The wire

There is a wire that runs from a power station to your house. It might be 50 kilometres long. It was expensive to install. It's expensive to maintain. Every month, a company reads the meter on your wall and sends you a bill.

The power station burns coal, or gas, or splits atoms. The electricity travels through the wire, losing 5-8% along the way. It arrives at your house. You use it. You pay $1,500-2,000 a year for the privilege.

The company that owns the wire didn't build the power station. The company that built the power station didn't mine the coal. Nobody in this chain works for you. They all work for shareholders. You are the product being metered.

Here's the question: what if there was no wire?

The sun hits your roof for free

A 400-watt solar panel costs $100. At mass production, not retail — $100. It sits on your roof and makes about 1.6 kilowatt-hours of electricity every day. For free. From the sun. Which sends no invoice.

One panel isn't enough to power a house. You need about 10 for full independence. Most new Australian houses already have 6-10 kilowatt systems installed — that's 15-25 panels. The sun hits them every day. The electricity is generated. And then...

It goes into the grid. Through the wire. The power company buys it from you for 5 cents per kilowatt-hour and sells it back to you for 30 cents. You generate the power. They take the margin. Because they own the wire.

What if you didn't need the wire?

The node

One box. On the side of your house or in your garage. About the size of a bar fridge. Inside:

WHAT'S IN IT	WHAT IT DOES	WHAT IT COSTS
Solar connection	Takes power from your rooftop panels	Already installed
Battery (5-15 kWh)	Stores power for when the sun isn't shining	$550-1,650
Resonant coils (×2)	Sends and receives power wirelessly to neighbouring nodes	$400
Inverter	Converts between solar DC, battery DC, and the resonant frequency	$300
Mesh controller	Talks to your neighbours' nodes, balances load, tracks credits	$50
Weatherproof housing	Keeps it all dry	$100

Total: $1,500-3,000 depending on battery size.

For context: a Tesla Powerwall costs $12,000 and still needs the grid wire. This replaces both the Powerwall and the wire.

How it works

Your panels generate power during the day. Your battery stores what you need for tonight. Your resonant coils share what's left with neighbours.

That's it.

No wire. No meter. No bill. No company. No permission.

The resonant coils work like wireless phone chargers — except bigger. Copper coils tuned to the same frequency, transferring power through the air. Your phone charger does it at 5 watts across 2 centimetres. These do it at kilowatts across metres.

When your neighbour's battery is full and yours is low — maybe you had a cloudy morning, maybe you're running the air conditioning — their node sends power to yours. Wirelessly. Through the coils. The mesh controller handles it automatically. You don't touch anything.

When your battery is full and your neighbour's is low, your node sends power their way.

The mesh controller keeps a ledger. Who sent how much to whom. Credits and debits. Settled in tokens. No power company in the middle taking 83% of the margin.

The relay chain

"But my nearest neighbour is 20 metres away. Wireless power doesn't work at 20 metres."

Not in one jump. But it does in a chain.

Between your house and your neighbour's, there's a relay coil. It's a copper coil on a post — about the size of a dinner plate — mounted on a fence or under an eave. It catches power from one node, resonates, and passes it to the next. Like a bucket brigade, except with electricity.

MIT proved this works in 2007. They transferred power between resonant coils with an intermediate relay at over 90% efficiency per hop. A 2024 study scaled this to 20 relay coils in a chain.

Nobody's tested it at suburb scale yet. That's the gap. The physics works. The engineering works at small scale. The question is whether it works at 200-house scale with real-world obstacles and weather.

We think it does. Here's why.

The maths for a suburb

200 houses. Each has a node.

Generation: If each house has a 6.6kW solar system (the current Australian average), the suburb generates about **5,280 kWh per day** collectively. Average household use is about 18 kWh/day. 200 houses need 3,600 kWh/day. The suburb generates **47% more than it needs.**

Storage: If each node has a 10 kWh battery, the suburb stores 2,000 kWh. That's 13 hours of average use. Enough to get through the night and most cloudy days.

Sharing: At 2pm, most houses are empty. Panels are generating. Batteries are full. Surplus builds up. At 7pm, everyone's home. Cooking. Air conditioning. The mesh moves power from the houses that banked it to the houses that need it. Automatically. The mesh controller's only job is answering one question: who has surplus, who has deficit, and what's the shortest path between them?

Cost: 200 nodes × $2,500 average = **$500,000** for the whole suburb. Including batteries, coils, controllers, everything.

For comparison: running power lines to a new 200-lot subdivision costs **$5,000-15,000 per lot** just for the grid connection. 200 lots × $10,000 = **$2,000,000** for wires. Before the first electron flows.

The mesh costs a quarter of the wires. And then the electricity is free. Forever.

Payback

The average Australian household pays $1,500-2,000 per year for electricity.

A power mesh node costs $1,500-3,000 once.

Payback: 1-2 years.

After that, your electricity costs are: sunlight (free) + battery degradation (~$50/year after year 8) + occasional coil maintenance (~$20/year).

Call it $70/year after payback. Versus $1,800/year on the grid.

Over 20 years:

- **Grid:** $36,000
- **Mesh:** $3,000 node + $1,260 maintenance = **$4,260**

That's **$31,740 saved per household.** For a suburb of 200 houses: **$6.3 million** kept in the community instead of sent to a power company.

Safety

"Is this safe?"

Your phone charger uses this technology. It transfers power wirelessly through resonant coils. It doesn't shock you. It doesn't set fires. It doesn't interfere with your Wi-Fi. It's been in billions of phones since 2017.

A power mesh node is the same principle, scaled up:

- **No exposed wires.** The coils are enclosed. The power electronics are sealed. The battery is LFP (lithium iron phosphate) — the chemistry that doesn't catch fire. LFP is what BYD and Tesla use in their standard-range cars specifically because it's thermally stable.
- **No lightning.** Tesla's experiments produced 135-foot arcs because he used 12 million volts through a spark gap. This system uses modern solid-state electronics at household voltages. No sparks. No arcs. No dramatic discharges. It's quieter than your fridge.
- **No radiation concerns.** The coils operate at a specific low frequency — not microwave, not RF. The magnetic field drops off rapidly with distance. Standing a metre from the coil, the field strength is less than standing next to a microwave oven. At 3 metres, it's undetectable.
- **Automatic shutdown.** Modern power electronics detect faults in microseconds and cut power. If a coil is damaged, if a connection breaks, if anything unexpected happens — the system stops. Instantly. Tesla didn't have this. We do.
- **Battery safety.** LFP chemistry operates between 20-60°C safely. The BMS (battery management system) monitors every cell. Temperature too high? Shutdown. Voltage too low? Shutdown. Charge rate too fast? Shutdown. This is the same technology in every electric car on the road.

What it looks like

Not what you think.

The solar panels are already on your roof. You already have those.

The node box sits against a wall or in the garage. Matte finish. No lights, no noise. About 600mm × 400mm × 300mm. Smaller than a hot water system. You forget it's there.

The relay coils — if your suburb needs them — are flat copper spirals behind a weatherproof disc. They mount on fence posts, under eaves, or on the sides of buildings. About the diameter of a dinner plate. Painted to match. After a week, you stop seeing them. After a month, you forget they exist.

There are no wires strung between houses. No poles. No transformers on the street. No overhead lines. No underground cables to dig up when they fail.

The ugliest part of your street's electrical infrastructure — the poles, the wires, the transformers, the junction boxes — all of it disappears. What replaces it is invisible.

The comparison nobody makes

	THE WIRE	THE MESH
Upfront cost (200-house suburb)	$2,000,000	$500,000
Annual cost per household	$1,800	$70 (after year 2)
20-year cost per household	$36,000	$4,260
Who profits	Shareholders	You and your neighbours
Single point of failure	Power station, substation, any point on the wire	None — every node generates and stores
Blackout resilience	Goes down when the grid goes down	Works as long as the sun comes up
Aesthetics	Poles, wires, transformers	Flat discs and a box in the garage
Maintenance	Professional crews, $millions/year	Replace a coil every 15 years
Environmental	Coal/gas plant + transmission losses	Solar. That's it.
Who controls it	The power company	You

At country scale

Australia has about 11 million households.

11 million nodes × $2,500 = **$27.5 billion** to power the entire country wirelessly.

Australia spent **$12 billion** on the NBN (National Broadband Network) to deliver internet.

Australia's electricity network is valued at over **$100 billion** in regulated asset base — and that's the wire infrastructure alone, not counting the power stations.

$27.5 billion replaces $100 billion in wires and delivers free electricity after a 2-year payback. The entire national electricity bill — about **$20 billion per year** — drops to near zero. The investment pays for itself in **18 months** at national scale.

No coal. No gas. No grid. No bills. No power company. Just the sun hitting roofs and neighbours sharing with neighbours.

Where the numbers are honest

Some of these numbers are solid. Some are shaky. Here's which:

Solid:

- Solar panel costs ($100-200 per panel at scale) — this is current wholesale pricing
- LFP battery costs ($80-100/kWh) — this is current wholesale and still falling
- Average electricity bills ($1,500-2,000/year) — AER published data

- Grid connection costs ($5,000-15,000 per lot) — industry standard
- Resonant coupling efficiency at short range (>90%) — MIT, published, replicated

Shaky:

- Resonant coil costs at mass production ($400 per node) — could be $200, could be $800
- Per-hop efficiency at suburb distances — nobody's published data for multi-kilowatt resonant transfer across 10-20 metres with relay chains
- Whether the mesh controller can balance 200 nodes in real time — the software is unwritten
- Battery longevity assumptions — LFP lasts 3,000-5,000 cycles (~10 years), but real-world degradation varies

Unknown:

- Regulatory approval for residential wireless power transfer at multi-kilowatt levels
- Insurance implications
- What happens in extreme weather (hail on relay coils, flooding)
- Whether neighbours will actually cooperate or whether someone will try to free-ride

The last one is the easiest to solve. That's what the token ledger is for. Your node tracks what it gives and what it takes. The mesh settles the balance. Free-riders don't get free power — they get exactly what they contribute. That's not a technical problem. That's an incentive design problem. And it's already solved ((Applebee & Combe, 2026, "*Trust-First Governance*") — Trust-First Governance, (Applebee & Combe, 2026, "*Cooperative Capitalism*") — Cooperative Capitalism).

The connection

(Applebee & Combe, 2026, "*Just Turn It On*") said: the data network is your phones. No towers. No company. No permission.

This paper says: the power network is your houses. No wires. No company. No bill.

Same principle. Same mesh topology. Same decentralisation. Same "no single point of failure." Different payload. One carries bytes. The other carries watts.

(Applebee & Combe, 2026, "*Who Owns You?*") asked: who owns you? Five companies that control your identity.

This paper asks: who owns your electrons? One company that owns a wire.

Cut the wire.

What you can do

If you're a homeowner: Watch this space. The first pilot is 200 houses. If the per-hop efficiency holds at suburb scale, you'll be able to buy a node for $2,500 and stop paying power bills within a year.

If you're a developer: Build the mesh controller software. The power electronics exist. The resonant coils exist. The batteries exist. The solar exists. What doesn't exist is the software that balances 200 nodes in real time and settles credits fairly. That's code. That's OMXUS.

If you're a council or land developer: 200 lots at $10,000 each for grid connection = $2 million. 200 nodes at $2,500 each = $500,000. You save $1.5 million, your buyers save $1,800/year on power bills, and you can advertise "Australia's first grid-free suburb." The PR alone is worth more than the infrastructure.

If you're a physicist or electrical engineer: The per-hop efficiency gap between 2-metre lab demonstrations and 20-metre real-world relay chains is the single most important number in this paper. Test it. Publish it. If it holds above 80% per hop, this works. If it drops below 60%, we need denser relay placement. Either way, the answer is a measurement, not a theory. Measure it.

The ask

This paper doesn't claim the problem is solved. (Applebee & Combe, 2026, "*The Power Mesh*") lays out the physics honestly — what works, what doesn't, what's unknown. The Q factor of the Earth-ionosphere cavity is too low for global wireless power. Tesla's grand vision of one tower powering the planet was beautiful and wrong.

But Tesla's intuition — that power should flow without wires — was right. It just flows locally, not globally. Through relay chains, not through the Earth. Between neighbours, not across continents.

A mesh. Of houses. Sharing power. Like they already share Wi-Fi passwords, cups of sugar, and borrowed lawnmowers.

The technology exists. The economics work. The aesthetics are better than what we have now. The safety is proven at small scale.

What's missing is the test. One suburb. 200 houses. One year.

After that, either the numbers hold or they don't. If they hold, the wire is dead.

Series Context

This paper is the kitchen-table version of (Applebee & Combe, 2026, "*The Power Mesh*") (The Power Mesh).

This paper supports:

- Conclusion 5 (Direct Democracy) — energy independence enables political independence
- Conclusion 9 (Marketing To Self) — power companies sell you your own sunlight
- Conclusion 15 (Justice = Economic) — the electricity bill is a form of economic extraction

This paper closes the escape route: "You'll always need the grid."

LEVEL	RESPONSE
Gut	The sun hits your roof for free. The power company charges you for it.
Relatable	$2,500 once vs $1,800 every year forever. The node pays for itself in 18 months.
Academic	200-house mesh: $500K vs $2M grid connection. 47% generation surplus. LFP safety record. Per-hop efficiency is the open question — measure it.

See also: (Applebee & Combe, 2026, "*Just Turn It On*") (Just Turn It On), (Applebee & Combe, 2026, "*Your Computer, Your Brain*") (Your Computer, Your Brain), (Applebee & Combe, 2026, "*The Invisible Fence*") (The Invisible Fence)

The sun doesn't send a bill. Why does your power company?