Renewable Energy System Analysis Features in Version 28

A sneak preview of coming attractions…

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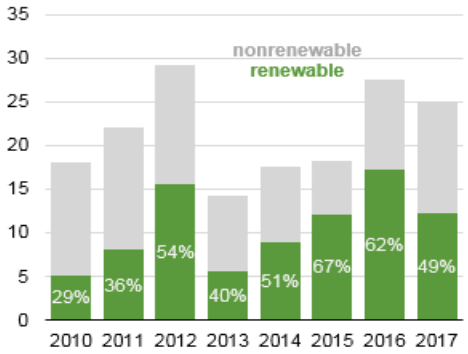
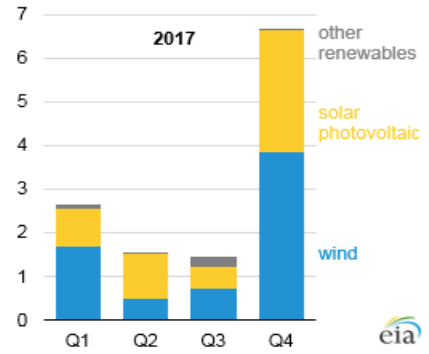
JANUARY 10, 2018

Nearly half of utility-scale capacity installed in 2017 came from renewables

Utility-scale capacity additions, 2010-2017
gigawatts



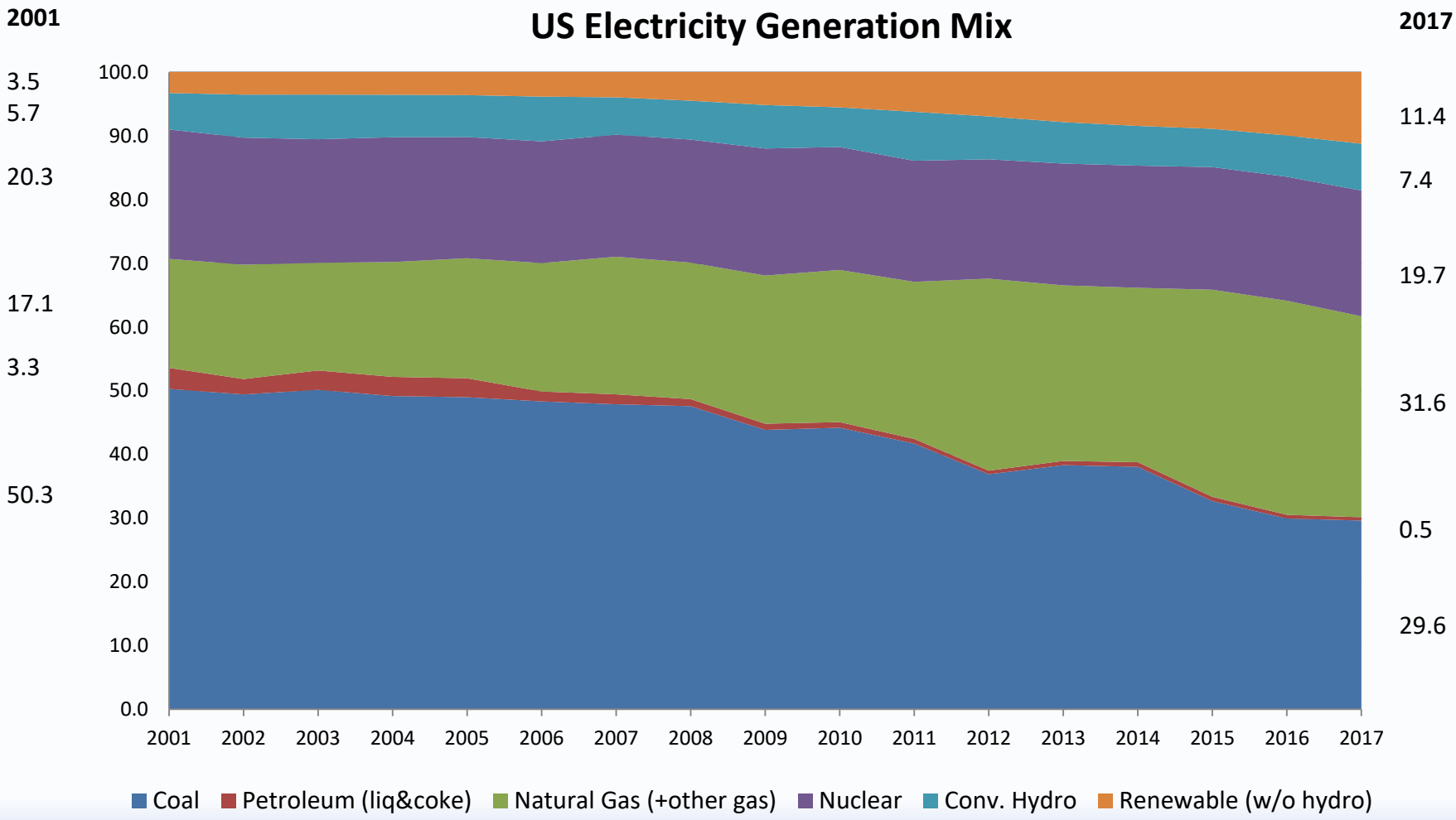
Utility-scale renewable capacity additions
gigawatts



Source: U.S. Energy Information Administration, Form EIA-860M, *Preliminary Monthly Electric Generator Inventory*

Change in US Renewable electricity production 2016 -> 2017 +1.3%
2017 Total renewable electricity production (incl. biomass, excl. conv hydro) 11.4%

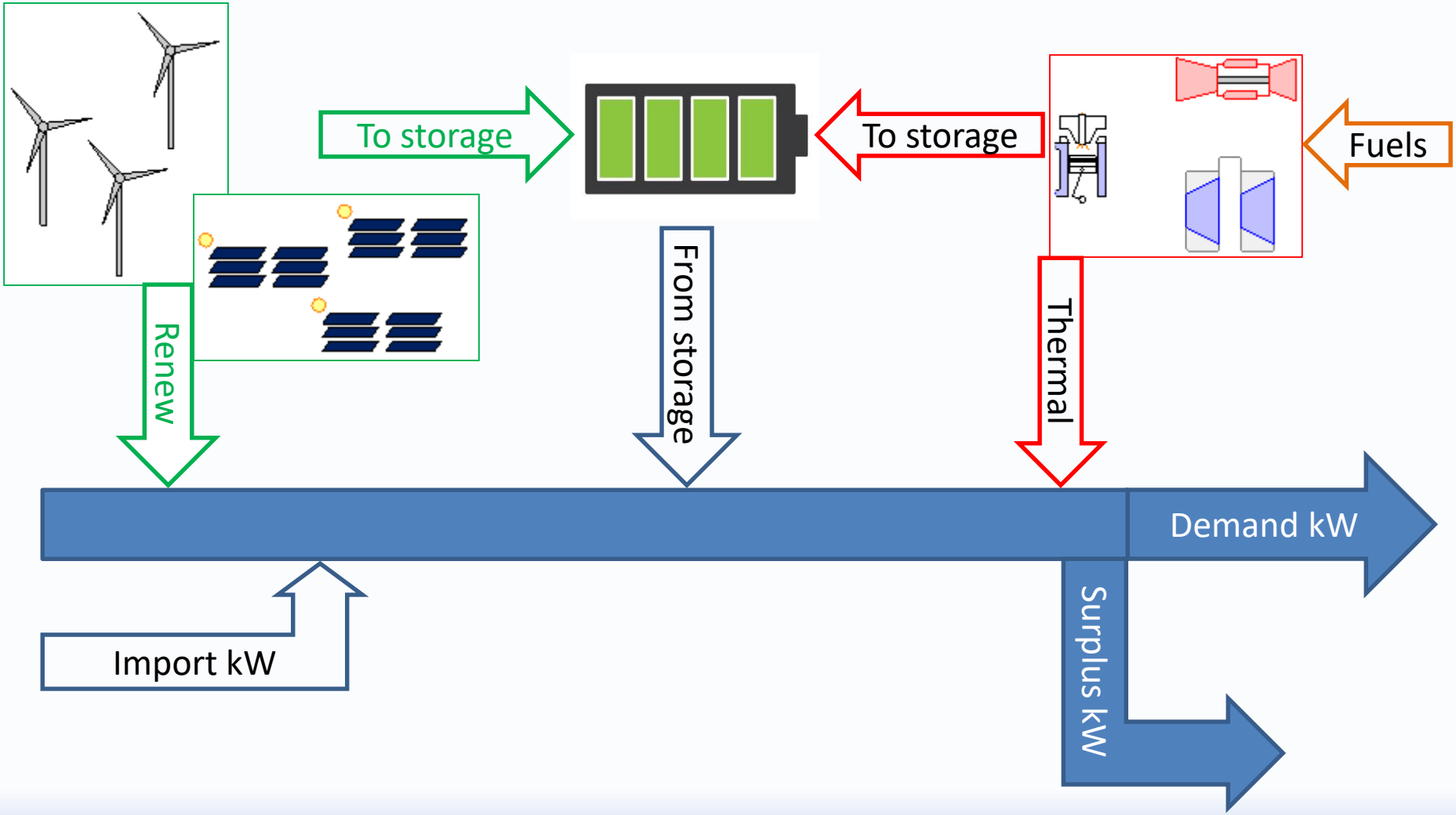
US Electricity Generation Mix



Version 28 – Feature Preview

- **TFRenew (TFR)** – a new program for analyzing the performance, cost, and economic value of systems combining:
  - Renewable power: wind farms, solar PV, user-defined
  - Storage systems: batteries, flywheels, pumped hydro, user-defined, …
  - Thermal plants: recips, open cycle GTs, combined cycles, coal plants, etc.
- Storage systems in **THERMOFLEX / PEACE**
  - Components for batteries, flywheels, pumped hydro, user-defined, …
- Battery storage in **GT PRO / GT MASTER / PEACE**
  - Gas turbine OEMs (Siemens, Solar, …) are offering 'instant power' solutions using battery storage
  - New feature to design battery storage including cost and performance analysis using built-in simplified annual model, and TIME

TFR - Demo


To storage
To storage
Fuels
Renew
From storage
Thermal
Demand kW
Import kW
Surplus kW