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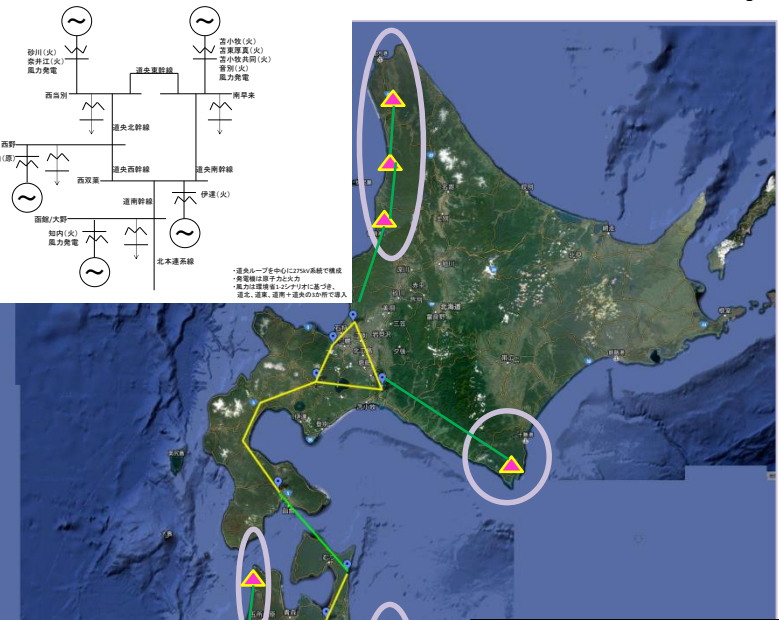
# **Modelling of Variable Renewables (VRs) in Power System**

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# Power Transmission line in Eastern Japan



**Tradition : Adjusting Supply to Demand**

Supply → Demand

**Future : Adjusting Demand to Supply**

Demand → Supply (massive VRs)

- Regional distribution of VRs
- Transmission line ( e.g. tie lines )
- Flexible power sources
  - Rechargeable battery, Pumped-hydro
  - Ramp products (e.g. Gas-CC )
  - VR suppression control (e.g. PC)
  - Demand response (e.g. EV, heat-pump, smart meter)

**VR Modelling Study in Japan**

- Study by University of Tokyo, funded by Ministry of the Environment Japan
- Study by University of Tokyo - Ministry of Economy, Trade and Industry (METI)

