

# Illinois Regional Smart Grid Innovation Ecosystem GridWeek Presentation

October 18, 2010



# Illinois 18 Months Ago

- Pockets of Activity
  - Numerous narrowly scaled projects
- Limited Dialogue or Collaboration
  - Competing ARRA applications
- Ineffective Leveraging of Resources
  - Few partnerships
  - Limited public resource availability
- Nonetheless, a foundation was being developed
  - Illinois Commerce Commission, University of Illinois, Illinois Institute of Technology, Argonne National Laboratory, private industry



# Illinois Statewide Smart Grid Collaborative

- Established by the Illinois Commerce Commission in September of 2008 to develop a strategic plan to guide deployment of smart grid in Illinois and to recommend policies the Commission can consider for adoption.
- Key Issues for Consideration
  - Cost-Benefit Analysis: Criteria for Deployment Decisions
  - Default Rates: How to Charge for Electricity with AMI in Place
  - Cost Recovery: How to Pay for Smart Grid and Who Bears Associated Risks?
  - State Regulatory Consumer Policies:
    - Data Privacy and Data Access
    - Retail Market Structure and the Role of Utilities
    - Technical Characteristics and Standards
    - Remote Connection and Disconnection Policies
    - Consumer Education



# Illinois Regional Smart Grid Development Plan

Research and Development

Idea Pipeline



Pilot Deployment and Testing

Market Needs & Opportunities



Regulatory and Policy Review

Public Support / Engagement



Collaborative Business Models/Market Development

Ecosystem & Collaborators



Deployment/Market Capture

- Research & Development
  - University of Illinois at Urbana-Champaign, Illinois Institute of Technology, Argonne National Laboratory
- Industry
  - Public-Private Partnership, ComEd, Ameren, S&C Electric, BOMA/Chicago
- Public Policy & Investment
  - Illinois Commerce Commission, Illinois Power Authority, Illinois Department of Commerce and Economic Opportunity
- Test Beds / Public Laboratories
  - City of Chicago, Village of Oak Park, City of Naperville, Village of Princeton, Illinois Community College Network
- Non-Governmental Organizations
  - Citizens Utility Board, Center for Neighborhood Technology, Galvin Electricity Initiative
- International Support
  - Partnership with Republic of Korea, Ministry of Knowledge Economy

# Innovation Across Sectors

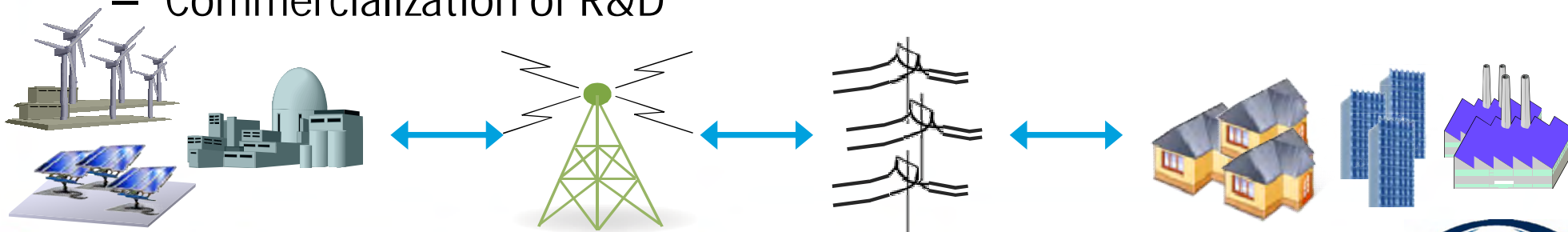
More than \$500 million has been captured in the state in the last 18 months for energy efficiency or green development, including nearly \$120 million in smart grid R&D and demonstration projects in 2009 and 2010 highlighted by:

- \$25 million to the Chicago Metropolitan Agency for Planning and the City of Chicago for energy efficiency retrofit program design and execution.
- \$24 million in American Recovery and Reinvestment Act (ARRA) funds to Beacon Power Corporation to construct a 20 MW flywheel energy storage plant in Chicago, Illinois.
- \$18.8 million over 5 years to the Information Trust Institute at the University of Illinois Urbana-Champaign by the U.S. Department of Energy to extend their Trustworthy Cyber Infrastructure for the Power Grid initiative.
- \$12.6 million including, \$5 million in ARRA funds and \$2.5 million in State funds, to the Illinois Institute of Technology to establish a Smart Grid Education and Workforce Training Center. The \$5 million award was the largest university award of the ARRA project category.
- \$11 million in ARRA funds to City of Naperville for Advanced Meter Infrastructure installation to increase reliability.
- \$8.8 million to Argonne National Laboratory for advanced battery and energy storage R&D. This research will set the stage for mass electric vehicle adoption.
- \$5.1 million in ARRA funds to S & C Electric for a distributed generation project.
- ComEd has developed an Advanced Meter Infrastructure pilot that will deploy approximately 141,000 smart meters in 11 suburban communities and in the City of Chicago as part of one of the most comprehensive tests of smart meters in the nation.
- \$245 million captured for 17 ARRA broadband awards leveraging a total value of \$350 million.



# Aggregating Sector Interests

- Smart Buildings
  - Demand Response
  - Green Hospitals / Schools
  - Public Infrastructure
- Smart Transportation
  - Smart Parking (Vehicle to Grid)
  - Mass Transit
  - Micro-Transportation
- Research & Development
  - Engaging Universities and Federal Labs
  - Commercialization of R&D
- Smart Homes
  - Control Devices
  - Smart Appliances
  - Energy Storage / Renewable Energy Integration
- Smart Utilities
  - Self Healing Systems
  - Advanced Communications
- Workforce Development
  - Curriculum and Training



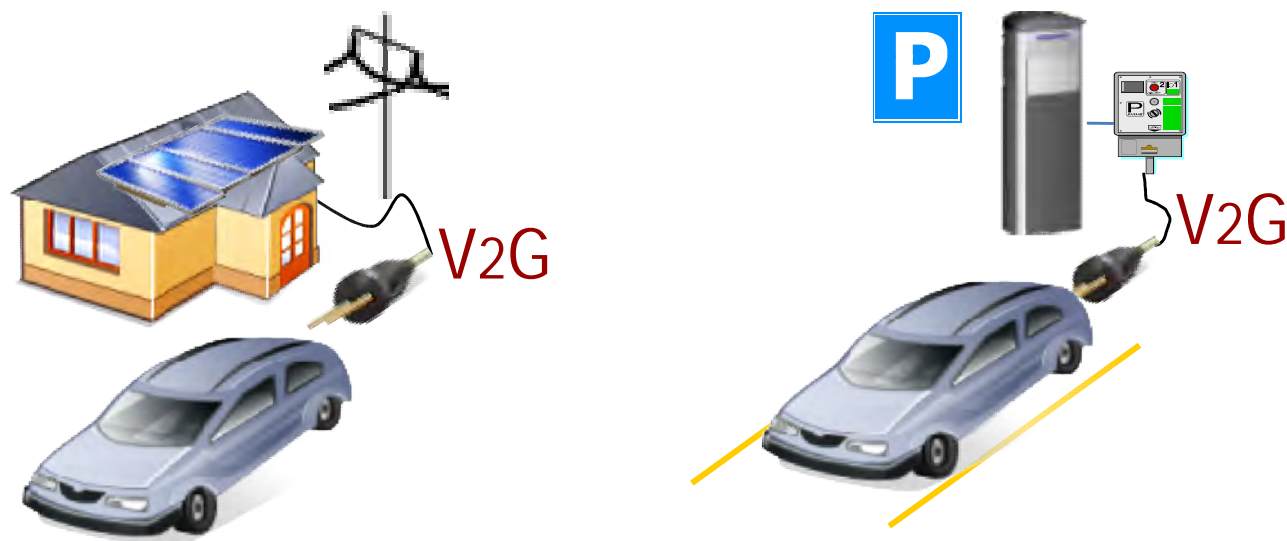
# Acceleration Tools

- Illinois Smart Grid Regional Innovation Cluster
  - Awarded contract from the U.S. Small Business Administration in September 2010, to accelerate business growth in the emerging Illinois Smart Grid Regional Innovation Cluster.
  - Partners: Illinois Institute of Technology, Clean Energy Trust and O-H Community Partners
  - ISTC will manage cluster growth strategies, including efforts to engage companies and researchers in Smart Grid innovative efforts.
- Illinois CleanTech Ecosystem
  - The Clean Energy Trust secured a U.S. Department of Energy grant in September 2010, to help transfer research from Illinois' world-class universities and science labs into clean energy technologies and viable businesses.
  - The ISTC is a partner in the development of the ecosystem, providing in-kind staff support and facilitating a \$25,000 investment by the Illinois Department of Commerce and Economic Opportunity.
- Collaboration with Korean Ministry of Knowledge Economy
  - Information Trust Institute at the University of Illinois: Collaborative research and development on grid data/cyber security and network resiliency.
  - Illinois Institute of Technology: Collaborative research and development in building energy efficiency, distribution automation, integration of renewable energy sources and energy storage in relation to the smart grid.
  - Illinois Institute of Technology/ADICA: Developing an international smart grid training program for industry specialized professionals.
  - Other projects in the pipeline related to smart communities and technology deployment.



# Regional Electric Vehicle Infrastructure

- The City of Chicago and the State of Illinois partnered to issue an RFP for regional electric vehicle infrastructure.
- Contract will be announced soon.
- Plan consists of 70+ level II and III charging locations.



# Illinois Institute of Technology

- 2008 - IIT Perfect Power Prototype (\$12 million)
  - A Smart Grid Demonstration grant from U.S. Department of Energy to create the first “Perfect Power” smart grid prototype on IIT’s main campus in Chicago.
- 2010 - IIT Smart Grid Workforce Training Center (\$12.6 million)
  - Grants from U.S. Department of Energy & State of Illinois to deploy a state-of-the-art Smart Grid education and workforce training center.
- 2010 – IIT Wind Energy Consortium (\$8.8 million)
  - Grant from the U.S. Department of Energy to support university wind energy research and development programs.



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