

# APERC Update

## EGEEC 61 and EGNRET 59 Joint Meeting

17 October 2023 – Makati City, Metro Manila, The Philippines

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# Outline

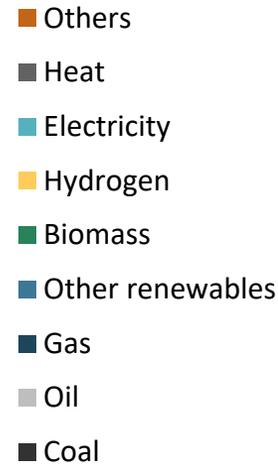
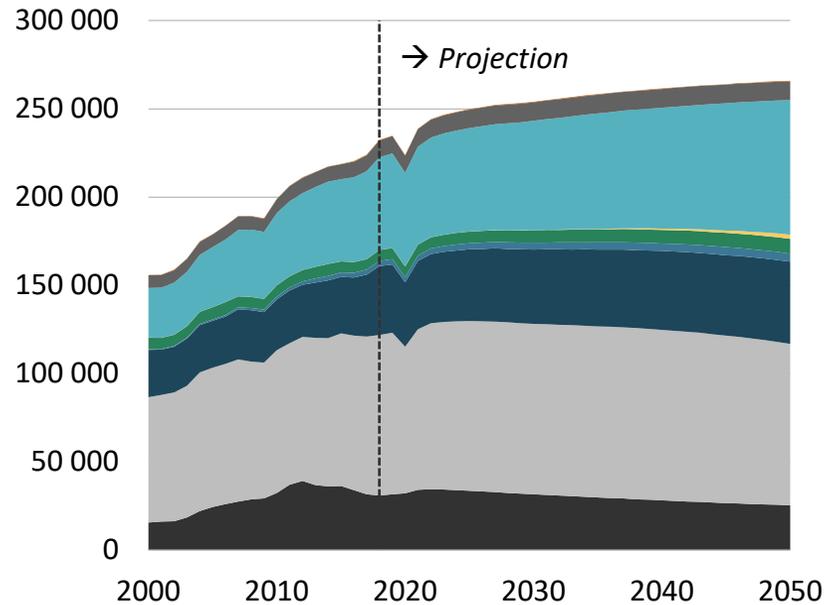
- Energy intensity and renewable energy share projections from the APEC Energy Demand and Supply Outlook 8th Edition
- Recent policy developments on energy efficiency and renewable energy
- Preparing the APEC Energy Demand and Supply Outlook 9th Edition

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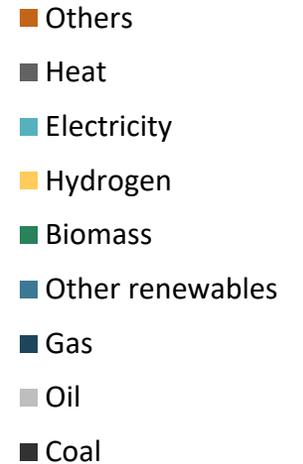
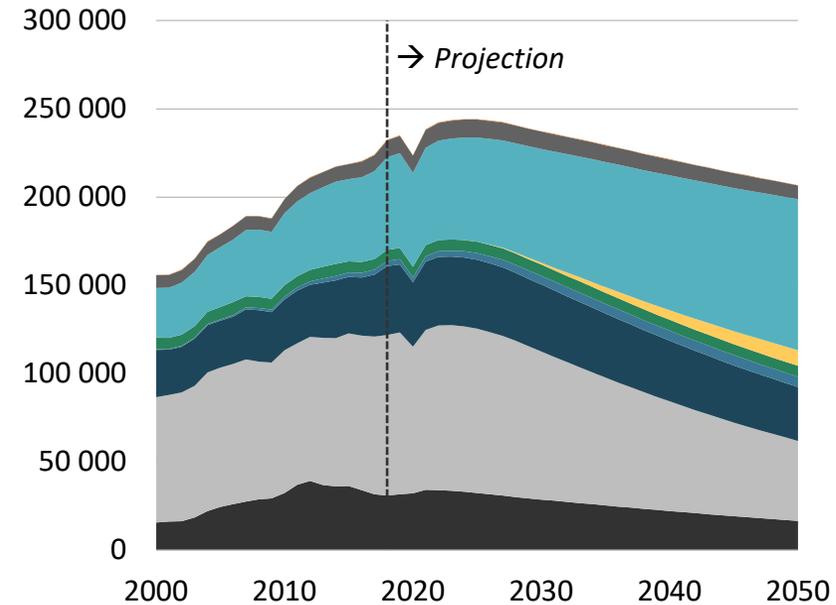
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# Energy demand decouples significantly from economic activity

Energy demand by fuel in REF (PJ)



Energy demand by fuel in CN (PJ)

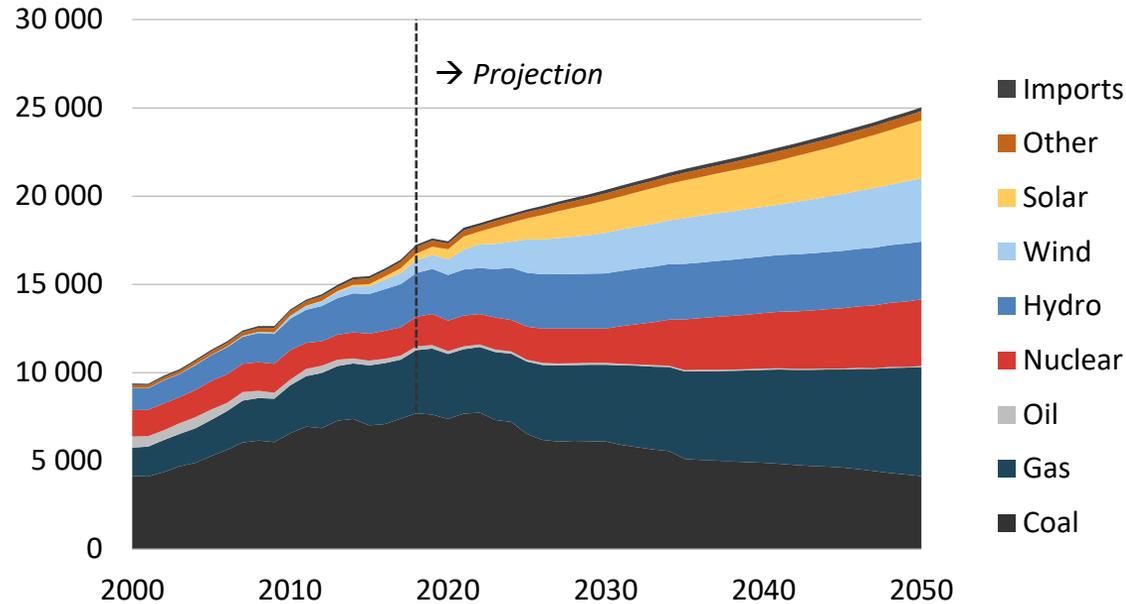


- In CN, energy efficiency and electrification enable energy demand to be 22% lower in 2050 relative to REF.
- In CN, energy use peaks in 2025.

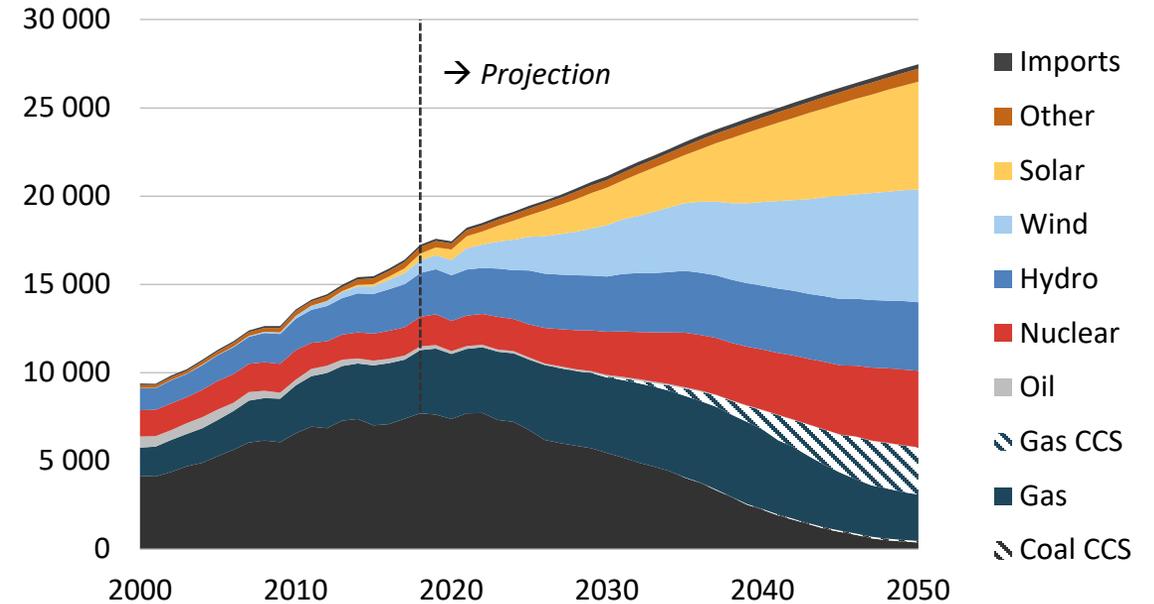
Note: Carbon Neutrality (CN) Scenario

# Electricity demand is increasingly met with generation from wind and solar . . .

Electricity generation in REF (TWh)



Electricity generation in CN (TWh)

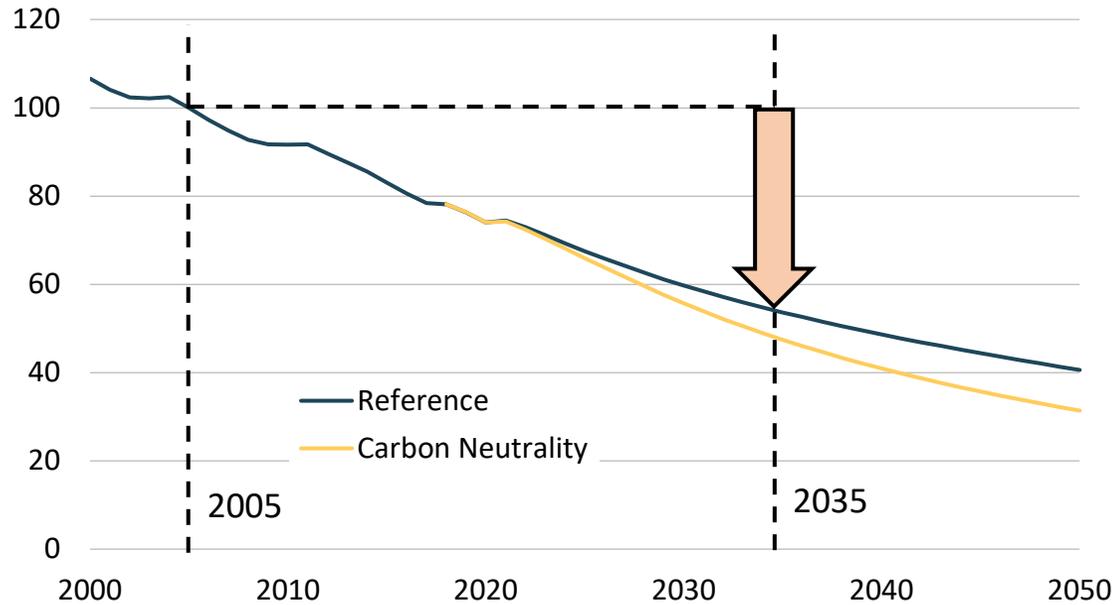


- Growth in electricity generation to meet increased demand, primarily in buildings and transport.
- Natural gas substitution for coal continues and provides balancing and ancillary services to the electric grid.

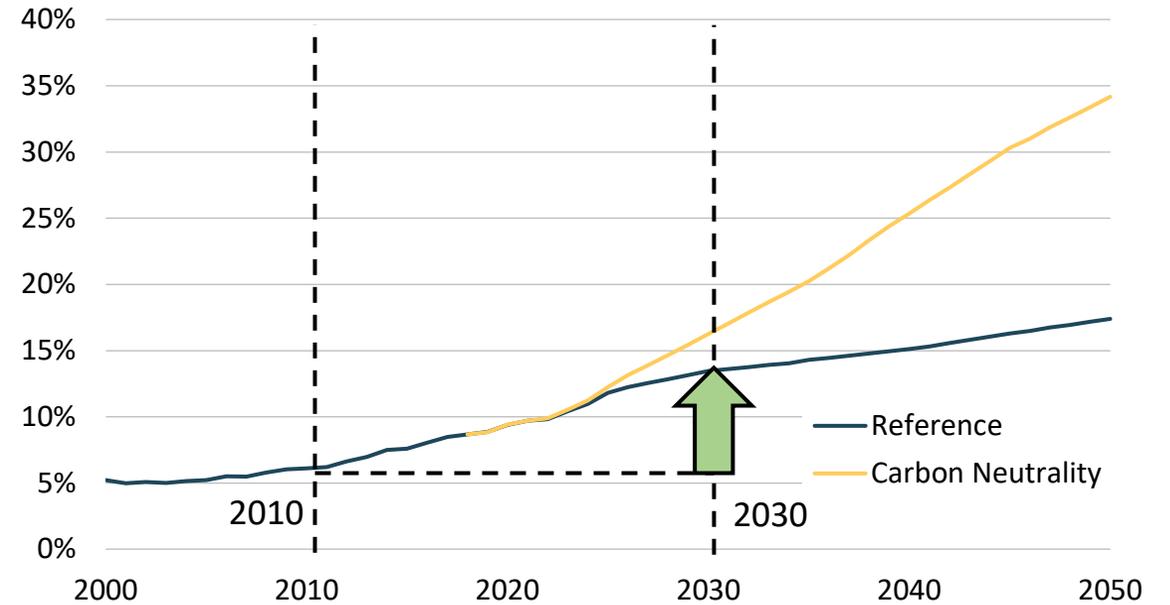
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# APEC projected to meet dual energy goals

Final energy intensity (2005 = 100)



Share of modern renewable energy



- Final energy intensity declines 45% by 2034 in REF and by 2031 in CN
- Modern renewable energy share doubles by 2026 in REF and by 2025 in CN

# Summary

Renewable energy share driven primarily by RE electricity generation in two economies.

Achieving the renewable energy share target is relatively straightforward while attaining the energy intensity target carries a higher level of risk.

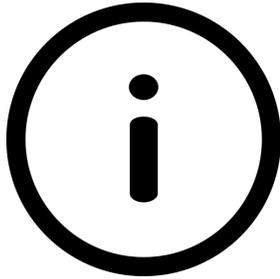
Outlook results indicate that APEC is on track to meet both energy goals

APERC will continue to track both energy intensity and the renewable energy share

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# Recent policy developments on Energy Efficiency in APEC



## Information

**(AUS) Commercial Building Disclosure:** 1000 sqm or more office space should provide EE information for sale or lease.

**(CT) Building Energy-Efficiency Rating System:**

Buildings that wish to obtain a green building label must provide energy efficiency information.



## Incentives

**(CDA) Greener Homes Initiative:** Provide grants and loans to help owners renovate but must undertake both a pre- and post-retrofit energy evaluation and launch Oil to Heat Pump financial supports for low-income groups.

**(USA) Inflation Reduction Act: on energy efficiency and electrification:** Provide tax credits for EVs, Energy Efficient Home, and Electrification.



## Regulation

**(JPN) Revised Act on Rationalization of Energy Use:** Require significant energy users to report non-fossil-fuel usage, submit an energy transition plan, and encourage the demand response measures.

**(PRC) Benchmarking Levels for Energy Efficiency in Industry Key Areas:** expanding and improving benchmarking levels from 25 to 36 fields.

# Recent policy developments on Renewable Energy in APEC



## Market-based

**(JPN) Introduction of Feed-in Premium (FIP):** Introduce the FIP system to encourage power generation linked to market prices to reflect the actual cost. (e.g. non-fossil value, balancing cost)

**(ROK) Renewable Energy Bidding System:** Introduce renewable energy generators (greater than 3MW) to participate in the electricity bidding market to stabilize the supply and demand of the electricity market.



## Incentives

**(CDA) Clean Energy Technology & Clean Electricity Investment Tax Credit:** 15%~30% refundable invest. tax credits are funded by the federal government

**(USA) National Clean Investment Fund & Clean Communities Investment Accelerator :** capitalize on clean energy financing and invest. and support underserved communities. (Part of IRA)



## Regulation

**(CT) Renewable Energy Dept. Act (Revs.):**

1. Major electricity users (>5000 kW) must install above 10% of the contracted capacity of RE, energy storage, or procure T-RECs;
2. New buildings are required to install a specific capacity of solar panels.

Note: RECs (Renewable Energy Certificates)

# Takeaways

Energy efficiency policies can progressively enhance the **clarity of energy-related information**, guiding consumers toward more **energy-efficient choices**.

**Electrification and demand response** have been integrated into current energy efficiency **regulations and incentive programs**.

Renewable energy policies have considered the **intermittency of renewable energy** to mitigate the **potential impacts on the power grid**.

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# Preparing the Outlook 9<sup>th</sup> Edition

- Since the 1<sup>st</sup> edition was published in 1998, the APEC Energy Outlook has responded to global trends.
  - From 6<sup>th</sup> to 8<sup>th</sup> edition of the APEC Energy Outlook, the scenarios have continuously updated.
- APERC provide two potential energy pathways for the **APEC Energy Outlook 9<sup>th</sup> Edition**.
  - The projection period for the Outlook 9<sup>th</sup> Edition is until **2060**
  - Considering the critical technology development trends (CCS, Energy storage, EV and Hydrogen)

	6th	7th	8th	9th
<b>Period</b>	2013-2040	2016-2050	2018-2050	2021-2060
<b>Base year</b>	2013	2016	2018	2021
<b>Scenarios</b>	Business-as-Usual (BAU) Improved Efficiency (IE) High Renewables (HR) Alternative Power Mix (APM)	Business-as-Usual (BAU)  APEC Target (TGT)  2-Degrees Celsius (2DC)	Reference (REF)   Carbon Neutrality (CN)	Reference (REF)   Target(TGT)
<b>Publication</b>	2016	2019	2022	2025

# Main objectives for Outlook 9th Edition

- **Two core objectives are:**

1. Estimate **energy demand and supply** trends
2. Estimate progress on **APEC energy-related goals**

- **Additional objectives are:**

1. Estimate **CO2 emissions** from **energy combustion**
2. Quantify the **decarbonization** of **power sector**. (discussing new APEC target)
3. Provide a rough estimate of **fugitive methane emissions** from the supply side
4. Estimate the **capital investment** in key sectors
5. Communicate **challenges and opportunities** along policy pathways

# Scenario 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.

# Next Steps

- **Scenario assumption setting:** APERC researchers are creating scenario assumptions for each economy and may reach out to economy representatives for feedback
- **Analysis:** modeling scenarios for each economy and have several internal discussions.
- **External reviews:** APERC researchers will share preliminary results with economy representatives

**Thank you.**

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