of Government Affairs, Starship Technologies
Alyson McCormick, Assistant City Manager, City of Sparks
Michael Hillerby, representing City of Sparks
Cadence Matijevich, Government Affairs Liaison, Washoe County
Ashley Garza Kennedy, Principal Management Analyst, Government Affairs, Department of Administrative Services, Clark County
Jennifer Berthiaume, Government Affairs Manager, Nevada Association of Counties
Wesley Harper, Executive Director, Nevada League of Cities and Municipalities
Rodney Schilling, Chief Traffic Operations Engineer, Traffic Operations Division, Department of Transportation
Tessa M. Laxalt, Manager of Government Affairs, Nevada Trucking Association
Paul Nelson, Government Affairs Officer, Regional Transportation Commission

Chair Watts:
[Roll was taken. Protocols and rules were reviewed.] Good afternoon. Welcome to today's Committee on Growth and Infrastructure. We have all Committee members here in Carson City.

We will hear presentations from the Department of Transportation as well as a panel of presentations from autonomous vehicle technology companies that are operating in the state. Then we will have hearings on two bills today, Assembly Bill 2 and Assembly Bill 56. We will begin with the presentation from the Department of Transportation.

Tracy Larkin Thomason, Director, Department of Transportation:
I am the Director of the Department of Transportation. We have a mission statement to operate and preserve the transportation system that enhances safety, quality of life, and economic development through innovation, environmental stewardship, and dedicated workforce. Our primary goal is safety first. We cultivate environmental stewardship, operate and maintain the system, enhance internal and external communications, and [unintelligible] of effective data management. On the department breakdown, we have just under 1,900 full-time positions [page 3, Exhibit C]. We also add on to those temporary and seasonal workers. Our major divisions are Administration, Planning and Communications, Project Delivery and Engineering, and Operations and Maintenance.

We are divided into three different areas [page 4]. We have three maintenance districts, and I will talk a little bit more about them as we go on. We have approximately 13,501 miles of roadways, which equals 15 percent of all of Nevada roadways. These are actual lane miles, not centerline miles. We have 1,238 bridges in the state. We have, for the statewide traffic volumes, 50 percent of all traffic, "vehicle traffics" travel on the roadways, 70 percent of all truck traffic, and 68 percent of all heavy truck traffic. Obviously, I-80 and I-15 are major freight corridors. As for our maintenance districts, we have three districts. District 1 is Las Vegas and goes up to about Tonopah and covers about the bottom third of the state. District 2 is the northwest portion, including Reno, Tahoe, and the Carson City area. District 3 includes all the rural areas: Ely, Winnemucca, and Elko. They are basically all on 24/7 calls.

There are 45 maintenance stations around the state, and we have about 740 personnel associated with them. So, well over two-thirds of our department is composed of the maintenance divisions throughout the state. Our headquarters is in Carson City. On the executive leadership team [page 5, Exhibit C], I am the director. I have three deputy directors: Cole Mortensen, Darin Tedford, and Jeff Lerud. Cole Mortensen is over administration, Darin Tedford is over project delivery, and Jeff Lerud is over operations. We also have four assistant directors: one for administration, one for operations, one for engineering, and one for planning.

When I started with the Transportation Department, I was thinking of roads and highways. It is much more than that. It is also an integration of travel by rail, bike, bus, and foot. What I really like to say is that transportation is fundamental to our quality of life. From the minute you leave your door, you are using some form of transportation, whether it is a sidewalk, buses, whatever. It is part of how you get to everything you do in life: education, food, et cetera. I like to emphasize that it really is fundamental. Our mission [page 7] is "Safe and Connected."

We are responsible for the planning, construction, and operation of all 5,400 miles of highway and over 1,000 bridges in the system. Regarding the bridges, I want to say we have been number one in the nation for eight years. Additionally, we are federally mandated to inspect every public bridge every two years. On multimodal, we are also responsible for integrating the transportation system as we must serve all the users of the system [page 8]. We offer pedestrian trails, rail, bike, air, and bus systems. Transit is more through the urbanized area as passed-through funding to the metropolitan areas. We do cover rural transit. For emergency response [page 9]: if you have lived in Nevada for a long time, you have seen us plow snow, fight fires, deal with earthquakes and flooding. In 2020, we had the largest earthquake in the middle of Nevada where the pavement differential was six inches on Highway 95 near Tonopah. It is a big bump in the road.

We support other emergency management personnel when they come out. We work with first responders, and we work with the Federal Emergency Management Agency. We work, as necessary, with any entity involved in emergency management. Our maintenance stations also function as a base in rural areas for refueling and/or becoming a staging center for

emergency operations. We currently have a landslide on State Route 208 that happened in early January. We have 400 feet that is completely obliterated on State Route 208 in Wilson Canyon. We are working through emergency management to clear that out and also deal with the river right next to it to restore it to its precondition. We also deal with fires. One of our focuses as we move forward is to continue to plan for the resiliency of these things happening in the future in terms of working with other sectors and making sure that we are prepared to deal with what hits us.

The Freeway Service Patrol program is a service that is offered in both Reno and in Las Vegas [page 10, Exhibit C]. In the Reno area, it is primarily along I-80 and I-580. In Las Vegas, it is along I-15 and U.S. 95. They patrol the area helping stranded vehicles. They move them over to the side. If the vehicle is out of gas, the service provides it. They are trained in hazardous materials. They are also trained in cardiopulmonary resuscitation as they are the first responders. By traveling around, they can more effectively address issues and clear the highway. We also have worked with the FAST Center [Freeway and Arterial System of Traffic], the traffic operations center in Las Vegas. We have programs working with technology that integrate traffic patterns on the freeway with historical data. The cameras in the operations center look for anomalies and traffic that identify the situations faster. By looking at that over time, we have staged the Freeway Service Patrol to respond faster. They are integrated with law enforcement and with towing companies. When an incident is identified, we have reduced response time by 12 minutes, which is huge. We are always looking for different ways we can integrate with other sectors and more effectively cooperate to provide better response time to the user.

In supporting rural counties, we do a lot of county consultant processes. We go out a minimum of every two years; it is more often because we have the maintenance stations around the state. They are active members of the community, particularly in the rural areas [page 11]. We constantly look for feedback on what their needs are to determine how we can help them address their needs and identify and work through the issues they are dealing with.

On the Nevada State Climate Initiative, we look for ways to support environmental sustainability such as seeking alternate fuels [page 12]. We are particularly looking at ways to address electric vehicles. As you know, the federal administration is very pro-electric. We have had to implement the National Electric Vehicle Infrastructure plan. It is a challenge. Not only are we looking at how we place them, we are also looking at the availability of the grid. Can we actually place them? We need to consider who the end user is. If you are a person traveling alone, do you want to be on the side of I-80, filling up your tank plug-in for an hour or so? As you know, in Nevada we have vast rural areas. If you are driving along Highways 93, 315, or 368, there is nothing around. It is beautiful scenery, but you cannot see that at night if you need to charge. Those are the things that we are considering as we move forward.

We are looking at other things [page 13]; at the national level, what other types of fuels may be needed, particularly along the corridors for freight, such as hydrogen hubs. Basically, I am saying that we are fundamental. As I said before, we are here to work with other sectors, work on the highway, but also to promote economic vitality, sustainability, and getting people where they need to go.

How do we budget? Based on the latest financial information [page 15, Exhibit C], we have approximately $968 million available for projects in federal fiscal year 2023, the fiscal year being about halfway through. That number will fluctuate over the next four years. It is based on formula funding. The federal funding is apportioned to 10-12 formula programs, each with its own set of requirements for spending. We utilize highway user fees and federal aid. For 2024 only, the Governor's recommended budget is a General Fund authorization to fund approximately 99 percent of its operations. With the Governor's budget, you will see that we replaced an estimated $257 million of highway funding with General Funds in order to show the Governor's gas tax initiative. The federal aid highway program is a reimbursable program requiring upfront expenditure of highway funds. We pay upfront and then submit our billing to the federal government. Due to the high percentage of federal lands, since we are so high, in the 85-87 percent area, we only need to provide 5 percent match for most of the federal aid. Most states have to match with 20 percent in funds. Some of our programs do require 20 percent. The federal aid revenue figures do reflect an increased amount of reimbursement, and this is due to the passage of the Infrastructure Investment and Jobs Act. It increased our federal aid apportionment to Nevada by approximately 20 percent in federal fiscal year 2022. With each year after that, it will increase 2 percent until 2026.

In fiscal year 2024, the Department of Transportation (NDOT) is requesting authorization to sell bonds in the amount of $150 million—$100 million to be paid with state fuel taxes and $50 million with the fuel revenue indexing. If there is any confusion, please stop me in the middle of it.

For the Highway Fund revenue sources [page 16], this is what we get. The state user revenue equals about $627 million. The special fuel tax is about 19 percent. Driver's licenses are about 4 percent, and the motor carrier is 7 percent. The government service tax is 13 percent, gas taxes are 36 percent, and motor vehicle and registration fees are 21 percent. In addition to the state user funds, our total Highway Fund revenue is $1.14 billion. The other funding from federal funding is 29 percent of that. Other receipts are 7 percent, and the Department of Motor Vehicles (DMV) and Department of Public Safety is 10 percent.

I will now explain expenditures [page 17] and how the funding is spent. The chart indicates expenditures by category since 2012. What you see in the gray area is what we spend on construction. Maintenance expenditures are represented by orange, and administration is represented in blue. Over the time period, the average is 18 percent maintenance, 7 percent administration, and 75 percent construction and engineering. The Highway Fund expenditure on the state [page 18] is showing NDOT as just under $1 billion, about 75 percent of it or $935 million. The Department of Motor Vehicles is approximately $147 million; Department of Public Safety is just under $82 million; the "Other" category is

about $84 million. When I say other, it is the State Public Works Board. It is the Nevada Transportation Authority for regulation of functions like taxicabs and so on. It is also the transfers to the State Treasurer's Office for bond payments, such as were part of the $75 million for the buildings that were built for DMV. It is repaying those bonds and our portion of the SMART 21.

We also have federal funds that are directed to the metropolitan planning organizations (MPOs). We have four in the state: Washoe County, Carson City, southern Nevada, and Lake Tahoe [page 19, Exhibit C]. The urbanized MPOs, Washoe County and Clark County, get a specific apportionment of the program funds and it is suballocated. Basically, it is a pass-through from NDOT. In addition, the Surface Transportation Block Grant and the Transportation Alternative Plan have requirements for spending in other areas as well—the specific funding set aside for areas of a population of 5,000 or less. These are reflected in the work program while the urban area allocations are not because we are not the delivery agency. This shows it is the smaller areas and that NDOT covers the rural areas. We also have Congestion Mitigation Air Quality funding that we pass through NDOT. That is also for Clark and Washoe Counties because they are in nonattainment areas. Their specific requirements are set that they can use for different projects, but they must show that they help mitigate the air particulates, the air quality, by the projects they use.

Maximizing the federal funds: The bipartisan Infrastructure Investment in Jobs Act brings in a 20 percent increase in the federal funding to Nevada [page 20]. Over time, it will increase to about 31 percent over current funding. This will help maintain the program. One of the challenges we have is that inflation has kept up almost identically with the increase in funding. While we received about 21 percent more, inflation for construction is almost 20 percent. We are thankful that it allowed us to keep the program we had.

Obligations: I want to give big kudos to our financial department. With NDOT, one of the reasons we have been able to really maximize all the available federal funding is that NDOT brought in an additional $208 million in federal funding to Nevada. In August, the end of the federal fiscal year, we are able to obtain obligation funds from other entities. If we have $100 million, the federal government tells us that we can spend $75 million of it. That is our obligation authority. If, at the end of the year, every state is not using up their $75 million, we are allowed to ask for what they have not used. Then the federal government will expand our obligation authority, depending on what is available. Being very strategic about it, our financial department has looked at where we can ask for the extra funding, as $208 million goes a long way in projects. Also, I like to point out that our funding source has been constitutionally protected. We are not competing with General Funds. The funding is dedicated completely to construction, maintenance, and repair of the public highways of the state.

Chair Watts:
I will step in for a moment, Director, to say we are getting close on time.

Tracy Larkin Thomason:
How we prioritize: We have the One Nevada Plan [page 23, Exhibit C]. In the last several years, we have put together a data-driven plan where we look at specific priorities of connecting communities, safety, preserving infrastructure, mobility, economics, and sustainability. We have goals set with all of those and it is weighted. Part of that is we are trying to look for the best projects that hit one or more of these priorities. We also look at the federal and state requirements we need to meet over the four-year annual work program [page 25]. The short-range element and the anticipated projects at NDOT will deliver in years 2023-2025.

We also look at geographic splits and funding [page 26]. We look at how it is spread around the state. In general, the lane miles percentage in Clark County is about 21 percent, Washoe County is 8 percent, and the rest of the state is 71 percent. Obviously, the money is not split accordingly. Clark County has the majority of the population, so it generally receives about 75 percent of the funding. Washoe County comes after that, and the remaining funding goes to the rural areas. When I mentioned the split there, it was in centerlane miles.

In the obligations in the work program [page 27], you can see here where it shows the split in the different areas. The Department of Transportation preservation funding primarily goes to the rural counties with 41 percent. Clark County receives 32 percent and Washoe County receives 27 percent. However, with the other non-preservation funds, Clark County gets about 67 to 75 percent, and they also get a part of the preservation portion.

The strategic performance management process [page 28]: We look at our communication with the public, the state Legislature, other decision makers, and various levels of the management at NDOT. We also look at other areas within NDOT such as major divisions and program areas. The process is meant to be a performance-based, decision-making cycle. It gets to a point where we start looking at the geographical splits, political influences, and other factors like emergencies that would impact our program.

What we build: Obviously, we build highways, trails, and bridges [page 29]. We also perform services and operations throughout the state.

Challenges: The biggest challenge is the increasing population [page 32]. We are currently showing 15 percent growth. That is more than twice the national average. Inflation has gone up almost 20 percent and the vehicle-miles traveled has now actually increased to pre-pandemic levels. Electric vehicles and other alternate fuel cars are becoming much more prevalent. It is hitting that part of the curve where it is going to go straight up. These vehicles do not provide any income to the Highway Fund that preserves the roads they are driving on.

The state gasoline tax [page 33] generates about 0.8 cents for each mile driven by vehicles. But now we are down to 0.6 cents per mile. Over the next 20 years, it will decline by 50 percent. We are getting less return for what is coming in because the Highway Fund is

based on the gasoline tax. Inflation is also a big challenge [page 34, Exhibit C]. Asphalt has gone up almost 20 percent, concrete is up 14 percent, diesel fuel is up 33 percent, and equipment has gone up 20 percent. Those are some of the major categories.

Another big issue is staff vacancies [pages 35-37]. Overall, the department vacancy rate is 25 percent and growing. Some of the critical areas are in our maintenance areas. In Las Vegas, there is a 50 percent vacancy rate in maintenance. In the northwest, we are showing 45 to 75 percent vacancy, depending on which area in the state. I do not think it is a secret anywhere. It is compensation for most of them. We are concerned about it because it is a direct impact to public safety. While I have enough plows to plow the roads, I do not have enough plow drivers to plow the roads or to use the plows that are available. We do hire consultants and contractors as much as possible. That is not feasible for all areas, and it costs more to contract out.

Legislative priorities: We have the budget, part of which we discussed in our budget session earlier. I can go through them [page 39], or I can go straight to our legislative bill.

Chair Watts:
I think we will talk about policy since we are in the policy committee right now.

Tracy Larkin Thomason:
In that case, I will introduce Rod Schilling, and he will go over Assembly Bill 56.

Chair Watts:
We are going to go through all of our presentations and then come back around to bill presentations. That concludes your presentation, and we will open it up to questions from the members.

Assemblywoman Dickman:
In the presentation materials that we have, all the graphs, charts, and photos are missing. They are missing online as well. Some of us were thinking it would be good for us to have those graphs at least.

Chair Watts:
I can speak to that. We want to ensure that we can provide materials to the members of the public. Even if the people who are putting the presentations together have rights to images, the Legislature does not necessarily have those rights, which we would need in order to share them with the public. That is why we are having everything that is available to the public be text only or tables that are compiled with only text and numbers. We can make sure that we have some of the additional materials made available to all members.

Additional questions from the Committee? Seeing none, thank you very much for that overview and presentation from your agency. With that, we are going to begin our series of presentations about autonomous vehicle technology here in the state of Nevada. I recall some of the great fanfare when a few of the first autonomous vehicles were hitting the

streets, especially in southern Nevada several years ago. Our state has really been on the forefront of creating a policy and an environment to help spur the development of these technologies. We wanted to create the opportunity for members of the Committee to learn about some of the various applications. First, we are going to ask Nuro to come up and give a brief presentation. Welcome. Whenever you are ready, you can state your name for the record and begin.

David Goldwater, representing Nuro, Inc.:
I represent Nuro, Inc. and it was in this very room that we passed the original autonomous driving enabling legislation in 2013 at the behest of then-Chair Marilyn Dondero Loop.

Chair Watts:
Welcome back. It is good to have you here.

Katie Stevens, Head of State and Local Policy, West-Nuro, Inc.:
I am head of state and local policy at Nuro and just really thrilled to be here and to tell you a little bit about our business and our presence here in Nevada. This is our vehicle [page 2, Exhibit D]. We are focused on building a service that will deliver anything to you faster than you would normally get it at extremely low cost. To do that, we are deploying battery-electric vehicles that operate on-road and that are designed exclusively for goods delivery. This vehicle will never have a human occupant. There is no opportunity or no room in it to have a human occupant. It has none of the creature comforts required for human occupancy. We were founded in 2016, and we have a little over 1,000 employees in California, Texas, Arizona, and here in Nevada. We are delivering groceries, medicine, and pizza with partners like Kroger, CVS, Walmart, and Domino's. You may have seen some commercials in the past of it avoiding the Noid.

We work with different partners, recently FedEx and Uber Eats, as well. Regarding our investment in Nevada, we are excited to announce that we are working and will open this year an end-of-the-line manufacturing facility in North Las Vegas. We are at the Las Vegas Motor Speedway also, where we built a testing track. I have a brief video to show you as well. These are some of our partners [page 4] and you can see that this is meant to showcase the use for these vehicles. We have the grocery delivery service where we can extend the physical grocery stores to food deserts. We have about 20 million people who live in food deserts today and we believe we can reach about 70 percent of those with this type of vehicle. We also have the Fun Burrito. You get delivery, maybe through FedEx, from a low, zero emission vehicle that is narrow, light, and low speed. I know there was a conversation earlier in the presentation about the cost of infrastructure of our roads. This is a narrow, lighter vehicle. The impact to road infrastructure is diminished. The result is lower cost and lower impact to the roads and infrastructure.

This is our third-generation vehicle that is being manufactured in North Las Vegas. You can see it is a step beyond our R2 second generation. This is our R3 or next generation. This will go a little faster, it has a larger payload, it will have heating and cooling in the compartments, and you can see how we have compartments within a compartment, and you

can see what the uses for these two compartments could look like. On the front of it, you will see a human machine interface screen. When you order with Nuro, it arrives, you punch in the code that you are texted, and those doors open. Then you take what you need, you push the button, the door closes, and it is on its way.

We have been at the Las Vegas Motor Speedway for about a year and a half. We have built this small city at the Speedway with our testing track, which is ironic because we go very slowly. This type of model allows us to address community challenges like safety. Nevada has one of the highest rates of fatalities on our roads. We look at what a lower speed vehicle means for that reduction in fatalities. We have a study that says we are looking at 60 percent fewer injuries and fatalities if we scale something like this on our roads. Our focus is making sure we have public trust and are reducing fatalities and injuries on the road by creating a safer vehicle. We are also zero emissions and are also 100 percent renewable. That has been instilled in our culture from the onset.

I mentioned serving food deserts. This is important to us in terms of our reach. Regarding serving communities that are typically underserved, we have areas of Houston, for example, which are longtime food deserts and do not have access to fresh food and groceries. We have elderly and/or disabled people who are unable to get to the grocery store and we can provide home service.

We produce a respectable number of new jobs with our retail partners and at Nuro itself. These are fully benefited, living-wage positions such as we will have at the manufacturing facility and already have with our existing footprint. An independent report came out from the Steer Group [page 6] that found, if we scale this model vehicle between 2025-2035, we are looking at the following things: 3.4 million jobs created; $4.1 trillion economic activity generated; 348,000 fewer crash injuries; 407 million tons of carbon dioxide avoided; 8,000 tons of particulate matter 2.5 and harmful emissions avoided.

Our investment in Nevada [page 7, Exhibit D] is $40 million to develop the two facilities previously mentioned in North Las Vegas and at the Las Vegas Motor Speedway to commercialize the scale and production of our third-generation electric vehicle, which you saw. This is a rendering of our large manufacturing facility [page 8]. It is being built and will be the first end-of-line manufacturing facility in the country with the capacity to manufacture tens of thousands of these electric delivery EVs. We are breaking ground on several levels: breaking ground on the building, but also just in the nature of what we are doing here. The facility will total over 100,000 square feet on 8 acres of property and opens this year. This is our 74-acre testing track [page 9]. You will see a durability track, which is what that is, which allows us to test on various types of surfaces. We have simulation testing, artificial testing, synthetic testing, and road testing. This is where we can, in a safe space, test all sorts of environments. Obviously, this is prior to on-road testing. We must validate and go through a number of testing procedures before we move onto roads. This is a valuable stage in our safety testing.

We are looking at the creation of about 250 high-skilled career opportunities with a $2.2 billion economic impact in the first ten years here in Nevada [page 10, Exhibit D]. Lastly, I want to talk about how the state has been a leader in promoting safe development of autonomous vehicles. We are proud to be here and proud of the leadership this body has had since 2011 [page 17], which is when the first autonomous vehicle bill passed the first legislation in the country. Last session, you passed Assembly Bill 412 of the 81st Session, which allows us to operate on road. It says that we are not required to have items like side-view mirrors and dashboard indicators. If you do not have a driver or anyone in the vehicle, it does not make sense to require these items. Thankfully, the State and this body agreed and passed this bill that allows us to operate here. Nevada is also continuing leadership for autonomous vehicle job growth. Senator Marilyn Dondero Loop is working on a bill this session. We hope to have more discussion about this in the months to come. I thank this body again for all the support and leadership of the state when it comes to autonomous vehicle and innovation policy.

Chair Watts:
Thank you for that presentation. It is exciting to see the development of this technology move forward, and we appreciate the investments that you have made here in the state of Nevada to deploy zero-emissions and autonomous technology. We will open it up to see if any members have questions.

Assemblywoman Kasama:
I have a quick question from your presentation. Since it can only go up to 45 mph [miles per hour], I am assuming it cannot go on the freeway; it will be all side streets.

Katie Stevens:
That is right. We use a network of neighborhood roads right now, so it is meant to be first mile-last mile goods delivery service for the time being. They are about the size of a sedan, so they are not tremendously large. That sweet spot is sort of first mile-last mile.

Assemblywoman Kasama:
In the compartment, is one compartment for one person buying goods or are there a lot of different items in the compartment and people just pick out what is theirs? I am curious to know how that works.

Katie Stevens:
It could be a variety of things. It could be that for FedEx, for example, we would have the doors open and you would have a unique code for the locker that is yours. That creates efficiency, but it also lowers the carbon footprint. We want to eliminate congestion on our roads and matching is important for retail partners as well. We want to reduce the vehicle miles traveled. The whole locker idea is what is going to be impactful, and that is what we are looking at.

Assemblywoman Miller:
Earlier in your presentation, you mentioned that they were slow. Now you mentioned they go up to 45 mph, and 45 mph is not slow. I do not want to imply that it is the average speed on many roads, but if you are hit by a vehicle going 45 mph, it is pretty impactful. Can you speak to that? Because at that point, it is literally going the same average speed as most automobiles.

Katie Stevens:
That is a wonderful comment. Right now, our vehicles are low-speed vehicles. The neighborhood electric vehicles only go 25 mph. This next model will be able to go up to 45 mph, but it does not go that speed now. When I talk about low speed, I am talking about 25 mph. Regarding the network of neighborhood roads, when you go to 45 mph, that is when you go on the higher speed roads. What we find valuable are a couple of things: This vehicle will never drive drunk or distracted and it will never drive over the speed limit. Those are the benefits to communities at the local level and on residential streets. We are supportive of the types of livable streets, livable communities and policies that are really focused on bike infrastructure and finding other modes for people to get around in a low-carbon way.

Chair Watts:
Thank you. I believe, just to follow up, that one of the issues was making sure we have a lot of those 45 mph arterials. From what I have understood previously, the goal is to be able to cross those arterials, to use them when necessary, but for the most part to stay on those smaller, slower streets. Is that correct?

Katie Stevens:
Yes, that is right. In fact, the bill from last session, the equipment exemption, also did address that, so thank you for clarifying that.

Assemblyman Miller:
Thank you all for coming to North Las Vegas. How many people do you plan to employ at the North Las Vegas location? What is the average salary range and the skill sets that are involved with working there?

Katie Stevens:
We anticipate hiring about 250 employees between the two, but most of our employees will be at the manufacturing facility. As far as wages, I do not know off the top of my head. But what we do have is a commitment to work with our community colleges. We do that already in the Bay Area, and in Houston, and are really looking forward to doing that in North Las Vegas. We are looking at livable wages, and they are fully benefited positions. In the other states where we operate, we have Fleet Tech, and EV Fleet Tech certifications are the first of its kind. What we do is take existing curriculum and pull it together. A little bit of information technology and a little bit of auto tech creates maybe a perfect certification program or training for an auto tech. It could be the same sort of level of education that may be required in the manufacturing facility. In the Bay Area, you can go to school and get this

up-scaling for free, right? You go to school, and you work at Nuro while you are getting this certification. Or you get the certification and then go work at Nuro. That sort of opportunity, not having to give up a job necessarily to go to school, having a job while going to school or getting training, is important to us. We would love to collaborate with local workforce groups and colleges to make that happen.

Assemblyman Miller:
Thank you for all of that. When do you plan to bring the 250 jobs online? What does the timeline look like before you are fully staffed?

Katie Stevens:
I think it will take a little bit of time. We will have the building up and running or fully built by the end of the year, and then we will slowly start increasing staff as we start deploying more of our third vehicle. Right now, we are looking at the demand for our next-generation vehicle. How are we deploying? What is the demand for that vehicle? That demand spills over into our manufacturing facility. It probably changes a little bit, but we are looking at 250 over the course of the next year or two.

Chair Watts:
We look forward to continuing to hear about those workforce development initiatives. It is great to create new jobs here in Nevada, make sure there are opportunities for that across the community, and then create those credentials that also help build career paths for folks.

We will move on to our next presentation where we will hear from Motional. It is good to have you here.

Samuel Wempe, Director, Government Relations and Public Policy, Motional:
I am joined here by Morgan Roth, who is also at Motional. Motional had the pleasure of presenting to this Committee two years ago. We are excited to give you an update for where things are and what we have been up to over the course of the last few years. For those of you who do not know Motional, we are a joint venture between Hyundai Motor Group and Aptiv PLC [page 2, Exhibit E]. Many of you probably saw Aptiv vehicles around Las Vegas several years ago. Essentially, everyone who was at that facility is now a Motional employee. We are developing autonomous vehicles. They are on an all-electric Hyundai platform. You can see an image of it right here. I would like to stress that these vehicles are going to be used for ride hail only and that they are being developed for fleets only. We are not a freight autonomous vehicle developer, and these are not going to be vehicles that are ever going to be for sale at a Hyundai dealership. These are specifically going to be for fleet operations on ride-hail platforms.

I will give you a bit of information about Motional and our footprint [page 3]. We have our largest testing facility in Las Vegas. We started investing in Las Vegas in 2017. I am not going to belabor the point around Nevada's forward-thinking approach to autonomous vehicles, but that is what gave us the certainty to start investing in the state. We have really grown quite a bit since then. Outside of Las Vegas, we also have facilities in Santa Monica,

the Boston area, the Bay Area, Pittsburgh, and Singapore. We have over 350 employees in Nevada. Since we last presented to you, we have added 100, so a hundred in the last few years. Things are looking good. We are likely to continue growing, and I have some more information about workforce as we get into that. We are partnered with Uber and Lyft. We are the only autonomous vehicle company that is offering rides on both of those platforms, including in the Las Vegas area, right now. If any of you are on the Strip, open up Uber or Lyft and if you are going between two places that we serve, you have the opportunity to be matched with one of our vehicles. You will be given a little bit of information and you have to opt in by proactively choosing one of those rides. We have given over 125,000 rides to members of the public since we started giving those and we have not had, in the 2 million miles, a single at-fault incident in that entire time.

I will share a little bit about our time in Nevada [page 5, Exhibit E]. As I mentioned, we have been investing here for several years. We opened our first technical facility, which I have a little bit more information about, in 2018. We first began testing on Uber and Lyft shortly thereafter. By 2019, we had given 70,000 rides to members of the public in Nevada, and that had grown to 100,080 rides to members of the public in 2020. We upgraded our permit to be able to start testing fully driverless vehicles later that year. In 2021, we began first testing without a safety driver on the streets around Las Vegas. I will say, though, that if you are going to get a ride in one of our vehicles over the course of the next couple of months, they will still have a safety driver in them. But by mid-point this year, we are going to have fully driverless vehicles without safety drivers operating in the Las Vegas area. And again, all those vehicles that are on Lyft and Uber are fully electric Honda IONIQ 5s.

In our time in Nevada, we have been partnered with a number of different organizations. First, we have been working very closely with the Regional Transportation Commission [page 6]. We have found them to be a great partner in discussing all things transportation. We also work very closely with the Las Vegas Metropolitan Police Department. We are doing some interesting testing with them right now where we are doing siren detection, light detection, and building a playbook for making sure that autonomous vehicles operate better than a human after an incident or around first responders to give first responders the confidence that these vehicles are on the road and are going to be operating as safely or safer than a human driver.

We also work very closely with Workforce Connections to make sure the pipeline of talent that is coming into all of our companies has all the skills it needs to succeed and to develop in Las Vegas. You have a couple more photos here of our vehicle going along the Strip and some photos here of our technical facility. Regarding our workforce: I mentioned we have 350 employees [page 7]. I will provide a bit of a breakdown in terms of what that looks like. So that is 20 percent engineers: Your classic coders, software developers, and Ph.D.s, some of them coming out of Las Vegas schools, some of them moving from elsewhere in the United States and bringing their families and purchasing property here. But 45 percent are vehicle operators. Those are your safety drivers and those jobs do not require a college education. In fact, you just have to have a clean driving record and a strong desire to want to learn and work hard. Those are full-time employees, and they start at $60,000 a year, and

have full health care benefits. There is a lot of upward mobility within that role. We have a number of folks who have moved into much higher positions such as fleet support, remote operators, and a number of similar roles.

As we go to fully driverless, these employees are going to continue to be employees and there are several things we are going to have them doing, such as continuing to test in new areas around Nevada to make sure we are constantly growing the territory that we operate in. We have 20 percent who are technicians, support specialists, and remote operators. A lot of those, especially the technicians, are coming out of vocational schools. Since 2021, we have invested over $20 million in a 25,000-square-foot facility that is currently in Las Vegas. I will stop there and see if there are questions.

Chair Watts:
Thank you for the presentation. Members, do we have any questions for this presenter? I have one. I have had the opportunity to visit and to ride in one of the vehicles. Could you speak briefly about the ongoing testing as well as some of the mapping work? I think it is helpful for members to understand the different technological applications and, in general, understand where you are operating the extensive mapping you do of the environment in advance. Also, could you speak to the high level of your approach? It seems at this point, this technology cannot just turn down the road. You must do a lot of work on the front end to make sure these vehicles are really prepared for different encounters or situations they could face. Maybe you could also speak a little bit about roadwork and other things that change up what is going on in the roads.

Samuel Wempe:
The mapping pieces are a very important component. Before our vehicles go anywhere, we must map every area dozens of times. That is not just a map like what you see on Google Street View. This is a three-dimensional, high-definition map. This allows us to have 100 percent certainty when we are driving down the road that if there are changes, we know exactly where those changes are, and it allows our vehicles to know precisely where they are down to the millimeter on any given road. If there are storms that blow debris into the roadway or if there is impromptu construction, our vehicle is able to pick up those things with its sensors, compare that with the high-definition maps that it already has and know that, Okay, this is something I can navigate around, or maybe this is something that is a little bit more challenging, or there is an emergency situation and it knows exactly how to handle those. That is why you cannot bring a car ride up to Carson City right away giving rides to the members of this Committee up and down the street. We just have not had the opportunity to map in those areas yet. That is a very expensive endeavor to do ahead of time. As roadway construction happens, it is a complex thing that is handled at a lot of different levels of government. We are always making sure that we are trying to keep abreast of where those different construction projects are working because there is a limited area where we operate, and making sure we have the ability to test on the roads is critical.

Chair Watts:
Thank you. And could you speak briefly to the incorporation of some of the connected infrastructure technology, traffic signals, and other things, and how those interact with your vehicles?

Samuel Wempe:
Absolutely. The way our vehicles are designed, in terms of redundancy, is that they do not rely on smart infrastructure because our roads must operate on the roads of today, and a lot of the roads, frankly, do not have smart lights or different sorts of smart meters, things like that. However, there are a number of different smart intersections all throughout the Las Vegas area that operate on previously dedicated short-range communications. They have moved to other frequencies now, and we do have the ability to leverage those. When they are available, we can make use of them. We can make our planning a little more efficient, but if we are ever in an area where a traffic light is down or is not operating, we can still operate just fine without those pieces. We do not require massive sorts of infrastructure upgrades in order to operate. We can operate on the roads of today.

Chair Watts:
Are there additional questions from members of the Committee? Thank you, Mr. Wempe, for providing an update on your company's activities.

Next, we will hear from Halo Car or Halo.Car. I am sure I will learn the proper way to refer to it shortly.

Anand Nandakumar, Founder and CEO, Halo.Car:
Before I start presenting, I am so proud to be in Nevada because I started the company in San Francisco as a solo founder, and I moved to Nevada with just a backpack and a minivan. We are 30 people now. I want to talk about that process journey, but I want to start off with a vision of why I started Halo in the first place. I had a vision that the world should be running on all-electric vehicles, and today there is a big difficulty. Only 3 to 4 percent of the general population has access to an electric car. The number one problem is because it is too expensive: $40,000 to afford a single electric car; not everybody can afford a $40,000 car. Number two is even if you are able to afford it, you have to retrofit housing for some form of charging infrastructure. It is a big limiting factor for general populations that are rapidly changing to all-electric vehicles. Number three is that private cars, when they are owned and operated privately, are parked 96 percent of the time. So for every car we make in the U.S. today, we make eight parking spaces that come with it. This is why cities today in the U.S. are not walkable. If you go to Europe, every city is nearly walkable. It is because there are not enough parking spaces in the downtown area. Cars are not allowed in downtown areas. So, we want to think about changing this infrastructure. That is why I started Halo in the first place.

What if a car could be delivered to you with nobody inside and dropped off to you for you to drive? Then when you were done, what if you did not have to think about parking the car? That was a vision for Halo [Exhibit F]. With the push of a button, a car just comes to you

with nobody inside. It is delivered to you and then you jump into the driver's seat. You take over and drive the car for as long as you want. When you are finished, you do not have to think about parking. We all understand parking is a nightmare no matter what city we live in. So, you just get out and walk away. The car is gone.

The biggest difficulty in operating a fleet is repositioning the fleet. If we solve that repositioning problem, everybody now has access to an all-electric vehicle. That is the vision for Halo. That is what we are building. It is extremely convenient if you think about the whole transportation sector—the private transportation sector. You have your rideshare companies, you have your car-share companies, and you have the car rental companies. Halo combines them all together in a unique way. You are able to get a very affordable car-share service at a very convenient and accessible way. The car comes to you. That is the beauty of Halo. We are not autonomous. We are simply hiring people and training them to remotely drive the car or pilot the car, very similarly to how the U.S. Department of Defense has been piloting drones. We have about eight different patents we have filed as to how we operate this remotely, be extremely safe, and extremely precise.

I started the company in 2019, as earlier mentioned, just for myself. Before that, I ran Uber's perception teams for the self-driving cars and trucking program and realized that autonomy is an incredibly hard challenge to solve. It is going to take a very long time before we can actually develop a commercial product that is scalable. But we want to find a way to solve the climate problem. We want to get the entire population moved to all-electric vehicles. That was the primary vision behind Halo.

In 2020, we had an operational prototype. In fact, I was literally sitting in a car and driving it with an Xbox controller; that was how the first prototype came together. We started road testing in 2021 and then moved to Nevada in February 2021 and worked closely with the Department of Motor Vehicles to get this permit saying we were ready to start testing on public roads. That is how we commenced testing on public roads, and that allowed us to raise even more capital from some of the top investors in Silicon Valley. I personally raised it. I have gone through all the fund-raising processes myself to close that round, and that allowed us to grow and bring this service to actual commercial viability. I will talk about how we are doing it, but before that, we have customers, which means that we have revenue. People absolutely love us the minute they see the car delivered to their doorstep, and they do not have to worry about going to a secluded parking lot in a random place to pick up a car and then later drop off the car at another parking lot. The game changes. They keep coming back over and over and over. They want to keep getting a car over and over, and they are almost ready to give up their cars and start moving to an all-service model. We have received a ton of coverage in the press. I know we are a very young company compared to all the other folks. We are much smaller, but we are getting a lot of attention. People have written about us from local to nationwide. They have written about how we are operating in Las Vegas.

We launched the service in four different stages [page 11, Exhibit F]. Stage 1 is only manual; there is no tech and no autonomy. There are no remote pilots. When you go to Halo.Car today, you can request a car. We will just sit in the car, drive the car, and deliver the car to you. Again, the primary mission of the company is to move the entire world to all-electric vehicles. It does not matter how the car comes to you. Once the car comes to you, you jump in, and you drive however much you want. When you are finished driving, you literally leave the car on your doorstep and walk away. We will remotely lock the car and take over, dispatch a person to come pick up the car, bring it back to our parking lots, get it charged, clean it, and get it ready for the next customer. This is live right now in Las Vegas, and customers are ordering every single day.

Stage 2 is when we started testing remotely delivered cars. That is someone in our base station who is trained to pilot the car, sit there, and drive the car remotely with a safety driver inside to be absolutely certain we are doing everything the correct way to get the car delivered to a customer. Once it is delivered, it is the same as stage 1. The customer drives the car and once they are done, they drop it off.

We are super proud of stage 3. Stage 3, which we are commencing very soon, means that the car is fully driverless. There is nobody inside the car, and it is fully remotely driven with a chase car to deliver the car to a customer. In the chase car, there are two operators. One is a safety driver who is driving the car itself, and there is an e-stop operator, which means they have a wireless stop button so they can stop the car whenever they need to stop the car. We are commercially launching that stage in the first quarter of this year in downtown Las Vegas. We are very proud of this achievement.

The last stage is stage 4 where we will not have a chase car at all. That is when you request a car, and the car just comes to you with nobody inside. That is a sight to see. We have viral videos on this one; it is so amazing. When the car comes to you, you just jump in and drive. That stage will be launching later this year.

This is the current coverage zone for stage 1 [page 12]. Except for the airport and some small areas, we cover all of Las Vegas. You can be in Centennial Hills, or you can be in Henderson. It does not matter. You just go to Halo.Car and request a car. We will deliver the car to you. It is all electric, fully charged with 260 miles on a single charge, and you drive it as long as you need to. You do not have to worry about recharging it when you give it back. Just save us ten miles and that is it. We will take it back, and it is very affordable.

This year, we are going to be rolling out stage 3 in downtown [page 13]. That little triangle-shaped box that you see, the yellow one, is where we are starting off in the first quarter and we are going to be scaling that across Las Vegas, as you can see. The large green polygon is for manual deliveries. The purple polygon is the actual remote deliveries we are going to be scaling to.

We had an incredible 2022. We have a brand-new office right across from The English Hotel where the famous kitty statues are. We took over the building, and we now have almost 30 people. We started road testing, fully remote—nobody inside the car. One of the pilots is a military veteran, locally hired, and a fully trained, full-time employee. We have an incredible partnership with T-Mobile. They saw the Internet Protocol that we created. Not only do they partner with us, but they also invested in the company because the value at which we are using the network is very powerful for them. Many people have taken rides in our cars, from law enforcement, cities' council members, and mayors. We are super excited for that close level of partnership with the City of Las Vegas and the state. This is Halo and we are Halo.Car. Thank you very much.

Chair Watts:
Thank you for the presentation. I think some of those additional stages are set, at least partly, in Assembly District 15, which is exciting to see. Members, do we have any questions?

Assemblywoman Gallant:
It is an interesting idea. While you were talking, I set up an account. I wanted to see how much it would cost. It seems like the idea is no more cars, especially if you live in a city, and we would not have to buy cars anymore. We could just have this service. Do you envision a way to make it more affordable, because right now it is $80 a day and most people cannot afford that. Could there be some kind of subscription service?

Anand Nandakumar:
Right now, it costs $800 per month for the average car to be maintained. That is way too expensive. We want to get to a point where a car becomes a service, not an asset that is losing value every single day. We want to get to that stage, but we must start somewhere. As a young company, we must start at a point where we can show some form of break-even period for the car, and that is why we are starting with that cost. But then, the whole point of the car is, even if you take a car, you should not be parking it. If you rent a car today, it is parked 96 percent of the time. So, when you use the car, we are asking you to use it by the hour. Rented by the hour, it is only $10 an hour. Use it by the hour and when you are done, we will come pick it up wherever it is. Do not hold the car; just give it back.

Assemblywoman Gallant:
With that, is it an app or is it a phone call? How easy is it to say, Okay, I am done. Please come get it. Also, what is the wait time to get another car?

Anand Nandakumar:
It is not an app. You do not have to download anything. You just go to Halo.Car on your mobile phone and you can request it right away. It is also all online on the website and mobile website. It is live right now, and the delivery time is about an hour. Because we are still a young company, we have a small fleet. We only have 17 cars right now. We still have

to scale to that level where we can drop that delivery time. But any time you request a car, you are already planning where you want to go and how you want to use the car. It may be an IKEA trip or to pick up a couple of friends. You already are planning that ahead of time and that gives us the ability to use that hour to plan our delivery windows.

Assemblywoman Kasama:
Once you take possession of the car, could you have the option of not driving and having your driver continue to drive? We could sit in the back seat and work on our bills.

Anand Nandakumar:
There are two reasons why we do not do that today. We might in the future, but the number one reason is the liability is too high for us. You are way too expensive a consumer for us to drive you around. So, we cannot. That is number one: Insurance purposes. Number two is that it is not cost-effective for us when we drive. That means that now, one of our pilots is fully occupied for the entire duration of our driving you. It is simply not a profitable venture for us to pursue. However, we do see a beautiful merge between autonomy and the remote pilot when a remote pilot becomes a supervisor way down the line where you could technically sit idling. We do not have to do any driving. The car could do the majority of the work, but the remote pilot becomes a supervisor and is able to push some commands to it to get over some of the humps. That could happen in the future.

Chair Watts:
Members, any additional questions? I appreciate the clarification that it is remote driving technology right now. It sounds like autonomy is envisioned—potentially down the road in future phases. Thank you for coming and sharing an update on your operations with us today.

That brings us to our last presentation for this panel. We have Starship Technologies joining us.

Aileen Zhong, Director of Government Affairs, Starship Technologies:
Starship [Exhibit G] is revolutionizing the way goods are moved with autonomous delivery through our personal delivery devices or delivery robots. These delivery robots are low mass, low speed, and designed to deliver food, groceries, and packages locally. Here is a little background on Starship [page 2, Exhibit G]. We were founded in 2014 by the two co-founders of Skype after a request, or competition, was created by the National Aeronautics and Space Administration for moon rovers. Needless to say, they did not win that competition, and these [Starship robots] did not end up on the moon. But they knew that they had something that could make an impact on earth by solving the issues around last-mile delivery.

From 2014 to 2019, the company was in a research and development phase to ensure that the best and safest product would be put out there for autonomous delivery. From there, we launched our first commercial delivery in 2019 and have been expanding ever since. The robot is designed to deliver locally within a 3- to 4-mile radius and can be accessed through a

mobile application platform either through the Starship app or, depending on who our partner is, it could also be through the Grubhub app. The robots are locked and secured until they get to their destination. The person who placed the order can unlock the robot with their phone to retrieve their items. They can also watch the robot as it travels from the pickup location to retrieval.

The vehicle can fit about three grocery bags' worth of food and can carry about a 25-pound payload. So how do these personal delivery devices operate? The robots travel at about a fast-walking speed [page 3, Exhibit G], about 4 mph or so, but significantly slow down when they encounter humans. When they are in a crowded place or around other pedestrians, they slow down to about 2 mph. They can operate essentially anywhere pedestrians are able to navigate, but they mainly operate on sidewalks and crosswalks. They were specifically made to be about human shoulder-width apart, about 22 inches, so that they can navigate safely around the sidewalk spaces. How do PDDs [personal delivery devices] avoid obstacles? Our robots have a whole host of safety mechanisms in place that allow them to see and navigate the world autonomously. This includes cameras. There are about 12 of them and include 3 time-of-flight cameras. There are also ultrasonic sensors, global positioning systems, and a whole host of neural networks that allow them to see the world. In rare cases, if a robot ever gets stuck in an unfamiliar situation, it can ping a remote operator or local staff to analyze the situation and get the robot out from wherever it needs to be removed. Some benefits to our operations are that we are able to reduce vehicle miles traveled and take delivery vehicles off the road, which in turn reduces congestion on streets and increases safety, helping to reach Vision Zero.

Since we began our commercial operations, we have completed over 4 million deliveries worldwide and driven over 5 million autonomous miles since our inception [page 4]. Additionally, our robots have completed over 140,000 road crossings across the world. We now operate in six countries, including Estonia, Denmark, Germany, Finland, the U.K., and obviously, the U.S. We currently are in operations at about 35 different college campuses across the country, including the University of Nevada, Las Vegas (UNLV), the University of Nevada, Reno, Arizona State, UCLA, Purdue University, James Madison University, the University of Mississippi, and so many more. Of these 35 campuses [page 5], we operate in about 25 states. We also have operations citywide as part of our global operations and also part of our university operations. We have the ability to operate citywide, but our main focus here in the U.S. has been campus operations because of the need and desire for our robots to operate in those secluded places. There are 24 states across the country and Washington, D.C., that have legislation in place that provides a framework for PDD operations [page 6]. The legislation itself provides guidance for weight, speed, and allowance for operations on pedestrian-accessible areas such as sidewalks and crossings. They are categorized as nonvehicular because they only operate on sidewalks and crossings. These laws are fairly broad across the U.S., so it allows a lot of room for control and for these decisions to ultimately be made at the local jurisdiction level as to where the robots can or cannot operate, so a lot of these decisions are made at the local level.

In the jurisdictions we currently operate in, we are excited to bring our services to more campus areas in Nevada. Unfortunately, one of the barriers we face to operations and expansion here in the state is Dillon's Rule. For example, we have been operating at UNLV's main campus for about six or seven months now, but we have a limitation as to where we can expand. Because the campus crosses a number of public roads throughout the county, we are not able to cross those roads because they have not been given the authority to allow permits to be issued for PDD operations. Our hope is that introducing legislation this year will provide an explicit framework for local jurisdictions that will allow them to have the permitting authority so that we can expand our services to the university and the state. That concludes my presentation.

Chair Watts:
Members, do we have questions?

Assemblywoman Gallant:
Does it have the capabilities of being able to know when it can cross a street? Las Vegas has really bad accident rates. I am just concerned about that increasing.

Aileen Zhong:
Our robots cross about 140,000 to 150,000 crossings every day autonomously. Because of the ultrasonic sensors and artificial intelligence imaging, they can understand where the crossings are, when the light changes, and when crossings change so that the robots can see and then make their move and cross the street safely.

Assemblywoman Gallant:
Las Vegas is also known for drinking 24 hours a day and a lot of silliness goes on. How do you ensure that people do not trip over them and that we do not have issues with regard to people getting hurt?

Aileen Zhong:
Great question. The way a lot of our operations proceed and move forward is that we ensure our robots have the ability to stop when there are pedestrians in front of them. They have the ability to see when a pedestrian is in front of them and can navigate safely out of the way so that no one can get injured. They are moving at about 2 mph around pedestrians, so they are moving extremely slowly. Those are some of the ways that our robots detect and understand where humans are in order to safely navigate out of their way.

Assemblywoman Peters:
I want some clarification on something you had said earlier: Vision Zero. What does that mean?

Aileen Zhong:
The Department of Transportation wants to reach Vision Zero, which means zero fatalities. It means removing vehicles from the road in order to achieve zero fatalities from vehicular movement.

Chair Watts:
I certainly hope that we will not experience any fatalities with a vehicle going 4 mph. Any other questions for members of the Committee? We thank you for the presentation.

Members and members of the public, I hope you found it interesting to see the different ideas and applications of autonomous and remote vehicle technology in our state—everything from the robot level operating on sidewalks to operating on roadways, from delivery services to ride shares, and even to vehicle delivery for drivers. So again, I want to thank our presenters for sharing these things. We are excited to provide an environment where these technologies can be tested and, as they are proven, deployed.

With that, we are going to move on to our business for the day, which is our bill presentations. We have two bills before us. The first is Assembly Bill 2, which revises provisions relating to public safety. I believe we have representatives from the City of Sparks joining us. I am going to open the hearing on A.B. 2. You can proceed whenever you are ready.

Assembly Bill 2: Revises provisions relating to public safety. (BDR 43-355)

Alyson McCormick, Assistant City Manager, City of Sparks:
We are here today to discuss Assembly Bill 2, which is the result of the City of Sparks' sole bill draft request. Current law allows the Department of Transportation (NDOT) and its contractors to use nonflashing blue lights on their vehicles during road maintenance and similar activities. Assembly Bill 2 would add local governments and their contractors to the entities that are authorized to use nonflashing blue lights on their road maintenance vehicles. Blue light is more visible from farther away, especially in certain conditions like nighttime or snowstorms. If drivers on the road can see local government vehicles from farther away, they can more effectively and more safely take appropriate action like slowing down or changing lanes to avoid those slower-moving vehicles. That is especially important for much of the work that local government maintenance crews perform on our streets. For example, City of Sparks maintenance employees are responsible for maintaining traffic signals at 113 intersections, 734 lane miles of roadways, and 10,578 storm-drain catch basins, which are located in city streets so that our roadways are clear of stormwater. These essential maintenance activities require city vehicles to move much more slowly than general traffic, or to be stopped altogether. Most nonresidential streets in Sparks have speed limits of 35 mph and some have speed limits up to 55 mph, making increased visibility extremely important at those higher speeds.

Over the course of three days between New Year's Eve and January 2 of this year, City of Sparks employees spent 502 hours in snowplows and drove more than 4,000 miles in snowplows just over the course of those three days. Snowplows, of course, travel more slowly than the average vehicle, and improved visibility for these vehicles will help keep

both our city employees and the traveling public safe. In conclusion, A.B. 2 will allow local government vehicles to use nonflashing blue lights which are more visible, improving safety for local government employees and the public alike. Thank you for your time and consideration of this bill.

Chair Watts:
Do we have any questions for the presenters of the bill?

Assemblyman Carter:
I want to clarify one thing. This is meant for local government, state government, and quasi-governmental operations, meaning people under contract, like the Freeway Service Patrol. I am assuming, because I read it completely, it is not meant for road construction vehicles—heavy contractors, heavy highway contractors and the like—or is it?

Alyson McCormick:
Thank you for that question. I believe the language is probably broad enough that those contractors, arguably, do fit into that. However, these are nonflashing, static blue lights on vehicles on roadways.

Michael Hillerby, representing City of Sparks:
I can clarify. Look at page 2 of the bill, section 1. The new language appears in paragraph (g) [subsection 3]. It is identical, other than the change from NDOT to local governments, to that in paragraph (d) [section 1, subsection 3]. This is limited to those times when one of these vehicles is performing that kind of work or assisting a traffic incident, which is also defined in that bill. It would not be for normal construction activities such as a contractor driving down the road from one construction site to another doing private work. It would be for those public vehicles or someone directly under contract and those limited sets of circumstances for which Nevada has long had a duty to the public for drivers to either slow down or stop for those traffic incidents in those vehicles. So, there are some limitations there.

Assemblyman Carter:
Thank you for that clarification. My concern was the overuse as we experience with the construction companies using their strobe lights when they are really not even in a construction zone. I did not want to see any expansion of that disruption of traffic.

Chair Watts:
Are there additional questions from members of the Committee? Seeing none, thank you again for the presentation. With that, we will open testimony on Assembly Bill 2. Since this is our first bill hearing in this Committee, I just want to remind everyone that per Assembly Standing Rule 54, a person must state for the record whether they support, oppose, or are neutral on the measure before the Committee. Support consists for approval of the measure as written or as written along with proposed amendments that have been approved by the

sponsor of the measure. Opposition consists of not supporting the measure as written or as revised by an amendment that has not been approved by the sponsor of the measure, and neutral is a position on the measure in which a person offers insight but expresses no position on the measure. With that, I will open up testimony in support of Assembly Bill 2.

Cadence Matijevich, Government Affairs Liaison, Washoe County:
Washoe County comes before you today in full support of this bill. We thank the City of Sparks for bringing it forward. Ms. McCormick did a wonderful job of articulating the needs for this bill, so I will not repeat those. I will let you know that the Washoe County Board of Commissioners had identified this subject to be one of Washoe County's bill draft requests (BDRs). When we learned that the City of Sparks brought it forward, we did not feel there needed to be one more BDR on your list that did the same exact thing. So, we did not submit it, but we wholeheartedly support it and ask for your support as well. Thank you.

Ashley Garza Kennedy, Principal Management Analyst, Government Affairs, Department of Administrative Services, Clark County:
I will just ditto what my colleagues said. Clark County is in support of A.B. 2. Thank you.

Jennifer Berthiaume, Government Affairs Manager, Nevada Association of Counties:
We thank the City of Sparks for bringing forth this bill as it aligns with traffic safety efforts across the state and as such, Nevada Association of Counties supports A.B. 2.

Wesley Harper, Executive Director, Nevada League of Cities and Municipalities:
We wholeheartedly support the bill and thank the City of Sparks for bringing it. Thank you.

Chair Watts:
Thank you very much. Is there anyone else wishing to provide testimony in support of A.B. 2? [There was no one.]

[Exhibit H was submitted but not discussed and is included as an exhibit for this meeting.]

Is there anyone else wishing to provide testimony in opposition to A.B. 2? [There was no one.] Is there anyone else wishing to provide testimony in neutral to A.B. 2? [There was no one.] With that, do the presenters wish to make any closing statements?

Alyson McCormick:
I would just like to thank the Chair and the Committee members again for your time and consideration of our bill.

Chair Watts:
We appreciate your bringing us what is hopefully going to be one of the simpler and faster bills of our session. We will put it out there and see if that holds up. I think it will. With that, I will close the hearing on Assembly Bill 2.

We will now open the hearing on Assembly Bill 56, which revises provisions relating to the operation of certain motor vehicles on certain portions of a highway. Welcome, Department of Transportation, back up to the table.

Assembly Bill 56: Revises provisions relating to the operation of certain motor vehicles on certain portions of a highway. (BDR 43-257)

Rodney Schilling, Chief Traffic Operations Engineer, Traffic Operations Division, Department of Transportation:
I am here today to talk about the sole bill draft request (BDR) for the Nevada Department of Transportation, which is Assembly Bill 56 for hard shoulder running [Exhibit I]. This is a joint partnership as well with the Regional Transportation Commission of Southern Nevada, our Department of Public Safety with the Nevada Highway Patrol, and also our Traffic Incident Management (TIM) Coalition, which is our emergency management services on our freeways. We did some research [page 2, Exhibit I] with other states with similar laws for shoulder running including California, Colorado, Illinois, Kansas, Maryland, Minnesota, New Jersey, Virginia, and Oregon. What we found is that a lot of these states were looking for laws that would allow for passing on the shoulders. Colorado revised their statutes to allow buses on shoulders, and Minnesota is the primary state that was using this for over 20 years. It is like guidelines for other states to utilize. We looked at the existing laws, reviewed those, and proposed them for our BDR [page 3]. Those are *Nevada Revised Statutes* (NRS) 484B.210, "When overtaking on right side allowed"; NRS 484B.267 for the operation of a vehicle on approach of an authorized emergency vehicle or official vehicle of a regulatory agency; and NRS 484B.587 for the obedience to signs and restrictions on driving on controlled access highways.

Some of the issues with the existing laws [page 4] that we found within NRS 484B.210, when overtaking on the right side is allowed, is that it limits that travel to no more than 200 feet in that section of pavement not marked as a traffic lane. There was no definition for traffic incident management vehicles, tow cars, or a public transit motor bus in regard to these rules of the road. For NRS 484B.267, the operation of the vehicle on the approach of the authorized emergency vehicle or official vehicle of a regulatory agency, the issue we found there was that yielding on the shoulder by drivers will impede that movement desired on the shoulder. For NRS 484B.587, the obedience to the signs and restrictions on the driving on controlled access facilities, prohibits anyone from driving a vehicle on a controlled access highway outside of a marked travel lane or marked entrance or exit lanes. There were a few other statutes that we were looking into, but if these are all amended, then they will be properly taken care of and will not need to be addressed.

The changes and purposes [page 5] for these changes for NRS 484B.210 were to include the exception of overtaking a vehicle except as provided in the new subsection 4 of A.B. 56. So, add that new section 1, subsection 4 to provide for the vehicle movement exceptions to the authorized emergency vehicles, traffic incident management vehicles, tow cars, or the public transit motor bus that are driven on the paved shoulder where lawfully placed signage allows, and add definitions for those additional vehicles listed in subsection 4. For NRS 484B.267,

we need to amend it to reflect that a law enforcement officer can direct where other vehicles move to yield and amend section 2, subsection 1(b) to include that a driver shall not drive or stop on the shoulder, except those vehicles cited in section 1, subsection 4 of NRS 484B.210. For NRS 484B.587, we need to amend, where required, to refer to the new section 3, subsection 3, and add that new subsection 3 to refer to the new subsection 4 of NRS 484B.210 to allow those vehicles to drive on a paved shoulder where lawfully placed signage allows.

If this amendment [Exhibit J] goes forward, which we have already submitted, we would need to remove references to curb, the reason being that you will not see curb features in a controlled access facility; remove references to the right shoulder, the reason is we want the ability to have either the inside left or the right shoulder, depending on the demand where we are going to be using these facilities; and include the hazardous materials (hazmat) and the definition for traffic incidents within that definition of traffic incident management vehicles. Hazmat is one of those vehicles that is part of our emergency services and is very important as part of the open roads policy to make sure it is quick, safe, and clear. Those are some of the final portions of it.

Chair Watts:
Thank you. We will begin questions.

Assemblywoman Miller:
I believe I understand the need for this request, but will there be some kind of campaign to educate the public if this is passed into legislation?

Rod Schilling:
Absolutely. We would have to establish policies and guidelines, too, because you have to look at the operation and management of those facilities. A public information campaign would be a key part of that.

Assemblywoman Summers-Armstrong:
I read it and I think I understand it. Can you paint a picture of what this would look like, in actual terms, if we had an emergency situation? Let us say we have traffic backed up on the I-15 at the state line and there is an emergency. Can you walk us through what would happen?

Rod Schilling:
What we would have to do first is really look at where this facility would be most useful. To that question at the state line on I-15, probably not down in there. Where my director was talking about, where transit is limited to the urban street, is where we would focus these efforts. It would probably be more within the controlled access facilities within the urban footprints in Las Vegas. The way we would control some of the emergency management side would be to access our partners. We must do the operations and management piece of the guidelines. We would have to look at that. You have to make sure those roads are cleared. We would use our freeway arterial systems at the Freeway and Arterial System of

Transportation (FAST) Center to operate and manage those systems on a 24/7 basis to actively look at those, make sure that we have maintenance activities, whether they are with our freeway service patrol or patrolling those roads to make sure those shoulders are clear for use.

I hope that addresses some of your concerns with emergency management. I would like to follow up by saying we do have some incident management plans. We work with our Traffic Incident Management (TIM) Coalition, which I think is part of our initiatives to make sure that those roads are clear.

Assemblywoman Summers-Armstrong:
Let us suppose there is a wreck between Spring Mountain Road and Russell Road and now we have Tropicana Avenue, so Tropicana is closed. We have the ambient signs that are being monitored by the Regional Transportation Commission of Southern Nevada. What would this look like if there was a real emergency situation? How would this play out? How would the public be able to understand what you need them to do?

Rod Schilling:
Again, what we have to do is go back. In some of those situations, what we have in that area is a concept of operations. What we would have to do is modify those concepts of operations so that we fully understand all of those lane configurations. In that case, what you are talking about is an active traffic management system. So, we must incorporate that into it too. Those dynamic message signs that you are talking about with the lane controls would be included as part of our operations and update our concept of operations. We have to do that. We do that right now. So, when we actively have a full lane closure, right lane closure, or whatever it is, we would have to address that and develop that operating procedure. That would be a work in process to establish all of those.

Assemblywoman Kasama:
Could you explain to me what is going on right now when there is an emergency that comes up? It seems to me I see people going in the right lane or going around emergency vehicles to get to their destinations. Why would this be needed when currently people seem to be making it work? If you could, please expand on my colleague's question as to what is going on now that we need to change this.

Rod Schilling:
Currently, there is nothing going on right now for that. We just have our incident management. I think that is what you are talking about. The laws currently do not allow travel on that shoulder for certain incidents. That is why we are asking for the revisions to the statutes. It is the same thing with transit. There is nothing in there that allows for transit on those facilities, so that is why we are asking to include this in there.

Assemblywoman Kasama:
Right now, if there is an incident that happens, I see people drive on the shoulder to get there quickly. That is going on right now, correct? When there is an incident, people just go around people to get there—ambulance, police.

Rod Schilling:
In instances where the road needs to be utilized, correct. But the law currently reads that you cannot travel more than 200 feet. I do not believe that the Department of Public Safety (DPS) is going to go out there and enforce it, especially when you have certain situations where you need the lanes to open up as quickly and safely as possible. They do the best they can within the prescription of the law.

Assemblywoman Kasama:
I see. It is going on right now, but we need to clean up the language to allow them to go further distances.

Rod Schilling:
Correct. I have been asked through DPS for several years to see if we can include this language to allow them further distance than the 200 feet. That way it will be included in the statute.

Assemblywoman Brown-May:
We are asking for this change for a highway. What constitutes a highway? Where would this actually take place?

Rod Schilling:
This would be on our controlled access highways. That would be on our interstates and freeways.

Assemblywoman Peters:
The bill, as it is written, would take effect immediately upon passage and approval, but it sounds like you need to put together an action plan for how to implement this. Does it make sense for us to have this be approved upon passage and approval, or do we need to give you some grace period to establish those parameters before it becomes law? I understand that and, as my colleagues suggested, it is happening already. People not pulling over to the right side of the road during emergency vehicles passing creates a dynamic on the highways that is maybe not safe.

Rod Schilling:
The passage is really the first step and would give us the ability. After that, we would have to start establishing those policies and guidelines. That would be one of the next steps once the passage is approved.

Assemblywoman Peters:
But it is law then, which means that the police force would have the ability to put this into action. If someone incidentally pulled over to the right side of the freeway to allow a vehicle to pass, potentially they could get a ticket for that. This is the gray space, right? How do we make sure we are informing the public with enough grace period that they can accommodate that while not putting laws in place that put them at risk while they are also trying to overcome your concerns of making sure we are meeting the needs of emergency vehicles?

Rod Schilling:
There are probably two components to this. You have the incident management component and then you have the transit component. I think the transit component is more dynamic. That is where we really have to look at the guidelines and policies to include those. The incident management, with our Department of Public Safety, could be a public outreach campaign. We have to work with our partners on that one to make sure everybody is clear as to what that revised statute means.

Assemblywoman Peters:
I think I would like to see some consideration for a stepped-phase approach.

Chair Watts:
We will move on to testimony, so thank you very much for the presentation. We will begin with testimony in support of Assembly Bill 56.

Tessa M. Laxalt, Manager of Government Affairs, Nevada Trucking Association:
We are here testifying in support of Assembly Bill 56 as we do have members who are tow operators. We appreciate this bill to ensure the safety of our drivers and the first responders in responding to accidents to clear the roadways in a safe and efficient manner.

Paul Nelson, Government Affairs Officer, Regional Transportation Commission:
We support this bill. We do think that if there is a crash or another incident, this could get our buses out of that mess and around that incident sooner than later.

Chair Watts:
Is there anyone else wishing to provide testimony in support of A.B. 56? [There was no one] Is there anyone else wishing to provide testimony in opposition to A.B. 56? [There was no one.] Is there anyone else wishing to provide testimony in neutral to A.B. 56? [There was no one.] Thank you very much. Would the department like to provide any closing remarks?

Rod Schilling:
I truly appreciate everybody's time for this. It is a joint venture and we appreciate this consideration.

Chair Watts:
With that, I will close the hearing on Assembly Bill 56. That brings us to the last item on our agenda for today, which is public comment. [There was none.] Our next meeting is Thursday, February 16, 2023, at 1:30 p.m. We are adjourned [at 3:27 p.m.].

RESPECTFULLY SUBMITTED:

_____
Kathy Biagi
Committee Secretary

APPROVED BY:

_____
Assemblyman Howard Watts, Chair

DATE: _____

EXHIBITS

Exhibit A is the Agenda.

Exhibit B is the Attendance Roster.

Exhibit C is a copy of a PowerPoint presentation titled "Overview of the Nevada Department of Transportation," dated February 14, 2023, presented by Tracy Larkin Thomason, Director, Department of Transportation.

Exhibit D is a copy of a PowerPoint presentation titled "Autonomous EV Goods Delivery: Nuro in Nevada," dated February 14, 2023, presented by Katie Stevens, Head of State and Local Policy, West, Nuro, Inc.

Exhibit E is a copy of a PowerPoint presentation titled "Update on Motional's Nevada AV Operations and Milestones," dated February 14, 2023, presented by Samuel Wempe, Director, Government Relations and Public Policy, Motional, Inc.

Exhibit F is a copy of a PowerPoint presentation titled "Halo.Car," dated February 2023, presented by Anand Nandakumar, Founder and CEO, Halo.Car.

Exhibit G is a copy of a PowerPoint presentation titled "Starship Personal Delivery Devices," presented by Aileen Zhong, Director of Government Affairs, Starship Technologies.

Exhibit H is a letter to the Assembly Committee on Growth and Infrastructure, dated February 14, 2023, submitted by Nic Ciccone, Legislative Relations, Program Manager, City of Reno, in support of Assembly Bill 2.

Exhibit I is a copy of a PowerPoint presentation titled "Assembly Committee on Growth and Infrastructure AB56: Hard Shoulder Running," dated February 14, presented by Rodney Schilling, P.E., Chief Traffic Operations Engineer, Traffic Operations Division, Department of Transportation.

Exhibit J is a copy of a proposed amendment to Assembly Bill 56, dated February 9, 2023, submitted by Ryan McInerney, Director of Communications and Government Affairs, Department of Transportation.