

The Great Lakes Energy Institute:

*Where we are
and where we 're going*

Liza Reed, Associate Director, GLEI
Presentation to AEE, May 12, 2016

The Great Lakes Energy Institute @ Case Western Reserve University

Vision: Empowering our faculty, students and partners to catalyze breakthroughs in energy sustainability that address the most pressing problems facing our world.

GLEI is distinct among institutions... leading to a 4X increase in energy research \$ at CWRU in 5 years

Prioritizing... *identifying areas of strength and growth*

Connecting... *across stakeholders to encourage partnerships and opportunities*

Empowering... *supporting stakeholders with core services that break down barriers to success*



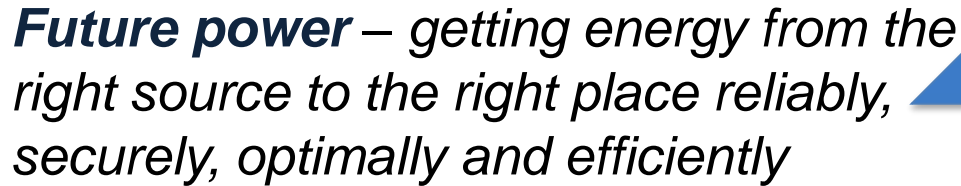
Educational impact

Breakthrough discoveries

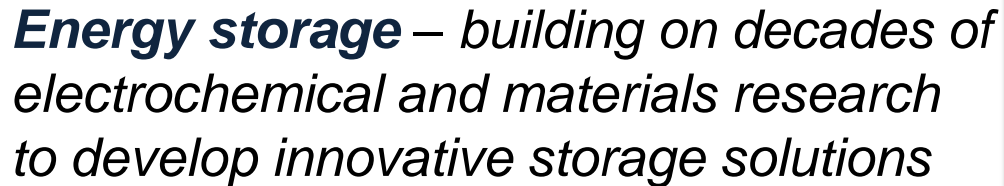
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**GLEI over-arching goal:
\$20+ million/year in energy
funding by 2020**

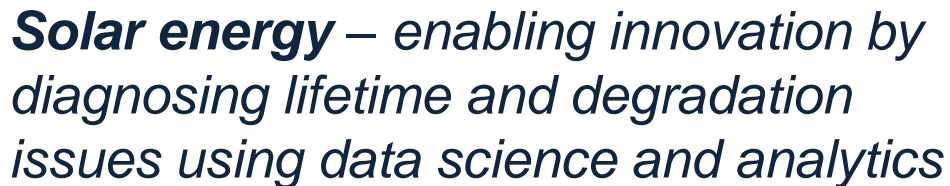
GLEI focuses efforts at the intersection of CWRU strengths and the most pressing problems facing our world




Future power – getting energy from the right source to the right place reliably, securely, optimally and efficiently



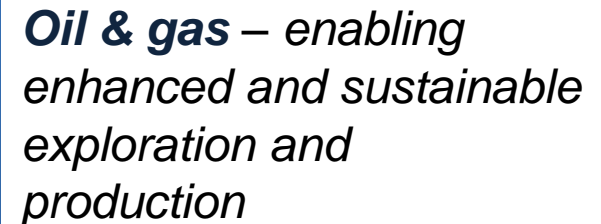
Energy storage – building on decades of electrochemical and materials research to develop innovative storage solutions



Solar energy – enabling innovation by diagnosing lifetime and degradation issues using data science and analytics



Wind – building capabilities for fresh water installations of turbines



Oil & gas – enabling enhanced and sustainable exploration and production

“Big data” science and analytics

Seven years of GLEI success... and growing...



Funding

~\$70 million dollars won and raised

4X increase in energy research

Strong history of success with ARPA-E

~50% "hit rate" on proposals

Stakeholders

90+ faculty engaged with GLEI

100+ industry and national lab partners

70+ students in Energy Entrepreneurship with \$200k in follow up \$

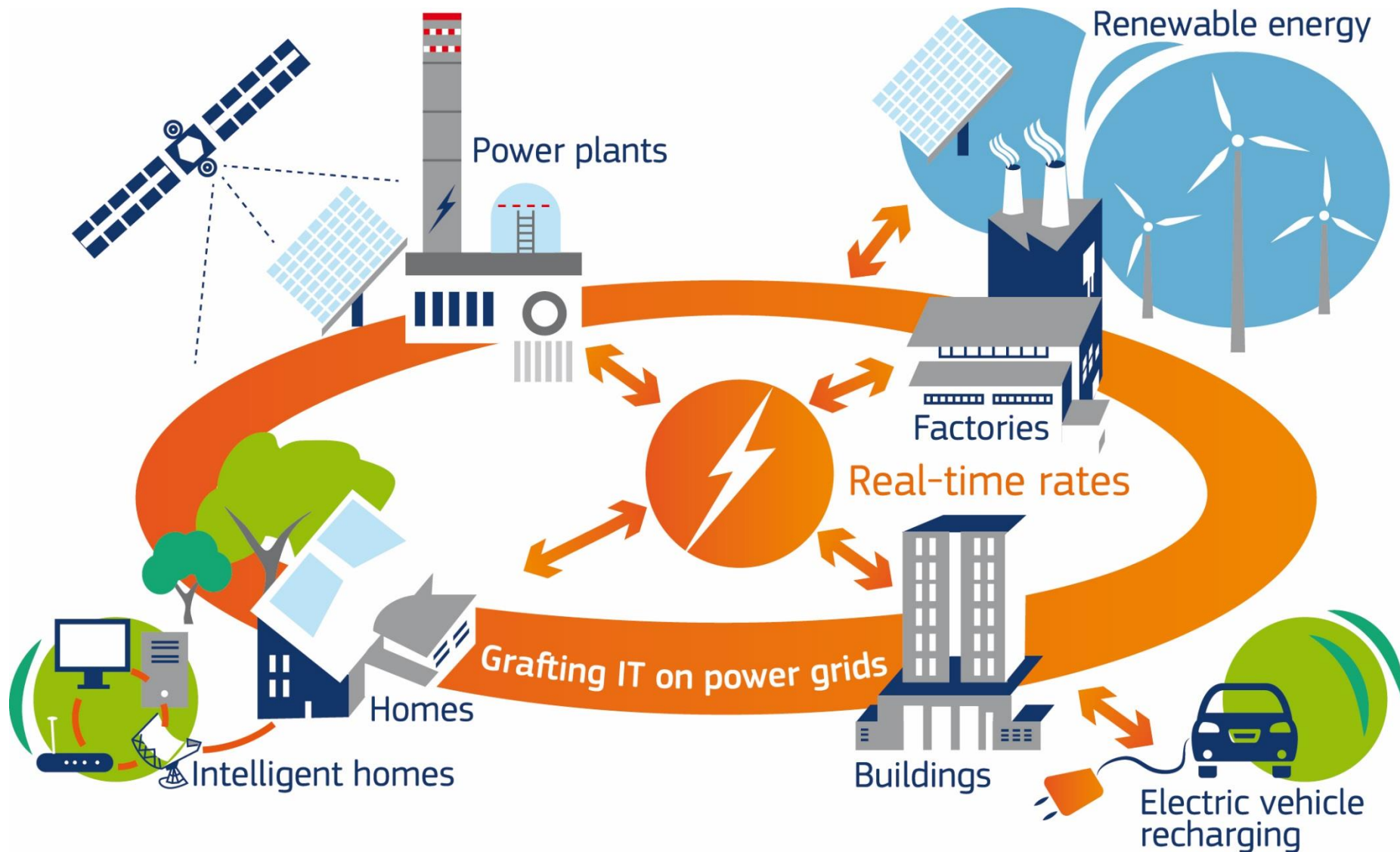
Impact

Breakthrough energy storage discoveries, including flow battery

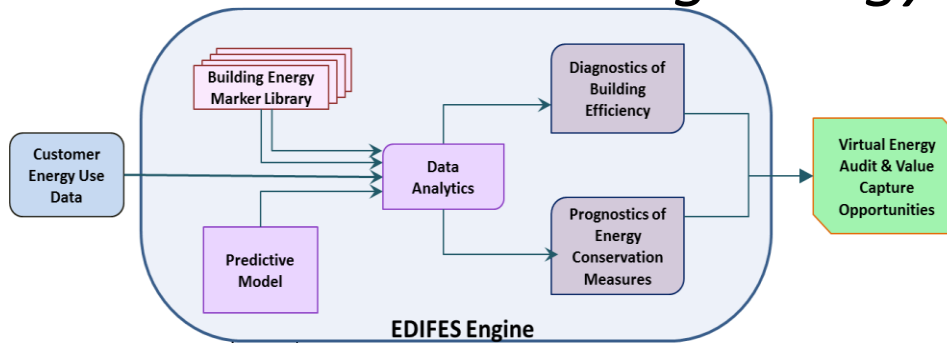
Solar Durability and Lifetime Extension Center

Wind energy awards: blades , magnets , offshore wind in Lake Erie

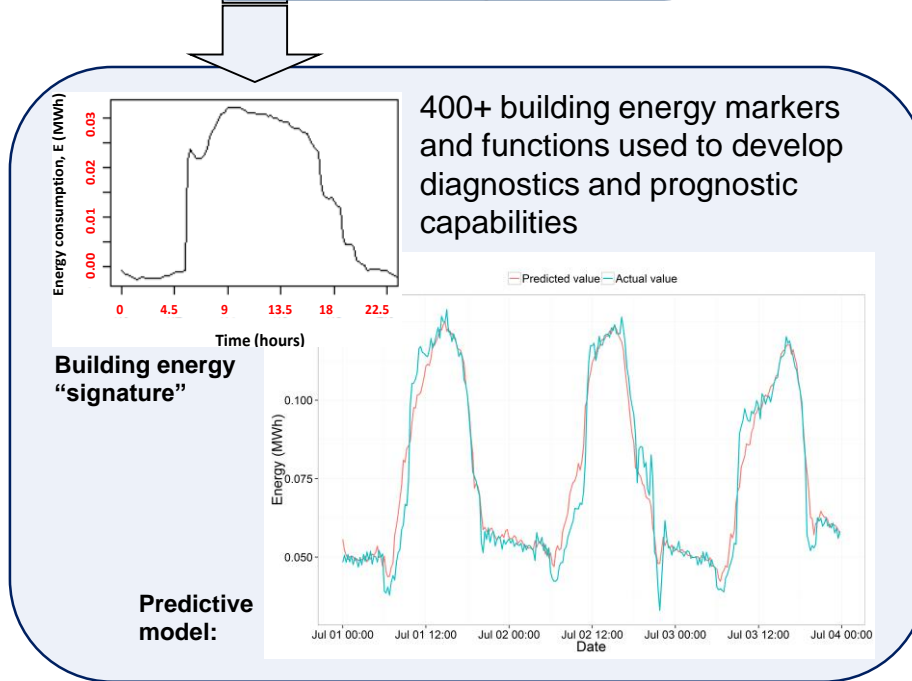
Grid Demonstration: A smart, distributed and connected energy ecosystem



Building Energy Efficiency



- Short term returns on scheduling, equipment issues
- Long term analyses/predictions of policy changes, efficiency upgrade ROIs
- Replicable to new data, sites, partners
- Scalable to include, e.g., water, gas



City, County, and Suburb dashboards



GREAT LAKES
ENERGY
INSTITUTE

Cuyahoga County & Case Western Reserve University
MetroLab Network Partnership



Think*Energy*. Building an Energy Ecosystem

Think*Energy* connects students with energy topics, faculty, companies, financiers, and local, national and international communities

