

CAETS 2020 REPORT EXECUTIVE SUMMARY

Solutions for High-Level Penetration of Intermittent Renewable Electricity

Purpose

This report aims to suggest feasible investments to combat intermittency with minimal disruption, summarizes the successful approaches taken by 21 contributing countries, and offers five viable solutions to renewable electricity intermittency, to sustain growth in variable renewable electricity generation, distribution, storage, and implementation.

“Without a breakthrough in long-duration battery technology to counteract the problem of controlling the load with fluctuating sources of variable renewable energy (VRE) like wind and solar, policymakers, utilities, and producers alike are faced with difficult considerations in determining sensible energy policy”

In order to gain some understanding of the respective country solutions of the member representatives’, similarly situated countries were analyzed as peer groups, and were then categorized based on their relative positions in the transition process. Peer-group analysis showed that implementation challenges and solutions for combatting intermittency are different across country archetypes.

This report assessed the performances of countries in several categories as follows as the basis for grouping for comparative review: energy mix portfolio, renewable energy generation, climate policy and future milestones, and the presence of interconnected systems. The solutions proposed by contributing CAETS countries, given the wide breadth of their approaches, have been grouped into the following three categories:

- A. Large geographic interconnections to absorb variability and modulate output;
- B. The dispatch of secondary “spinning reserves” to quickly correct load fluctuations; and
- C. Investment in transmission and distribution “smart grid” systems to efficiently deliver power without compromising quality.

Generalized Solutions

In addition to country portfolio-tailored solutions, the report highlights common investments prescribed for general intermittency mitigation, including:

- Energy Storage
- Demand Response
- Financial Incentives & Curtailment
- Forecasting Tools
- Microgrids
- Nuclear Power

Conclusion

An outage or a blackout would throw our daily lives, already shifted by the pandemic, into turmoil. Our time spent sheltering has us working from home, learning from home, eating and drinking and cooling and heating all in the home. The thought of doing all that without reliable power is more than ever, unacceptable. This is urgent. This will not occur without the necessary and radical changes that some countries have already begun implementing, in the way we produce and consume energy.