

# Collaboration Between Korea and Illinois

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# About ISED

The Institute for Sustainable Energy Development (ISED) is a non-profit corporation dedicated to supporting the development of sustainable models for energy production and consumption.

**Mission** - ISED's mission is to support the development and transfer of knowledge and technology that can facilitate new models for energy production and consumption that can help to better manage system costs, improve reliability, and reduce the environmental impact of energy consumption.

# Smart Grid Green Technology Memorandum of Understanding between Illinois and Korea

The Korean Ministry of Knowledge Economy (MKE) and Illinois' Department of Commerce and Economic Opportunity (DCEO) signed a MOU at the World Smart Grid Forum in Seoul in January 2010. Its mission is to advance the adoption of innovative smart grid and green technologies that will generate economic opportunity, create jobs and produce environmental benefits for consumers, communities and shareholders in Illinois and elsewhere.

- As part of the collaboration, nine additional memorandums of understanding have been signed to advance business relationships and establish project criteria.
- Illinois and Korean partners are working collaboratively to advance additional projects. Future projects will focus on the “built environment.”

# Initial Projects with Korean Consortium Partners

- **IIT – KERI**
  - Technology deployment and research in phasor measurement units on microgrid to detect faults and promote reliability.
- **ADICA – KPX**
  - Consulting and agent based software agreement to improve utility functions.
- **UIUC – ETRI**
  - \$100,000 collaborative research on distributed denial of service on smart grids to prevent, detect and respond to cyber attacks. Promotes network resiliency and cyber security.
- **Illinois – Korea Smart Buildings Initiative (ISBI)**
  - \$2.7 million from Korean government, \$1 million from the State of Illinois and labor and product from Korean companies for 1<sup>st</sup> of its kind multi-building demand response, ancillary services and energy efficiency project.

# ISBI Project Goal

To collaboratively develop clear business models for efficiency improvements in buildings that will reduce energy consumption while simultaneously improving the efficiency of the electricity grid

# Illinois Smart Buildings Initiative

ISED is managing the ISBI and Performing Technical Design Services

## – Key Illinois Partners

- Draper and Kramer
- M&J Wilkow
- Illinois Science and Technology Coalition
- Citizens Utility Board
- Argonne National Laboratories

## – Key Korean Partners

- Korea Smart Grid Institute (KSGI)
- KT
- LGE
- Nara Controls

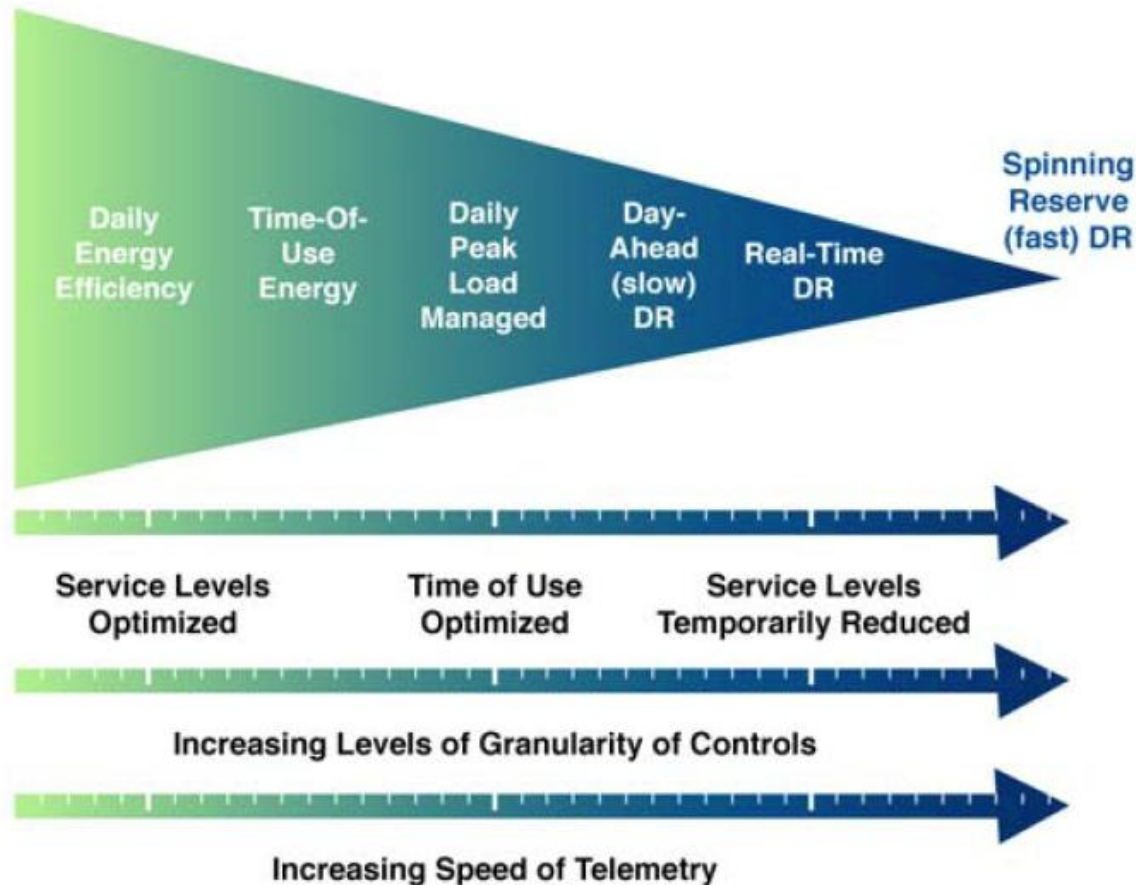
# Buildings Use a Lot of Energy

On an annual basis, buildings in the United States consume 39% of America's energy and 68% of its electricity

In the City of Chicago, buildings account for approximately 70 % of City emissions and are the primary target for reducing emissions through the City's Climate Action Plan

Pacific Northwest National Laboratories estimates that poor operation and maintenance (O&M) of buildings can result in 10 to 30 percent excess energy use

# Smart Technology Creates New Opportunity



**Source:** Demand Response Research Center at Lawrence Berkeley National Laboratories, M.A. Piette, S. Kiliccote, G. Ghatikar, Linking Continuous Energy Management and Open Automated Demand, November 2008, Presented at the *Grid Interop Forum*, Atlanta, GA, November 11-13, 2008.

# Focus Areas

- Network Operation Center (NOC)
- Building Energy Management Systems (BEMS)
- Building Automation Systems (BAS)
- LED Lighting
- Smart Appliances
- Solar Panels
- Battery Storage

# Creating Value

ISBI will create value through:

- Reductions in demand (efficiency)
- Load shifting (demand response)
- Increase operational capabilities and situational awareness (better building management and efficiency)
- The provision of ancillary services

# Business Model Goals

- Reduce the upfront investment required by buildings
- Create revenues for new energy management solutions and strategies
- Create new linkages between wholesale energy markets and building operations

# Next Steps

- Advanced Metering will be installed in Feb-March
- The Design and Audit Stage will end in April
- LED Lighting and Appliance Mock-ups will be complete in April
- Full Implementation will begin in May
  - NOC Construction
  - BEMS and BAS Integration

# Questions?

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