

Session 1A - APEC's renewable energy share doubling goal and tracking progress from 2010

The 18th APEC Workshop on Energy Statistics

Joint APEC-IRENA Training Workshop on Renewable Energy Statistics

Edito Barcelona, ESTO/APERC



Renewable share doubling goal milestones

- **EWG 47 (May 2014)** - US proposed the APEC aspirational goal of doubling the share of renewable energy by 2030 and noted that it interacted with APEC's aspirational energy intensity goal.
- **EMM 11 (Sep 2014)** - "Doubling the share of renewables in the APEC energy mix, including in power generation, from 2010 levels by 2030."
- **EWG 54 (Nov 2017)** - EWG decided that traditional biomass will not be counted; IRENA's definition of renewable energy is recommended; APEC data should be used for monitoring progress; and the goal should be monitored on both the supply and demand side.

Renewable doubling goal definitions

Question	Options	EWG54 decision
Renewables	Definition	IRENA recommended
Biomass	All v. modern	Traditional excluded
Hydro	All v. small	All except pumped-storage
Geothermal	In v. out	In
Measurement point	Supply v. demand	Both FED and TPES
Data	IEA v. APEC	APEC

Traditional vs modern

- ❑ **Traditional biomass** – are all types of biomass consumed in the commercial, residential and agriculture sectors
 - Some of the biomass might be “modern” but in view of the lack of sufficient information, “traditional” for now
- ❑ **Modern biomass** – biomass consumed in the industrial sector and in electricity and heat generation

Extrapolation meets the goal, but projection fails

Measure	Period	Data	Result
Renewable Share Doubling	2010-2030	Supply	Extrapolation
			Projection
		Demand	Extrapolation
			Projection

Renewable energy supply and consumption

Primary energy supply, PJ

	2010	2018	% change
Non-renewables	287,524	311,028	8.2%
Coal	116,655	113,078	-3.1%
Oil	90,579	98,671	8.9%
Gas	61,372	79,630	29.7%
Other non-renewables	18,917	19,649	3.9%
Traditional biomass	3,551	3,090	-13.0%
Modern renewable energy	14,985	23,441	56.4%
Modern biomass	4,491	5,808	29.3%
Hydro	6,396	8,898	39.1%
Geothermal	1,486	1,757	18.2%
Solar	152	1,497	881.7%
Wind	586	2,611	345.9%
Other renewables	1,873	2,869	53.2%
Total	306,060	337,559	10.3%
Modern RE share	4.9%	6.9%	41.8%

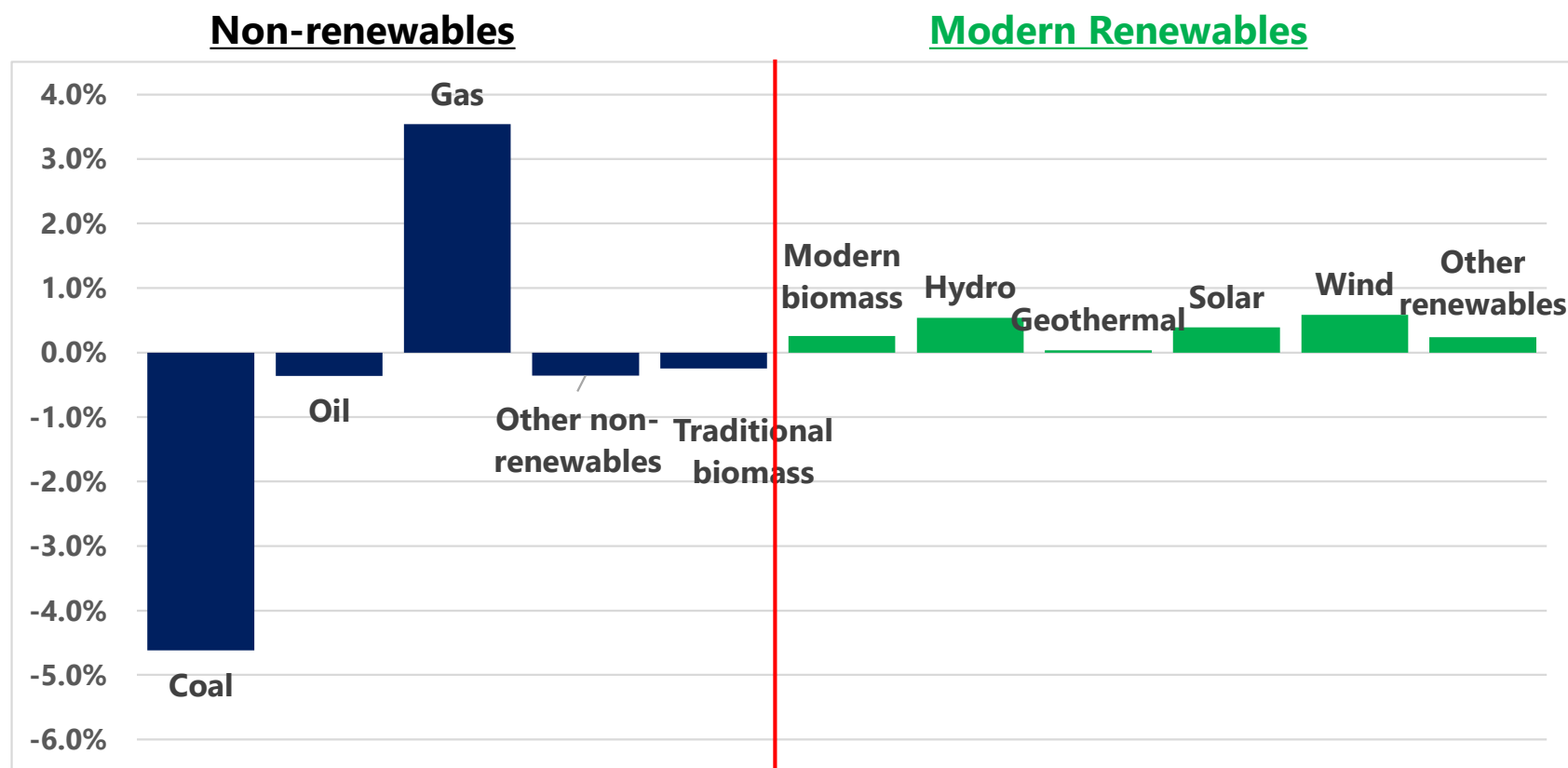
Final energy consumption, PJ

	2010	2018	% change
Non-renewables	164,548	181,546	10.3%
Coal	30,630	26,292	-14.2%
Oil	65,128	71,216	9.3%
Gas	26,184	34,326	31.1%
Electricity	34,553	40,037	15.9%
Heat	7,839	9,373	19.6%
Other non-renewables	215	303	40.8%
Traditional biomass	3,551	3,090	-13.0%
Modern renewable energy	10,735	17,543	63.4%
Electricity	6,243	11,584	85.6%
Heat	61	62	0.8%
Modern biomass	2,862	3,276	14.5%
Other renewables	1,570	2,621	67.0%
Total	178,835	202,179	13.1%
Modern RE share	6.0%	8.7%	44.5%

*Note: Consumption of electricity and heat from renewables is calculated from the share of total electricity and heat production.
Data of China for 2018 are estimated based on preliminary information.
Source: APEC data.*

Coal and other energy lost shares to gas and renewables

Percent change in fuels in primary energy supply market share, 2010-2018



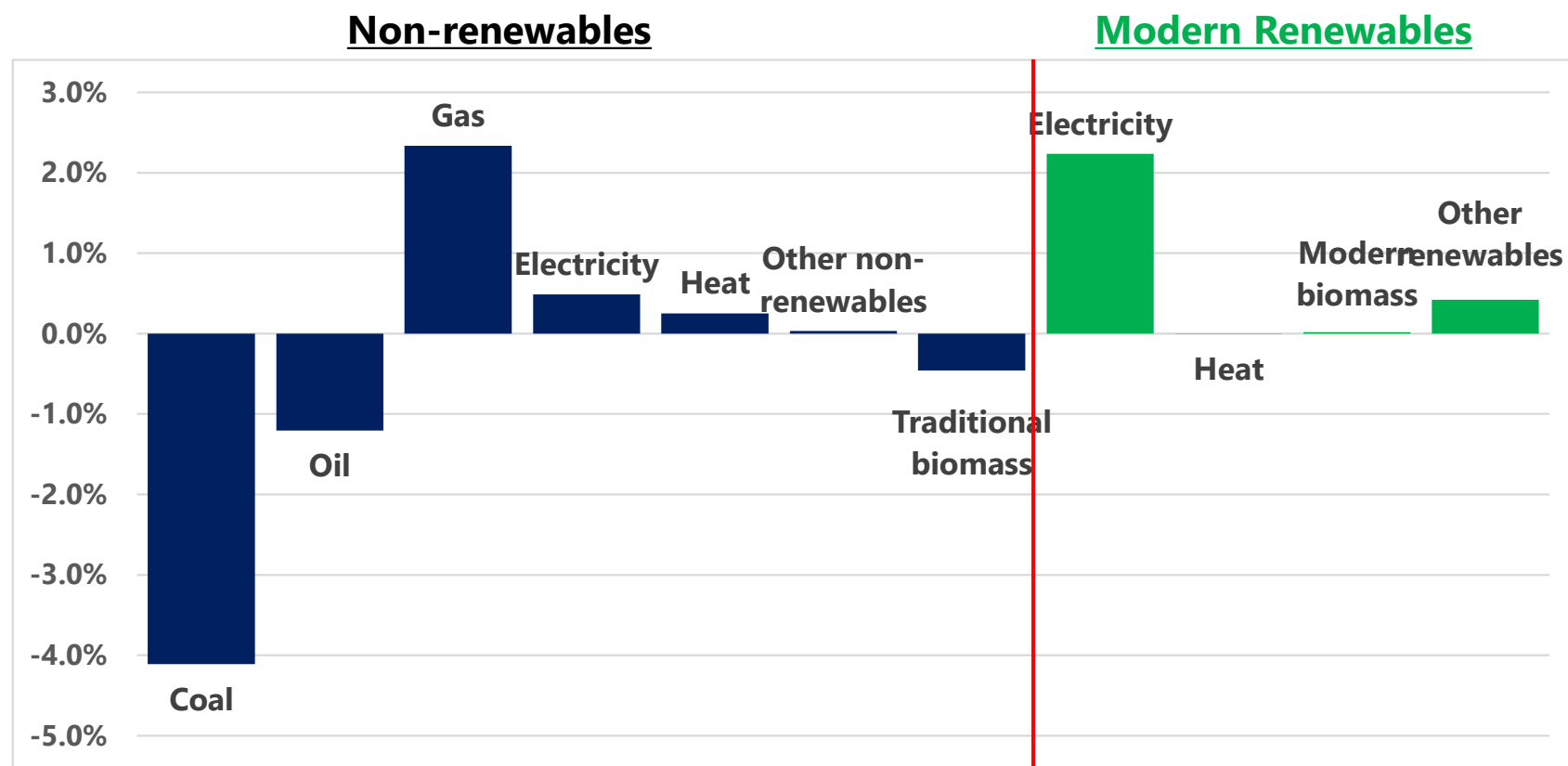
Note: Renewable energy includes electricity and heat generated from renewable energy sources

Source: APEC data

From 2010 to 2018, the renewable share increased 2.0 percentage points, 42% of the way to the goal.

Coal and oil lost shares to electricity from renewables

Percent change in fuels in final energy consumption market share, 2010-2018



Note: Renewable energy includes electricity and heat generated from renewable energy sources

Source: APEC data.

From 2010 to 2018, the renewable share increased 2.7 percentage points, 45% of the way to the goal.

Renewable energy supply and consumption

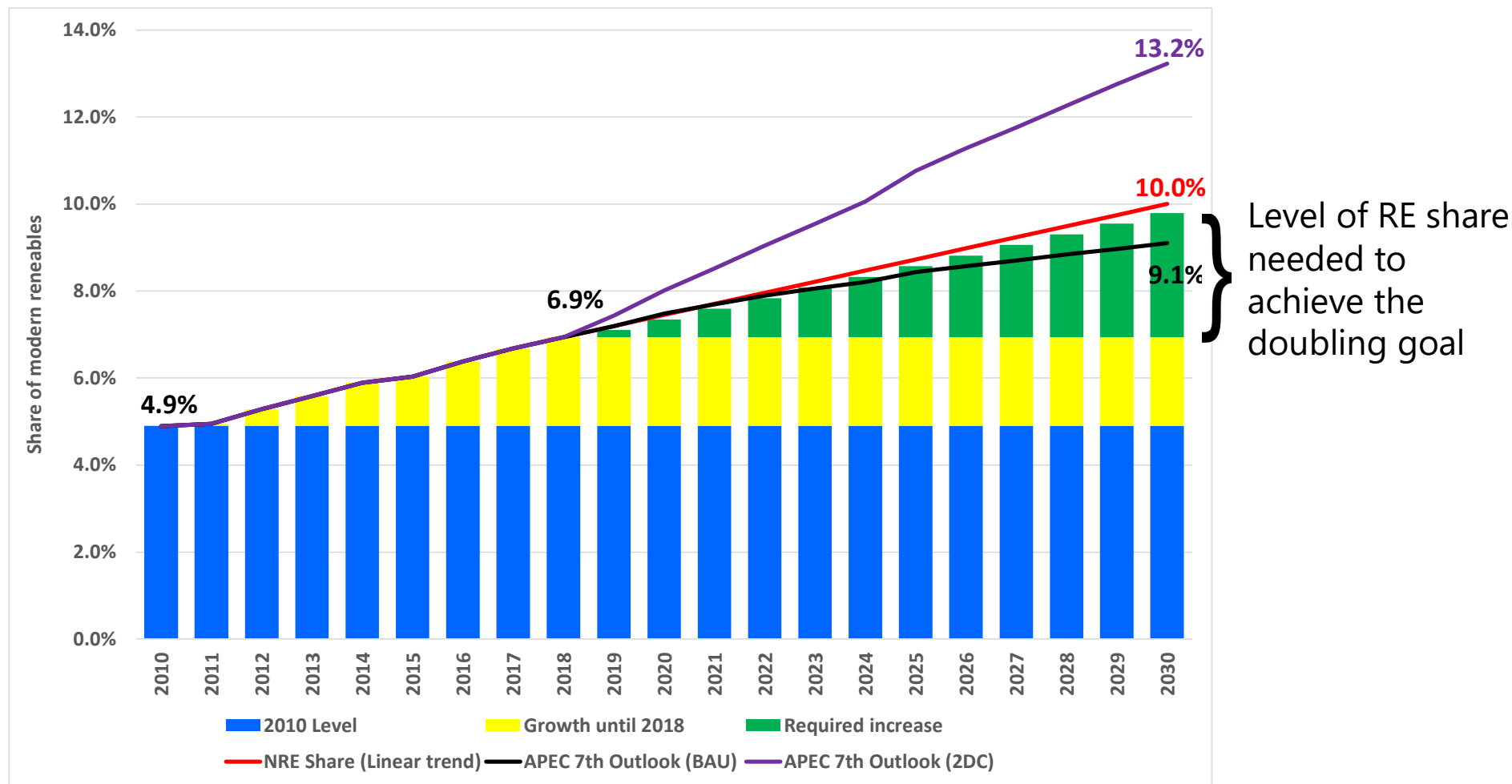
Electricity Generation, TWh

	2010	2018	% change
Non-renewables	11,377	13,059	14.8%
Coal	6,572	7,463	13.6%
Oil	330	210	-36.5%
Gas	2,711	3,624	33.7%
Nuclear	1,658	1,681	1.4%
Other non-renewables	106	81	-23.4%
Modern renewable energy	2,103	3,824	81.9%
Modern biomass	73	165	126.8%
Hydro	1,780	2,475	39.1%
Geothermal	53	60	13.7%
Solar	9	366	3966.3%
Wind	163	725	345.8%
Other renewables	26	34	29.6%
Total	13,480	16,884	25.3%
Modern RE share	15.6%	22.7%	45.2%

Even in electricity generation, for just 40% of the time to 2030, APEC has already increased renewable energy share by 45%

Supply outlook BAU extrapolation fails to meet the goal

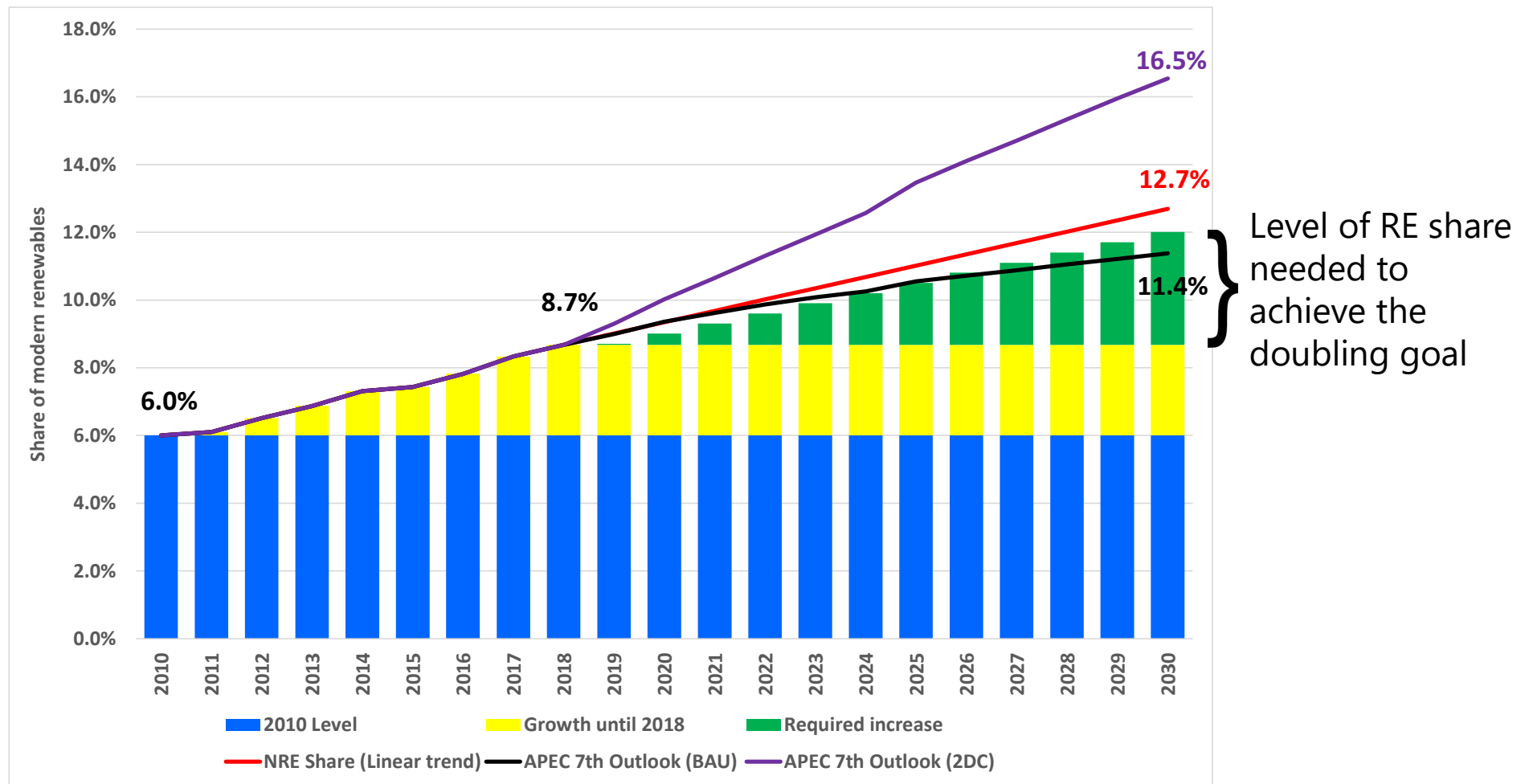
Renewable energy share in total primary energy supply, 2010-2030



Source: APEC data and APERC analysis.

Demand outlook BAU extrapolation also fails to meet the goal

Renewable energy share in total final energy demand, 2010-2030



Source: APEC data and APERC analysis.

Closing thoughts

- ❑ From 2010 to 2018, real progress has been made toward achieving the renewable doubling goal
 - Enabled by rapid decrease in costs and favorable government policies (FIT, RPS, etc.)
- ❑ Further increases in the share of VREs will require back-up generation and/or substantial increases in electricity storage to ensure grid stability
 - There are many options, although some are high cost with current technologies
 - An APERC study shows that one option for storage is battery electric vehicles (BEVs)
- ❑ We expect the grid stability challenge to be addressed on an economy-by-economy basis and APERC will continue to monitor progress and identify lessons learned over the coming years.



Thank you for your attention

<https://www.egeda.ewg.apec.org/>

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