

# Is this coal downturn cyclical or structural?”



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Analysis  
August 2014

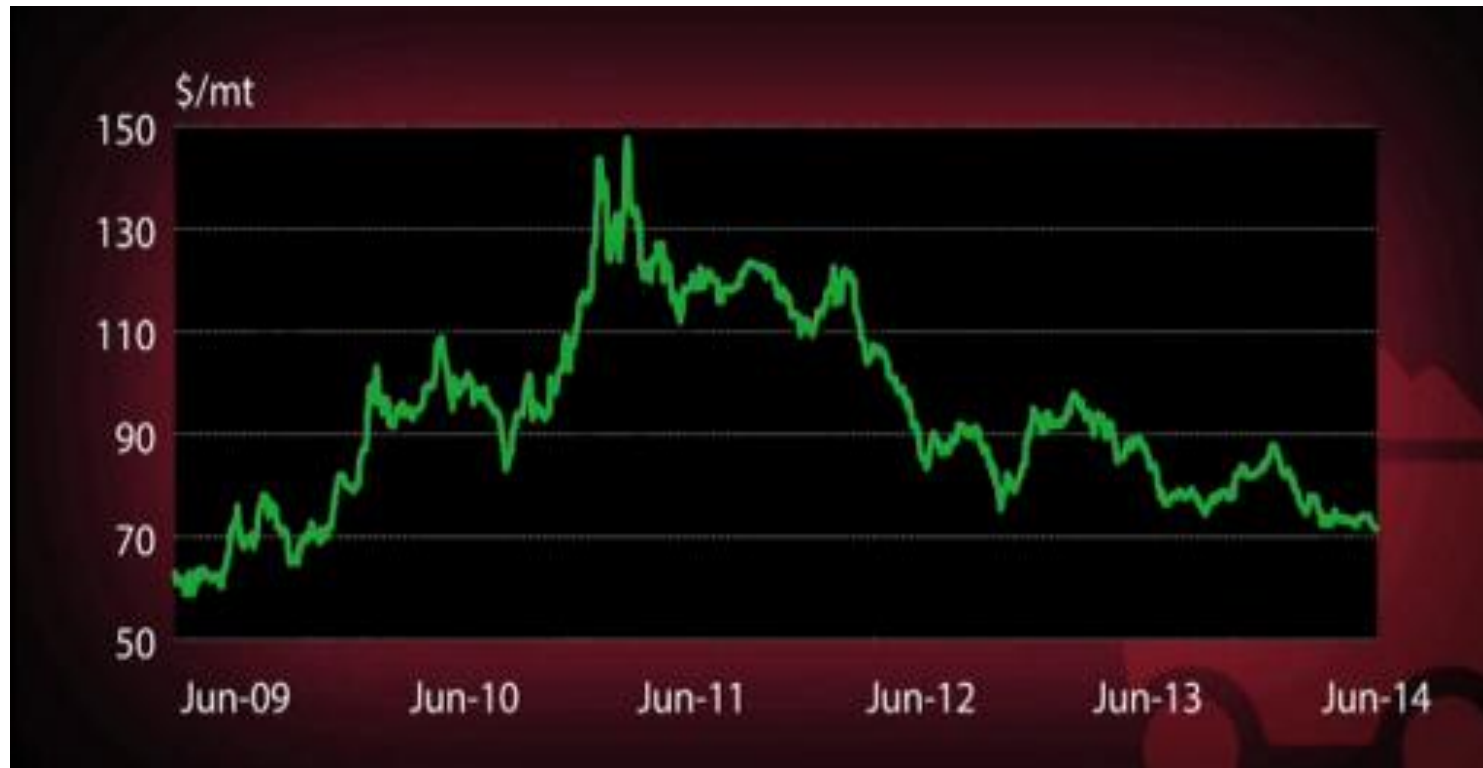
# Agenda

- State of Play in Global Coal Markets
- IEA New Policies Scenario
- Technology Improvements
- Regulatory Change
- Case Study – China
- Case Study - Japan

# Section 1 – Current state of the Coal Market

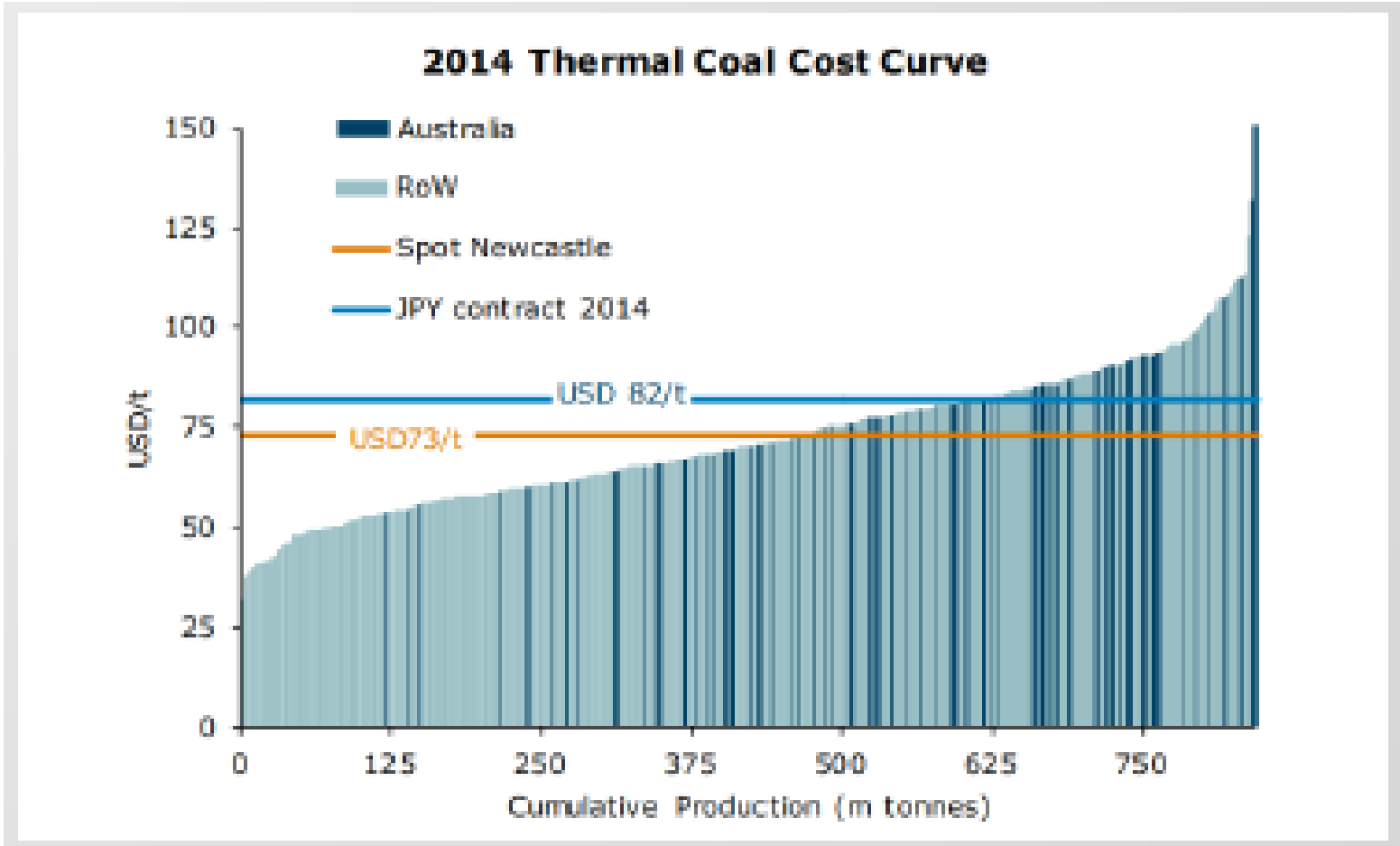
# Australian Thermal Coal Price

**US\$/t, Newcastle benchmark, 6,000kca I NAR fob, 14% ash.**



Source: <http://www.platts.com/videos/2014/june/coal-price-negotiations>

# Australian Thermal Coal Cost Curve (US\$/t)



Source: Wood MacKenzie



# US Coal Companies (2011-2014)

Peabody Energy Corp. (BTU) - NYSE

**15.93** 0.00(0.00%) 12 Jul

ACI

GET CHART

COMPARE

EVENTS ▾

TECHNICAL INDICATORS ▾

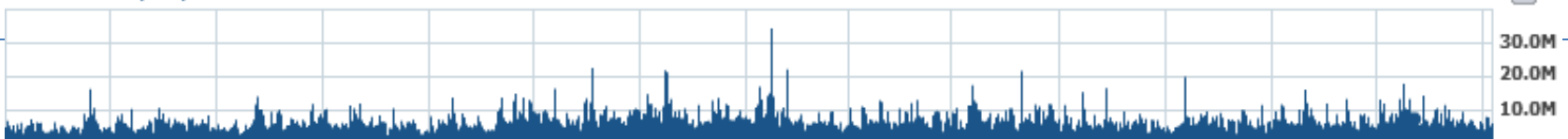
CHART SETTINGS ▾

RESET

Week of 5 May 2014: ■ BTU 18.59 ■ ACI 4.23 ■ ^DJI 16583.34 ■ ANR 4.29



■ Volume: 7,160,300



1D 5D 1M 3M 6M YTD 1Y 2Y 5Y Max

FROM: 31 Dec 2010

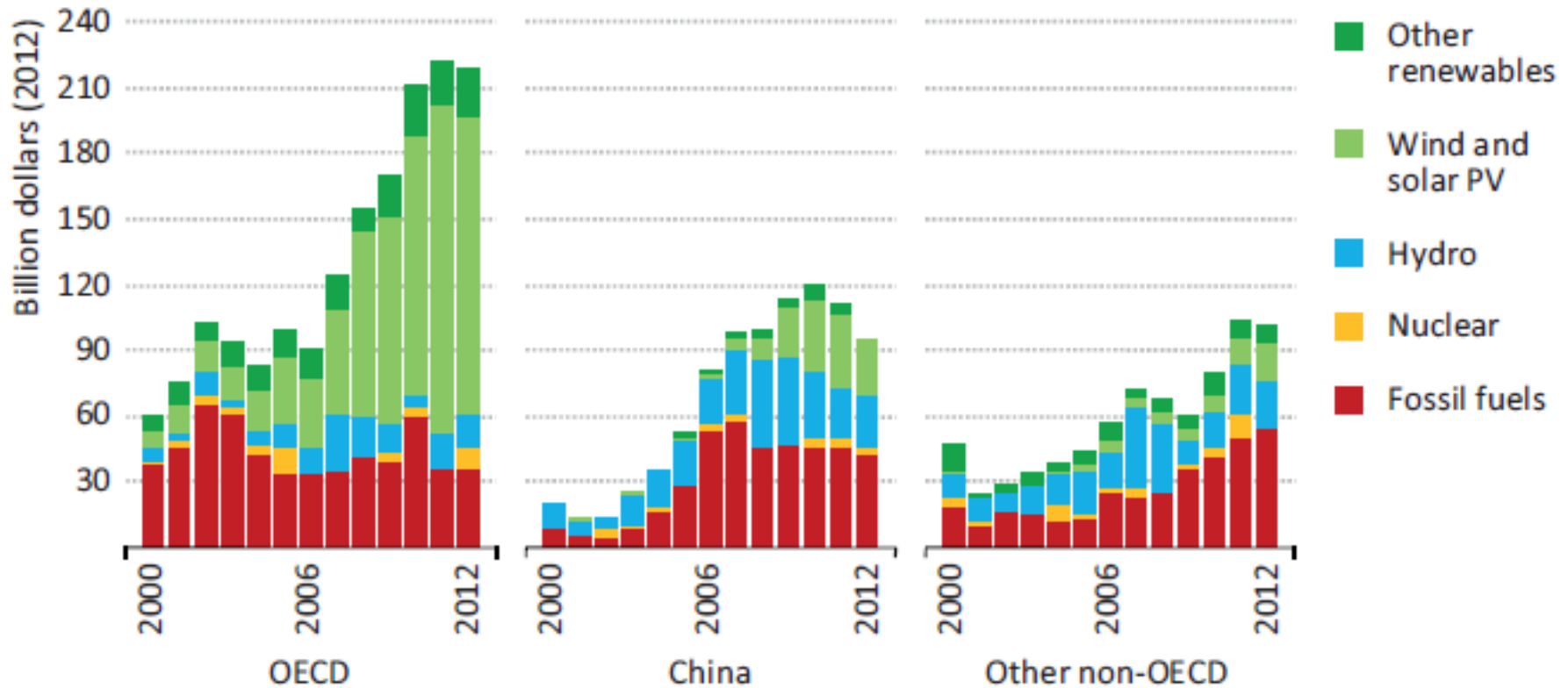
TO: 11 Jul 2014

-75.10%

# Section 2 – IEA New Policies

- The IEA's central estimate

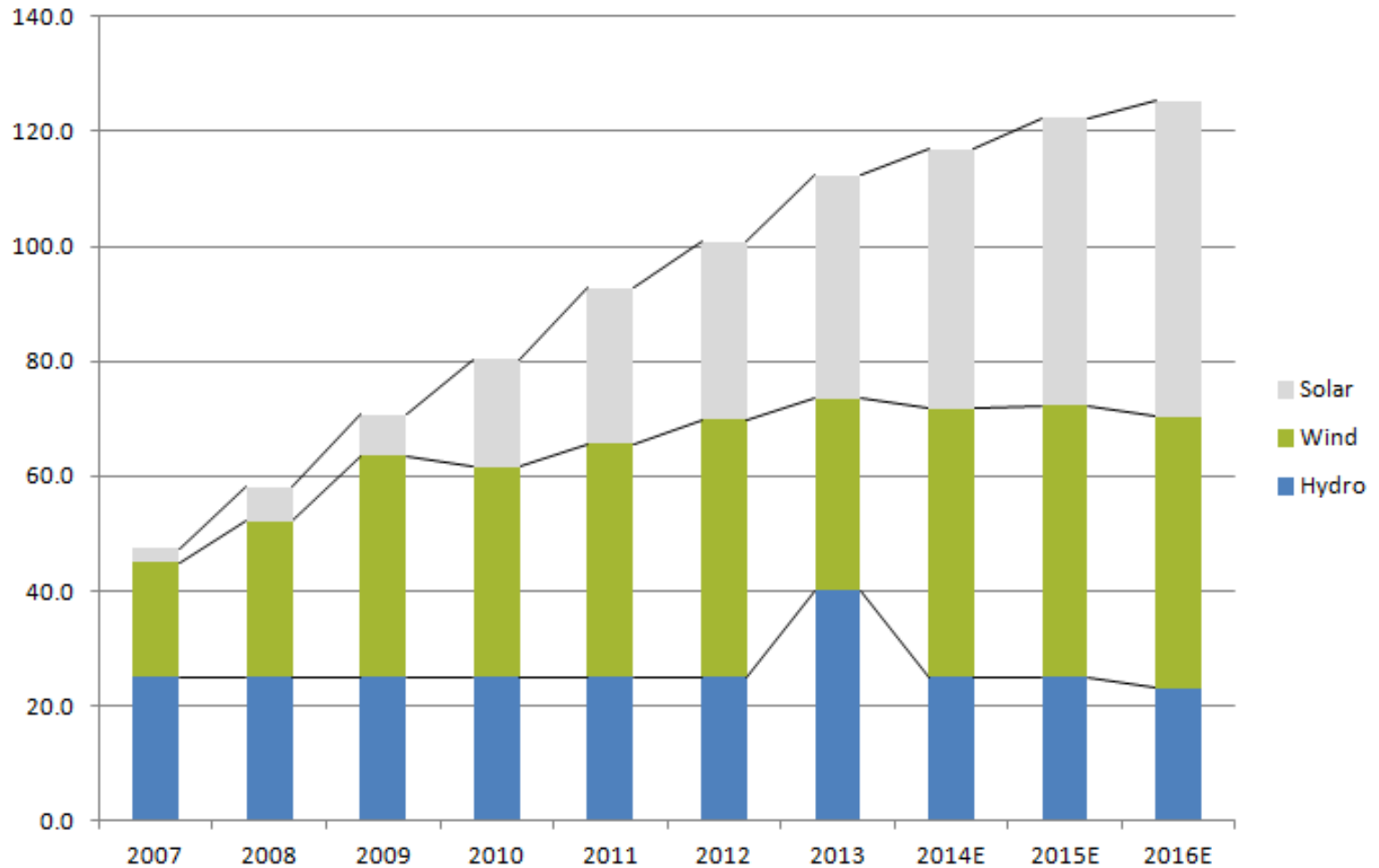
# Global Power Capacity Investment (2000-2012)



Source: <http://www.iea.org/publications/freepublications/publication/WEIO2014.pdf> May 2014.

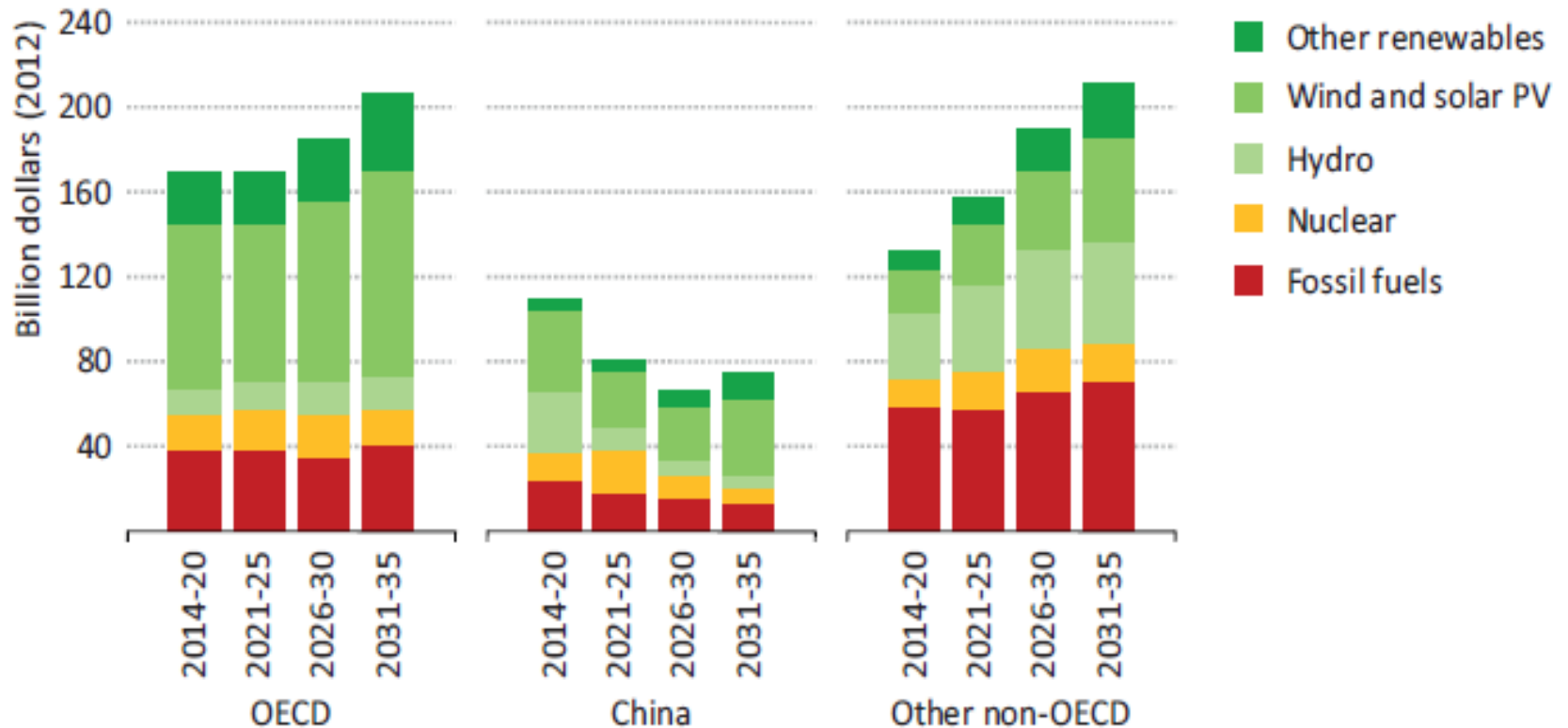


# Renewable Energy Installs Globally (GW)



Source: IEEFA Estimates

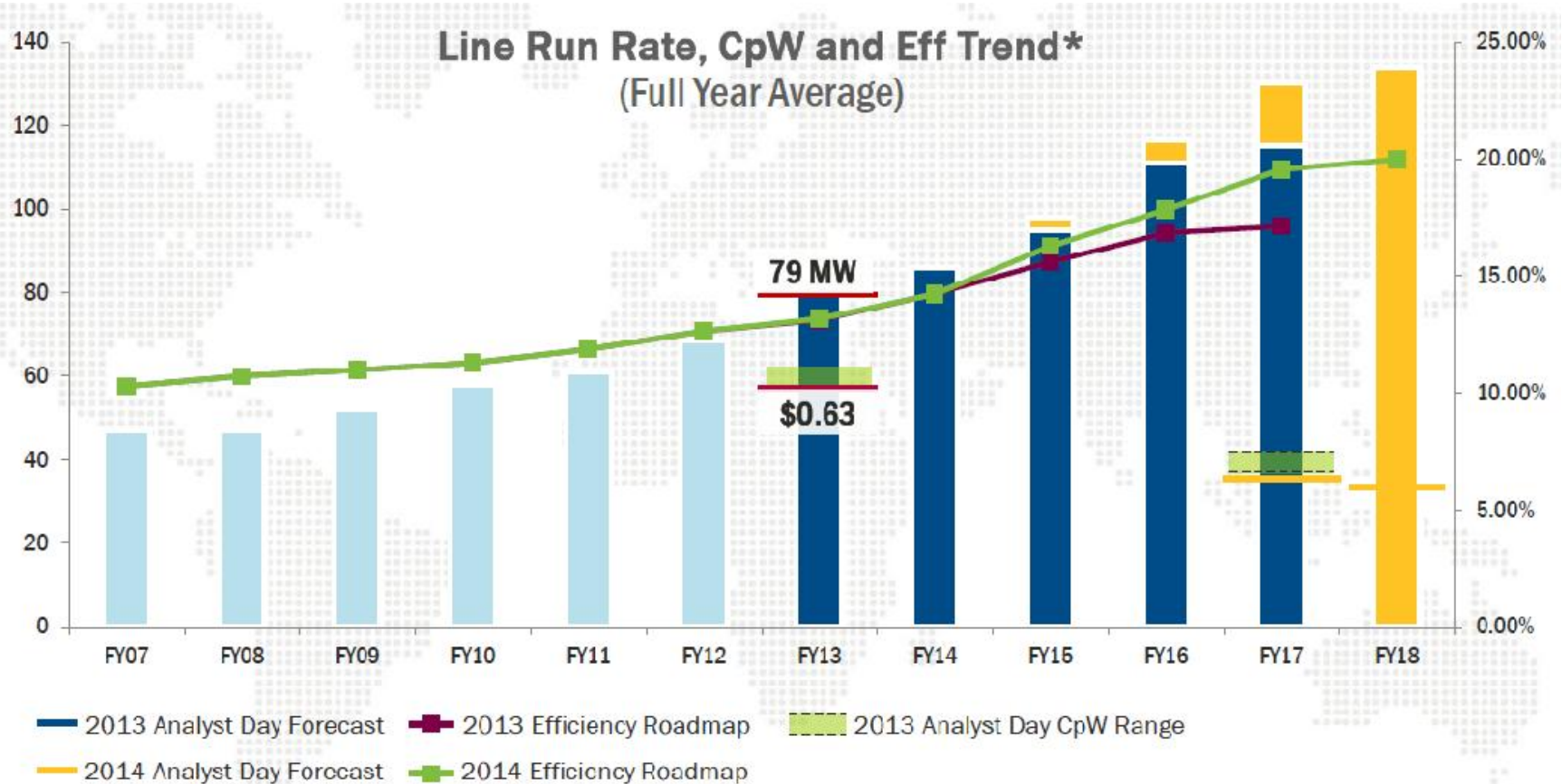
# Global Power Capacity Investment (2014-2035) – IEA New Policies



Source: <http://www.iea.org/publications/freepublications/publication/WEIO2014.pdf> May 2014.

# Section 3 – Technology Improvements

# Solar System – Conversion Efficiency (RHS)



Source: First Solar Estimates, April 2014

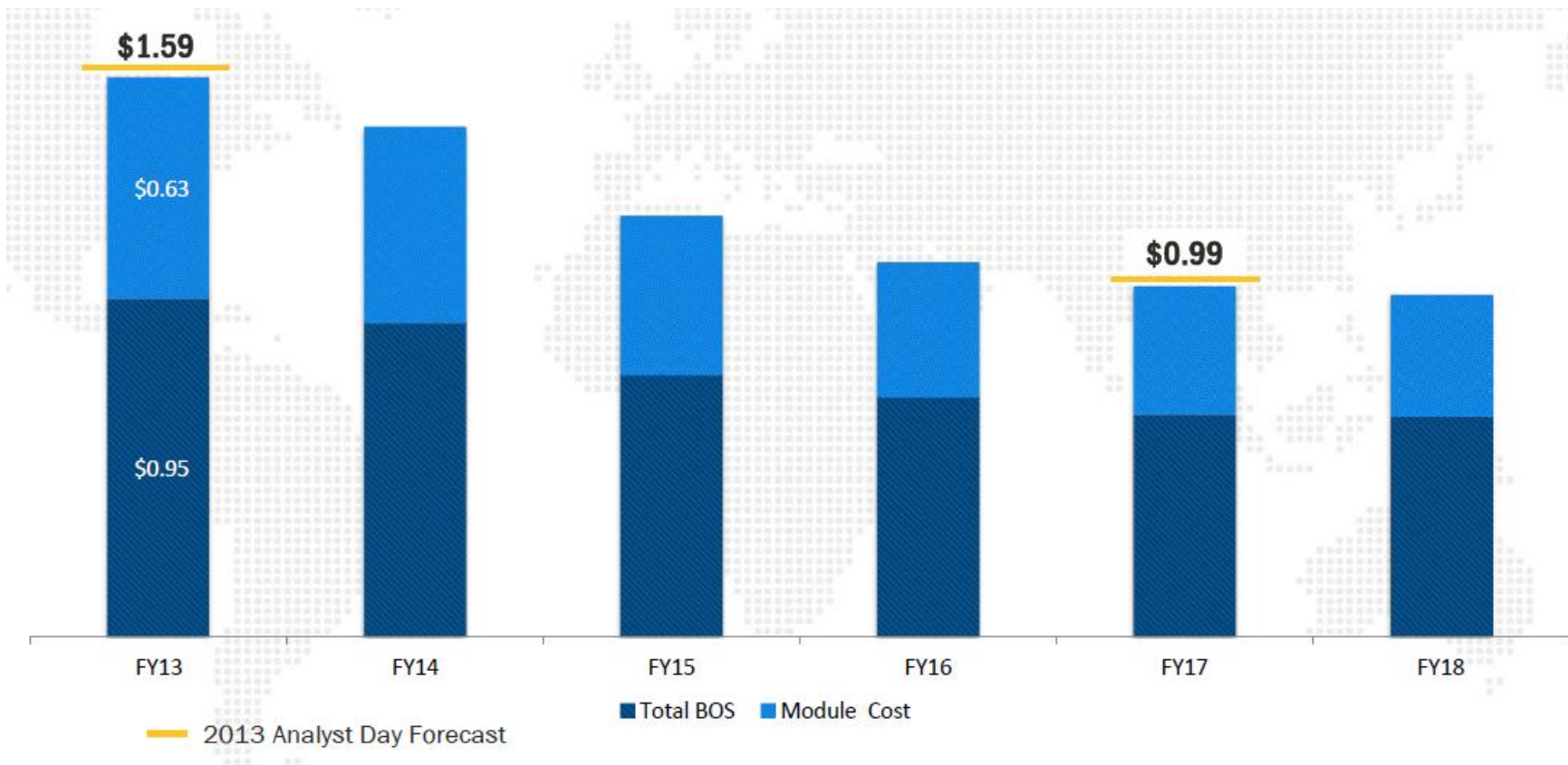
LHS – Average Production Line Run Rate (output)

RHS – Conversion Efficiency (%)

CpW – manufactured Cost per Watt



# Solar– Total Utility Scale installed cost: 2013 vs 2018



Source: First Solar Estimates, April 2014

# Section 4 – Regulatory Change

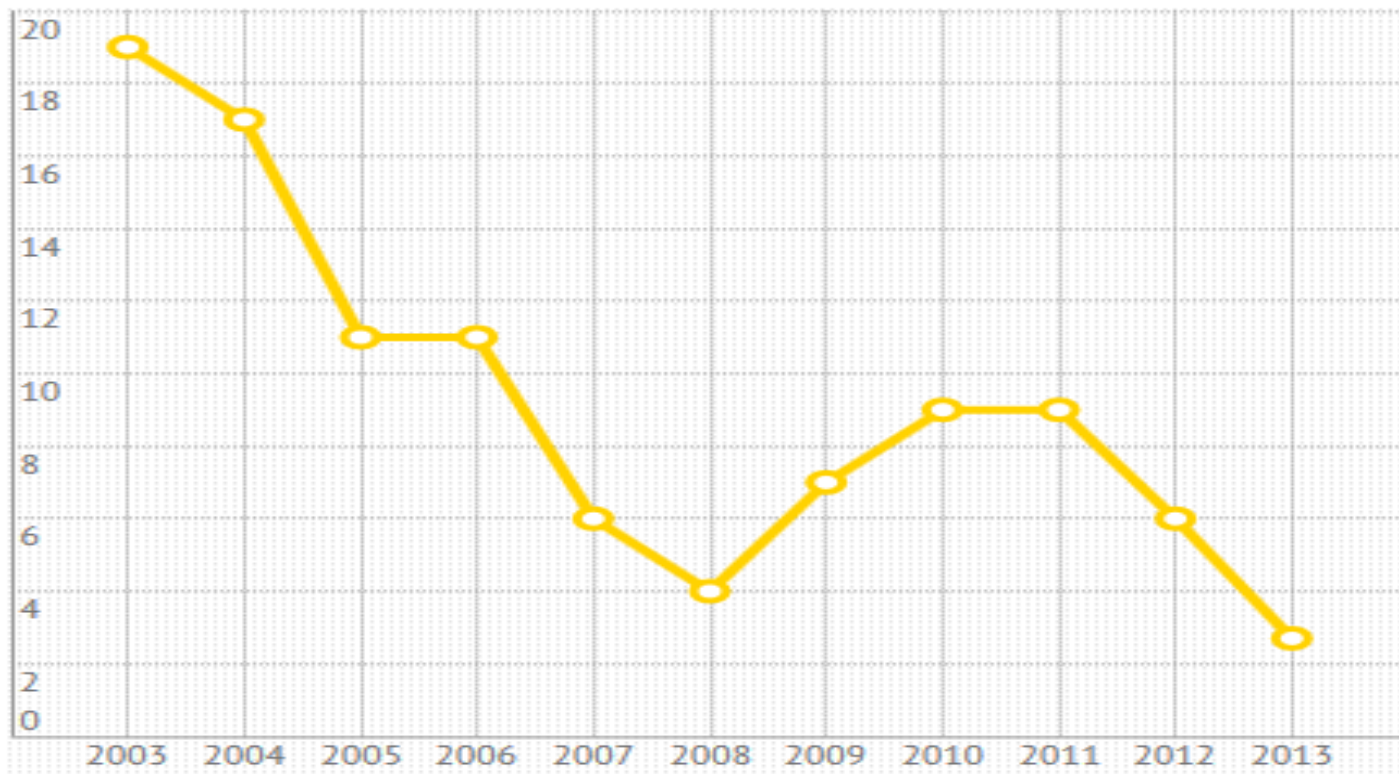
# Section 4 – Global Regulatory Change

- There is serious national climate policy
  - China’s President Xi Jinping calls for an energy revolution; 7 ETS schemes progressing
    - War on air pollution
  - US President Obama has launched his “Clean Power Plan”
    - EPA forecasts 90GW of coal plant closures (-180Mtpa)
  - South Korea launches US\$16-18/t coal tax July 2014 and its national ETS in Jan 2015

# Section 5 – China as a Case Study



# China Coal Consumption Growth (% pa)



Source: BP statistical review, Chinese preliminary data, Platts

# China's Electricity System

GW Installed	Jun'2013	Jun'2014	Percent of total Installed	Change yoy	GW	Percent of new installs
Thermal	833.8	878.8		5.4%		
<i>Coal</i>	793.6	829.1	66.3%	4.5%	35.5	33%
<i>Gas</i>	40.2	49.7	4.0%	23.8%	9.6	9%
Hydro	221.8	253.7	20.3%	14.4%	31.9	30%
Nuclear	14.6	17.8	1.4%	21.7%	3.2	3%
Wind	67.5	82.8	6.6%	22.6%	15.3	14%
Other (Solar, EfW, CHP)	6.0	18.1	1.4%	202.3%	12.1	11%
<b>Total</b>	<b>1,143.7</b>	<b>1,251.2</b>		<b>9.4%</b>	<b>107.5</b>	<b>100%</b>

Source: National Energy Agency, July 2014, IEEFA calculations

# Section 6 – Japan as a Case Study

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- Fukushima provoked a massive, urgent energy strategy rethink.
- Nuclear was 30% of supply, but 49GW was closed.
- Over CY2010-2013, GDP growth was +1% pa, but electricity demand was -12% or -4% pa. Energy efficiency cut 110TWh of the 2010 929TWh total.
- Japan is installing 8GW pa of solar. Over 8 years at this rate to 2020, this adds 80TWh of new electricity.
- Japan's population and electricity demand is still falling, so this solar will replace fossil fuel imports.
- If nuclear restarts, that will replace more coal imports.

# Appendix

# Grid Privatisation

		2012/13	2013/14	2014/15	2015/16
		Base year	Current year		
<b>Environmental policies</b>	<b>c/kWh</b>	<b>4.56</b>	<b>4.49</b>	<b>4.48</b>	<b>2.91</b>
Carbon	c/kWh	2.44	2.53	2.60	0.65
LRET	c/kWh	0.57	0.58	0.56	0.65
SRES	c/kWh	0.81	0.54	0.34	0.24
FIT Schemes	c/kWh	0.57	0.67	0.81	1.20
Other state schemes	c/kWh	0.17	0.17	0.17	0.17
<b>Regulated networks</b>	<b>c/kWh</b>	<b>13.58</b>	<b>14.40</b>	<b>15.11</b>	<b>15.53</b>
Transmission	c/kWh	2.41	2.54	2.63	2.71
Distribution	c/kWh	11.17	11.85	12.48	12.82
<b>Competitive market</b>	<b>c/kWh</b>	<b>8.96</b>	<b>9.06</b>	<b>9.30</b>	<b>9.60</b>
Wholesale	c/kWh	5.29	5.26	5.38	5.56
Retail	c/kWh	3.68	3.80	3.92	4.04
<b>Total</b>	<b>c/kWh</b>	<b>27.11</b>	<b>27.95</b>	<b>28.89</b>	<b>28.04</b>

Source: <http://reneweconomy.com.au/2014/even-coal-free-couldnt-compete-rooftop-solar-88808>

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