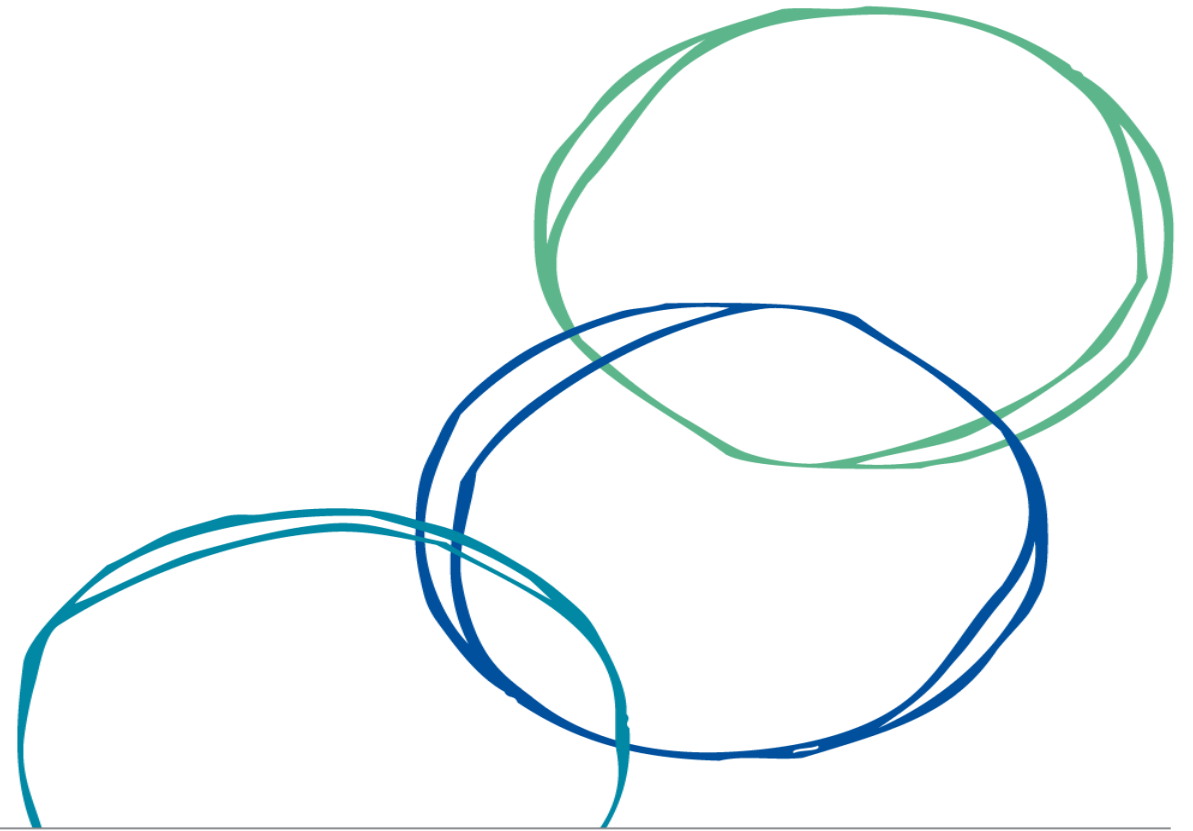
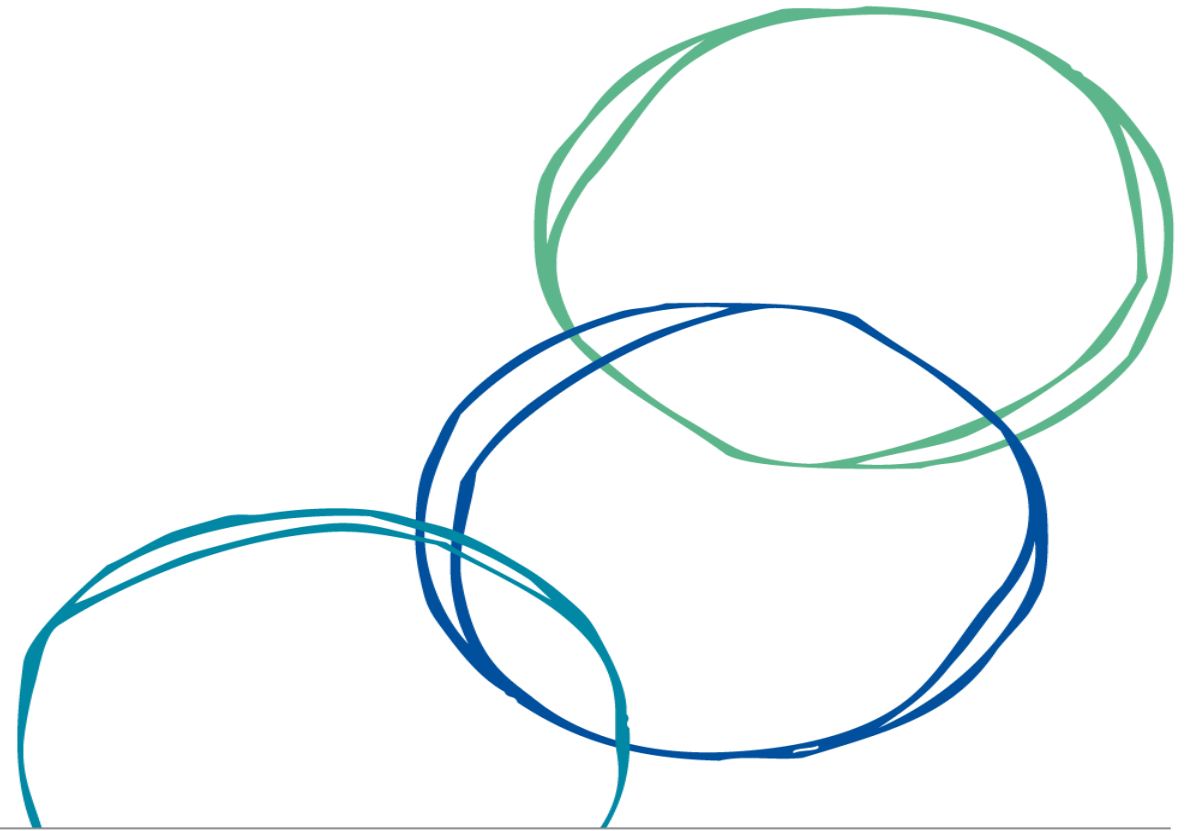


The Trackless Tram and Lithium Valley - the next agenda...

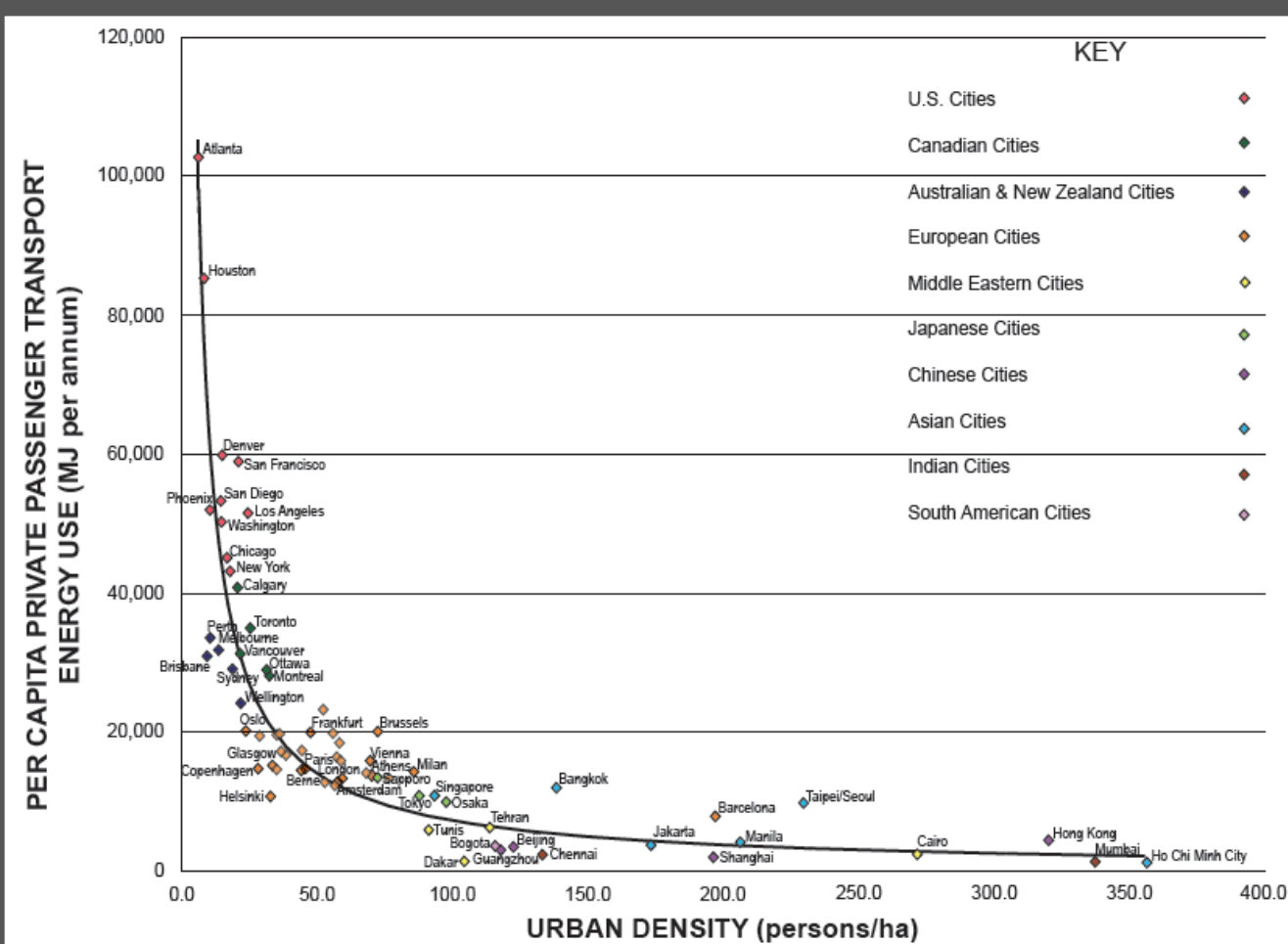
by
Peter Newman



Thanks to the CRC
Low Carbon Living
for an amazing 8
years of support for
CUSP....



Transport, Energy and Land Use – a personal and academic journey....



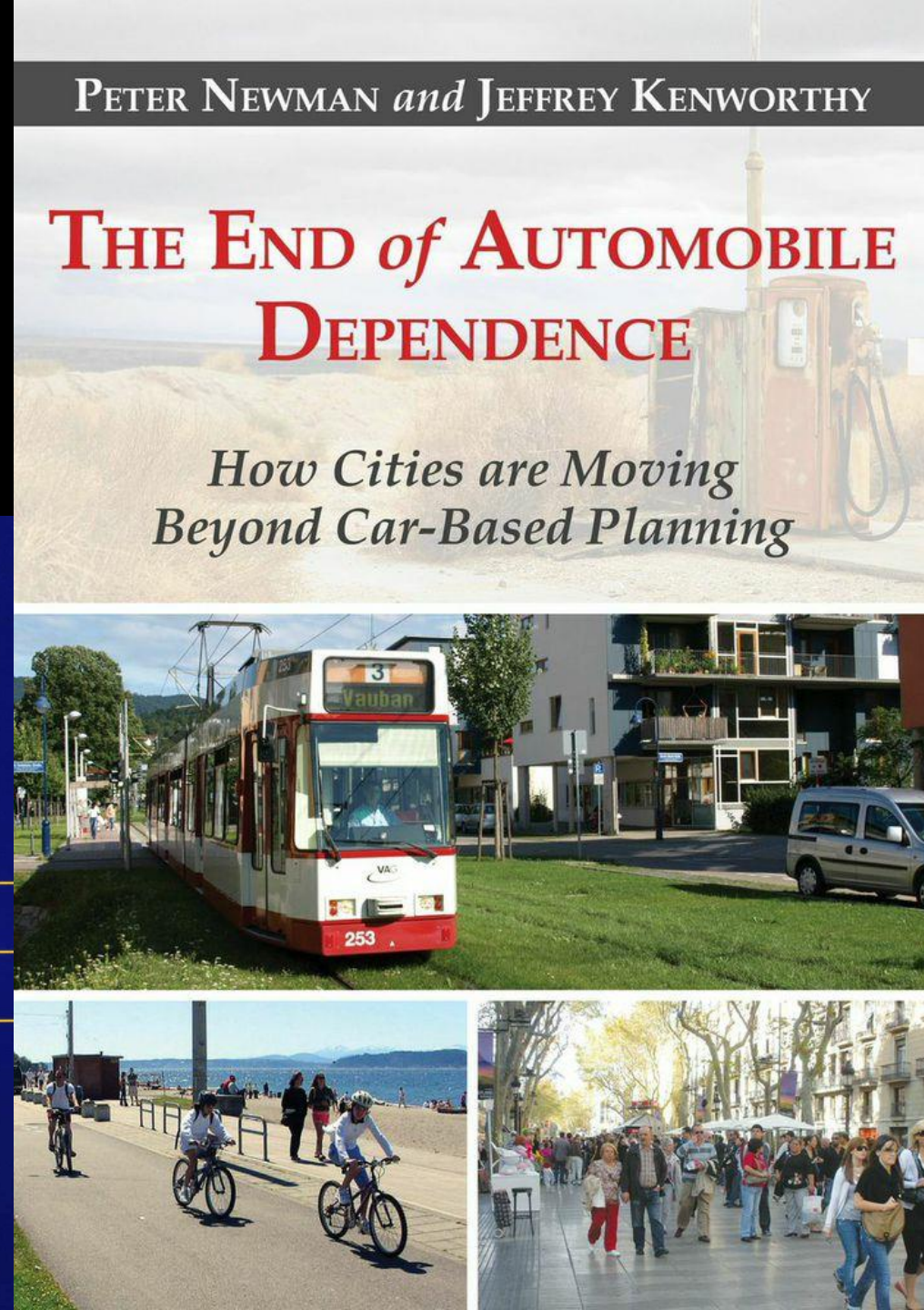
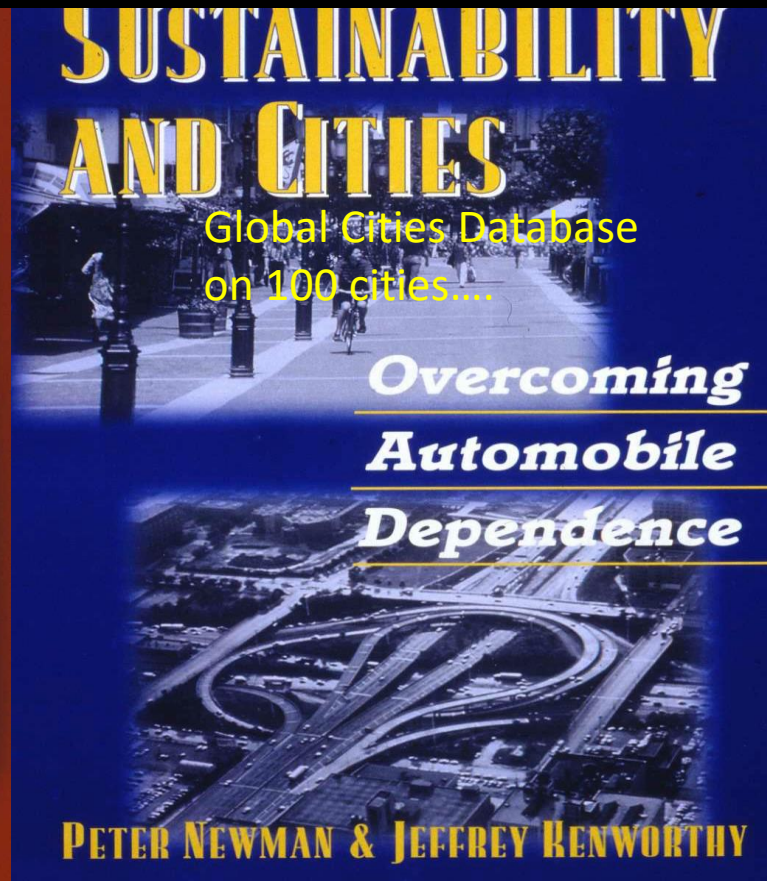
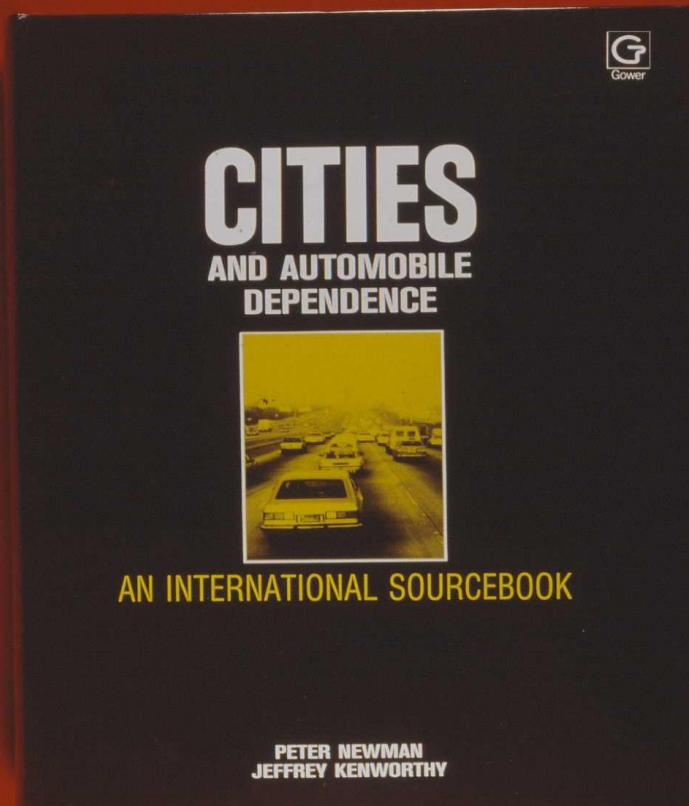
Getting data to compare cities - to see why some have fewer cars and better transit....

2015

Rail vs road, density vs sprawl.....

1989

2009

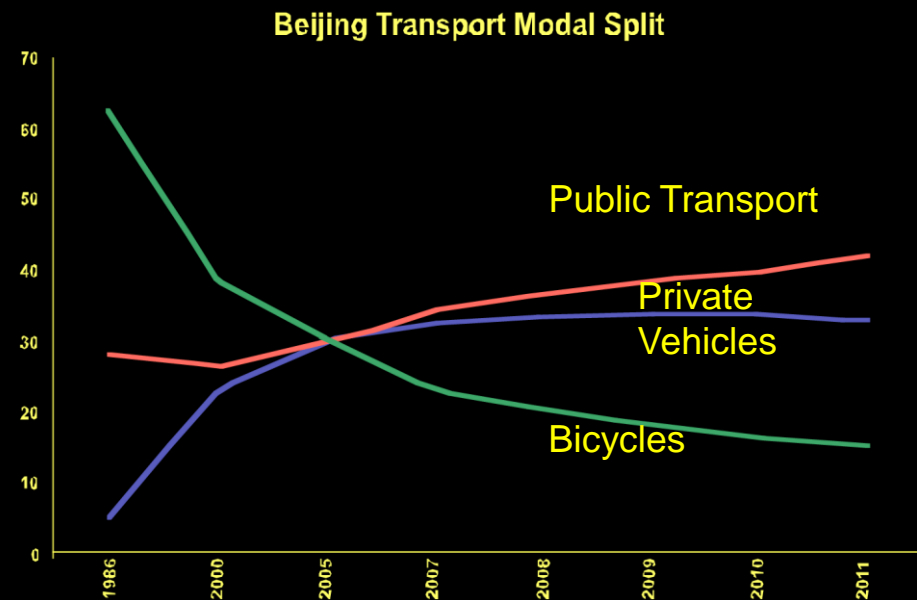


Global growth now in rail ...

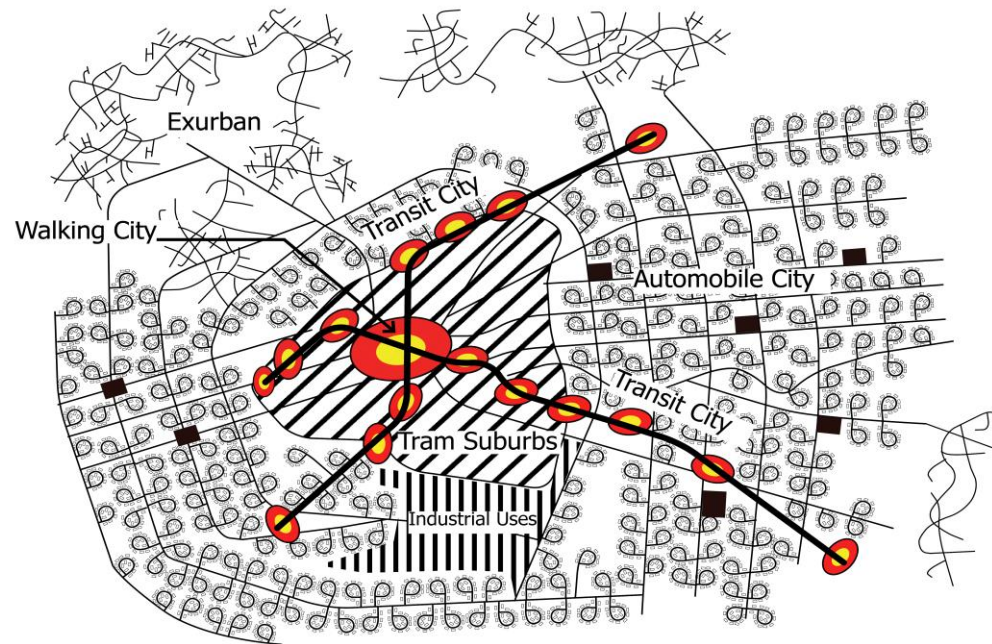
- 82 Chinese cities building metros and high speed rail between cities
Shanghai 8m passengers/day
- 51 Indian cities building metros Any city over 1m.
- Middle east cities building rail for first time



Proportion of Transport Modal



Theory of Urban Fabrics – three cities exist in all cities. Need to respect and rejuvenate all three...different energy strategies in each



Most cities now want Rail Transit Fabric.....rail and activity centres



ALONG COMES THE TRACKLESS TRAM.....

Electric. 70 kph. 300-500 people capacity



TRACKLESS TRAM in ZhuZhou

No tracks
\$6m per km
instead of
minimum \$50m









Linked to Local Shared Mobility

Autonomous Local Transit
at Curtin
- interoperability

Characteristics of transit systems

The table summarises the key characteristics of Bus Rapid Transit (BRT), Light Rail Transit (LRT) and Autonomous Rail Transit (ART, or trackless tram) systems.

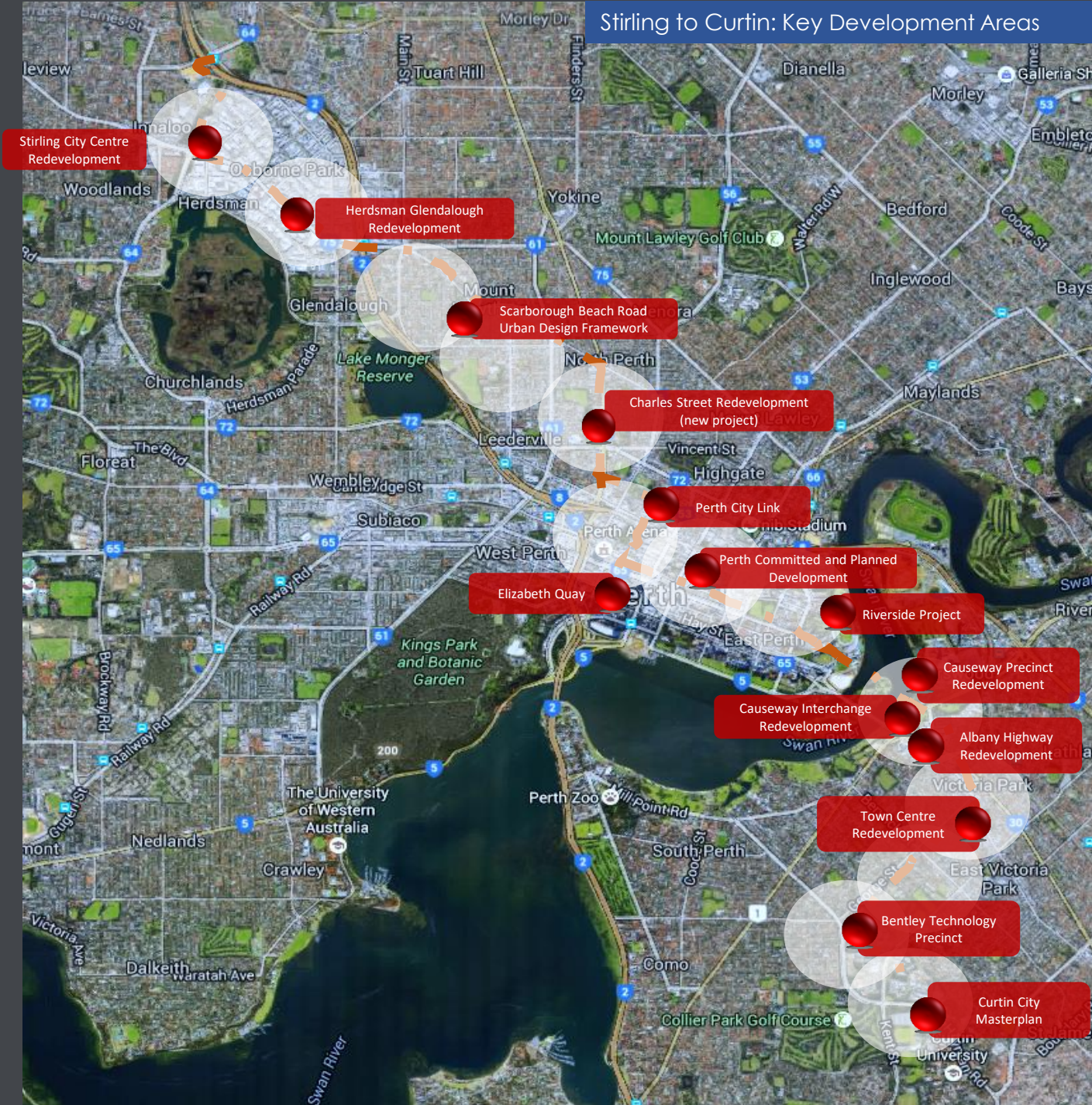
Characteristic	BRT	LRT	ART
Speed and capacity	✓	✓✓	✓✓
Ride quality	✗	✓✓	✓✓
Land development potential	✗	✓✓	✓✓
Cost	✓	✗	✓
Disruption to services and local economy in construction period	✓	✗	✓✓
Implementation time	✓	✗	✓
Overall	✓	✓✓	✓✓✓



GUIDE and MANUAL

- available on CUSP website
- next project will apply it to several places across Australia

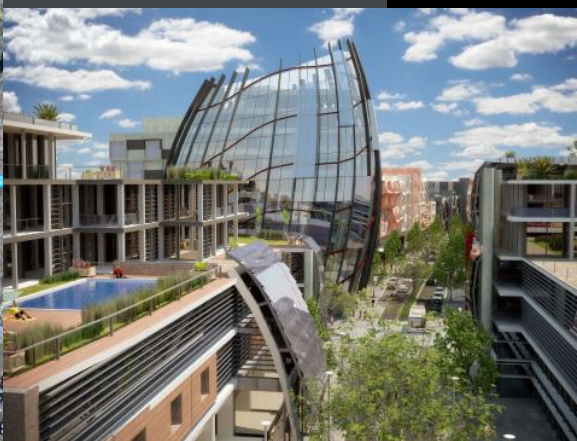
Transit
Activated
Development
Developer-led
transit



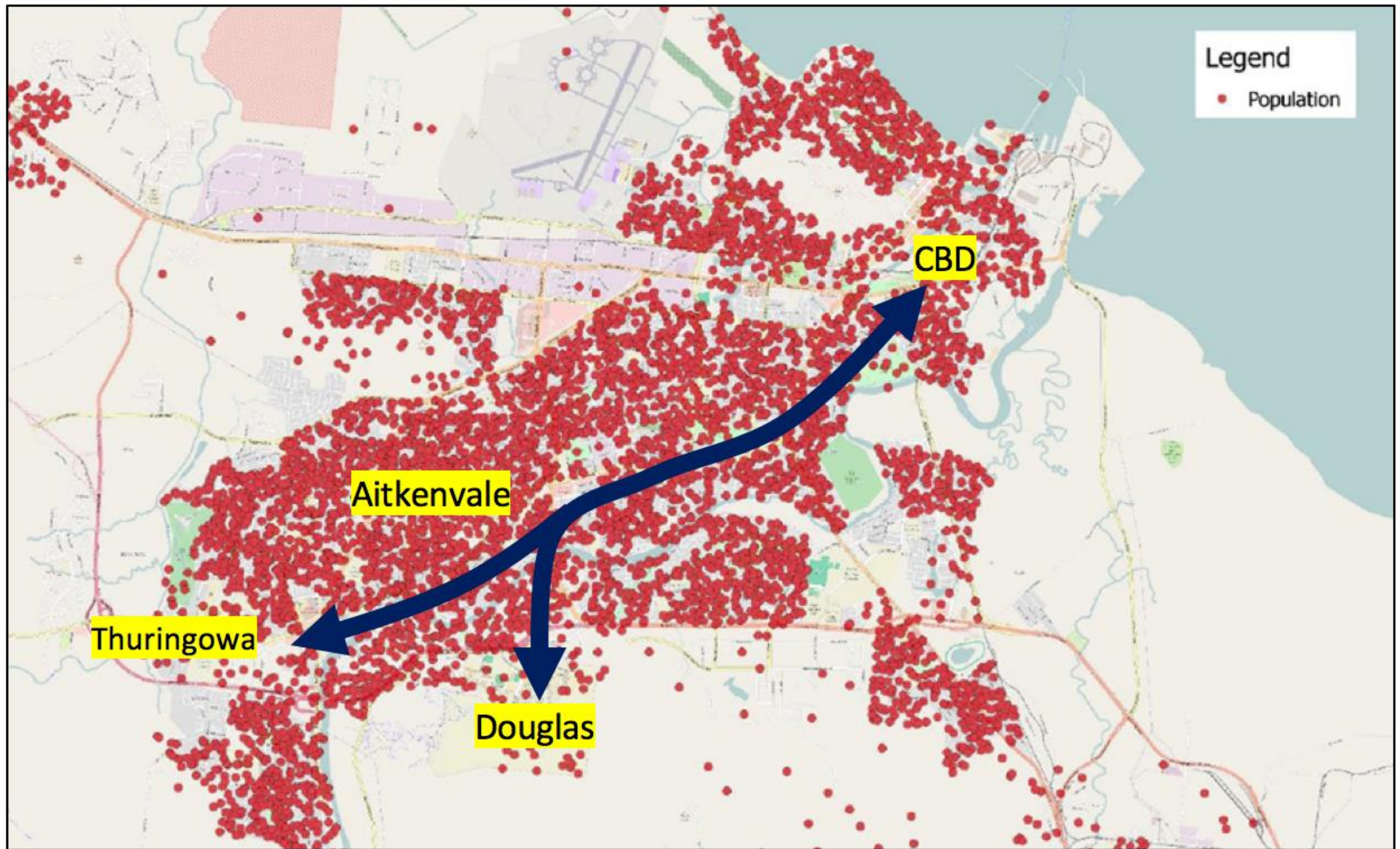
Stirling City Centre



Riverside Project



Bentley Technology Precinct

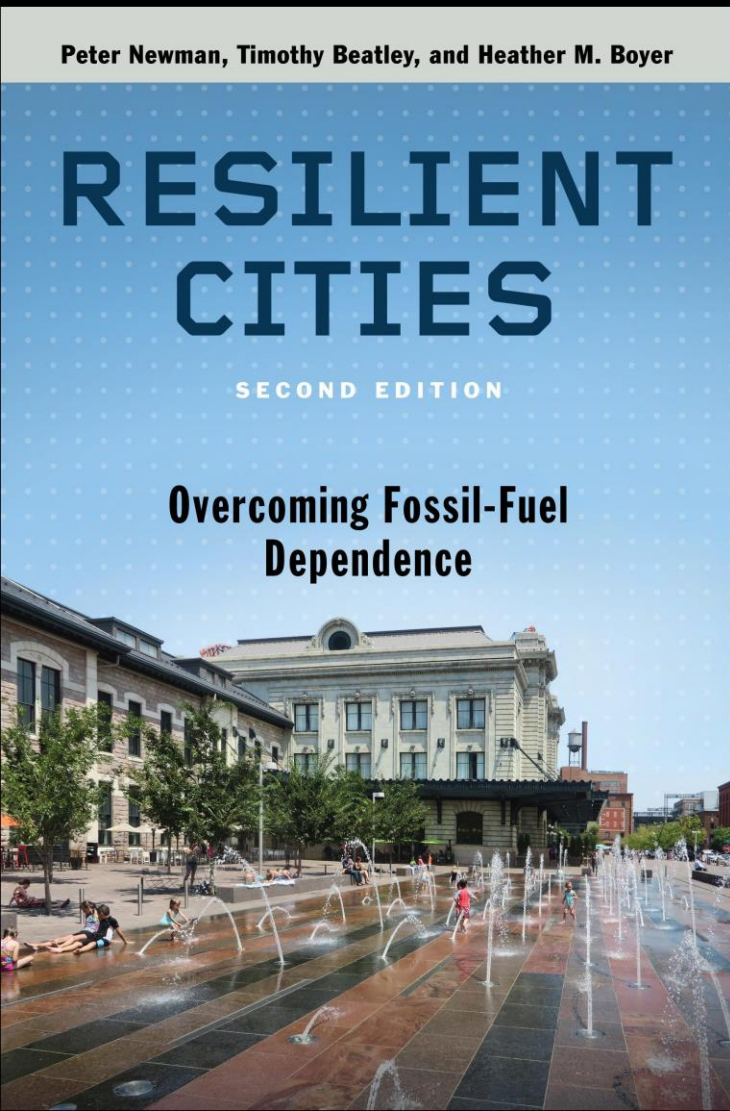


²Figure 3: Proposed Metro route in relation and population clusters

The Trackless Tram...

- New generation technology with significant opportunity to reduce carbon.
- Enables integrated land development through finance options.
- Offers a dramatic opportunity to create a far less car dependent city
- Should be possible to build without requiring only-government funding but needs new partnerships.
- Requires lots of demonstrations as part of a new CRC.....

The disruptive innovations changing our future cities.....



2010 to 2016....according to IRENA

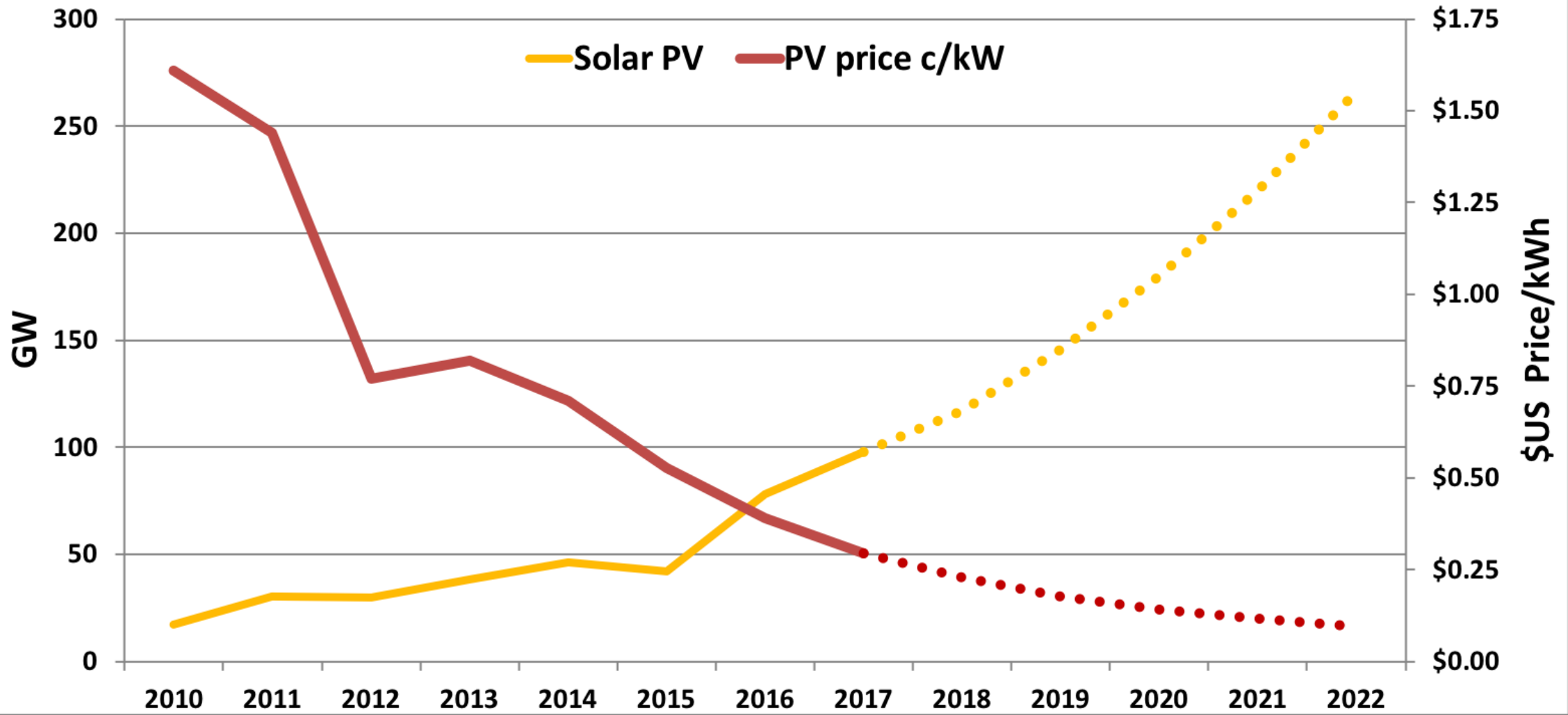
1. Solar grew by 66%
2. Wind grew by 30%
3. Batteries grew by 50%

And the annual rates keep going up...

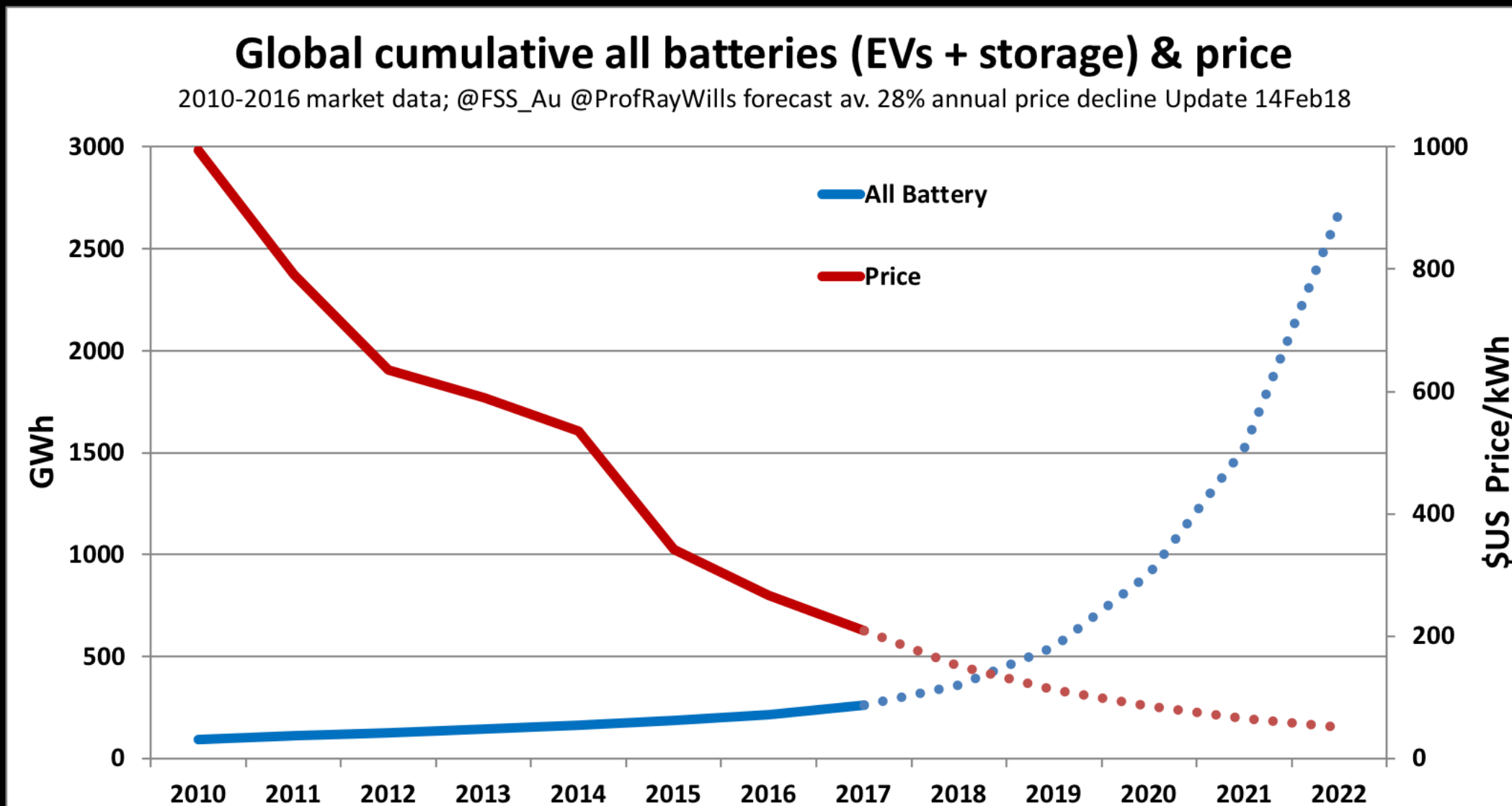
Solar growth as cost drops— mass production China

Global cumulative solar & price

2010-2017 market data; @FSS_Au @ProfRayWills forecast av. 28% annual price decline 11Feb18

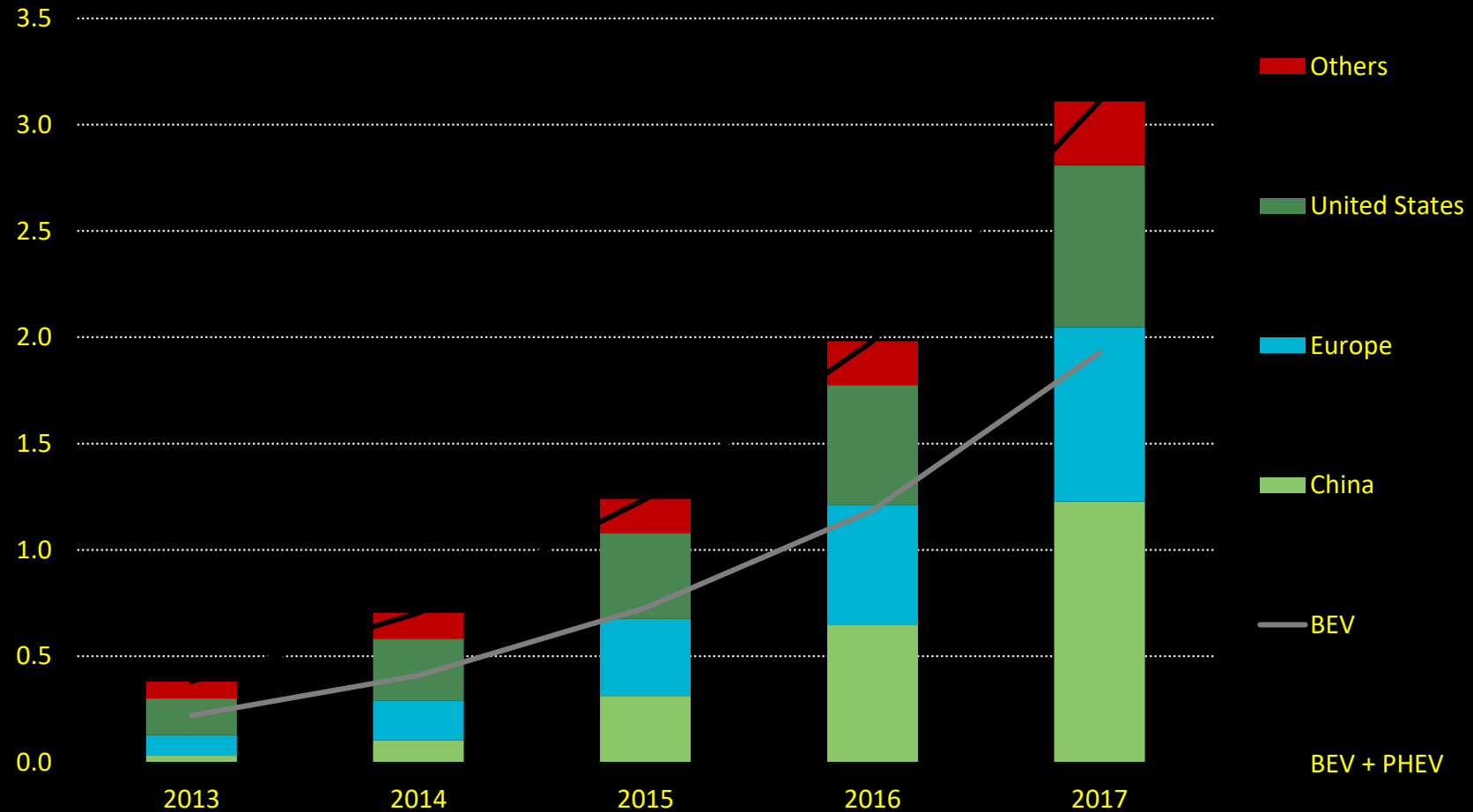


Battery growth as cost drops....



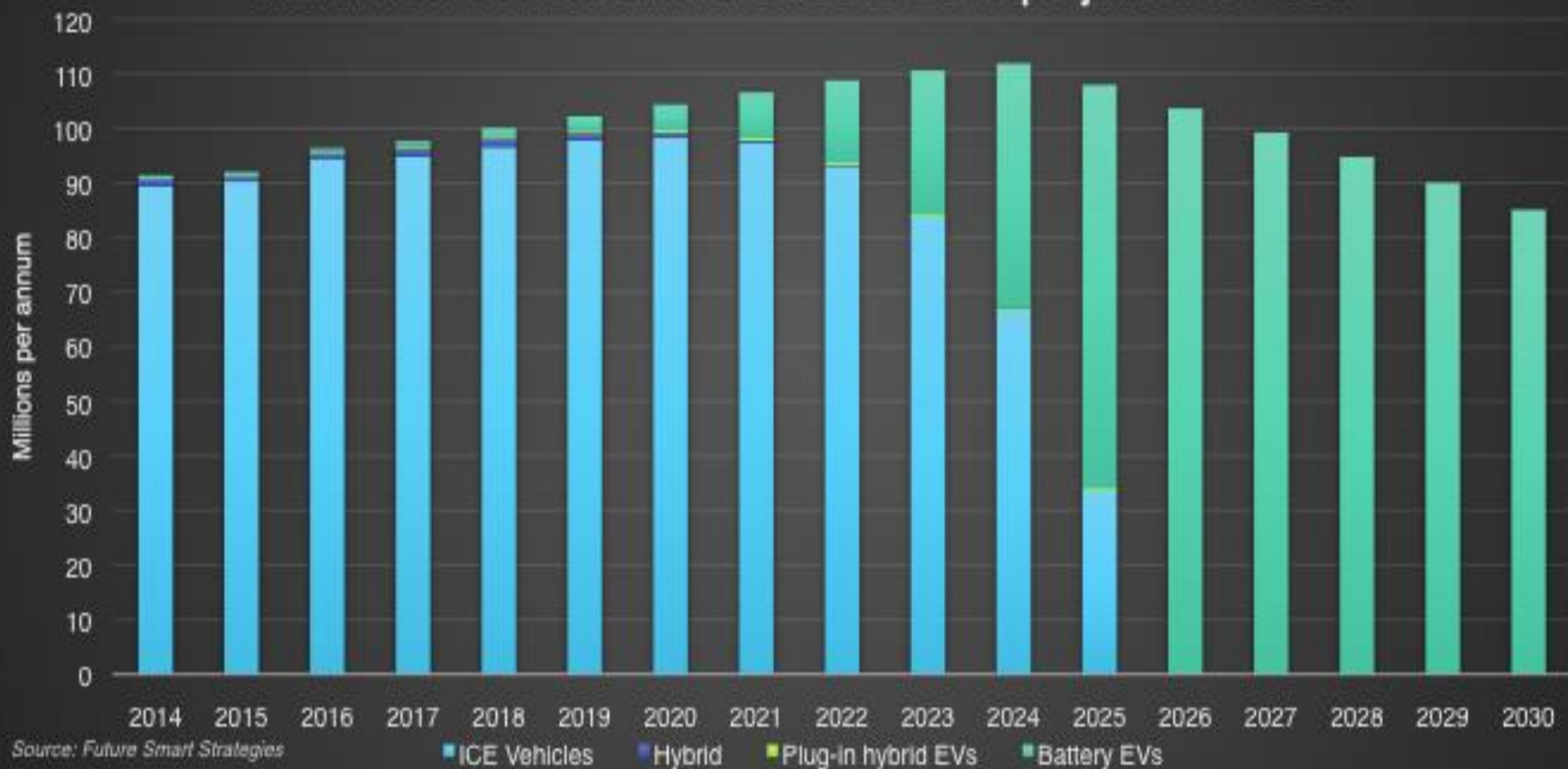
Electric vehicles are growing globally at over 40% per year ...

Honda Zero Carbon Home

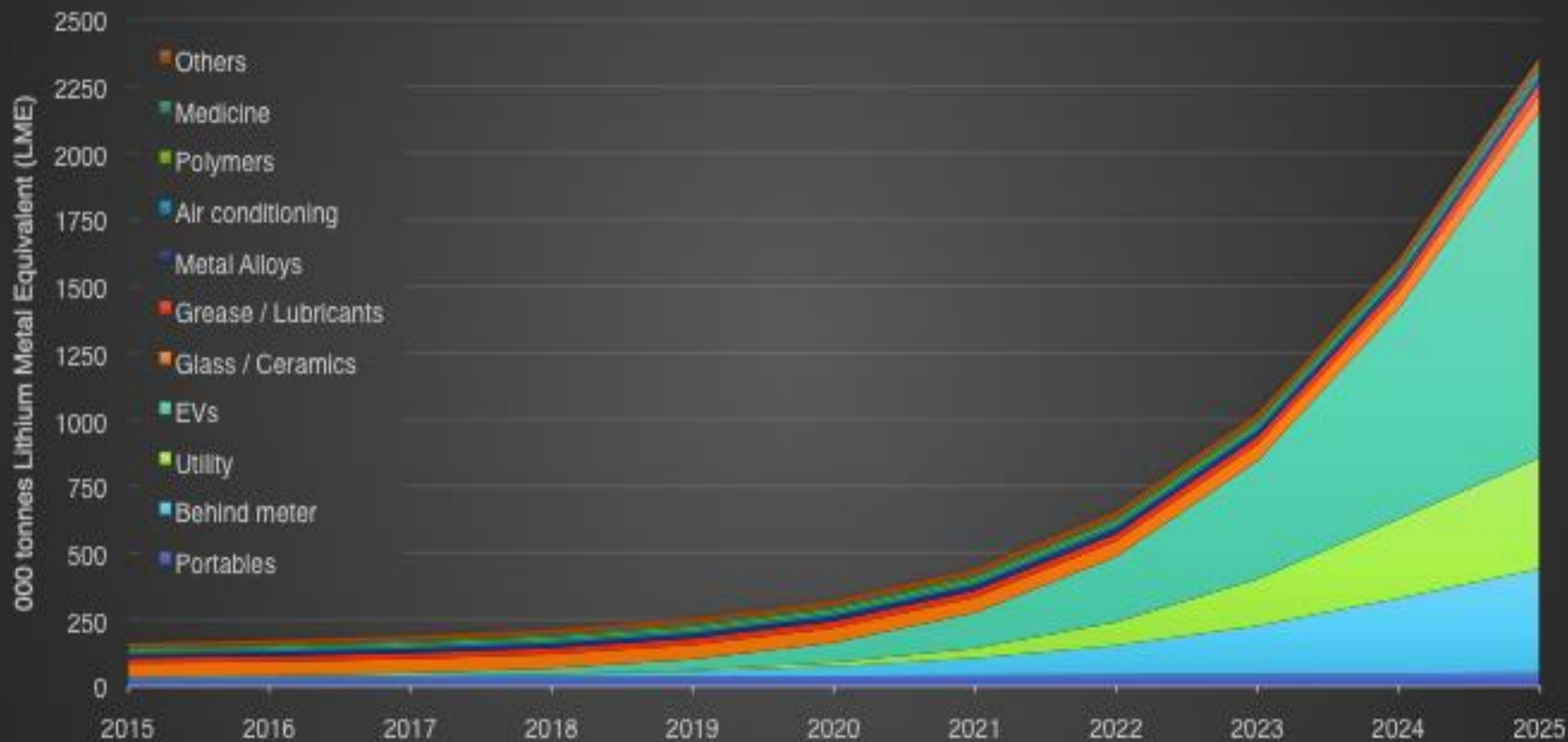


Electric Vehicle Transition

Global new vehicle annual sales to 2017 projected to 2030



Global Annual Lithium Demand Projection to 2025



Will we run out of Lithium and other battery minerals?

The New Energy
economy needs
metals...

Australia has a big
role...



Photo: NASA

How we are taking this seriously....

Lithium Valley:

To become the California of the New Energy Economy
Also needs a new CRC....



Curtin University