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## First Virtual Smart Grid Knowledge Centre

### Context:

Recently, the Union Minister for Power has launched the Virtual Smart Grid Knowledge Center (Virtual SGKC) and Innovation Park.

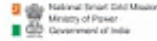
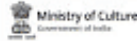
### Relevance:

### GS II- Infrastructure, Industrial Policy, Growth & Development

### Dimensions of the Article:

1. What is Virtual Smart Grid Knowledge Center (Virtual SGKC)?
2. Significance of this Initiative
3. What is a Smart Grid?
4. Benefits of Smart Grid Deployments

### What is Virtual Smart Grid Knowledge Center (Virtual SGKC)?



- The Union government's first-of-its-kind effort is the Virtual SGKC, which is housed within the power grid centre in Manesar (Haryana).
- The initiative will be one of the world's premier Centers of Excellence for supporting innovation, entrepreneurship, and research in smart grid technologies as part of the Azadi ka Amrit Mahotsav Programme.
- For the demonstration and progress of frontier smart grid technologies, POWERGRID built it with backing from the Union Ministry of Power and technical assistance from the US Agency for International Development (USAID).

### Significance of this Initiative

- SGKC aspires to be one of the world's top centres of excellence for smart grid technology innovation, entrepreneurship, and research, as well as building capacity in the power distribution industry.
- It will provide for a digital trace of SGKC's physical setup, which was deemed necessary during the Covid-19 pandemic.

### What is a Smart Grid?

- A smart grid is an electrical grid with automation, communication, and information technology systems that can monitor power flows from generators to consumers (even



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down to the appliance level) and control or curtail the load in real-time or near real-time to match generation.

- Smart Grids can be built by implementing efficient transmission and distribution technologies, as well as system operations, customer integration, and renewable energy integration.
- Smart grid solutions aid in the real-time monitoring, measurement, and management of power flows, which can aid in the detection of losses and, as a result, the implementation of suitable technical and administrative actions to mitigate losses.

### **Vision for India:**

Transform the Indian power sector into a secure, adaptive, sustainable and digitally enabled ecosystem that provides reliable and quality energy for all with active participation of stakeholders.

### **Benefits of Smart Grid Deployments:**

- Reduction of T&D losses,
- Peak load management, improved QoS and reliability.
- Reduction in power purchase cost.
- Better asset management.
- Increased grid visibility and self-healing grids.
- Renewable integration and accessibility to electricity.
- Increased options such as ToU tariff, DR programs, net metering.
- Satisfied customers and financially sound utilities etc.

*-Source: PIB*