

## **SUMMARY OF ECONOMIC IMPACT ANALYSIS AND IMPACT REVIEW**

The Governor's Office of Economic Development ("GOED") uses IMPLAN for economic modeling of new and expanding businesses applying for incentives administered by our agency. IMPLAN is a widely-accepted and utilized software tool that models the economic relationships between government, industry, and household sectors for a specific region so that when there is a change in any of these sectors, one can measure the effects/impacts that will happen to the other.

The version of IMPLAN used by GOED is owned and designed by Applied Economics, an economic consulting firm based in Phoenix, Arizona that specializes in socioeconomic modeling, economic development, and economic and fiscal impact assessment. Applied Economics has a 20-year history in providing specialized economic consulting, and has provided service to GOED and its predecessor agency, the Nevada Commission of Economic Development, for a number of years.

For the Tesla project, GOED contracted with Applied Economics to complete both economic impact and tax revenue reports which are attached herein. In the reports you will find regional versus national impact analysis. Through its licensed software, GOED creates regional models for standard abatements in the state. These models do not take into account the cluster effect and addition of supply chain and infrastructure that comes from bringing in a company with the size and scale of Tesla. For larger scale projects such as Tesla, GOED commissions the development of a custom model that studies both regional and national impacts. As described in the attached report, the difference is significant.

One purpose in creating a custom model for the Tesla project was to show the significance of regional versus national results. The other purpose was to allow results from IMPLAN to be compared against other results generated by the University of Nevada, Reno (UNR) using its own software developed by Regional Economic Models Incorporated (REMI). In addition to the IMPLAN and REMI models, GOED commissioned a third set of results from the developers of another economic modeling tool known as Economic Modeling Specialists International (EMSI).

There are a number of major economic modeling programs available, but those most notable for this type of analysis are IMPLAN, REMI and EMSI. By commissioning separate reports from both REMI and EMSI, GOED's goal was to make sure that IMPLAN results were reasonable and accurate.

Assisting GOED in its review of these results was Alan Schlottmann, Professor of Economics at the University of Nevada, Las Vegas. Dr. Schlottman is a respected economist with real-world

experience studying complex manufacturing projects, including the BMW factory located in South Carolina.

Also providing assistance was Jeff Hardcastle, the Nevada State Demographer. Jeff is part of the Nevada Small Business Development Center at the University of Nevada, Reno and has over 20 years' experience running the REMI model.

Since UNR does not have national licensing for REMI and cannot run the national model, GOED requested both regional and statewide models be created for the Tesla project. As the reader can see, the REMI regional results are 28.7 percent higher than the IMPLAN regional model, and the REMI statewide model is 4.9 percent higher than the IMPLAN national model. Mr. Hardcastle's work shows an economic output of over \$100 billion over the next 20 years using his state model.

While the EMSI tool also produces economic impact studies, it is a static single year model that more appropriately recognizes job impacts and clustering activity instead of the economic activity as presented by IMPLAN or REMI. When compared against stabilized growth, however, the EMSI model's results for a similar period can prove useful. As can be seen, when the clustering effect is considered, EMSI's job projections come in at 23,000 or 5% higher than the IMPLAN national results. In this regard, we believe the EMSI model also verifies the IMPLAN model is the most conservative of the three approaches.

Given this outside analysis, it was determined that the IMPLAN national model provides a conservative estimate for the Tesla project.



# **Economic Impact of Tesla On Washoe and Storey Counties**

**September 2014**

**Prepared By:**



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Disclaimer: The information and observations contained in this report are based on our present knowledge of the components of development, and of the current physical, socioeconomic and fiscal conditions of the affected areas. Estimates made in this analysis are based on hypothetical assumptions, current tax policies, and the current economic structure of the region. However, even if the assumptions outlined in this report were to occur, there will usually be differences between the estimates and the actual results because events and circumstances frequently do not occur as expected. This analysis is based on the best available information and is intended to aid the State of Nevada in quantifying the impacts of Tesla the local economy. In no way will Applied Economics be held responsible or have any liability or be subject to damages as a result of this analysis. This report may be used only for the purposes that it was intended.

## INTRODUCTION

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Applied Economics has been contracted by the Nevada Governor's Office of Economic Development to perform a third party economic analysis of a planned battery manufacturing facility in Storey County, referred to as the Tesla Gigafactory, in order to quantify the impacts of their operations on the county and state relative to the amount of abatements and reimbursements being offered. This analysis is intended to provide a framework for understanding the economic and revenue impacts of the company's proposed location in Storey County.

Tesla would make a major capital investment as well as generating a significant number of new jobs that would provide economic benefits to the region. They would also support improvements in transportation and utility infrastructure that would greatly enhance the region's competitiveness for future manufacturing and logistics projects.

Tesla would be an important contributor to the region's economy and could serve as a catalyst for additional manufacturing and logistics development in the region with its worldwide name recognition and cutting-edge technology. In addition, all of the jobs created by the company would be net new jobs thereby growing the economy both locally and regionally. The attraction of this company to Washoe County and Storey County would not only create a large number of new direct jobs, but also support a sizeable amount of additional economic activity, jobs and payroll at related local supplier and consumer businesses.

## IMPACT METHODOLOGY

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The development and operation of the Tesla Gigafactory in Storey County would provide a variety of economic benefits to the region. These benefits, or economic impacts, are derived from expenditures made in the local economy. The economic impacts include direct and indirect jobs, personal income, and economic activity or output that would be generated by the battery manufacturing facility.

Economic impacts measure the effects of economic stimuli, or expenditures, in the local economy. These impacts include direct, indirect and induced jobs, personal income and output that could be generated by Tesla. Indirect and induced impacts are the result of the multiplier effect and capture supported supplier and consumer businesses and their employees that would benefit from this type of facility.

This analysis includes a low scenario and a high or most likely scenario relative to the economic impacts to illustrate the range of possible outcomes as shown in the Key Findings. The low scenario is based on the current economic base of Storey and Washoe Counties, which includes a limited number of potential suppliers to Tesla. This is likely a realistic short term picture of the economic impacts of the project. However, given the overall size of Tesla's operations and the total supplier demand it would create, it is expected that over the longer term a cluster of local suppliers would develop. This type of clustering is often observed in the auto industry, for example, in other parts of the country.

The high scenario, based on national multipliers, shows the maximum level of economic impacts that could be created if all domestic supplier needs of the company could be met by local vendors through this clustering effect. While it is somewhat unlikely that this very high supplier concentration would be achieved in the Storey/Washoe County region, it is certainly the case that economic base changes will occur over the next 20 years in response to demand created by Tesla. The high scenario places an upper bound on the potential impacts of these economic changes.

## Project Summary

Based on the assumptions used in this analysis, the company would create a total of 6,500 jobs within the next four years including assemblers, operators, engineering, supervisors and administrators and executives. The average wage is estimated at \$27.35 per hour. The company would build out in four phases beginning with 700 jobs in phase 1; 1,000 more jobs in phase 2; 3,000 more jobs in phase 3 and 1,800 more jobs in the final phase. In the pro-forma shown here, the company would make a \$1.0 billion investment in buildings and \$3.95 billion in equipment over the first four years. They would make additional equipment purchases totaling \$5.0 billion from 2019 to 2028. The labor cost associated with installing this equipment is estimated at \$1.3 billion. The results show the overall impacts of Tesla on the Washoe/Storey County region over the next 20 years. Although the facility would be located in Storey County, many of the employees will live in Washoe County, thus it is important to show the impacts on the two county regions.

**FIGURE 1  
PROJECT DESCRIPTION**

| Year                 | Jobs         | Payroll                | Capital Investment     |                        |                        |
|----------------------|--------------|------------------------|------------------------|------------------------|------------------------|
|                      |              |                        | Construction           | Equipment              | Installation           |
| 2015                 | 700          | \$39,817,456           | \$335,000,000          | \$592,500,000          | \$88,875,000           |
| 2016                 | 1,700        | \$96,699,536           | \$345,000,000          | \$1,382,500,000        | \$207,375,000          |
| 2017                 | 4,700        | \$267,345,776          | \$320,000,000          | \$1,382,500,000        | \$207,375,000          |
| 2018                 | 6,500        | \$369,733,520          | \$0                    | \$592,500,000          | \$88,875,000           |
| 2019                 | 6,500        | \$369,733,520          | \$0                    | \$100,000,000          | \$15,000,000           |
| 2020                 | 6,500        | \$369,733,520          | \$0                    | \$250,000,000          | \$37,500,000           |
| 2021                 | 6,500        | \$369,733,520          | \$0                    | \$250,000,000          | \$37,500,000           |
| 2022                 | 6,500        | \$369,733,520          | \$0                    | \$500,000,000          | \$75,000,000           |
| 2023                 | 6,500        | \$369,733,520          | \$0                    | \$500,000,000          | \$75,000,000           |
| 2024                 | 6,500        | \$369,733,520          | \$0                    | \$500,000,000          | \$75,000,000           |
| 2025                 | 6,500        | \$369,733,520          | \$0                    | \$500,000,000          | \$75,000,000           |
| 2026                 | 6,500        | \$369,733,520          | \$0                    | \$650,000,000          | \$97,500,000           |
| 2027                 | 6,500        | \$369,733,520          | \$0                    | \$750,000,000          | \$112,500,000          |
| 2028                 | 6,500        | \$369,733,520          | \$0                    | \$1,000,000,000        | \$150,000,000          |
| 2029                 | 6,500        | \$369,733,520          | \$0                    | \$0                    | \$0                    |
| 2030                 | 6,500        | \$369,733,520          | \$0                    | \$0                    | \$0                    |
| 2031                 | 6,500        | \$369,733,520          | \$0                    | \$0                    | \$0                    |
| 2032                 | 6,500        | \$369,733,520          | \$0                    | \$0                    | \$0                    |
| 2033                 | 6,500        | \$369,733,520          | \$0                    | \$0                    | \$0                    |
| 2034                 | 6,500        | \$184,866,760          | \$0                    | \$0                    | \$0                    |
| <b>20 Year Total</b> | <b>6,500</b> | <b>\$6,504,465,848</b> | <b>\$1,000,000,000</b> | <b>\$8,950,000,000</b> | <b>\$1,342,500,000</b> |

## Economic Impacts

- **Construction Impacts.** Construction jobs are not permanent and should therefore be viewed as a “person-year” equivalent. About 9,000 direct construction jobs and 4,700 additional indirect jobs, or an annual average of 3,000 direct and 1,600 indirect jobs, would be created in Washoe and Storey Counties over a three year period from 2015 to 2017 through the new construction activity associated with the building and site improvements for the manufacturing facility. In addition, labor associated with equipment installation will result in 11,400 direct in indirect jobs or an annual average of 2,300 over the first three years. The combination of these two activities would result in a one-time economic impact of \$2.4 billion, or an annual average impact of \$799.1 million for the first three years. These construction impacts are in addition to the operations impacts detailed above.

Impacts associated with equipment installation would continue through 2028 creating an annual average impact of \$121.6 million, or a total impact of \$1.3 billion from 2018 to 2028 and supporting a total of 11,400 direct and indirect jobs, or an annual average of 1,000 jobs. There would also be a number of regional construction impacts associated with the background infrastructure for the Gigafactory, including transportation and communication facilities, distribution networks and energy supply systems, none of which are included in these estimates.

- **Operations Impacts.** All total, Tesla could create an annual economic impact of \$5.4 billion at stabilized annual levels, or \$96.9 billion over the next 20 years on the Washoe/Storey County region, based on the high or most likely scenario. Their operations could directly and indirectly support an estimated 22,700 total jobs (based on 6,500 direct jobs) and to \$1.3 billion in annual personal income, or \$24.1 billion in personal income over the 20 year period. The company could increase regional GDP by an estimated 26 percent based on their total annual impact.
- **Overall Stabilized Impacts.** Based on the construction and operations impacts combined, the Gigafactory could generate overall impacts of \$100.6 billion over 20 years.
- **Jobs and Income.** The facility would directly employ about 6,500 people with an estimated annual payroll of \$369.7 million by 2018. Through the multiplier effect, an additional 16,200 jobs and \$955.3 million in annual payroll could be supported at other local businesses, based on the most likely scenario for the level of supplier demand that could be met locally. The additional jobs and payroll at other local businesses stem from direct and indirect impacts of supplier demand created by Tesla and consumer demand created by its employees.
- **Supported Population.** The 6,500 direct jobs and an estimated 16,200 indirect and induced jobs associated with Tesla’s operations would support a population



(including families) of about 49,000 people. This estimate assumes that approximately 96 percent of the workforce would live in the Washoe-Storey region, with some additional workforce assumed to live in northern Lyon County.

## Revenue Impacts

- **Direct Revenue Impacts.** Tesla would generate a moderate amount of utility franchise fees on electric and natural gas usage estimated at \$1.4 million annually, or \$25.2 million over 20 years. This assumption does not include renewable power generation recently proposed by Tesla for the Gigafactory that would reduce these franchise fee impacts. Beginning in 2024, they would also begin to generate an estimated \$35.8 million in average annual property tax revenues and \$3.7 million in annual modified business taxes. All total, the company could generate about \$459.6 million in direct state and local revenues the next 20 years.
- **Indirect Revenue Impacts.** In addition to direct revenues, Tesla and its employees would generate indirect property and sales tax revenues through employee spending and property ownership. Indirect revenues are estimated at \$81.8 million per year at stabilized annual levels, or \$1.5 billion over 20 years, based on the most likely scenario relative to the level of economic impacts and the total number of indirect and induced employees that could be supported by Tesla.
- **Value of Abatements and Reimbursements.** Over the 20 year period, the company could generate up to \$1.95 billion in direct and indirect revenues in Nevada, net of abatements and reimbursements, based on the most likely scenario. The proposed package of abatements, reimbursements and tax credits associated with Tesla would total \$1.10 billion, net of proposed legislative program repurposing over 20 years, or \$1.3 billion without this adjustment. Abatements are higher during the first four years due to the effect of sales and use tax abatements. The abatements include a 100 percent real and personal property tax abatement through June 2024; an abatement of all sales and use taxes on construction materials and equipment purchased for 20 years; a 100 percent abatement of modified business taxes through June 2024; and Transferable Tax Credits totaling \$195 million including \$12,500 per job for the first 6,000 jobs, 5 percent of first \$1 billion investment and 2.8 percent of the next \$2.5 billion investment.

**Tesla - \$10 billion Investment  
Summary of Key Findings  
(National Multipliers)**

| Jobs and Income Created                       | Jobs                              | Annual Personal<br>Income  | Average Wage                          |
|---|-----------------------------------|----------------------------|---------------------------------------|
| Direct  | 6,500                             | \$369.7 million            | \$27.35                               |
| Indirect                                      | 16,215                            | \$955.3 million            | \$28.32                               |
| <b>Total</b>                                  | <b>22,715</b>                     | <b>\$1.3 billion</b>       | <b>\$28.04</b>                        |
| <b>Operational Output Impact</b>              | <b>Stabilized Annual</b>          | <b>20 Year</b>             | <b>Stabilized 20 Year</b>             |
| Direct  | \$2.1 billion                     | \$37.5 billion             | \$41.5 billion                        |
| Indirect                                      | \$3.3 billion                     | \$59.4 billion             | \$65.6 billion                        |
| <b>Total</b>                                  | <b>\$5.4 billion</b>              | <b>\$96.9 billion</b>      | <b>\$107.1 billion</b>                |
| <b>Construction Impact (2015 to 2017)</b>     | <b>Total</b>                      | <b>Annual Average</b>      |                                       |
| Direct Jobs                                   | 8,950                             | 2,983                      |                                       |
| Indirect Jobs                                 | 4,665                             | 1,555                      |                                       |
| <b>Total</b>                                  | <b>13,614</b>                     | <b>4,538</b>               |                                       |
| <b>One-Time Economic Impact</b>               | <b>\$1.6 billion</b>              | <b>\$531.4 million</b>     |                                       |
| <b>Equipment Installation (2015 to 2028)</b>  | <b>Total</b>                      | <b>Annual Average</b>      |                                       |
| Direct Jobs                                   | 12,015                            | 858                        |                                       |
| Indirect Jobs                                 | 6,262                             | 447                        |                                       |
| <b>Total</b>                                  | <b>18,277</b>                     | <b>1,306</b>               |                                       |
| <b>One-Time Economic Impact</b>               | <b>\$2.1 billion</b>              | <b>\$152.9 million</b>     |                                       |
| <b>Total Capital Investment</b>               | <b>Total</b>                      | <b>Annual Average</b>      |                                       |
| Direct Construction                           | \$1.0 billion                     | \$333.3 million            |                                       |
| Background Infrastructure                     | -TBD-                             |                            |                                       |
| Equipment <sup>1</sup>                        | \$9.0 billion                     | n/a                        |                                       |
| Equipment Installation                        | \$1.3 billion                     |                            |                                       |
| <b>Total</b>                                  | <b>\$11.3 billion</b>             |                            |                                       |
| <b>Tax Revenue Impact (Net of Abatements)</b> | <b>Average Annual<sup>2</sup></b> | <b>20 Year<sup>2</sup></b> | <b>Stabilized 20 Year<sup>3</sup></b> |
| <b>Direct</b>                                 |                                   |                            |                                       |
| State of Nevada                               | \$5.7 million                     | \$59.6 million             | \$113.5 million                       |
| Local Government                              | \$27.3 million                    | \$298.1 million            | \$545.0 million                       |
| School District                               | \$9.7 million                     | \$101.9 million            | \$194.1 million                       |
| <b>Total</b>                                  | <b>\$42.6 million</b>             | <b>\$459.6 million</b>     | <b>\$852.6 million</b>                |
| <b>Indirect<sup>4</sup></b>                   |                                   |                            |                                       |
| State of Nevada                               | \$19.4 million                    | \$387.4 million            | \$387.4 million                       |
| Local Government                              | \$34.4 million                    | \$688.0 million            | \$688.0 million                       |
| School District                               | \$20.6 million                    | \$411.2 million            | \$411.2 million                       |
| <b>Total</b>                                  | <b>\$74.3 million</b>             | <b>\$1.5 billion</b>       | <b>\$1.5 billion</b>                  |
| <b>Total</b>                                  |                                   |                            |                                       |
| State of Nevada                               | \$25.0 million                    | \$446.9 million            | \$500.9 million                       |
| Local Government                              | \$61.7 million                    | \$986.1 million            | \$1233.0 million                      |
| School District                               | \$30.3 million                    | \$513.1 million            | \$605.3 million                       |
| <b>Total</b>                                  | <b>\$117.0 million</b>            | <b>\$1.9 billion</b>       | <b>\$2.3 billion</b>                  |

<sup>1</sup> Equipment assumes initial purchase of \$3.95 B, with \$5.0 B in replacement through year 14 (2028).

<sup>2</sup> Direct average annual tax revenues only reflect the 10 1/2 year period starting July 1, 2024. The 20 year scenarios are similarly

<sup>3</sup> Unlike direct average annual tax revenues, indirect tax revenues are collected over the entire 20 year period.

<sup>4</sup> Stabilized 20 Year direct tax revenues assume that period following July 1, 2024, while indirect tax revenues cover the period



**Tesla - \$10 billion Investment  
Summary of Key Findings  
(Regional Multipliers)**

| Jobs and Income Created                       | Jobs                              | Annual Personal<br>Income  | Average Wage                          |
|---|-----------------------------------|----------------------------|---------------------------------------|
| Direct  | 6,500                             | \$369.7 million            | \$27.35                               |
| Indirect                                      | 6,388                             | \$334.3 million            | \$25.16                               |
| Total   | 12,888                            | \$704.0 million            | \$26.26                               |
| <b>Operational Output Impact</b>              | <b>Stabilized Annual</b>          | <b>20 Year</b>             | <b>Stabilized 20 Year</b>             |
| Direct  | \$2.1 billion                     | \$37.5 billion             | \$41.5 billion                        |
| Indirect                                      | \$850.6 million                   | \$15.4 billion             | \$17.0 billion                        |
| Total   | \$2.9 billion                     | \$52.9 billion             | \$58.5 billion                        |
| <b>Construction Impact (2015 to 2017)</b>     | <b>Total</b>                      | <b>Annual Average</b>      |                                       |
| Direct Jobs                                   | 8,950                             | 2,983                      |                                       |
| Indirect Jobs                                 | 4,665                             | 1,555                      |                                       |
| Total   | 13,614                            | 4,538                      |                                       |
| One-Time Economic Impact                      | \$1.6 billion                     | \$531.4 million            |                                       |
| <b>Equipment Installation (2015 to 2028)</b>  | <b>Total</b>                      | <b>Annual Average</b>      |                                       |
| Direct Jobs                                   | 12,015                            | 858                        |                                       |
| Indirect Jobs                                 | 6,262                             | 447                        |                                       |
| Total   | 18,277                            | 1,306                      |                                       |
| One-Time Economic Impact                      | \$2.1 billion                     | \$152.9 million            |                                       |
| <b>Total Capital Investment</b>               | <b>Total</b>                      | <b>Annual Average</b>      |                                       |
| Direct Construction                           | \$1.0 billion                     | \$333.3 million            |                                       |
| Background Infrastructure                     | -TBD-                             |                            |                                       |
| Equipment <sup>1</sup>                        | \$9.0 billion                     | n/a                        |                                       |
| Equipment Installation                        | \$1.3 billion                     |                            |                                       |
| Total   | \$11.3 billion                    |                            |                                       |
| <b>Tax Revenue Impact (Net of Abatements)</b> | <b>Average Annual<sup>2</sup></b> | <b>20 Year<sup>2</sup></b> | <b>Stabilized 20 Year<sup>3</sup></b> |
| <b>Direct</b>                                 |                                   |                            |                                       |
| State of Nevada                               | \$5.7 million                     | \$59.6 million             | \$113.5 million                       |
| Local Government                              | \$27.3 million                    | \$298.1 million            | \$545.0 million                       |
| School District                               | \$9.7 million                     | \$101.9 million            | \$194.1 million                       |
| Total   | \$42.6 million                    | \$459.6 million            | \$852.6 million                       |
| <b>Indirect<sup>4</sup></b>                   |                                   |                            |                                       |
| State of Nevada                               | \$8.4 million                     | \$168.8 million            | \$168.8 million                       |
| Local Government                              | \$19.1 million                    | \$381.5 million            | \$381.5 million                       |
| School District                               | \$11.3 million                    | \$225.9 million            | \$225.9 million                       |
| Total   | \$38.8 million                    | \$776.1 million            | \$776.1 million                       |
| <b>Total</b>                                  |                                   |                            |                                       |
| State of Nevada                               | \$14.1 million                    | \$228.3 million            | \$282.3 million                       |
| Local Government                              | \$46.3 million                    | \$679.5 million            | \$926.5 million                       |
| School District                               | \$21.0 million                    | \$327.8 million            | \$420.0 million                       |
| Total   | \$81.4 million                    | \$1.2 billion              | \$1.6 billion                         |

<sup>1</sup> Equipment assumes initial purchase of \$3.95 B, with \$5.0 B in replacement through year 14 (2028).

<sup>2</sup> Direct average annual tax revenues only reflect the 10 1/2 year period starting July 1, 2024. The 20 year scenarios are similarly

<sup>3</sup> Unlike direct average annual tax revenues, indirect tax revenues are collected over the entire 20 year period.

<sup>4</sup> Stabilized 20 Year direct tax revenues assume that period following July 1, 2024, while indirect tax revenues cover the period following January 1, 2018.

## ECONOMIC IMPACT ANALYSIS

The economic benefits resulting from the attraction of Tesla to Storey County can be measured in terms of both the one-time construction impacts and on-going operations impacts. These impacts include direct and indirect jobs, personal income and economic activity, or output that would be generated by the project. Indirect impacts are the result of the multiplier effect and capture supported supplier and consumer businesses and employees in Storey and Washoe Counties that would benefit from the new facility.

### **Construction Impacts**

Total personal income, or earnings, from construction and the total increase in economic activity from new construction expenditures are shown in Figure 2. The 5.5 million square foot facility required for this project would result in direct construction expenditures of about \$1.0 billion over three years. In addition, there would be \$503.6 million in estimated labor costs for equipment installation during the first three years. The multiplier effect of this spending would result in a total increase in economic activity of about \$2.4 billion. Equipment installation expenditures would continue through 2028, resulting in additional economic impacts of \$1.3 billion from 2018 to 2028. All total, construction impacts are estimated at \$3.7 billion from 2015 to 2028. The approximately 31,900 direct and indirect jobs created locally by the construction and equipment installation could result in close to \$1.6 billion in personal income over the entire period. This translates to an average of 6,800 total jobs and \$316.0 million in personal income per year during the first three years and 1,000 jobs and \$63.0 million in annual personal income in subsequent years. There would be additional construction impacts related to rail, highway and utility improvements that are not included here.

**FIGURE 2  
CONSTRUCTION IMPACT OF TESLA  
ON WASHOE AND STOREY COUNTIES**

| Year   | Direct                    |               |                        | Total                  |               |                        |
|--|---------------------------|---------------|------------------------|------------------------|---------------|------------------------|
|  | Construction Expenditures | Jobs          | Personal Income        | Output                 | Jobs          | Personal Income        |
| <b>Facilities and Equipment Installation</b> |                           |               |                        |                        |               |                        |
| 2015   | \$423,875,000             | 3,793         | \$169,550,000          | \$675,788,777          | 5,771         | \$267,253,963          |
| 2016   | \$552,375,000             | 4,943         | \$220,950,000          | \$880,657,801          | 7,520         | \$348,273,449          |
| 2017   | \$527,375,000             | 4,720         | \$210,950,000          | \$840,800,015          | 7,180         | \$332,510,903          |
| <b>Additional Equipment Installation</b>     |                           |               |                        |                        |               |                        |
| 2018   | \$88,875,000              | 795           | \$52,992,391           | \$141,694,432          | 1,210         | \$73,478,241           |
| 2019   | \$15,000,000              | 134           | \$8,943,864            | \$23,914,672           | 204           | \$12,401,391           |
| 2020   | \$37,500,000              | 336           | \$22,359,659           | \$59,786,680           | 511           | \$31,003,477           |
| 2021   | \$37,500,000              | 336           | \$22,359,659           | \$59,786,680           | 511           | \$31,003,477           |
| 2022   | \$75,000,000              | 671           | \$44,719,318           | \$119,573,361          | 1,021         | \$62,006,955           |
| 2023   | \$75,000,000              | 671           | \$44,719,318           | \$119,573,361          | 1,021         | \$62,006,955           |
| 2024   | \$75,000,000              | 671           | \$44,719,318           | \$119,573,361          | 1,021         | \$62,006,955           |
| 2025   | \$75,000,000              | 671           | \$44,719,318           | \$119,573,361          | 1,021         | \$62,006,955           |
| 2026   | \$97,500,000              | 873           | \$58,135,113           | \$155,445,369          | 1,327         | \$80,609,041           |
| 2027   | \$112,500,000             | 1,007         | \$67,078,976           | \$179,360,041          | 1,532         | \$93,010,432           |
| 2028   | \$150,000,000             | 1,342         | \$89,438,635           | \$239,146,721          | 2,042         | \$124,013,910          |
| <b>Total 2015-2028</b>                       | <b>\$2,342,500,000</b>    | <b>20,964</b> | <b>\$1,101,635,567</b> | <b>\$3,734,674,632</b> | <b>31,891</b> | <b>\$1,641,586,105</b> |
| <b>Annual Average 2015-2017</b>              | <b>\$501,208,333</b>      | <b>4,486</b>  | <b>\$200,483,333</b>   | <b>\$799,082,198</b>   | <b>6,824</b>  | <b>\$316,012,772</b>   |
| <b>Annual Average 2018-2028</b>              | <b>\$76,261,364</b>       | <b>683</b>    | <b>\$45,471,415</b>    | <b>\$121,584,367</b>   | <b>1,038</b>  | <b>\$63,049,799</b>    |

## Operations Impacts

For the operations impact, the analysis includes a low scenario based on regional multipliers for Storey and Washoe Counties, a high scenario based on national multipliers and a most likely scenario. These scenarios illustrate the range of impacts that could occur over time depending on the share of supplier demand that could be met locally through changes in the regional economic base, and the corresponding level of indirect and induced output that could be supported. The on-going economic impacts from the operations of Tesla over the next 20 years are shown in Figures 3 and 4.

**FIGURE 3  
ANNUAL OPERATIONS IMPACT OF TESLA  
ON WASHOE AND STOREY COUNTIES USING REGIONAL MULTIPLIERS**

| Year               | Direct                  |              |                        | Indirect               |              |                        | Induced                |              |                        | Total                   |               |                         |
|--------------------|-------------------------|--------------|------------------------|------------------------|--------------|------------------------|------------------------|--------------|------------------------|-------------------------|---------------|-------------------------|
|                    | Output                  | Jobs         | Personal Income        | Output                 | Jobs         | Personal Income        | Output                 | Jobs         | Personal Income        | Output                  | Jobs          | Personal Income         |
| 2015               | \$223,196,019           | 700          | \$39,817,456           | \$51,279,533           | 363          | \$21,141,299           | \$40,318,954           | 325          | \$14,861,521           | \$314,794,507           | 1,388         | \$75,820,276            |
| 2016               | \$542,047,475           | 1,700        | \$96,699,536           | \$124,536,009          | 882          | \$51,343,154           | \$97,917,460           | 789          | \$36,092,266           | \$764,500,945           | 3,371         | \$184,134,956           |
| 2017               | \$1,498,601,844         | 4,700        | \$267,345,776          | \$344,305,436          | 2,439        | \$141,948,721          | \$270,712,979          | 2,180        | \$99,784,500           | \$2,113,620,259         | 9,319         | \$509,078,997           |
| 2018               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2019               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2020               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2021               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2022               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2023               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2024               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2025               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2026               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2027               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2028               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2029               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2030               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2031               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2032               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2033               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| 2034               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$476,167,093          | 3,374        | \$196,312,061          | \$374,390,290          | 3,015        | \$137,999,841          | \$2,923,091,848         | 12,888        | \$704,045,422           |
| <b>20 Yr Total</b> | <b>\$37,496,931,246</b> | <b>6,500</b> | <b>\$6,689,332,608</b> | <b>\$8,614,961,553</b> | <b>3,374</b> | <b>\$3,551,738,204</b> | <b>\$6,773,584,321</b> | <b>3,015</b> | <b>\$2,496,735,584</b> | <b>\$52,885,477,120</b> | <b>12,888</b> | <b>\$12,737,806,396</b> |

**FIGURE 4  
ANNUAL OPERATIONS IMPACT OF TESLA  
ON WASHOE AND STOREY COUNTIES USING NATIONAL MULTIPLIERS**

| Year               | Direct                  |              |                        | Indirect                |              |                        | Induced                 |              |                        | Total                   |               |                         |
|--------------------|-------------------------|--------------|------------------------|-------------------------|--------------|------------------------|-------------------------|--------------|------------------------|-------------------------|---------------|-------------------------|
|                    | Output                  | Jobs         | Personal Income        | Output                  | Jobs         | Personal Income        | Output                  | Jobs         | Personal Income        | Output                  | Jobs          | Personal Income         |
| 2015               | \$223,196,019           | 700          | \$39,817,456           | \$217,628,309           | 841          | \$58,456,903           | \$135,775,516           | 905          | \$44,418,860           | \$576,599,845           | 2,446         | \$142,693,220           |
| 2016               | \$542,047,475           | 1,700        | \$96,699,536           | \$528,525,894           | 2,044        | \$141,966,765          | \$329,740,539           | 2,197        | \$152,482,834          | \$1,400,313,909         | 5,941         | \$391,149,135           |
| 2017               | \$1,498,601,844         | 4,700        | \$267,345,776          | \$1,461,218,647         | 5,650        | \$392,496,350          | \$911,635,609           | 6,075        | \$421,570,189          | \$3,871,456,100         | 16,425        | \$1,081,412,315         |
| 2018               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2019               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2020               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2021               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2022               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2023               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2024               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2025               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2026               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2027               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2028               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2029               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2030               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2031               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2032               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2033               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| 2034               | \$2,072,534,465         | 6,500        | \$369,733,520          | \$2,020,834,300         | 7,814        | \$542,814,101          | \$1,260,772,650         | 8,402        | \$412,460,847          | \$5,354,141,415         | 22,715        | \$1,325,008,468         |
| <b>20 Yr Total</b> | <b>\$37,496,931,246</b> | <b>6,500</b> | <b>\$6,689,332,608</b> | <b>\$36,561,555,945</b> | <b>7,814</b> | <b>\$9,820,759,735</b> | <b>\$22,810,286,717</b> | <b>8,402</b> | <b>\$7,630,306,289</b> | <b>\$96,868,773,908</b> | <b>22,715</b> | <b>\$24,140,398,632</b> |



The company would open with about 700 jobs and \$39.8 million in payroll by 2015. By 2018, they would expand to 6,500 jobs and \$369.7 million in payroll. Through their local supplier purchases, as well as employee spending, they could create an annual economic impact of \$2.9 billion to \$5.4 billion at full operational levels. Tesla could indirectly support an estimated 16,200 additional jobs and \$955.3 million in annual personal income at other local businesses in Storey and Washoe Counties on an on-going basis, based on the high or most likely scenario. This represents a 26 percent increase in the total current GDP of the region, depending on the level of supplier demand that can be met locally.

The multiplier effect of the battery manufacturing operations on the region could result in a total economic impact of \$52.9 billion to \$96.9 billion over the next 20 years, with \$96.9 representing the most likely scenario, based on direct employment of 6,500 jobs and an estimated annual payroll of \$369.7 million. Should the number of jobs or the amount of payroll increase, the economic impacts would increase proportionally.

The new jobs generated directly and indirectly by the manufacturing operation could support a total local population of about 49,000 people under the most likely scenario, most of who would live in Washoe County. This includes families of direct employees, as well as families of employees at related supplier and consumer businesses supported through the multiplier effect. The supported population estimate assumes that about 96 percent of the employees will work and live in the region.

The secondary or indirect impacts described here are called multiplier effects. Multiplier effects are a way of representing the larger economic effects on the local economy. The multiplier effects translate an increase in output (loosely defined as sales, less profits) into a corresponding increase in jobs and personal income. In essence, the multiplier effect represents the recycling of local spending. This recycling process creates new business opportunities.

In looking at the differences between the regional multiplier or low scenario and the national multiplier or high scenario, it is evident that both the indirect (supplier) and induced (employee spending) impacts would be greater under the national scenario. The national multipliers reflect a much higher level of supplier demand being met locally. In the most likely or high scenario, it is assumed that the local economy adjusts over time to the presence of this new industry. In terms of the induced impacts, it is likely that most of the employee spending under the low scenario could already be captured locally, however, as the number of indirect jobs and personal income increases, so does the level of aggregate employee spending, and hence the increase in induced impacts in the high scenario.

The multipliers used in this analysis are from IMPLAN, a national vendor of economic impact software. Industry specific multipliers for storage batteries, carbon and graphite products, inorganic chemicals and aluminum products, as well as commercial construction were used in the analysis. The average output multiplier for operations is 1.41 based on regional multipliers

compared to 2.58 based on the high or most likely scenario. Using the most likely multipliers as an example, this means that for every \$1 million of output created by the company, an additional \$1.58 million in economic activity is generated in the regional economy.

## Revenue Impacts

In addition to supporting jobs and output at related businesses in the area through multiplier effects, Tesla would also generate state and local tax revenues to Storey and Washoe Counties and the State of Nevada. All total, the company could generate \$1.24 billion to \$1.95 billion in new direct and indirect tax revenues in Nevada, net of abatements and reimbursements, over the next 20 years. Note that the direct revenue impacts remain the same in both scenarios, whereas the indirect or employee-driven revenues vary depending on the number of indirect and induced jobs supported by the project.

### Direct Revenues

Tesla would be a major utility user and could generate utility franchise fees in Storey County estimated at \$25.2 million over 20 years, based on annual electric and natural gas costs of \$139.4 million and a utility franchise fee rate of 1 percent. State and local sales taxes generated by the company on equipment purchases and construction materials would be abated for 20 years (Figure 5). Real and personal property taxes and modified business tax would be abated for 10 years through June 2024, resulting in direct property taxes of \$394.2 million and modified business taxes of \$40.2 billion from 2024 through 2034.

**FIGURE 5  
DIRECT REVENUE IMPACT OF TESLA  
NET OF ABATEMENTS AND REIMBURSEMENTS**

| Year         | School                    |                        | County and Other Local Govts |                     |                        | State                  |                           |                     | Total Direct Revenues |
|--------------|---------------------------|------------------------|------------------------------|---------------------|------------------------|------------------------|---------------------------|---------------------|-----------------------|
|              | Property Tax <sup>2</sup> | Sales Tax <sup>1</sup> | Property Tax <sup>2</sup>    | Franchise Fees      | Sales Tax <sup>1</sup> | Sales Tax <sup>1</sup> | Property Tax <sup>2</sup> | MBT                 |                       |
| 2015         | \$0                       | \$0                    | \$0                          | \$182,822           | \$0                    | \$0                    | \$0                       | \$0                 | \$182,822             |
| 2016         | \$0                       | \$0                    | \$0                          | \$400,171           | \$0                    | \$0                    | \$0                       | \$0                 | \$400,171             |
| 2017         | \$0                       | \$0                    | \$0                          | \$992,053           | \$0                    | \$0                    | \$0                       | \$0                 | \$992,053             |
| 2018         | \$0                       | \$0                    | \$0                          | \$1,374,960         | \$0                    | \$0                    | \$0                       | \$0                 | \$1,374,960           |
| 2019         | \$0                       | \$0                    | \$0                          | \$1,380,966         | \$0                    | \$0                    | \$0                       | \$0                 | \$1,380,966           |
| 2020         | \$0                       | \$0                    | \$0                          | \$1,380,966         | \$0                    | \$0                    | \$0                       | \$0                 | \$1,380,966           |
| 2021         | \$0                       | \$0                    | \$0                          | \$1,380,966         | \$0                    | \$0                    | \$0                       | \$0                 | \$1,380,966           |
| 2022         | \$0                       | \$0                    | \$0                          | \$1,380,966         | \$0                    | \$0                    | \$0                       | \$0                 | \$1,380,966           |
| 2023         | \$0                       | \$0                    | \$0                          | \$1,387,244         | \$0                    | \$0                    | \$0                       | \$0                 | \$1,387,244           |
| 2024         | \$5,186,689               | \$0                    | \$13,889,914                 | \$1,387,244         | \$0                    | \$0                    | \$985,511                 | \$1,915,477         | \$23,364,836          |
| 2025         | \$10,334,897              | \$0                    | \$27,676,777                 | \$1,393,523         | \$0                    | \$0                    | \$1,963,711               | \$3,830,953         | \$45,199,861          |
| 2026         | \$10,684,241              | \$0                    | \$28,612,319                 | \$1,393,523         | \$0                    | \$0                    | \$2,030,089               | \$3,830,953         | \$46,551,126          |
| 2027         | \$11,453,842              | \$0                    | \$30,673,304                 | \$1,393,523         | \$0                    | \$0                    | \$2,176,320               | \$3,830,953         | \$49,527,943          |
| 2028         | \$13,147,455              | \$0                    | \$35,208,789                 | \$1,393,523         | \$0                    | \$0                    | \$2,498,119               | \$3,830,953         | \$56,078,840          |
| 2029         | \$11,367,038              | \$0                    | \$30,440,845                 | \$1,393,523         | \$0                    | \$0                    | \$2,159,826               | \$3,830,953         | \$49,192,186          |
| 2030         | \$9,913,310               | \$0                    | \$26,547,770                 | \$1,393,523         | \$0                    | \$0                    | \$1,883,606               | \$3,830,953         | \$43,569,162          |
| 2031         | \$8,730,608               | \$0                    | \$23,380,503                 | \$1,393,523         | \$0                    | \$0                    | \$1,658,884               | \$3,830,953         | \$38,994,472          |
| 2032         | \$7,750,260               | \$0                    | \$20,755,140                 | \$1,393,523         | \$0                    | \$0                    | \$1,472,610               | \$3,830,953         | \$35,202,487          |
| 2033         | \$6,979,251               | \$0                    | \$18,690,381                 | \$1,393,523         | \$0                    | \$0                    | \$1,326,112               | \$3,830,953         | \$32,220,221          |
| 2034         | \$6,359,724               | \$0                    | \$17,031,295                 | \$1,393,523         | \$0                    | \$0                    | \$1,208,397               | \$3,830,953         | \$29,823,893          |
| <b>Total</b> | <b>\$101,907,315</b>      | <b>\$0</b>             | <b>\$272,907,038</b>         | <b>\$25,183,588</b> | <b>\$0</b>             | <b>\$0</b>             | <b>\$19,363,187</b>       | <b>\$40,225,011</b> | <b>\$459,586,140</b>  |

Note: All figures are in constant 2014 dollars.

<sup>1</sup> Includes nonrecurring construction sales tax. This analysis assumes a full abatement of sales and use taxes on capital equipment and construction materials and exemption of sales tax on electric and gas.

<sup>2</sup> Property tax assumes 100% abatement of real and personal property thru July 2024.

## Indirect Revenues

Along with the direct taxes paid by the company, there would also be indirect taxes generated by direct and indirect employees. Using the results from the economic impact analysis, it is possible to estimate indirect tax impacts for each of the scenarios. All total, the direct and indirect employees associated with this project could generate \$776.1 million to \$1.49 billion in state and local revenues over the next 20 years, with \$1.49 billion representing the most likely scenario.

Indirect property tax revenues were based on average residential assessed per capita in Washoe County, times the annual supported population, times a property tax rate of 3.66 percent. Indirect property taxes are estimated at about \$7.0 million to \$12.4 million per year to the school district, \$14.5 million to \$25.6 million to the county and \$1.1 million to \$1.9 million to the state (Figures 6 and 7). All total the company would generate about \$721.4 million in indirect property tax revenues to all jurisdictions combined over 20 years based on the most likely scenario.

**FIGURE 6  
INDIRECT REVENUE IMPACT OF TESLA  
BASED ON REGIONAL MULTIPLIERS**

| Year         | School               |                     | County and Other Local Govts |                      | State               |                     |                     | Total Indirect Revenues |
|--------------|----------------------|---------------------|------------------------------|----------------------|---------------------|---------------------|---------------------|-------------------------|
|              | Property Tax         | Sales Tax           | Property Tax                 | Sales Tax            | Sales Tax           | Property Tax        | MBT                 |                         |
| 2015         | \$757,911            | \$586,667           | \$1,565,418                  | \$705,129            | \$470,086           | \$113,171           | \$421,233           | \$4,619,614             |
| 2016         | \$1,840,642          | \$1,424,763         | \$3,801,730                  | \$1,712,455          | \$1,141,637         | \$274,843           | \$1,022,994         | \$11,219,064            |
| 2017         | \$5,088,833          | \$3,939,050         | \$10,510,664                 | \$4,734,435          | \$3,156,290         | \$759,861           | \$2,828,279         | \$31,017,411            |
| 2018         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2019         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2020         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2021         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2022         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2023         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2024         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2025         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2026         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2027         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2028         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2029         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2030         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2031         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2032         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2033         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| 2034         | \$7,037,748          | \$5,447,622         | \$14,536,025                 | \$6,547,622          | \$4,365,082         | \$1,050,871         | \$3,911,449         | \$42,896,420            |
| <b>Total</b> | <b>\$127,329,104</b> | <b>\$98,560,051</b> | <b>\$262,990,240</b>         | <b>\$118,461,599</b> | <b>\$78,974,400</b> | <b>\$19,012,690</b> | <b>\$70,767,143</b> | <b>\$776,095,227</b>    |

Note: All figures are in constant 2014 dollars.

**FIGURE 7  
INDIRECT REVENUE IMPACT OF TESLA  
BASED ON NATIONAL MULTIPLIERS**

| Year         | School               |                      | County and Other Local Govts |                      | State                |                     |                      | Total Indirect Revenues |
|--------------|----------------------|----------------------|------------------------------|----------------------|----------------------|---------------------|----------------------|-------------------------|
|              | Property             |                      | Property                     |                      | Property             |                     |                      |                         |
|              | Tax                  | Sales Tax            | Tax                          | Sales Tax            | Sales Tax            | Tax                 | MBT                  |                         |
| 2015         | \$1,335,795          | \$1,104,103          | \$2,759,000                  | \$1,327,047          | \$884,698            | \$199,460           | \$1,203,646          | \$8,813,750             |
| 2016         | \$3,244,074          | \$3,026,556          | \$6,700,430                  | \$3,637,687          | \$2,425,125          | \$484,403           | \$3,445,060          | \$22,963,333            |
| 2017         | \$8,968,909          | \$8,367,536          | \$18,524,717                 | \$10,057,135         | \$6,704,756          | \$1,339,231         | \$9,524,579          | \$63,486,863            |
| 2018         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2019         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2020         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2021         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2022         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2023         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2024         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2025         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2026         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2027         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2028         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2029         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2030         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2031         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2032         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2033         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| 2034         | \$12,403,811         | \$10,252,386         | \$25,619,289                 | \$12,322,579         | \$8,215,053          | \$1,852,128         | \$11,176,717         | \$81,841,962            |
| <b>Total</b> | <b>\$224,413,561</b> | <b>\$186,788,748</b> | <b>\$463,512,068</b>         | <b>\$224,505,707</b> | <b>\$149,670,472</b> | <b>\$33,509,271</b> | <b>\$204,177,472</b> | <b>\$1,486,577,300</b>  |

Note: All figures are in constant 2014 dollars.

Indirect sales tax revenues include sales taxes from direct employees and employees at supported local businesses. They are estimated by multiplying total personal income from the economic impact times 31 percent (share of taxable expenditures), times a residency ratio of 96 percent for the region, times the local sales tax rate.<sup>1</sup> No residency ratio is used for state indirect sales tax. Indirect sales taxes are estimated at about \$5.4 million to \$10.3 million per year to the school district, \$6.5 million to \$12.3 million to the county and \$4.4 million to \$8.2 million to the state.<sup>2</sup> All total the company would generate about \$561.0 million in indirect sales tax revenues to all jurisdictions combined over 20 years based on the most likely scenario.

In terms of state modified business tax, direct and indirect employees could generate approximately \$70.8 million to \$204.2 million in new revenues over 20 years, with \$204.2 million representing the most likely scenario. For this calculation a rate of 1.17% is applied to indirect personal income from the economic impacts. Modified business tax from direct employees is already captured in direct revenues.

### Value of Abatements and Reimbursements

In total, Tesla could generate an estimated \$1.95 billion in direct and indirect tax revenues, net of abatements and reimbursements, to state and local governments in Nevada over 20 years

<sup>1</sup> According to the Census Bureau Consumer Expenditure Survey, persons in the median income range spend about 31 percent of their income on taxable goods.

<sup>2</sup> Reflects state sales tax rate of 2 percent.

under the most likely scenario. Figure 8 shows the value of the sales, property tax and modified business tax (MBT) abatements and reimbursements provided by each jurisdiction. These total \$866.7 million at the local level and \$237.5 million at the state level over 20 years.

The summary shows the value of a 100 percent real and personal property tax abatement through June 2024. The sales tax information shows the value of a 100 percent of both state and local sales taxes on equipment purchases and construction materials for 20 years. There would also be a 100 percent MBT abatement through June 2024. In addition, the state is offering Transferrable Tax Credits totaling \$195 million based on the combined value of \$12,500 per job for the first 6,000 new jobs created by the company, 5 percent of first \$1 billion investment and 2.8 percent of the next \$2.5 billion investment. The proposed package of abatements, reimbursements and tax credits associated with Tesla would total \$1.10 billion, net of proposed legislative program repurposing over 20 years, or \$1.3 billion without this adjustment.

**FIGURE 8  
ABATEMENTS AND REIMBURSEMENTS SUMMARY  
TESLA**

| Year         | Property             |                     |                     | Sales                |                      |                      | MBT                 | TTC                  | Offsets               | Total                |                      |
|--------------|----------------------|---------------------|---------------------|----------------------|----------------------|----------------------|---------------------|----------------------|-----------------------|----------------------|----------------------|
|              | County               | School District     | State               | County/Other Local   | School District      | State                | State               | State                | State                 | Local                | State                |
| 2015         | \$7,778,015          | \$2,904,420         | \$551,863           | \$23,805,000         | \$20,631,000         | \$15,870,000         | \$461,782           | \$15,000,000         | -\$30,000,000         | \$55,118,435         | \$1,883,644          |
| 2016         | \$21,310,839         | \$7,957,766         | \$1,512,038         | \$47,685,000         | \$41,327,000         | \$31,790,000         | \$1,054,286         | \$30,000,000         | -\$45,000,000         | \$118,280,605        | \$19,356,324         |
| 2017         | \$32,590,881         | \$12,169,892        | \$2,312,375         | \$47,235,000         | \$40,937,000         | \$31,490,000         | \$2,946,390         | \$45,000,000         | -\$45,000,000         | \$132,932,773        | \$36,748,764         |
| 2018         | \$31,972,111         | \$11,938,835        | \$2,268,472         | \$17,775,000         | \$15,405,000         | \$11,850,000         | \$3,830,953         | \$45,000,000         | -\$45,000,000         | \$77,090,946         | \$17,949,425         |
| 2019         | \$28,324,799         | \$10,576,877        | \$2,009,689         | \$3,000,000          | \$2,600,000          | \$2,000,000          | \$3,830,953         | \$45,000,000         | -\$30,000,000         | \$44,501,676         | \$22,840,643         |
| 2020         | \$26,690,273         | \$9,966,522         | \$1,893,717         | \$7,500,000          | \$6,500,000          | \$5,000,000          | \$3,830,953         | \$15,000,000         |                       | \$50,656,795         | \$25,724,671         |
| 2021         | \$25,368,767         | \$9,473,054         | \$1,799,954         | \$7,500,000          | \$6,500,000          | \$5,000,000          | \$3,830,953         | \$0                  |                       | \$48,841,821         | \$10,630,908         |
| 2022         | \$26,439,817         | \$9,872,998         | \$1,875,947         | \$15,000,000         | \$13,000,000         | \$10,000,000         | \$3,830,953         | \$0                  |                       | \$64,312,815         | \$15,706,900         |
| 2023         | \$27,258,982         | \$10,178,886        | \$1,934,068         | \$15,000,000         | \$13,000,000         | \$10,000,000         | \$3,830,953         | \$0                  |                       | \$65,437,869         | \$15,765,021         |
| 2024         | \$13,889,914         | \$5,186,689         | \$985,511           | \$15,000,000         | \$13,000,000         | \$10,000,000         | \$1,915,477         | \$0                  |                       | \$47,076,603         | \$12,900,988         |
| 2025         | \$0                  | \$0                 | \$0                 | \$15,000,000         | \$13,000,000         | \$10,000,000         | \$0                 | \$0                  |                       | \$28,000,000         | \$10,000,000         |
| 2026         | \$0                  | \$0                 | \$0                 | \$19,500,000         | \$16,900,000         | \$13,000,000         | \$0                 | \$0                  |                       | \$36,400,000         | \$13,000,000         |
| 2027         | \$0                  | \$0                 | \$0                 | \$22,500,000         | \$19,500,000         | \$15,000,000         | \$0                 | \$0                  |                       | \$42,000,000         | \$15,000,000         |
| 2028         | \$0                  | \$0                 | \$0                 | \$30,000,000         | \$26,000,000         | \$20,000,000         | \$0                 | \$0                  |                       | \$56,000,000         | \$20,000,000         |
| 2029         | \$0                  | \$0                 | \$0                 | \$0                  | \$0                  | \$0                  | \$0                 | \$0                  |                       | \$0                  | \$0                  |
| 2030         | \$0                  | \$0                 | \$0                 | \$0                  | \$0                  | \$0                  | \$0                 | \$0                  |                       | \$0                  | \$0                  |
| 2031         | \$0                  | \$0                 | \$0                 | \$0                  | \$0                  | \$0                  | \$0                 | \$0                  |                       | \$0                  | \$0                  |
| 2032         | \$0                  | \$0                 | \$0                 | \$0                  | \$0                  | \$0                  | \$0                 | \$0                  |                       | \$0                  | \$0                  |
| 2033         | \$0                  | \$0                 | \$0                 | \$0                  | \$0                  | \$0                  | \$0                 | \$0                  |                       | \$0                  | \$0                  |
| 2034         | \$0                  | \$0                 | \$0                 | \$0                  | \$0                  | \$0                  | \$0                 | \$0                  |                       | \$0                  | \$0                  |
| <b>Total</b> | <b>\$241,624,399</b> | <b>\$90,225,939</b> | <b>\$17,143,634</b> | <b>\$286,500,000</b> | <b>\$248,300,000</b> | <b>\$191,000,000</b> | <b>\$29,363,655</b> | <b>\$195,000,000</b> | <b>-\$195,000,000</b> | <b>\$866,650,338</b> | <b>\$237,507,290</b> |

## Summary

The operations of the manufacturing facility described in this analysis would create significant economic benefits for Storey and Washoe County. The company would not only create new basic jobs and payroll in a high tech export industry, but would also create additional demand for other local businesses based on supplier purchases and employee spending. The number of direct jobs created by Tesla would increase manufacturing employment in the metro area by more than 50 percent.

Although the company would not generate any sales or property taxes in the near term, the project would result in significant construction related to transportation and utility infrastructure as well as employee housing that would generate sales and property taxes at the

full unabated rate. The direct and indirect employees would also generate a significant amount of sales taxes from their personal spending in the region. Furthermore, it is likely that investing in attracting this type of well-known company to Northern Nevada will allow for significant infrastructure improvements and will seed additional related economic development activity locally and throughout the region.



# Tax and Incentive Analysis for Tesla in Storey County, NV

September 2014

Prepared By:



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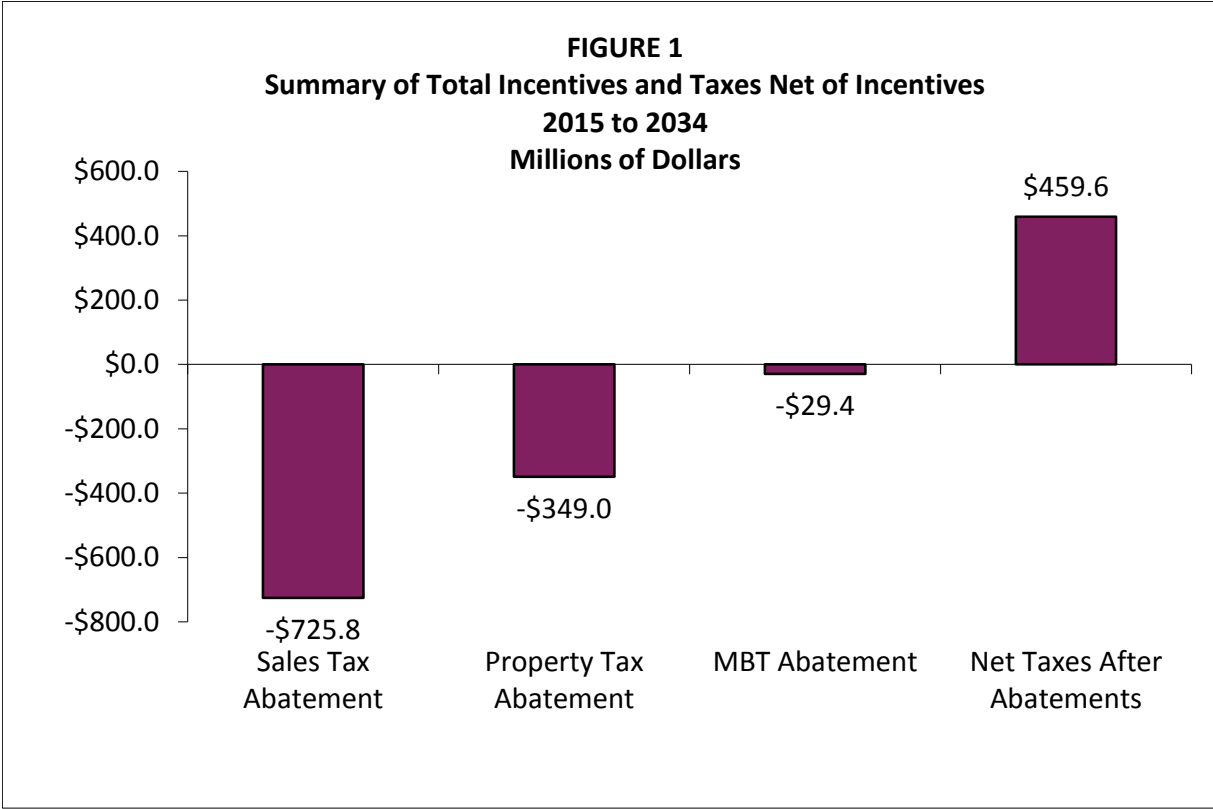
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# EXECUTIVE SUMMARY

This analysis details net taxes and proposed incentives for a planned battery manufacturing facility in Storey County referred to as the Tesla Gigafactory. The results reflect the proposed incentive offer to the company, which will require legislative approval.

Total incentives valued at \$1.1 billion would include a 100 percent real and personal property tax abatement through June 2024, a 100 percent state and local sales tax abatement on equipment purchases and construction materials for 20 years, a 100 percent modified business tax (MBT) abatement through June 2024, and transferrable tax credits valued at \$195 million. However, the taxes generated by the company over the next 20 years would still result in \$459.6 million in net new revenues to the state and to local governments (Figure 1).



## **1.0 INTRODUCTION**

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Applied Economics was retained by the Governor's Office of Economic Development to provide information and analysis relating to the taxes and utility costs for the construction and operation of a battery manufacturing facility. The analysis includes an estimate of both incentives and net new taxes generated by the company over the next 20 years.

### **1.1 Project Description**

Construction for the proposed facility could begin in 2014/2015, with phase one operations beginning in 2015. The company would continue to expand and add employees through 2018. The analysis shows a 20 year time horizon to illustrate the longer term impacts of the project and match the term of the tax abatements.

- Facility construction would begin in 2014/2015, with completion in 2017. All total, construction costs are estimated at \$1.0 billion over the three year period.
- The manufacturing facility would open with 700 employees in 2015, ramping up to 6,500 employees by 2018.
- The analysis assumes the company would purchase \$3.95 billion in equipment during the initial ramp up from 2015 through 2018. Additional replacement equipment purchases totaling \$5.0 billion are included in subsequent years through 2028.
- The company would use a significant amount of electric power estimated at 60 MW and 45.83 MWh per month in the first year and increasing to 240MW and 192 MWh at full operational levels. They would also use an estimated 15,000 MMBtu of natural gas per day.

Based on the project information shown in Figure 2, this analysis estimates major taxes at the proposed site in Storey County. The analysis does not include an assessment of every tax, fee or charge that would be levied. Rather, it focuses on the major sources of public revenue including modified business taxes, sales taxes, utility franchise fees and property taxes. These public revenue sources not only make up the vast majority of the company's projected non-federal tax liability, they also account for all of the available tax abatement and reimbursement programs.

**FIGURE 1  
PROJECT DESCRIPTION  
TESLA**

| Assumptions                        | 2015                | 2016                | 2017                 | 2018                 | 2019                 | 2020                 | 2021                 | 2022                 | 2023                 | 2024                 | 2025                 | 2026                 | 2027                 | 2028                 | 2029 and beyond      |
|------------------------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <b>Labor, Payroll and Training</b> |                     |                     |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Total Workforce                    | 700                 | 1,700               | 4,700                | 6,500                | 6,500                | 6,500                | 6,500                | 6,500                | 6,500                | 6,500                | 6,500                | 6,500                | 6,500                | 6,500                | 6,500                |
| <b>Payroll</b>                     | <b>\$39,817,456</b> | <b>\$96,699,536</b> | <b>\$267,345,776</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> | <b>\$369,733,520</b> |
| Direct Labor @ \$49,254            | \$24,665,088        | \$59,900,928        | \$165,608,448        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        | \$229,032,960        |
| Indirect Labor @ \$62,546          | \$7,409,248         | \$17,993,888        | \$49,747,808         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         | \$68,800,160         |
| Support Labor @ \$95,867           | \$7,743,120         | \$18,804,720        | \$51,989,520         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         | \$71,900,400         |
| <b>Benefits</b>                    | <b>\$10,144,400</b> | <b>\$24,636,400</b> | <b>\$68,112,400</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  | <b>\$94,198,000</b>  |
| Direct Labor @ \$13,770            | \$6,895,392         | \$16,745,952        | \$46,297,632         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         | \$64,028,640         |
| Indirect Labor @ \$15,018          | \$1,779,008         | \$4,320,448         | \$11,944,768         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         | \$16,519,360         |
| Support Labor @ \$18,200           | \$1,470,000         | \$3,570,000         | \$9,870,000          | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         | \$13,650,000         |
| <b>Capital Expenditures</b>        |                     |                     |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Manufacturing Equipment            | \$592,500,000       | \$1,382,500,000     | \$1,382,500,000      | \$592,500,000        | \$100,000,000        | \$250,000,000        | \$250,000,000        | \$500,000,000        | \$500,000,000        | \$500,000,000        | \$500,000,000        | \$650,000,000        | \$750,000,000        | \$1,000,000,000      | \$0                  |
| <b>Facilities</b>                  |                     |                     |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Land                               | \$0                 | \$0                 | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  |
| Construction Costs                 | \$335,000,000       | \$345,000,000       | \$320,000,000        | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  | \$0                  |
| <b>Utility Usage</b>               |                     |                     |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Electric Demand (MW)               | 0                   | 60                  | 180                  | 240                  | 240                  | 240                  | 240                  | 240                  | 240                  | 240                  | 240                  | 240                  | 240                  | 240                  | 240                  |
| Electric Usage (GWh) per year      | 0                   | 550                 | 1,500                | 2,300                | 2,300                | 2,300                | 2,300                | 2,300                | 2,300                | 2,300                | 2,300                | 2,300                | 2,300                | 2,300                | 2,300                |
| Natural Gas (MMBTU) per day        | 0                   | 15,000              | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               | 15,000               |

The information and observations contained in this report are based on our present knowledge of the components of development, and of the current physical, socioeconomic and fiscal conditions of the affected areas. Estimates made in this analysis are based on hypothetical assumptions, current tax policies, and the current economic structure of the region. However, even if the assumptions outlined in this report were to occur, there will usually be differences between the estimates and the actual results because events and circumstances frequently do not occur as expected. This analysis is based on the best available information and is intended to aid the Nevada Governor's Office of Economic Development in estimating taxes and utility costs for this project. In no way will Applied Economics be held responsible or have any liability or be subject to damages as a result of this analysis. This report may be used only for the purposes that it was intended.

## **2.0 COMPARATIVE ANALYSIS OF TAXES AND INCENTIVES**

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### **2.1 Sales Taxes**

Sales taxes in this analysis apply to the purchase of equipment and construction materials. The applicable state and local sales tax rate in Storey County is 7.6 percent. Sales taxes over 20 years are estimated at \$725.8 million before abatements.

State and local sales tax estimates are based on the proposed schedule for construction expenditures (60 percent materials) and equipment purchases. Electric and natural gas costs are exempt from sales tax in Nevada. The proposed incentive offer would include a 100 percent abatement of all state and local sales taxes on equipment purchases and construction materials during the first 20 years. Tesla's sales tax liability in Storey County after the proposed abatements would be zero through 2034.

**FIGURE 2  
SALES TAX COMPARISON**

**Assumptions**

Sales tax calculation includes purchases of manufacturing equipment and construction materials (60% of building cost). If equipment is purchased out of state, it is assumed that use tax will be paid locally. Effective Tax Rate: Storey County 7.6%.

|   | Total           | 1<br>2015      | 2<br>2016       | 3<br>2017       | 4<br>2018      | 5<br>2019     | 6<br>2020      | 7<br>2021      |
|---|-----------------|----------------|-----------------|-----------------|----------------|---------------|----------------|----------------|
| no abatement                                  | \$725,800,000   | \$60,306,000   | \$120,802,000   | \$119,662,000   | \$45,030,000   | \$7,600,000   | \$19,000,000   | \$19,000,000   |
| 100% Sales and Use Tax Abatement <sup>1</sup> | (\$725,800,000) | (\$60,306,000) | (\$120,802,000) | (\$119,662,000) | (\$45,030,000) | (\$7,600,000) | (\$19,000,000) | (\$19,000,000) |
| Net Tax Due                                   | \$0             | \$0            | \$0             | \$0             | \$0            | \$0           | \$0            | \$0            |

<sup>1</sup>This analysis assumes full abatement of sales and use taxes on capital equipment and construction materials. Electricity, water and gas are exempt per NRS 372.295.

**Assumptions**

Sales tax calculation includes purchases of manufacturing equipment and construction materials (60% of building cost). If equipment is purchased out of state, it is assumed that use tax will be paid locally. Effective Tax Rate: Storey County 7.6%.

|   | Total           | 8<br>2022      | 9<br>2023      | 10<br>2024     | 11<br>2025     | 12<br>2026     | 13<br>2027     | 14<br>2028     |
|---|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| no abatement                                  | \$725,800,000   | \$38,000,000   | \$38,000,000   | \$38,000,000   | \$38,000,000   | \$49,400,000   | \$57,000,000   | \$76,000,000   |
| 100% Sales and Use Tax Abatement <sup>1</sup> | (\$725,800,000) | (\$38,000,000) | (\$38,000,000) | (\$38,000,000) | (\$38,000,000) | (\$49,400,000) | (\$57,000,000) | (\$76,000,000) |
| Net Tax Due                                   | \$0             | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            |

## **2.2 Property Taxes**

The State of Nevada imposes a tax on both real and personal property. Note that real property taxes shown here only reflect the value of the new facility, not the value of the land. The effective property tax rate of 1.21 percent was calculated by multiplying the assessment ratio by the mill rate for the selected location in Storey County. Personal property is depreciated using standard 10 year schedule for manufacturing equipment prescribed by the state. Real property is not depreciated.

Depreciated personal property and real property in Nevada are assessed at 35 percent and a mill rate of 3.4607 percent is applied for Storey County. This results in an unabated real and personal property tax liability of about \$743.2 million over 20 years.

Under the proposed incentive offer, all real and personal property taxes on new construction, new and replacement equipment would be abated through June 2024. After that date, normal property taxes would apply. The resulting net property tax liability over 20 years is estimated at \$394.2 million.

**FIGURE 3  
PROPERTY TAX COMPARISON**

**Assumptions**

Value of New and Replacement Machinery: \$8.95 billion in 2015-2028; Value of New Buildings: \$1.0 billion in 2015-2017. Useful life of machinery and equipment - 10 years. Real property has not been depreciated in this example. Effective Tax Rate: Storey County 1.211%

| <b>Personal Property</b>                  |                 | 1              | 2              | 3              | 4              | 5              | 6              | 7              | 8              | 9              |
|---|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Total                                     |                 | 2015           | 2016           | 2017           | 2018           | 2019           | 2020           | 2021           | 2022           | 2023           |
| no abatement <sup>1</sup>                 | \$512,853,276   | \$7,176,627    | \$22,544,176   | \$34,960,697   | \$34,066,968   | \$28,798,915   | \$26,438,063   | \$24,529,325   | \$26,076,312   | \$27,259,487   |
| 100% abatement thru Jun 2024 <sup>2</sup> | (\$245,856,460) | (\$7,176,627)  | (\$22,544,176) | (\$34,960,697) | (\$34,066,968) | (\$28,798,915) | (\$26,438,063) | (\$24,529,325) | (\$26,076,312) | (\$27,259,487) |
| Net Tax Due                               | \$266,996,816   | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            |
| <hr/>                                     |                 |                |                |                |                |                |                |                |                |                |
| <b>Real Property</b>                      |                 | 2015           | 2016           | 2017           | 2018           | 2019           | 2020           | 2021           | 2022           | 2023           |
| Total                                     |                 | 2015           | 2016           | 2017           | 2018           | 2019           | 2020           | 2021           | 2022           | 2023           |
| no abatement                              | \$230,318,237   | \$4,057,671    | \$8,236,466    | \$12,112,450   | \$12,112,450   | \$12,112,450   | \$12,112,450   | \$12,112,450   | \$12,112,450   | \$12,112,450   |
| 100% abatement thru Jun 2024 <sup>2</sup> | (\$103,137,512) | (\$4,057,671)  | (\$8,236,466)  | (\$12,112,450) | (\$12,112,450) | (\$12,112,450) | (\$12,112,450) | (\$12,112,450) | (\$12,112,450) | (\$12,112,450) |
| Net Tax Due                               | \$127,180,725   | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            |
| <hr/>                                     |                 |                |                |                |                |                |                |                |                |                |
| <b>TOTAL</b>                              |                 | 2015           | 2016           | 2017           | 2018           | 2019           | 2020           | 2021           | 2022           | 2023           |
| Total                                     |                 | 2015           | 2016           | 2017           | 2018           | 2019           | 2020           | 2021           | 2022           | 2023           |
| no abatement <sup>1</sup>                 | \$743,171,512   | \$11,234,297   | \$30,780,642   | \$47,073,147   | \$46,179,418   | \$40,911,365   | \$38,550,513   | \$36,641,775   | \$38,188,762   | \$39,371,937   |
| 100% abatement thru Jun 2024 <sup>2</sup> | (\$348,993,972) | (\$11,234,297) | (\$30,780,642) | (\$47,073,147) | (\$46,179,418) | (\$40,911,365) | (\$38,550,513) | (\$36,641,775) | (\$38,188,762) | (\$39,371,937) |
| Net Tax Due                               | \$394,177,541   | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            |

<sup>1</sup> Personal property is depreciated using a schedules provided by state based on a 10 year life. Replacement equipment purchases are assumed through 2028.

<sup>2</sup> Real and personal property abatement of 100% is available for a 10 year term.



**FIGURE 3  
PROPERTY TAX COMPARISON**

**Assumptions**

Value of New and Replacement Machinery: \$8.95 billion in 2015-2028; Value of New Buildings: \$1.0 billion in 2015-2017. Useful life of machinery and equipment - 10 years. Real property has not been depreciated in this example. Effective Tax Rate: Storey County 1.211%

| <b>Personal Property</b>                  | 10             | 11           | 12           | 13           | 14           | 15           | 16           | 17           | 18           | 19           | 20           |
|---|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|   | 2024           | 2025         | 2026         | 2027         | 2028         | 2029         | 2030         | 2031         | 2032         | 2033         | 2034         |
| no abatement <sup>1</sup>                 | \$28,011,779   | \$27,862,935 | \$29,214,200 | \$32,191,016 | \$38,741,914 | \$31,855,259 | \$26,232,236 | \$21,657,545 | \$17,865,561 | \$14,883,294 | \$12,486,967 |
| 100% abatement thru Jun 2024 <sup>2</sup> | (\$14,005,889) | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          |
| Net Tax Due                               | \$14,005,889   | \$27,862,935 | \$29,214,200 | \$32,191,016 | \$38,741,914 | \$31,855,259 | \$26,232,236 | \$21,657,545 | \$17,865,561 | \$14,883,294 | \$12,486,967 |

| <b>Real Property</b>                      | 2024          | 2025         | 2026         | 2027         | 2028         | 2029         | 2030         | 2031         | 2032         | 2033         | 2034         |
|---|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| no abatement                              | \$12,112,450  | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 |
| 100% abatement thru Jun 2024 <sup>4</sup> | (\$6,056,225) | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          |
| Net Tax Due                               | \$6,056,225   | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 | \$12,112,450 |

| <b>TOTAL</b>                              | 2024           | 2025         | 2026         | 2027         | 2028         | 2029         | 2030         | 2031         | 2032         | 2033         | 2034         |
|---|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| no abatement <sup>1</sup>                 | \$40,124,229   | \$39,975,385 | \$41,326,650 | \$44,303,466 | \$50,854,364 | \$43,967,709 | \$38,344,686 | \$33,769,995 | \$29,978,011 | \$26,995,744 | \$24,599,417 |
| 100% abatement thru Jun 2024 <sup>2</sup> | (\$20,062,114) | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          | \$0          |
| Net Tax Due                               | \$20,062,114   | \$39,975,385 | \$41,326,650 | \$44,303,466 | \$50,854,364 | \$43,967,709 | \$38,344,686 | \$33,769,995 | \$29,978,011 | \$26,995,744 | \$24,599,417 |

### **2.3 Utility Costs and Franchise Fees**

This battery manufacturing facility would be a very large utility user at a high load factor and thus utility costs will be a sizeable portion of overall operating costs. In addition to the basic cost of electricity and natural gas, Storey County also has a franchise fee of 1 percent based on total electricity and natural gas sales. Although franchise fees are paid by the utility, this ultimately represents public revenues generated by the project.

In Storey County, the estimated cost of electricity through Nevada Energy would be \$1.9 billion over 20 years at an average cost of 5.54 cents per kilowatt hour (kWh). Natural gas costs are estimated at \$628.4 million over 20 years, based on an average cost of \$6.31 per MMBtu. The utility franchise fees of 1 percent in Storey County would add an additional \$25.2 million.

**FIGURE 4  
ELECTRIC AND NATURAL GAS COST AND UTILITY FRANCHISE FEES**

**Assumptions**

Costs based on monthly electric usage of 60MW, 45.83MWh per month in Phase I, 180MW, 125MWh per month in Phase II and 240MW, 192 MWh in Phase III; . Gas usage is estimated at 15,000 MMBTU per day. Effective Utility Franchise Rate: Storey County 1% on electric, 1% on natural gas.

|                         | Total           | 2015         | 2016         | 2017         | 2018          | 2019          | 2020          | 2021          | 2022          | 2023          | 2024          |
|-------------------------|-----------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Electric Cost (EIA-NVE) | \$1,889,973,964 | \$13,103,208 | \$26,206,416 | \$76,762,960 | \$102,969,376 | \$103,569,940 | \$103,569,940 | \$103,569,940 | \$103,569,940 | \$104,197,802 | \$104,197,802 |
| Natural Gas (NV Energy) | \$628,384,848   | \$5,178,996  | \$13,810,656 | \$22,442,316 | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  |
| Utility Franchise Fees  | \$25,183,588    | \$182,822    | \$400,171    | \$992,053    | \$1,374,960   | \$1,380,966   | \$1,380,966   | \$1,380,966   | \$1,380,966   | \$1,387,244   | \$1,387,244   |

**Assumptions**

Costs based on monthly electric usage of 60MW, 45.83MWh per month in Phase I, 180MW, 125MWh per month in Phase II and 240MW, 192 MWh in Phase III; . Gas usage is estimated at 15,000 MMBTU per day. Effective Utility Franchise Rate: Storey County 1% on electric, 1% on natural gas.

|                         | Total           | 2025          | 2026          | 2027          | 2028          | 2029          | 2030          | 2031          | 2032          | 2033          | 2034          |
|-------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Electric Cost (EIA-NVE) | \$1,889,973,964 | \$104,825,664 | \$104,825,664 | \$104,825,664 | \$104,825,664 | \$104,825,664 | \$104,825,664 | \$104,825,664 | \$104,825,664 | \$104,825,664 | \$104,825,664 |
| Natural Gas (NV Energy) | \$628,384,848   | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  | \$34,526,640  |
| Utility Franchise Fees  | \$25,183,588    | \$1,393,523   | \$1,393,523   | \$1,393,523   | \$1,393,523   | \$1,393,523   | \$1,393,523   | \$1,393,523   | \$1,393,523   | \$1,393,523   | \$1,393,523   |

## **2.4 Modified Business Taxes and Other Credits**

Although Nevada has no state income tax, the modified business tax on payroll would apply to Tesla. The estimated modified business tax liability for the company is shown in Figure 5. The calculations are based on annual payroll net of health care costs times 1.17 percent of the amount over \$340,000.

Under the proposed incentive package, a 100 percent MBT abatement would apply through June 2024. The unabated MBT liability would be \$69.6 million over 20 years. After the abatement, the 20 year total MBT liability would be reduced to \$40.2 million.

In addition to the MBT abatement, the proposed incentive package also includes Transferrable Tax Credits totaling \$195 million. These include a credit of \$12,500 per new job for the first 6,000 jobs, a 4 percent credit on the first \$1.0 billion in capital investment, and a 3.2 percent credit on the next \$2.5 billion capital investment. The credits would extend through 2020 and would be offset by current tax programs.

**FIGURE 5  
OTHER TAX CREDIT PROGRAMS**

|                                 | Total           | 2015           | 2016           | 2017           | 2018           | 2019           | 2020           | 2021          | 2022          | 2023          | 2024          |
|---------------------------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|
| Modified Business Tax           | \$69,588,667    | \$461,782      | \$1,054,286    | \$2,946,390    | \$3,830,953    | \$3,830,953    | \$3,830,953    | \$3,830,953   | \$3,830,953   | \$3,830,953   | \$3,830,953   |
| 100% abatement thru Jun 2024    | (\$29,363,655)  | (\$461,782)    | (\$1,054,286)  | (\$2,946,390)  | (\$3,830,953)  | (\$3,830,953)  | (\$3,830,953)  | (\$3,830,953) | (\$3,830,953) | (\$3,830,953) | (\$1,915,477) |
| Transferable Tax Credits Issued | (\$195,000,000) | (\$15,000,000) | (\$30,000,000) | (\$45,000,000) | (\$45,000,000) | (\$45,000,000) | (\$15,000,000) | \$0           | \$0           | \$0           | \$0           |
| Current Tax Program Offsets     | \$195,000,000   | \$15,000,000   | \$30,000,000   | \$45,000,000   | \$45,000,000   | \$45,000,000   | \$15,000,000   | \$0           | \$0           | \$0           | \$0           |
| Net Tax Due                     | \$40,225,011    | \$0            | \$0            | \$0            | \$0            | \$0            | \$0            | \$0           | \$0           | \$0           | \$1,915,477   |

|                                 | Total           | 2025        | 2026        | 2027        | 2028        | 2029        | 2030        | 2031        | 2032        | 2033        | 2034        |
|---------------------------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Modified Business Tax           | \$69,588,667    | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 |
| 100% abatement thru Jun 2024    | (\$29,363,655)  | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Transferable Tax Credits Issued | (\$195,000,000) | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Current Tax Program Offsets     | \$195,000,000   | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| Net Tax Due                     | \$40,225,011    | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 | \$3,830,953 |

### 3.0 SUMMARY OF RESULTS

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A summary of the value of net taxes by type along with the proposed abatements, reimbursements and credits is shown in Figure 6. Total taxes over 20 years, net of abatements and reimbursements, are shown at the bottom of the figure.

**FIGURE 6  
SUMMARY OF TAX REVENUES, ABATEMENTS  
AND REIMBURSEMENTS BY TAX TYPE FOR TESLA**

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|  |                              |
|--|------------------------------|
| <u>Sales Tax Abatements</u>  |                              |
| 100% Sales and Use Tax Abatement for 20 yrs                                | (\$725,800,000)              |
| <i>Total Sales Tax Due After Abatements and Reimbursements (2015-2034)</i> | <i>\$0</i>                   |
| <br><u>Property Tax Abatements</u>   |                              |
| 100% Real and Personal Abatement thru June 2024                            | (\$348,993,972)              |
| <i>Total Property Tax After Abatements (2015-2034)</i>                     | <i>\$394,177,541</i>         |
| <br><u>Other Tax Credits</u>   |                              |
| 100% MBT Abatement thru June 2024  | (\$29,363,655)               |
| Transferable Tax Credits-A   | (\$75,000,000)               |
| Transferable Tax Credits-B   | (\$120,000,000)              |
| <i>Total MBT + Transferrable Tax Credits (2015 -2034)</i>                  | <i>\$40,225,011</i>          |
| <br><i>Total Utility Franchise Fee (2015 - 2034)</i>                       | <br><i>\$25,183,588</i>      |
| <br><b>Total Abatements and Reimbursements</b>                             | <br><b>(\$1,104,157,627)</b> |
| <b>Total Taxes After Abatements and Reimbursements</b>                     | <b>\$459,586,140</b>         |

Note: Abatement and reimbursement totals are for multiple years. See backup documents on each program for details.

The net tax liability in Storey County is estimated at \$459.6 million over 20 years, based on the proposed incentive package valued at \$1.1 billion. The State of Nevada is offering a full real and personal property tax abatement through June 2024, as well as abating all sales taxes for the first 20 years, abating modified business taxes through June 2024, and offering transferrable tax credits valued at \$195 million that significantly reduce the total tax burden to the company. Overall, the proposed incentive package in Storey County results in a very competitive tax environment for the company.



September 7, 2014

To whom it may concern,

The purpose of this letter is to provide an opinion for discussion purposes of Tesla's potential economic impacts as the special session begins.

In discussing the potential economic impacts of Tesla on Nevada, it first needs to be recognized that manufacturing facilities tend to have higher multipliers on state growth than other industries (The Manufacturing Institute, 2009).

It is interesting to note that "large" multipliers appear to occur for successful large-scale manufacturing facilities over time as they become more integrated into the state economy. An important example to consider is the partnership between BMW and South Carolina.

For example, the BMW multiplier grew over time into a larger multiplier in South Carolina as compared to similar facilities (Woodward, Moore School of Business, 2008). Specifically, the employment multiplier effect defined as the ratio of total state employment supported by direct employment at the factory is approximately 4.3. A typical employment multiplier for South Carolina industries or services is closer to approximately 2.0 (Woodward, Moore School of Business, 2008).

In the case of Tesla, estimating "total" economic impacts are further complicated by the (potentially positive) transfer of their technology to other sectors which could augment additional new growth. Traditional impacts models are simply not well suited to capture either additional technology transfers or demonstration effects of a leading sustainable enterprise. It certainly appears that these "extra" factors occurred with the BMW facilities in South Carolina in increasing the employment multiplier.

We can all agree that in the real-world large scale facilities matter a lot but as a general statement there is a tendency in traditional impact models to scale up and down with fixed (i.e. constant) coefficients. This is not reasonable for new disruptive technologies which may then lead to further new technical developments. For example, (smartphone) cell phones were a major advancement in personal communication but the true technology explosion in growth due to applications (apps) was not fully anticipated in impact models.

In trying to sort out estimates from traditional economic impact models, it is important to remind ourselves how they are constructed for a specific state. Tesla represents an industry that does not

yet exist in Nevada as a large and fully functioning sector that is integrated into the State economy. Thus, Nevada's current experience is at a small scale which generally leads to lower coefficients and results within impact models based upon less advanced production with less demand of ancillary products. This is likely not a reasonable assumption for large manufacturing and not for Tesla which is as much a technology company as a battery company. However, impact models are generally based upon what is already in place (for a comparison of the most-commonly utilized models, see Lynch, 2000). Thus, these base estimates can often show "flat" growth.

As a parallel to consider, this is likely why the actual gains associated with BMW began to double traditional estimates. BMW was a game changer in scale, technology, and substitution and service demand that was not well approximated by pre-BMW existing industry structure in South Carolina. The 5,400 direct jobs at BMW have been estimated to be associated with 23,050 total jobs in South Carolina (Figure 3, Woodward, op. cit.).

It does also need to be recognized that further work in economic development is needed to encourage domestic supplier needs of the company to be met by local vendors through the well-known clustering effect combined with future Nevada recruitment efforts and the relocation of national suppliers to our state. While it is unlikely that this very high supplier concentration would be achieved in Nevada in the immediate future, it is certainly the case that economic base changes would occur over time in response to projected demand created by Tesla. With a partnership between Tesla and Nevada, a concerted effort to build up the supplier infrastructure would be a priority.

Respectfully,



Alan Schlottmann

Professor of Economics

Former Associate Editor, *Journal of Regional Science*

Former Editor, *Review of Regional Studies*

Citations:

Woodward, Douglas P. and Paulo Guimaraes, *BMW in South Carolina: The Economic Impact of a Leading Sustainable Enterprise*, Moore School of Business, University of South Carolina, September 2008.



The Manufacturing Institute, *Facts About Modern Manufacturing*, Eighth Edition, Washington, DC, 2009

Lynch, Tim, *Analyzing the Economic Impacts of Transportation Projects Using RIMS II, IMPLAN, and REMI*, US Department of Transportation, Office of Research and Special Programs, Washington, 2000.

# Nevada Small Business Development Center

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September 8, 2014

Mr. Steve Hill,  
Executive Director  
Nevada Governor's Office of Economic Development  
555 E. Washington Avenue, Suite 5400  
Las Vegas, NV 89101

Dear Mr. Hill:

At the request of your office I have been using the Regional Economic Models, Inc. (REMI) model to examine the economic impact of the Tesla battery factory to be located in Storey County. I am submitting to you these general comments to assistance you in your testimony to the Nevada Legislature.

I have been using the REMI model for 13 years as the State Demographer and for 9 years prior to that as a client when I worked for Clark County Comprehensive Planning. I bring to this modeling my educational background which includes a Master of Urban and Regional Planning from the University of Colorado at Denver that emphasized economic development and growth management. I have used the REMI model to project Nevada's population by county, evaluate the impact of the BRAC review on Mineral County as well as an interchange study for the Nevada Department of Transportation when they were looking at the Tahoe Regional Industrial Center and the Crossroads Commerce Center in Fernley.

The REMI model projections that I have produced for the Tesla battery manufacturing facility are in all likelihood conservative because of the lack of existing supply chain and infrastructure in the region.

To briefly explain, the REMI model can be customized with different levels of industrial and regional detail as defined by the user. Additionally, it is a dynamic model that relates a county or state's economic and population dynamics to those of other regions or the nation as specified by the user. The model I use for my regular projections includes Nevada's 17 counties and the broad 23 industrial groups. This allows me to narrowly specify geographic information within the state, but less so at the industry level. This being the case I used the broad manufacturing industry group to estimate the impacts of the Tesla battery production facility. This lack of industry specificity along with the regional limitations of existing supply chain and infrastructure in the region necessarily yield conservative economic impact projections.

It should also be noted that REMI's results are unlike those produce by static models like IMPLAN. Those models use different concepts than REMI which produces detail about local output of goods, the sale of those goods outside of the region, local consumption, and imports for production of those goods and services.

Specific to the Tesla battery manufacturing facility, the REMI results using the available regional model yields economic impacts 44.6 percent higher than those estimated by IMPLAN's regional model. If a national REMI model were available for analysis in an effort to capture the clustering effect of an operation the scale of the Tesla facility, these impacts could be at least equal to and likely higher than a

similar analysis using IMPLAN. To be certain additional analysis should be conducted. Even without that analysis, we do show using the Nevada state model an economic output of over \$100 Billion over the next 20 years (as shown in the attached documents).

At your request I would be happy to provide in much more detail the data, analysis, and methodologies that have lead me to these conclusions.

The potential impacts on the communities of Northern Nevada in terms of economic and population changes will be significant. When I came to Nevada from Colorado it was suffering one of the worst economic downturns since the Great Depression. Prior to and during that period entities in Colorado cooperated by invested in public infrastructure. That leadership led to recovery and the Tesla battery plant presents the same opportunity for Nevada.

Thank you for asking me to review this project and contribute to your work. Please feel free to contact me if you have questions.

Sincerely,

A handwritten signature in black ink that reads "JEFF HARDCASTLE". The signature is written in a cursive, slightly slanted style.

Jeff Hardcastle, AICP  
Nevada State Demographer

**Comparison of Economic Impact of Tesla Battery  
Manufacturing Plant using Regional and State Multipliers**

| <u>Year</u>          | <u>Regional Multiplier Output</u><br><u>Current Dollars</u> | <u>State Multiplier Output</u><br><u>Current Dollars</u> |
|----------------------|---|--|
| 2015                 | \$567,167,635   | \$770,465,340  |
| 2016                 | \$1,268,478,652   | \$1,727,231,358  |
| 2017                 | \$2,845,251,744   | \$3,744,273,745  |
| 2018                 | \$3,595,984,008   | \$4,702,530,024  |
| 2019                 | \$3,523,028,835   | \$4,656,457,594  |
| 2020                 | \$3,565,389,903   | \$4,800,097,284  |
| 2021                 | \$3,578,333,563   | \$4,894,755,839  |
| 2022                 | \$3,647,758,646   | \$5,069,260,108  |
| 2023                 | \$3,661,879,003   | \$5,171,854,755  |
| 2024                 | \$3,678,352,751   | \$5,277,609,477  |
| 2025                 | \$3,697,179,893   | \$5,396,776,555  |
| 2026                 | \$3,756,014,710   | \$5,572,358,120  |
| 2027                 | \$3,806,612,652   | \$5,741,817,044  |
| 2028                 | \$3,900,748,359   | \$5,972,897,395  |
| 2029                 | \$3,732,480,783   | \$5,866,316,745  |
| 2030                 | \$3,764,251,584   | \$6,049,672,809  |
| 2031                 | \$3,796,022,385   | \$6,234,070,260  |
| 2032                 | \$3,846,620,328   | \$6,437,859,070  |
| 2033                 | \$3,896,041,574   | \$6,647,752,566  |
| 2034                 | \$3,952,522,998   | \$6,870,106,806  |
| <b>20 Year Total</b> | <b>\$68,080,120,003</b>                                     | <b>\$101,604,162,894</b>                                 |