

Control, Flexibility and Inertia Technologies for Achieving NDC 2030 and Net Zero 2050 in Korea

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Abstract

This presentation provides an overview of the CFI projects being developed by KEPCO Research Institute in Korea. The CFI projects are a series of research and development initiatives being undertaken by the KEPRI to achieve NDC 2030 and Net Zero 2050 in Korea. The projects are focused on developing Control, Flexibility, and Inertia technologies that will enable the maximum extension of renewable energy in the Korean grid while maintaining system security.

The CFI projects consist of five demonstration projects, each aimed at addressing specific challenges facing renewable energy in Korea.

The Control project is focused on developing real-time curtailment technologies that use forecasting and monitoring to manage the power systems.

The Flexibility project is aimed at developing multi-purpose control algorithms such as NTAs for congestion management of transmission lines and existing algorithms for frequency regulations of the system. It could also be used for grid planning and operation as well.

Lastly, it has two projects for Inertia. One is a demonstration project for an FW-Synchronous condenser to supply rotational inertia to the system, while the other is focused on developing Grid Forming technology to supply virtual inertia through applying it to PV and ESS.

The CFI projects are being implemented and demonstrated in Jeju Island first, with plans to extend them to mainland Korea if they prove successful. The value of these projects has been controversial, but KEPRI hopes that they will help address concerns about renewable energy's reliability and stability. Overall, the CFI projects represent an exciting opportunity for Korea to lead the way in renewable energy development while maintaining system security. By developing cutting-edge technologies that address critical issues facing renewable energy adoption, KEPRI hopes to pave the way for a more sustainable future for Korea and beyond.