

RV2035

Escape Into Nature

In an increasingly urban future punctuated by congestion, severe weather events, and the occasional pandemic, natural experiences will become ever more necessary - to connect, reflect, grow, and heal.

Some will seek a more resilient and empowering lifestyle, unshackled from skyrocketing costs of living and the aging infrastructures that rely on fossil fuels. A mobile lifestyle will become more desirable and commonplace, for short-term escapes or for years at a time. These "**Nomads**" will require mastery of their resources and more efficient modes of travel, moving in and out of communities as their needs evolve.

This project proposes a design for a near-future towable trailer that loves nature back. Model #2035 is a closed-loop RV that harvests all of its own water and energy, deploying them in an interactive and conservative fashion. Designed from the ground up for a leasing model, it's composed of recyclable materials and serviceable components that dramatically improves the vehicle's useful life and re-manufacturability. It targets a younger, more urban customer than the traditional RV industry, providing an accessible outdoor retreat and escape from high-consumption behaviors. It has been designed for rapid setup / takedown, resource stewardship, and low environmental impact.

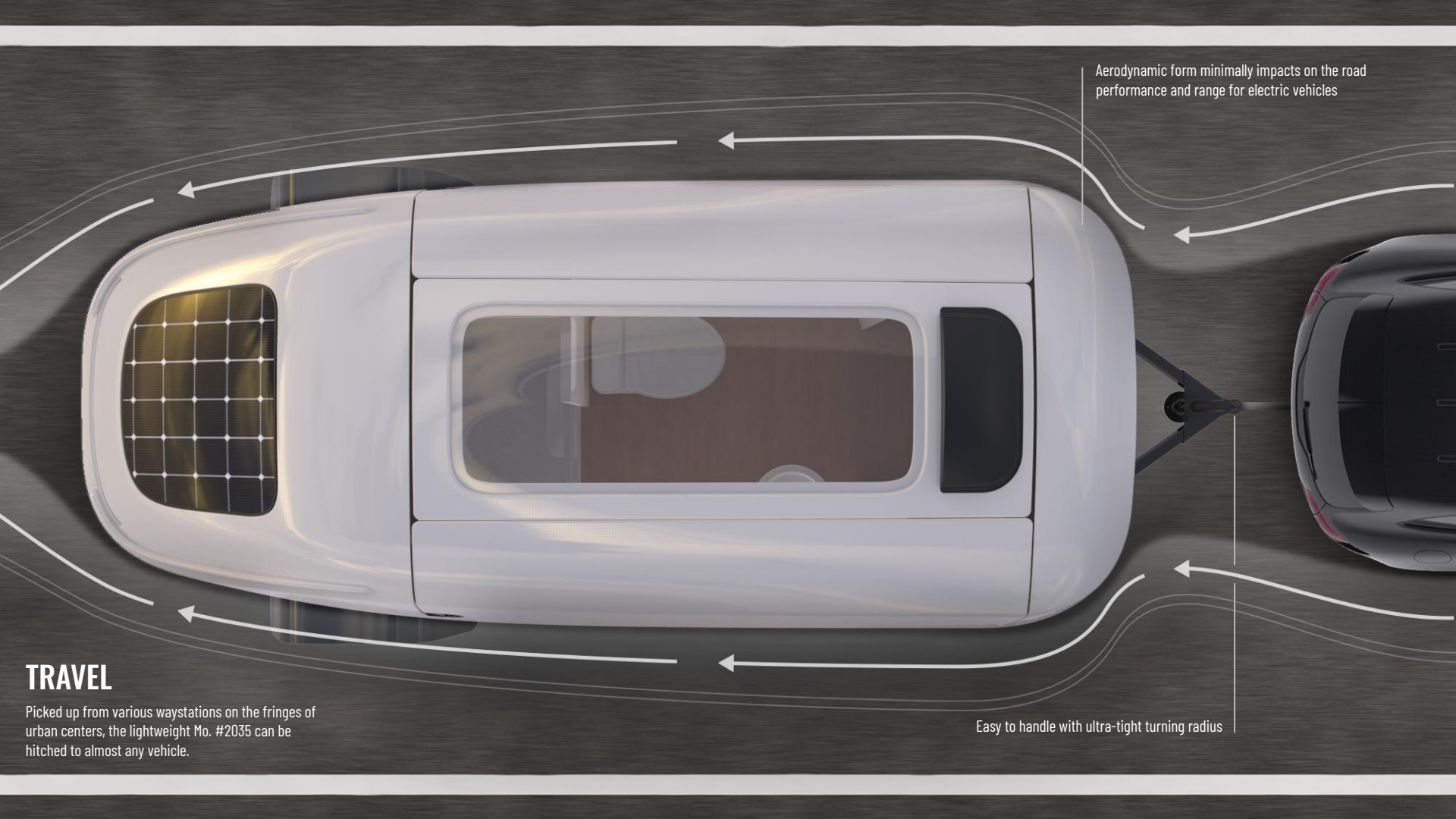
In this storyboard, I invite you to join these Nomads on one of their journeys with **Model #2035**.





Model #2035

Compact, adaptable, and quick to deploy. Go from the road to shelter **in seconds...**

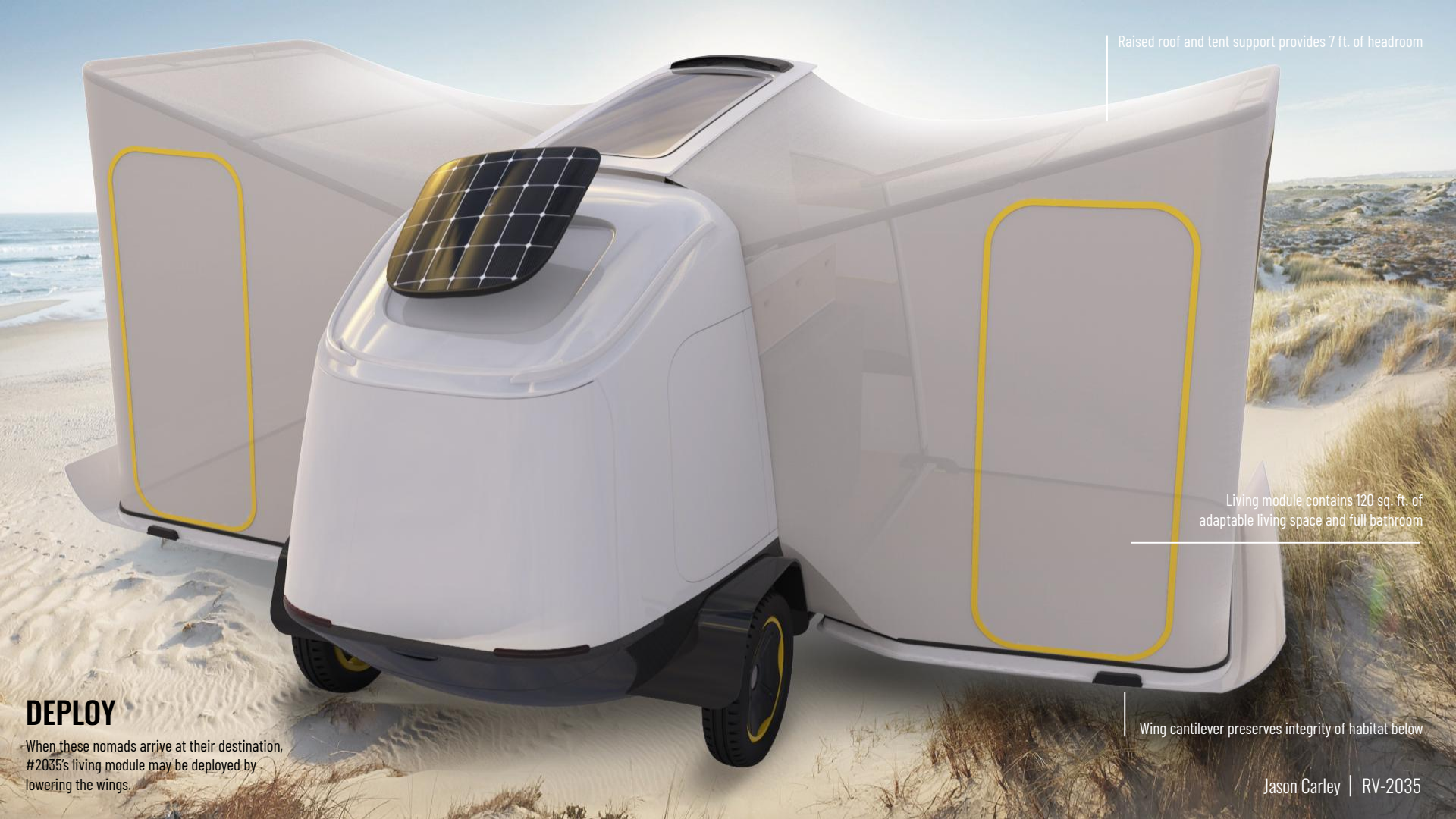


Aerodynamic form minimally impacts on the road performance and range for electric vehicles

TRAVEL

Picked up from various waystations on the fringes of urban centers, the lightweight Mo. #2035 can be hitched to almost any vehicle.

Easy to handle with ultra-tight turning radius




Raised roof and tent support provides 7 ft. of headroom

Living module contains 120 sq. ft. of adaptable living space and full bathroom

Wing cantilever preserves integrity of habitat below

DEPLOY

When these nomads arrive at their destination, #2035's living module may be deployed by lowering the wings.



Unzippable window flaps with screen welcomes air and the sounds and scents of nature

Kitchenette located outside the vehicle in public/private setting that serves as front porch and water cooler

PLAY

During the daytime, the two rooms on either side of the trailer offer respite from the elements, privacy to work or relax, and a place to socialize.

Hand-pump faucet and 9" wide sink

Insulated cooler drawer with integrated ice-maker

62%	4 Hours	Today	Tomorrow

The induction cooktop's backlit display informs battery status, time of use remaining, and when a solar recharge is likely to occur

NOURISH

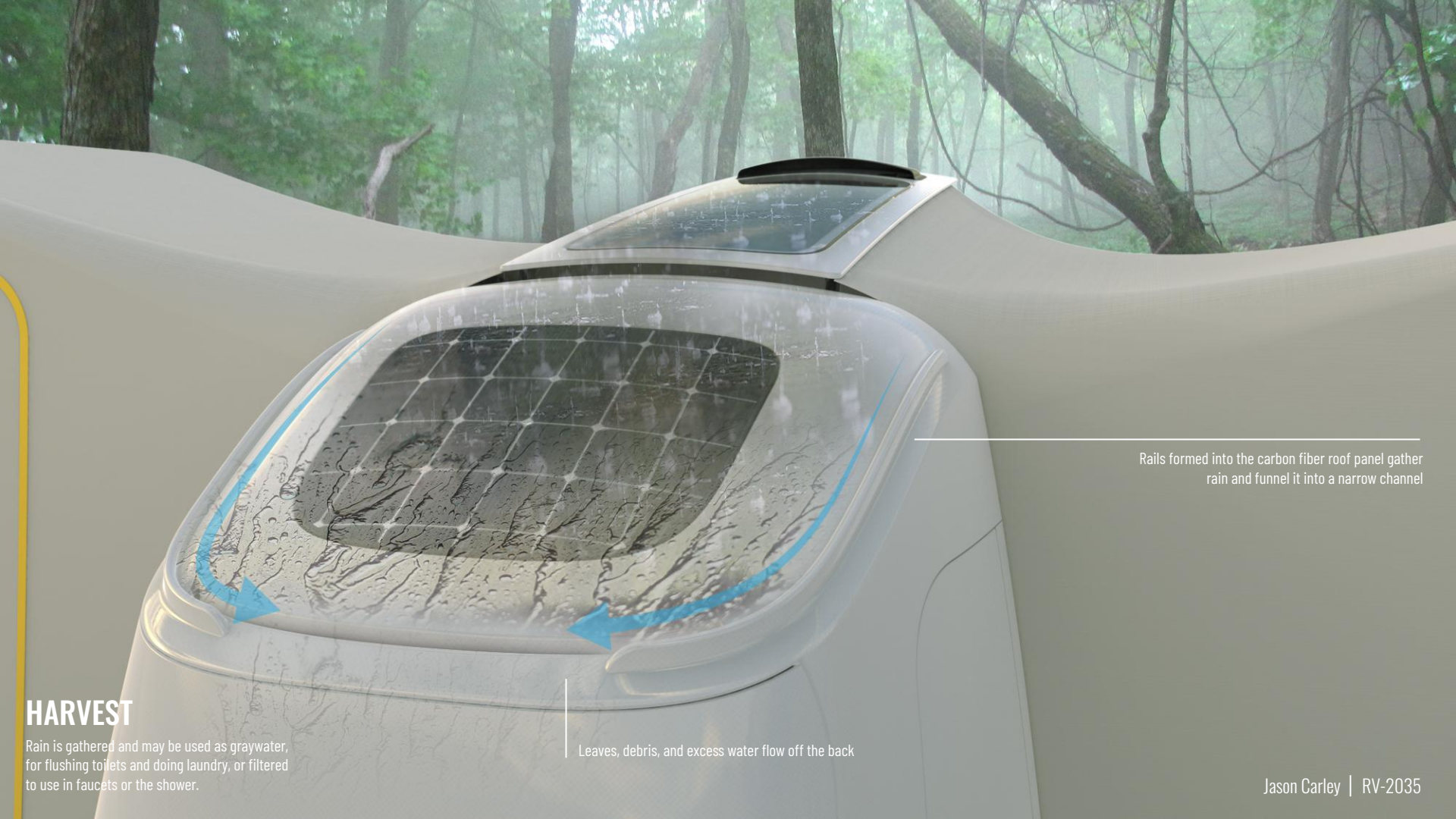
#2035's Kitchenette is designed for practicality and efficiency; with an open work surface and a durable composite console, everything they need is close at hand.



HARVEST

The nomads rely on solar energy for all their living needs. Like horse-carts and coal, propane is a relic of the past.

A motorized bracket passively tracks the movement of the sun, ensuring the solar array is always at its optimal angle of incidence.




HARVEST

Rain is gathered and may be used as graywater, for flushing toilets and doing laundry, or filtered to use in faucets or the shower.

Leaves, debris, and excess water flow off the back

Rails formed into the carbon fiber roof panel gather rain and funnel it into a narrow channel



Proximity-controlled
wayfinding light

Mattress unit and mounting hardware is
modularized, allowing for a queen-sized
bed, convertible sofa, or two twin cots.

REST

At night, #2035 may stowed and shut to improve insulation. Sleeping in comfort and off the ground offers a restorative night's sleep that boosts trip longevity.

Floor plan allows each sleeper to use the bathroom
without disturbing the other partner.

Translucent light-well fabric distributes daylight while offering privacy and retaining moisture

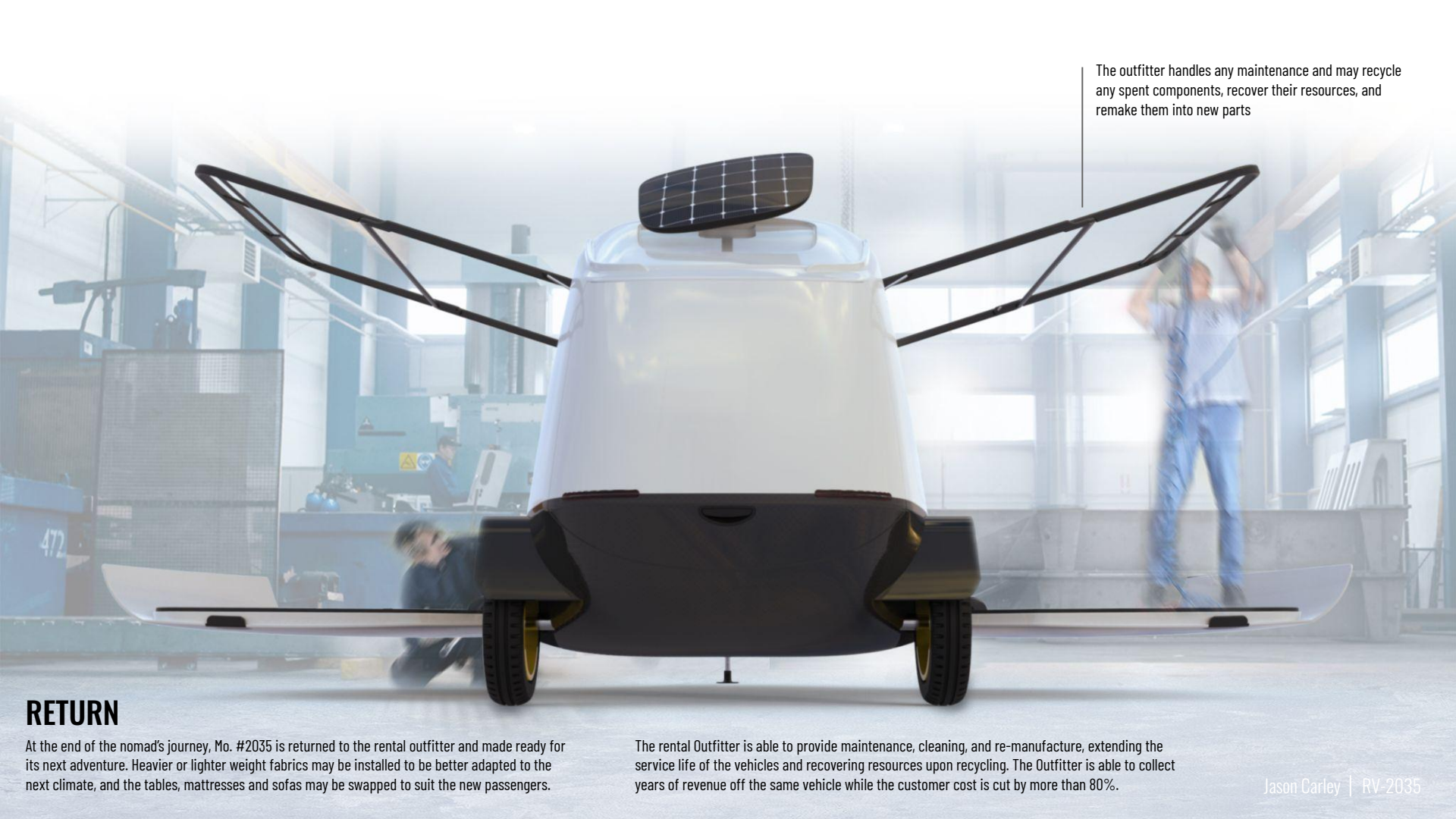
A backlit display panel is mounted on the wall of the shower. It features a header with four icons: a water drop, a sand timer, a sun behind a cloud, and a cloud with rain. Below the header, the display is divided into four columns. The first column shows '49% / 12G' with a water drop icon. The second column shows '13 Mins' with a sand timer icon. The third column shows 'Today' with a sun behind a cloud icon. The fourth column shows 'Tomorrow' with a cloud and rain icon.

49% / 12G	13 Mins	Today	Tomorrow

Backlit display shows real-time water inventory and when it may be naturally replenished. It may be programmed to shut off when thresholds are hit or based on a countdown timer.

REFRESH

To clean up after a day outdoors or to rejuvenate in the morning, a misting showerhead provides steamy refreshment with a low flow-rate.



The outfitter handles any maintenance and may recycle any spent components, recover their resources, and remake them into new parts

RETURN

At the end of the nomad's journey, Mo. #2035 is returned to the rental outfitter and made ready for its next adventure. Heavier or lighter weight fabrics may be installed to be better adapted to the next climate, and the tables, mattresses and sofas may be swapped to suit the new passengers.

The rental Outfitter is able to provide maintenance, cleaning, and re-manufacture, extending the service life of the vehicles and recovering resources upon recycling. The Outfitter is able to collect years of revenue off the same vehicle while the customer cost is cut by more than 80%.

SYSTEMS

Structure



The outer structure of the trailer is made from lightweight carbon fiber, a durable material whose cost and recyclability is improving with emerging research. This displaces heavier materials, like lumber and aluminum, which must travel thousands of miles to the factory after being harvested. Currently, RVs are made to order, so there is no standing inventory. With this model, an Outfitter

will have excess inventory to accommodate events (festivals, weddings) and coordinate rallies (habitat cleanups, charity hikes). They can even be used as temporary dwellings for people that lose their homes to coastal flooding or wildfires, or for housing first responders or volunteers for natural or manmade disasters.

SYSTEMS

Materials

Carbon fiber supports

Photovoltaic array

Plastic resin bins, console and
engineered countertop

Recycled denim tent fabric
with hydrophobic coating
Wool inner for insulation

Natural rubber gasket

Sustainable pine flooring

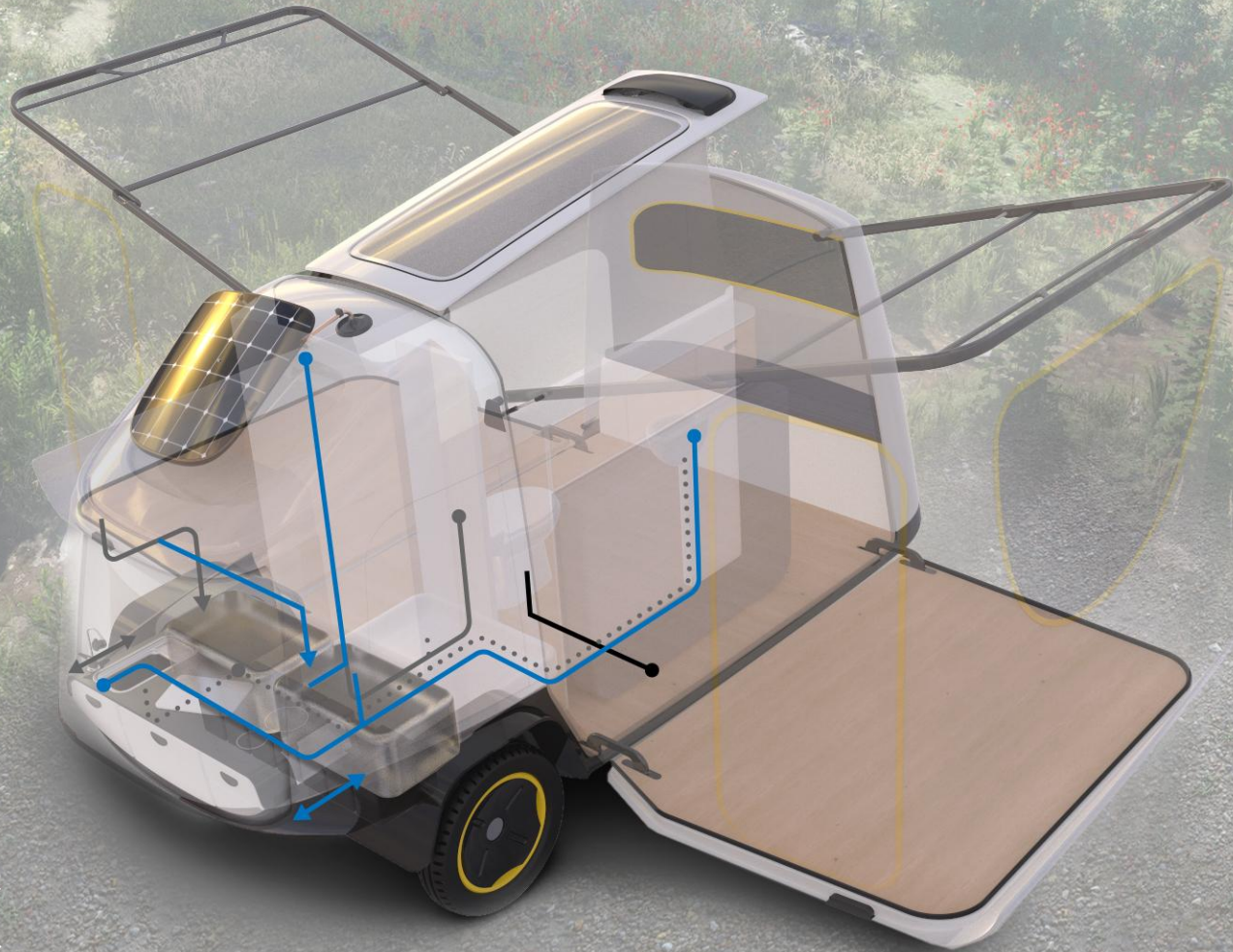
SYSTEMS Layout



The two wings provide for adaptable configurations. Mattresses may fold out from either side and can double as sofa seating for entertainment or media. A tabletop routed from the floorboard may be assembled to create a dining nook or workspace.

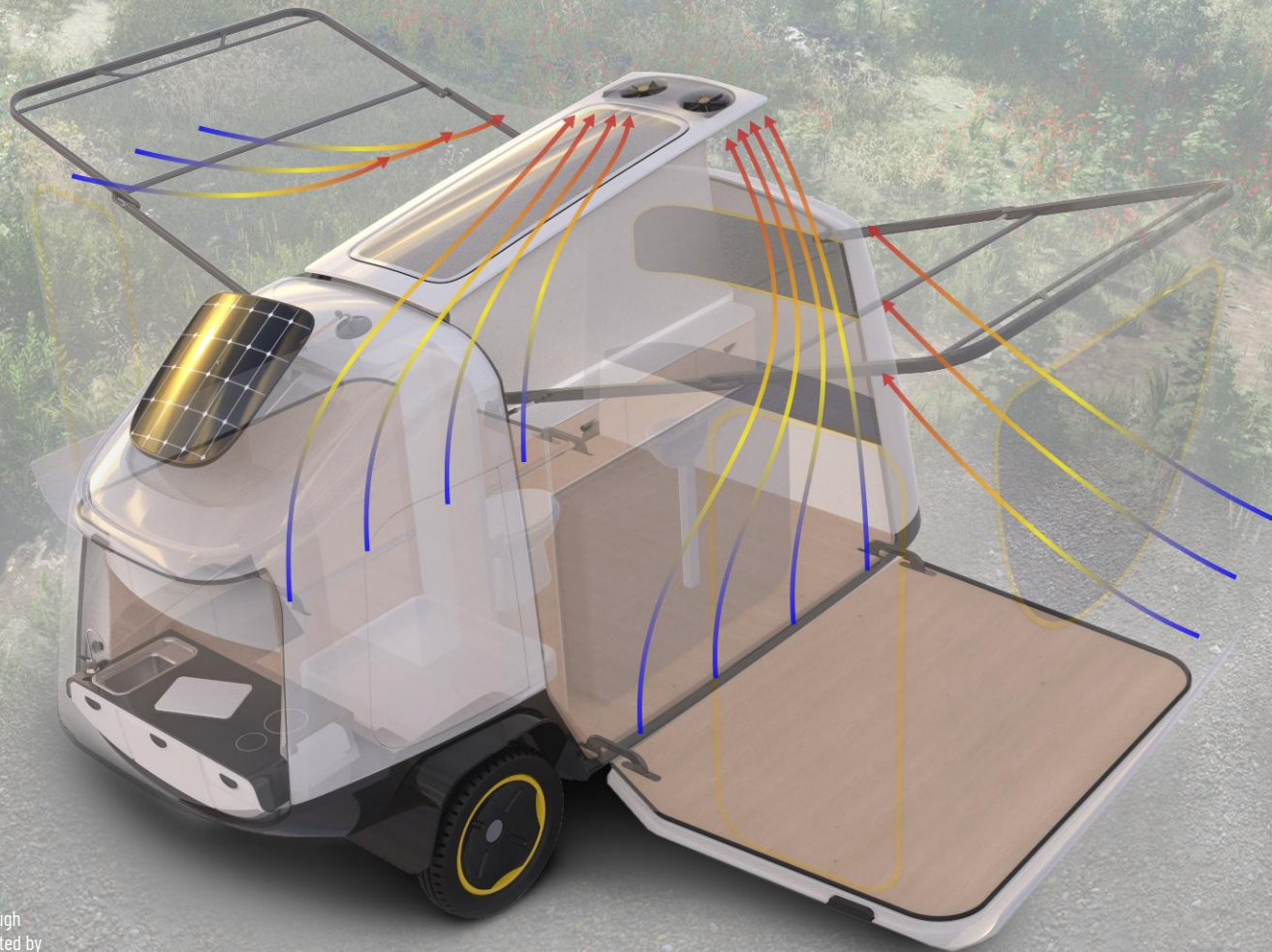
SYSTEMS

Water



The trailer is equipped with two 25G tanks, one for freshwater, shown in blue, and one for greywater. They are fed by the rainwater collection system and augmented by hookups. Plumbing is localized to the rear of the vehicle.

SYSTEMS Cooling



Natural airflow cools the trailer, entering through the wing seams and tent windows and evacuated by two 8" vent fans at the highest point of the tent.

SYSTEMS

Heating



The wing and front panels are heavily insulated with recycled denim and sustainable pine, with multi-layer tent fabrics available for colder climates. Active heating is supplied by a radiant tube, that may be fed from the shower or greywater tank.

RV 2035

Research and Appendices

RESEARCH

Initial Questions

1.

Living Small and Simply

What benefits does small scale living provide?

Can traveling in an RV teach people about sustainable values?

2.

Mobility

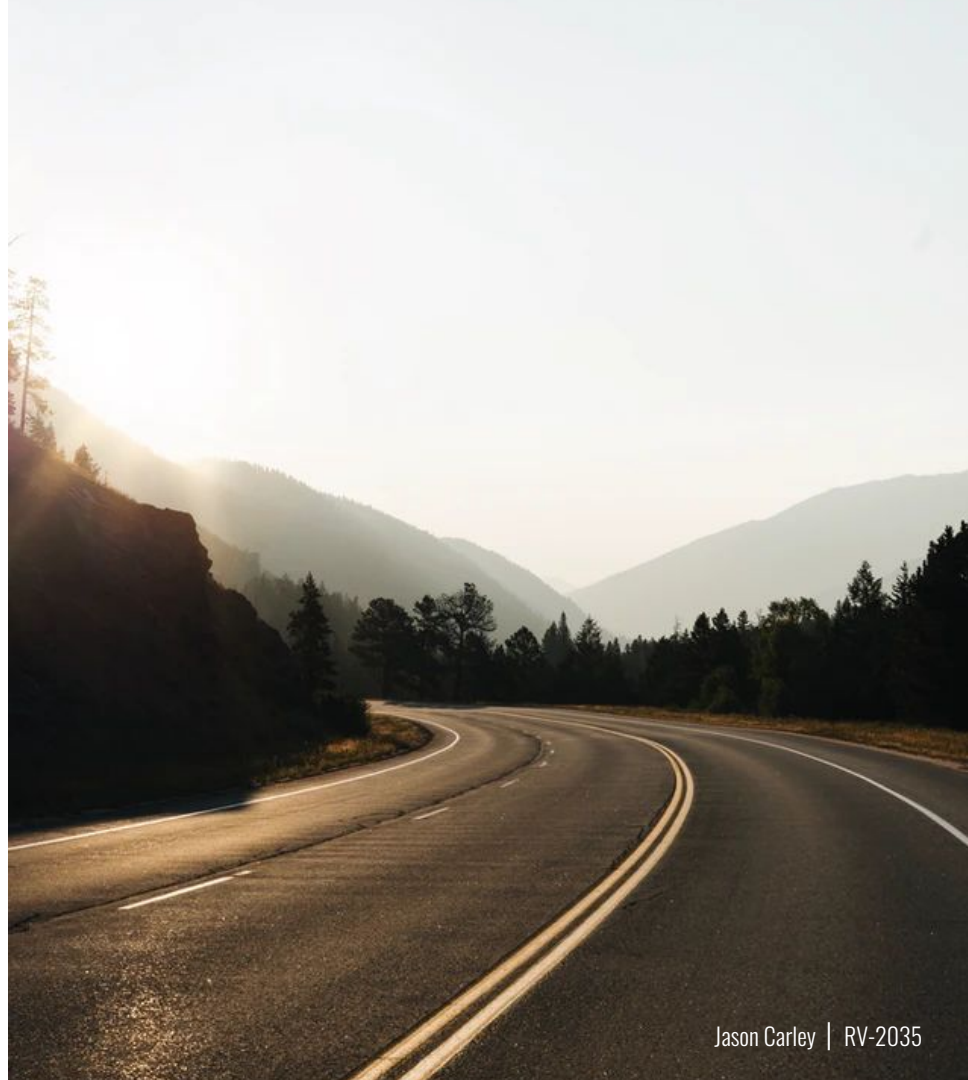
What benefits do travel, mobility, or a nomadic lifestyle provide?

3.

Nature

How does a nature trip / outdoor vacation transform the way we feel?

How long do these effects last?



RESEARCH Approach



Secondary

- Literature Reviews of RV Industry trends
- Online media from campers / builders / influencers
- Manufacturer and Industry benchmarking

Primary

- RV Walkthroughs
- Interviews with RV Industry Professionals
- Concept reviews with campers / RVers

Design

- Sketch exploration of architectures and off-grid features

USER RESEARCH

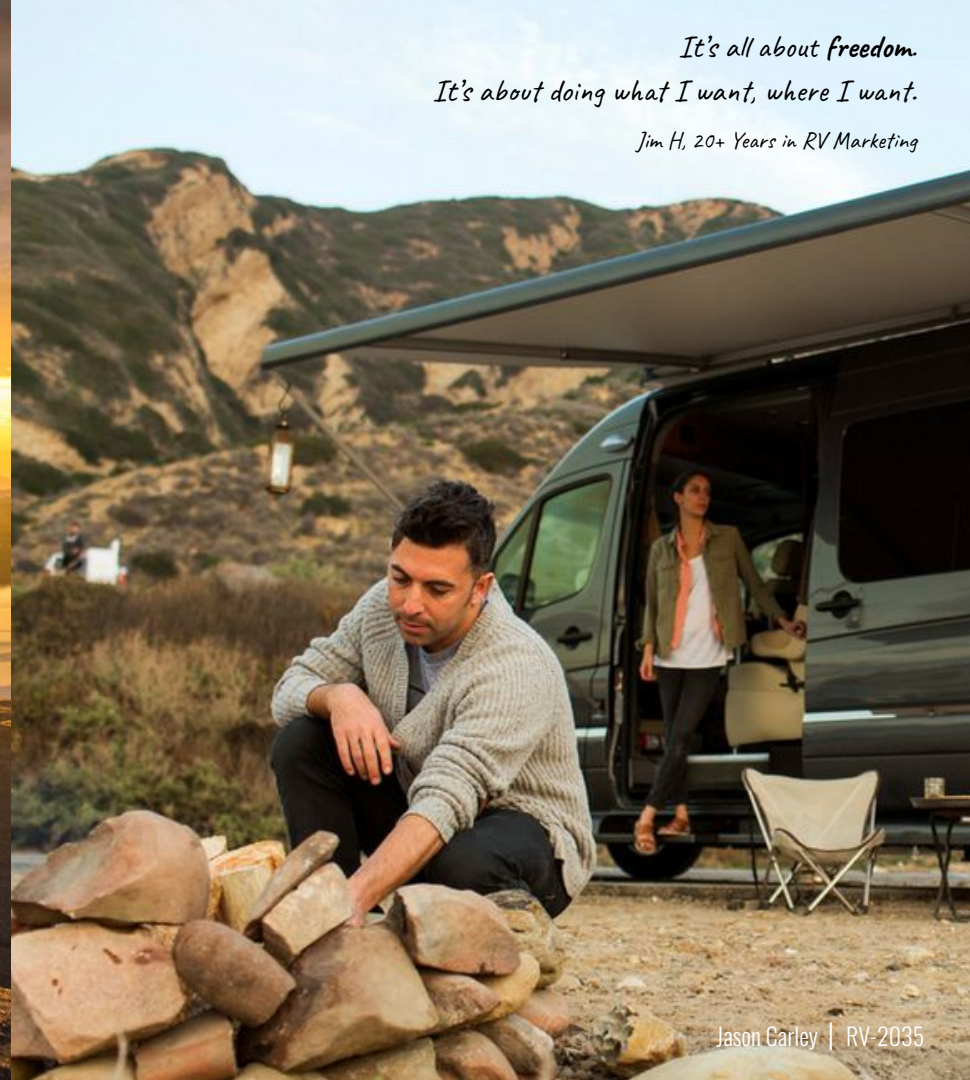
What is the appeal of a Mobile Lifestyle?

*My daughter is 14. I will lose her [to college] in 4 years.
I don't have much time to make memories...*

Rochelle, Recently Purchased RV

*It's all about freedom.
It's about doing what I want, where I want.*

Jim H, 20+ Years in RV Marketing



Jason Carley | RV-2035

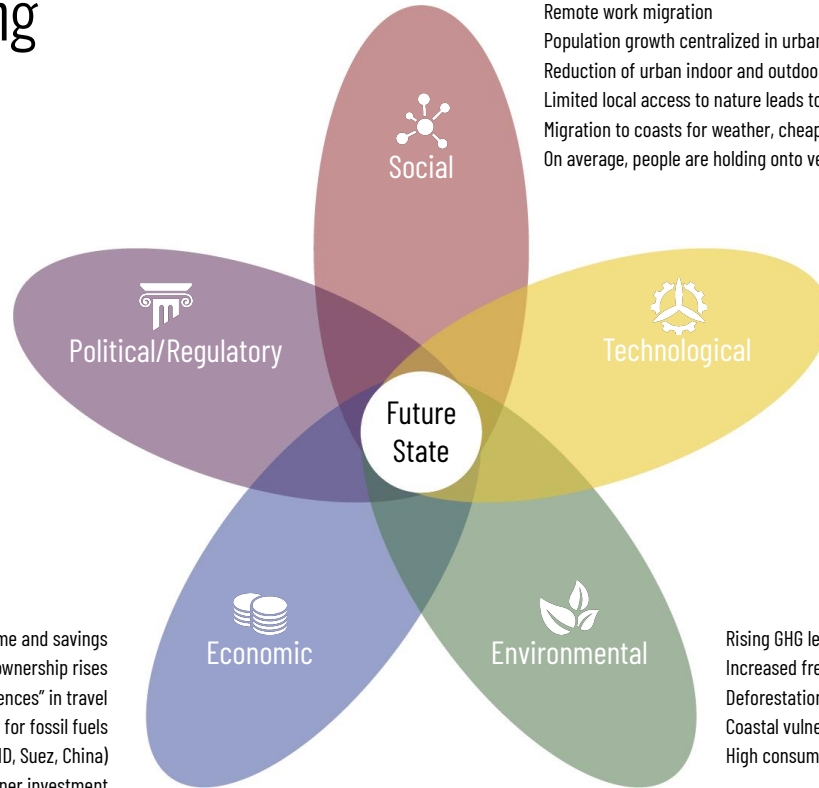
FUTURES

U.S. Trend Forecasting

What will we encounter in
Transportation and Architecture
in 10-15 years?

Global pressures raise likelihood of carbon regulations
Energy efficiency and fuel regulation brought into spotlight
Deeper political divides increase local/state protections (i.e. CA, TX)
Aging infrastructures (highway, stormwater, healthcare)

Increasing wealth gap in income and savings
Shift towards “shared” service models as cost of ownership rises
Rise of “Experiences” in travel
Renewable energy competitiveness drives down demand for fossil fuels
Supply chain insecurity due to global interconnectedness (COVID, Suez, China)
Transparency in ESG metrics to bolster customer loyalty, garner investment
Rising resource costs due to scarcity, global competition

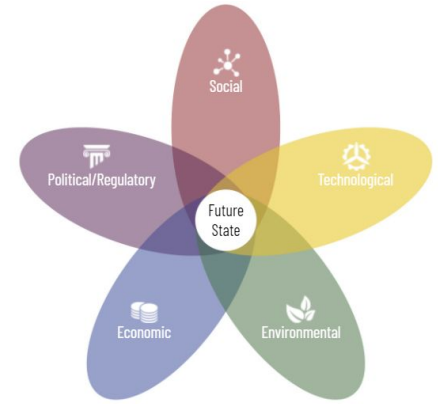


Remote work migration
Population growth centralized in urban cores
Reduction of urban indoor and outdoor living footprints
Limited local access to nature leads to rise in nature travel / retreats
Migration to coasts for weather, cheap housing
On average, people are holding onto vehicles and homes longer than a decade ago

Improving battery energy densities
Expansion of electric infrastructure
Lightweight composites becoming cost effective
Chemical recycling methods developed for composites
Advances of sensor and automation technology

Rising GHG levels brings emphasis to fuel regulation, energy efficiency
Increased frequency of severe storm events affects building codes / insurance
Deforestation and Land-Use-Changes for housing and commercial expansions
Coastal vulnerability to flooding, storm surge, and sea level rise
High consumption of natural / embodied resources among affluent communities

Trend Impact to RV Landscape



Digital Nomad

Experiences > Assets
Rise of the remote workplace, "road-schooling"
Rethink "home"-ownership
Retirees visiting families, bucket-list items (RVIA)
Urban dwellers seeking natural retreats (Getaway.House, Overlander)



Shift to Renewables

Fleet Electrification
Solar ubiquity and cost competitiveness
Disruptions to dated infrastructure
Increasing likelihood of carbon regulation
Power of ESG values to garner customer loyalty and investment (Blackrock, Merck, Tesla)



Circularity

Post-Consumer resource recovery and closed-loop manufacturing (Renault, Subaru)
Sharing economy (Outdoorsy, RVshare)
Responsible sourcing
Inclusive and Accessible Use Models
Membership and Margin as KPI

MARKET RESEARCH

Outdoor and Camping Lodging Options

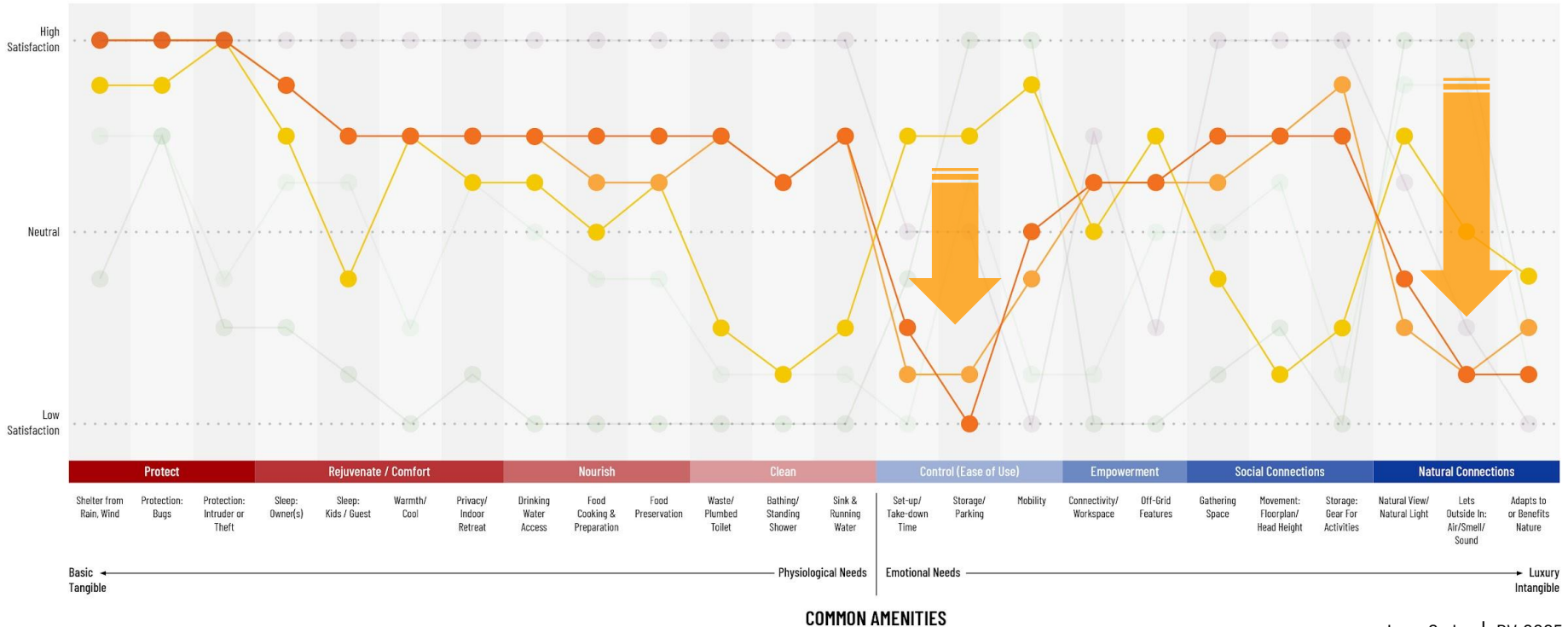
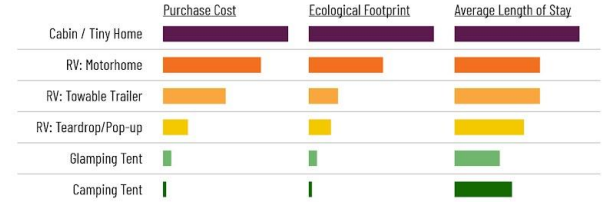


	<u>Purchase Cost</u>	<u>Ecological Footprint*</u>	<u>Average Length of Stay</u>
Cabin / Tiny Home	150K+	180K lbs	5.6 days
RV: Motorhome	100K+	26K lbs (6-8mpg)	3.7 days
RV: Towable Trailer	50K-100K	4K lbs (7mpg loss)	3.7 days
RV: Teardrop/Pop-up	20K	1.2K lbs (3mpg loss)	???
Glamping Tent	1K-3K	200 lbs	2.15 days
Camping Tent	\$60-\$400	5lbs	2.5 days

*Further research needed

MARKET RESEARCH

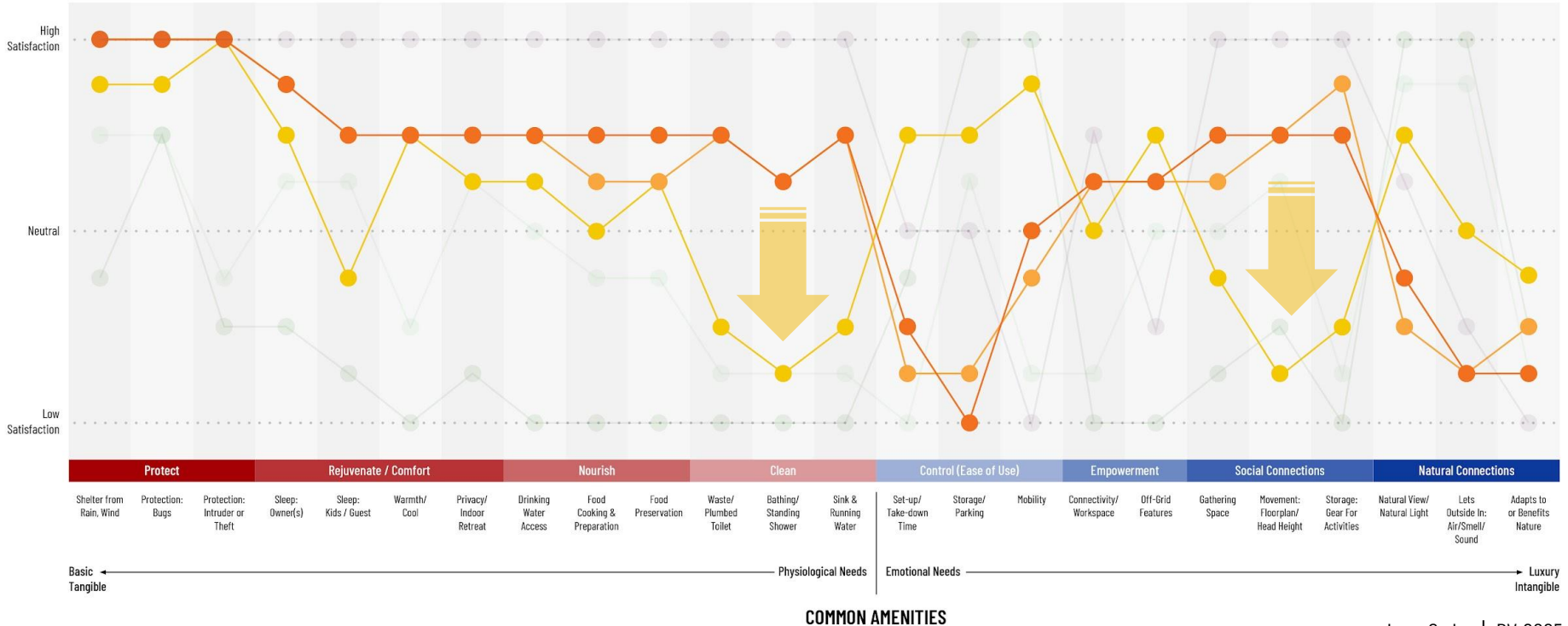
Large RV's more cumbersome, lack natural harmony



MARKET RESEARCH

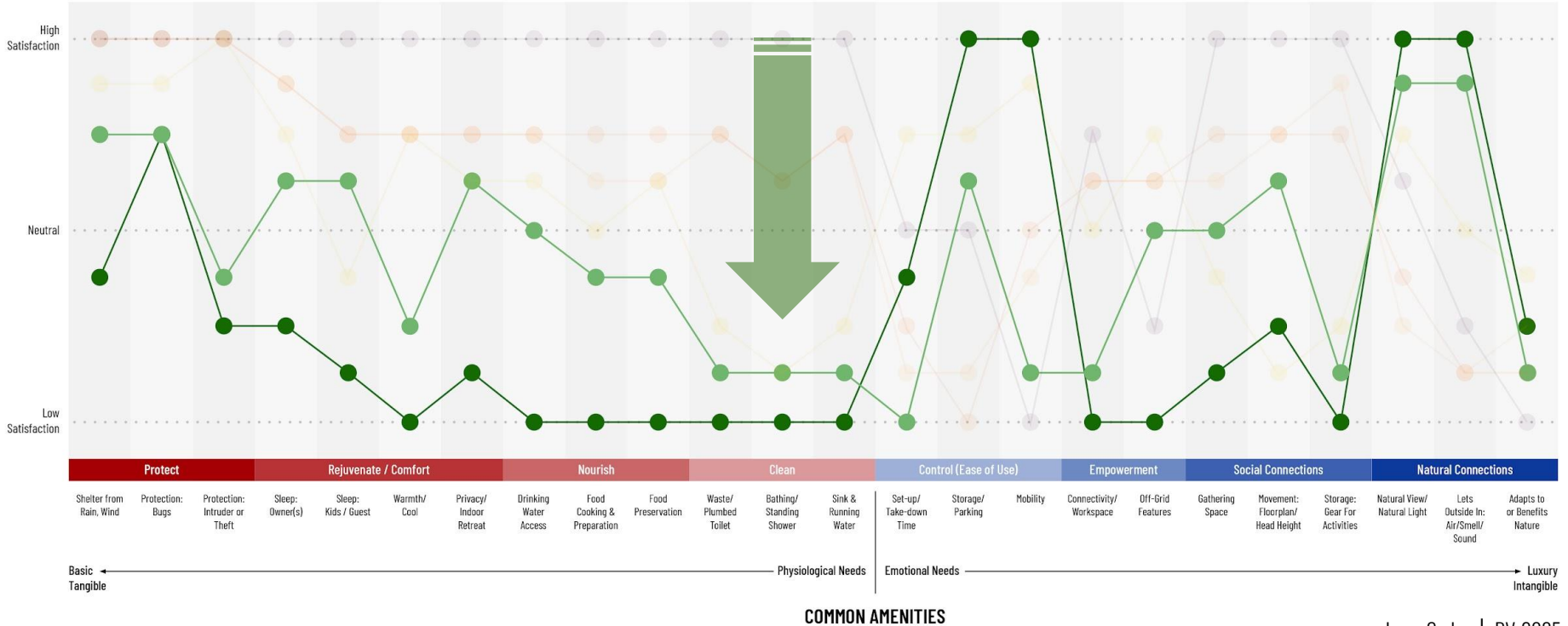
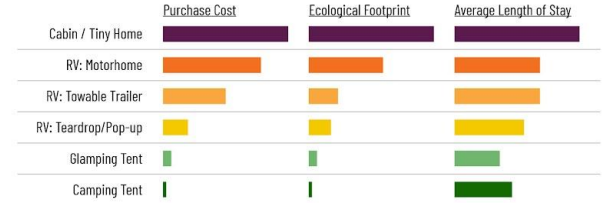
Teardrops lack hygiene and social amenities

	Purchase Cost	Ecological Footprint	Average Length of Stay
Cabin / Tiny Home			
RV: Motorhome			
RV: Towable Trailer			
RV: Teardrop/Pop-up			
Glamping Tent			
Camping Tent			



MARKET RESEARCH

Tents lack infrastructure to satisfy basic needs



INSPIRATION

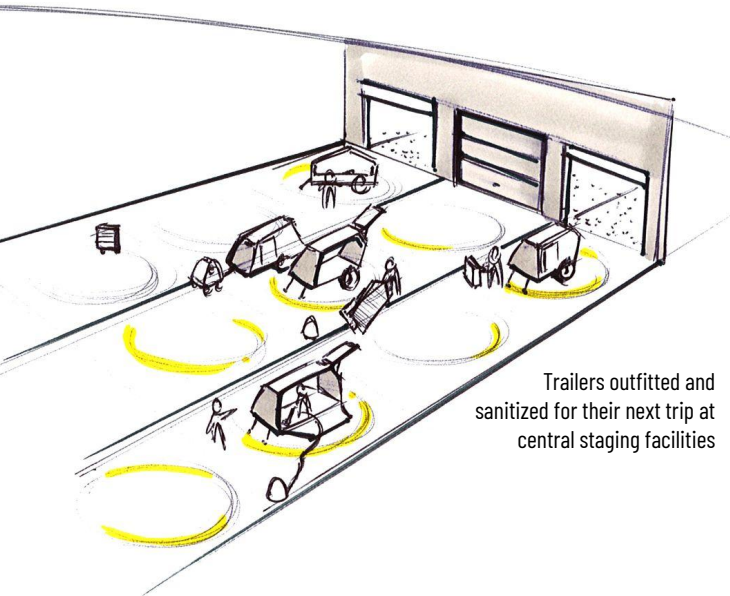
Natural Harmony



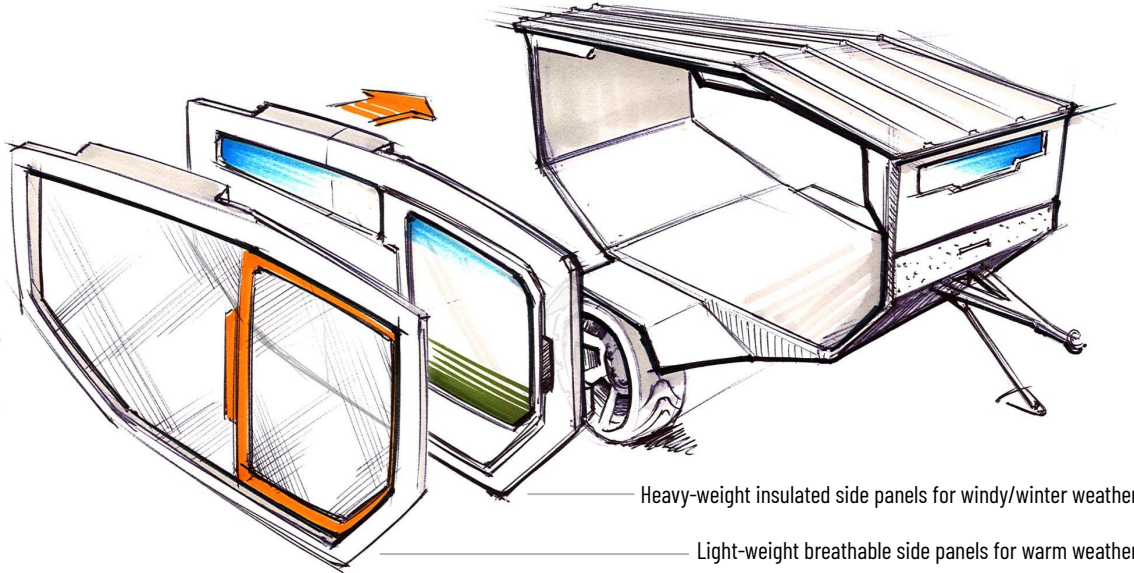
The work of:
Zaha Hadid
Marc Newson
Jan Kaplicky
Bjarke Ingels
Vincent Callebaut
Santiago Calatrava
Nomadic Resorts



Service Model Rental Outfitter

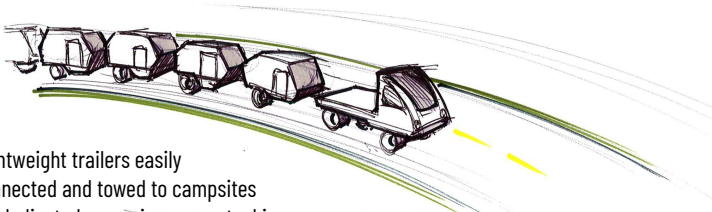


Trailers outfitted and sanitized for their next trip at central staging facilities



Heavy-weight insulated side panels for windy/winter weather

Light-weight breathable side panels for warm weather



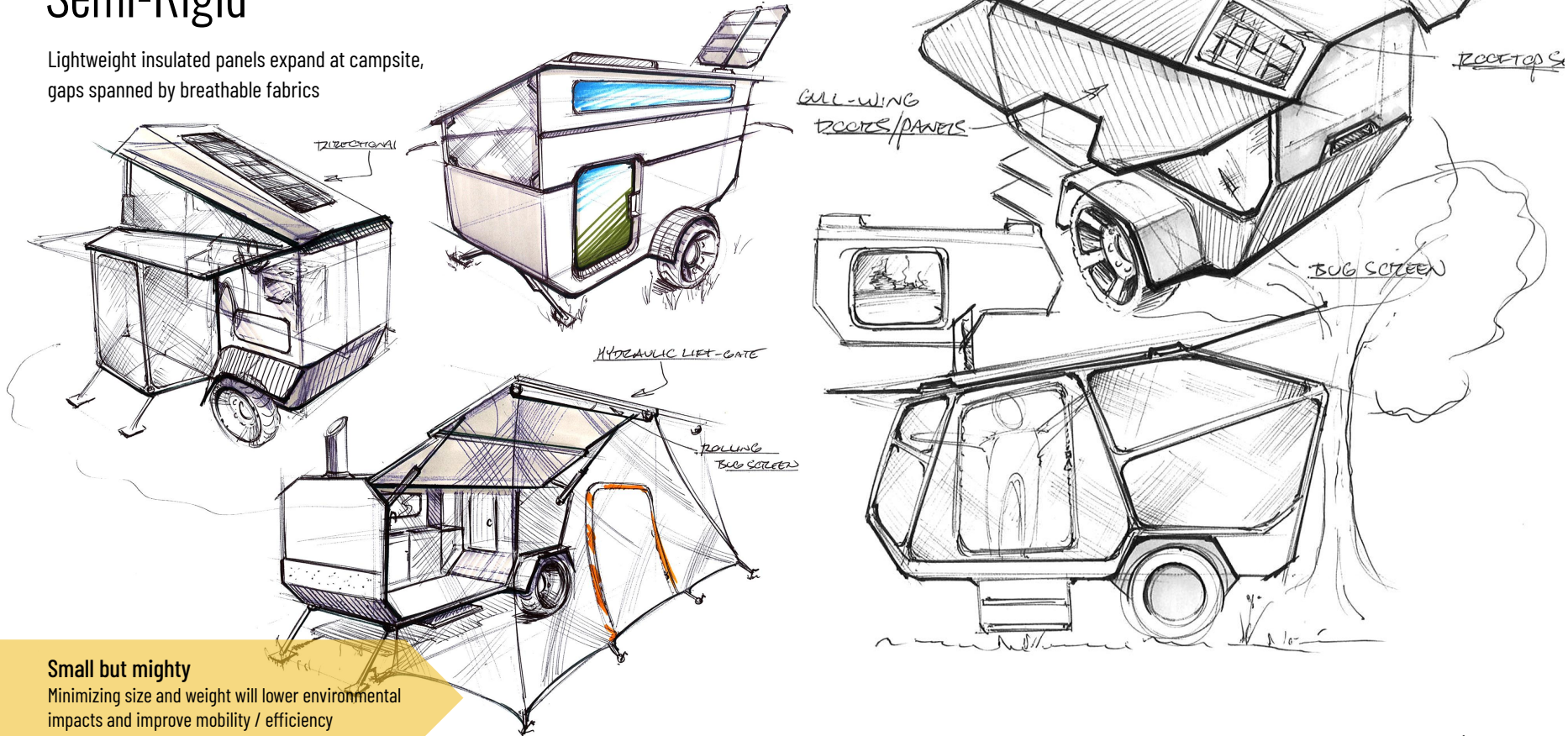
Lightweight trailers easily connected and towed to campsites for dedicated excursions or restocking

Alternative business models unlock opportunities
Design from the ground-up for a circular leasing model and attract with targeted excursions

Architecture 01

Semi-Rigid

Lightweight insulated panels expand at campsite, gaps spanned by breathable fabrics



Small but mighty

Minimizing size and weight will lower environmental impacts and improve mobility / efficiency