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visionmelb

Rebuilding Melbourne for a sustainable future.



ACKNOWLEDGEMENT OF COUNTRY



I acknowledge the Traditional Owners of the land on which we are meeting. I pay my respects to their Elders, past and present, and the Aboriginal Elders of other communities who may be here today.



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INTRODUCTION

Melbourne's population is predicted to reach 5.9 million by 2030.

In 2030, the city of Melbourne will be a **greener**, **safer**, and more **inclusive** version of present day. The challenges that plague Melbourne today will be like a bad dream of the past. The 17 Sustainable Development Goals laid out by the United Nations will act as navigating stars to overcome these challenges.

The suburbs are expanding at a rapid pace without many amenities (also called **urban sprawl**). Suburb dwellers are forced to rush to the CBD for jobs, business, recreation, and events. This situation is choking roads and increasing congestion in the CBD.

In light of this a two-pronged comprehensive city and community planning solution is pitched in this report — **Community +**. **Community +** aims to address the needs of Melbournians both in the CBD and far suburbs to ensure increased mobility and connectivity. This calls for tailored solutions addressing the needs of suburban dwellers in terms of access to essentials and the infrastructure to make them available, and a different set of solution for CBD dwellers. The core mission of the **Community +** solution is to reduce traffic congestion, bridge inequalities, improve public transport, improve access to essentials, and shared living and growth. **Sustainability** lies at the heart of this solution, keeping in mind the UN's SDG vision for 2030.

Source:

[1] Infrastructure Victoria. (2022). *Three big problems that are getting worse*. InfrastructureVictoria.com. <https://www.infrastructurevictoria.com.au/report/2-three-big-problems-that-are-getting-worse/>



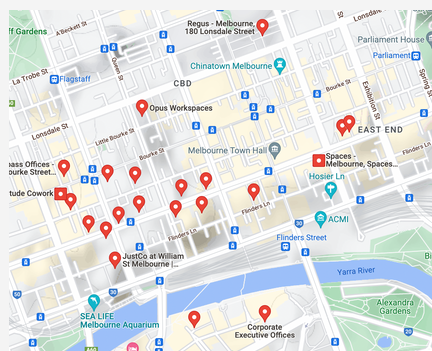
Challenge 1

URBAN SPRAWL

In 2016, outer suburban areas accounted for 46.6% of Melbourne's population [2]. Even though suburbs have the highest population growth rates, they lack many amenities. This incentivizes people to flock towards the central city, or CBD.

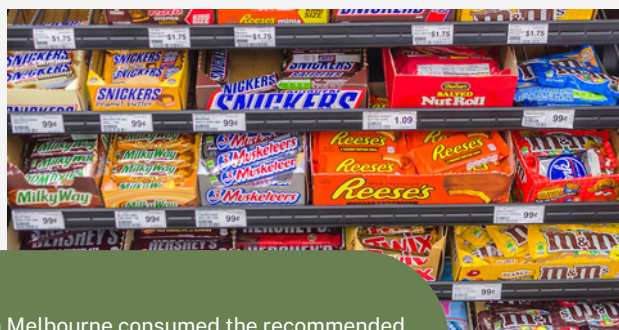
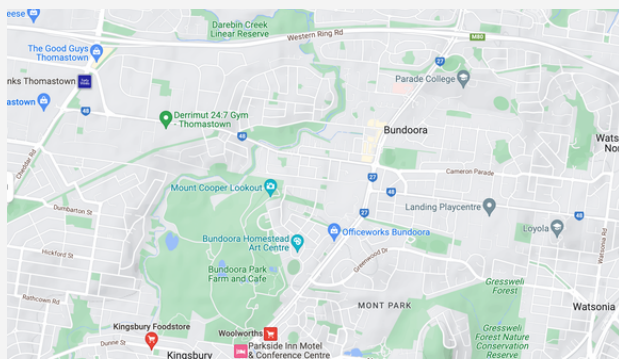
JOBS

- Most large companies, state government offices are located in the CBD.
- Average commute distance to work = 17 kms. [3]
- 30 hours per week spent on the road due to traffic congestion.



All locations pinned as red are office buildings and coworking spaces in Melbourne CBD, within an area of 4.5 sq. km. (Google Maps, 2022)

In Bundoora suburb, only 1 Woolworths is present in an area of 36 sq. km. (Google Maps, 2022)



7%

Adults in Melbourne consumed the recommended daily intake of 2 serves of fruit and 3 serves of vegetable (2020). [5]

HEALTHY FOOD OPTIONS

- Food insecurity rose to 33% in 2020 affecting low-income, marginalized communities disproportionately. [4]
- Supermarkets in the outer suburbs are far and few, often lacking access to fresh produce. These 'food deserts' push Melbournians toward unhealthy takeaway options.
- Supermarkets tend to push sugary drinks and candies for higher profits.
- Everyday foods like milk, cereal, bread, etc are wrapped in plastic adding to the plastic crisis. Less than 12% of plastic is recycled in Australia. [6]



2 out of 3

Australians were overweight or obese (2016-17)

Source:

[2] Brain, P., Stanley, J., Stanley, J. (2019). *Melbourne: How Big*. University of Melbourne. <https://sustainable.unimelb.edu.au/publications/research-papers/melbourne-how-big>

[3] Victoria Government. (2013). *Travel in Metropolitan Melbourne*. Transport.vic.gov.au. <https://transport.vic.gov.au/-/media/tfv-documents/vista/vista-2013-travel-in-metropolitan-melbourne-pdf.pdf>

[4], [5] Government of Victoria. (2022). *Food Security*. Melbourne.vic.gov.au. <https://www.melbourne.vic.gov.au/SiteCollectionDocuments/hwp-food-security.pdf>

[6] World Wildlife Fund. *Get Involved - Plastics*. WWF.org.au. <https://www.wwf.org.au/get-involved/plastics#gs.f47tji>

Challenge 1

URBAN SPRAWL

ALIENATION

- Outer suburbs designed to own cars means lack of "accidental encounters" with neighbors.
- Building parks, waterways are not enough for engaging people.
- The elderly feel disconnected and detached due to poor public transport.



PUBLIC TRANSPORT

- Most tram/metro routes are designed to converge in the CBD.
- Poor connectivity for inter-suburb travel. 3% journeys to work 5 kms outside the CBD were done by PT. [7]
- 70% of peak buses services run at less than one-third of their capacity due to poor frequency. [8]

ENERGY

- The energy market is dominated by the triopoly of 'gentailers'. 85% of Australia's energy is generated by fossil fuel power plants.
- Constructing large power plants and distribution systems is capital intensive.
- Longer distances means higher power losses and maintenance costs.



Source:

[7] Victoria Government. (2013). Travel in Metropolitan Melbourne. Transport.vic.gov.au. <https://transport.vic.gov.au/-/media/tfv-documents/vista/vista-2013-travel-in-metropolitan-melbourne-pdf.pdf>

[8] Government of Victoria. (2022). Food Security. Melbourne.vic.gov.au. <https://www.melbourne.vic.gov.au/SiteCollectionDocuments/hwp-food-security.pdf>

Visualising Solution 1

SELF-SUSTAINING SUBURBIA

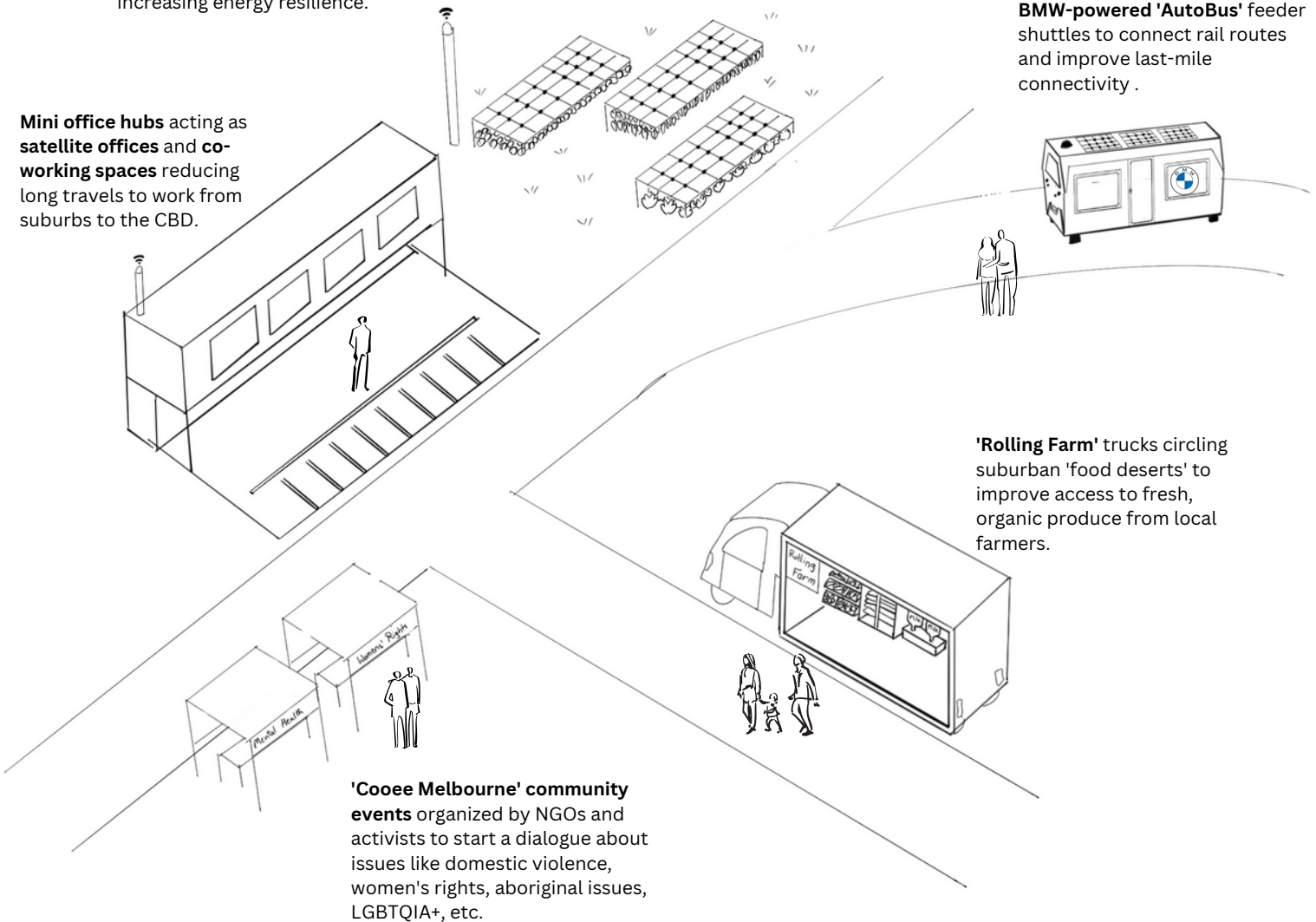
Suburbs in 2030, will be have everything the CBD has to offer and more. Attractive, connected, and self-reliant communities will reduce the need to travel to the CBD.

Decentralized energy systems to generate and distribute **100% renewable energy** locally and increasing energy resilience.

Suburban community gardens to **sustainably** grow seasonal, healthy, local produce and enable bonding.

BMW-powered 'AutoBus' feeder shuttles to connect rail routes and improve last-mile connectivity .

Mini office hubs acting as **satellite offices** and **co-working spaces** reducing long travels to work from suburbs to the CBD.



'Cooee Melbourne' community events organized by NGOs and activists to start a dialogue about issues like domestic violence, women's rights, aboriginal issues, LGBTQIA+, etc.



Self-sustaining suburbia

BENEFITS + IMPACT




PUBLIC MOBILITY | SUSTAINABILITY

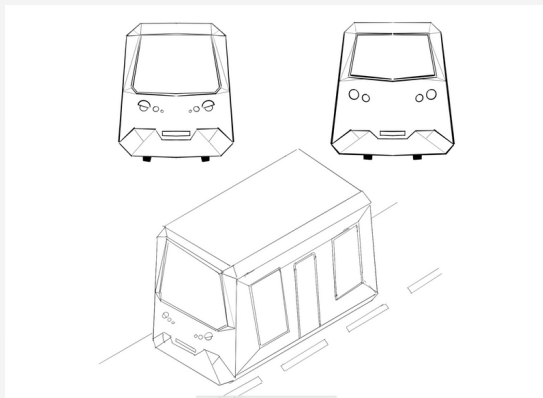
AUTOBUS

Features

- Electric, autonomous feeder shuttles will be deployed as a **Mobility-as-a-Service (MaaS)** public transport solution to weave different rail routes into a web-like network.
- Operating within a very short distance (2-5 kms) would mean **negligible waiting times (<5 mins)** to seamlessly connect two rail routes.
- Captained by **level-5 automation** algorithms, shuttles would optimize routes in real-time based on passenger location, traffic conditions, traffic signal timing, etc.

Benefits

-  Reduced travel time → Increased public transport ridership → Reduced road congestion
-  Advanced algorithms will enable door-step pickup/drop — bringing public transport to Melbournians and not the other way around.
-  More accessible, sustainable, faster mode of travelling.






ROLLING FARM TRUCKS

Features

- The Rolling Farm will be like an ice-cream truck but for groceries. These mobile minimarkets would be parked in different locations across Melbourne and will circle back regularly.
- Parking time and locations would be **optimized** according to supermarket proximity, consumer demand.
- **Refill stations** for common foods like milk, cereal, bread to reduce plastic packaging waste.
- Partner with local farmers and communal gardens like **Kensington Stockyard Food Garden**.

Benefits

-  Improved access to fresh, healthy and local organic produce.
-  Reduced plastic pollution and emissions as shoppers can walk down for groceries
-  Stronger sense of community due to increased 'accidental encounters' with neighbors



Self-sustaining suburbia

BENEFITS + IMPACT



PRIVATE MOBILITY | SUSTAINABILITY | CONNECTIVITY | URBAN PLANNING

DECENTRALISED ENERGY SYSTEMS

Features

- Renewable energy sources like wind/ solar farms closer to the site of consumption.
- IoT-powered energy systems will self-optimize energy generation according to demand.

Benefits

-  Disaster-resilient decentralized energy infrastructure
-  More efficient, low maintenance, and robust clean energy





SUBURBAN COMMUNITY GARDENS

Features

- Enriched by household compost to increase soil quality.
- Run by volunteers and gardening enthusiasts of all ages.

Benefits

-  Lower greenhouse emissions due to local composting and lower food transport miles.
-  Improved micro-climate and biodiversity.





MINI OFFICE HUBS

Features

- Satellites offices of large companies and government bodies located near residential areas.
- People can walk, cycle to nearby mini hubs.

Benefits

-  Reduced load on roads and public transport
-  Improved access to decent jobs in low-income areas





'COOEE MELBOURNE' EVENTS

Features

- Closed streets on weekends for fun, thought-provoking events.
- Partner with NGOs, yoga/dance studios, music bands.

Benefits

-  Community education on issues like domestic violence, aboriginal wellbeing, climate change.
-  Strengthened community ties and belonging to the city



Challenge 2

GRIDLOCKED CBD

Melbourne CBD is the city's business and finance hub and attracts inflow of citizens from surrounding suburbs due to better access to commercial spaces and amenities. Due to increased flow of traffic and vehicles, it is essential for the CBD zone to develop sustainable and future-forward infrastructure, while also improving personal mobility by improving peoples' walkability.



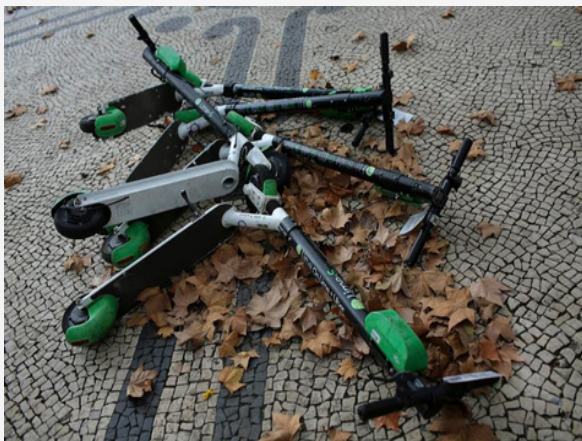
WIRELESS CHARGING

- If the future of mobility is autonomous, the future of charging is wireless. Installing wireless EV chargers on **more than 220,000 parking spaces** in Melbourne will be expensive.
- Only **3,000 public EV chargers** cover 7.92 million square kms in Australia leading to low EV sales.

[9]

SHARED MICRO-MOBILITY

- Shared micro-mobility services like Neuron and Lime improve door-to-door connectivity but are far from perfect.
- Incorrectly parked e-scooters/ bikes obstruct footpaths for pedestrians and are hazards for visually impaired walkers.
- Scattering and charging these scooters/ bikes is a time-consuming human task.



Source:

[9] Savvy.com. (2022. *Australian Electric Vehicle Charging Points: Do we have enough?*. [www.savvy.com. https://www.savvy.com.au/media-releases/australian-electric-vehicle-charging-points-report-do-we-have-enough-2022/#:~:text=To%20cover%20the%20whole%207.692,40%20destination%20chargers%2C%20Australia%20wide](https://www.savvy.com.au/media-releases/australian-electric-vehicle-charging-points-report-do-we-have-enough-2022/#:~:text=To%20cover%20the%20whole%207.692,40%20destination%20chargers%2C%20Australia%20wide)

The Challenges - II

GRIDLOCKED CBD



2.5 million tonnes

of greenhouse gas emissions released due to food wastage in Melbourne. [8]

FOOD WASTAGE

- Melbourne wastes **900,000 tonnes** of edible food every year. Enough to feed 2,000 people.
- This wasted food uses **180 gegalitres** of water and 3.6 million hectares of land to grow.
- Restaurants and supermarkets throw away food that does not sell during the week as they are unable to find any takers.

COMMUNITY PARTICIPATION

- Thousands of international students and immigrants move to Melbourne every year.
- Percentage of people who support a sports team and volunteer is dropping. [10]



Source:

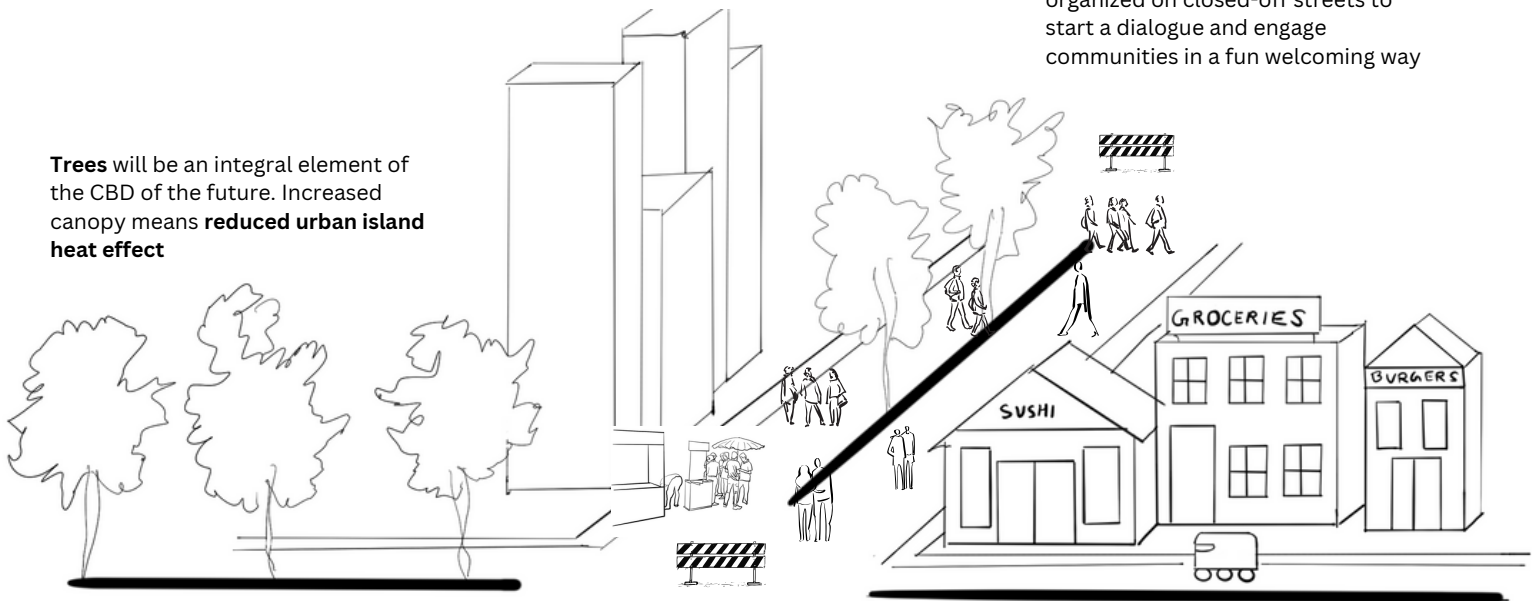
[10] Dow, A. (2015). The 20 things that threaten Melbourne's livability. The Age. <https://www.theage.com.au/national/victoria/the-20-things-that-threaten-melbournes-liveability-20150604-ghh4cj.html>

Visualising the Solution - II

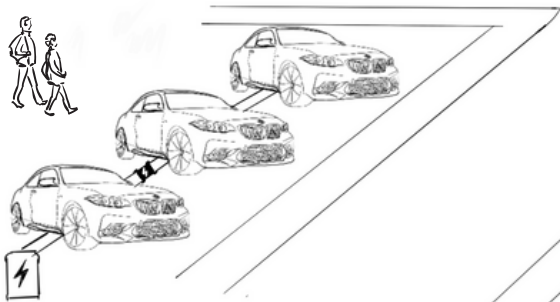
CBD OF THE FUTURE

Apart from car-free zones, green patches, rooftop solar, Melbourne CBD will be an inclusive and future-ready region. Technologies of the future will solve challenges that hold Melbourne back.

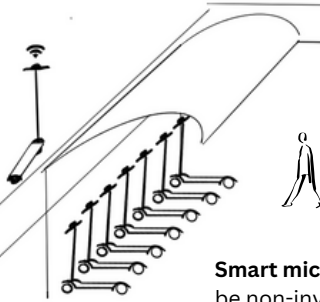
Trees will be an integral element of the CBD of the future. Increased canopy means **reduced urban island heat effect**



'Cooee Melbourne' events organized on closed-off streets to start a dialogue and engage communities in a fun welcoming way



AmpedUp charging hubs - A cost effective solution to wirelessly charge autonomous EVs.



Self-driving e-scooters summoned using a mobile app and will return to its charging hubs when the trip ends.

'Food Retriever' robots will collect **extra food** based on inputs from restaurant/supermarkets and deliver it to people in need.

Smart micro-mobility will be non-invasive charging spots for self-driving e-scooters/bikes



BENEFITS + IMPACT




PRIVATE MOBILITY | SUSTAINABILITY

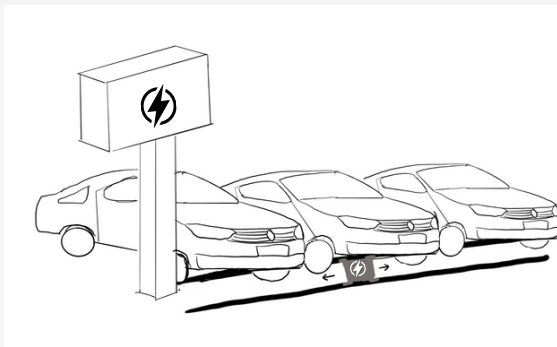
'AMPEDUP' CHARGING HUBS

Features

- Designed to work seamlessly with autonomous electric vehicles. Will work on the "One Strip, One Charger" design.
- One Strip, One Charger is a charging infrastructure design where in, one moving smart coil would wirelessly charge a strip of parked cars.
- The smart coil would optimize charging schedule according to data provided the car owner like current battery charge, estimated parking duration, required charge, etc.

Benefits

-  Massive reduction in wireless charging installation costs. Cost of a wireless charger = ~A\$7,000
-  Vehicle-to-Grid (V2G) discharge during peak load hours without human intervention.
-  Prolonged EV battery life due to slower charging rates (compared to DC superchargers)






'FOOD RETRIEVER' ROBOTS

Features

- Restaurants and supermarkets will input the estimated food wastage on an app. Autonomous food retriever robot will collect the extra food and distribute them to areas in need without human intervention.
- Advanced AI algorithms will plan the collection route based on quantity/type of food, store location & destination.

Benefits

-  Reduced food wastage translates to lower water and land usage
-  Affordable healthy options for low-income communities
-  Reduced greenhouse gas emissions by stopping food ending up in landfills



BENEFITS + IMPACT

PRIVATE MOBILITY | CONNECTIVITY

SMART MICROMOBILITY

Features

- Self-driving e-scooter/bikes will be summoned on prompts through on app when need to use arises.
- Ability to self-travel to solar-powered charging hubs when the trip ends.

Benefits



Free up the streets of Melbourne for pedestrians



Greater ridership due to scattering (near stations in morning and offices in evenings)



e-scooters/bikes charging hubs powered by 100% renewable energy



'COOOE MELBOURNE' EVENTS

Features

- Closed streets on weekends for fun, thought-provoking events.
- Partner with NGOs, activists, yoga/dance studios, music bands, fitness centers.

Benefits



More no-traffic space in cities promotes walkability.



Deeper sense of community is fostered, promoting connectivity amongst people.



Increased awareness and education around socio-economic problems.

