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**EECA EV Public Charging Infrastructure Roadmap – *Initial Stakeholder Engagement***

# Engagement Report

Final Issue

8 June 2021

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# Executive summary

Arup was commissioned by the Energy Efficiency and Conservation Authority (EECA) in May 2021 to undertake an independent stakeholder consultation for a proposed EV Public Charging Infrastructure Roadmap. An initial sounding questionnaire and interviews sought feedback regarding roadmap content, development approach and draft objectives.

A selected group of cross-sectoral stakeholders were consulted, including representation from: the electricity industry, automotive retail dealerships, local government, EV advocacy groups, EV charger installers/manufacturers/operators, fuel retailers and customer advocacy groups. Stakeholders (29 in total) were identified and divided into two tiers to facilitate engagement. Tier 1 stakeholders were requested to complete a questionnaire and undertake a follow-up face to face interview. Tier 2 stakeholders were requested to complete the questionnaire. By the conclusion of engagement, Arup had received 24 completed questionnaire responses and held 11 face-to-face interviews, representing response rates of 83% (completed questionnaire) and 100% (interviews held) respectively.

General feedback on the proposal to develop a roadmap was supportive, and highlighted potential barriers and opportunities, as identified by each stakeholder group. There was considerable overlap in common themes across stakeholder groups, including: lack of available funding and low return on investment; need for an action-oriented roadmap; need for improved data sharing to manage and balance the electricity grid/charging requirements; need for regional factors to be considered as well as a consistent national strategic approach; and the need to take a "customer-centric" lens in developing an integrated EV public charging system that both acknowledges and improves the end-user/customer experience. In summary, majority of engaged stakeholders:

- **support** the draft objectives and the proposed EV Public Charging Infrastructure Roadmap content;

- **agreed** with EECA's approach to address fast and slow public charging only in this particular roadmap;

- **highlighted** that EECA should acknowledge the interdependencies of EV public charging with commercial property and home charging, from a "system of systems" perspective;

- **agreed** that the roadmap should focus on light passenger and commercial electric vehicles.

- **recommended** the roadmap horizon should be between 5-10 years, but also make sure it drives early action to accelerate installation of EV chargers and drive consumer uptake.

- **provided** suggestions on what else should be considered in development of the roadmap including: measures to avoid sectoral monopolies forming; planning and design principles to future-proof space for charging network expansion, planning for critical infrastructure resilience; and enabling a market-led investment approach in the long term.

Suggested recommendations summarise a proposed approach for further engagement and a recommended methodology for further roadmap development. This includes further policy analysis, and data assessment to determine optimal timing and location for the progressive rollout of additional EV public charging stations.

The infographic overleaf summarises at a glance key findings and metrics from this stakeholder engagement.

# EECA EV Public Charging Infrastructure Roadmap – Initial Stakeholder Engagement

Stakeholder engagement – at a glance

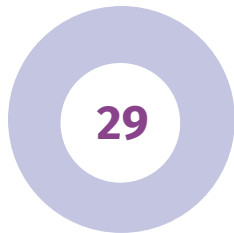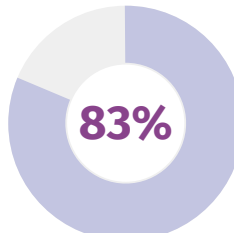| | | | | |
|---|---|---|---|---|
| Stakeholders want to know scope, extent and longevity of the roadmap | Yes, stakeholders confirm urgent need for a roadmap! | Strong overall support for EECA's aims & draft objectives | General interest in ongoing and more expansive engagement | Majority of stakeholders think roadmap horizon should be 5-10 years |

**29** Stakeholders contacted

**83%** Questionnaire responses
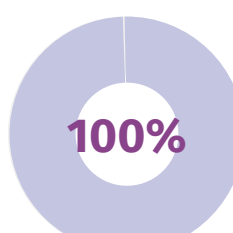
**100%** Tier 1 interview responses

**Common Themes**

| Action plan, funding provision and ROI | Data sharing and communication | Attractive customer journey | Regional factors vs National plan | Cross-sector collaboration |
|---|---|---|---|---|

## Stakeholder categories of interview and questionnaire participants.

- 31%
- 15%
- 15%
- 15%
- 8%
- 8%
- 4%
- 4%

- Other (electricity industry/owner operator, charger manufacturer, fleet company)
- Electricity industry
- Advocacy groups
- Local Government
- Customers e.g finance or property company
- Charger installers
- Fuel retailers
- Chargers operators

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# Table of Contents

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# 1. Background and purpose of engagement

## SCOPE

The Energy Efficiency & Conservation Authority (EECA) commissioned Arup New Zealand Limited (Arup) to engage with selected industry stakeholders, in order to better understand perspectives on what an EV Public Charging Infrastructure roadmap for New Zealand could look like and test some early thinking regarding roadmap attributes for further development.

The purpose of this Engagement Report is to document stakeholder feedback from a survey and interviews conducted during May 2021.

This Engagement Report outlines:
• survey findings
• survey methodology
• stakeholder profile groups consulted,
• key themes informing opportunities and barrier
• key themes on roadmap content and objectives recommendations on next steps.

This stakeholder engagement was undertaken by Arup on behalf of EECA, as an independent study.

## HOW THIS CAME ABOUT

In April 2017, Waka Kotahi (WK) announced a public (light) electric vehicle charging "coverage vision" for New Zealand – specifying installation of one EV fast charger every 75km along the State Highway Network.

This coverage vision, (95% achieved) is considered no longer fit for purpose - since April 2017 there are over 700% more electric vehicles on NZ roads, and changes in vehicle battery sizes and charging technology is rapidly changing the nature, expansion and expectations for EV use and recharging on NZ roads.

EECA is principally responsible for development of the EV Public Charging Infrastructure roadmap for New Zealand, on behalf of Government, and in conjunction with MoT, Waka Kotahi and MBIE.

EECA is exploring the potential for shaping the roadmap in response to the NZ Climate Change Commission 2021 advice to "*develop a charging infrastructure plan for the rapid uptake of EVs*" and to complement existing programmes such as the Low Emission Vehicle Contestable Fund (LEVCF) for co-funding of public EV charging infrastructure.

## PURPOSE OF THE ROADMAP

Two key purposes for an EV Public Charging Infrastructure roadmap are to:
• provide information and guidance to both industry and consumers, and
• to optimise government and private sector investment in future EV charging infrastructure.

This roadmap may provide forward-looking guidance on the level of funding required, location and types of EV chargers and standards of charging required, information to optimise investment to encourage new competition and other future changes that should be considered (e.g., emerging and potential new technologies).

## HOW FINDINGS FROM THIS STUDY CAN BE USED

This engagement is intended to be used by EECA and other government agencies to support and inform the development of a draft roadmap and work programme in this area. As agreed with EECA, individual stakeholder survey and interview responses from this engagement have been anonymised, and responses analysed and reported by stakeholder group.

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The **Draft Objectives** of the EV Public Charging Infrastructure Roadmap are:

1. Support EV uptake and provide consumers with confidence in the provision of public electric vehicle charging infrastructure

2. Ensure charging infrastructure requirements such as convenience, speed and waiting times for public charging are adequately met

3. Provide government and market information and guidance to better inform planning and optimal investment

4. Encourage new entrants and competition for provision of charging infrastructure and service providers for the benefit of consumers

5. Enable innovation in new technology and business models such as smart charging and grid integration

6. Be flexible to respond to changes in technology and consumer behaviour

7. Support other industry and government transport strategies and roadmaps
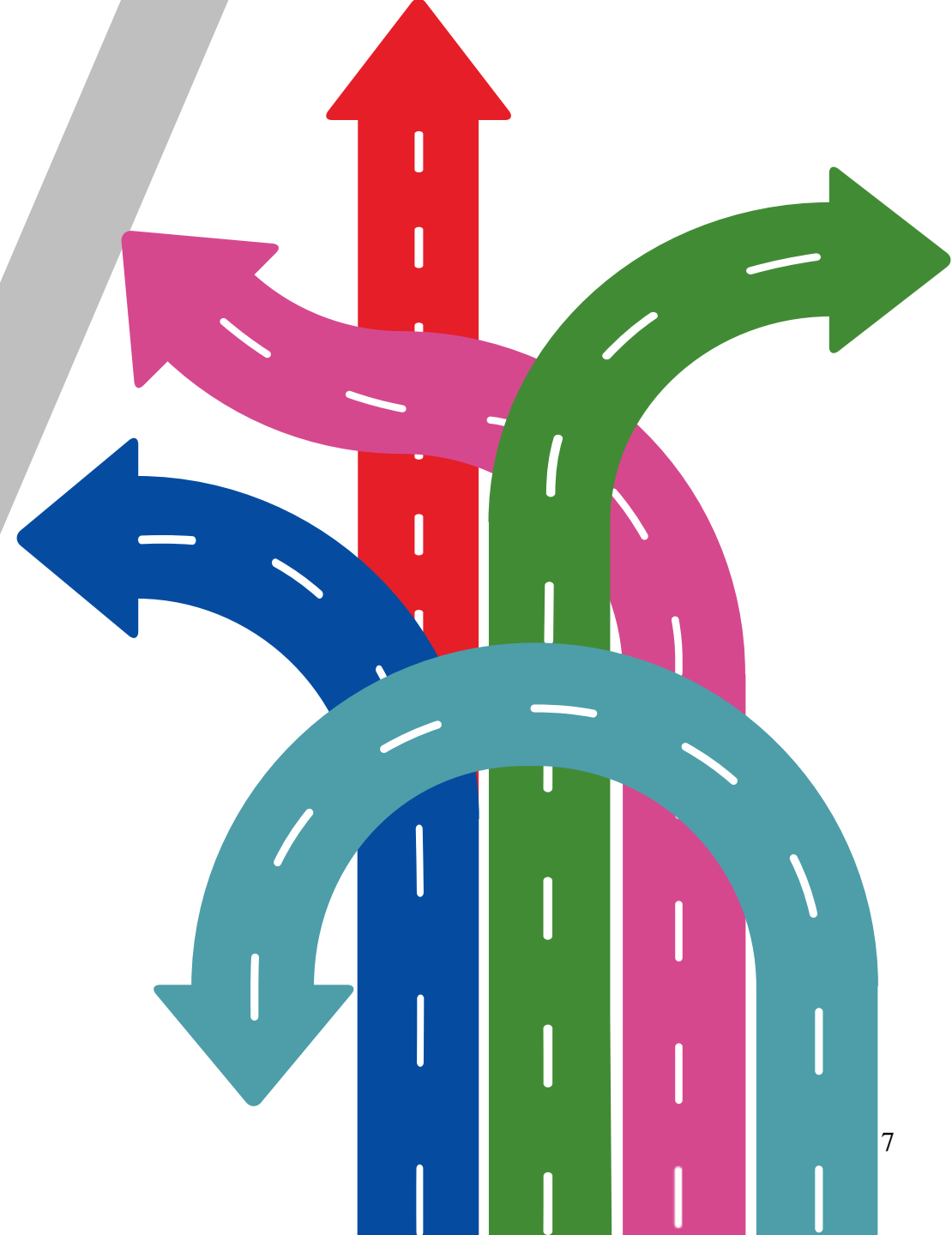
# 2. Who we engaged with and who we heard from

## Stakeholders consulted

## All engaged stakeholders

Seven categories of stakeholders were identified for consultation at this phase of roadmap planning.

EECA provided guidance on sampling the cross-sectoral selection of stakeholders to be engaged for initial sounding.

Stakeholders were categorised as either Tier 1 or Tier 2. Tier 1 stakeholders were identified by EECA as those whose initial views were most desirable to be captured through survey + interviews, in order to collate key market insights and industry commentary.

The stakeholders (29 in total) were invited to participate during this early engagement.

Arup received 24 completed questionnaire responses.

**Advocacy Groups - 6**

**Charger Installers/Operators – 6**

**Customers – 3**

**Commercial automotive retailers – 2**

**Electricity Industry – 8**

**Fuel Retailers – 1**

**Local Government – 5**

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## 2. Who we heard from
The response rates are summarised below based on the stakeholder categories.

# 83%
**Overall survey response rate**

# 100%
**of Tier 1 stakeholders interviewed**

## Stakeholder categories of interview and questionnaire participants.



Legend:
- Other (electricity industry/owner operator, charger manufacturer, fleet company)
- Electricity industry
- Advocacy groups
- Local Government
- Customers e.g finance or property company
- Charger installers
- Fuel retailers
- Chargers operators

31% · 15% · 15% · 15% · 8% · 8% · 4% · 4%

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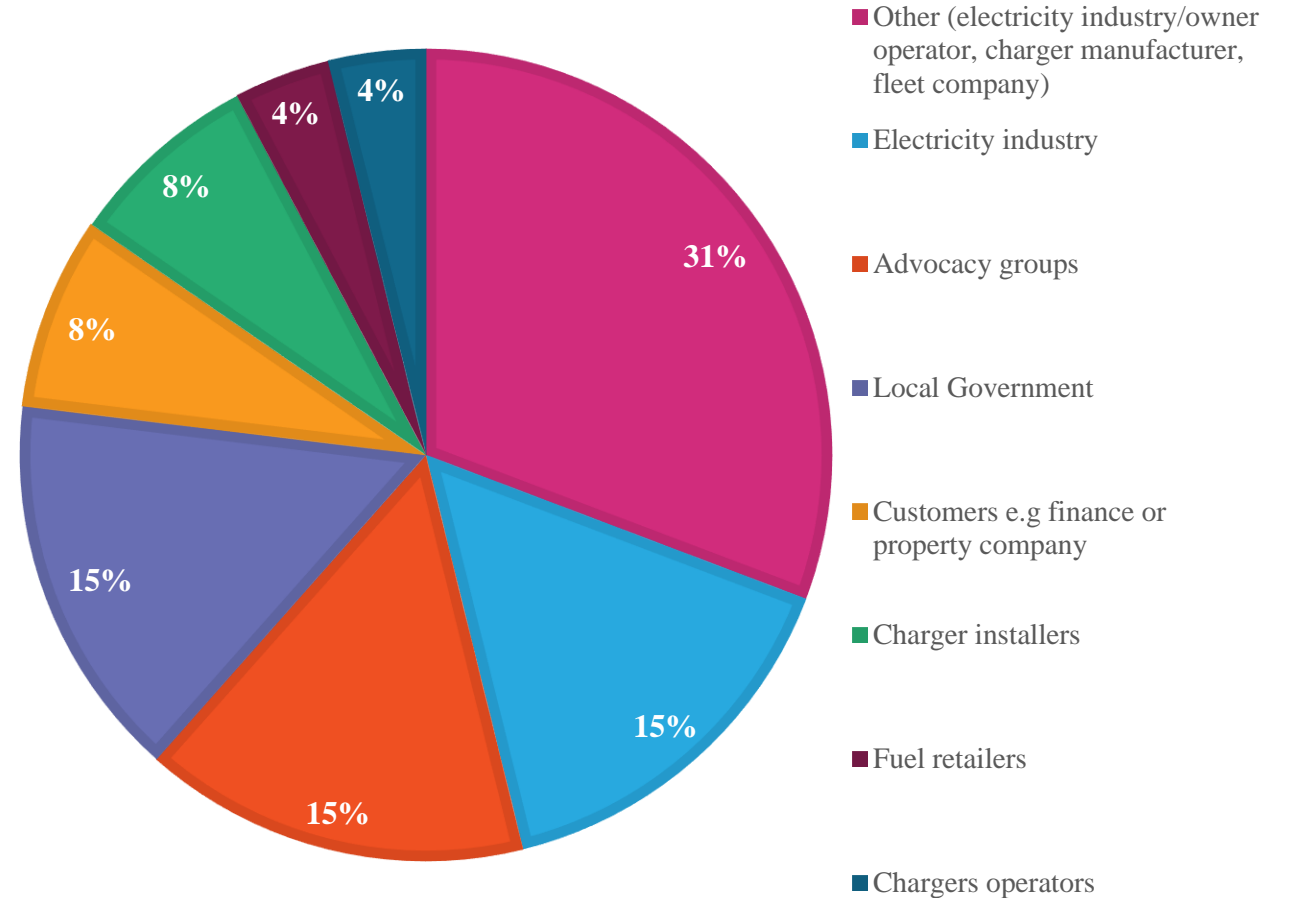
# 3. Key themes by stakeholder group

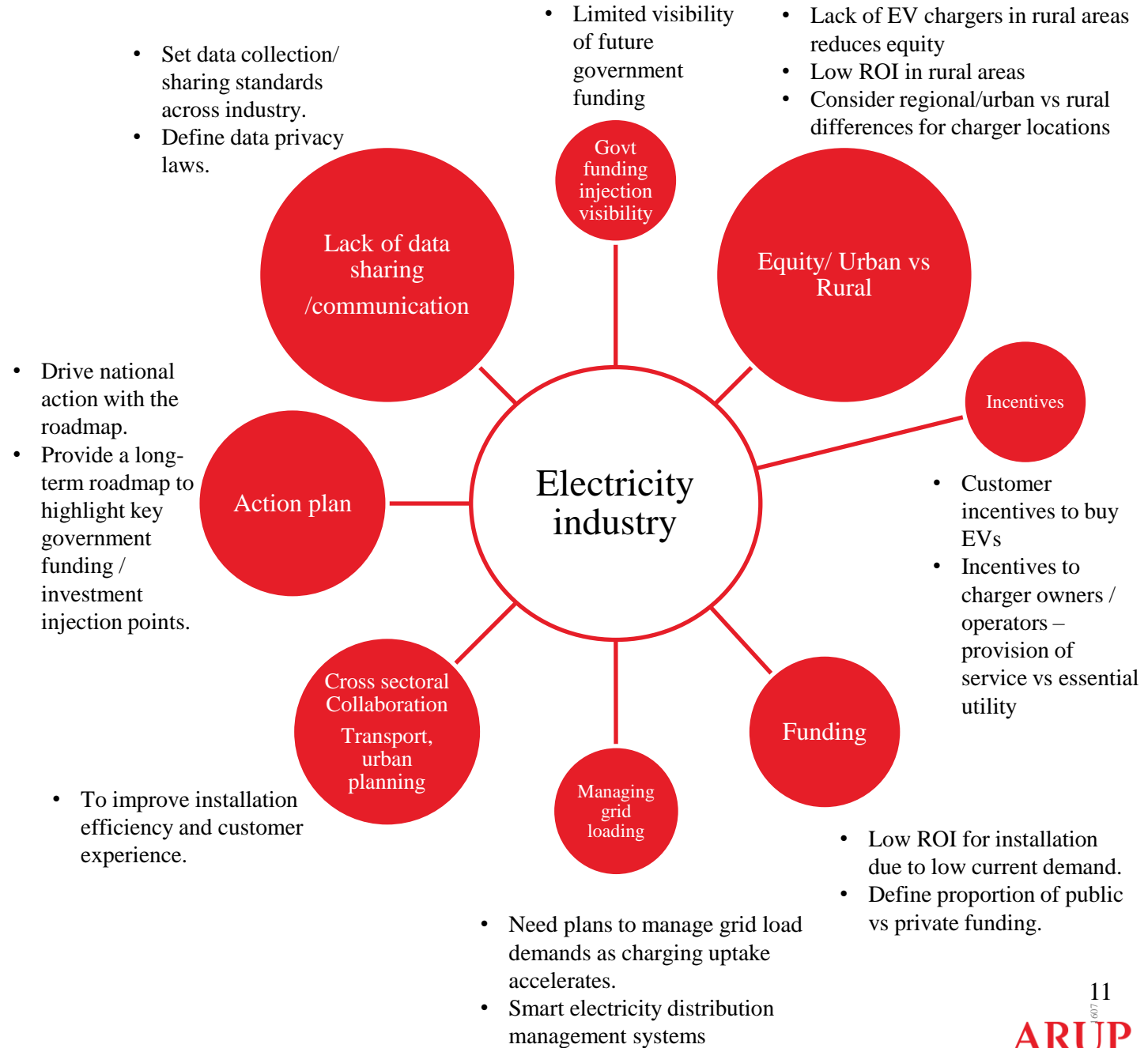**Electricity Industry: Generators, distributors, transmitters**

Below is a summary of the barriers and opportunities identified by the electricity industry stakeholders during the interviews and questionnaire.

The diagram summaries the key themes identified.

⚡Barriers - lack of data collection and sharing standards, lack of visibility of committed funding, low ROI especially for rural/uneconomic areas.

💡Opportunities - stakeholder and customer incentives, demand management for the grid, cross sectoral collaboration, pricing model innovation, consider rural vs urban and other regional differences to decide on charger locations, collecting ICP data.

Refer to interview notes in Appendix C for more detailed information.

*Relative level of response*

- Set data collection/ sharing standards across industry.
- Define data privacy laws.

- Limited visibility of future government funding

- Lack of EV chargers in rural areas reduces equity
- Low ROI in rural areas
- Consider regional/urban vs rural differences for charger locations

**Lack of data sharing /communication**

**Govt funding injection visibility**

**Equity/ Urban vs Rural**

**Incentives**

**Electricity industry**

- Drive national action with the roadmap.
- Provide a long-term roadmap to highlight key government funding / investment injection points.

**Action plan**

- Customer incentives to buy EVs
- Incentives to charger owners / operators – provision of service vs essential utility

**Cross sectoral Collaboration** Transport, urban planning

**Funding**

**Managing grid loading**

- To improve installation efficiency and customer experience.

- Need plans to manage grid load demands as charging uptake accelerates.
- Smart electricity distribution management systems

- Low ROI for installation due to low current demand.
- Define proportion of public vs private funding.

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# 3. Key themes by stakeholder group
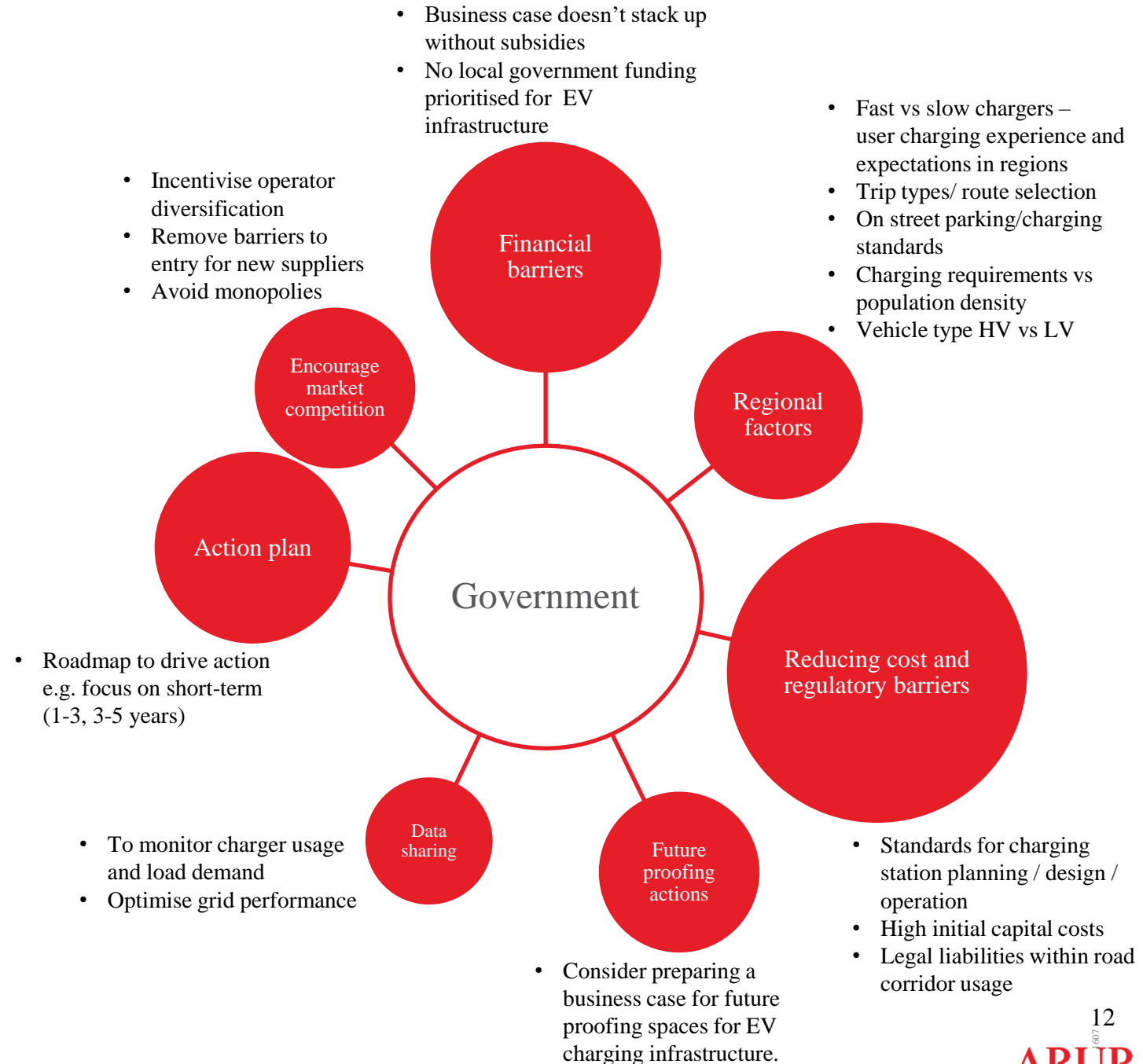
**Local Government**

Below is a summary of the barriers and opportunities identified by local government stakeholders during the interviews and questionnaire.

The diagram summaries the key themes identified.

⚡ Barriers – financial/funding barriers to investment, data sharing across sectors.

💡 Opportunities – consider strategic factors consistent across regions to optimise charger locations e.g. type and duration of trip, type of chargers, associated land use activities, travel behavior, include future proofing actions in the roadmap development (e.g., planning for hydrogen, high speed charging), encourage greater market competition to avoid formation of monopolies, develop a roadmap that is more action-oriented, develop a suitable parking strategy, consider making the customer journey more attractive e.g. one payment system.

Refer to interview notes in Appendix C for more detailed information.

*Relative level of response*

- Business case doesn't stack up without subsidies
- No local government funding prioritised for EV infrastructure

- Incentivise operator diversification
- Remove barriers to entry for new suppliers
- Avoid monopolies

- Fast vs slow chargers – user charging experience and expectations in regions
- Trip types/ route selection
- On street parking/charging standards
- Charging requirements vs population density
- Vehicle type HV vs LV

**Financial barriers**

**Encourage market competition**

**Regional factors**

**Action plan**

**Government**

**Reducing cost and regulatory barriers**

**Data sharing**

**Future proofing actions**

- Roadmap to drive action e.g. focus on short-term (1-3, 3-5 years)

- To monitor charger usage and load demand
- Optimise grid performance

- Consider preparing a business case for future proofing spaces for EV charging infrastructure.

- Standards for charging station planning / design / operation
- High initial capital costs
- Legal liabilities within road corridor usage

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# 3. Key themes by stakeholder group

**Advocacy Groups**

Below is a summary of the barriers and opportunities identified by advocacy group stakeholders during the interviews and questionnaire.

The diagram summaries the key themes identified.

⚡ Barriers – historical underinvestment particularly from government, managing peak load on the grid, lack of certainty to inform investment, initial demand doesn't justify supply, which means potentially low ROI, lack of predictability in funding availability reduces confidence to invest further.

💡 Opportunities – leverage existing/available funding, drive greater market competition, focus on creating an attractive customer service/journey, take a holistic and actions-based approach in the roadmap, provide more certainty regarding future funding, consider cross-sectoral collaboration, embed system resilience as a key principle in growing a national EV charging network, develop ability to evaluate battery life at purchase, draft new home build standards to include charging, leverage travel and behavior data to optimize existing and future charger locations, explore income options for the government (e.g. licensing, user pays).

Refer to interview notes in Appendix C for more detailed information.

*Relative level of response*

- Ensure grid operators have factored in charger growth
- EV charging network & system resilience

- Plan for ways to eliminate "charge rage"/waiting to access charge infrastructure e.g. site co-location with retail / hospitality /service centres

- Consider linkages with commercial property and new housing standards for EV chargers

**Attractive customer service journey**

**Drive market competition avoid monopolies**

**Resilience**

**Advocacy groups**

**Factors by region and station design**

**Sectoral collaboration/ urban planning/ electricity and government**

**Funding**

- Fast vs slow vs emergency roadside assist
- Population density prioritising charger locations
- Potential different requirements across councils and local plans and grid operations
- Address regional specific challenges (seismic, sea level rise/coastal, socio economic, high growth regions etc)

**Certainty of action plan**

**Public engagement**

- EECA to promote uptake of public charging to customers
- Engage local funders
- Conduct public education across all socio-economic and demographic profiles

- Track actions from the roadmap
- Show confidence in future funding opportunities
- Holistic /national whole of systems view

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# 3. Key themes by stakeholder group

**Fuel Retailers**

**Key interests are:** On-street charging (e.g. Dedicated kerbside points), charging hubs rapid/HP public charging infrastructure, Mobile charging infrastructure to meet peaks;
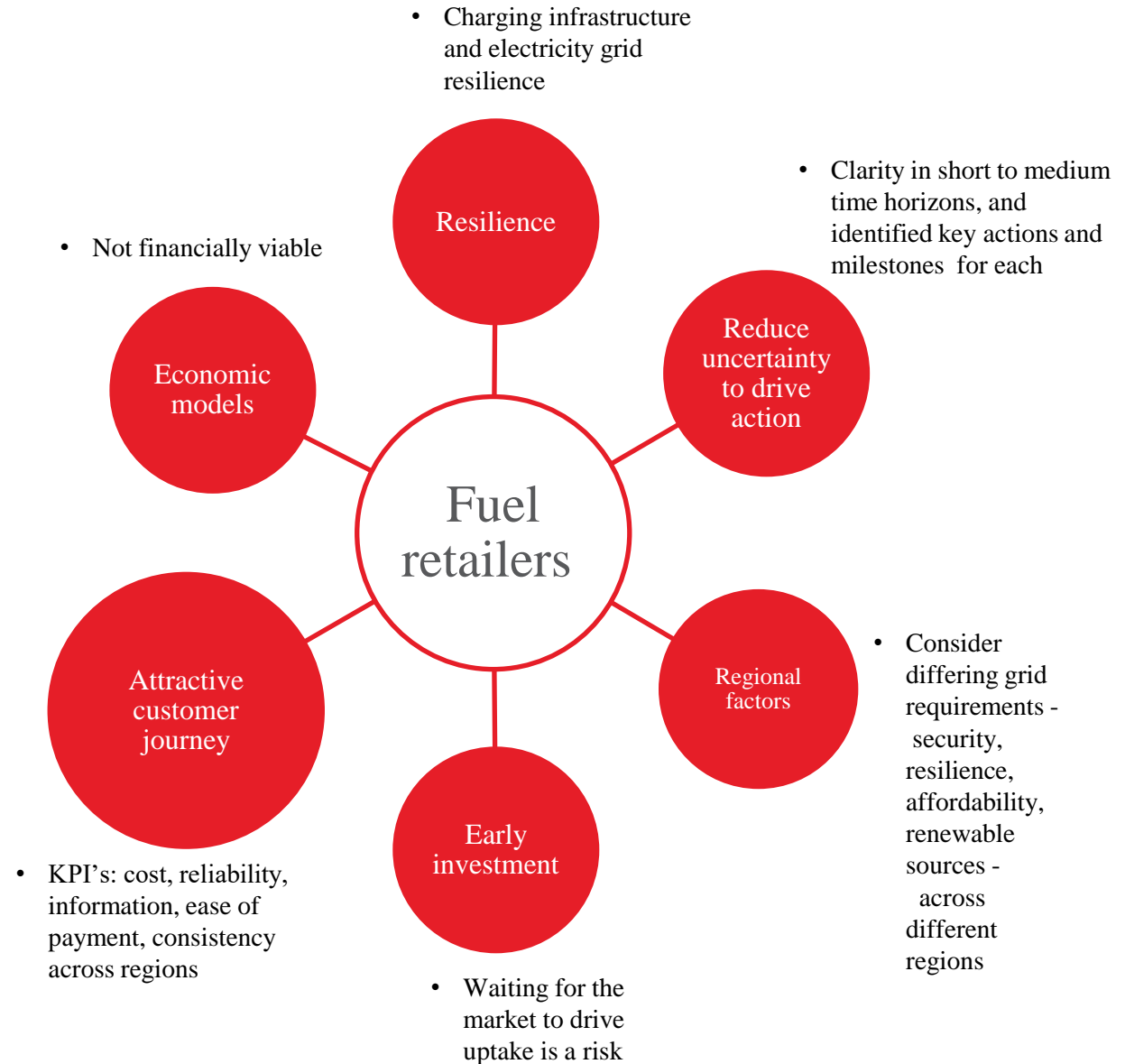
Below is a summary of the barriers and opportunities identified by fuel retailer stakeholders during the interviews and questionnaire.

The diagram summaries the key themes identified.

⚡ Barriers – lack of collaboration across sectors to make the installation process easier, the economic models currently are not financially viable.

💡 Opportunities – consider focusing on making the customer journey attractive to drive uptake along the growth curve, use early investment to stimulate market competition, reduce uncertainty by driving actions in the roadmap, adopt resilience for charging infrastructure and the grid as a key principle for the EV charging infrastructure.

Refer to interview notes in Appendix C for more detailed information.

- Charging infrastructure and electricity grid resilience

- Clarity in short to medium time horizons, and identified key actions and milestones for each

- Not financially viable

**Resilience**

**Economic models**

**Reduce uncertainty to drive action**

## Fuel retailers

**Attractive customer journey**

**Regional factors**

**Early investment**

- Consider differing grid requirements - security, resilience, affordability, renewable sources - across different regions

- KPI's: cost, reliability, information, ease of payment, consistency across regions

- Waiting for the market to drive uptake is a risk

*Relative level of response*

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# 3. Key themes by stakeholder group

**Charger installers, manufacturers, operators**

Below is a summary of the barriers and opportunities identified by charger installers, manufacturers, and operator stakeholders during the interviews and questionnaire.

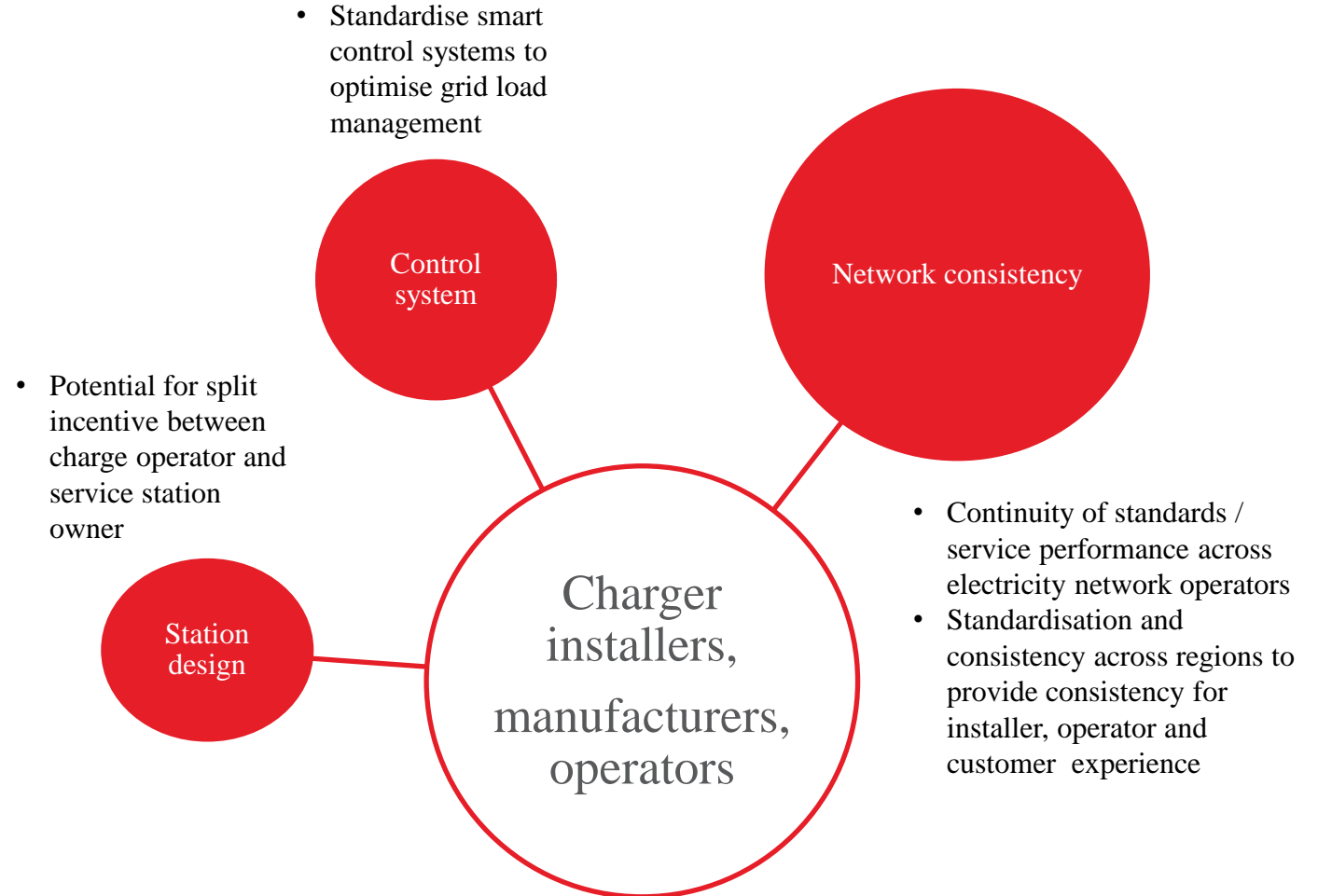The diagram summaries the key themes identified.

⚡ Barriers – issues around managing grid loading when higher uptake occurs, lack of data access across sectors especially EV charging patterns and locations, inconsistent and unsuitable station designs e.g., lack of national standards.

💡 Opportunities – consider control systems in homes to leverage EV and grid data and manage grid loading, electricity consistency across regions, cross sectoral collaboration across transport behavior/ land use/ grid data, innovation in retail electricity to encourage customer uptake.

Refer to interview notes in Appendix C for more detailed information.

- Standardise smart control systems to optimise grid load management

**Control system**

**Network consistency**

- Potential for split incentive between charge operator and service station owner

**Station design**

## Charger installers, manufacturers, operators

- Continuity of standards / service performance across electricity network operators
- Standardisation and consistency across regions to provide consistency for installer, operator and customer experience

*Relative level of response*

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# 3. Key themes by stakeholder group

**Customers: business customers e.g. finance, property, fleet companies**

Below is a summary of the barriers and opportunities identified by customer stakeholders during the interviews and questionnaire.

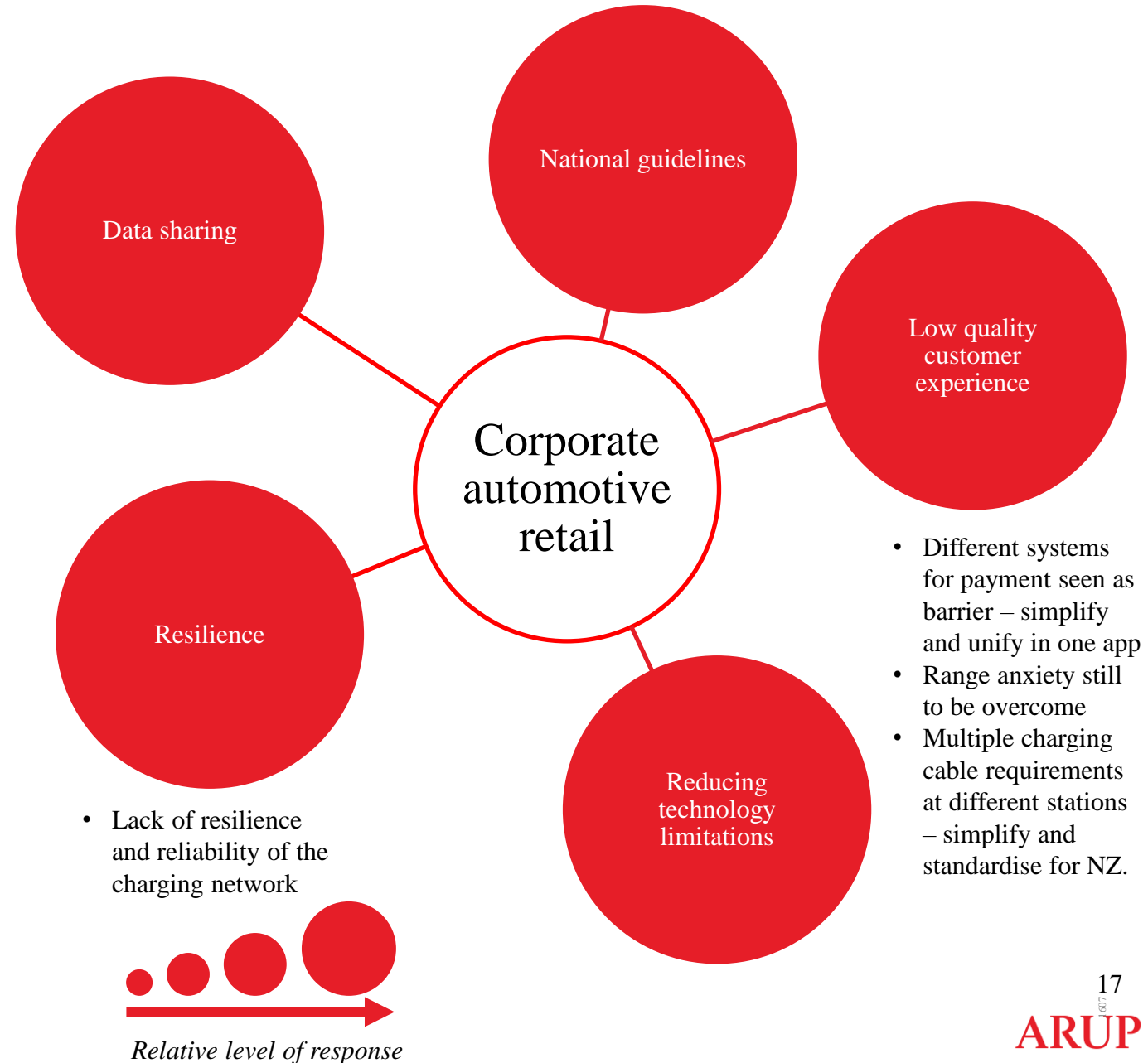The diagram summaries the key themes identified.

⚡ Barriers – high purchase costs are a barrier to entry and uptake, lack of information on how to go about installing and transitioning to mainstream EV fleet for a business, overcoming pushback from property landlords regarding installing EV chargers in homes, commercial premises.

💡 Opportunities - Focus on key regional routes e.g., fast charging on all key truck routes, the roadmap to build consumer and commercial confidence within the market, the roadmap can help guide user (stakeholder and customer) behaviours.

Refer to interview notes in Appendix C for more detailed information.

*Relative level of response*

- Influence new refuelling / recharging habits in customers e.g. charge while you shop, have a coffee

**Guiding user behaviour**

**Building confidence**

**Focusing on key routes**

**Customers**

- Provide information on how, when and what regulatory powers the national network should consider
- Increase supply of urban and regional charging stations to incentivise mainstream EV uptake
- Businesses require confidence that they can undertake their business only using EV's.

**High EV Cost**

- Prioritise more charging stations in urban areas, and then regional areas
- Prioritise fast charging along major truck routes and corridors
- Prioritise charger locations e.g. Starting with highly congested cities, polluted areas, major concentrations of EV's

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# 3. Key themes by stakeholder group

**Corporate Automotive Retail**

Below is a summary of the barriers and opportunities identified by corporate automotive retail stakeholders during the interviews and questionnaire.

The diagram summaries the key themes identified.

⚡ Barriers – negative perception of range and availability of charging services along routes, low quality customer experience (availability & duration of charging at popular centres), productivity and efficiency costs due to long charging times, EV charging infrastructure is not yet defined/managed as national critical infrastructure, business uptake of EV's is dependent on home charging availability.

💡 Opportunities – national guideline e.g., for electricity, consider using distance between cities to decide where to prioritise assessment for locations, sharing data/knowledge is important within and across sectors e.g., via research, studies, trials, consider defining a max waiting time when taking a customer journey assessment. Incentives for home-owners who rent out their properties e.g., a charger will increase home value and pool of renters.

Refer to interview notes in Appendix C for more detailed information.

- National standards on electricity for consistency across regions to reduce barriers for installers

## National guidelines

## Data sharing

## Corporate automotive retail

## Low quality customer experience

- Different systems for payment seen as barrier – simplify and unify in one app
- Range anxiety still to be overcome
- Multiple charging cable requirements at different stations – simplify and standardise for NZ.

## Resilience

## Reducing technology limitations

- Lack of resilience and reliability of the charging network

*Relative level of response*

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# 3. Key themes across all stakeholder groups

**The following infographic summarises key themes across all stakeholder group participants. Highlighted elements demonstrated significant overlap between stakeholder groups, confirming emergence of key common themes**
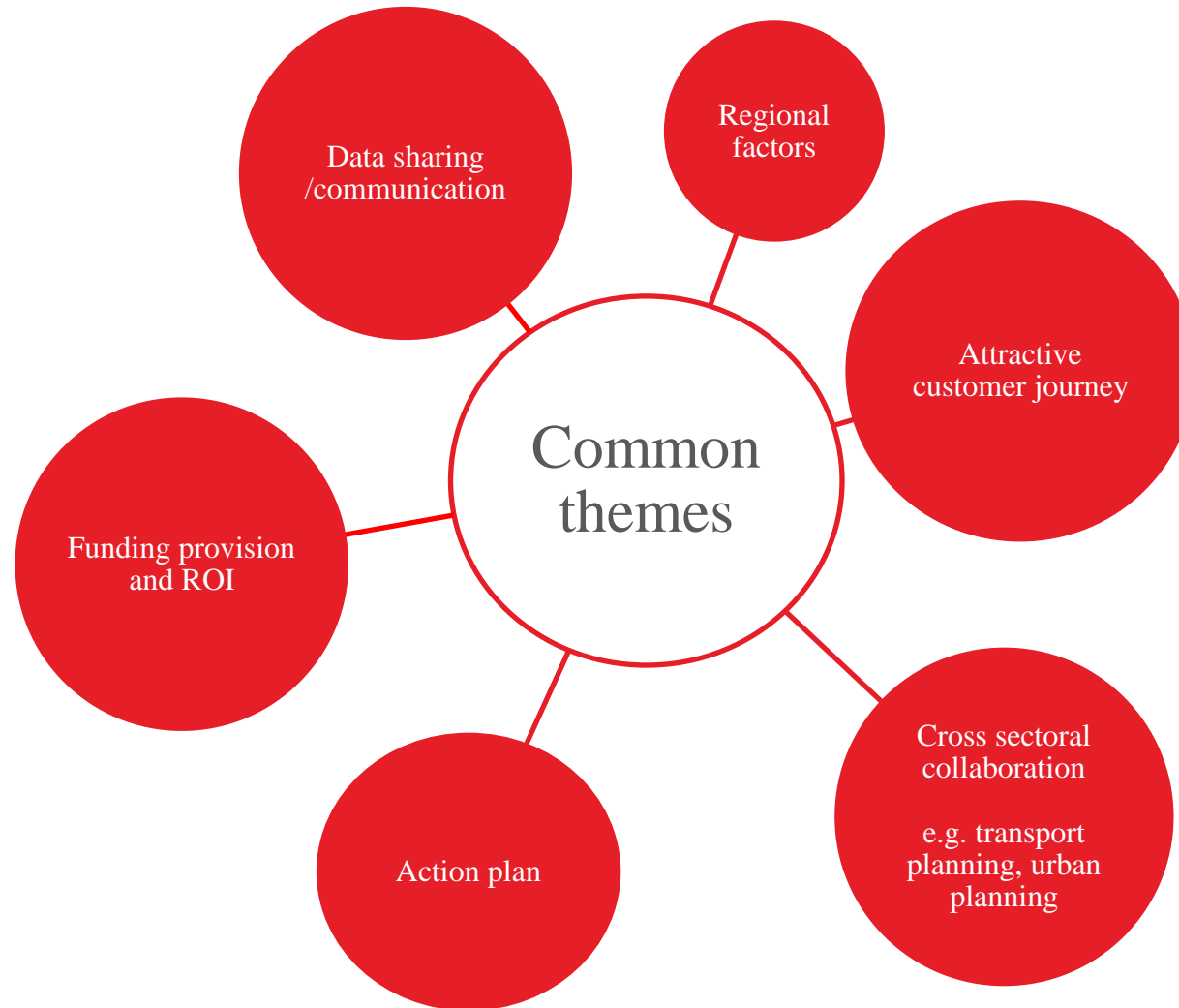


*Relative level of response*

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# Engagement insights on the proposed EV public charging infrastructure roadmap objectives

## Insights

All surveyed stakeholders agree with the objectives overall. The following additional objectives were recommended:

- Provide education and information to customers to drive EV uptake.
- Identify incentives for customers and installers to drive EV uptake.
- Determine regulatory and H&S requirements.
- Outline an approach for future proofing the network.
- Keeping local councils involved in the development of the roadmap.
- Recognise the different types of charging needs for public, business etc

One stakeholder from local government recommend removing all objectives, however this was treated as an error. One fuel retailer suggested the removal of objective 7 and one charger operator recommended to remove objective 2.

## Clarifications needed

Clarify to stakeholders how, when and where this roadmap relates to business and home charging, and how it will be addressed holisitcally by Government.

## Level of Support

Strong overall support for EECA's draft roadmap objectives

## Recommendations/next steps for EECA

Below is a summary of the recommended next steps for EECA regarding the roadmap development.

- Progress with the draft roadmap objectives.
- However, consider adding an objective on how NZ will learn from others to develop the roadmap and not reinvent the wheel e.g., via case studies.
- Also consider adding objectives on how the roadmap will provide guidance on regulatory requirements, H&S, and embed a future proofing approach within the roadmap.

Key:

- Low support of EECA's approach
- Support of EECA's approach with additional suggestions
- Strong support for EECA approach

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Informed by answers to Q8,9,10 from the questionnaire.

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# Engagement insights on the proposed EV public charging infrastructure roadmap objectives

## Insights

Advocacy groups mention the need to consider the supply and demand ratio to decide the number of stations to build. This links to the stakeholder commentary on the current growth trajectory.

- There was also strong support to consider embedding a future proofing basis for charging stations, adopting a "technology agnostic" position toward deployment of future charging infrastructure, and focussing more on user experience and needs.

- Majority of stakeholders thought the roadmap should have actions/decisions that would better inform stakeholders to make and take commercial decisions/actions regarding charging infrastructure investment/deployment/operation.

- Some stakeholders (installers) are keen to see practical actions on how to approach growing the network rather and a high-level strategy.

- The provision of customer incentives featured strongly in feedback.

- Suggestions from charge operators included conducting policy analysis to inform the roadmap development.

- Customers recommended that the roadmap should focus on how we will guide user behaviour. "We are at a standstill due to the fluid chicken and egg cycle of EV uptake vs charger deployment".

- Survey responses suggested that a broad-brush assessment of what's expected is needed in the roadmap.

- Survey responses suggested that charger locations and charger types are addressed in the roadmap.

- Develop enabling structures and policies to meet objectives was highlighted as a key step for the roadmap development.

- More than 70% of survey responses recommended that the roadmap should cover all charger types and exclude mobile charging.
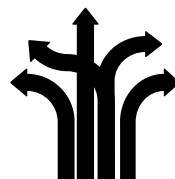
## Recommendations/next steps for EECA

Below is a summary of the recommended next steps for EECA regarding the roadmap development.

- Consider additional objectives for the development of the roadmap: technology agnostic, future proofing approach, approach to supply/demand approach in relation to the growth curve.

- Recommend addressing how actions will be provided either through the roadmap or as the next stage of work.

Keep the aim to provide guidance on funding levels.

Consider using this roadmap to establish some key decisions around barriers that will encourage uptake for industry and customers.

Consider conducting further policy analysis as part of the roadmap development to bring greater clarity on roles of industry and government.

- Consider focussing on a customer journey/experience approach to guide user adoption confidence. Consider how greater definition within a roadmap can break the perceived "chicken and egg cycle" of investment/user demand.

- Recommend using case studies to inform roadmap options.

- Recommend addressing the approach to address peak load.

- Keep the draft aims for the roadmap.

- Consider adopting roadmap design principles such as – future proofing, building for resilience.

- Consider explaining the approach for commercial and home charging and how it will considered/ assumptions or how it will be further developed if the roadmap focuses just on public charging.

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Informed by answers to Q11,12,14,15,16,17,18,19,20 from the questionnaire.

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# Engagement insights on the proposed EV public charging infrastructure roadmap objectives

## Level of Support

- Stakeholders agree overall with the proposed roadmap content but they also think it should provide actions/decisions and rather than just high level guidance.

- The survey responses show strong alignment with EECA's aim to provide guidance on funding levels and other relevant guidance.

- There is general support for EECA proposed roadmap content and it was also suggested that the roadmap should provide clarity on how it will address all vehicles types LV and HV.

- The survey responses show strong alignment to EECA's aim to provide charger locations in the roadmap.

- The survey responses show strong support for EECA's aim for the roadmap to address public EV charging.
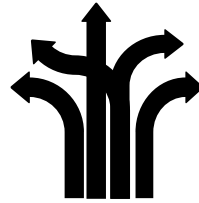
## Recommended clarifications to be communicated to stakeholders

- EECA to provide clarity and opportunities for inclusive participation to inform planned roadmap content via consultation and co-creation, before finalising the roadmap.

- EECA to clarify which charger types the roadmap will address and address why/why not others with stakeholders.

Key:

- Low support of EECA's approach
- Support of EECA's approach with additional suggestions
- Strong support for EECA approach

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# Engagement insights on the on the proposed EV public charging infrastructure roadmap content

**A - Insight and recommendation** - majority of stakeholders agree that the roadmap should focus on public charging for light passenger and commercial electric vehicles. Therefore it is recommended to keep this as the roadmap focus.

**B - Insight and recommendations** – a significant percentage of stakeholders prefer a short term outlook of 3-5 years and/or a medium outlook of 10 years to drive action and provide certainty in the industry. Consider the type of content in the roadmap if it's a 10yr timeframe (e.g. long term view with interim reviews and short term 3-5 year actions).

A - Should the roadmap focus on public charging for light passenger and commercial electric vehicles?

B - What is the most appropriate time horizon for the roadmap?



Pie chart A:
- Agree: 34%
- Disagree: 8%
- Neither agree or disagree: 8%
- Strongly agree: 50%
- Strongly disagree: 0%
- Don't know

Pie chart B:
- 10 years: 38%
- 2 years: 8%
- 30 years: 8%
- 5 years: 46%

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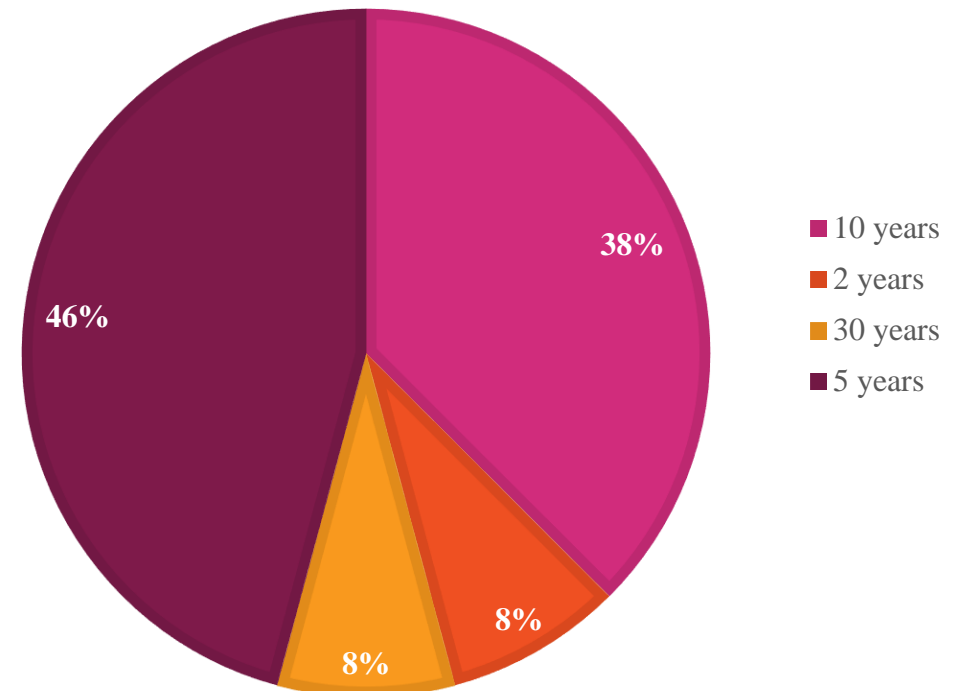
# Engagement Insights on stakeholder interests + their involvement in EV charging infrastructure rollout process

## Insights

- 92% of the 24 questionnaire participants were interested in slow and/or fast public charging infrastructure.
- 92% were interested in public, business and private EV charging infrastructure.
- Stakeholders would like the roadmap to: help support business case development, help the industry plan for more instalments, allow stakeholders to review their strategic positioning, inform cost reduction options, inform customer decisions on EV purchases.

## Recommended clarifications to be communicated

- Clarify to stakeholders what the plans are to address the other areas of charging e.g. home and commercial.
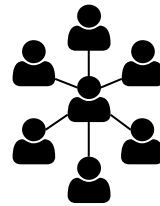
## Level of Support

- The survey responses show strong alignment to EECA initial thoughts to focus on both fast and slow public EV charging infrastructure. A public EV roadmap would satisfy the needs of the industry.
- The survey responses show strong alignment to EECA's objective 3.

## Recommendations/next steps for EECA

- Progress with public EV slow and fast charging infrastructure in the roadmap.

Key:

- Low support of EECA's approach
- Support of EECA's approach with additional suggestions
- Strong support for EECA approach

Informed by the answers for Q1,2,13 in the questionnaire.   ARUP

# Which stakeholders should be consulted?

**The following infographic identifies by order of size, the most frequently identified stakeholder groups recommended for future engagement on the EV Public Charging Infrastructure Roadmap by questionnaire + survey participants.**

ARUP

# 3. Questions from stakeholders

**The following questions were captured from the survey + interview participants. It is recommended that EECA note these and consider how best to incorporate responses in further development of the EV Public Charging Infrastructure Roadmap.**

*When will the EV charging market run itself in NZ ?*

*Who will determine EV charging solution type and location? Govt or customers?*

*What is the right balance for NZ between public and private investment in EV charging infrastructure?*

*Does NZ have policies in place that support sustainable growth of the EV industry?*

*Will the roadmap just focus on public charging or consider other charging types as well?*

*At which point does EV charging in NZ become critical infrastructure?*

*How and when will sector players invest in EV charging infrastructure outright ?*

*How long will tax payers/govt money continue to be required to subsidise efforts?*

**ARUP**

# 3. Good ideas

This section summarises some novel ideas and emergent thinking captured during stakeholder interviews that may help inform EECA's roadmap development.

Innovation in redesigning customer charging experience / activities while charging.

By re-imagining the traditional fuelling station, community hubs can be created which deliver a low-emission 'one-stop shop' user experience as well as the opportunity for new business models.

Click to add text

**CASE STUDY: ELECTRIC VEHICLE CHARGING FORECOURTS, UK** Arup worked with Gridserve in the UK to develop a concept for 'charging forecourts' which bring together solar generation, battery storage, charging infrastructure and user amenities such as coffee shops, grocery stores, lounges, and high-speed internet.

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**ARUP**

# 3. Good ideas

A well-designed roadmap can help harness the availability of electricity networks and ensure a policy-guided and market driven EV transition experience.

Taking a "no-regrets" approach:

- Analyse user market growth & budget implications, and coordinate plan for roll out.
- Develop supportive policies to guide charging locations, recognising different users require different charging solutions
- Set planning targets for quantity, type & distribution of infrastructure
- Capitalise on opportunities to install infrastructure during road and building improvements, and ensure adequate futureproofing for future technology upgrades



Electric Vehicle Charging
Different users need different solutions

ARUP
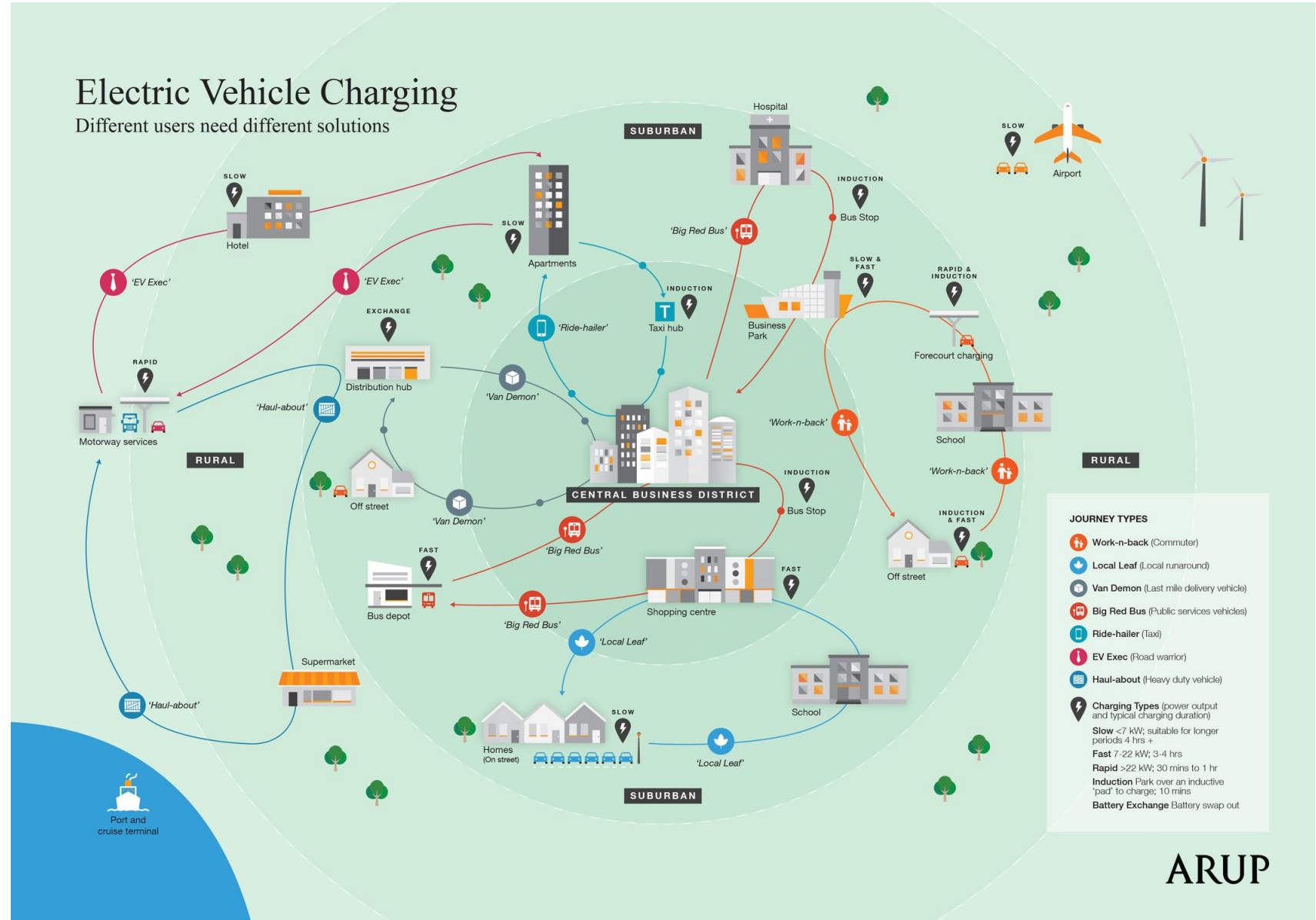
# 3. Good ideas

Below is a summary of some novel ideas and emergent thinking captured during stakeholder interviews that may help inform EECA's roadmap development.

**Make the switch to EV attractive - One system for the customer for payment, unified pricing approach. E.g. one centralised app for payments**

- Emerging apps can indicate which EV chargers are currently in use, and which are available for use.
- The opportunity exists to create one national app in NZ for all consumers, that suits both urban and longer-distance travel requirements and EV charger types.
- These apps interface with EV charging infrastructure smart meters / smart charging management to synchronise data sources - eg ICP linked data.
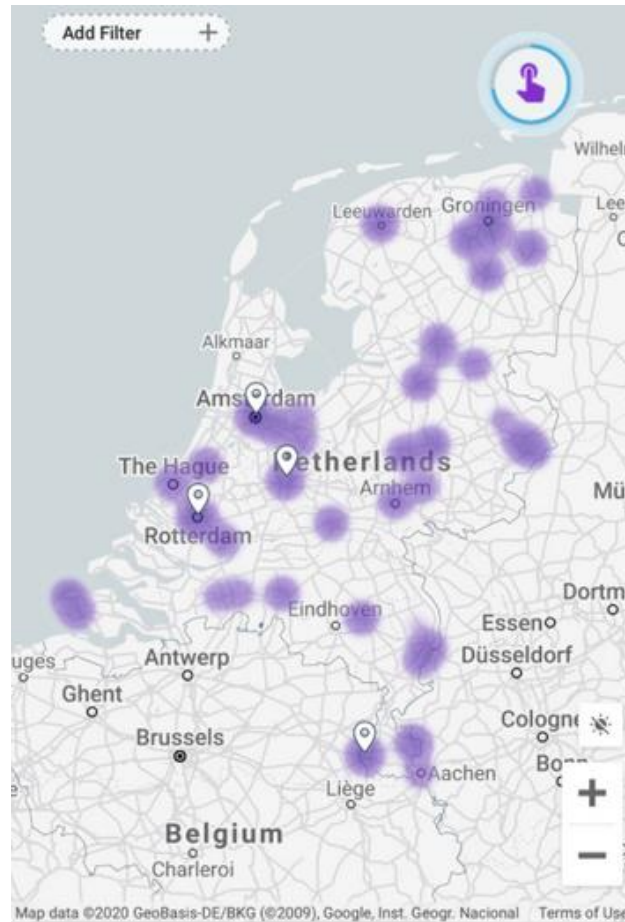




Figure 15.0
Average winter business day ICP demand per customer in control group (note non-zero axis)
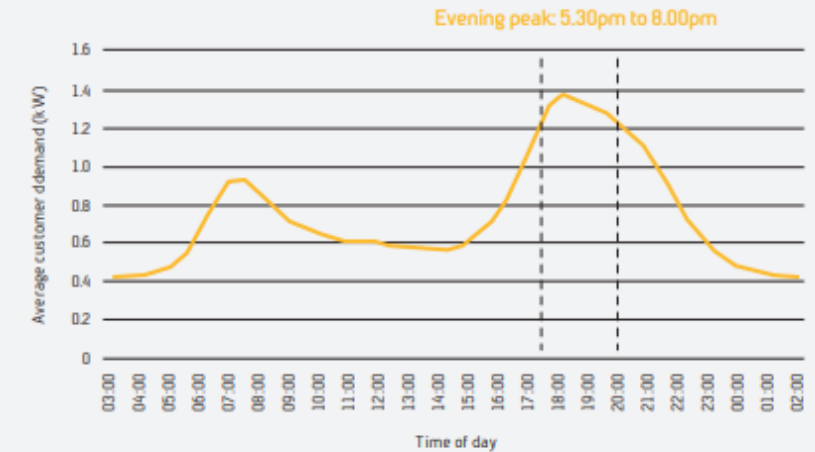
Source: Report on Electric Vehicle Charging Trial Prepared for Wellington Electricity

Source: EV Smart meter data hot spot map

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# Related work + recommended reading



This strategy identified where the Welsh government could focus their efforts to increase the number of EV chargers in the country. It outlines an action plan which highlights delivery aims, milestones and responsible entities.
Source: https://www.arup.com/projects/welsh-government-electric-vehicle-charging-strategy

This thought piece looked into the neccessary steps required to increase the roll-out of EV chargers across Los Angeles. It explored the barriers and tools that could be used, identifying further steps for energy, local government and utilities.
Source: https://www.arup.com/perspectives/publications/promotional-materials/section/establishing-curbside-ev-charging-to-serve-all

**ARUP**

Ngā mihi

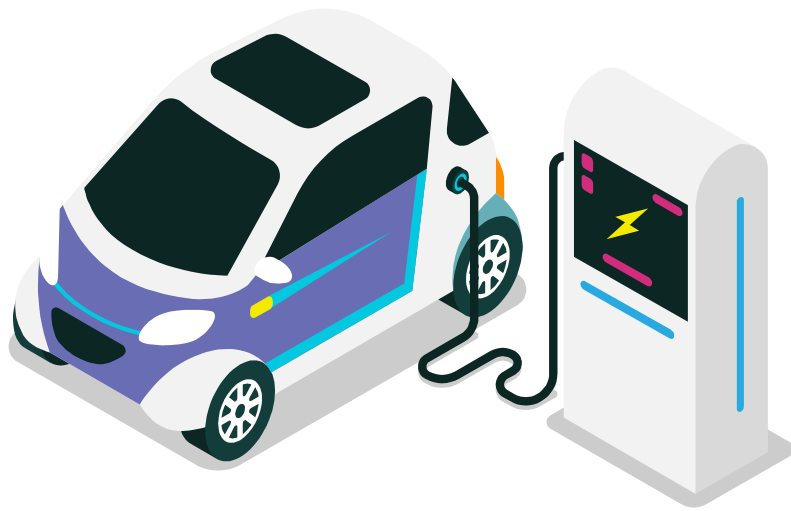**EECA EV Public Charging Infrastructure Roadmap – Initial Stakeholder Engagement**

# Engagement Report

## Appendix A – Survey and Interview Design

ARUP

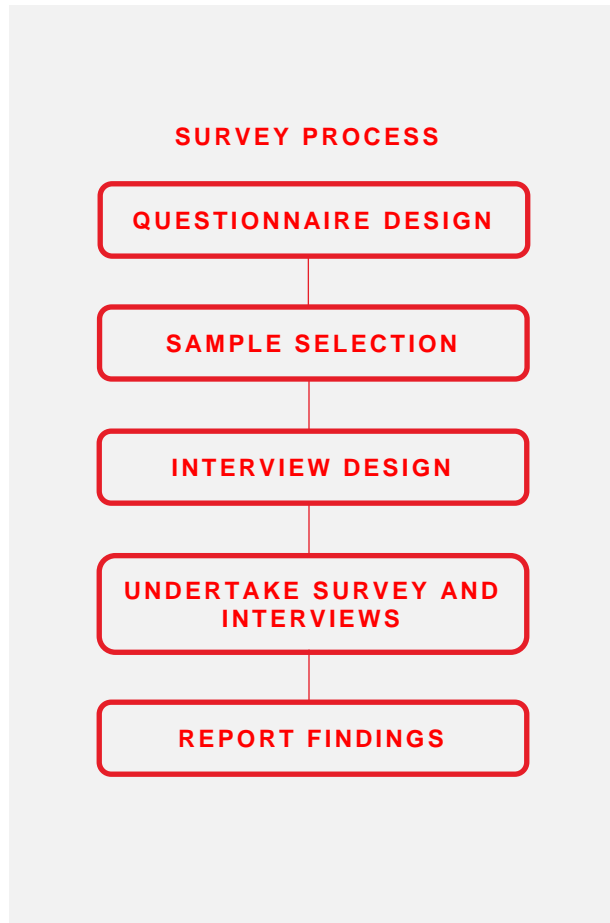## Table of Contents

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## Survey details

- The title of the survey – Stakeholder Engagement Questionnaire EECA EV Public Charging Infrastructure Roadmap

- The sponsor of the survey – EECA

- Survey conducted in May 2021

- The organisation or person who is carrying out the work - Arup

- Frequency - One off survey

- Time frame of questionnaire – 6 working days and 2 weekends

- Time frame of interviews – 5 days

- Topics covered - road map content, objectives, stakeholder support on EECA's aims and interest areas, barriers and opportunities.

## Survey methodology

The following methodology was used:

- Defining goals and objectives with EECA.

- Validating the sampling methodology.

- Designing and testing a questionnaire.

- Design the interview and interview questions.

- Define the end-use of your survey results.

- Determine the type of data analysis needed.

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# How we engaged with stakeholders

**SURVEY PROCESS**

- QUESTIONNAIRE DESIGN
- SAMPLE SELECTION
- INTERVIEW DESIGN
- UNDERTAKE SURVEY AND INTERVIEWS
- REPORT FINDINGS

## QUESTIONAIRE DESIGN

Draft questions were provided by EECA. These were reviewed and updated by Arup to make sure the questions were designed in a way to provide specific insights to EECA. The questionnaire construction was checked for double, confusing and leading questions. The survey was designed using principles and approaches outlined in Stats NZ Survey Design Guide. See Appendix D for the questionnaire.

## SAMPLE SELECTION

The sample was selected to represent the key stakeholder industry groups in New Zealand involved with EV charging. The stakeholders were slightly skewed to the North Island. The sample was selected based on a judgement sampling approach by EECA.

## ANALYSIS APPROACH

Quantitative and qualitative analysis was conducted for the questionnaire and interview results. The quantitative results are highlighted in the key insights sections of the summary report for each of the survey topics. The key insights also highlight the qualitative results from the questionnaire and interviews. The diagrams were used to highlight the prevalence of the key themes within each stakeholder group.

## INTERVIEW DESIGN

The interview was designed to provide further insight and reasoning behind the questionnaire results from the tier 1 stakeholders. See Appendix C in the interview notes for the interview questions and answers.

## RISKS ON RESPONSE RATE

A high response rate was desired to provide statistical confidence to provide results that were representative of the EV charging industry. The survey and interview timeframe was extended to increase the response rate and therefore improve statistical confidence.

## RELIABILITY OF THE RESULTS

Reliability was measured through questionnaire validity. The approach used to measure validity was face validity. EECA and Arup (who understand your topic) went through the questionnaire to check if the questions captured the topics well. This was to validate the content and to check if the questions would provide the desired insights. Adopting this process meant that the results have satisfactory validity.

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## Interview design

- Cover  a smaller percentage of the total questions from the survey.

- Approach on reaching out to stakeholders - one key contact  was emailed to avoid  receiving double responses from one organisation. e.g. emailing all contacts in the org?

- Two 2 Arup interviews were present (one interviewer and note taker)  plus one stakeholder. Ideally this is the same person that compete the survey.

- Stakeholders were allowed to invite other colleagues to the interview.

- Duration was set to 30mins.

- Purpose – this is a follow-up of the survey and get clarity on the why behind the answers in the survey. The survey must be completed before the interview.

- How do we distinguish between personal and organisation responses in the interview? The survey email and form stressed that we required the organisations point of view rather than the personal point of view of the respondent. We also let them know to that they consult within their company to get a consensus on the organisations POV.

- Anonymous interview notes

- Used PickTime calendar app to book interviews with stakeholders. This was to avoid double booking.