



SUSTAINABLE FLEET

# Guide to Vehicle Charging

ORIX New Zealand / 2023



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# Vehicle charging methods



## AC Charging

Alternating Current

AC charging charges the vehicle via it’s internal battery charger. This charging method is slower so AC chargers are typically used in situations where a vehicle can be plugged in for extended periods of time.

## DC Charging

Direct Current

DC charging charges the vehicle’s battery directly, resulting in much faster charge times. It is typically used in high frequency settings such as the public network.

### 7kW wall charger

Home and workplace solutions

- Single-Phase electricity supply required
- Fixed price solution available through ORIX

### 22kW wall charger

Workplace solutions

- Three-Phase electricity supply required
- Only certain vehicles can accommodate 22kW charging

### 25kW - 300kW charging units

Workplace solutions and public network

- Three-Phase electricity supply required
- All fast charging units are DC chargers

# Green vehicle technology and charging requirements



## HYBRID

Dual powertrain

- No charging infrastructure required
- Electric motor is charged through regenerative braking system



## PHEV

Plug-in hybrid

- AC charging infrastructure required
- A very limited number of models also offer DC charging capability



## BATTERY EV

All-electric vehicle

- AC and DC charging infrastructure required
- DC charging can be accessed through the public charging network

# Estimated charging times by charger type



## Bigger is better, right?

Not necessarily. The speed of the charging station is important, but so is the maximum supported charging speed of the vehicle. A vehicle may only support a third of the charge speed - despite more being available!

| Term               | Type of charger         | Approx. range added per hour | Approx. charge time to reach 80% | Connector image                                                                                                                                                             | Comments                                                                       |
|--------------------|-------------------------|------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Slow charge        | AC Single-Phase (7.4kW) | 40km                         | 9 - 11 hours                     |     | Preferred solution, especially for home charging – you may need your own cable |
| Medium charge      | AC Three-Phase (22kW)   | 120km                        | 3-4 hours                        |   | Beware! Vehicle might not charge faster than 7kW – you may need your own cable |
| Fast charge        | DC Medium (25kW)        | 150km                        | 1.5 hours                        |   | Public charging solution<br>80% max. charge                                    |
| Rapid charge       | DC Rapid (50kW)         | 300km                        | 1 hours                          |   | Public charging solution<br>80% max. charge                                    |
| Ultra-Rapid charge | DC Ultra-Rapid (300kW)  | 400km (per .25 hour)         | 15 minutes                       |   | Public charging solution<br>80% max. charge                                    |

# ORIX Sustainable Fleet pillars



## Our three phase green fleet strategy

ORIX's approach to supporting our customers on their journey to a more sustainable fleet is different – much more than just a vehicle and charging solution. We understand that careful consideration and planning needs to occur in several areas including: stakeholder and change management, vehicle assessment, infrastructure design and development. We will support you through this with our sustainable fleet framework – Discover, Develop, Deploy.

### Discover

- Understand your motivation and goals
- Analyse your fleet requirements
- Determine opportunities and limitations
- Share our insights and considerations
- Outline associated costs and risks

### Develop

- Establish transition plan and plot delivery timeline
- Evaluate your vehicle and charging options
- Calculate costs for vehicles, charging and onboarding
- Identify all stakeholders and their responsibilities
- Design communication plan

### Deploy

- Action transition and communication plans
- Arrange appropriate information and training
- Encourage feedback from all stakeholders
- Supply tailored packages to drivers
- Arrange ongoing analytics and support

# Vehicle charging



How ORIX guides you through your vehicle charging rollout

## Discover

- Discuss charging options, requirements, risks and benefits
- High-level cost estimations
- Outline requirements and risks
- ORIX charging case studies

## Develop

- Assist with engaging preferred suppliers
- Support site scoping
- Develop and finalise Implementation Plan
- Infrastructure delivery timeline
- Guidance and support on home owner agreement and landlord approval

## Deploy

- Facilitate installation of chargers
- Arrange post-installation training and user guides
- Monthly charge reporting and insights
- On-going support

# Home charging



We've found that 80% of charging typically occurs at home

## Key considerations for home charging

- All homes of drivers will need to be assessed for suitability
- Companies will need to define comprehensive parameters for the installation and removal of home chargers; including obtaining an agreement with the home owner
- There are ongoing maintenance and compliance costs associated with all home charging units
- Companies will need to consider and agree on how drivers will be reimbursed for home charging costs - ORIX can offer support with this
- Worksafe has published strict guidelines around home EV charging

[Review Worksafe's EV Charging Guidelines here](#)

# Home charging

Home charging example:

[Evnex E2 7.4kW Smart EV Charger](#)

Standard installation:

From \$2,195.00 + GST

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Monthly subscription fee:

\$10.00 + GST

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Annual charger inspection fee:

\$250.00 + GST

Prices correct as at 02.05.23 and will be subject to site assessment and proximity to an Evnex service centre. Cost of electricity consumption not included.

- Flexible options for charger installation indoors or outdoors, standard installation is indoors within 3 meters of the electrical distribution board
- Tethered configuration (fixed 5m lead & plug)
- Includes Evnex Power Sensor for dynamic home overload protection
- Access to Exnex's cloud-based dashboard CP-Link to monitor sessions and costs
- Reporting of sessions, costs by user/charge point
- Access to Evnex driver app and 7 day local support



EVNEX E2 IN STONE

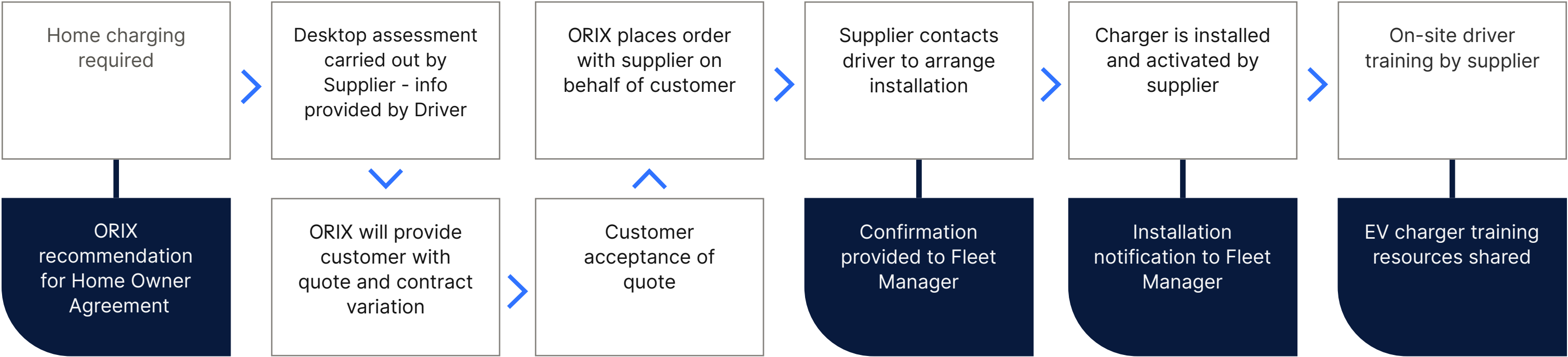
# Home charging



## Discover

## Develop

## Deploy



# Workplace charging

## Key considerations for workplace charging

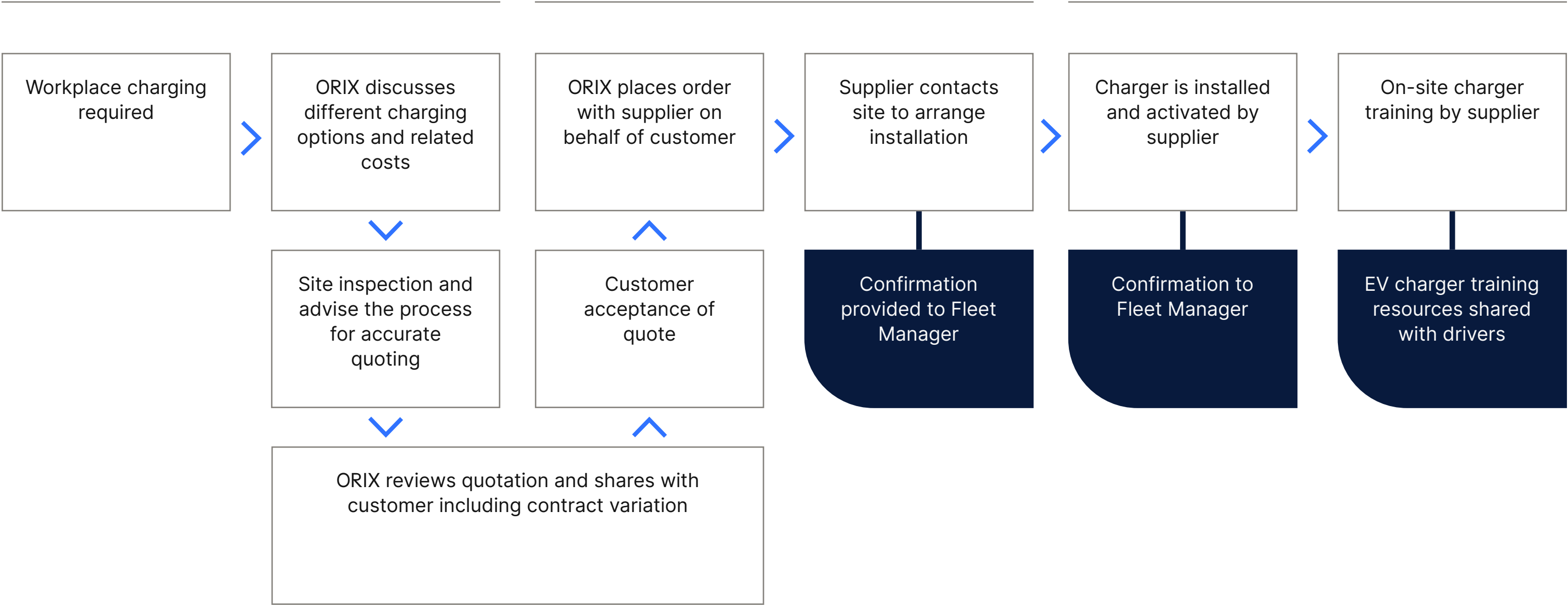
- Scoping of the workplace needs to occur before a charging solution can be recommended - this often involves data logging to measure the electricity and consumption
- This is an important step to determine whether there is any spare capacity to install EV chargers
- The further away you install the chargers from the electrical board, the more expensive it becomes
- Any civil work will increase the installation costs
- Need to consider carpark markings and notice boards i.e. “EV Only”



# Workplace charging



➤ Discover                      ➤ Develop                      ➤ Deploy



# Public charging on the ChargeNet network

## ORIX drivers are supplied with a ChargeNet RFID tag

- The ChargeNet network consists of over 280 vehicle charging stations nationwide
- Drivers can use the ChargeNet app to locate chargers and view their availability in real time
- Charging session easily activated by drivers swiping an RFID tag



## Costs

- Public charging can be more expensive than charging at home or work
- 25 - 50kW DC chargers: up to 80c per kWh
- 75kW and above DC chargers: up to \$1 per kWh
- Idle fees: \$1 per minute if vehicle remains at charging unit after the charging session
- The cost of any charging on the ChargeNet network will automatically be added to your consolidated monthly invoice





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