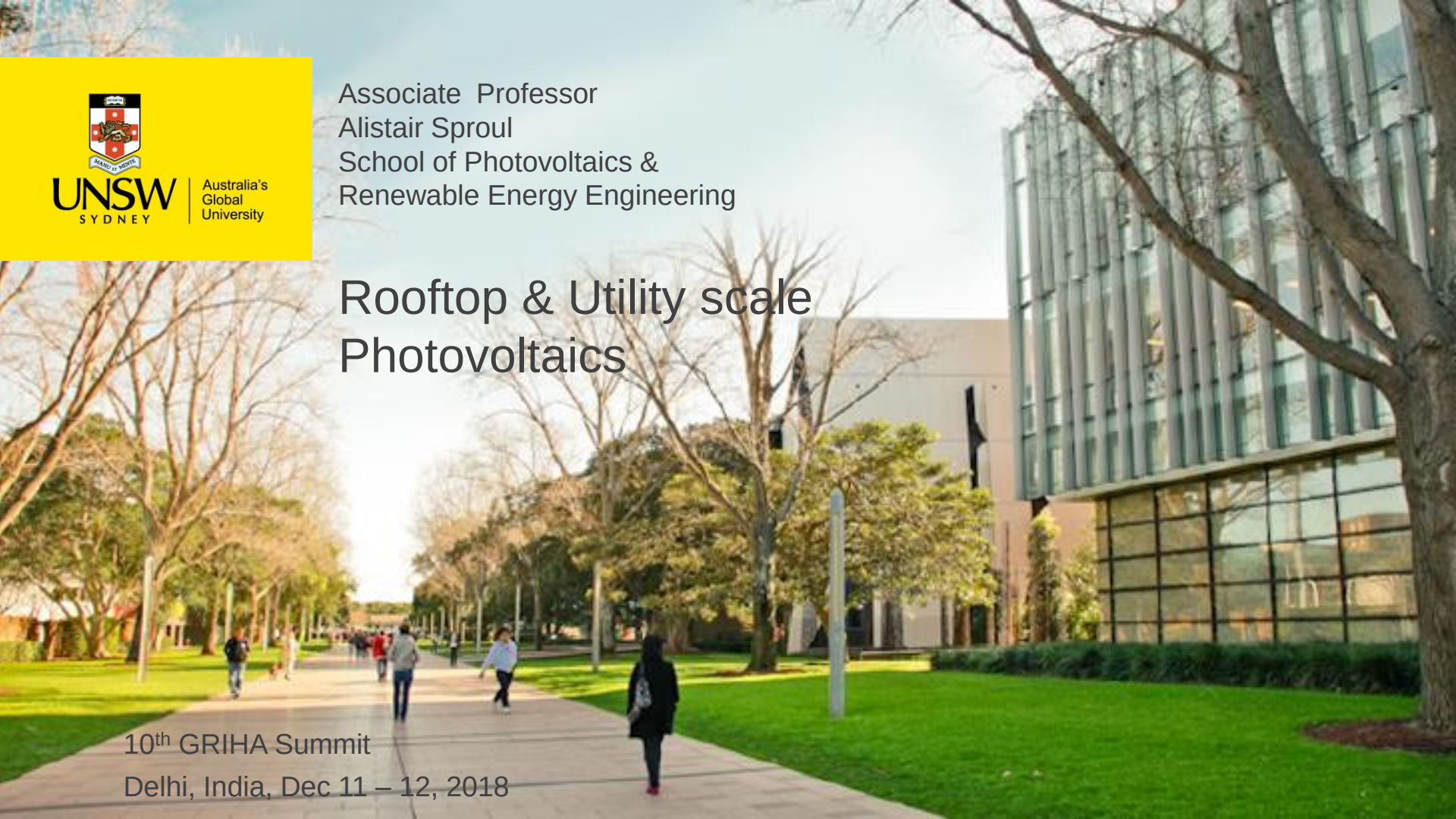


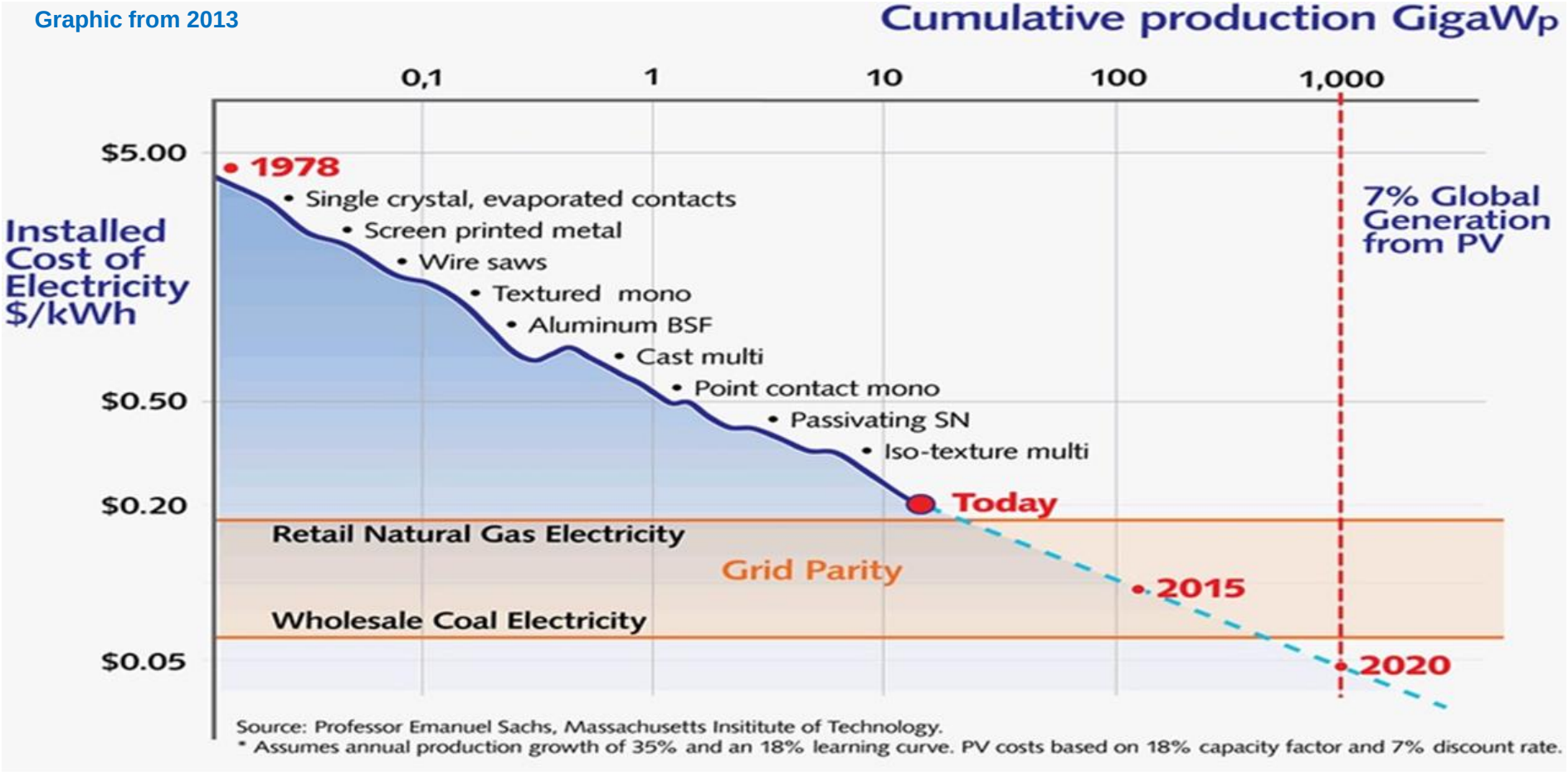
Associate Professor
Alistair Sproul
School of Photovoltaics &
Renewable Energy Engineering

Rooftop & Utility scale Photovoltaics

10th GRIHA Summit

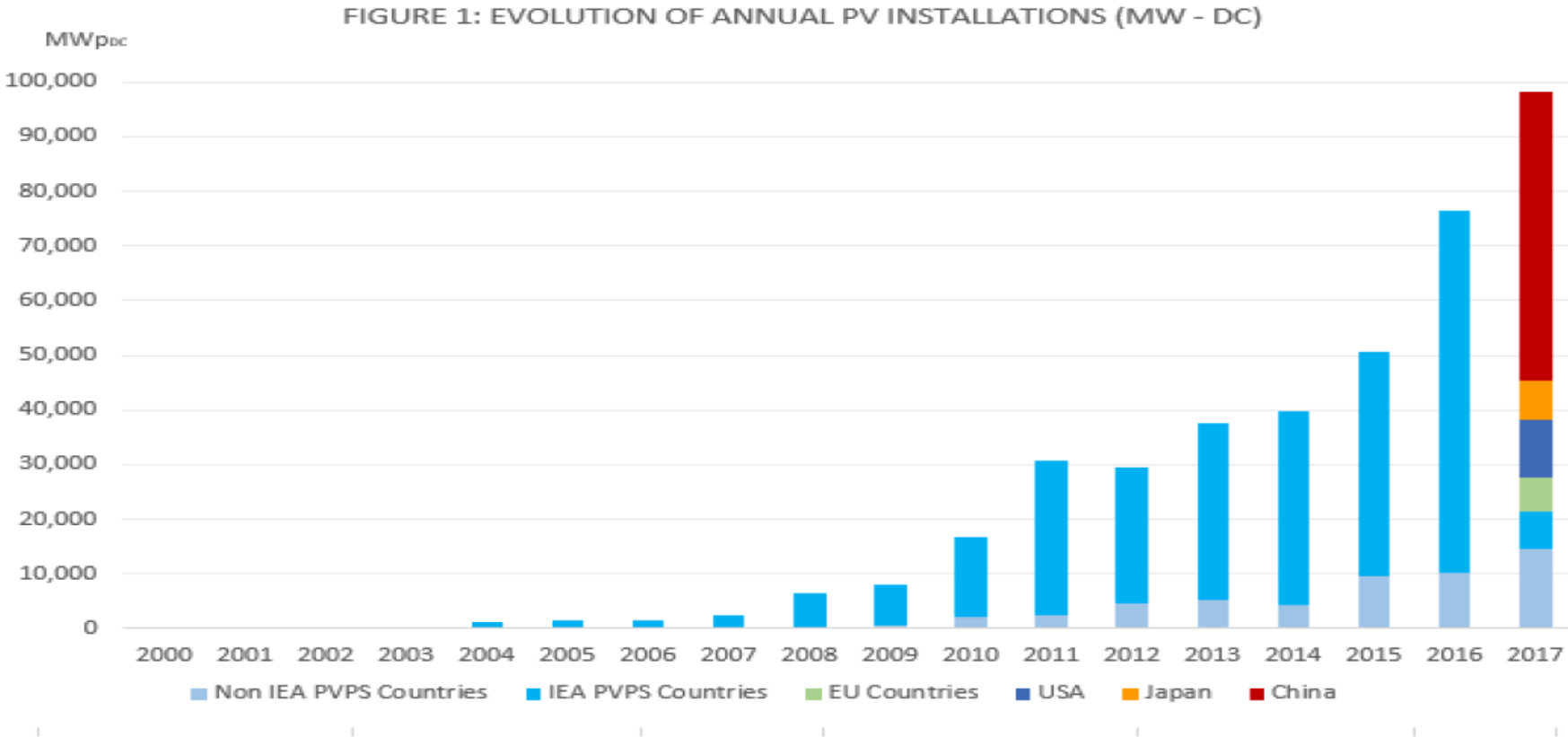
Delhi, India, Dec 11 – 12, 2018

Graphic from 2013



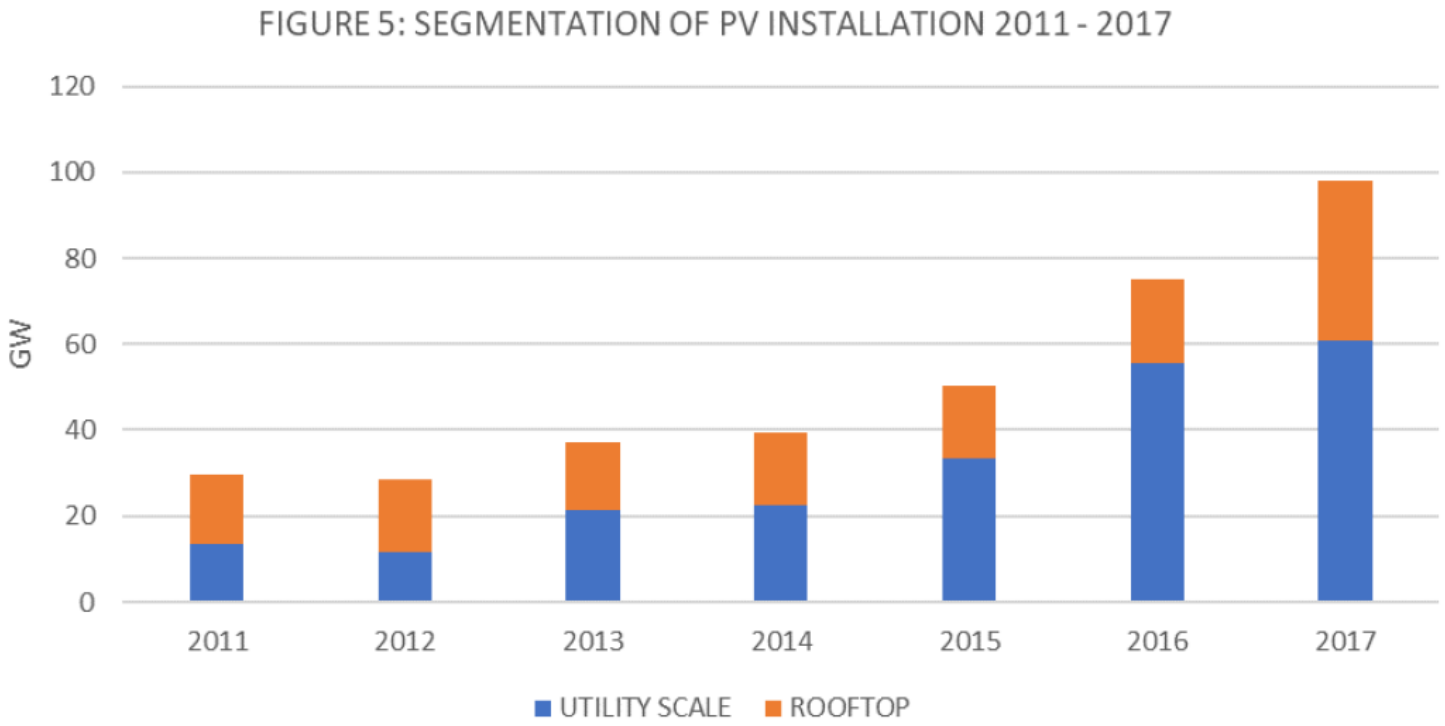
https://landartgenerator.org/blagi/archives/647

Global annual PV installations



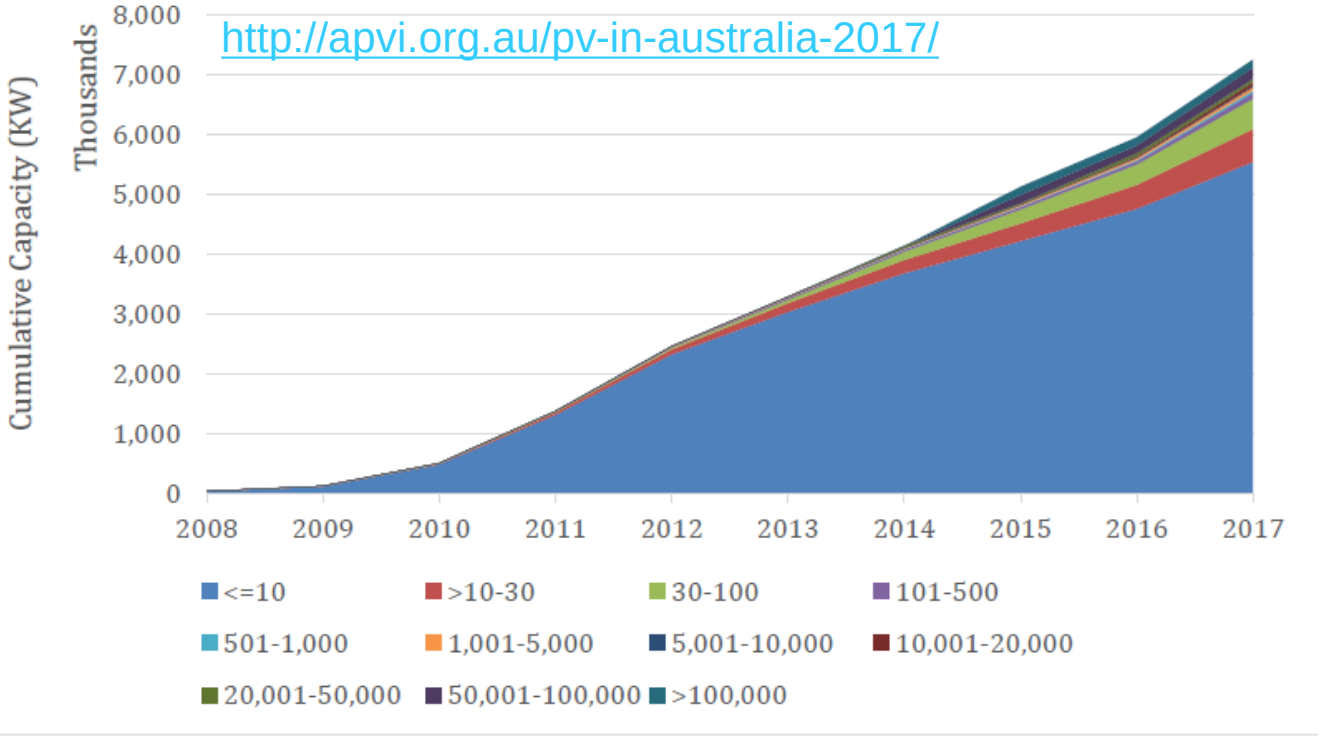
http://www.iea-pvps.org/fileadmin/dam/public/report/statistics/IEA-PVPS_-_A_Snapshot_of_Global_PV_-_1992-2017.pdf

Global: Rooftop & Utility Scale PV

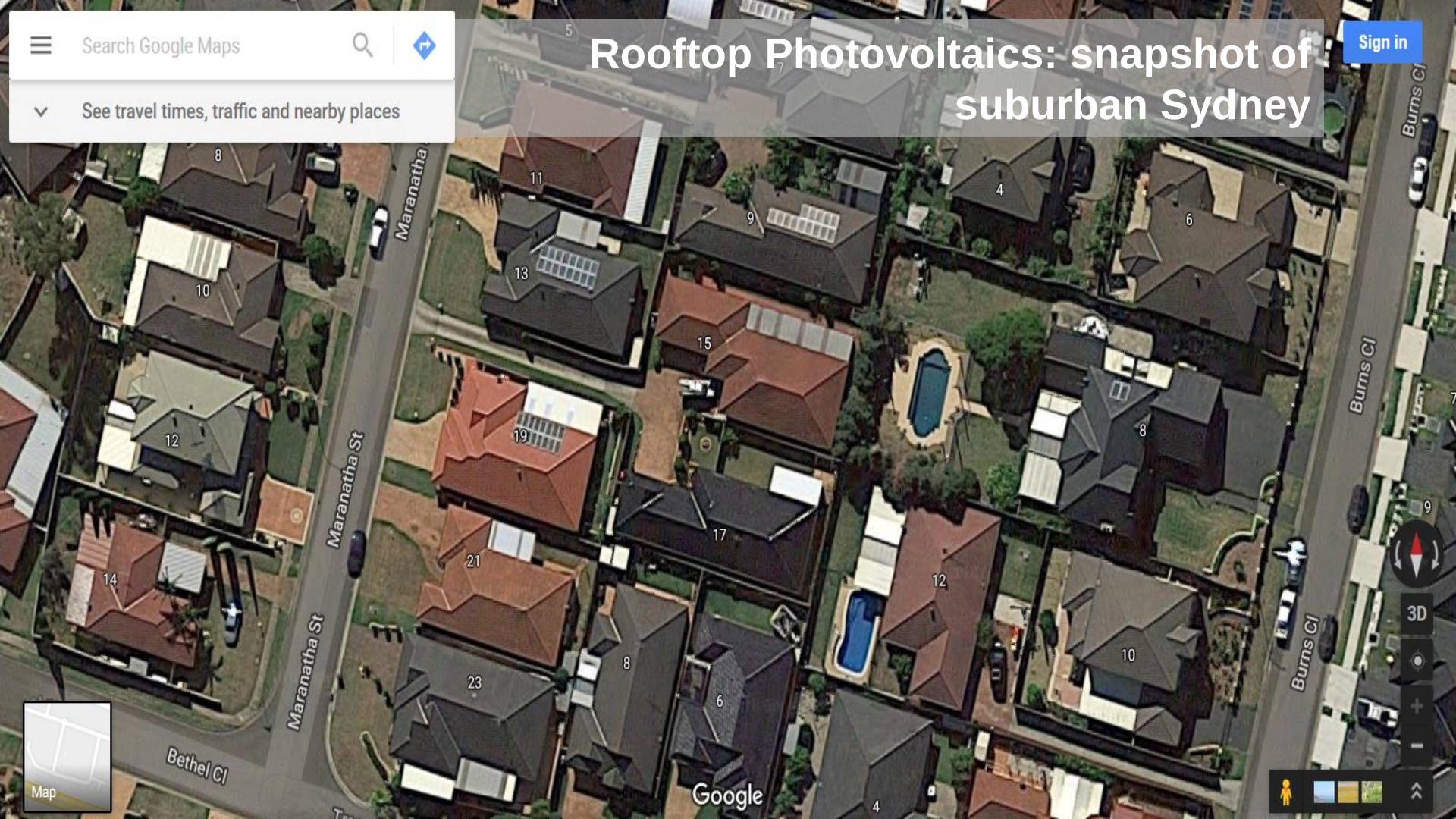


http://www.iea-pvps.org/fileadmin/dam/public/report/statistics/IEA-PVPS_-_A_Snapshot_of_Global_PV_-_1992-2017.pdf

Cumulative installed PV capacity, Australia



- Total installed PV in Australia end of 2017 over 7 GW peak.
- 2018 – utility scale installation greater than rooftop
- Headed for 10 GW for 2018 (~40% increase/year)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See travel times, traffic and nearby places
Rooftop Photovoltaics: snapshot of suburban Sydney
Sign in
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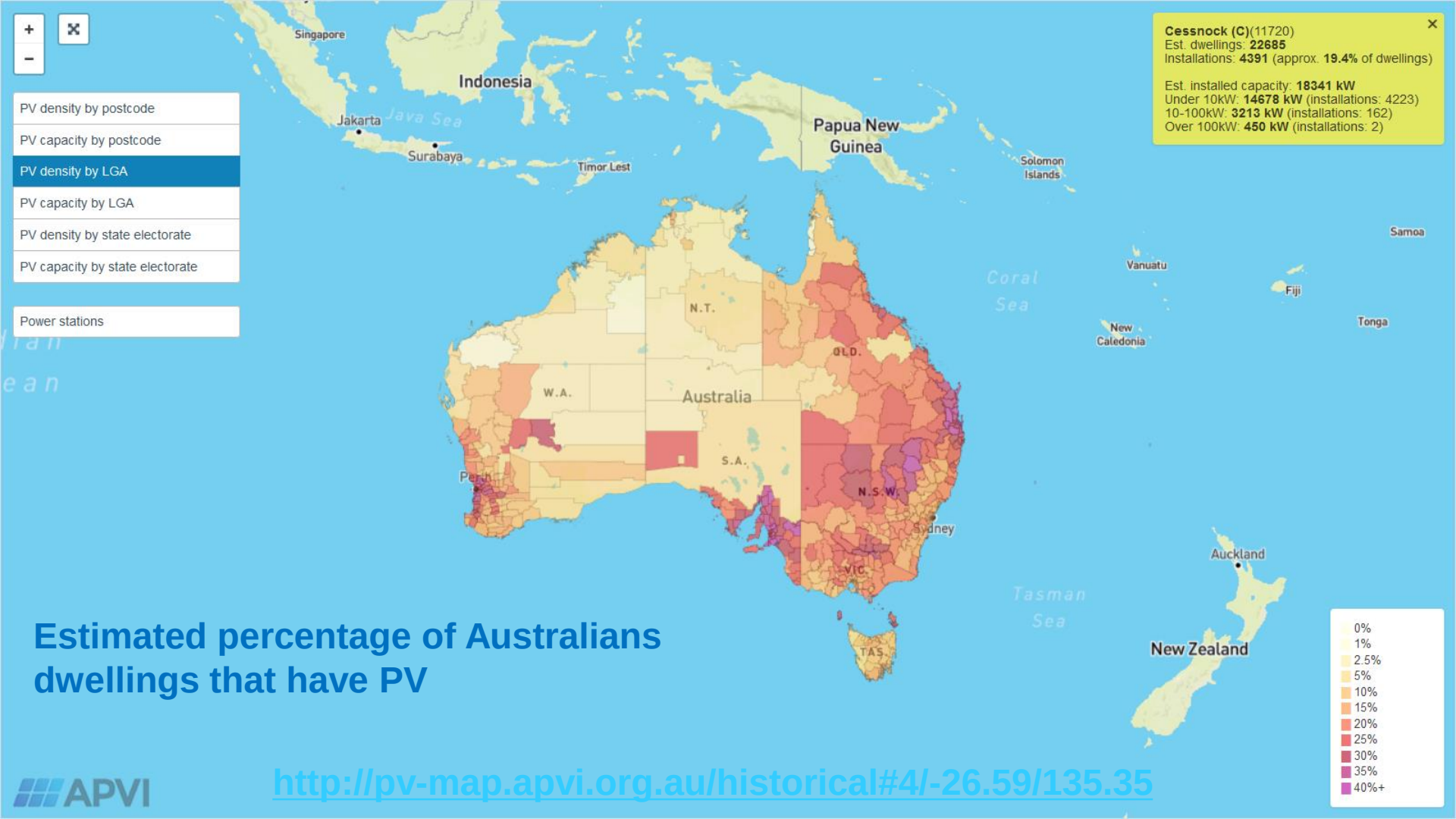
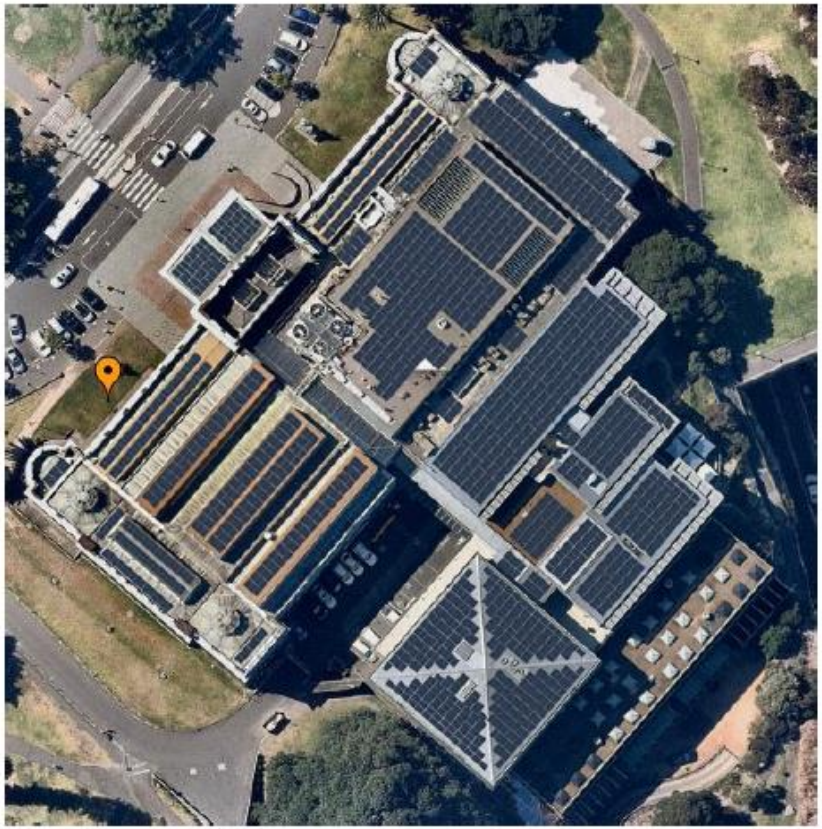


Estimated percentage of Australians dwellings that have PV

APVI

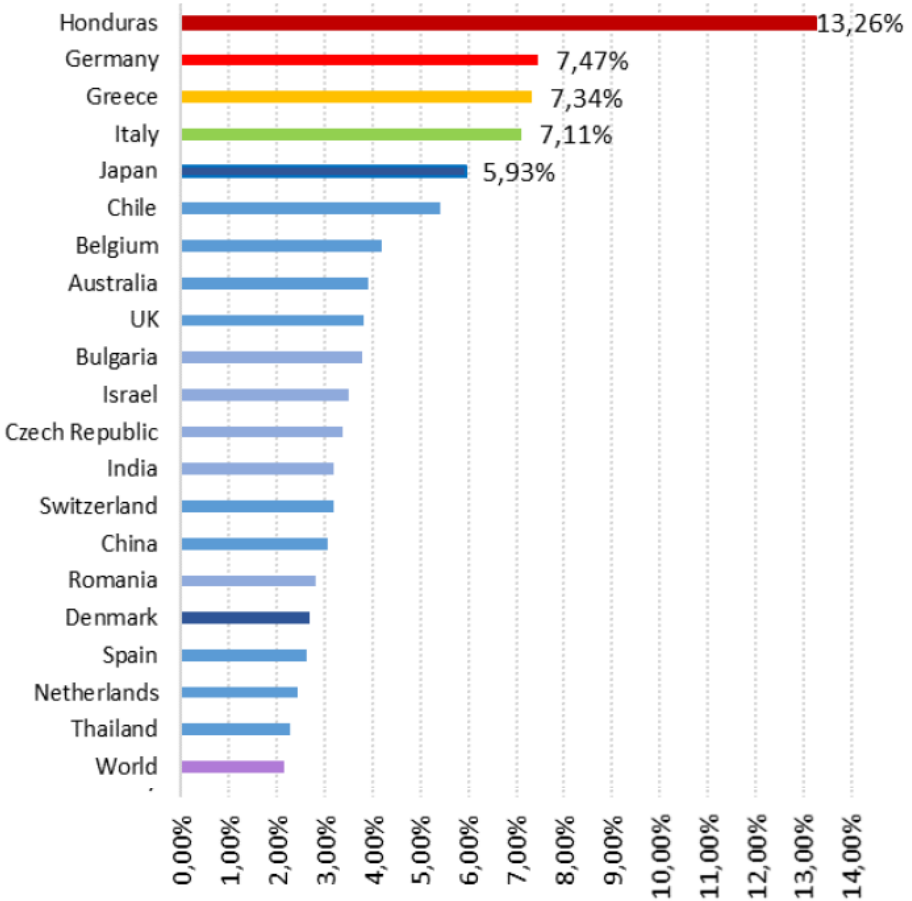
http://pv-map.apvi.org.au/historical#4/-26.59/135.35

PV potential rooftop installations: Sydney



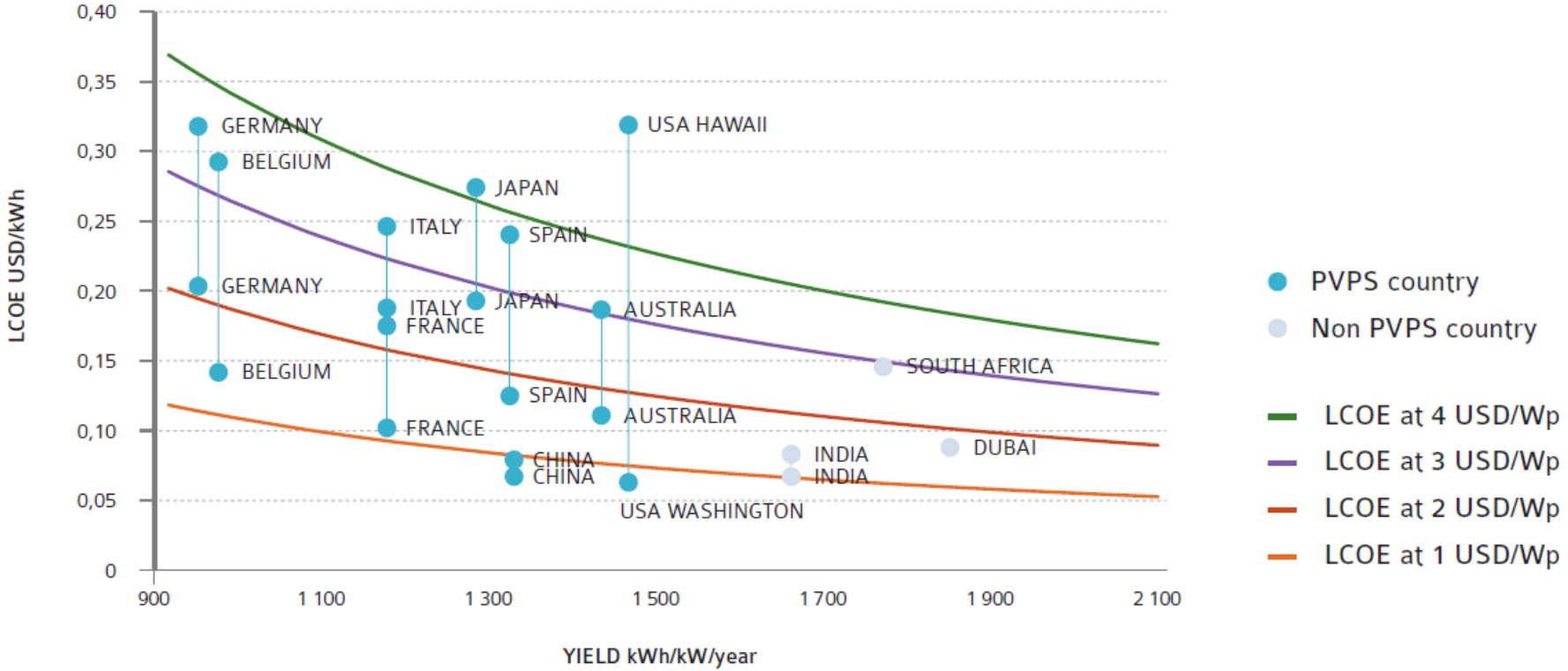
http://apvi.org.au/wp-content/uploads/2018/03/CMC_SydneySolarPotential_Final_Final_lores.pdf

Estimate of total electricity demand met by PV generation by country for 2017



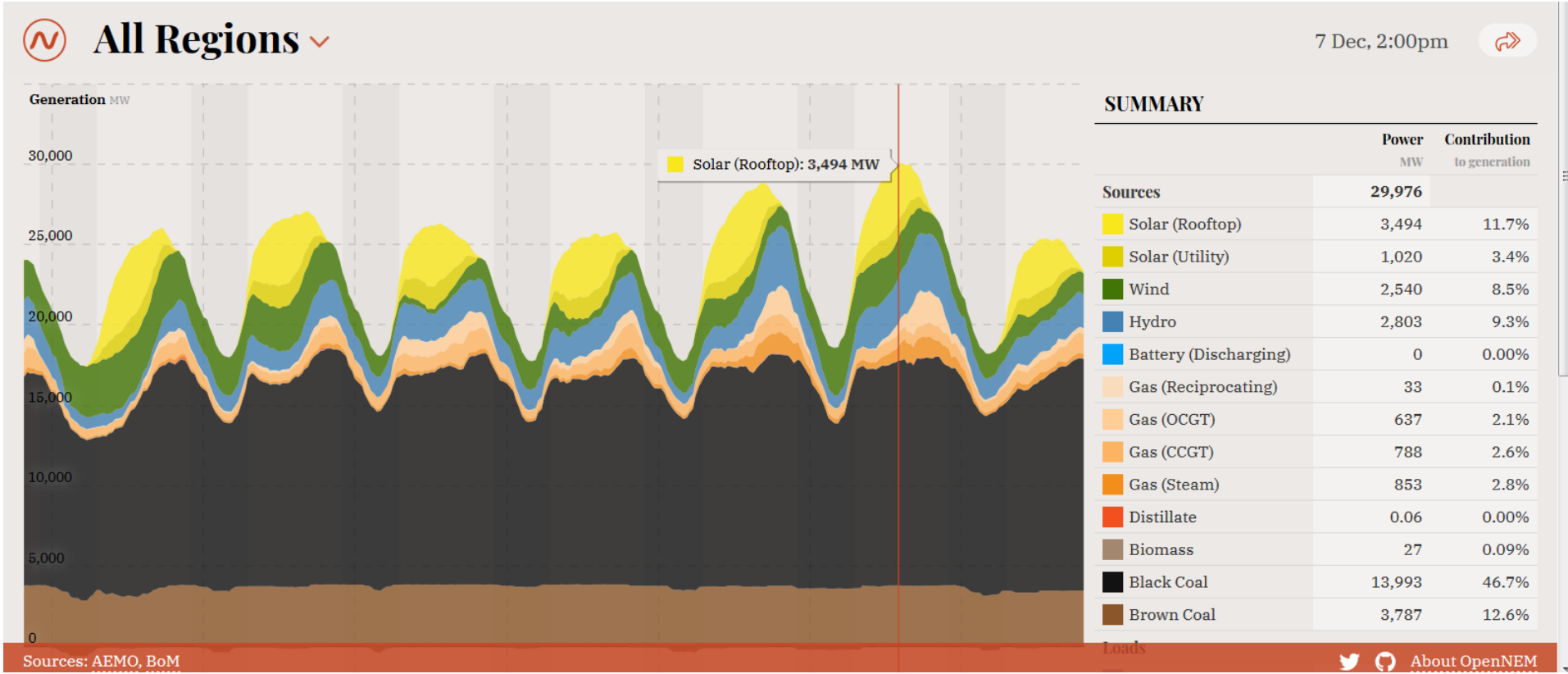
http://www.iea-pvps.org/fileadmin/dam/public/report/statistics/IEA-PVPS_-_A_Snapshot_of_Global_PV_-_1992-2017.pdf

PV Levelized Cost of Electricity (LCOE)



http://www.iea-pvps.org/fileadmin/dam/public/report/statistics/IEA-PVPS_Trends_2017_in_Photovoltaic_Applications.pdf

Electricity mix, Australia: increasing PV, wind and hydro



TYREE Energy technology building, UNSW

150 kW PV 6 star efficient building

UNSW to go 100% off-site solar

In the first deal of its kind in the world university sector, UNSW has reached an agreement with Maoneng Australia and Origin Energy to have 100% of its electricity supplied by photovoltaic solar energy by 2019.

Sunraysia solar farm will be built by Maoneng near Balranald – western NSW.

UNSW power purchase arrangement.

- **100% solar – price is lower than standard “black” electricity (coal, gas).**
- **No subsidies**

http://sunraysiasolarfarm.com.au/

Artist’s impression of 200 MW_{AC} Sunraysia Solar Farm

The future is very close: solar roof, batteries, efficient buildings + EV

https://www.wired.com/2016/10/tesla-unveils-new-line-camouflaged-solar-panels/

Conclusions

- Photovoltaics is growing fast (~40% per annum **cumulatively**).
- Rooftop photovoltaics together with utility scale photovoltaics is now cost competitive with fossil fueled electricity in many parts of the world.
- A major transition away from coal, gas and oil is now well and truly underway
- Countries with greater sunshine have a natural advantage and PV electricity is **still** getting cheaper.
- PV as an industry can deliver power from Watts to TeraWatts – homes, villages, cities and nations.
- PV and other renewables **at scale** will aid humanity in moving towards developing sustainable habitats now and for future generations.