Marketing Plan:

TESLA Powerwall

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EXECUTIVE SUMMARY

The purpose of this Marketing Plan is to analyze current marketing and industry analysis, opportunities and threats, marketing objectives and strategy specified in terms of the four Ps, action programs, so that it is possible for Tesla to better understand the market in which they operate, their future direction, and the means to obtain support for new initiatives.

Tesla's primary home storage device known as "Powerwall" can be charged by electricity, generated from solar panels, or from grid when utility rates are low, and power during peak hours. Powerwall target market ranges from home owners paying the electricity bill to the utility, households installing alternatives such as backup generators, wind turbines, or rooftop solar panels, RV owners, Model S electric car owners and utilities. Analyzing the different market segments Tesla plans to launch the product to Solar and generator customers as Powerwall can support peak energy generation storage capacity and backup power. However, Tesla's long term objective is to provide package solution in the form of energy, demand response, capacity, reactive power support, and other non-energy products to the grid.

The home battery storage industry is competitive with many prolific suppliers, incumbent competitors, promising substitute products, rational customers and not so strong barrier to enter the market. However, Tesla with its mass production capacity in "Gigafactory", using its current brand image with EV, Model S customer base and being the first to market advantage is going to make a head away in the home storage battery market.

Tesla's marketing strategy is to encourage the usage of green technologies by providing high standard, quality solutions for better energy consumption. Hence, it wants to position its products as an option that helps to energize Green Energy Customers (GEC) towards Affordable Energy Abundance. Tesla plans to adopt penetration pricing strategy by keeping margins low, but plan for decreases in total costs as it starts manufacturing from Gigafactory. As Tesla is in the early market it adopts a short channel with an intermediary that has the necessary expertise and capability to carry Tesla product to the target customers. In line with its distribution strategy, Tesla plans to sustain its brand image through unique strategies that involves but are not limited to cooperation with intermediary in promotion and advertising, harness web 2.0 technologies and new media, stimulate word of mouth and corporate social responsibility.

Tesla has a thorough and specific implementation plan that identifies when each plan should be implemented and what would be the metrics. The implementation plan acts as a blueprint for Tesla to use the plan.

INTRODUCTION

Tesla is an automotive and energy storage company that started its journey almost ten years ago. Since its inception, Tesla worked towards its mission of accelerating the world's transition to a sustainable transport and energy. Sensing that Solar, wind, and micro-hydropower are all subject to the vagaries of nature, and clouds, still conditions, and low water levels can render them mute, Tesla came up with the idea of a storage battery known as "Powerwall" to ease consumers' woes from inherently unreliable grid or undependable alternative energy sources.

In this document a marketing plan for Tesla's Powerwall has been introduced and developed. An analysis of the company and the market is presented in order to support the decisions made in terms of the target market, life cycle and future projections.

Product

Tesla home battery, known as Powerwall, is a "home battery that is charged by electricity, generated from solar panels, or when utility rates are low, and powers home in the evening. It also fortifies the home against power outages by providing a backup electricity supply. Automated, compact and simple to install, Powerwall offers independence from the utility grid and the security of an emergency backup." [1]

There are other home battery options available, but when compared to Powerwall, these other options are "bulky, expensive to install and maintain." [1] Additionally, Powerwall inherits its technology from Tesla's proven battery technology, thus allowing its users to power their home safely and economically. Completely automated, it installs easily and requires no maintenance (Figure 1).

The capacity of the battery comes in two options: first in a 10 kWh weekly cycle and the other in a 7 kWh daily cycle. Either battery is guaranteed for ten years. The capacity is sufficient to power most homes during peak evening hours. And if needed, multiple batteries may be installed together for homes with greater energy need, up to 90 kWh total for the 10 kWh battery and 63 kWh total for the 7 kWh battery. [1]

Figure 1: Tesla Home Battery Specification

At a cost of $3000-3500 plus installation, the consumer Powerwall provides the following primary benefits according to Tesla [2]:

- Load shifting – The battery can provide financial savings to its owner by charging during low rate periods when demand for electricity is lower and discharging during more expensive rate periods when electricity demand is higher
- Increasing self-consumption of solar power generation – The battery can store surplus solar energy not used at the time it is generated and use that energy later when the sun is not shining
- Back-up power – Assures power in the event of an outage

Other benefits may accrue to the power generation industry [2]:

- Firm up renewable generation by reconciling the intermittency of power from these sources and storing excess capacity to dispatch when it's needed.
- Increase resource capacity. Tesla Energy for Utilities acts as on-demand distributed power generation, contributing to the overall generating capacity while adding resiliency to the grid.
- Ramp Control. Tesla Energy for Utilities can act as a buffer while the power output from a large generation source is ramping up or down, delivering power instantly to smoothly transitioning output to the required level.
- Improve power quality by preventing fluctuations from propagating to downstream loads.
- Defer costly and time-consuming infrastructure upgrades.
- Manage peak demand by deploying power within seconds or milliseconds.

Tesla offers a commercial-scale product designed for sale directly to utilities, but broad distribution of Powerwall and grid access to electric vehicle battery packs both contribute to these benefits.

The home product will also require professional installation, bringing the total installed cost to an estimated $7340 [3] before any subsidies or tax incentives.

MARKET DEFINTION AND OPPORTUNITY

Tesla has listed three benefits that accrue to the consumer. Load shifting is primarily an economic benefit, but may be seen to contribute to reducing a user's carbon footprint through reducing peak demand for power generation at the utility. Increasing personal use of locally generated power, such as power from an on-site solar or wind generation installation, is significant only to customers who currently have or are in the market for local power generation. Back-up power is a benefit to anyone whose power is not 100% reliable, but is a much greater benefit where power outages are more common or more damaging.

In addition, there are six benefits that accrue to power utilities where battery technology becomes common. Some of these benefits are only available when a commercial-scale battery solution is deployed, but wide adoption of local battery storage in homes can contribute to leveling generating capacity from renewables, increasing total capacity, deferring upgrades, and managing peak demand.

Powerwall is a product whose benefit accrues to the individual responsible for paying the electricity bill for the home in which the product is installed and/or the consumer or user of that electricity; these are generally the same person or persons in close association such as family or roommates. Powerwall is, however, a product that is permanently installed in the home so the homeowner is almost exclusively going to be the decision maker. When the homeowner is the one accruing the benefit, we see that homeowner as part of the market for Powerwall.

The broadest target market for the Powerwall product in its current form is the number of owner-occupied homes, starting in the United States where production and distribution are located. In 2014 there were approximately 133.3 million homes in the United States, of which about 74.7 million were owner-occupied [4] with the rest being either rental properties or vacant (Figure 2).

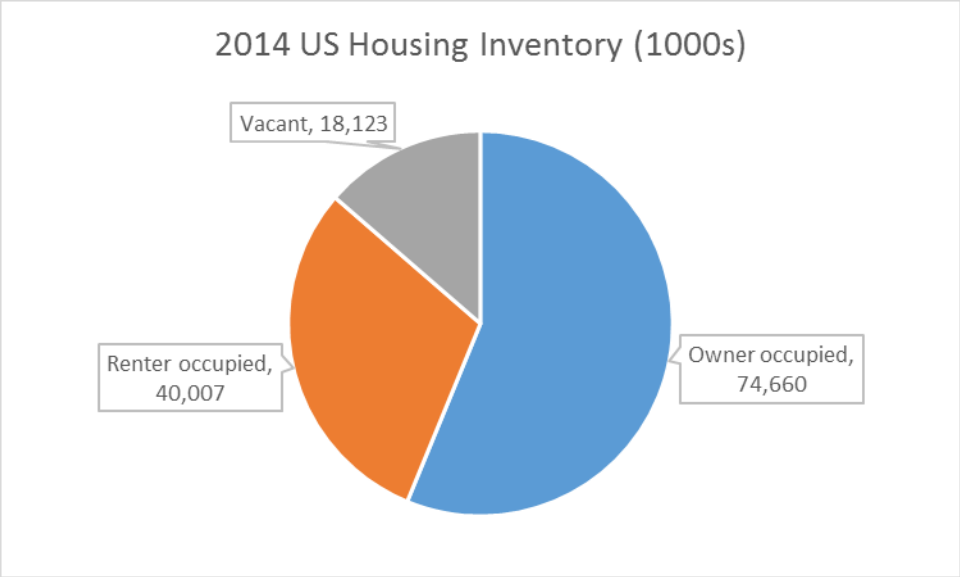


Figure 2: Housing Inventory in the U.S in the year 2014

Home power needs are typically satisfied using grid power, with a small but growing number of households installing alternatives such as backup generators, wind turbines, or rooftop solar panels. Solar and generator customers are of particular interest to Tesla, as those each satisfy a need that Powerwall can fill (peak energy generation storage capacity and backup power, respectively). Solar growth is still significant, with the Union of Concerned Scientists collecting data that projects 900,000 – 3.8 million total solar installations within the next five years (Figure 3) [5]. Generator customers are concerned about power availability and emergency preparedness. Generac estimates the residential generator market to be about 50 million homes, with roughly 2.5% penetration now [6].

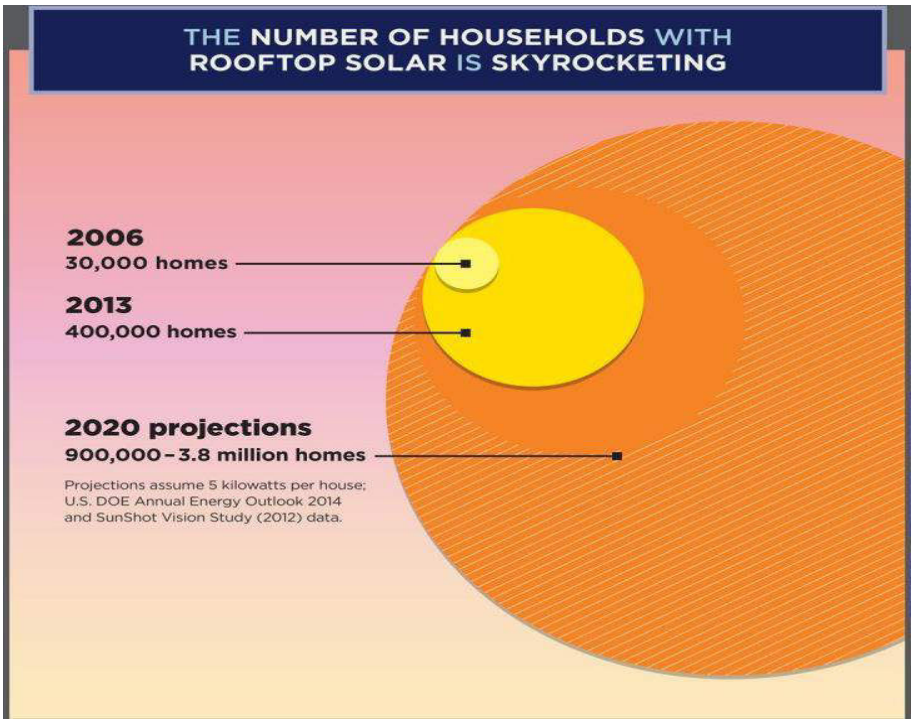


Figure 3: Solar Installations and Projections in the U.S

A parallel market for the product is RV owners; these homes on wheels are similar to owner-occupied properties for our purposes. According to a 2011 survey conducted at the University of Michigan [7], about 6.9% of US households claim ownership of either a motor home or a travel trailer, either of which might benefit from advanced power technology. This market is rising quickly, representing only 4.7% in 1993.

The power needs of an RV are currently satisfied using a bank of lead-acid batteries with much less capacity and more weight than even the smallest (7kwh) Powerwall unit. So, RV owners could find this to be a very good solution. However, it is not a viable market in the near term largely for technical reasons. The installation and mounting requirements for a Powerwall are simply not compatible with even the largest existing RVs [8]. While the base technology has great promise for that market, the RV market will require a separate product to suit its space needs.

There does not seem to be a heavy demand for Powerwall outside those homes with alternative energy at this time. Until there is a significant cost benefit (that is, a relatively short term economic argument) to installing Powerwall, the market plan is focused on solar and generator customers who have already shown that they perceive a need for the benefits of Powerwall, and can gain additional benefit from their existing installations by adding the Tesla product.

Tesla has built a brand image that is very progressive and forward-looking. A great deal of interest has already arisen around this product before its launch, mostly based on the company's success with its Model S electric car and, to a lesser extent, a cult of personality around Elon Musk (the company's founder). This keeps interest in Tesla's new products high and allows quick market penetration similar (on a smaller scale) to the success Apple has with new iPhone products.

In conclusion, a total US market on the order of 70 million Powerwall installations is estimated, but saturating that market will take a long time as is shown in the projections below.

COMPANY ANALYSIS

Tesla Motors, Inc. (Tesla) was founded by Jeffrey B. Straubel, Elon R. Musk and Marc Tarpenning on July 1, 2003 and is headquartered in Palo Alto, CA. Tesla's offerings range from own vehicles, sales and service centers and Supercharger stations to financial products through various financial institutions in the United States, Europe, and Asia. Besides, the company designs, develops, manufactures, and sells advanced electric vehicle power train components to other automotive manufacturers. It has provided development services and power train components to Daimler AG (Daimler) for its Smart for two and A-Class electric vehicles. A recent addition to its extended product line is stationary energy storage products for use in homes, commercial sites, and utilities. Tesla's mission is to accelerate the world's transition to sustainable transport, energy [9]. Since 2013, Tesla Motors revenue essentially exploded onto the scene (Figure 4). Model S, the premium, all-electric sedan officially made Tesla a formidable competitor in the luxury car market [8].

Figure 4: Tesla Motors Revenue [10]

Tesla has about 10,000 employees (FY 2014), which is very modest for a car manufacturer that has aspirations to sell over half a million cars in 2020. But Tesla builds cars with parts that mostly come from outside suppliers. To reduce the costs of lithium ion battery packs, Tesla and key strategic partners including Panasonic have begun construction of a gigafactory in Nevada that will facilitate the production of a mass-market affordable vehicle, Model 3 by 2020. The gigafactory in Nevada is expected to employ 6000 more people in the company [10].

Tesla's marketing strategy is selling a product that is very different than what has come before. Its effort is driven towards great products and innovation. Tesla has built its own ecosystem and direct distribution system. The strategy of Tesla is to enter at the high end of the market, where customers are prepared to pay a premium, and then drive down market as fast as possible to higher unit volume and lower prices with each successive model. Major competitors for Tesla include Federal Signal, industrial conglomerate; Ford Motor Company, multinational automobile manufacturer founded in 1903; General Motors (GM), multinational automobile manufacturer founded in 1908; Honda Motor Company (HMC), multinational automobile manufacturer founded in 1948; Nasdaq-listed Kandi Technologies; Navistar (NAV), commercial vehicle holding company; Oshkosh (OSK), truck and military vehicle manufacturer, founded

in 1917; PACCAR Inc., truck manufacturer; Spartan Motors, specialty chassis and vehicle manufacturer; Tata Motors, the largest automotive manufacturer in India; Toyota Motor Corp. (TM), multinational automotive manufacturer; and Wabco (WBC), manufacturer of systems for heavy duty commercial vehicles [11].

Compared to other luxury sedans, Tesla sells the Model S to a much higher percentage of men and those buyers are, on average, younger and wealthier than those purchasing competing models. The buyer profile for Model S (Table 1) reveals that consumers are found to be skewing a little younger than the typical $100,000 car buyers [12].

Table 1: Buyer's Profile for Model S

Male	83.9%
Female	16.1%
Income under $50,000	5.7%
Income $50,000-$99,999	17.2%
Income over $100,000	77.3%
18-44 yrs. Old	33.2%
45-64 yrs. old	50.6%
65+ yrs. old	16.2%

SWOT ANALYSIS

SWOT analysis (Table 2) covers both internal and external factors that may have a positive or negative impact on how Tesla Powerwall will be deployed in the marketplace.

Table 2: SWOT Analysis for Tesla

STRENGTHS	WEAKNESS
● Well-developed technology – vetted for wide-spread use ● Pre-existing user base (cars) – strong following ● Management team tested and experienced ● Can capitalize on solar installed base ● Barrier to entry (to manufacture and support at a mass level	● Management and support staff may be maxed-out to fully support residential launch ● Scale to meet market demands ● Supply chain not fully established ● Need to be able to offer complete solution: marketing, sales, permits, paperwork, rebates, installation
OPPORTUNITIES	**THREATS**
● Wide-open market opportunities – untapped market ● Govt. tax credit / rebates ● Growing visibility and higher sensitivity to be "green" ● Partnership opportunities with solar manufacturers: First Solar 13.5%, SolarWorld 22.2%, Others 64.3% ● 2015-'19, government assistance will continue to drive demand for solar panels, with many states projected to raise renewable portfolio standards (RPSs).	● Solar-installation industry on way down, negative revenues ● Solar panel manufacturing down 7.3% '09-'14 ● Annual growth projected to be down 10.4% '14-'19 ● Growth trend trends reversed in 2011 as global market became saturated with low-cost solar panels, mostly from China ● Competition (not necessarily from well-established solution provider)

SWOT

COMPETITOR ANALYSIS

Competition for superior home energy solutions comes in many forms. One of which is simply not pursuing the purchase and installation of home energy storage and/or solar panels. Cost, negligible efficiency/performance, maintenance, obtuse-looking and "overall hassle" are all potential barriers. However, for the purpose of analyzing the competitor landscape, we employed various research tools. These tools looked specifically at Tesla's Powerwall device, as well as other similar products in this home energy storage space. The competing firms that appear most frequently in various trade publications, articles and press releases are as follows: Daimler, Honda and Sonnenbatterie. Please refer to the following Competitor Analysis sub-sections for a more in-depth breakdown.

QFD

Quality Function Deployment, or QFD, is a process to help identify customer requirements, and to structure the design and development of a solution to meet those requirements. The probable market drivers for Tesla are identified and product features are clarified. Product features are prioritized based on high, medium and low. Each product feature is analyzed against market driver to identify strong, medium or weak relationship. The raw score indicates the most important product features that would satisfy most market needs. Compliance with all home electrical standards, safety, reliability, solar roof panel integration and wind/turbine integration are found to the most important product features from Tesla from QFD exercise (Table 3).

Table 3: QFD for Tesla Powerwall

Q F D

Prodcuct Features vs. Market Drivers	Value
Strong Relationship	3
Medium Relationshi	2
Wek Relationship	1

Priority
High
Medium
Low

What the market wants

Market (Technology) Drivers

Product Features		Intelligent Monitoring Features (D1)	Telephony Integration (D2)	Safety Alerts (D3)	Smart Comm at your disposal (D4)	Smart Usage System (D5)	Better Power Efficiency (D6)	Pristine Look & Feel (D7)	Interactive / Multi-funtional (D8)	Intuitive / User-friendly (D9)	Priority	Score
Compact	P1											5
Safe	P2											9
Durable	P3											4
Reliable	P4											13
Solar Roof Panel Integration	P5											6
Wind / turbine Integration	P6											9
Battery response time - immediate	P7											5
Compliance w/all home electrical stan	P8											17

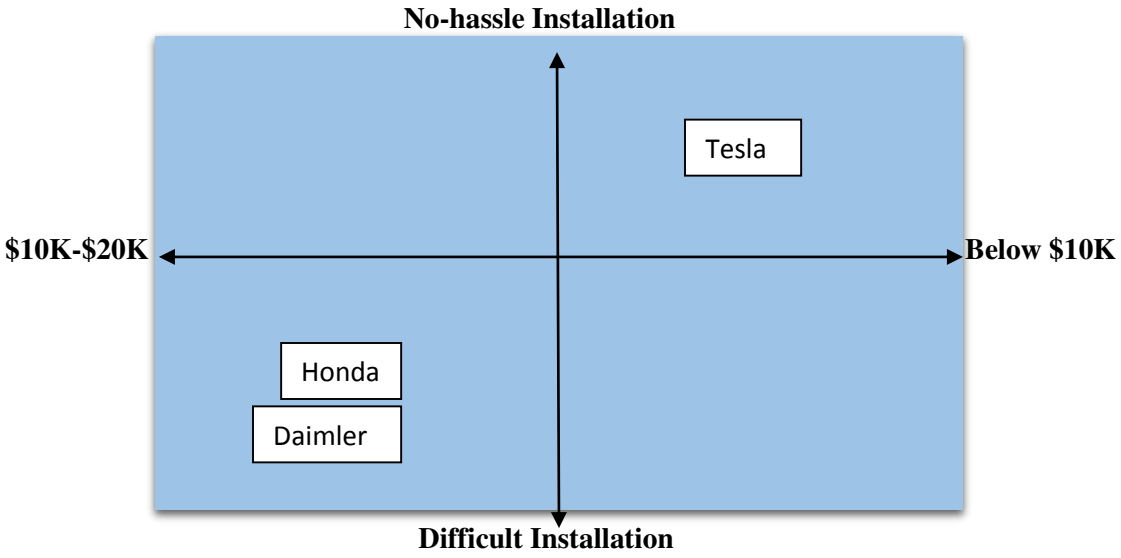


Figure 5: Competitive Landscape – Affinity Map

Table 4: Competitive Landscape – Attribute Table

ATTRIBUTE / COMPANY	Tesla	Daimler	Honda	Other
Proven Technology	X		X	
Early Adopters – Waiting List for pre-Purchase	X			
Manf. Supply Chain	X (2017)		X	
Govt. Relationship - Rebates or Incentives	X		X	
Reliability	X		X	
Compliance w/home electrical standards	X	X	X	X
Compact / Clean Looking	X			

The above Affinity Map (figure 5) and Attribute table (Table 4) is based on preliminary research that at this time could not be cross-referenced as actual price for competing products as well as actual installation configuration are in flux. As more data becomes readily available, both tools should be updated to reflect the actual situation.

Industry Analysis

In the 1970s, Harvard economist Michael Porter created a model that helps firms to formulate strategy. Referred to as Porter's Five Forces, the method analyzes the industry and competitive environment. The framework (Figure 6) identifies the current environment where the firm competes and unveils the big picture that facilitates the formulation of long-term strategy. It is helpful in making effective decision for sustainable development.

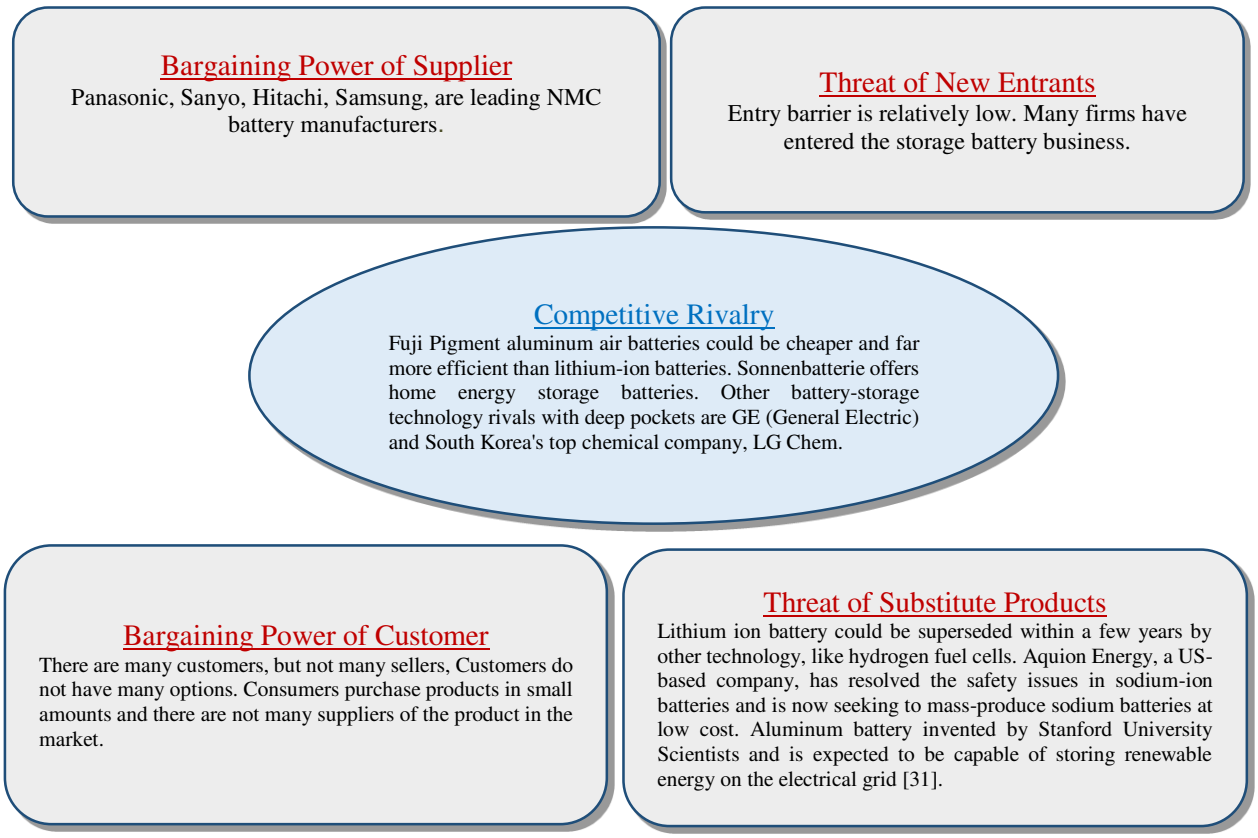


Figure 6: Porter's Five Forces for Industry Analysis

Bargaining Power of Suppliers (Low Pressure)

By controlling the quality or quantity of a product or service a firm needs to conduct its business, or by affecting the price, a supplier can have power over the firm and impact its ability to enter or function in a new market. The main component of home battery is Lithium-ion battery with a nickel, manganese, cobalt oxide cathode, called an NMC battery. Panasonic, Sanyo, Hitachi, Samsung, are some of the leading NMC battery manufacturers (Table 5).

Table 5: Leading NMC Batteries

Shipments of Global Key Lithium Battery Manufacturers, 2005-2011(million units)

	2005	2006	2007	2008	2009	2010	2011E
SANYO	443.5	503.6	599.6	705.1	617.9		
SONY	242.9	343.1	411.7	466.2	371.3	462.9	480
PANASONIC	196.6	203.1	207.1	179.3	196.6	990.8	1088
HITACHI MAXELL	59.9	81.6	127.1	162.2	111.4	139.8	150
SGS	61.8	71.4	57.4	45.8	26.5	40.2	40
NEC	66.2	85.5	47.7	34.5	7.2	20.3	20
SAMSUNG SDI	199.6	275.2	375.3	476.2	565.1	780.2	1045
LGC	118.6	161.0	226.9	215.2	402.2	586	735
BYD	140.3	198.0	282.0	268.7	201.6	161.6	150
LISHEN	75.3	110.7	108.0	114.4	169.8	247.5	250
ATL(TDK)	32.7	67.8	96.0	124.8	113.1	147.3	150
BAK	109.2	167.4	164.4	218.1	146.7	175.5	180
E-ONE	13.6	17.8	39.0	51.3	33.8	27.9	30
A123		4.5	14.1	15.3	18.3	21.0	30
OTHERS	33.3	33.9	25.5	24.0	30.7	40.8	40
POUCH OTHERS	46.1	44.6	39.6	48.3	50.7	60.2	60
TOTAL	1840	2369	2821	3149	3063	3902	4448

Source: ResearchInChina [13]

Bargaining Power of Customers (Low pressure)

Just as the supplier has power in the competition and market wars, the customer has power. Customers can force down prices, demand more service or better quality, and even pit competitors against one another. Companies and academic labs are pouring billions of dollars into research and development to significantly increase the amount of energy that batteries can store and to lower their cost, it could take years before significant breakthroughs reach the market. Hence, any product with a competitive price is the only option for consumers with solar panels or wind turbines but have trouble integrating the extra capacity into their grids. Customer, therefore, has limited bargaining power till other products are available in the market.

Competitive Rivalry (High Pressure)

Every company and every firm has competition. The competition may be direct or indirect, but there is competition. The moment a firm begins to believe that it does not have competition is the exact moment it becomes vulnerable to competition.

Fuji Pigment Co. Ltd. announced on January 8, 2015 that it has developed a new type of aluminum-air battery rechargeable by refilling salty or normal water and having a modified structure which ensures longer battery lifetime [14]. Theoretically, the aluminum-air battery has the second largest capacity next to a lithium-air battery which is the strongest secondary battery (lithium-ion battery: 120-200 Wh/kg, aluminum-air battery: 8,100Wh/kg, lithium-air battery: 11,400 Wh/kg). The aluminum-air battery has theoretical capacity more than 40 times that of a lithium-ion battery.

Sonnenbatterie is a global leader in smart energy storage solutions, with its headquarters outside Munich, Germany and North American offices in Los Angeles, CA. Sonnenbatterie has sold over 8,000 smart energy storage units for residential and commercial applications to date. Sungevity, Inc., the largest private solar company in the U.S. and a leader in the global solar market, announced a new partnership with

Sonnenbatterie, Europe's leading smart energy storage provider in April, 2015 [15]. Through the partnership, Sungevity will offer Sonnenbatterie smart energy storage systems to its network of customers in the U.S. and Europe, starting in the second half of 2015. Sonnenbatterie's highly sophisticated storage systems incorporate Sony's Fortelion lithium ion cells with an industry-leading 10,000 charge cycles.

GE plans to supply utility Consolidated Edison**'s** subsidiary, Con Edison Development, with an 8 MWh battery energy storage system in Central Valley, California [16]. Plans for an 8 MWh battery energy storage system are far from equivalent to Tesla Motors Inc.'s Gigafactory. If production there goes as planned, this GE system will equate to just 0.002% of Tesla's annual production. Consolidated Edison will use this first energy storage project as a lesson for both "optimizing and operating energy storage facilities in the future.

LG Chem and Siemens is collaborating on project development and marketing of industrial battery storage systems [17]. Siemens will supply the converters and controller for the joint storage solutions and also handle the project planning and implementation as well as the integration of the storage systems into distribution grids and microgrids. LG Chem will supply the batteries and the battery management system. The two companies have agreed upon accelerating Energy Storage Solution (ESS) market dominance by collaborating on several major ESS projects over the next years.

Threat of Substitute Product/Service (High Pressure)

A substitute to a product or service can be any other product or service that serves a similar function. Too often, firms underestimate the competitor by not realizing that the product the competitor sells may be a substitute for its own product or service. Fuel cells are electric generators that rely on a fuel, typically compressed hydrogen, to produce electricity without toxic emissions. Fuel cell could replace the (heavy, expensive, awkward to package) batteries. Lithium ion batteries have a high output and are durable, yet they simply remain too expensive to be widely used for storing excess solar and wind energy. Novel sodium-ion batteries could help solve this problem. Aquion Energy, a US-based company, has resolved the safety issues formerly associated with the technology and is now seeking to mass-produce sodium batteries at low cost [18]. The batteries' storage capacity remains constant during extreme fluctuations in temperature, making them suitable without limitations for use in the desert. This makes them ideal partners for the large solar power stations, which are mushrooming all along the Sunbelt. Sodium-ion batteries can be used equally as well for storing wind power. If they prove to be a success, they may also be attractive for those private households already producing their own solar or wind power and are seeking to maximize their self-efficiency.

Threat of New Entrants (Low to medium pressure)

Barriers to entry refer to forces that deter companies from entering a particular market. The barriers generally observed by Porter include economies of scale, product differentiation, capital requirements, cost disadvantage independent of size, access to distribution channels, and government policies (regulation). The greatest barrier to entry is economies of scale. There are many firms who are in storage battery business in other parts of the world and also researchers are working on finding different avenues to store energy in different forms but the cost of the batteries is very high.

CUSTOMER ANALYSIS

Tesla Powerwall is a product that can be marketed to virtually any homeowner, but certain segments are far more likely to purchase early than others. We began analyzing our customer base by starting with interviews to discover what we might want to ask, following that with a survey, and doing research to supplement those results. In the end we have produced a consistent portrait of the Powerwall customer.

General demographic information about homeowners is available from the US Department of Housing and Urban Development's American Housing Survey [19]. From this we can start looking at a few potentially interesting items: while virtually all homeowners have at least a high school education (89.6%), only about a third have a bachelor's degree or higher (35.5%). The median age of a homeowner is 55 years, and the median time in the home in 2013 was 12 years.

Demographic information specifically about green and/or solar customers has been difficult to find; it would be valuable to compare that data set against the AHS data to see how solar customers differ from homeowners at large.

Because we expect early Powerwall customers are likely to be those already investing in alternative energy solutions, we a local solar power expert to determine what questions to ask to gauge the values of that market. Using the questions agreed upon, we produced a survey to evaluate attitudes. We received only 15 responses, so this data set needs to be much larger before it can be relied upon. The sample population was Portland-area homeowners, about half of whom were green energy customers.

Our survey drew 14 responses. Given our sample size we wanted to locate more data about our customers; we found that in the form of a study done by Faiers et al of 100 solar customers and 1000 homeowners who did not have solar power. This study was designed to measure attitude differences between customers who had decided to purchase residential solar from those who hadn't. The key findings from this study showed that those who had not purchased solar panels saw it as difficult to afford the installation (grants and tax rebates were seen as key to this), difficult to install and/or maintain, less attractive, and requiring longer payback periods.

The results from our survey, though small, were relatively consistent with the results from Faiers. What we discovered were that our survey revealed customers who were

- Likely to participate in a green energy program
- Strongly interested in reducing their personal carbon footprint
- Moderately inconvenienced by power outages
- Concerned about the up-front cost of the installation, though those with solar power were significantly less concerned about this
- Very interested in grants, tax rebates, and subsidies that help to defray the up-front cost
- Slightly worried about problems related to system installation and maintenance
- Interested in the economic payback period

MARKETING OBJECTIVES & GOALS

Company Mission: To encourage the usage of green technologies by providing high standard, quality solutions for better energy consumption [2].

As of right now there are 40,000 batteries ordered, and a total US market of 70 million according to the Market definition section. Out of those 70 million about 400,000 are exciting solar customers. Based on our survey results 25% of the solar homeowners said that they would get the Powerwall, 1 out of 4 which is a small sample size. Therefore we will aim to reach 25% of the market for the next two years; which comes down to 100,000 homeowners basing the plan for phase one which includes solar panel homeowners. The batteries themselves cost anywhere from $3000-$3500 plus installation which comes to a total of $7340 without any tax incentives of subsidies. Currently the only company partnering with Tesla is Solar City in California and no distributors at the moment, which is an objective that the marketing plan point out for Tesla's long term objectives.

With a total of 40,000 batteries ordered at a total cost of $3250 (the medium of $3,000-$3,500), the total estimated revenue is $130,000,000. For the next two years Tesla is aiming at 100,000 installations that makes a total revenue of $325,000,000. In order to make it to that objective there is a difference of $195,000,000 ($325,000,000- $130,000,000), which divided by unit cost $3,250 gives us the result of the total units to be sold 60,000 units. Currently, Tesla has met 60% of the total 100, 000 if all those pre-orders go through which means that there is still 40% to be met; therefore increasing the sales by 60,000 units. Based on this information, the goals and objectives are shown in Table 6:

Table 6. Goals and Objectives for Tesla

Goal/Objective	Action	Timeline	Desired Outcome
Goal	To develop new markets	Over the upcoming two-year period	To reach a total of 25% of the solar homeowners to install a Powerwall.
Objective	Establish a distributor relationship	During the first year.	To attain at least a total of 3 by the end of the first quarter.
Objective	Establish partnerships with utility companies	In the next five years for our long term target.	To establish partnership with at least 3 utility companies in California such as PG&E.
Objective	To increase sales	Over the next 2 years for our short term target.	Increase the sales by 60% over the next five years to achieve a total of 60,000 units sold.
Objective	Enhance a web presence and expand brand name	Over the first quarter.	To develop customer relationships in nearby and targeted distant market areas.
Objective	To become a standard in new infrastructure	Over the next 5 years as part of our long term plan.	To establish Powerwall as a must every time a new building arises.

MARKETING STRATEGY

We are focusing on the US market, specifically users who already own a green energy option either at home or own an electrical vehicle. Energy efficient and solar panel users already express the interest in alternative energy sources plus are not concern with price which makes it a perfect target for this technology. The same

statement goes for electric car users. This allows establishing a partnership with utility companies as well as increasing the chances of this technology to become a standard in buildings. So for the short term the solar panel homeowners and electric car owners will be Powerwall's targeted audience. In terms of long term, Tesla's Powerwall target will be the utility companies in order to be able to achieve the goals and objectives mentioned earlier by making it more accessible.

Promotion

First and foremost is generating awareness. This may come in a combination of press releases, industry analyst papers and finally, industry research efforts form the like of Gartner Research. From there, demonstrate the product offerings through various field-marketing events such as conferences and tradeshows.

But so far, awareness of the Powerwall system is growing at a viral rate. According to Tesla CEO, Elon Musk said "The response has been overwhelming, like, crazy." In less than a week, they received 38,000 reservations for Powerwall, and 2,800 for Powerpack – the commercial or industrial version.
Riding on this huge wave of awareness building, the second promotional activity is securing partnerships with installation experts. Not only will they be the only group licensed and bonded to install, but they have their own network of clients. Tesla can leverage their pre-existing relationships to expand Tesla's market.
Running in tandem with promotional activities one and two, is to officially form alliances with Public Utility Districts, such as PG&E, for it is they that will drive the incentive programs. Such incentives could feasibly represent a 50% cost reduction of the total Powerwall system price, thereby reducing the pay-back period. This will be key and quite possibly necessary to cross the chasm to reach the Early Majority market segment (Figure 7).

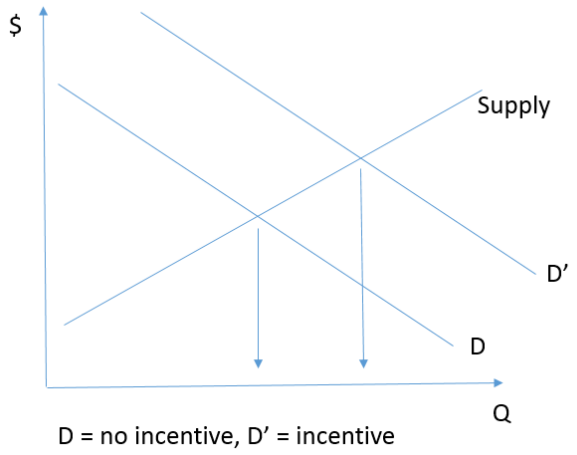


Figure 7: Impact on demand with / without incentives

The idea behind the promotion strategy aligns with our customer acquisition strategy. "When the retention probability is high and the time horizon to recoup the acquisition investment is low…" [20] From Tesla's perspective, the reason the time horizon to recoup the acquisition investment is low is due to the entry level price point of $3K to $3.5K. If the home buyer goes direct to Tesla, the price is such that financing over a long period of time is not cost-justified for either party. Second, if the home buyer acquires the home battery system from a licensed dealer / installer, it will be up to the home installer to offer financing over the long-run, yet Tesla will get paid by the licensed installer with a pre-defined agreement, i.e.: Tesla gets paid in full when the sale takes place.

TARGET MARKET & POSITIONING

A battery powering every home is too ambitious even for Tesla, but there are customers are ready to buy Powerwall today. We intend to establish a beachhead with an identified group of early adopters in order to grow into the green energy market, with a long-term goal of attracting investment from energy utilities to help power the smart grids of the future.

Among potential customers for Powerwall, only those currently generating their own power – through solar, wind, or another mode – are in a position to take advantage of all the possible benefits of the product. Solar energy consumers are an ideal beachhead: there are nearly half a million solar energy installations in the United States already and that is expected to continue to rise through at least 2020.

Existing solar customers are focused on getting the most usage from their solar arrays; Figure 8 shows that a great deal of what is generated must be fed back to the grid rather than consumed directly. We must show them how Powerwall increases the efficiency of their home systems at a cost that is moderate in the long term. Their values of energy independence and reducing their carbon footprint are also motivating. The reliable power benefit is of less importance to this group. We would expect to focus our initial marketing on states with the most residential solar installations: CA, AZ, NJ, MA, NY [21].

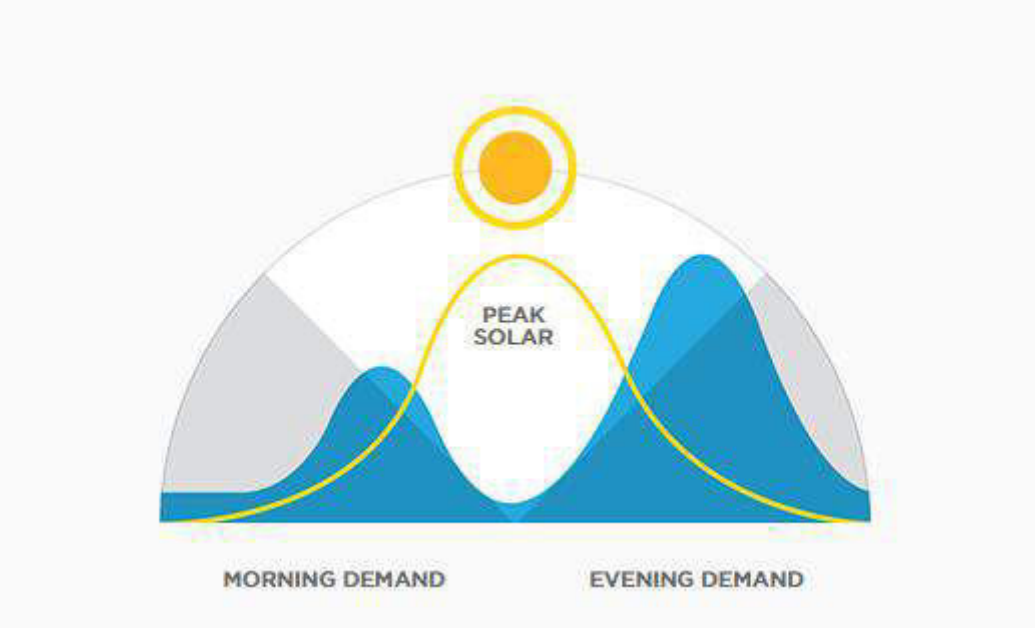


Figure 8: Production vs. Demand for Solar Power [1]

Closely adjacent is the market for new solar installations. Solar installs are expected to grow from 400,000 in 2013 to an estimated 1,000,000 – 3,800,000 in 2020. These customers would benefit from Powerwall but may be resistant to the initial investment. New solar customers are looking for green power / carbon footprint reduction and system payoff, but are also concerned about the effect of the installation on property values. We must show that Powerwall improves system operation and payoff, and is attractive in the home.

The homeowner market has relatively few solar installations, so to grow our foothold we need to reach beyond the beachhead. Green energy customers who want to reduce their carbon footprint represent

between 5% and 18% of the energy market in the top participating regions; any overlap between this group and existing Tesla customers should represent an opportunity.

> *The current customer of Tesla […] are successful business executives and entrepreneurs who are also city dwellers that are tech savvy and green friendly. These are wealthy and early adopters whose income levels put them in the upper-middle class segment. [22]*

Tesla has an existing customer base of roughly 70,000 people who have already purchased the company's flagship Model S [23]. These tech-savvy, green-friendly early adopters have the means and the motivation to adopt this new product. "The value proposition now is around reliability and backup power more than it is around savings, but over time that may change," said Shayle Kahn, an analyst at GTM Research [24].

According to research by Faiers et al in England, there are few identifiable attitude differences between this group and solar customers, who are our beachhead [25]:

- They find solar more unattractive
- The initial cost is too high
- They believe the tax breaks and/or incentives are insufficient
- They need assurance that the system is low maintenance, will add to property value, is not visually intrusive, has low landscape impact, and is simple. **To reach these people we must show economic payoff at the price point, system attractiveness, and simple low-maintenance operation.** Reducing the cost of the unit (when the gigafactory comes online) and gaining increased incentives from government and utilities will help us reach this segment. This segment covers about 1.5% of homeowners, for a total market size of about 1.1 million.

Another adjacent market is customers of gas generators. Users of these products are concerned about power availability in an emergency, and a Powerwall installation would eliminate the down time usually encountered between losing grid power and starting the generator. It also allows the generator to charge the battery during the daytime rather than only during peak (nighttime) usage hours. There are approximately 1.25 million homes with permanent generators [6], and many more with portable emergency generators. Only the upper end of this market is likely to buy Powerwall at its current price.

Our long-term strategy is to attract investment from utilities. As stated in the product description, there are many important benefits to utilities who employ smart grid technology when distributed batteries become available. With penetration through our initial markets rising, we believe we will see utilities begin to subsidize home batteries rather than building expensive new infrastructure. With subsidies the initial investment is reduced to the consumer and the economic argument for adding a battery becomes strong. Working as an expansion to the Net Zero / Low-Energy home initiatives [26] and through home builders and remodelers, we anticipate this is how the product will jump the chasm and allow us to sell to the remaining portion of the owner-occupied market. We anticipate much heavier competition during this phase.

Positioning

Positioning is an effort to make customer perceive the product in a certain way. The concept was first coined by Al Ries and Jack Trout through their famous edition "Positioning – a battle for your mind". A product's position is how potential buyers see the product To position Tesla Battery, different aspects are clarified sequentially through the following ten steps based on literature by Walker (2003) [27] and Prounis (2007). [28]

Step 1: The unmet needs and customer's perception about the various available options

The Powerwall will backup power outages and emergencies. People will be able to stay connected during storms, natural disasters and other emergencies. At the moment portable and whole-house electric generators, solar emergency power or wind energy provides the necessary electricity and are the probable options during unexpected outages.

Step 2: Assessing the competition to identify a relevant set of competitive products
Tesla would face plenty of competition for their batteries, with names like Bosch, GE and Samsung involved. Honda has unveiled a demonstration smart home that features a rechargeable home battery, along with an electric vehicle, solar panels and geothermal heat pump, and is driven by an energy management system. But Tesla is the first company to have the potential to become the Apple computer of the home battery in U.S.

Step 3: A thorough understanding of product's attributes and features
Powerwall will save homeowners a ton of cash on their electricity bills with the so-called load shifting. As electricity costs less at night than it does during the day, users will be able to charge up their Tesla battery during the night and then use it to power their homes during the peak times. The battery can store surplus solar energy not used at the time it is generated and use that energy later when the sun is not shining. Improved batteries could help utility companies store power from renewable power to even-out the spikes and spikes and valleys those sources produce. And, of course, residential homes could store more solar power from their own solar panels to reduce their reliance on the over-taxed grid—a reduction that utilities would also welcome. The so-called Powerpack is an upscale version of the Powerwall, which is considered to be an "infinitely scalable system" that can be configured to power utilities and industries.

Step 4: Brainstorm and explore various positioning ideas
Powerwall can be positioned functionally, symbolically or experientially. Functional positioning would focus on how the product solves problems, provide benefits to customers and get favorable perception by investors (stock profile) and lenders. Symbolic positioning would explain how the product enhances self-image, identify ego, belongingness and social meaningfulness, and affective fulfillment. While experiential positioning would clarify how the product provides sensory stimulation or cognitive stimulation.

Step 5: Analyze the products' current position in the competitive set (positioning map)
The positioning map is based on determinant attributes that the consumer relies upon in their purchase decision. The determinant attributes that are quite important to consumers and help them differentiate competitive products are captured in the questionnaire survey. The two dimensions are energy reliability and payback period (Figure 9).

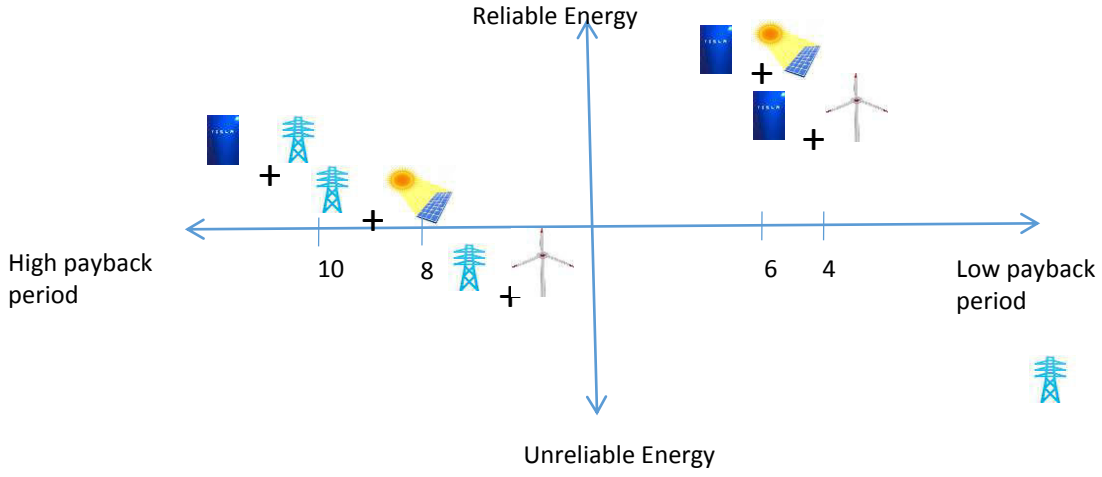


Figure 9: Positioning Map for Tesla Home Battery Installation

Step 6: Uncover emotional connections to the brand
Tesla would help consumers to reduce personal carbon footprint. It would enable economies to move to low-carbon energy sources. Tesla's chief goal is to reduce carbon emissions that cause climate change.

Step 7: Fit of possible positions with customer needs and segment attractiveness
The target market for the product is Green Consumers or those already having solar arrays. Powerwall can be charged at night for daytime use, they can be charged by solar power during the day to power home appliances day and night. It is very much a green solution and a key element in the battle to end reliance on fossil fuels. For some users dependent on solar power, it may allow them to get completely off the grid.

Step 8: work with what customers already know
One catchy slogan on the Tesla's website proclaims "Zero emissions, zero guilt." In all its electric cars and battery production it promotes its image as an environmentally conscious manufacturer.

Step 9: Write positioning statement
Powerwall Energizes GEC towards Affordable Energy Abundance.

PRODUCT AND BRAND MANAGEMENT

In this section the product and brand management for Tesla's Powerwall is discussed in relation to the marketing plan.

Product Management

In terms of Tesla, the Powerwall falls into the product platform and derivative architecture since there are two types of Powerwall offered based on a single design and underlying technology. Those two types of Powerwall are the set of derivative of the battery meeting specialized needs of different types of customers (residential vs commercial). This is the first of its platform and as it becomes more popular in the market there will be fixes for the next generation [20].

The reason why platform and derivative strategy is better is due to unit-one costs, where the first product made is very costly in comparison to reproducing it. Also, the Powerwall is a breakthrough product which will more likely create "gaps" in the marketplace. These gaps are part of the transition and adaptation of switching from one technology to the other, and are important to pay attention to since those gaps are the areas where competitors could come in [20].

As far of customization of the product there is not much involved in that realm apart from the kilowatt per hour selection and how many would you need installed at your home. This limits the production costs and makes decisions easier for the customer. It also offers a service of installment and 10 year warranty which makes the process effortless for the customers and bring peace of mind [20].

In terms of the intersection of Technology and Service, Tesla falls into category one: Augment high-tech product sales with services revenue. The company produces high quality-advanced technology, which are pricey for the average user. In order to increment the revenue; the company also offers services, maintenance, repair, training, and warranties. This is a win-win scenario for both Tesla and the buyer. Tesla makes more sales and creates more of a relationship with the user, and the user gets a great product with a

complete solution. For example, their current product line: electric cars, are a high quality, high price item that works with Tesla branded products. In case something happens to the car in terms of battery, flat tires or any service repairs then the customer has to talk to Tesla to provide their services on top of the product itself.

Brand Management

Brand is very important in the high-tech market as it determines the company's financial strength, importance in driving customer selection and the likelihood of generating branded revenue. A brand is not only a way to recognize a company or distinguish yours from others; also a brand can be protected through trademarks providing value to the company that owns them [20].

There are several branding strategies including: brand elements, usage experience, and associations with other entities. Brand elements are the logos, symbols and slogans that relate to Tesla. The logo for Tesla is shown on our cover page. It is simple, to the point, classy, sophisticated and has a nice modern design which represents the company. The usage experience involves marketing activities and supporting programs that create favorable and strong connections to the brand. Finally, associations with other entities helps build the brand by distribution channels, co-branding, sponsorship events, celebrity endorsements and country of origin. In this case Tesla sells its own products without the help of any distribution channel or partnership. With the Powerwall, SolarCity (utility company in the Bay Area in California) is now a partner that is offering this product to their customers, and this is important source in order to increase the market share and revenue with this product; utility companies as a distribution channel are the key to a successful Powerwall. Table 7 shows the advantages and disadvantages of Tesla's strong brand.

Table 7: Advantages and Disadvantages of Tesla as a Strong Brand

	Advantages	Disadvantages
For Tesla	Earn higher margins	Long-term commitment
	Positive impact on financial performance	Can be expensive
	Positive impact on consumer behavior	
	Positive effect to the environment	
For Customers	Provide a pledge of quality premium technology	Can become angry if expectations are not met
	Save money in the long run	

Having a distribution can sometimes weaken the company brand, but in this case Tesla will be in charge of producing good quality products and the distribution channels will be in charge of installing it. This process is very important in terms of servicing and the customer's piece of mind. Although, if something were to go wrong during the installation process then the distribution channel is the one to blame not Tesla. Most customers will see a good brand, but an unreliable channel with whom they last talked to plus the channel's sticker/logo will be on the battery as well which eases up the effect on Tesla's brand.

In order to develop a strong brand Tesla needs to do the following: [20]

1. Create a steady stream of innovations with a strong value proposition
2. Emphasize advertising to create awareness and positive brand image
3. Effectively harness web 2.0 technologies and new media

4. Stimulate word of mouth
5. Corporate social responsibility
6. Rely on symbols
7. Use effective internal branding
8. Manage all points of contact
9. Work with partners

PRICING MANAGEMENT

According to industry analysts, we will see Tesla's Powerwall pre-installation system costing between $3000 and $3500. Dean Frankel, and analyst at Lux Research in New York says that "You'll likely see a price to the consumer of $7,000 to $9,000. It depends on how cheaply Tesla's [installation] partners can get the power electronics." [29] Frankel continues, "Use solar panels to create power and store it when it is in less demand, then sell it to the local utility or use it to offset your own consumption when demand and prices are both at their highest."

Mark Duvall, director of energy utilization at the Electric Power Research Institute, who's based in Half Moon Bay, California, "In places like California, where there are generous incentives for installing renewable power, a homeowner could save about $2 a day, meaning the system pays for itself in four to six years. In most of the rest of the country, the payoff would be longer because government incentives to go solar are smaller." [29]

Now that we have an idea about likely prices and pay-back periods, let's take another look at our initial "beachhead" target market – home owners that already have solar arrays installed. They have made the initial investment in accessing alternative energy sources, and have shown a predisposition to lowering their carbon footprint (see research section). With the use of solar arrays coupled with a home battery system, the payback period for this group represents six years on the outset.

Considering the average home owner stays in any given home is 14 years, this new set of buyers can easily see a very good ROI in the near future. And as an added benefit to reassure the buyer of this home battery system, even if they were to sell their home prior to recouping their investment, they can include this energy saving asset as a home improvement benefit. In situations like this, they may not get 100% return on that asset, but could feasibly recoup a large portion of the Powerwall investment, as the new home buyer will see an immediate cost savings.

Duvall also discussed how the system will get cheaper over time, "… a system like Tesla will probably get as much as 50 percent cheaper in the next 10 years. Part of that is the difference new technical innovations will make, but more of the price reduction will come simply from economies of scale as more people adopt at-home storage, using it in place of power from the utility grid or, more often, working in tandem with the grid." [29]

Energy consultant, Karl Rábago, who has worked in the past for both municipal utilities and utility corporations said that "early adopters wouldn't necessarily be motivated, or discouraged, by cost savings. People who will want to do it first are those who desire energy self-sufficiency and autonomy. They will think it's worth it… and the more of them we get, the cheaper the next version will be for the rest of us." [29]

Eventually, the cheaper system will simply open up other markets, people that are more price-sensitive, thereby increasing the Total Addressable Market.

Based on our projected set of internal sales and marketing resources, the plan is to sell through our Channel Partners, as described in the next section. The Channel Partners will have some say as to how the product will be marketed, sold, delivered and installed. However, due to the heavy reliance on rebates, government-related incentives, and the need for licensed and bonded contractors to install the Powerwall system, the final price to the customer will be relatively the same regardless of how the customer acquires the Powerwall system (Channel Partner or buy direct from Tesla).

DISTRIBUTION MANAGEMENT

The distribution (place) strategy helps to determine the way products or services get to customers [1]. The mechanism of connecting the producer with the customer is referred to as the channel distribution. Tesla's distribution channel strategy is formulated by designing Channel Structure, Channel Management and Channel Performance [29].

Channel Structure

Channel structure determines the number of intermediaries to be employed in delivering the product from manufacturer to end-users. Manufacturers can sell directly to the customers also known as "Vertically Integrated" distribution channel. When manufacturers use intermediaries or market based channels it is known as indirect channel. When products are distributed intensively through different intermediaries the distribution channel tends to be long. However, with exclusive distribution the length is shorter. Rezvani et al. (2011) identified four most important factors in choosing distribution channel which are: (1) consumer habits; (2) product characteristics; (3) the market; and (4) company factors. Using the framework proposed by the authors the appropriate channel for Tesla Home Battery is identified, see Table 8.

Table 8: Identifying Length of Distribution Channel

Factors		**Length of Distribution Channel**		Tesla Home Battery
		Short	**Long**	
Consumer Habits	Frequency of purchase	**Low**	High	Frequently purchased products require less selling effort and are therefore less frequently sold directly. Tesla is purchased one at a time after 10 – 15yrs.
	Purchasing effort	**High**	Low	Consumers spend considerable time and effort gathering information and comparing alternatives to Tesla.
	Rapidity of consumption	**Low**	High	Time of consumption is the time it takes for the consumer to consume the product. Tesla product is used for long period of time.
	Significance of purchase	**High**	Low	Buying a Tesla is very important because it is a long term decision
	Waiting time	**High**	Low	With a very short delivery time, the intermediate inventory is necessary because only in this way can goods be rushed quickly to the consumer and needs more levels in distribution. For Tesla product it is not necessary to have a very low delivery time.

Product Characteristics	Replacement rate	**Low**	High	Replacement rate of a product is the frequency which a product is purchased. High ratio of replacement rate will require intensive distribution because of the shipment costs. Tesla does not require frequent replacement.
	Gross margin	**High**	Low	High gross margin allows the company incur in the costs of direct distribution. Tesla is a product of high gross margin.
	Adjustment Factor	**High**	Low	The adjustment factor refers to the amount of change that is required at the point of purchase by the consumer. For Tesla, adjustment is required based on type, capacity and location of customer solar array already installed.
	Searching Time	High	**Low**	Search time refers to shopping time. Customer needs low search time for Tesla.
	Unit value	High	Low	Products of low unit value and common use are generally sold through middlemen as they cannot bear the cost of direct selling. Low-priced and high turnover articles like cosmetics, hosiery goods, stationery and small accessory equipment usually flow through a long channel. Tesla products are of high unit value and should short channel.
	Product complexity	**High**	Low	The complexity of a product is positively related to direct distribution. Tesla's lithium-ion cells was once formally rejected by its co-founder Martin Eberhard considering it to be an overly complex technology.
Product Life Cycle Stage	Volatility of demand	High	**Low**	Once the Tesla home battery is launched more and more customers would embrace it. Hence, the volatility of demand is expected to be low.
	Brand positioning on quality	**High**	Low	The higher a brand is positioned on quality the lower is its level of distribution intensity (Intensive, Selective and Exclusive).Tesla is a brand with high quality.
	Perishability	**Low**	High	For perishable goods direct selling would need more time and is not preferable. Tesla home battery is not a perishable goods.

Market Factors	Target focus on mass market	**Low**	High	The higher a manufacturer's target focus fora brand, the lower is its level of distribution intensity. Tesla's target is Green Energy Consumers.
	Rate of technological change	**High**	Low	Home battery technology has a rapid rate of technological change.
Intensity of …	Geographic concentration of market	**High**	Low	More market requires more intermediaries. Tesla is concentrating on U.S market so the market is narrow.
Company Factors	Range of products	Wide	**Narrow**	A company with a wide range of similar products can afford to take advantage of the economies of selling more directly spreading the fixed expenses of the outlet. Tesla has narrow range of products.
	Order size	Large	**Small**	With the increase of the average order, direct distribution becomes more economical. The order size is small for home batteries.
	Market share	**Low**	High	Tesla home battery is a new product and initially it is expected that it would have few competitors, The market share would be initially low,
	Desire of control	**High**	Low	The pricing factor influences the channel choice by manipulation of margins. If a firm desire price control the option to be preferred is directness of distribution. Tesla would definitely wish to have a greater control of price.
	Retailer investments	**Low**	High	The inverse relationship between manufacturer coordination efforts and distribution intensity is weaker when retailer investments are higher. Tesla's distribution intensity is low and it wishes to invest less on retailers.
	Number of support programs	**Low**	High	The higher the number of manufacturer support Programs; the higher is a brand's level of distribution. Tesla requires less manufacturer support programs.
	Promotion budget	**Low**	High	The use of direct channels require less promotional budget. Tesla would spend less on promotional budget because it is a new product.
	Size of the Firm	**Large**	Small	The bigger is the company the better they are able to support a company-owned distribution channel. Tesla is a large company and has the capability to own its own distribution channel.

Therefore, Tesla needs to employ a short distribution channel and needs to clarify whether a direct sale is the best option for distribution, (Table 9). The following table clarifies to what extend the direct channel would satisfy the objective of distribution channel as identified by Walker and Mullins (2013) [3].

Table 9: Objective of Direct Channel

Objective of Direct Channel	Tesla's ability to achieve objective
Increase the availability of the good to potential customers.	Tesla as the OEM would be able to ensure availability of the product.
Satisfy customer requirements by providing high levels of service.	Tesla does not have the expertise to provide the service of inverter, installation and other services required to integrate Tesla with solar arrays.
Increase cost- effectiveness.	Tesla needs to invest in establishing a company owned distribution channel for meeting all the customer service requirement for integrating solar array with Tesla. Hence, for Tesla it is more cost effective if they employ companies that work on powering homes by solar.

Based on the above analysis the probable distribution channel for Tesla Home Battery (Figure 10) can be structured as follows as it is at the Early Market stage in "Evolution of High-Tech Channels":

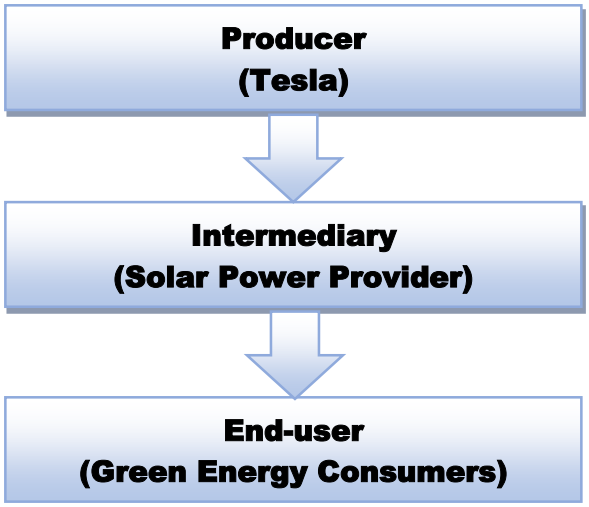


Figure 10: Distribution Channel of Tesla

Reach: The channel chosen must be easily accessible for customers. A retailer or distributor who knows the market is preferable for Tesla.
Skills: Tesla will be selling high-value, complex products to customers, A distributor network selling similar products is preferable as they will have the skills and knowledge to sell the product Tesla can provide their sales team with product training.
Customers: Distributor or retail network that sells products that are complementary to Tesla's Home Battery will be chosen. By offering sales incentives to the distributor, their customer base can be tapped and business can be expanded.
Control: Control is an important factor in channel selection. Distributors are monitored so that they keep the standards of customer service that is set by Tesla. People from Tesla will monitor and manage the performance of the distribution channel

Channel Management

Channel management involves several issues that includes but not limited to price policy, terms and conditions of sale, territorial rights and the definition of responsibilities of products from producer to consumer [20].

Price policy: Tesla can propose to give a 30% margin to intermediary. The agreement will be made mutually to protect the interest of Tesla and intermediary.

Terms and conditions of sale: Tesla will clarify with intermediary about payment terms, guarantees and any restrictions on where and how products are to be sold.

Territorial rights: Tesla will give exclusive rights to market home battery within U.S and ensure distributors adequately service the customers within the territory.

Definition of responsibilities: The respective duties and responsibilities of distributor are clearly defined. For instance, if a customer experiences a problem with Tesla and requires technical advice or a repair needs to be effected, then it is the responsibility of both Tesla and intermediary to immediately respond to the customer. In the same way, the agreement also specifies the training requirement on the part of the distributor to provide service to customers and the cost of training when new employees join the distributor or new products are introduced

Channel Performance

Channel performance will be measured in terms of effectiveness, equity and efficiency.
Effectiveness: Providing the required service most cost effectively.

- Delivery: Number of times the order that is serviced.
- Stimulation of demand: What are the efforts made by the channel member to increase customer base or increase the usage of the product.

Equity: Equity will be measured by the extent to which marketing channel serves the customers. Intermediary is supposed to serve customer in remote places and also provide after sales service.
Efficiency: Tesla would monitor the output to input ratio. Profitability will be calculated using R.O.I.

COMMUNICATIONS MANAGEMENT

The objectives of communication management are to supervise and direct the workflow of marketing, based on the following activities:

- Facilitate interdepartmental communications and manage external communications.
- Allocate Tesla company resources to maximize collaboration, efficiency and creativity in the building and maintenance of consistent branding or corporate identity across marketing and public relations channels, and to keep up to date on industry trends.
- Develop and refine marketing goals, pricing strategies, promotional activities and branding in consultation with marketing staff and clients.
- Direct market analysis and research to identify trends and opportunities.
- Monitor public's perception of a product, brand or Tesla as a company.
- Direct the creation of internal communications, press releases and speeches given by key Tesla executives, as well as Web or social media [30]

IMPLEMENTATION & CONTROL

Distributors are the outlet through which Tesla plans to reach the marketplace. By properly managing its relationship with distributor it can optimize its performance. The challenge for Tesla is maintaining the integrity of their brand promise across multiple relationships and channels when they plan to reach their customers through intermediary.

A thorough and specific implementation plan is clearly identified for every goal/objective; the plan identifies when it should be implemented and what would be the metrics. The implementation plan is specific enough so that Tesla has a blueprint for using the plan, Table 10.

Table 10: Implementation & Control

Objective/Goal	Timeline	Implementation	Metrics
Enhance a web presence and expand brand name	Over the first quarter	Cooperation in promotional programs with intermediary	Sales Lift
Establish a distributor relationship	During the first year	Empower intermediary. Provide information, research, or processes to help intermediaries perform well in service. Allow greater flexibility in the belief that their talents are best revealed in participation rather than acquiescence.	Profitability
To develop new markets	Over the upcoming two-year period	Provide simple product to consumers who lacked skill and wealth to get done what they had always wanted to get done – "New market disruption".	Sales per customer Social Media Analytics
To increase sales	Over the next 2 years for our short term target.	Invest in training or other forms of development to improve the skills and knowledge of intermediaries and their employees to reduce customer delivery time, treatment of damaged and lost goods, etc.	Market size, market penetration
Establish partnerships with utility companies	In the next five years for our long term target.	Making it easy for utilities to take advantage of distributed energy by providing platform where utilities do not have the platform.	Profitability
To become a standard in new infrastructure	Over the next 5 years as part of our long term plan.	Campaigning Net Zero Energy (NZE) buildings and lobbying for Tesla to be a criteria for LEED certification.	Market penetration

Tesla can create impact by being knowledgeable about their distributors' business, give them valuable ideas, and help them reach their goals -- develop powerful partnerships that improve performance.

Tesla plans to offer superior value to their intermediaries. Training, market research, and other capability-building programs are formulated to motivate and improve intermediaries' performance. Tesla knows the importance of constantly communicating and that intermediaries are crucial partners in a joint effort to satisfy end users of the product.

How to attract solar power users:

1. Easier to set up.
2. It will power up a house for longer.
3. Works on current installation.

How to expand the integration of Powerwall pre-existing buildings:

1. Works with already built in infrastructure.
2. If the house is sold then the market value will be increased, so it can be sold at a higher price.
3. Energy savings.

How to expand the integration of Powerwall new buildings:

1. By becoming a standard through the use of partnership with utility companies.
2. Cost-savings in the long-term value for customers.
3. The re-sale value of the house will go up in case the homeowner decides to sale the property.

How to attract current Tesla customers:

1. This segment has already invested $90,000 + in their cars therefore a $7340 total cost battery should not be difficult if they are already loyal to the brand.
2. It will help charge their cars.
3. Green energy/technology.
4. Easy setup and installation.
5. Nice design, just like the cars.

Some of the most common market metrics that can be used are:

Market Size: Market size is the number or value of units sold to a market in a given period (normally a year). Tesla may use surveying the channel/distribution route, or surveys of end-users. By taking market size (units and revenue) and dividing by the number of customers it is possible to get estimates of basket size - how much each customer in the market is worth.

Market Share: Market share is the number or value of units sold in a given period for a manufacturer as a percentage of the total market size. It can be defined either as share of units sold or share of revenue.

Market Penetration: Market penetration is the number of customers the company has as a percentage of the total customers in the market. This can be on the basis of sales in a period (sales penetration) or installed base. Combining penetration with market share sales per customer can be calculated. In case of a large customer penetration, but a low market share, there are many low-value sales and one way to increase share is to increase the value of the sales, rather than chase more customers. Sales penetration divided by installed penetration gives the level of customer activity. It can also be used to assess **customer loyalty** - the percentage of customers who stick to Tesla brand, and brand repertoire - the number of brands bought per

customer. By considering individual customers it is possible to look at share of wallet - how much of total business is coming Tesla's way.

Consumer survey helps to gather data that becomes a powerful metric for performance evaluation:

Customer Attitudes: Usage and attitudes often go together. This is important for advertising research.

Brand Awareness: The percentage of customers in a market who are able to name Tesla brand for Home Batteries is a way to check brand awareness. Popular brands are measured spontaneously, lesser known brands would be measured prompted. This can be cross-analyzed with market penetration to assess depth of brand coverage and brand reach - the potential for the brand to win new customers. Also used with Brand Equity to establish the value of the brand.

Advertising Awareness: The percentage of customers in a market who claim to have seen Tesla's advertising measures advertising awareness. Because of the importance of measuring advertising awareness, advertising may be designed to use test and control areas. Combining advertising awareness with market sales data can estimate the "sale uplift" caused by the advertising and consequently the advertising cost per additional sale.

Brand Image: Brand image is the associations between a brand and image based statements (eg "Is a brand for older people"). Brand image can be combined with sales penetration and brand awareness to attempt to understand what the key brand association are that drive sales.

Customer Satisfaction: Customer satisfaction measures how well the product/service is doing. Not normally part of market metrics as it relates purely to your customers. By comparing satisfaction to brand usage, customer loyalty and retention can be investigated.

SALES FORECAST

For the purpose of the Sales Forecast, Table 11, we build in the following **assumptions**:

- A 50/50 split between the 7kW ($3000 per) and 10kW ($3500 per) units will be sold
- Approximately 40,000 potential buyers have already reserved the product, with a down-payment – which means nearly all will proceed with purchase, reflected in 2016 and 2017 sales
- By 2018, the Gigafactory will be fully up and running, meeting the needs of the Early Adopters.
- Greater acceptance from Utilities to help finance / incentivize acquisition.

Table 11: Projected 5-year Sales Forecast

Year	# of Units Sold	Avg. Price	Gross Revenue
2016	15,000	$3,250	$48,750,000
2017	25,000	$3,250	$81,250,000
2018	60,000	$3,250	$195,000,000
2019	80,000	$3,250	$260,000,000
2020	100,000	$3,250	$325,000,000

CONCLUSION

The goals and objectives of this Marketing Plan is three-fold:

1. Outline necessary steps Tesla would implement in order to launch a new green-energy product in the marketplace
2. Incorporate analysis tools to better understand market opportunity and needs
3. Establish milestones in which key marketing metrics would be met

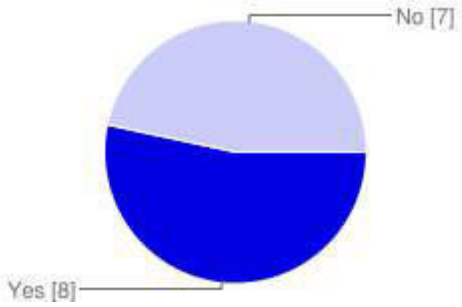
With this in hand, Tesla would be better prepared to grow Powerwall from a niche product sold to upscale alternative and green energy consumers into a product subsidized by utilities and sold in the hundreds of thousands. With wide distribution, Powerwall can help Tesla achieve its mission to encourage the usage of green technologies by providing high standard, quality solutions for better energy consumption.

APPENDIX

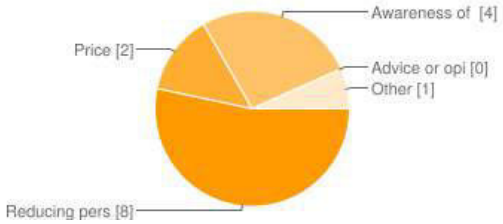
Survey Results:

Do you participate in your power company's green energy program (such as Blue Sky from PGE)?

Yes	8	53.3%
No	7	46.7%



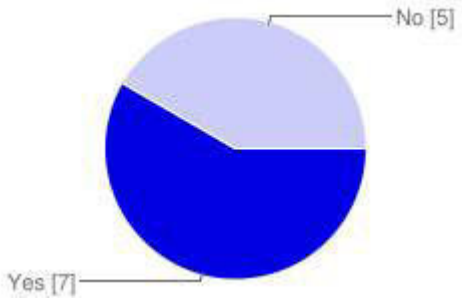
Which of these were most important in making the decision whether to use that program?



Reducing personal carbon footprint	8	53.3%
Price	2	13.3%
Awareness of the program	4	26.7%
Advice or opinion from friends or neighbors	0	0%
Other	1	6.7%

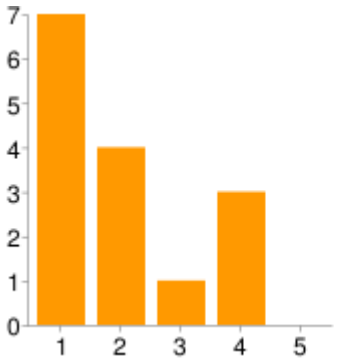
If you do not own an electric or plug-in hybrid,
do you plan to purchase an electric vehicle in the next five years?

Yes	7	58.3%
No	5	41.7%



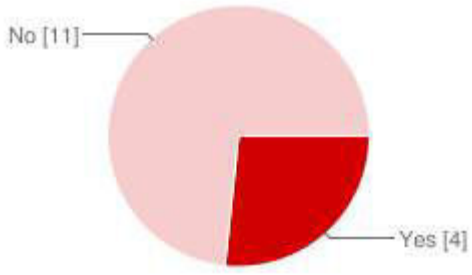
Rate the level of inconvenience caused by power outages at your home;

My power never goes out:	1	7	46.7%
	2	4	26.7%
	3	1	6.7%
	4	3	20%
Very inconvenient and/or frequent:	5	0	0%



Do you currently have a solar array at your home or plan to install one in the next year?

Yes	4	26.7%
No	11	73.3%



If so: What was most important in making that decision? Choose the three most important.

Purchase / installation price	1	25%
Reducing personal carbon footprint	2	50%
Friends or neighbors with solar	0	0%
Reducing electric bill	3	75%
Hedge against future energy price increases	1	25%
Increasing home value	1	25%

Incentives and/or tax breaks	1	25%
Home energy independence / energy reliability	1	25%

If not, which of the following are true about solar to the home? Choose the top three

The up-front installation cost is too much to manage	7	63.6%
Maintenance may be costly or difficult	3	27.3%
The systems are too visually intrusive	0	0%
Solar will not increase my property value (or not enough)	1	9.1%
The installation process is difficult and/or disruptive (e.g., may require a new roof)	5	45.5%
Given energy prices the system will take too long to pay for itself	1	9.1%
There is no good installation site on my home that receives enough sunlight	5	45.5%
Other	3	27.3%

REFERENCES

[1] Tesla, "Tesla Powerwall," Tesla, 2015. [Online]. Available: http://www.teslamotors.com/powerwall. [Accessed 01 05 2015].

[2] Tesla Motors, Inc., "Tesla Energy," 2015. [Online]. Available: http://www.teslamotors.com/presskit. [Accessed 06 06 2015].

[3] S. Hanley, "Tesla Powerwall Partners Roll In: Sunrun, Edison Energy, LichtBlick, & (Of Course) SolarCity," CleanTechnica, 07 05 2015. [Online]. Available: http://cleantechnica.com/2015/05/07/tesla-powerwall-partners-rolling-in-sunrun-edison-energy-lichtblick-of-course-solarcity/. [Accessed 06 06 20105].

[4] United States Census Bureau, "Housing Vacancies and Homeownership (CPS/HVS)," 21 02 2014. [Online]. Available: http://www.census.gov/housing/hvs/data/ann14ind.html. [Accessed 14 05 2015].

[5] L. Wisland, "How Many Homes Have Rooftop Solar? The Number is Growing…," Union of Concerned Scientists, 04 09 2014. [Online]. Available: http://blog.ucsusa.org/how-many-homes-have-rooftop-solar-644. [Accessed 18 05 2015].

[6] B. Tita, "A Sales Surge for Generator Maker," The Wall Street Journal, 06 11 2012. [Online]. Available: http://www.wsj.com/articles/SB10001424127887324894104578103334072599870. [Accessed 09 06 2015].

[7] R. Curtin, "The RV Consumer in 2011," 2011. [Online]. Available: http://data.sca.isr.umich.edu/fetchdoc.php?docid=49063. [Accessed 14 05 2015].

[8] C. Dunphy, "Tesla's Lithium Powerwall – Awesome, But Not For RVs," Technomadia, 01 05 2015. [Online]. Available: http://www.technomadia.com/2015/05/teslas-lithium-powerwall-awesome-but-not-for-rvs/. [Accessed 14 05 2015].

[9] Reuters, "Profile: Tesla Motors Inc (TSLA.O)," [Online]. Available: http://www.reuters.com/finance/stocks/companyProfile?symbol=TSLA.O. [Accessed 06 06 2015].

[10] D. Sparks, "Tesla's Success Story in 3 Charts," The Motley Fool, 22 08 2013. [Online]. Available: http://www.fool.com/investing/general/2013/08/22/teslas-success-story-in-3-charts.aspx. [Accessed 06 06 2015].

[11] Investopedia, "Who are Tesla's (TSLA) main competitors?," Investopedia, [Online]. Available: http://www.investopedia.com/ask/answers/120314/who-are-teslas-tsla-main-competitors.asp. [Accessed 06 06 2015].

[12] P. LeBeau, "The young and rich snapping up Tesla's Model S," CNBC, 19 08 2013. [Online]. Available: http://www.cnbc.com/id/100970641. [Accessed 06 06 2015].

[13] " Global and China Lithium Battery Industry Report, 2010-2011," ResearchInChina, 09 2011. [Online]. Available: http://www.researchinchina.com/Htmls/Report/2011/6218.html. [Accessed 06 06 2015].

[14] Fuji Pigment Co., Ltd., "Fuji Pigment Unveils Aluminium-Air Battery Rechargeable by Refilling Salty or Normal Water," PR Newswire, 08 01 2015. [Online]. Available: http://www.prnewswire.com/news-releases/fuji-pigment-unveils-aluminium-air-battery-rechargeable-by-refilling-salty-or-normal-water-300017712.html. [Accessed 06 06 2015].

[15] Sonnenbatterie , "Sungevity and Sonnenbatterie Announce Partnership to Offer Home Energy Storage," Sonnenbatterie , 29 04 2015. [Online]. Available: http://www.sonnenbattery.com/strom-energie-speicher/news/detail-view/?tx_ttnews%5Btt_news%5D=124&cHash=9e2d99caee459d87ddbc74f5033cdc97. [Accessed 06 06 2015].

[16] J. Loiseau, "General Electric Isn't Letting Tesla Motors Win the Energy Storage War," The Motley Fool, 23 04 2015. [Online]. Available: http://www.fool.com/investing/general/2015/04/23/general-electric-isnt-letting-tesla-motors-win-the.aspx. [Accessed 06 06 2015].

[17] LG Chem, "LG Chem and Siemens plan closer collaboration on battery storage systems," Press Release, 20 11 2014. [Online]. Available: http://www.lgchem.com/global/lg-chem-company/information-center/press-release/news-detail-643. [Accessed 06 06 2015].

[18] S. Rentzing, "ELECTRICITY STORAGE: SODIUM BATTERIES SOON TO BECOME A COST-EFFECTIVE ALTERNATIVE?," Solar Energy Storage, 29 01 2014. [Online]. Available: http://www.solarenergystorage.org/en/stromspeicher-natrium-batterien-bald-eine-kostengunstige-alternative/. [Accessed 06 06 2015].

[19] US Department of Housing and Urban Development, "American Housing Survey (AHS)," 2013. [Online]. Available: http://www.census.gov/programs-surveys/ahs/data/2013/national-summary-report-and-tables---ahs-2013.html. [Accessed 22 05 2015].

[20] J. Mohr, S. Sengupta and S. Slater, Marketing of High Technology Products and Innovations, 3rd ed., Upper Saddle River, NJ: Prentice Hall, 2010.

[21] National Renewable Energy Laboratory, "The Open PV Project," 2015. [Online]. Available: https://openpv.nrel.gov/rankings. [Accessed 01 05 2015].

[22] F. Andrade, J. Holloway, J. Payne, C. Roy and B. Sheffield , *Tesla Motors Marketing Plan for Tesla Model 3,* Fremont, CA: Tesla Motors, 2014.

[23] Tesla Motors, Inc., "Tesla Delivers 10,030 Vehicles in Q1 of 2015," Market Wired, 03 04 2015. [Online]. Available: http://www.marketwired.com/press-release/tesla-delivers-10030-vehicles-in-q1-of-2015-nasdaq-tsla-2006611.htm. [Accessed 06 06 2015].

[24] Associated Press, "Tesla plugs into energy storage market with home battery system," Power Engineering, 01 05 2015. [Online]. Available: http://www.power-eng.com/articles/2015/05/tesla-plugs-into-energy-storage-market-with-home-battery-system.html. [Accessed 07 06 2015].

[25] A. Faiers and C. Neame, "Consumer attitudes towards domestic solar power systems," *Energy Policy,* vol. 34, no. 14, pp. 1797-1806, 2006.

[26] United States Department of Energy, Office of Energy Efficiency & Renewable Energy, "Zero Energy Ready Home," 2015. [Online]. Available: http://energy.gov/eere/buildings/zero-energy-ready-home. [Accessed 01 05 2015].

[27] W. Jr., B. J. O. C. and M. J. a. J. J. H.W., Marketing Strategy: A Decision-Focused approach, 4th ed., New Delhi: McGraw Hill Publishing Company Limited, 2003, pp. 170-187.

[28] C. Prounis, "Positive Positioning: 10 Steps to Achieving Standout," MM & M, 2007. [Online]. Available: http://www.highbeam.com/doc/1P3-1221847281.html. [Accessed 10 May 2015].

[29] T. Mullaney, "Tesla's new bet: A home battery to slash energy costs," CNBC, 07 05 2015. [Online]. Available: http://www.cnbc.com/id/102654345. [Accessed 06 06 2015].

[30] Study.com, "Marketing and Communications Manager: Job Duties and Requirements," Study.com, [Online]. Available: http://study.com/articles/Marketing_and_Communications_Manager_Job_Duties_and_Requirements.html. [Accessed 06 06 2015].

[31] M. Schwartz, "Aluminum battery from Stanford offers safe alternative to conventional batteries," Stanford News, 06 04 2015. [Online]. Available: http://news.stanford.edu/news/2015/march/aluminum-ion-battery-033115.html. [Accessed 06 06 2015].