SCENARIOS

DIGITAL ENERGY FUTURES

AGGREGATED INDUSTRY SCENARIOS FOR THE HOME

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Aggregated industry scenarios

The Digital Energy Futures project aims to understand and forecast digital lifestyle trends and their impact on future Australian household electricity demand, including at peak times.

These scenarios were produced from the first stage of the research: a desk-based review of 64 digital technology and energy industry reports speculating on the near (2025-30) and medium-far (2030-50) futures.

The findings of the review were synthesised into six speculative future scenarios that placed dominant industry visions into the home in an accessible comic strip form.

Each scenario brings together the analysis in two novel ways, by:

1. Drawing together dominant energy and digital technology narratives, which are rarely considered together.

2. Applying the findings from this review to the everyday practice domains.

The comic strip scenarios do not represent the research team's own future visions

They have been extrapolated from the review and then applied to the everyday practice domains that the Digital Energy Futures project focuses on.

Through representing the dominant industry visions within the context of household life, these aggregated industry scenarios are designed to raise new questions relating to how future household everyday practices will intersect with digital and energy futures.

The scenarios also serve as translation materials which will be used in ethnographic research with 72 participating households for the next stage of the project.

The scenarios were informed by an analysis of research reports written prior to the **coronavirus pandemic.** *As such, the impacts and emerging trends of this international event were not anticipated or discussed.*

Nonetheless, the scenarios represent a set of dominant technology and energy speculations currently informing directions for near and medium-far futures in Australian and other advanced Western economies, including in response to recent events such as the coronavirus pandemic and the **2019-2020 Australian bushfires.**

Scenario 1.
Staying cool and comfortable in extreme weather

The **Staying cool and comfortable in extreme weather** scenario focuses on the macrotrend of more extreme weather resulting from climate change, leading to disruptions to electricity infrastructure services and home life. In the Australian context, these framings are specifically related to the anticipation of more frequent heatwaves, extreme heat days and bushfires. In integrating the visions and trends from the reports we reviewed into this scenario, the research team identified the possibility for emerging home technologies such as air purifiers (or new routines with existing technologies such as air conditioners) to become increasingly commonplace.

Technology reports reviewed anticipate that people will spend more time in their homes as they adopt more smart home technology, which the research team has integrated with the potential for extreme weather outdoors. Energy sector reports reviewed also identified that electricity grid failures resulting from extreme weather could encourage more localised generation and storage. This comic strip scenario depicts the implications of these possible changes for people as they perform everyday life practices in the future.

Scenario 1. Cool and comfortable in extreme weather
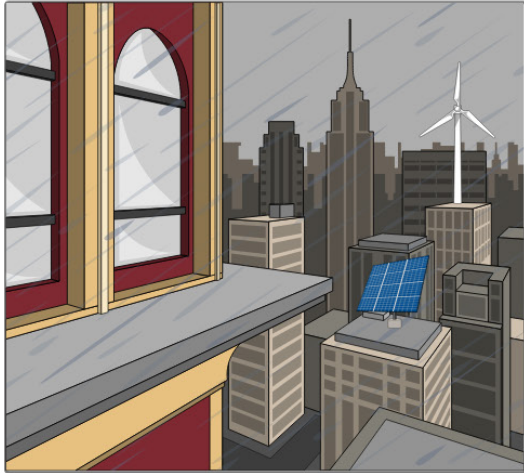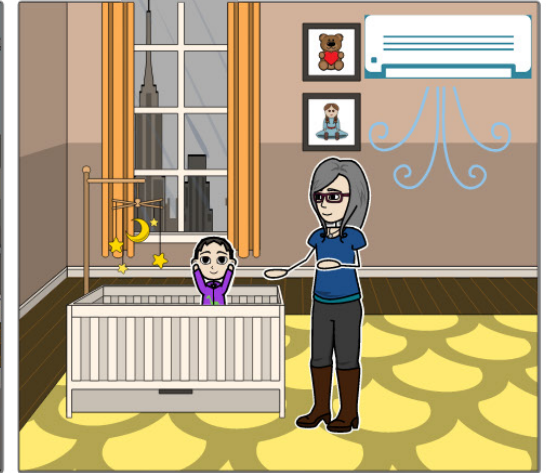

Australia will experience increasing days of extreme weather due to climate change.

Extreme weather may cause electricity grid failures, encouraging more people to rely on their batteries.

Air purification technology will keep the indoor air clean to breathe in poor outdoor conditions.

The increasing number of extreme weather days will increase usage of air conditioning. Air purification will be integrated into AC units.

More people will work and study from home to avoid commuting in extreme weather.

Poor air quality will encourage exercise in the home.

Home delivery services will enable you to stay in the comfort of your home.

Automatic smart lights will create the ideal atmosphere in the home.

Scenario 2.
Stay at home life

The **Stay at home life** scenario focuses on industry predictions that technological advances in telecommunication, VR, AR, and digital voice assistants will increase working and studying from home and make online shopping and delivery a seamless experience.

Everyday entertainment and leisure practices are also expected to increasingly take place in the home as they integrate with these emerging technologies.

Scenario 2. Stay at home life

Working, studying, and recreation can all now take place in the home.

E-sports and gaming are growing in popularity and reputation. Weekend sport might not require leaving the house.
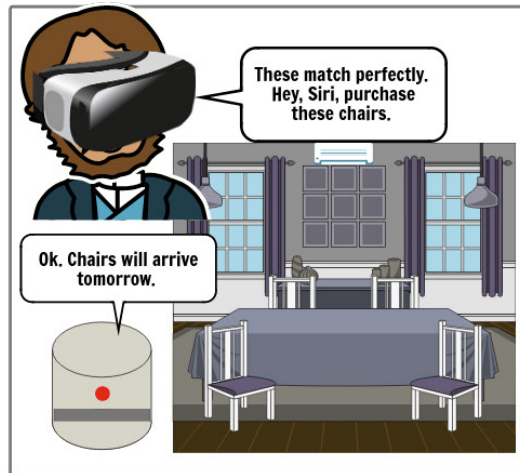

Telecommuting will be enhanced through the use of virtual reality, enabling many more professions to work remotely.


Studying from home will be more common as universities go online.
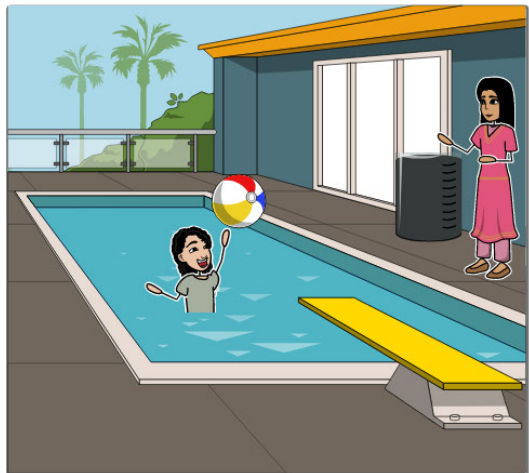
Energy management systems will optimise water heaters and pool pumps to automatically run when energy is cheapest.

Shopping will no longer require trips to the store. Augmented reality will allow you to see exactly how an object will fit into your home and orders can be placed through digital voice assistants.
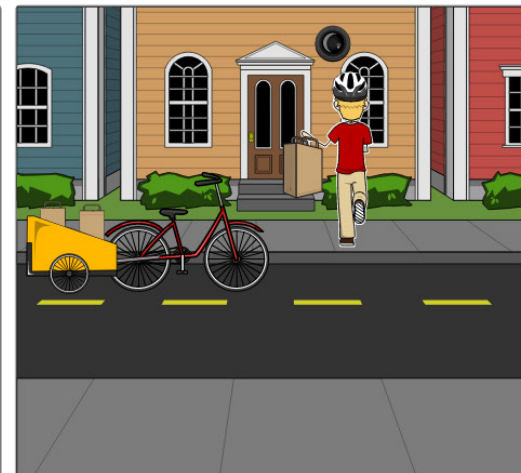
Groceries and purchases will be delivered to the home, with smart locks that allow deliveries in.

Virtual reality will allow you to travel and have immersive experiences, all without leaving home.

Scenario 3.
Ageing at home

The **Ageing at home** scenario takes as its starting point the key macro trend that Australia's population is ageing and that more people will desire to stay in their homes as they age. The reports reviewed expect that technology will help enable caring for the ageing population and predict that many emerging technologies will be integrated into the homes of older people to address health needs, ensure safety and provide companionship.

The comic strip depicts how these technologies might be used and experienced by older people within everyday practices if they were made available and accessible to them.
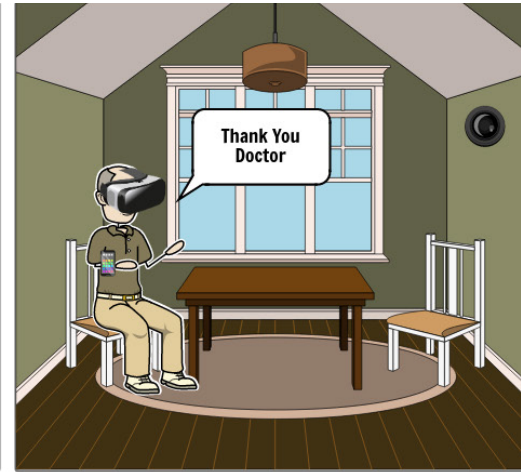
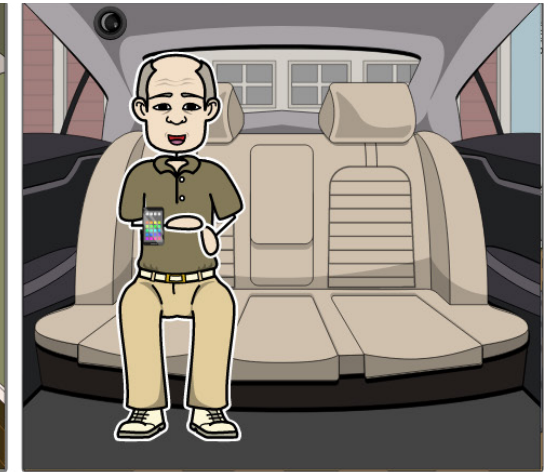# Scenario 3. Ageing at home
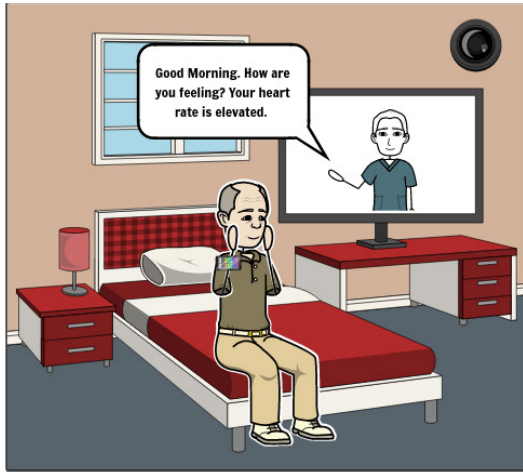
Wearable technology will monitor vital signs and alert health authorities if problems are detected.
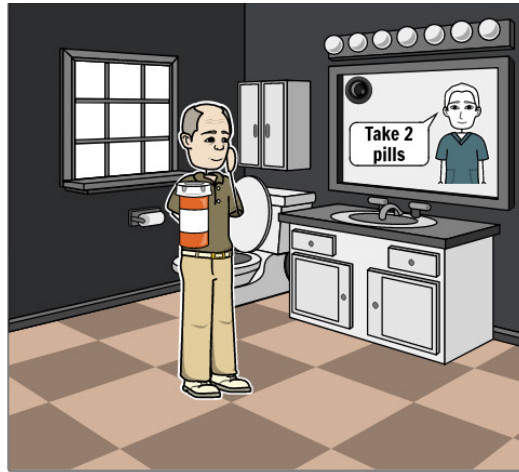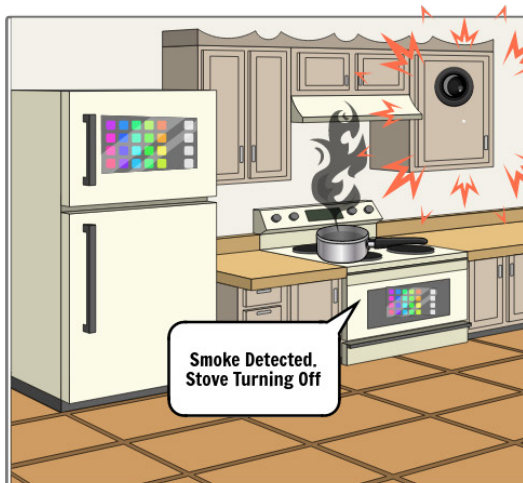

Digital voice assistants will remind people to take their medication.
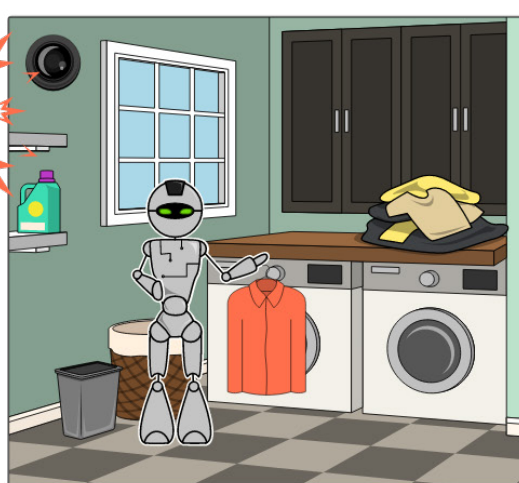

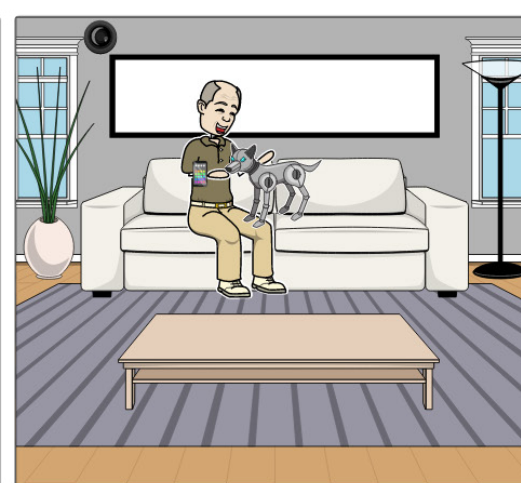Visits to the doctor can take place virtually from the home.

If it is necessary to travel, self-driving cars will allow the elderly to get around safely.
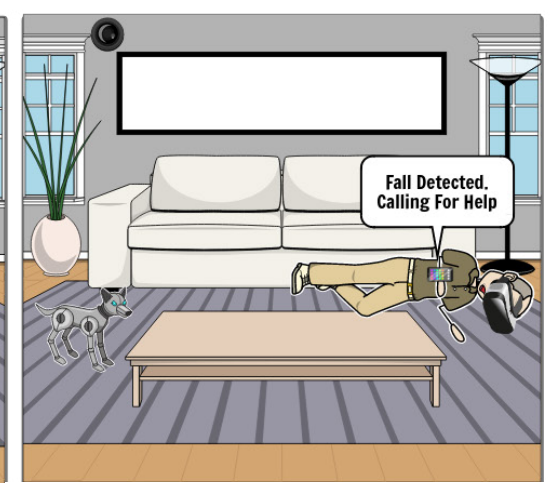

Sensors and smart appliances will communicate with each other to ensure safety.

Robotic carers will perform many household and nursing duties.

Companion robots such as robotic pets will provide comfort.

Wearable technology and sensors will be able to call for outside help when it is needed.

Scenario 4.
The smart and easy life

The **Smart and easy life** scenario takes as its starting point the prediction represented in the reports that homes will become increasingly "smart" and that this will be enabled by advances in Artificial Intelligence (AI) and Internet of Things (IoT). In this scenario, more household activities and decisions are expected to become automated, and advances in technology are expected to enable immersive forms of entertainment.

The comic strip depicts how these future devices might become part of individual and family-based everyday practices in the home.

Scenario 4. The smart and easy life
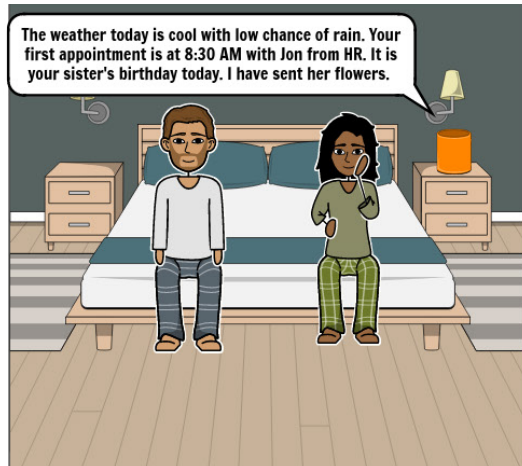
A digital voice assistant will start your day and help you plan for it.

Technolgies like a smart mirror may help you pick out your optimal outfit for the day.
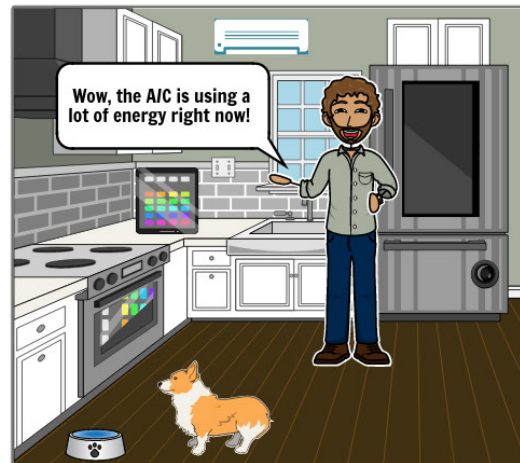

Smart sensors and wearable technologies will monitor your health.

Cameras will be installed in many locations in the house, so that children can be monitored from afar.

Smart appliances, like a smart fridge, may suggest recipes based on the contents of your fridge and your health data.

An energy monitor in a central location of your home will allow you to monitor your energy usage in real time, and allow you to automate appliances to run when energy is cheapest.

Facial scanning technologies in smart locks will know whether to let people into the house. Or in the case of unwanted visitors, to alert police.

You will no longer 'watch' a movie, but be transported into the movie, taking part in the adventure.

Scenario 5.

The active smart charging commuter

The **Active smart charging commuter** scenario is based on the prediction that electric vehicle (EV) ownership will increase significantly, internationally and in Australia. It is expected that this will lead to increased electricity demand for EV battery charging.

Energy sector reports reviewed emphasise that the increase in EVs has two possible implications: they could be a burden on the energy system if their charging is not efficiently managed; or if their battery storage is integrated into the electricity system through vehicle to grid connections and charging is managed and smart, they will create an opportunity for efficient home and mobility energy management.

The comic strip depicts how energy related to electric car use might be used and managed across a series of physically present and remote everyday practices, at home, at work and in transit.
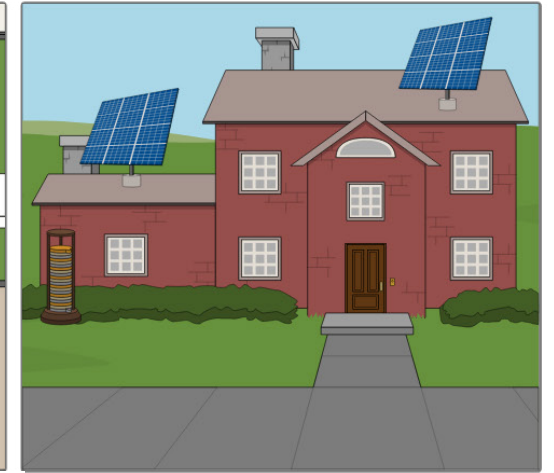
Scenario 5. The active smart charging commuter
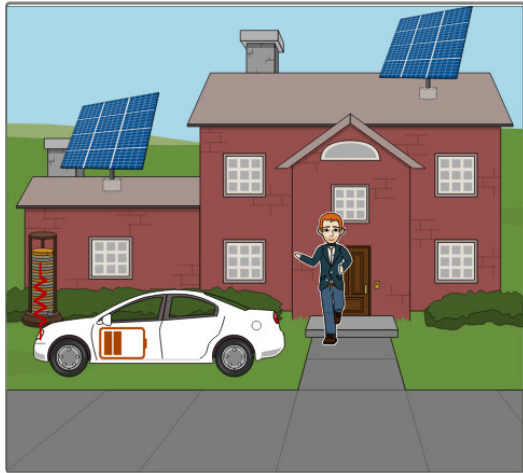
In the morning, your electric vehicle will have sufficient charge for you to commute to work.

When you arrive at work you will plug your car into a charger that will be powered by the solar energy that is plentiful during the afternoon.

You can control many household appliances remotely from your smart phone.

During the day, your house is powered by solar energy and either stores excess energy in your home battery or exports it to the grid when the feed-in tarriff is highest.

Many of your chores, such as the laundry, can be done when energy is coming from your solar panels, or when the feed-in tariff is lowest.

When you leave work, your car is fully charged.

After arriving home, you still have power in your car battery which you can plug into your house or export to the grid if there is a good price incentive.

Your evening activities are powered by your car battery. Because many of your chores have already been done, there is enough power leftover for you to commute to work the next morning.

Scenario 6.

The set and forget prosumer

The **Set and forget prosumer** scenario is based on the prediction that the rise of the sharing economy, increased consumer concern with sustainability, and the availability of automated technologies will lead to the increased uptake of distributed energy resources (DER), peer-to-peer trading systems, and automated energy management.

Household energy use is predicted to be optimised by the availability of real-time data as well as advances in AI and automated decision-making (ADM) to balance energy availability with household demand, creating cost savings for both consumers and the energy sector.

The comic strip depicts how these technological and energy futures possibilities might have implications for how people experience their home environments and use automated systems in the near future.

# Scenario 6. The set and forget prosumer
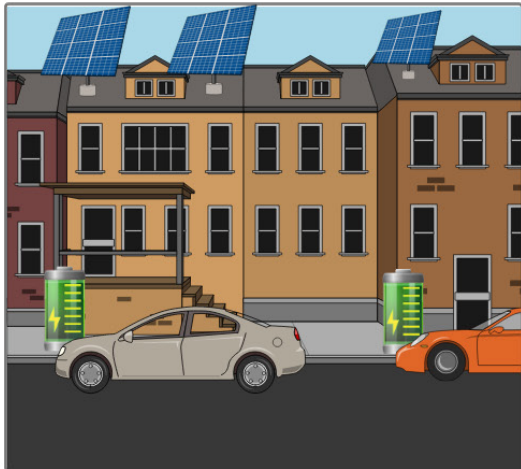
Peer-to-peer energy trading systems in 'micro-grids' will enable neighbours to connect to each other's energy generation and storage including batteries in electric cars.

An automated system enabled by blockchain technology will ensure everyone pays their fair share.

Smart thermostats will automatically heat or cool a room when solar energy is available to optimise the temperature, even preparing for your arrival home.
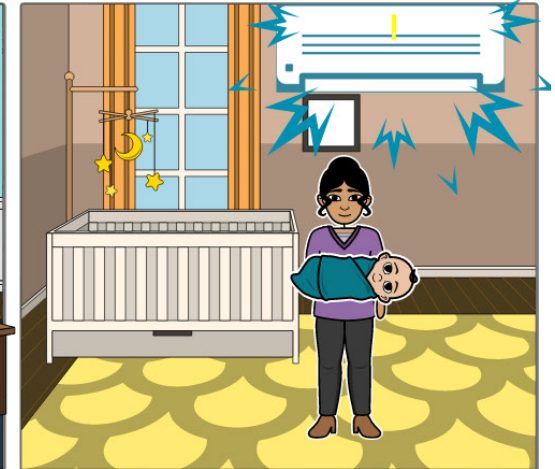
Algorithms will enable optimal temperatures based on the availability of solar energy.

Solar hot water ststems will automatically heat water when solar energy is available and store the water for later use. Technology will set an optimal temperature and shower time to ensure enough warm water.

Some appliances, such as the smart washing machine, will be automated to run when solar energy is available.

An energy monitor will enable you to see how much energy you are using and adjust your automated settings.
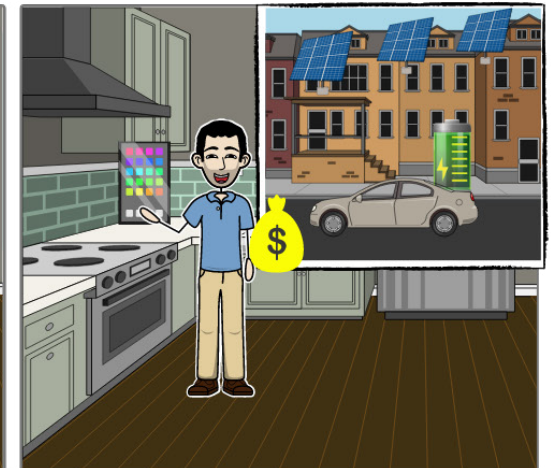
Any energy you produce but do not use, can be sold to your neighbours or to the grid.

FOR THE FULL REPORT AND EXECUTIVE SUMMARY, VISIT
DIGITAL ENERGY FUTURES

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