



TESLA'S K-12 INVESTMENT IN NEVADA

WORKFORCE DEVELOPMENT & EDUCATION PROGRAMS

Investment Overview and Implementation Plan

Chris Reilly, *February 2019*



TABLE OF CONTENTS

Investment Research & Background	3
Advisory Committee	4
Investment Plan	4
Measures of Success	5
Employee Engagement	5
Investment Timing	5
Open Source	5
Sourcing New Potential Investments	5
Current Investments	6
<hr/>	
Appendix A	8
Appendix B	9
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INVESTMENT RESEARCH & BACKGROUND

Tesla's mission is to accelerate the world's transition to sustainable energy, and this mission serves as a lens for every activity in which the company engages. Over the past two years, we have been evaluating how Tesla can best contribute to education in the state in a way that is most impactful for the community and authentic to this mission in three key ways.

First, it was critical to understand the larger picture of job growth in the state to make sure our programs and investments help develop a workforce for the industries Nevada is moving toward (including, but not limited to, the thousands of jobs in automated manufacturing that are being created at Gigafactory 1). Growth in Science, Technology, Engineering, Arts, and Mathematics (STEAM) careers are projected to be significantly higher than in non-STEAM jobs between 2014 – 2024, with Nevada specifically projected at a 40% higher growth in STEM-specific fields according to the Governor's Office of Workforce Innovation (OWINN). Additionally, Nevada's Department of Employment, Training & Rehabilitation has cited that 48% of new job openings will be Middle-Skill roles from 2014 - 2024, with a current gap of 28K jobs today [middle-skill being defined as those that generally require significant education and training beyond high school but less than a bachelor's degree].

Second, we felt it was important to engage in program development with our school districts first-hand to better understand the mechanics of what it takes to bring a solution to life in our education system. As a result of this collaboration, we started a suite of workforce development programs in partnership with our school districts that have greatly informed how we could best work together with the education system in the coming years (see Appendix A – Workforce Development Initiatives at Gigafactory 1, for more information on these programs).

Third, we wanted to make sure we were in close alignment with the overall education goals of the state, to help amplify its mission as well as ours without creating divergent paths to get to the same solution. Within the Department of Education, there is a clear statewide focus to make Nevada the fastest improving state in the nation for K-12 Education. In support of this, there have been key pieces of forward-thinking legislation passed in Nevada related to new Nevada industries that was important for us to understand, including:

- Computer science requirement for all high schools & K-12 standards
- Multiple dual enrollment & work-based learning initiatives
- K-3 literacy standards
- Nevada Promise Scholarship to reduce barriers for accessing Community College
- Expansion of New Skills for Youth career pathways
- New College and Career Ready High School Diploma & revised Standard High School Diploma

These areas of research and program development became a strong foundation to give us direction on investments that have an opportunity to touch the 30,000+ seniors graduating high school in Nevada every year throughout their K-12 academic career.



ADVISORY COMMITTEE

To make sure we were incorporating a series of diverse viewpoints on this investment, we started an advisory committee composed of leaders in various industries, education administrators, teachers, and state legislators to regularly review potential investments with us and to offer insightful feedback and recommendations. It is essential that this investment is a collaborative effort between Tesla and the community.

We are continuing to add more advisors as the investment evolves, but some of our current advisors include:

- Mark Newburn, VP of State Board of Education
- Brian Mitchell, Director of Governor's Office of Science, Innovation and Technology
- Kerry Larnerd, Director of Career & Tech Education, Clark County School District
- Josh Hartzog, Director of Career & Tech Education, Washoe County School District
- Jason Geddes, Energy Conservation and Sustainability Program Manager, Washoe County School District
- Todd Hess, Superintendent, Storey County
- Kristi Overgaard, Chief Awesomeness Officer, Switch Inc.
- Bryan Klein, Site Director, Apple Inc.
- Tony Slonim, President & CEO, Renown Health
- Rebecca Darling, Director of Corporate Social Responsibility, Barrick
- Ben Nguyen, CTE Manufacturing and STEAM Robotics, Sunrise Mountain High School

INVESTMENT PLAN

From our research, program development, and discussions with leaders in our community, we distilled the focus of our investment plan to the below:

Tesla's investment will be directed at initiatives that support the acceleration of robotics, STEAM, and sustainability programming within Nevada's K-12 education system. We are focused on directly supporting the development of future engineers in Nevada.

Within this focus, Tesla will make investments in four categories:

1. **Innovative Programs** – We are committed to partnering with local non-profits doing incredible work in these areas, as well as collaborating with some of the most impactful organizations in these areas worldwide to have a permanent footprint in Nevada long-term.
2. **Teacher Development** – Empowering teachers to have the confidence and ability to lead programs in these emerging areas requires significant investment in teacher development, and we aim to develop programs that will help them succeed.
3. **Infrastructure** – We must have spaces in our schools and communities dedicated to STEAM, robotics and sustainability learning, and we aim to develop and renovate several spaces in our communities across the state to foster this.
4. **Pathways to Employment** – Truly impactful programs in education help students understand how the content they are learning today can be applied to a career, and then help them get access to that career. We aim to create workforce development pipelines that give students opportunities across all in-demand industries in the new Nevada.



MEASURES OF SUCCESS

Tesla and the Department of Education will jointly measure the success and impact of this investment over time in four key areas:

1. Number of stable robotics, STEAM & sustainability programs kickstarted by Tesla's investment at elementary, middle, and high schools.*
2. Number of Teacher development opportunities that empower them to lead programs that drive students to new industries.
3. Diversity of programs established in underserved communities across the state
4. Greater Department of Education state rankings & recognition (graduation rates, STEAM career readiness, etc.)

**Note: 1 initiative at 180 schools would count as 180 programs, not 1 program. This is so that we don't try to implement too many different STEAM programs per school, but instead focus on expanding the best ones to as many schools as possible and going into significant levels of detail per program.*

EMPLOYEE ENGAGEMENT

Even with brilliant advisers, strategy, and substantial funding, schools face many entrenched problems that cannot be addressed without sustained local engagement. With 7,000 employees in northern Nevada, and an additional 1,000+ in Las Vegas, Tesla has a unique opportunity to create an internal volunteer infrastructure that complements our financial investment. This effort can help increase the % of success in these investments, while also empowering our employees to give back into their community in a way that directly aligns with Tesla's mission. Along with every investment, a component of employee volunteer opportunities will be developed.

INVESTMENT TIMING

To give each program necessary focus for sustained impact, Tesla will make directed investments into the Education Gift Fund on a quarterly basis (including both sustained funding for existing investments and new organizations). This will also allow investments to stack on top of one another and evolve over time as we see gaps that arise in program implementation within our schools.

Once an organization receives an investment, they will be reviewed quarterly with internal stakeholders beginning in spring 2019 to ensure continued alignment with the stated investment vision. These reviews also help us take full advantage of potential partnership opportunities that may come up as a result of new investments. To minimize the burden of tracking on our individual investment partners, we are currently in development of a system to monitor student engagement and impact by school and by investment across the state.

OPEN SOURCE

As we continue to develop content and curriculum, Tesla's aim is to make our work in K-12 education accessible and available to teachers around the state and beyond. This investment will enable Nevada to be the first to implement these new programs in partnership with Tesla, and then serve as an example over the longer term as we hope to partner with other regions on workforce and education initiatives.

SOURCING NEW POTENTIAL INVESTMENTS

Tesla does not have a fixed application timeline for investments, and will continue evaluating new potential partnerships that align with the vision of this investment. Local teachers, our investment advisory



committee, and state legislators have all been active in recommending programs – input which has already directly impacted our program investment portfolio. We have created an email address, educationprograms@tesla.com, for any entity interested to reach out to us with a short summary of their program and how they see bringing it to life in Nevada.

TESLA'S CURRENT INVESTMENTS

We will continue to announce additional investments with specific outlines by entity that align to our measures of success. Planning is underway for our next investment round launching March 2019.

In July 2018, Tesla and the Department of Education announced the first \$1.5M in investment across 9 entities, outlined below and in alignment with our overall plan. More detail regarding each investment and their outlined goals can be found in “Appendix B – Investment Goals by Entity.”

- \$315,550 to **FIRST Nevada** and \$127,100 to **Robotics Education and Competition Foundation (VEX)** as part of a multi-year investment for the establishment of a quality robotics program at every school in Nevada.
- \$263,924 to the **Desert Research Institute** for the initial development of a statewide teacher training infrastructure focusing on robotics and STEAM, with future collaboration in partnership with the **University of Nevada, Reno and the University of Nevada, Las Vegas**.
- \$262,700 to **The Envirolution, Inc.** for the Project ReCharge initiative, a STEAM-based program which collaborates with community partners, school districts, teachers and students, to deliver hands-on education related to energy, sustainability, and project-based learning opportunities that empower students to make local schools and businesses more energy efficient.
- \$200,000 to **Jobs for Nevada's Graduates (JAG Nevada)** to deliver mentoring, employability skills development, career association, job development, and job placement services to students across the state. JAG Nevada will be developing a new Education to Employment pathway across Nevada industries, and expanding access to 20 percent more students with this first investment.
- \$154,083 to **Sierra Nevada Journeys (SNJ)** to foster students' STEAM passion and achievement at an early age. SNJ will provide 250 scholarships for students in underserved communities to attend the Overnight Outdoor Learning program at Grizzly Creek Ranch, increase access to SNJ STEAM programs to 900 additional students, and kick start a new Girls in Engineering camp in partnership with Tesla team members.
- \$76,643 to **Energetics Education, Inc.** to pilot the Solar Rollers program in Washoe County. This initiative challenges high school teams to design, build, test and race sophisticated solar-powered radio-controlled cars while learning the fundamental concepts of a complete energy system.
- \$50,000 each to the **Clark County and Washoe County School Districts** as part of the establishment of multi-year special assignment roles in career technical education (CTE) offices to train and implement programming from within, while also supporting neighboring districts.

In December 2018, Tesla made an additional investment of \$1M across 10 entities. A large majority of this investment is continuation funding for 8 of the entities outlined above and reflected in our budgets for each entity. This round also included the establishment of 2 new investment partners mentioned below and detailed further in Appendix B.

- \$55,000 to the **Nevada Museum of Art** for the development and implementation of the Nevada STEAM conference in Reno, NV and the STEAM Symposium in Las Vegas, Nevada to give over



400 teachers custom programming that aligns with Tesla's focus on teacher development in the areas of robotics and sustainability.

- \$36,000 to the **Office of Career Readiness within the Department of Education** for the development of a new statewide teacher externship program that will provide access for K-12 teachers to have 3-5 day experiences at companies in New Nevada industries throughout the year. Tesla will match the Department of Education's investment in this program 1:1 to help kickstart the program.



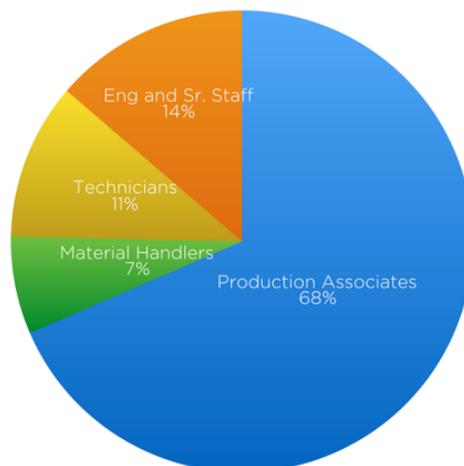
APPENDIX A - WORKFORCE DEVELOPMENT PROGRAMS AT GIGAFACTORY 1

Workforce Development

As workforce needs in the state continue to grow, Tesla has developed a long-term strategy to address future workforce needs across all levels of manufacturing.

- **Production Associates:** With 30,000+ seniors graduating from NV high schools every year, Tesla built a high school graduate apprenticeship called the [Manufacturing Development Program](#) that also includes continuing education in higher level Robotics & Automation at our community colleges while working. In two years, Tesla has hired a total of 67 graduates to start full-time careers at Tesla through this program.
- **Technicians:** Tesla has established a [Technician Trainee Program](#) for university and college students in the state to get hands-on work experience as Technicians at Gigafactory 1.
- **Engineers:** Tesla has established 2 minors at the local University of Nevada, Reno, and is actively recruiting from those minors for the Technician Trainee program and for University recruiting opportunities, including internships.
- **Veterans:** Over 500 veterans are currently working at Gigafactory 1, and we will be starting a new veteran-focused workforce development program in 2019.
- **Retraining:** Tesla established a scholarship program in partnership with the Governor's Office of Economic Development for Nevadans to learn advanced manufacturing fundamentals, which has benefited over 125 active employees.

Gigafactory 1 Estimated Headcount Breakdown





APPENDIX B - INVESTMENT GOALS BY ENTITY

FIRST Nevada

With this investment, FIRST Nevada will work to achieve the following:

1. Establish new FIRST Robotics teams with principal and teacher support across Nevada over 5 years, to include but not limited to 80 FIRST Robotic Competition (FRC) teams, 80 FIRST Tech Challenge (FTC) teams, and 100 FIRST Lego League (FLL) teams, with a goal to establish a competitive robotics program at every high school in Nevada and 100 middle schools.
2. Facilitate teacher workshops and training seminars in partnership with the Desert Research Institute to create a sustainable teacher training infrastructure across the state.
3. Administer stipends for team coaches from 2018 through 2026.
4. Administer incentives for existing FIRST NV robotics teams to mentor and train new teams (outlined in attached budget).
5. Hire 1 administrative headcount for FIRST NV to support team growth throughout the state as the result of the roll-out of this investment.

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Robotics Education & Competition (REC) Foundation

With this initial investment, the REC Foundation will work to achieve the following:

1. Establish new VEX robotics teams with principal and teacher support at 125 schools across 8 school districts in the 2018-2019 school year (66 elementary schools, 27 middle schools, and 32 high schools).
2. Match kit investments sent to schools 1 to 1, making 250 new kits available to students in Nevada and a minimum of two kits per school.
3. Maintain a minimum average of 6 students per team at every school receiving a kit (12 students per school).
4. Facilitate teacher workshops and training seminars in partnership with the Desert Research Institute to create a sustainable teacher training infrastructure across the state.
5. Develop a state-wide competition infrastructure for elementary, middle, and high schools to compete in at least two Robotics competitions per year (1 per semester).
6. Administer stipends for team coaches for 2018-2019 school year following spring semester competitions.
7. Hire 1 administrative headcount to support team growth throughout the state as the result of the roll-out of this investment.

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Desert Research Institute (DRI)

With this investment, the Desert Research Institute (DRI) will work to achieve the following:

1. The Desert Research Institute's Science Alive program will be the lead partner on state-wide collaborative robotics teacher trainings for Nevada, with a goal to coordinate programming that will effectively train 336 teachers across Nevada in the Fall of 2018.
2. Develop, in partnership with FIRST, REC Foundation, UNLV, and UNR, a statewide teacher development curriculum and onboarding process for new robotics coaches/mentors.
3. Responsible for coordinating teacher trainings to include, but not limited to:
 - a. Recruitment and marketing (creating a district specific teacher recruitment packet)
 - b. Registration platform and management



- c. Teacher professional development credits
 - d. Teacher and administrative packet for each STEAM/robotics program
 - e. Training coordination and agenda planning
 - f. Purchase of food and material items
 - g. Social media, pictures, and media for the day
 - h. Spacing and partner needs (school district contacts, higher education partners, etc.)
 - i. Evaluation (trainings and long-term impact)
 - j. Host an online portal for a one-stop shop of STEAM robotics education in Nevada
4. Develop short and long-term evaluations of all trainings and coach process. Evaluate effectiveness of robotics programs in student achievement and attitudes towards STEAM.

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Sierra Nevada Journeys

According to NAEP, in Nevada only 24 percent of fourth grade students and 27 percent of eighth grade students scored proficient in science. Without emphasis on STEAM education in our school systems, there is a huge gap in developing the region's STEAM workforce. With this investment, the Sierra Nevada Journeys (SNJ) will work to achieve the following:

1. Develop a new STEAM education camp for 100 middle-school aged students in NW Nevada. It combines the skills of Tesla employee volunteers, Girl Scouts of Sierra Nevada (GSSN) STEAM programs and Sierra Nevada Journeys (SNJ) STEAM programs to deliver an empowering and educational STEAM camp.
2. Grow capacity to serve 900 second to fifth grade students with STEAM programs to demonstrate increases in fifth grade State Science Proficiency. Programs include three in-class lessons delivered by SNJ credentialed teachers culminating in a one-day field STEAM program. Increase students served from 6,400 to 7,300 in 2018.
3. Enable all northern Nevada schools the ability to attend SNJ's Overnight Outdoor Learning program at Grizzly Creek Ranch, regardless of income level. Provide 250 scholarships for three-day, two-night immersion into STEAM as a capstone learning experience to Elementary STEAM education.
4. SNJ to develop Solar + Storage Energy curriculum in partnership with Washoe County School District, Envirolution, Tesla and other subject matter experts for delivery to 9,000 students annually at Grizzly Creek Ranch.

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Jobs for America's Graduates, Nevada

Jobs for America's Graduates (JAG) Nevada works with over 3,300 diverse students annually across 40+ schools, 900+ who are graduating every year. The program delivers mentoring, employability skills development, career association, job development, and job placement services over a multi-year program that will result in either a quality job leading to a career after graduation, enrollment in post-secondary education, or a workforce training program.

With this initial investment, JAG will set a foundation to achieve the following over a multi-year strategic growth initiative:

1. Develop a strategic operating reserve to increase available program development funding by over \$250,000 annually (adding up to \$1.25M in additional funding to JAG over 5 years). Without an operating reserve, JAG's funding model does not allow the organization to capture the full budget available from the Department of Education.



2. Increase the number of students served via the multi-year program by 175 students per year (875 additional students over 5 years).
3. Expand JAG's new Education to Employment pathway to 5 new companies annually, with a target to have employment opportunities across 20 companies in 5 years. The industries targeted for expansion are Advanced Manufacturing, Information Technology, Healthcare, Construction, and Hospitality.
4. Develop 10 additional career exploration activities for sophomores, juniors, and seniors to learn about industry opportunities in Nevada.
 - a. Establishment of a "Women in STEAM career day" that would bring up to 40 women in JAG to various NV businesses to showcase STEAM careers that are available to them, and specifically discuss Education to Employment Pathways for these students.
 - b. 10 Freshman, 10 Sophomore, and 10 Junior standouts will participate in a new "Women in Engineering Day" annually with JAG. Tesla will host tours and have a panel of female leaders from Switch, Apple, Tesla, and local businesses speak to the group.

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Energetics Education, Inc. [Solar Rollers]

As part of Energetics Education (EE), The Solar Rollers energy education program challenges high school teams to design, build and race sophisticated solar-powered radio-controlled cars. The organization helps teams to hand-build, test and optimize their own clean energy systems, which can hit 25+mph on the racetrack. Solar Rollers has held high-profile race events in Denver, Dallas and Dubai, and will continue to add races rapidly in 2019.

With this initial investment, Energetics Education will work to achieve the following:

1. Develop an initial pilot program for the establishment of 12 competitive Solar Rollers high school teams in the Reno-Sparks area.
2. Establish key collaborative partnerships in Nevada for the successful implementation and future expansion of the Solar Rollers program in the state.
3. Facilitate a teacher workshop and training seminar in partnership with the Desert Research Institute for the initial 12+ team leaders and set a structure to create a sustainable teacher training infrastructure across the state.
4. Work with coaches to maintain a minimum team size of 8 students throughout the season.
5. Provide complete cutting-edge materials kits to the Reno-Sparks Solar Rollers teams in January of 2019.
6. Implement refreshed online curriculum for students and coaches and provide technical support to teams remotely throughout the spring semester build season.
7. Develop and host a flagship spring competition for the 12 pilot teams in Reno-Sparks. (Tentatively May 25, 2019 on Reno City Plaza)
8. Administer stipends for team coaches for 2018-2019 school year following their successful participation in the competition.

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The Envirolution, Inc.

In 2007, the Nevada non-profit, Envirolution, created Project ReCharge, a STEAM-based program which collaborates with community partners, school districts, teachers and students to deliver hands-on and project-based education related to energy, energy efficiency, and sustainability. Over the past four years, Project ReCharge received over \$1.5M from the National Science Foundation and the State of Nevada for



implementation in 22 schools in 5 school districts in Northern Nevada, while becoming Washoe County and Carson City School District's lead partner in Energy curriculum for middle and high school teachers.

With this initial investment, Envirolution will work to achieve the following:

1. Continue supporting the existing 70+ Project ReCharge teachers within the 22 existing schools with the evolving curriculum, necessary classroom resources and ongoing assistance
2. Partner with 5 new schools and 1 new school district within Northern Nevada (Swope MS, Clayton MS, Carson Valley MS, Lemelson STEM Academy, Churchill County MS)
3. Recruit, train and provide 25 teachers within the new and existing Project ReCharge partner schools with 45 hours of professional development, STEAM curriculum and classroom resources. Includes the addition of new teachers into the program and the development and mentoring for "Master Teachers"
4. Engage up to 10,000 new students from a combination of ethnically and economically diverse backgrounds within the new and existing Project ReCharge partner schools
5. Develop and pilot new STEAM lessons and activities to integrate into curriculum with the assistance from partner organizations. Lessons will be focused on district energy dashboards and solar battery storage
6. Facilitate at least 50 in classroom STEAM guest speaker presentations within Project ReCharge partner schools
7. Assist students in the development of at least 20 energy efficiency and sustainability proposals for consideration by district administration
8. Provide support for the teacher-accessed interactive website and portal
9. Conduct Year End Student and Teacher recognition event and invite media, parents and community partners
10. Begin introducing the program to additional rural and Southern Nevada districts in preparation for expansion in 2019/2020 school year

Envirolution will also work toward the following long-term Program Objectives pending continued investment from Tesla's Education Gift Fund Investment and expansion of program partners:

1. Provide STEAM curriculum, classroom resources and 45 hours of professional development to 125 teachers in 45+ new schools in Northern, Rural and Southern Nevada
2. Engage up to 100,000 new students from a combination of ethnically and economically diverse backgrounds while increasing STEAM career interest and content knowledge
3. Facilitate 200+ In classroom STEAM Guest speaker presentations
4. Assist students in the development of 100+ energy efficiency proposals for consideration by district administration
5. Continue supporting existing Project ReCharge teachers with the evolving curriculum, necessary classroom resources and the ongoing assistance they need to reach up to 10,000 new students each year

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Nevada Museum of Art

With this investment, the Nevada Museum of Art will work to achieve the following:

1. Advance ideas and strategies that incorporate Science, Technology, Engineering, Arts, and Math education into pioneering classroom practices that foster student creativity and design-based thinking to better support the industries of the New Nevada.



2. Host the largest statewide STEAM conference in February at the Museum, in partnership with DRI. 250 preK-12 educators will participate in innovative programming that aligns with Tesla's focus on teacher development in the areas of robotics and sustainability.
3. Host additional regional professional development events in Las Vegas and Elko, utilizing similar content but better meeting the needs of the diverse learning communities across the state. An estimated 300 teachers will attend the regional events.
4. Event development and coordination includes, but is not limited to:
 - a. Hands-on robotics workshops and student showcase exposing diverse teachers to robotics content for classroom applications
 - b. Digital design and biomimicry workshops exploring new applications of technology
 - c. Lesson plan development and workshop delivery, including securing materials for hands-on experiences
 - d. Coordination of teacher visits to new Nevada industries
 - e. Identifying and securing nationally recognized keynote speakers
 - f. Application and awarding of teacher professional development credits
 - g. All event logistics, coordination, and agenda planning
 - h. All hospitably, reception, and meal services
 - i. All media, marketing, press and event promotion
 - j. Event evaluation, data collection and impact analysis

Office of Career Readiness – Department of Education

Empowering Nevada's teachers by giving them the confidence to lead robotics and sustainability focused programs across the state is a critical component of Tesla's investment. As part of a pilot with the Department of Education, Tesla hosted 5 CTE teachers from districts across the state in a 3-day externship to give these leaders insight into careers in New Nevada industries. Based on the success of that pilot, Tesla is excited to invest in a new teacher externship program to provide access for K-12 teachers to have 3-5 day experiences at companies in New Nevada industries throughout the year. Tesla will match the Department of Education's investment in this program 1:1 and is allocating an initial \$36,000 toward the first rounds of teacher externships. With this investment, Tesla and the Department of Education will work to achieve the following:

1. Launch an application process for teachers to apply for this new externship program in February of 2019.
2. Select an initial cohort of 25 teachers across the state for hands-on experiences starting in June of 2019.
3. Department of Education will develop an application process and select teachers. The DoE will also match teachers to companies that align with their teaching goals and will have a direct, positive impact on their ability to lead curriculum in the classroom.
4. Department of Education and Tesla will jointly recruit additional companies to participate in hosting teachers.