

# EMSI Analysis of Proposed Tesla Motors Battery Manufacturing Plant

Tesla Motors has proposed constructing a large-scale battery manufacturing plant in the Reno area, and EMSI has been asked to conduct a provisional analysis of its ultimate job impact on the State of Nevada. Facility and related infrastructure construction will take several years, during which the plant will gradually ramp up to its full operating capacity. Our analysis focuses on the plant when it is mature and fully operational.

The overall jobs impact of this facility has several components. Jobs in the state will be created in industries that supply the new plant, and jobs will be created in industries that supply the suppliers. These are the familiar “supply chain impacts.” Compared to maturity, the Nevada portion of the supply chain in the beginning will be fragmentary, as many of the inputs needed by the new plant are imported from elsewhere. This can be expected to change over time and our analysis includes an estimate of these “supply chain closure effects.” Finally there will be collection of effects induced by related consumer spending, business and private investment spending, and government effects. The sum of all these several effects constitutes “the production effect” of the new plant at maturity.

But the facility will not stand alone. Experience elsewhere suggests as an advanced technology facility of this size will attract other manufacturers to the state, drawn by the expanded supply chain, by a complementary workforce and educational establishment, and by the prospect of technology spillovers and sharing. Regional economists dub the collection of these several effects “cluster effects.”

Using the EMSI input-output model (part of EMSI Analyst), the below table presents our estimation and breakdown of the several job effects just described. Columns 1 and 2 show the impact of the plant as though it were dropped fully operation into the state of Nevada today. Column 1 shows the Nevada job impact while column 2 shows jobs (strictly supply chain jobs) created elsewhere, i.e., jobs that spill out of Nevada. Column 3 shows “supply chain closure effects.” These reflect the filling in of the supply chain over time, as a portion of suppliers relocate to Nevada.<sup>1</sup> Column 4 summarizes the “total production effect” of the new plant: By the end of 20 years, the Nevada economy will host 17,756 jobs as a result of the new 6,500 job advanced battery plant.<sup>2</sup>

Finally column 5 shows our estimate of cluster effects. While the existence of cluster effects are universally acknowledged, especially in areas involving advanced technologies, estimating their magnitude with any degree of precision is most difficult. Having said this, with a 6,500-employee advanced battery plant and a 20-year time frame, we feel another

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<sup>1</sup> We assume a 50% reduction of direct spillovers and a 25% reduction of indirect spillovers.

<sup>2</sup> Reflecting growth in the overall Nevada economy over the 20-year timeframe, the “induced effects” in columns 4 and 5 assume a 20% growth in the induced effects multiplier.

2,000 jobs in cluster-related industries is not unreasonable. Including multiplier effects, the total cluster-related job impact amounts to another 5,463 jobs.<sup>3</sup>

Column 6 adds total production effects (column 4) and cluster effects (column 5) and thus provides our “total effect” estimate: 8,500 new battery plant and cluster-related jobs, and a collection of multiplier effect jobs yielding a total impact of 23,220 new jobs.

	Production Effect	Supply Chain Spillover	Supply Chain Relocation Effect	Total Production Effect	Cluster Effect	Total Effect
	(1)	(2)	(3)	(1) + (3) (4)	(5)	(4) + (5) (6)
New Plant	6,500	na	na	6,500	2,000	8,500
Direct Input Suppliers	1,936	2,416	1,208	3,144	967	4,111
Indirect Input Suppliers	480	4,116	1,029	1,509	464	1,973
Induced Effects*	4,399	na	na	6,603	2,032	8,635
<b>Total</b>	<b>13,315</b>	<b>6,532</b>	<b>2,237</b>	<b>17,756</b>	<b>5,463</b>	<b>23,220</b>

Source: EMSI IO Model and related analysis

\*Effects stemming from changes in employee incomes and consequent consumption spending, changes in personal and business investment spending, and changes in state and local government spending, on schools, roads, etc.

<sup>3</sup> Lacking knowledge of the specific industries included in the 2,000 direct cluster-related jobs, we assume the same multiplier effects shown for the new battery plant (column 4).