

# Electric Vehicle Customer Experience Journey Mapping

A research report conducted and prepared by Ergon Energy Network and  
Energen

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# Summary

This report is based on qualitative research conducted from April to July 2021, exploring the motivations for purchase and the customer experience for electric vehicle (EV) owners from consideration through to use, with a key focus on understanding the customer experience in relation to charging. Customer Experience Journey Mapping enabled the discovery of charging behaviours, in addition to a better understanding of the end-to-end EV experience from a customer perspective.

At the macro level, the dominant reason for participants purchasing an EV over a non-EV, was because it is seen as the 'smart choice'. The idea of a 'smart choice' was linked to participants' motivational drivers. As part of the interview process, participants completed a profiling questionnaire to identify their needs-based customer segment. Eleven out of 15 participants were found to belong to two customer segments whose motivational drivers were around making a positive impact on the world and having the latest trends that deliver value to them. Notably, most of these participants in this segment opted to purchase a Tesla, a brand which resonates with these motivational drivers.

It is important to recognise the predominance of Tesla Model 3 owners in the research participants, however, we are confident that their journeys are still largely representative of that of EV owners who purchased other EV models. We did find that many Tesla Model 3 owners were generally committed to buying a Tesla and so didn't compare and test drive as many vehicles as other EV buyers. At the time of this research, Tesla Model 3s comprised 42% of all passenger EVs in Queensland.

In general, the tipping point for each participant's purchasing decision was a combination of affordability (according to the amount each participant would normally spend on a vehicle) and how well the EV would meet the participant's driving needs, with consideration given to advancements in technology, including range and other luxury car features. Consideration of charging requirements or a comparison of these were not a differentiating factor in the selection of an EV model, nor barrier to the overall decision to purchase an EV.

Participants had an expectation set through research that the running costs of an EV would be around one-quarter to one-third of the running cost of a non-EV. Post purchase, most had not established a practice of closely monitoring the impact on their electricity bills, but continued to believe they were making savings. Post-purchase comparisons validated these beliefs, such as how much it would cost to charge an EV to a certain range against how much it would cost to fill a non-EV with petrol, in addition to low or no maintenance costs and cheaper insurance. When thinking about electricity bills, participants automatically thought of electricity retailers and their pricing plans, and commonly commented on the current lack of tailored EV plans being offered in the market.

Participants generally took about four months learning to feel confident in the amount of charge needed to meet their travel needs. Most participants demonstrated mild range anxiety post-purchase and managed this by either staying close to home when driving their EV, or taking leisure drives to learn the location of charging stations and the impact of climate, terrain and traffic on the range. Only three participants experienced significant range anxiety at some point, relating to fear of not reaching their destination due to running out of battery charge. All participants held an expectation of a learning phase post-purchase, and this was accepted as part of the role of an 'early adopter' consumer. Post the learning phase, all participants had extremely low range anxiety, frequently explaining the experience being no different to running a non-EV.

# Summary (continued)

For most participants charging behaviours changed over time, from charging the battery to its maximum recommended amount, to ensuring the EV had enough charge to meet their driving needs for the next day. While participants were aware of both public and at home charging options, most charging occurs at home. There were two main charging routines. For those participants with solar, the preference is to avoid using the grid and leverage solar, either mid-morning (if at home) or in the afternoon (when home from work) and on weekends. Where this is not possible for participants who owned solar, and for all other participants, the common charging behaviour is to 'top-up', which means plugging in at home overnight for around eight hours, charging the battery to meet their travel requirements for the next day and a safety buffer. For those who owned solar and batteries, charging their EVs became part of a total home energy management routine, whereby using solar to charge the battery was a key consideration in addition to charging their EVs. The need to also charge batteries was driven by the desire to offset peak demand, and also have a back-up supply in case of power outages. Noting, one participant who was the owner of a PHEV charged the battery to 100% on each occasion, given the EV range was limited to 50km.

Becoming an EV owner generated a growth in energy literacy and appreciation of electricity as a commodity amongst all participants. Concepts of time and money start to be associated with charging, building a greater awareness of cents per kilowatt. Commonly, participants described the volume of energy in the vehicle 'kilometres' or to a percentage of battery life, which was then converted to distance. There was a general awareness of the differences of charging rates between home and various public charging stations, leading participants to a better understanding of the trade-off between price and time when using a fast charger as opposed to a low cost or free charger.

For the more empowered participant, they quickly moved to upgrading their solar and battery in a future focussed way to avoid using grid power and paying power bills. For others, this was an aspiration, with barriers being home ownership and price.

Overall, it was concluded that the customer experience for EVs is a positive one demonstrating that EVs have met customer expectations with participants becoming advocates for EV adoption. Each participant had established knowledge of how to manage the range of the vehicle, and charge according to their driving needs for the near future. In addition, findings indicate that customers are open to products and services that provide smart ways to manage their energy consumption – engaging in sustainable practices such as using batteries and solar – while deriving a financial benefits and ease of use benefits to themselves.



## About the customer research

## PURPOSE

To effectively manage the forecast adoption of EVs in Queensland, electricity distribution networks (DNSPs) require a better understanding of the customer experience in using and charging their EVs. By understanding customer needs and behaviours, DNSPs can develop supporting policies, systems and processes that leverage the challenges and opportunities presented by EVs to deliver long term sustainable benefits to customers and communities.

## OBJECTIVES

1. Identify key 'pain points' for customers in the process of considering, evaluating, purchasing and owning an EV, to identify opportunities for DNSPs to address those 'pain points' to deliver mutual value.
2. Understand the deeper influencers of charging behaviours so they can be capitalised on or addressed in order to facilitate charging arrangements that deliver greater value to EV owners, the Queensland electricity industry and other stakeholders.

## RESEARCH DESIGN

Participants were recruited in a two phase process. In Phase One, (April/May 2021), customers participating in the SmartCharge Trial, a program involving the installation of a technical device into their EV to record and share data, were invited to apply to participate in the research. From those who responded, seven were interviewed, including one in Cairns, one in Townsville and five in the Greater Brisbane area. In Phase Two, (June/July 2021), participants were recruited through social media posts. Seven were interviewed, including two in Townsville and five in Brisbane. Across the span, the participants included a mix of gender, EV model, solar and battery ownership and dwelling type. Interviews of up to two hours were held in participants' homes, using the practice of Customer Experience Journey Mapping. The process was supported by a discussion guide with specific questions pertaining to the research objectives. Participants were provided a \$150 Eftpos Gift Card as an incentive and thanks for participation.



# Characteristics of participants

Fifteen EV owners were consulted via face to face in-home interview of up to 2 hours in length in Brisbane, Gold Coast, Townsville and Cairns. Sample details are shown below. (Note, participants could be classed as more than one of the groups represented in the icons here, e.g., one female also represented the one family with children).



10 men in relationships with no school-aged children

4 women – (\*Noting one of these was not part of the decision making process)

2 families with school-aged children

2 singles

1 Retired couple

Combined household income of participants:  
80% @ >\$100K; 13% @ >\$200K;  
7% @ <\$100K

13 with University level education

Phase 1	Participant	Industry of occupation	Home ownership	Location	EV	Wall charger	Solar and battery
	1	Information Technology	Owner - house	South East Queensland	Tesla Model 3	Yes (included with car)	Solar and Battery
	2	Information Technology	Owner - house	Regional Queensland	Tesla Model 3	Yes (Paid for)	Solar and Battery
	3	Retired, (car enthusiast)	Owner - house	South East Queensland	BMW i3, Tesla Model 3	Yes (Paid for, one only)	Solar and Battery
	4	Energy - gas	Owner - house	South East Queensland	Tesla Model S	Yes (included with car)	Solar
	5	Environment and sustainability	Owner – semi-detached	South East Queensland	Tesla Model 3	Yes (included with car)	Solar and battery
	6	Health	Renter - house	South East Queensland	Mitsubishi Outlander Hybrid	No	No
	7	Energy - solar	Owner - apartment	Regional Queensland	Tesla Model 3	Yes (included with car)	Solar at work
	8	Environment and sustainability	Owner - house	Regional Queensland	Jaguar i-Pace	Yes (included with car)	Solar
Phase 2	9	Health	Renter - unit	South East Queensland	Tesla Model 3	No	No
	10	Administration	Renter - house	South East Queensland	MG ZS	No	No
	11	Professional services	Owner - semi-detached	South East Queensland	Tesla Model 3	No (15 amp circuit)	No
	12	Information Technology	Owner - House	South East Queensland	Jaguar i-Pace	Yes (Paid)	Solar
	13	Administration	Renter - house	South East Queensland	Tesla Model 3	No	No
	14	Information Technology	Owner - house	Regional Queensland	Tesla Model 3	Yes (included with car)	Solar
	15	Professional services	Owner - house	Regional Queensland	Tesla Model 3	Yes (included)	Solar and Battery

A photograph of two BMW electric vehicles parked in a lot. On the left is a blue BMW i8 sports car with license plate 779-W1D. On the right is a white BMW i3 hatchback with license plate 560-WKZ. The white car has a 'Brisbane BMW' logo on its side. The background shows trees and a clear sky.

# Journey mapping



# Highlights

The overall experience was highly positive for all participants. The points below identify key moments of the customer experience to inform initiatives.

## Moments of delight

- Realisation of personal affordability of the EV
- Driving experience, referred to as 'high performance' and 'fastest car ever driven'
- Being part of the EV 'club' and engaging in conversations on EVs
- Charging EVs from home solar and battery systems
- Charging at home – not needing to stop at petrol stations or rely on a non-renewable, high-emissions energy source
- The inbuilt technology and software upgrades to EVs, including autonomous driving
- Feature of EV consistent with luxury vehicles

## Barriers to purchasing

- Cost of purchase price – the price was often more than a participant would have normally spent on a car, however, the additional dollars were rationalised in calculated savings made on aspects normally associated with a non-EV, such as savings on fuel, maintenance, registration and stamp duty
- Many participants, particularly those who eventually purchased a Tesla, were waiting for technology break-throughs prior to their first purchase
- Many spoke of the need for policies to support the adoption of EVs by way of incentives to reduce purchase or registration costs

## Pain points

- EV charging stations not working
- For those who opted for a lower range EV (@300km) had a higher index of range anxiety on occasions
- For those who opted for a lower range EV, the time taken to charge away from home
- For some, the time taken to charge at home without a dedicated wall charger
- Access to some charging stations – they can be hard to find and some are in car parks which are closed at certain times
- Increasing use of public charging is seen as a future concern in creating lengthier wait times

## Enablers to purchasing EVs

- The need for a new car
- The drop in entry level price
- The high cost of petrol, in comparison to what it once was
- Recent salesperson activity taking a more active role in making charging seem easy with a standard connection point, not requiring a wall charger
- Free charging
- Awareness of the Queensland EV Super Highway
- Awareness of local public charging stations
- Availability of test driving vehicle







# Journey chapters


There are six key stages in the EV customer experience. Stages are represented as chapters in the boxes below. For some participants, their journey had been going for over a decade with many years spent watching the evolution of the EV, for others their journey was more recent as EVs became a viable purchasing option.

2 years – 10 years	2 weeks – 2 months	3 weeks – 6 months	4 months	4 months – ongoing	6 months onwards
Watching	Purchasing	Waiting	Learning	Part of the club	Wanting to do more
<p>Early adopters had more familiarity with the EV story through thought leaders. For all participants, watching others drive EVs makes having an EV possible. In this phase, some have also test driven or experienced a drive in an EV. For some, they are on to their second EV, meaning their first purchase was up to 10 years ago.</p>	<p>For most, purchasing coincided with the need to upgrade their car, with some already predisposed to purchasing an EV. Others now commenced active consideration of an EV as part of their research of the broader car market to learn what cars were in their general price range and how well they would meet their personal needs.</p> <p>The purchasing decision is justified against what they would normally spend on a car, and for some includes consideration of forecast savings through an EV as opposed to a non-EV, meaning they spend more than they normally would.</p> <p>Charging is not a consideration until the purchasing phase has already begun, and is not considered a barrier to purchase or an issue of high concern. Increasingly charging is being sold as 'easy', with no need for a wall charger from salespeople.</p>	<p>Wait times from order to delivery of vehicles has reduced significantly over the past two years, starting with six months to now four weeks. The wait period is used to continue to learn about EVs and in some cases, to assess the current way they use energy, and upgrade their house with consideration to how they may integrate solar and batteries with total home electricity use, including how they will charge their EV.</p>	<p>Learning to drive their EV is a self-taught process. There are new things to learn, including all technology and notably, how quickly the car uses energy that will impact the driving range and what participants can do to manage those impacts. Also, finding out about charging stations. Such as the rate of charge, the cost of charging, where they are located, how easy they are to use, how well-patroned and how reliable they are. In some cases, participants purchased a DC adaptor to enable them to use more charging stations. Many undertook a 'long drive' in this phase, all along the coastal region of Queensland and NSW and ranging from 90 kms to 1800kms. Almost all had one negative experience where they nearly ran out of battery charge.</p>	<p>Now they know the car better, people enter an advocacy phase and enjoy being a part of EV groups. They are keen to further develop their knowledge in EVs. Charging options are narrowed down, and people become more relaxed and only charge to what they need in the near future.</p>	<p>Charging behaviours are set. Most have worked out the cost to charge their car at home at less than \$9 a week. Most are seeking to learn more about energy and what else they can do to operate smarter, including increasing solar and battery use. However the path forward is not clear and needs more research and understanding of what's possible, what's best, what they should be doing. For the more advanced, consideration includes automated charging options to leverage the solar generation and also price opportunities without having to manually do these things.</p>

# Emotional spectrum

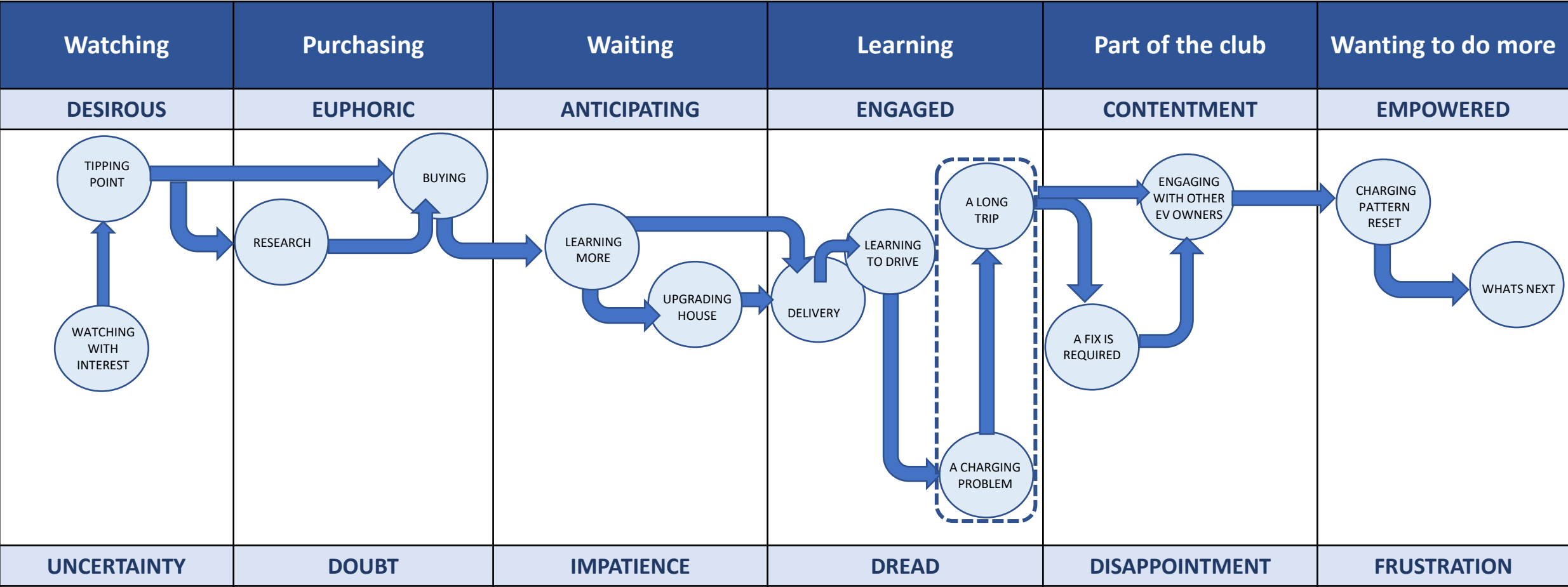
On the whole, the EV customer experience was extremely positive. Participants were empowered to undertake the journey independent of others by equipping themselves with knowledge and use this to make the right choice. Many participants saw themselves as early adopters and therefore were receptive to teething problems. They continue to love their EVs and the personal needs they meet – mostly around a luxury driving experience at the same time as making a smart choice.

Watching	Purchasing	Waiting	Learning	Part of the club	Wanting to do more
<b>DESIROUS</b>	<b>EUPHORIC</b>	<b>ANTICIPATING</b>	<b>ENGAGED</b>	<b>CONTENTMENT</b>	<b>EMPOWERED</b>
 <p>All participants were interested in the unfolding story around EVs. As this takes time, emotions are best described as hopeful. For some who are more eager, they feel constrained in not being able to meet their internal desires just at this time, and are waiting for the right time to buy to come.</p>	 <p>While the purchase of an EV normally coincides with the need for a new car, the tipping point leading people to consider an EV is price. For most Tesla fans, when the price dropped to an affordable range, the feeling was euphoric. Like a dream come true. This price point differed for participants, as some purchased a Tesla Model 3 around \$90K while more recently a participant purchased at \$60K.</p>	 <p>There are not too many negative feelings by those who are waiting, as they have access to information on the vehicle tailored to them, they can also use this time to prepare. For those purchasing Teslas, this time is filled by tracking the vehicle from where it is manufactured, to its delivery path.</p>	 <p>Almost all participants considered their EV a luxury car and commented on the performance and features relating to speed and technology. Most people accepted the learning to drive process without too many negative emotions. Notably, most participants experienced a feeling of dread once where they were in fear of not making it to their destination.</p>	 <p>Now that they are confident in how to avoid the worst case scenario of not reaching their destination, the initial feeling of euphoria is replaced with a feeling of contentment as people elevate themselves to a new, elite status and enjoy being a part of EV groups. Some have minor disappointments with something that needs to be fixed, but this is accepted as part of the deal for being among this select group of inspirational adopters.</p>	 <p>For all participants, this is the right step and they feel they are on the path to making better, smarter, sustainable solutions, but are not sure what this may entail just yet. There are many questions to be answered on what the best next move is, leading to a degree of frustration. EVs are part of this. Solar and battery are very much top of mind for those who don't already have them, but are constrained by their current situation of renting.</p>
<b>UNCERTAINTY</b>	<b>DOUBT</b>	<b>IMPATIENCE</b>	<b>DREAD</b>	<b>DISAPPOINTMENT</b>	<b>FRUSTRATION</b>

 In the above table, the length of the arrow represents the scale of emotion experienced from the positive emotion described in the second row of the table to the negative emotion described in the last row of the table. As demonstrated, some Chapters were mostly positive (e.g. Purchasing) whereas others experienced the full range of emotion (e.g. Learning to drive)

# Journey milestones

These milestones show the phase of the journey with detailed descriptions on the following slides. Participants moved through the electric vehicle journey almost like pioneers, continuing to learn and adapt as they went. Almost every participant interviewed had one negative experience where they feared not reaching their destination due to running out of charge. This was in the main due to participants learning the impacts of climate, terrain and traffic on range. Other negative experiences mostly related to the location and accessibility of public charging stations when needed to be accessed. Commonly, participants spoke of public chargers being faulty.



# Journey milestones

1	WATCHING WITH INTEREST	Almost all participants followed the development of EVs through newsfeeds they are signed up to through online media. Commonly referenced were updates from Elon Musk and Tesla, promoting the advancements in research, design, battery development. In addition, there was common knowledge of the Queensland EV Superhighway and some awareness of public charging station options. Only three participants did not demonstrate strong evidence of 'following' the EV story.
2	TIPPING POINT	In general, the tipping point for each participant's purchasing decision was a combination of affordability (according to the amount each participant would normally spend on a vehicle) with advancements in technology, including range and other luxury car features. For some, the key driver to purchasing was driven by the need for a new car or that it was time to upgrade, for others, who were more keenly interested in EVs, the Tesla Model 3 was the key driver to purchasing.
3	RESEARCH	For those participants who were Tesla followers, they went directly to a Tesla store to test drive and immediately ordered the Tesla model of their choice, skipping the research stage. Other participants took to normal online car sites such as Carsguide and Carsales to start searching for cars in their price range. The comparisons for these participants included non-EVs as well as EVs in their price range, with other preferences such as the make, model and additional features.
4	BUYING	The decision to purchase over a non-EV was a combination of personal motivations, underpinned by the idea of a smarter choice. Teslas are not considered to be 'sold' by car sales agents. Typically, participants believed the EV sells itself; the car sales agent is there to enable a test drive and guide them through the purchase. Only one very early adopter who had purchased a Nissan Leaf (some time ago) had a negative experience with car sales agents, where these agents had limited knowledge and also tried to dissuade the customer from buying the EV.
5	LEARNING MORE	While participants were waiting for their car to be delivered, they continued to watch YouTube channels to learn more about how to drive their EV, how it works, so they felt equipped with knowledge when their car arrived. Over the past several years, the wait for the Tesla Model 3 has significantly decreased from six months to four weeks. Some participants chose to track their Tesla's online, showing where the car is made and the path it took to be transported to their pick up destination. Most downloaded Charging Apps at this point.
6	UPGRADING HOUSE	While waiting for their car, those participants who could afford to, and had their own home, looked to upgrade their home's energy infrastructure in order to provide for the coming EV, which included considering upgrades to their solar, in addition to the purchase and installation of a battery if they could. These same participants also installed a dedicated wall charger. Two participants shared negative experiences when dealing with their network provider in relation to connecting solar and batteries, commenting on the lack of clear and consistent information and advice provided. One regional participant had a solar connection rejected, and also could not understand the reasoning behind the Connections Standards, commenting these were not supportive of renewables.



# Journey milestones

7

DELIVERY

For regional participants, the delivery of their car was somewhat disappointing. The car arrived on the back of a truck, with no fanfare – not the normal experience had when purchasing a new, luxury vehicle. Truck drivers had no knowledge or advice to provide on driving the car, simply employed to transport the vehicle.

8

LEARNING  
TO DRIVE

Participants had to spend time learning the features of their car and how to drive their car – such as functioning without a brake pedal. They also needed to learn what the information displays meant, and how to function the technology in the car. In addition, during this phase, participants learnt what the displayed range actually means and how the range is impacted by traffic, suburban versus city driving, etc.

9

A CHARGING  
PROBLEM

Almost all participants experienced a charging problem in the learning to drive phase. For most, this occurred while on a long drive, where the charging stations were not functioning. At this point, reference was made to Apps providing customer feedback that alerted them to how well the charge station was functioning. Others spoke about not being able to easily access charging stations as they were hard to find in some shopping centres, or the shopping centre carparks actually closed at certain times in the evening.

10

A LONG  
TRIP

Most participants had taken their vehicle for a long trip, which was like a pioneering adventure. Long trips ranged from Brisbane to the Gold Coast, Byron Bay and Sunshine Coast areas. Also, from Brisbane to Sydney, Rockhampton and Cairns. Almost all participants referenced the Queensland EV Super Highway as a great government initiative encouraging EV ownership. The long trip was highly enjoyable for most, with a holiday feeling meaning they were happy to pay different rates for different charge stations with the disposable holiday money at hand with some highlighting that it was still cheaper than petrol anyway!. Many spoke about how they would choose a hotel based on those that had EV charging available. They also spoke about engaging with other EV drivers and an EV culture of respect in sharing charging stations and also knowledge and experiences. The comfort of the car makes some think it is a viable option to airplane travel.

11

A FIX IS  
REQUIRED

Participants made adjustments in this phase – some purchasing an adaptor to improve their options at public charging stations. Those that hadn't already done so, installed a wall charger to make them less reliant on public charging stations. For the one participant, who purchased a Jaguar i-Pace (with about a 300km range) their lifestyle of working late and living 70km from work, resulted in the need to use a public charging station late at night before heading home. A wall charger was installed to increase the rate of charge at home overnight to meet the daily driving needs.

# Journey milestones

12

ENGAGING  
WITH  
OTHERS

Participants started to narrow down their communication channels now, with most enjoying being part of the Tesla Forum. Conversation becomes norm with colleagues and friends, and they become advocates of EVs to others.

13

CHARGING  
PATTERN  
RESET

Participants have reset their charging behaviours now, with most charging two to three times a week, or topping up overnight. This is purely dependent on the activities required the next day – and being confident that they know what the displayed range will equate to in reality. The exception is the participant with the Mitsubishi Outlander Hybrid, as the battery range was only 50km, so charging would continue on a trickle charge until the battery was 100% full.

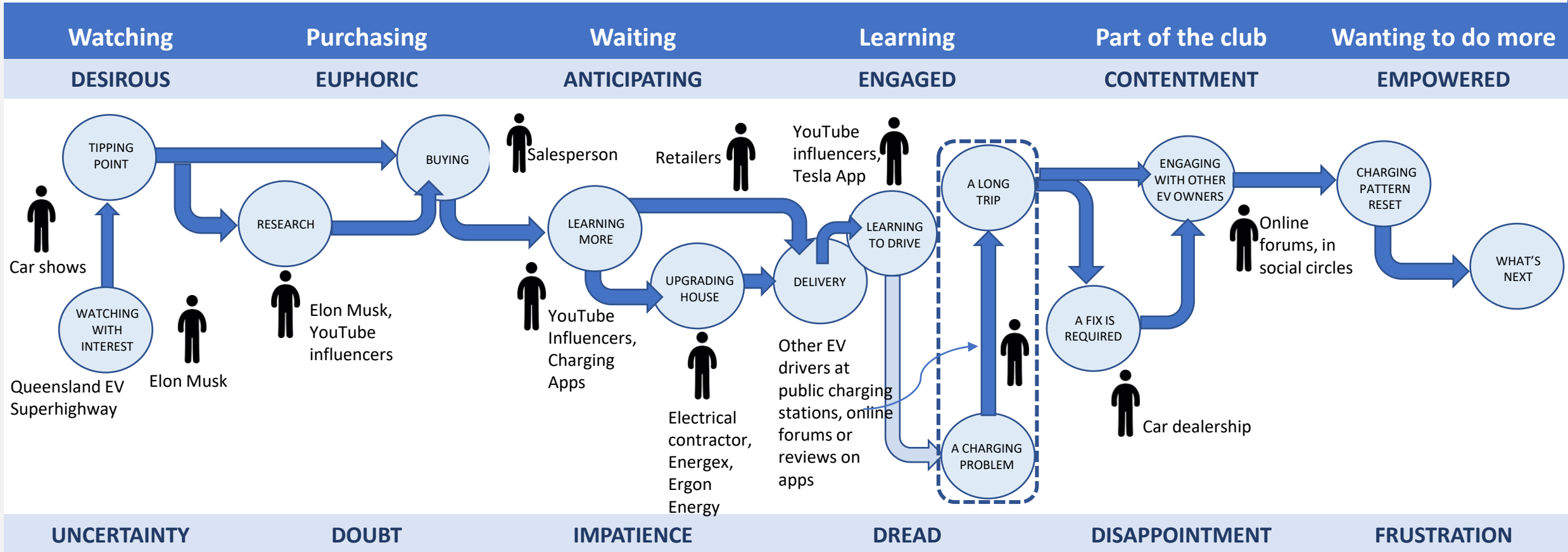
14

WHAT'S  
NEXT

Participants are now more aware of electricity consumption. They are more keenly aware of their bill. Some were eagerly waiting to see the first impact of the car on their bill. Almost all consider this to be a journey, where there will be additions and further changes to their interaction with energy in the future. This may include a second EV for their partner, or upgrading the house with solar and batteries. For the more advanced, automation of charging options to leverage sun and price opportunities without having to manually do these things is desired.

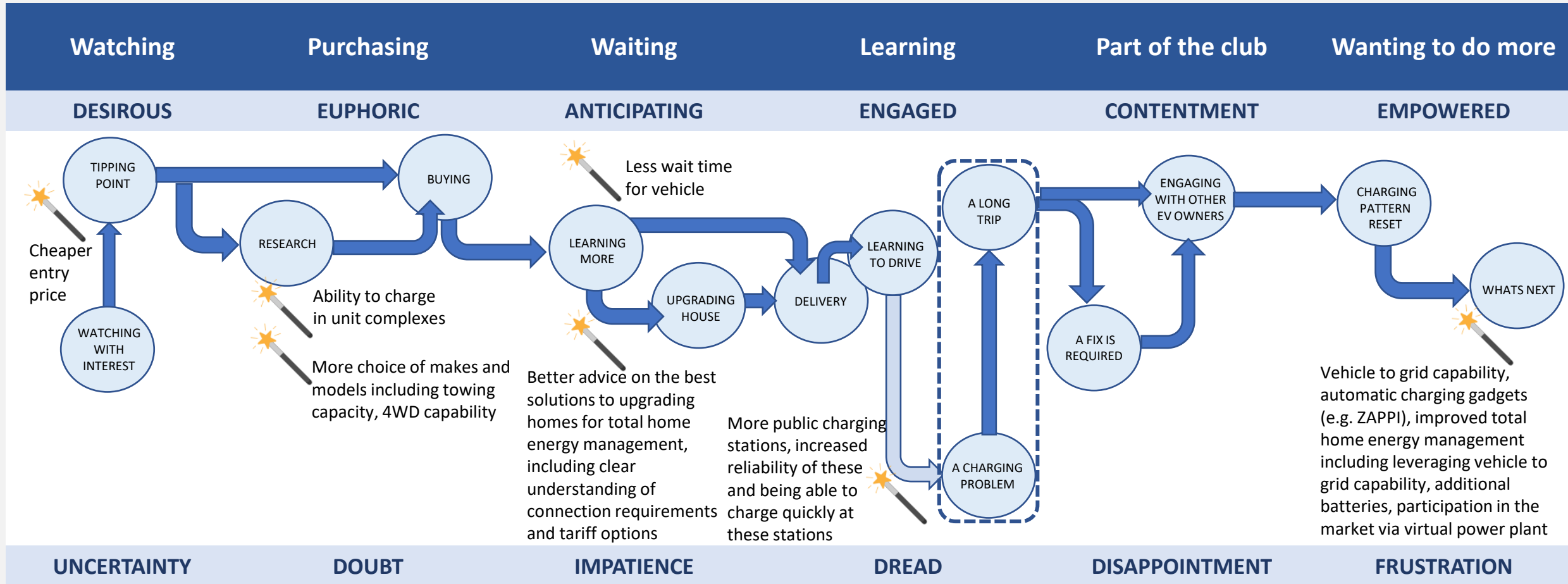
# Service providers and influencers

The most significant influencer in the EV journey was the Tesla brand and Elon Musk. This was the basis of general awareness of EVs. Other than this, the influence to purchase an EV is to respond to an internal motivational driver. As participants engaged to learn more on the topic, they found thought leaders in social media forums. Popular sources of information included e-newsletters and YouTube channels. These thought leaders enabled customers to overcome the fear of the unknown and equip participants with the knowledge needed to feel confident that they were doing the right thing in their purchasing decision. Further on in the journey, word of mouth, EV clubs, informed friends, et al. are important influencers.



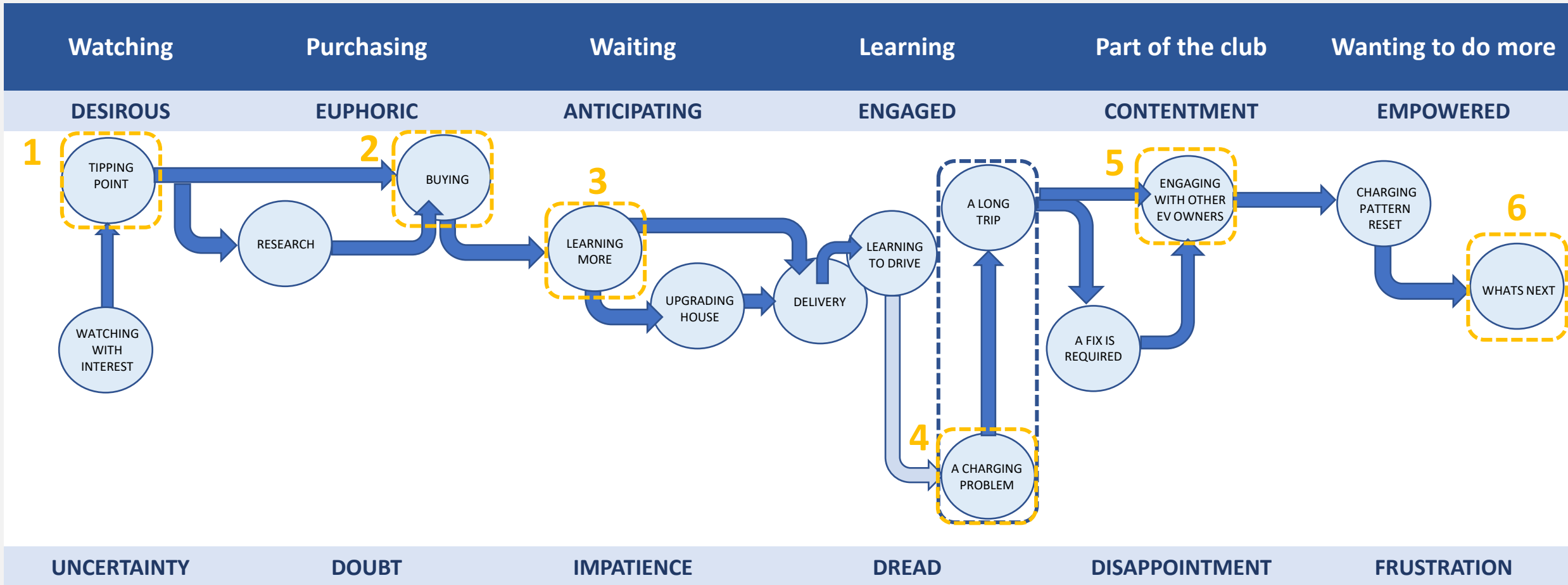
# Magic wand moments

Participants provided a number of options in response to the question 'If you had a magic wand, where would you change something in your journey?' These are identified in the journey below.



# Opportunity zones

Based on the holistic journey map, which includes milestones, emotions and engagement zones and cross-referencing these with magic wand moments, five Opportunity Zones are identified and described in more detail on the next page.





# Opportunity Zones

The findings of this research are reflective of early adopters of EVs. Early adopters are commonly more accepting of pain points and the need to overcome difficulties. The Opportunity Zones below consider both the opportunities of the current EV purchasing customers and the needs of future EV purchasing customers who are commonly less accepting of these pain points and seek more guidance.

Zone	Opportunity	
<p><b>1</b> <b>Tipping Point</b></p>	<p><b>Price barrier</b></p>	<p>Price was a barrier to purchasing. Many participants thought purchasing should be incentivised because it was considered to be a decision that benefitted the greater community and world. It was thought government should be leading in incentivising EV purchases. Another option is to educate on the Total Cost of Ownership (TCO). Some EV buyers seemed to not consider this, or at least not fully or effectively. It can be hard to source information. There is also lack of understanding about Electric Vehicle Supply Equipment (EVSE) value, especially on off-peak or Time of Use Tariffs. This is part of the TCO story. It seems many are open to off-peak charging but need guidance or a push/incentive.</p>
	<p><b>Charging in unit complexes</b></p>	<p>For two participants, having the option to charge their car at home with charging stations built into unit complexes was desirable. Home purchasing decisions were based on charging capability at the place of residence. Education of total cost of ownership will assist in overcoming price barriers.</p>
<p><b>2</b> <b>Buying</b></p>	<p><b>Raise awareness on impacts to range</b></p>	<p>To prevent frustration and a negative driving experience only associated with electric cars, better inform customers on the impact of terrain, climate and traffic on the range of the vehicle.</p>
	<p><b>House upgrades</b></p>	<p>Inform customers on the requirements for connection, based on various use cases including solar, non-solar and battery scenarios, explaining the concept of home energy demand and promoting the way this should be done. Retailers and electrical contractors are key here. Also revisit network Connection Standards for opportunities to support solar, batteries and EV connections.</p>

# Opportunity Zones (continued)

Zone	Opportunity	
<p><b>3</b> <b>Learning more</b></p>	<p><b>Charging advice</b></p>	<p>The period between purchase and delivery is when EV buyers tend to accelerate investigation of their charging arrangement at home and/or work, and public charging options close to them or on favoured routes. This represents an optimal time to target charging information to EV buyers, with EV salespeople being a potential key conduit of information or sources.</p>
<p><b>4</b> <b>A charging problem</b></p>	<p><b>Improve the reliability of public charging stations</b></p>	<p>Many participants were also cognisant that as more people get EVs their opportunities to access cheaper or faster public charging will be reduced. Promote adapters to enable customers to charge from both AC and DC type public charging stations. Consider other public charging experiences at and around workplaces (as EV type allows). One participant suggested carparks with access to PowerPoints where people can use their standard charging cable. For shorter range vehicles, this is a need, for others, a financial benefit would incentivise changed charging behaviours.</p>
<p><b>5</b> <b>Engaging with other EV owners</b></p>	<p><b>Leverage trusted sources</b></p>	<p>When researching, aspiring EV buyers often rely on the knowledge and experiences of people they trust (friends, family), or are at least likely to be trustworthy (other EV owners [especially in EV owner clubs], blog writers, reviewers, et al.). They also look to EV salespeople for information to differentiate options. Providing credible information to these influencers, and which they can refer to, is likely to enhance the trust in the dissemination of desired messages.</p>
<p><b>6</b> <b>What's next</b></p>	<p><b>Advice on smart energy solutions</b></p>	<p>Participants were open to products and services that make them feel like they are doing the right thing, that are also easy and where they derive a financial benefit, while meeting their energy needs in regards to total home electricity management. Consider communicating this with regard for the barriers of price and home ownership. In terms of innovations, participants referenced vehicle to grid, power sharing – either through making wall chargers publicly accessible or participation in VPPs, automated solutions to ‘dial up’ the charge rate to align solar energy use with sun energy generation (such as a Zappi charger – which automatically changes the ampage of the charge based on the amount of cloud cover).</p>

# Customer comments on charging options

*“Townsville doesn’t have any in shopping centres, but they have a fast charger in a petrol station – up to 1,500km/hr – 350kW charger (15 mins fills the battery @60c/kW = \$25). This is value for money. Townsville Frosty Mango has a charger, so they will often drive there, have an ice-cream and charge.”*

*“My son works at the Gold Coast in the hospital precinct. My son parks the car at a car charging station, walks over the road to work, and will come back and move the car a little while later when a message has popped up saying the car is charged to 90%. He will not charge if the car doesn’t need it. This charges at 80km/hr for 40c/kWh – which is understandable as these companies have to pay for the infrastructure. But still, if you compare to 100km of travel – an EV is about \$5 and petrol would be \$15. It’s about one-third the cost to running an ICE.”*

*“The charger came with the Tesla and we paid about \$1,000 for installation. At home, it charges for 35km/hr – so if you charge for 90% (as Tesla advises to only charge up to 90% of the full capacity – which is 350km) – that’s 10 hours.”*

*“It is a bit of a hassle to think about charging when you get home from work, but you get used to it. Initially we had range anxiety, even if it was 100km. The planning is something you have to do.”*

*“We don’t go to the free super charger deliberately – as it is only in the Valley. It takes 40-45mins to charge 500km. Most of the time it doubles though, because someone else is using it.”*



# Customer comments on charging options

*"I have three main options - Kelvin Grove Uni 50kw – free, Toombul Ultra Charge Fox which charges at about 50kW and costs 20c per kW and the Tesla Ann Street 150kw which ranges from about 48c – 52c."*

*"Charging speed – puma fuel station at Cluden – I tried that out to see how fast the car could charge. Definitely faster about 150kW of charge - it would have topped up pretty quickly at that rate. Home is 7kW in comparison. Overnight 7kw is not an issue. At home it varies because the charger on the fast charger is not linear. Overnight would get almost entirely full from empty. "*

*"At home I always charge from the solar and battery, never from the grid as this costs money. I also charge on the weekend from 10am to 2am from solar. Also at this time during the week when my wife is at home. Sometimes, I take the car to work (in city) – but have to park on street. I take the car to Palmer St (in city) and charge for free, about 40mins while having lunch. This gets you about \$15 of power – which is 200kms on the vehicle."*

*"On holidays, the car can just about make it to Cairns (400km). Tully, Cardwell & Innisfail have chargers now, so there are more options to fill up. It takes about 10-15 while we have a break. Charged at Frosty Mango. I select hotel with chargers – these will become more common..... All they need is trickle charge for travellers to charge overnight."*

*"I did a report to Townsville City Council, about charging EV (pay for carparking options and recommendations)."*

*"We originally thought the charge station network would charge more (faster) than it did..."*

*"I've watched people on Plugshare etc, but the novelty wears off after a while...you'll only go there if you have a short-range car. Our first was a 110km on a highway and about 150km on suburban streets."*

*"If the cost of batteries reduced to \$50/kW – that's game over. Same with cars, when they get to \$100 per km its no use having a petrol car."*