





Optimising energy use in an existing commercial building: a case study of Australia's Reef HQ Aquarium

Authors

[Authors and affiliations](#)

Sascha Thyer , Severine Thomas, Craig McClintock, Michael Ridd

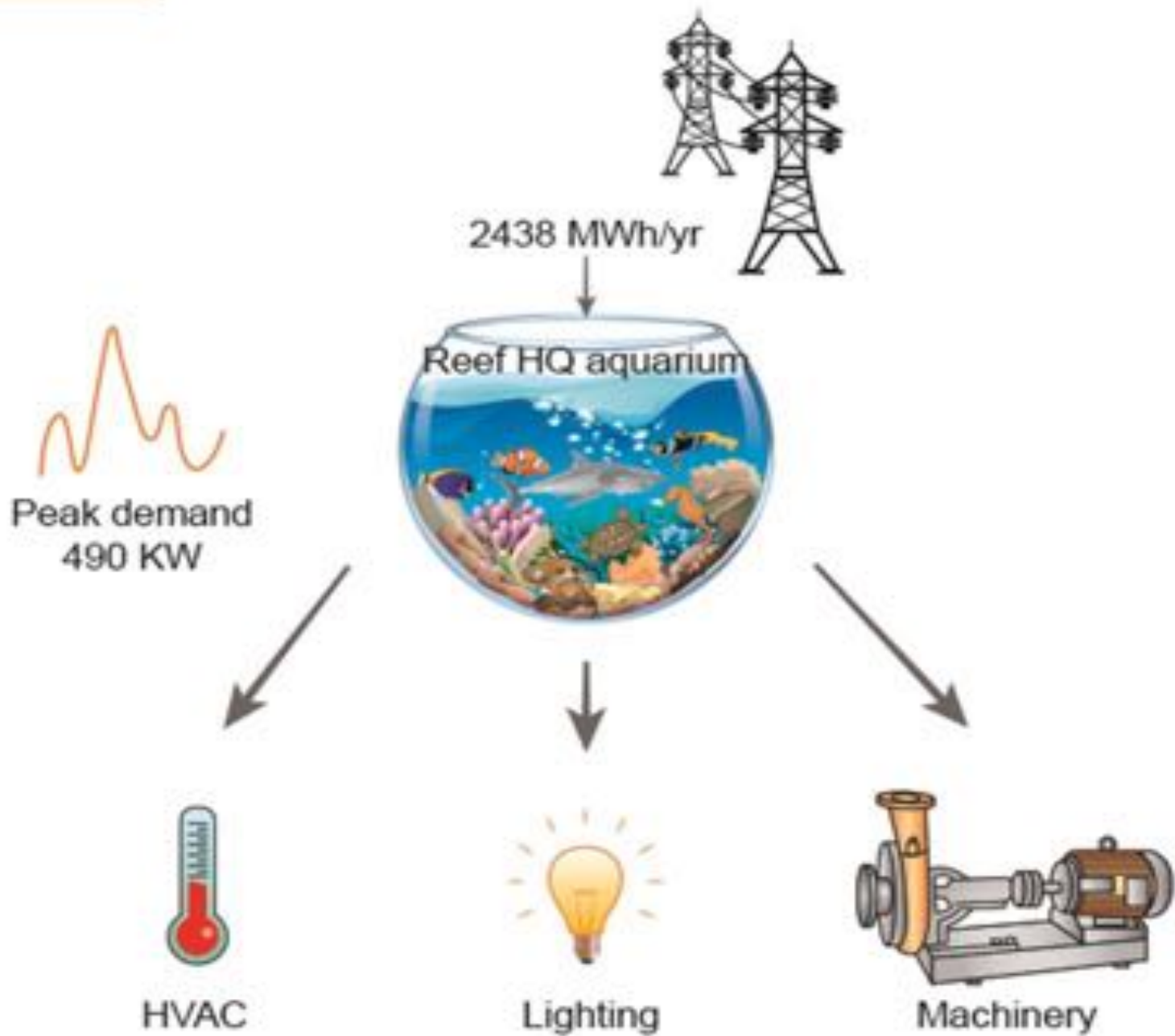


National Education Centre for the Great Barrier Reef

The world's Largest living coral reef Aquarium



BEFORE - 2006



ENERGY SAVING RETROFIT AT REEF HQ AQUARIUM

AFTER - 2014



1160 MWh/yr
down 50%



Peak demand 231 KW
down 46%



Building
management system



Reef HQ PV system
300 MWh/yr



Reef HQ aquarium

Significant business growth

\$ Savings



less 66%



24.5°C

23°C

HVAC

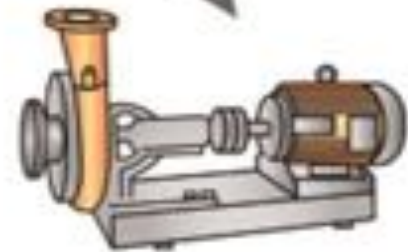


less 40%



Lighting

less 37%



Machinery

Dolphin-hugger

Noun

Dol-phin hug-ger

(*plural* dolphin-huggers)



(derogatory) An environmentalist who is considered
to be too earnest

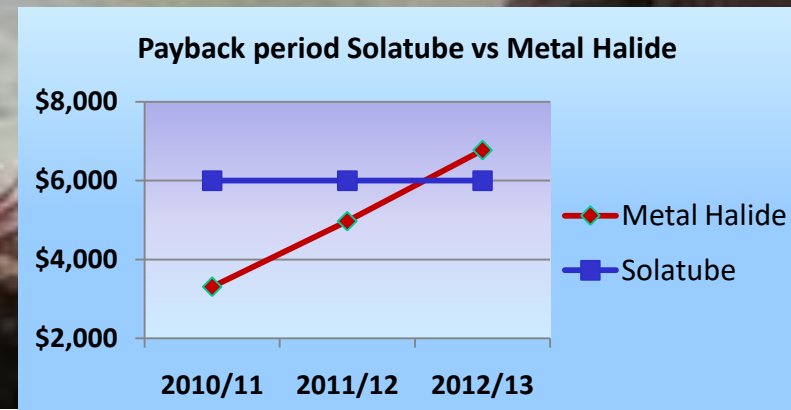
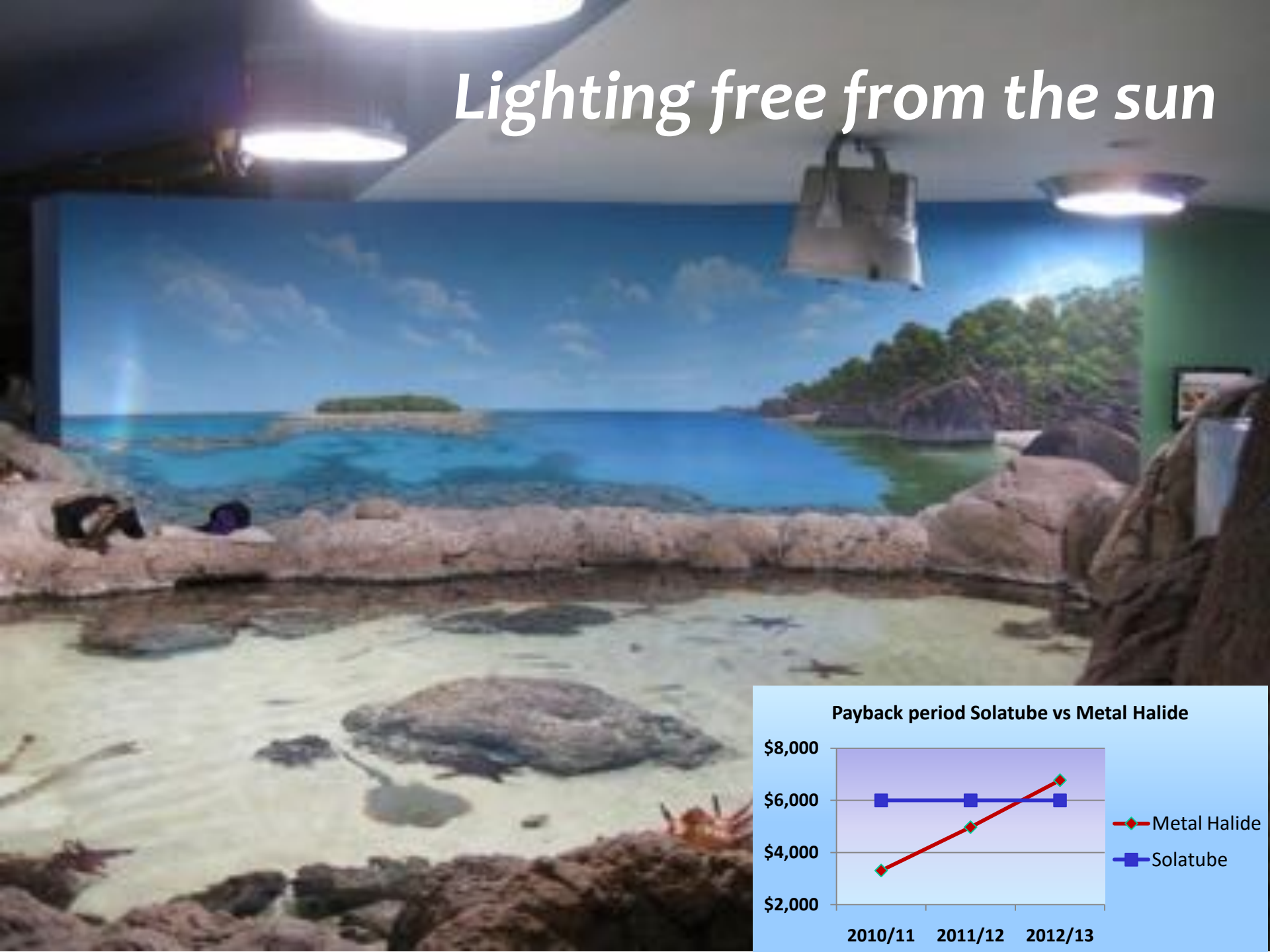
Climate Change *is the most serious threat to the* Great Barrier Reef

Conserve Act Rehabilitate Educate





Lighting free from the sun



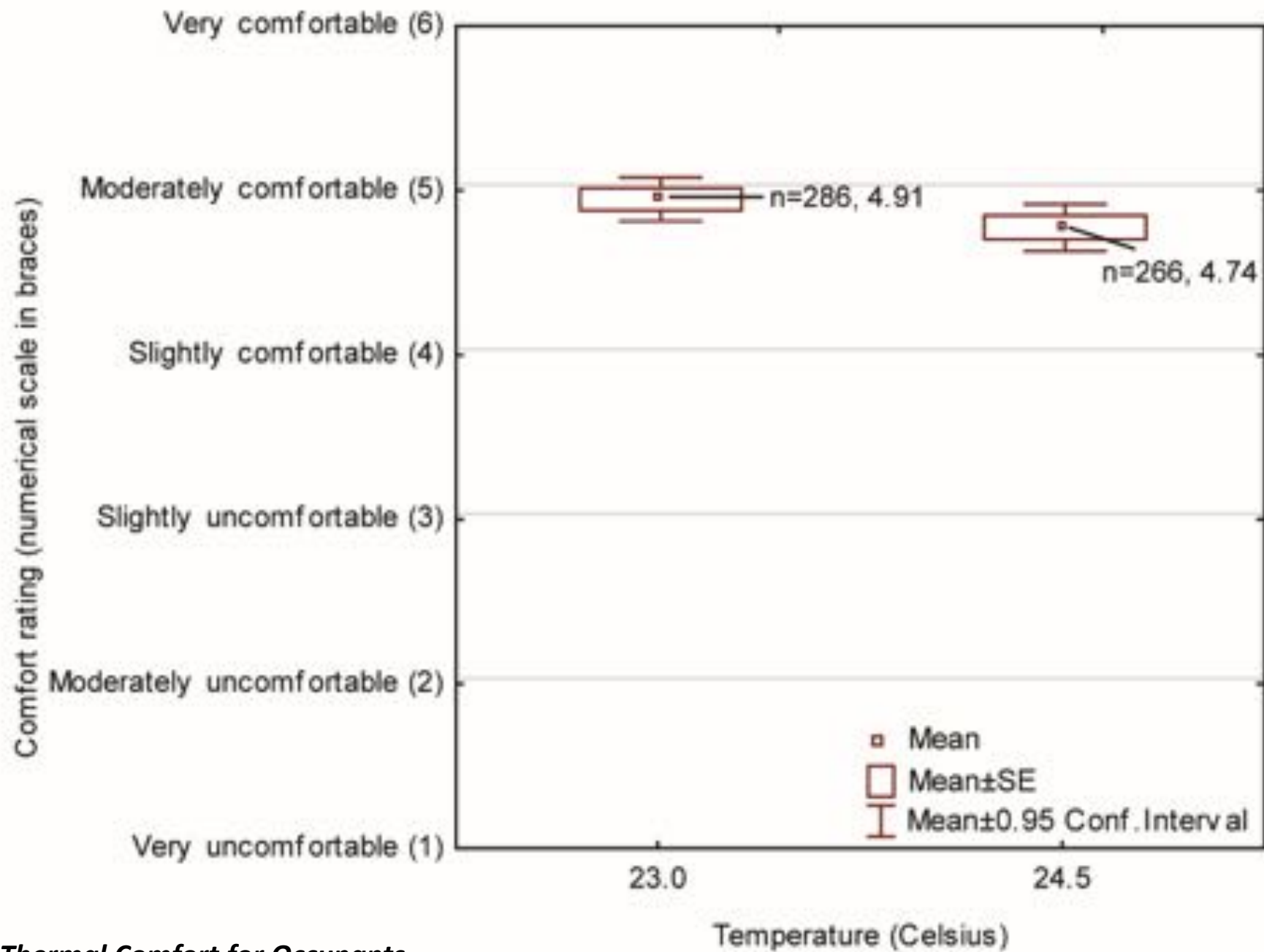


*It's 24.5°C
65% humidity
inside ...*

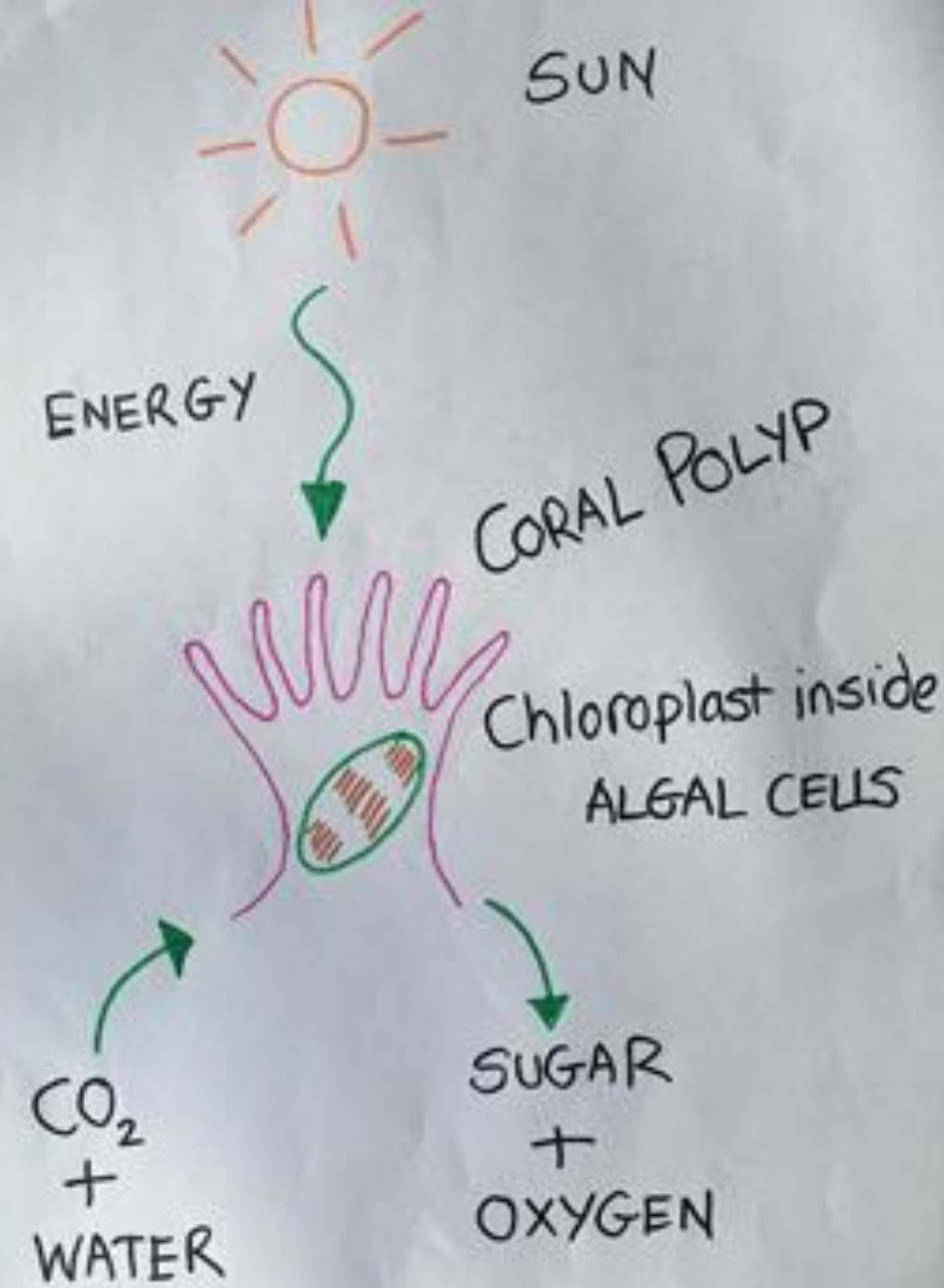


*So what is the perfect
temperature for
happiness?*





***Thermal Comfort for Occupants
Results***



ENERGY - FREE FROM THE SUN

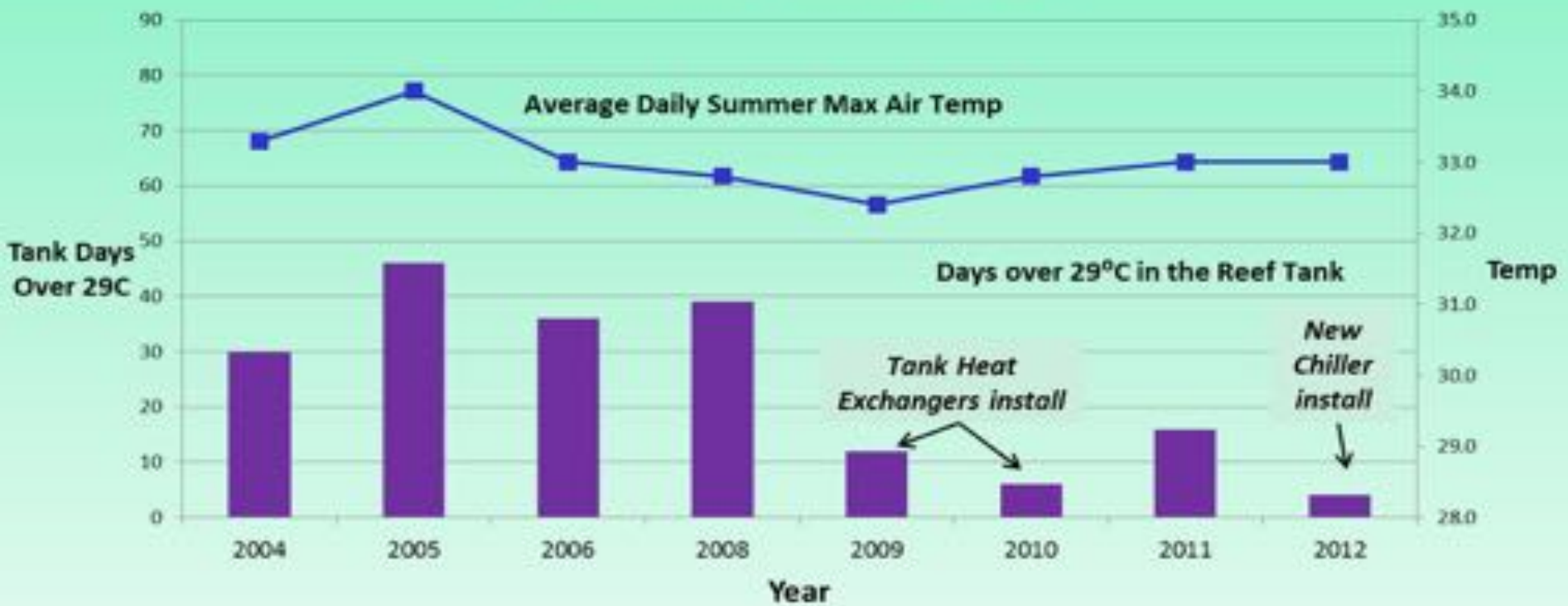




*Our solar power station is currently 206kW
with another 50 kW coming in February 2019*



Days over 29°C in the Reef Tank



WHEN IN the COURSE
of HUMAN EVENTS IT
BECOMES NECESSARY
FOR ONE PEOPLE TO
DISSOLVE the BANDS
THAT HAVE CONNECTED
THEM WITH ANOTHER.







CPowerSpout

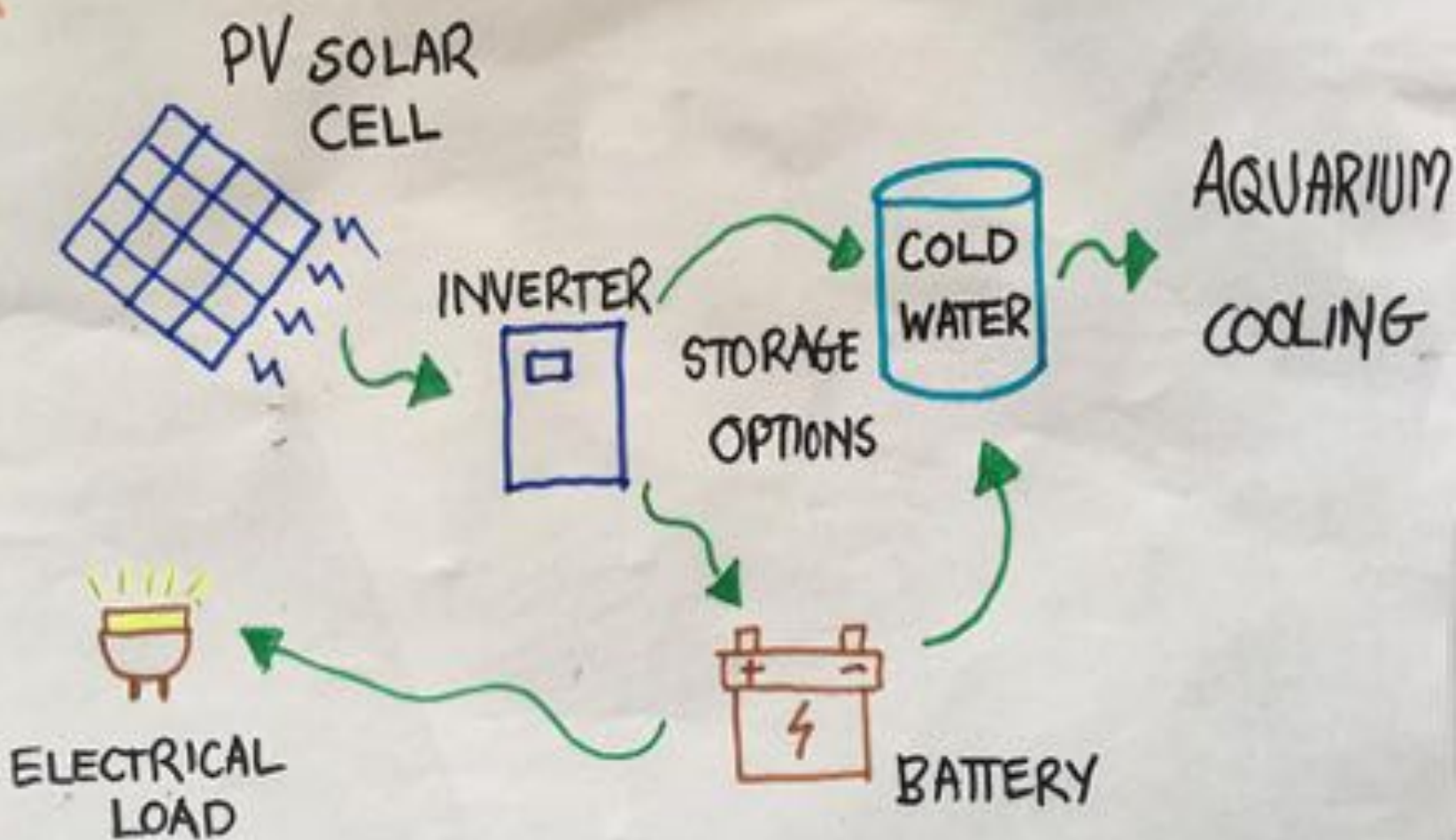


**Waste
Cooking
Oil**

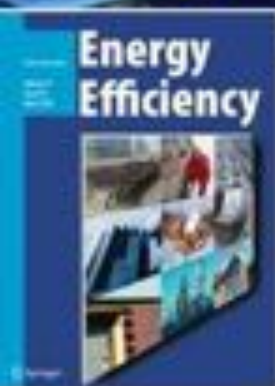
**Crude
Biodiesel
&
Glycerin**

**Polished
Biodiesel**

SUN



ENERGY - FREE FROM THE SUN (after payback)



©Commonwealth of Australia (Great Barrier Reef Marine Park Authority)

Energy Efficiency

January 2018, Volume 11, [Issue 1](#), pp 147–168 | [Cite as](#)

Optimising energy use in an existing commercial building: a case study of Australia's Reef HQ Aquarium

Authors

[Authors and affiliations](#)

Sascha Thyer , Severine Thomas, Craig McClintock, Michael Ridd

<https://link.springer.com/article/10.1007/s12053-017-9556-x>



Research at Reef HQ Aquarium

