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ICER Scholar Award Winners

Title- The role of microgrids within future regional electricity markets

As electricity markets across the globe are being partially or fully liberalized and are opening their markets to competition, electricity trading across borders has caused a trend for markets to become regionally integrated. While electricity markets are being regionalized, policy concerns on reliability and security of supply as well as flexibility and sustainability are increasing. While at a macro-level a trend of regionalization of electricity markets across national borders is noticeable, at a micro-level the trend is moving towards decentralization at consumer level. These two seemingly contradictory trends can be complementary in delivering secure energy in future smart energy systems. Decentral microgrids will fulfil a dual role within regionally integrated markets: they can address macro-level concerns; and at the same time provide new services to the macro-grid. Established microgrids within fully and partially liberalized electricity markets in the EU and East Asia are analyzed to formulate policy drivers for the introduction of microgrids in future smart electricity systems. Lessons learned from this analysis show that full liberalization could guide the integration of microgrids into the electricity system at a regional level and identified microgrid drivers could allow for regulators to tailor regulation towards local and regional grid integration.