

# 3. APEC Energy Demand and Supply Outlook 9th Edition: Key Issues

## APERC Workshop

The 65th Meeting of APEC Energy Working Group (EWG65)  
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# Outline

- Summary of 8th Edition Outlook findings
- Feedback from economy roadshows
- Key issues
- Trends and uncertainties
- 9th Edition scenarios
- Next steps

# Scenarios in the 8th Edition

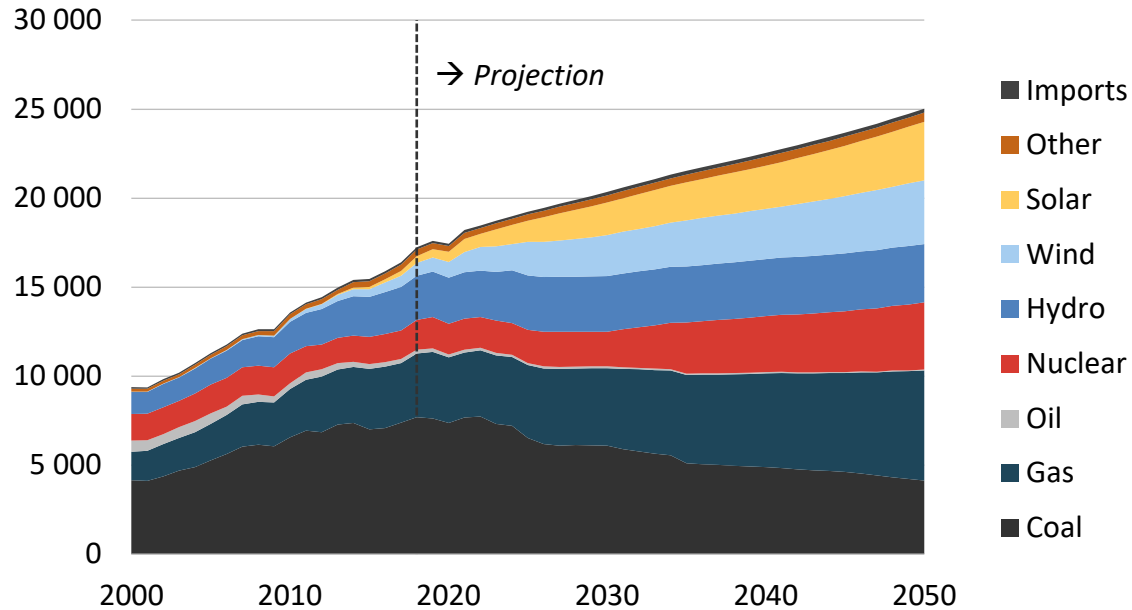
	Reference (REF)	Carbon Neutrality (CN)
<b>Definition</b>	Recent trends and current policies.	Hypothetical decarbonisation pathways for each APEC economy.
<b>Purpose</b>	Provides a baseline for comparison with the Carbon Neutrality scenario.	Additional energy sector transformations that support decarbonisation objectives.
<b>Key assumptions</b>	Current policies and trends continue.	Increased levels of energy efficiency, electrification, behavioral changes, fuel switching, and CCS deployment.
<b>Limitations</b>	Assumes that recent trends, including relevant decarbonisation measures continue.	Does not consider non-energy impacts on CO <sub>2</sub> or removal.

*Note: does not represent APERC's recommendation or advocacy for a pathway or set of policies.*

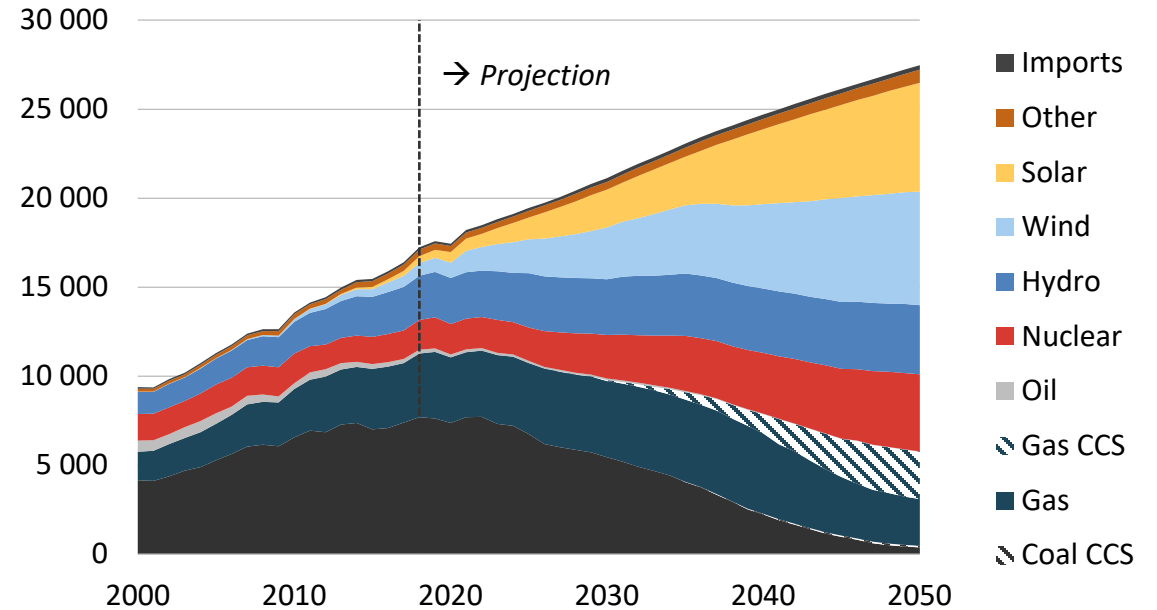
*The analysis was performed prior to March 2022 and does not include current disruptions to international energy markets.*

# Electricity is increasingly generated from wind and solar

Electricity generation in REF (TWh)



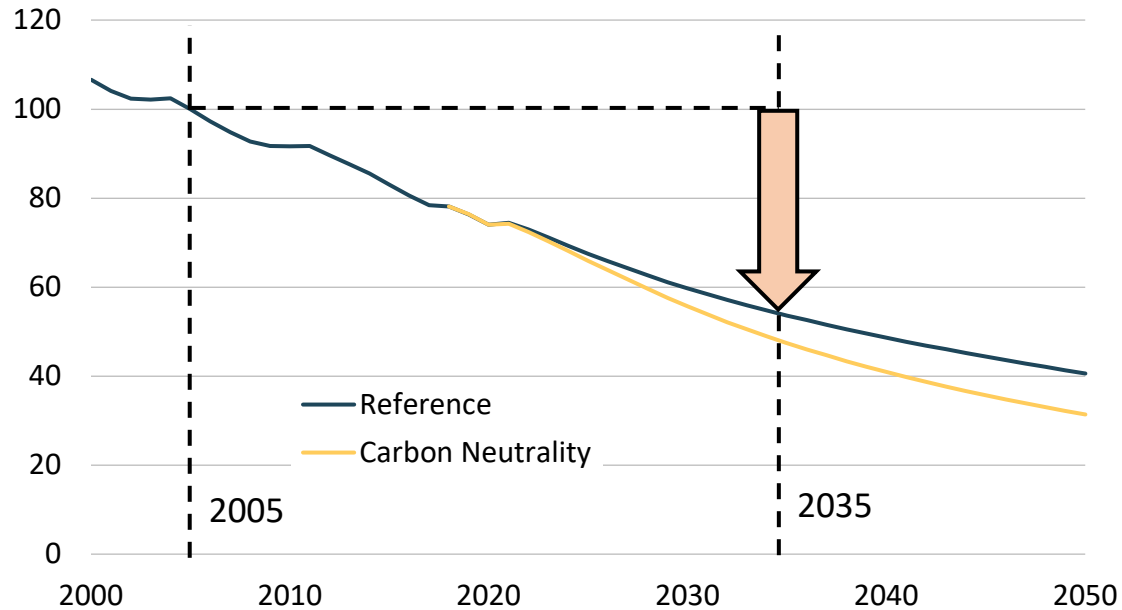
Electricity generation in CN (TWh)



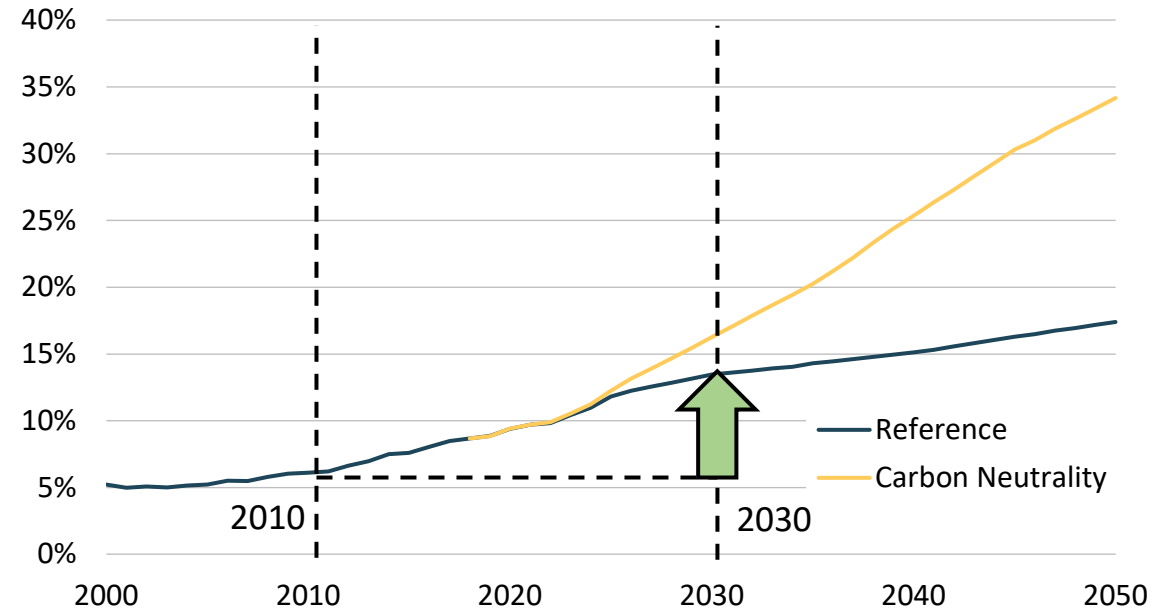
- Growth in electricity generation to meet increased buildings and transport demand.
- Natural gas substitution for coal continues and provides balancing and ancillary services to the electric grid.

# APEC projected to meet dual energy goals

Final energy intensity (2005 = 100)



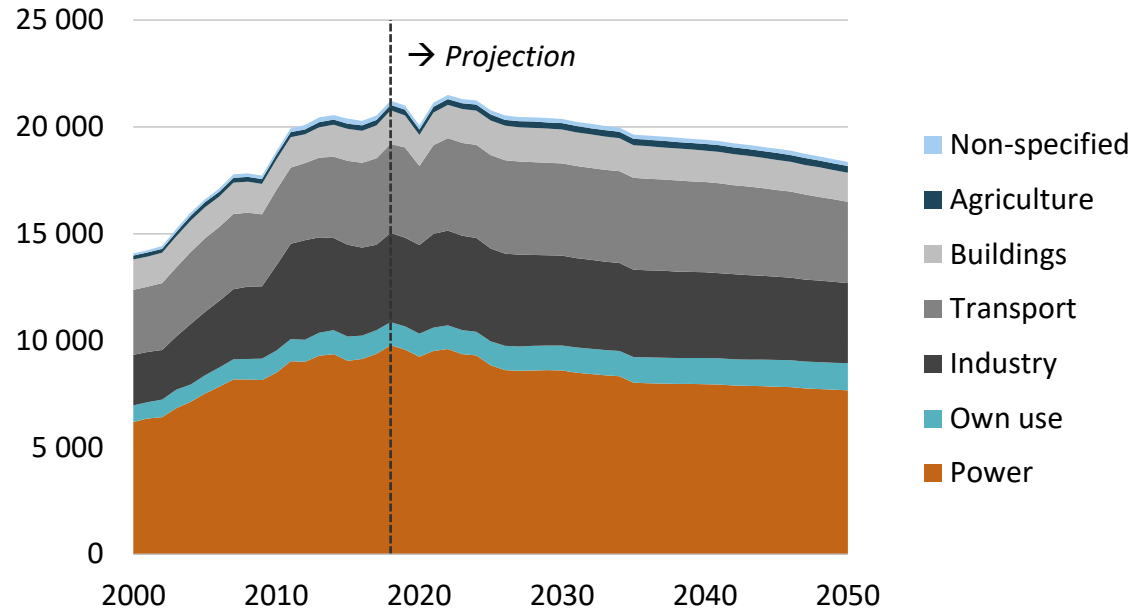
Share of modern renewable energy



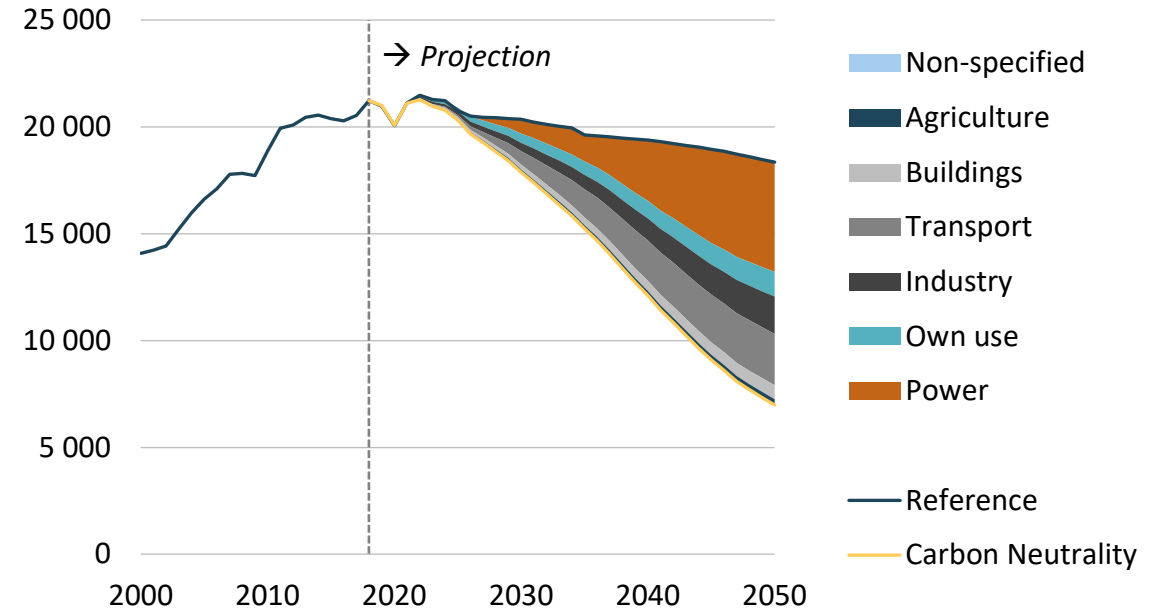
- Final energy intensity on track to decline 45% by 2034 (REF)
- Modern renewable energy share doubles by 2026 (REF)

# CN delivers ambitious CO<sub>2</sub> emissions reductions

Energy-related CO<sub>2</sub> emissions in REF (million tonnes)



Decrease between REF and CN (million tonnes)



- APEC-wide CO<sub>2</sub> emissions decline by 14% in REF and by 67% in CN.
- Some APEC economies have carbon neutrality targets past 2050.
- The power and transport sectors are the most influential in driving emissions lower in CN.

# Feedback from economy roadshows

- Balancing the three pillars of the energy trilemma is important:
  - Energy security
  - Sustainability and decarbonization
  - Affordability
- Interest in additional analysis of hydrogen demand and supply, including ammonia
- Concern about maintaining grid reliability and energy storage
- Uncertainty about new technology costs and performance

# Outlook 9th Edition

- Scheduled for publication in 2025
- Two volumes:
  - Volume 1: APEC-wide trends and results, including estimated progress on energy-related goals
  - Volume 2: 21 economy analyses
- Supplemental dataset and model methodology
- Projections through 2060
- Utilizes EGEDA historical energy balances



# Key issues for the 9th Edition

- APEC energy-related goals
- CO<sub>2</sub> emissions from combustion
- Costs and investments in technology
- Critical materials
- Preliminary estimate of energy-related methane emissions

# Important technology trends and uncertainties

- CCS
- Energy storage (batteries)
- Electric vehicles
- Hydrogen (including ammonia)
  
- APERC researchers are developing technology perspectives to understand:
  - Technical potential
  - Cost profiles
  - Other barriers (e.g., permitting, regulation)
  - Unintended consequences (e.g., reducing grid reliability)
  
- These perspectives will inform assumptions for scenario development and modeling

# Scenarios in the 9th Edition

## The Reference scenario (REF)

- a set of economy-specific pathways where existing policies are retained, and new policy measures are included if and only if they are supported by implementation details.
- in the absence of details, energy intensity, fuel switching, investment, technology deployment, and energy supply are assumed to loosely follow historical trends.

## The Target scenario (TGT)\*

- illustrates a hypothetical pathway for each economy towards realizing energy-related policy targets, even if implementation details are not available.
- when details are not available, economy targets provide directional guidance and a general sense of policy priorities to inform assumptions.

\* this scenario is different than the Target Scenario from the 7th Edition Outlook

# Next steps

- **Scenario development:** APERC researchers are creating scenarios for each economy and may reach out to economy representatives for feedback
- **Analysis:** modeling scenarios for each economy
- **External reviews:** APERC researchers will share preliminary results with economy representatives

**Thank you.**

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