

Nuclear power

Friend or Foe?

The Salon goes Nuclear
on 28th July



*“Well, I feel some of you in this group
are heavily into denial.”*

The world wants more electricity:

- World electricity demand is likely to double by 2025, double again by 2050.
- Demand being driven by China, India, ASEAN countries, Latin America.
- China each year adds more generation capacity than exists in all of Australia.
- Yet 1.6 billion still have no power at all.

The challenges presented are enormous

How to meet this growing demand while minimising GHG emissions?

For the next few decades the options are:

- Increase efficiency of generation and use.
- Increase resort to renewables.
- Capture & sequester CO₂ from coal plants.
- Increase resort to nuclear power.

It would be a mistake to rule out any of these.

Australia needs more electricity:

Let's look just at NSW:

- Demand for electrical energy is growing at 2% per year.
- Demand for peak power growing faster still (all those air conditioners).
- That's despite efficiency gains, conservation.
- 15% of our electricity imported from interstate.
- State's generation plant from 15-35 years old.

No orders for new plant placed in 25 years.

Looking ahead:

Worldwide:

- On current projections, nuclear electricity output will grow only 5% by 2025.
- Meanwhile, electricity use likely to double
- A consequence will be GHG from power alone, rising from 7 to 12 billion tonnes CO₂ in 2025
- If nuclear retains its share (17%) then GHG emissions will fall from 12 to 10 billion t. CO₂.
- This will require 250 more 1,000 MW reactors (an increase of 50% of current installed base).
- CO₂ emissions stabilisation points to need for 1,500 such reactors by 2050, plus other steps.

Concerns currently limiting deployment of nuclear power:

- Cost.
- Safety.
- Proliferation.
- Waste.

There will be little deployment unless these concerns are resolved.

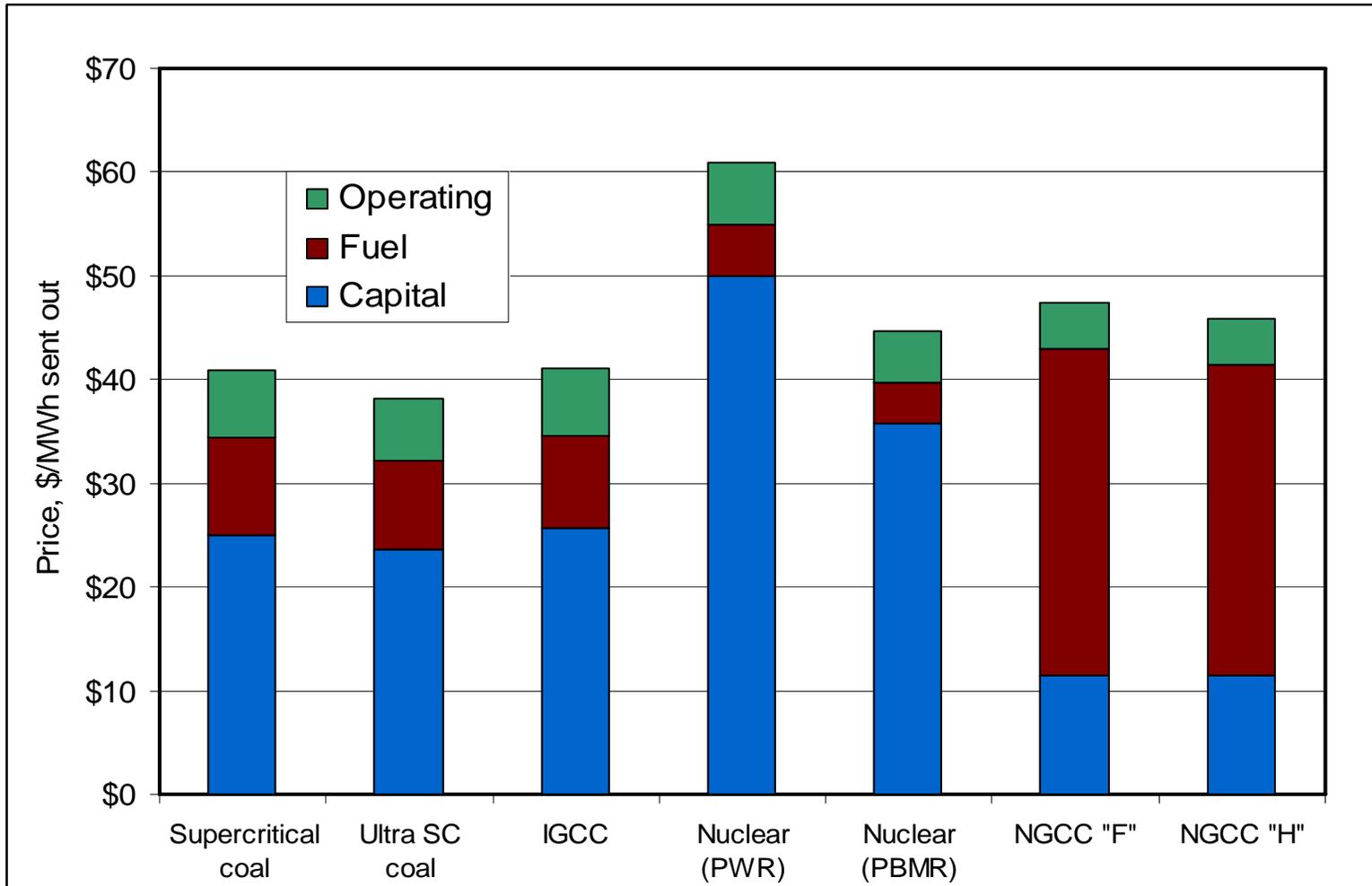
Will building many more nuclear plants make these harder, or easier to resolve?

Australia has so far foregone the nuclear-power option.

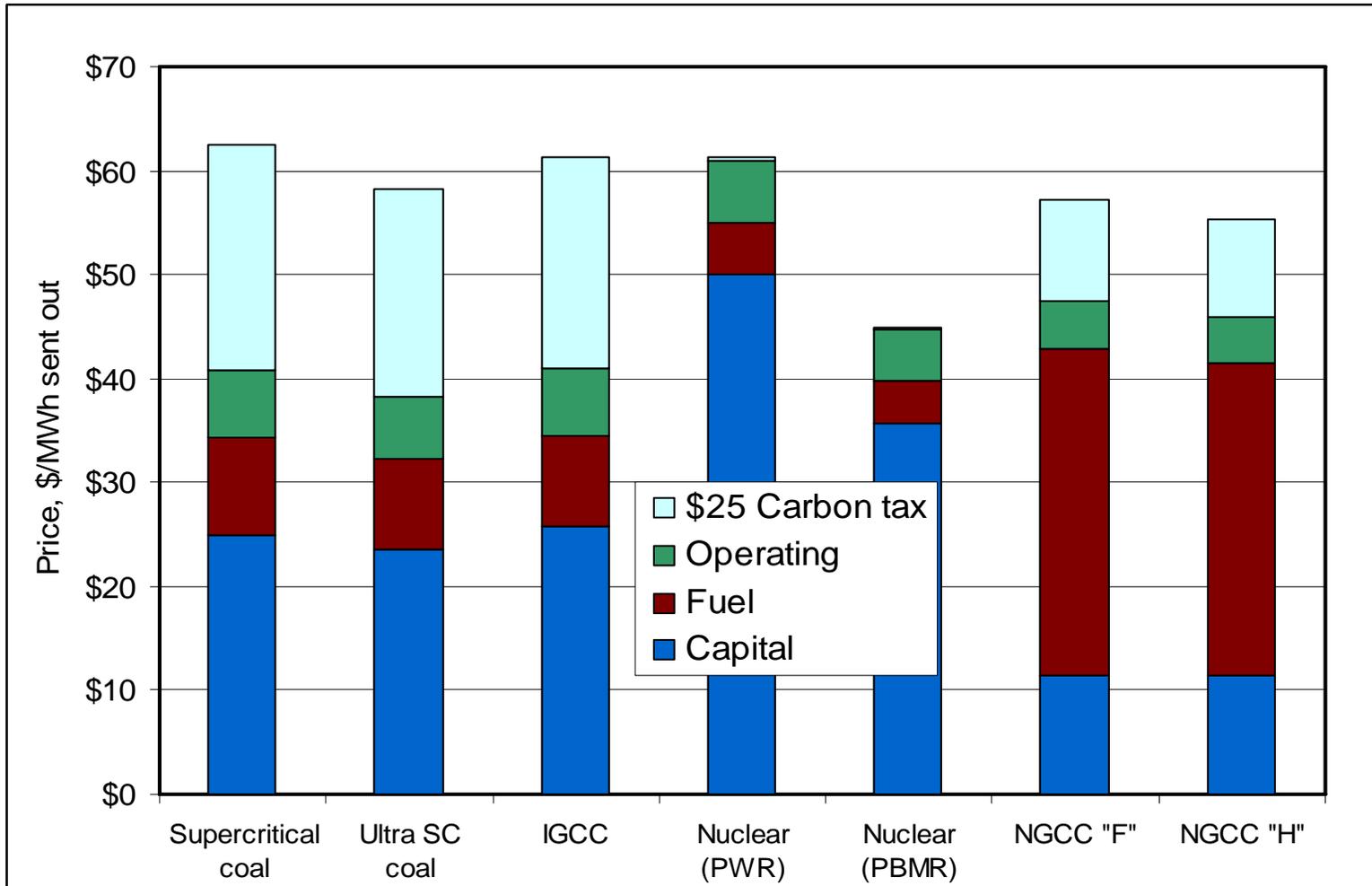
Does this make sense, when:

- 90% of our total electricity comes from coal (c.f. the USA, where the figure is 50%).
- We are the OECD's highest GHG emitter per capita (only a few oil states are higher).
- We hold 40% of the world's uranium resources.
- We're happy to export the stuff.
- We face challenges with water supplies.
- And (in the past) we have contributed much to nuclear technology, esp. waste disposal?

Cost of new electricity in NSW from power generation alternatives



Cost of new electricity in NSW with a \$25/tonne CO₂ carbon tax

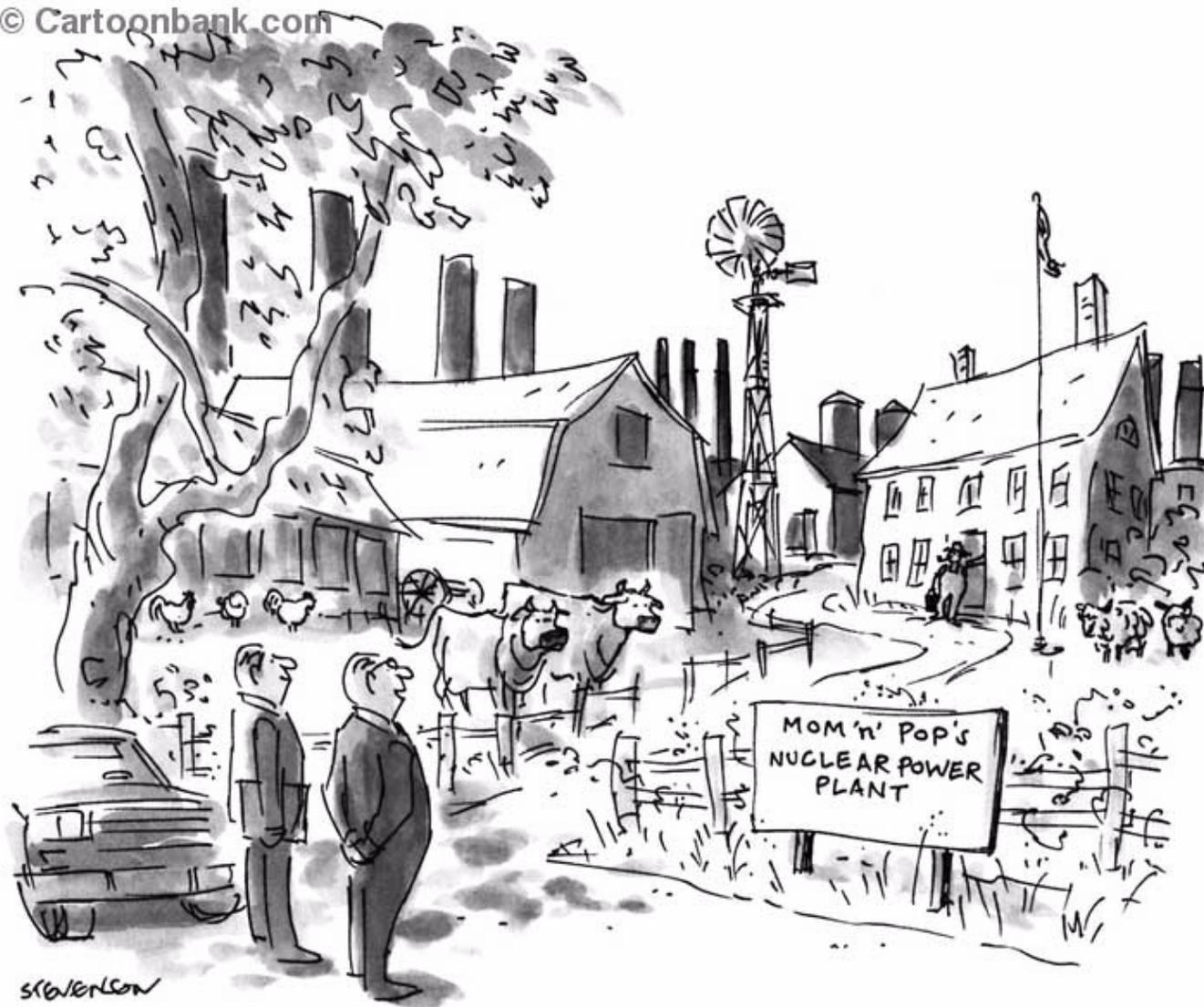


Would the world be a better, safer place if Australia:

- Left its uranium in the ground, *or* exported it with stringent safeguards?
- Exported uranium as crude ore (yellowcake) *or* as value-added fuel products?
- Left disposal of wastes from our uranium to others, *or* took back wastes for permanent disposal here?
- Left it to others to generate GHG-free electricity, *or* showed world how to use our resources safely, economically and environmentally soundly, by adopting the latest generation of nuclear plants?

Since when did ignoring such issues solve them?

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"I think we're beginning to chip away at the stigma."

On reflection:

- **Cost:** The nuclear power industry says it can compete with coal. New designs (Generation 4) cheaper still.
 - **Safety:** Far fewer lives likely to be lost over the next 50 years than with coal, gas (per unit of electricity).
 - **Proliferation:** With good design, esp. with no reprocessing, risk is tiny; existing fissile materials, bombs represent the real proliferation threat.
 - **Waste:** The high-level waste from 1,500 x 1,000 MW reactors each operating for 50 years could be secured for millions of years in less than one square kilometre of outback land area (with Synroc, deep-borehole disposal).
- A growing nuclear industry should minimise these risks.***

Denial won't do any longer

Australia's current position on nuclear power:

- Is hypocritical.
- Ignores reality.
- Sees others gain from our resources, our know-how, at our expense.
- Heightens the risk of adverse global consequences.

Is our position even morally justifiable?