

## Deep Learning Application for Power Generation Forecasting of VRE in Thailand

C2 - Power System Operation and Control

PS2 - Operational Planning Strategies, Methodologies and Supporting Tools

Q2.6 - Artificial intelligence is currently providing insights to assist operations staff in their decision-making. How can artificial intelligence be harnessed to provide further support such as recommending courses of action for operational decision-makers?

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# How can Artificial Intelligence (AI) be Harnessed?

- AI helps optimize the utilization of Variable Renewable Energy (VRE) using the prediction model.
- An improvement in accuracy in prediction model would lead to relatively high penetration of VRE into electricity market.
- By comparison, rising penetration levels of VRE are expected to increase curtailment.
- AI ensures the optimal use of VRE by adapting operation according to weather conditions at any times.
- AI makes the real-time decisions of the best time to charge and discharge the Energy Storage System (ESS).

# What can AI-Based Prediction Model Provide System Operators?

- The high integration of VRE resources requires additional operating reserve to guard against the uncertainty of VRE power generation which imposes higher operating costs on power system.
- AI has the ability to learn complex power systems and support fast decision-making process, leading to increased grid flexibility and integration of VRE.
- The capabilities of AI are enabling improved VRE forecasting, smoothing the path for transition to VRE-based power generation.
- The potential of AI is able to improve operational planning, increase dispatch efficiency and, as a result, minimize the amount of operating reserve capacity required in the system.