

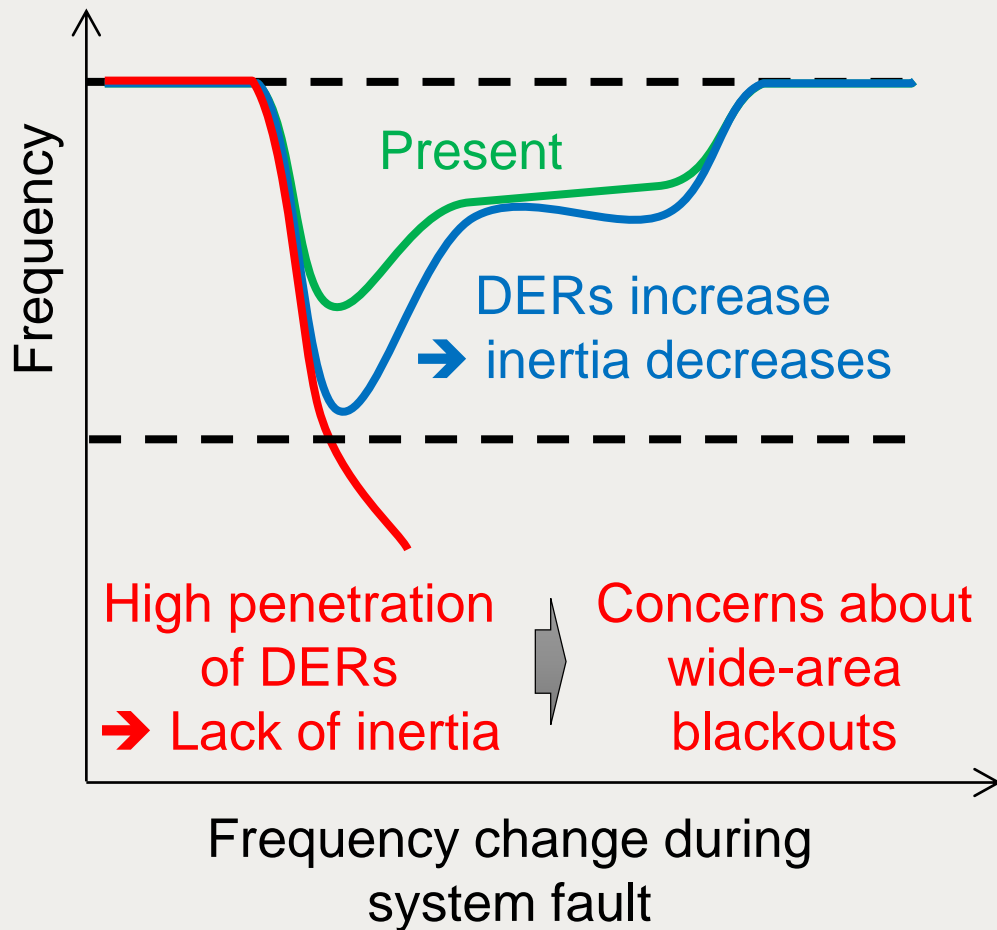
Action on the development of inverters with pseudo-inertia function

C4, PS3

Question 18 : What is the impact of DER on various forms of system stability (including but not limited to system frequency and inertia) as the share of the large-scale and distributed IBR increases and what is the resultant impact on the modelling details required, e.g. the need to represent inverter controls of the DER?

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Issues due to the reduction of inertial force



<Issues>

- Expansion of installation of distributed energy resources (DERs) such as PVs
- Decrease of rotating generators such as thermal power plants



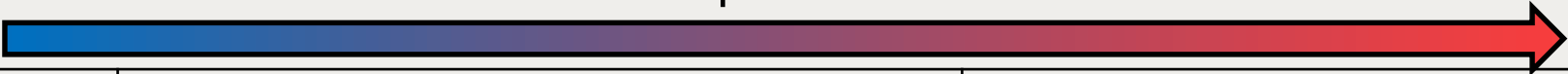
- If the frequency cannot be maintained due to momentary fluctuations such as grid faults due to a decrease in inertial force, there is a risk of wide-area blackouts.



Maintaining an inertial force for instantaneous fluctuations response is necessary.

Project for developing the inverter with the pseudo-inertia function

- Develop and verify inverters with a pseudo-inertia function through a verification project
 - Since the number of inverters connected in medium-voltage networks (6.6kV) is relatively large, we consider developing medium-voltage inverters with a pseudo-inertia function.
 - We will develop and verify the GFL and GFM inverters that balance the islanding detection function and pseudo-inertia function.

DER penetration level 

Inverter type	GFL : Grid Following	GFM : Grid Forming
Development difficulty	<p style="text-align: center;"><u>middle</u> Add functions to conventional control methods ↓ Development is considered relatively easy</p>	<p style="text-align: center;"><u>hard</u> New control method ↓ Development and verification of a new control method are necessary</p>