University of Pittsburgh

EPIC – November 2015

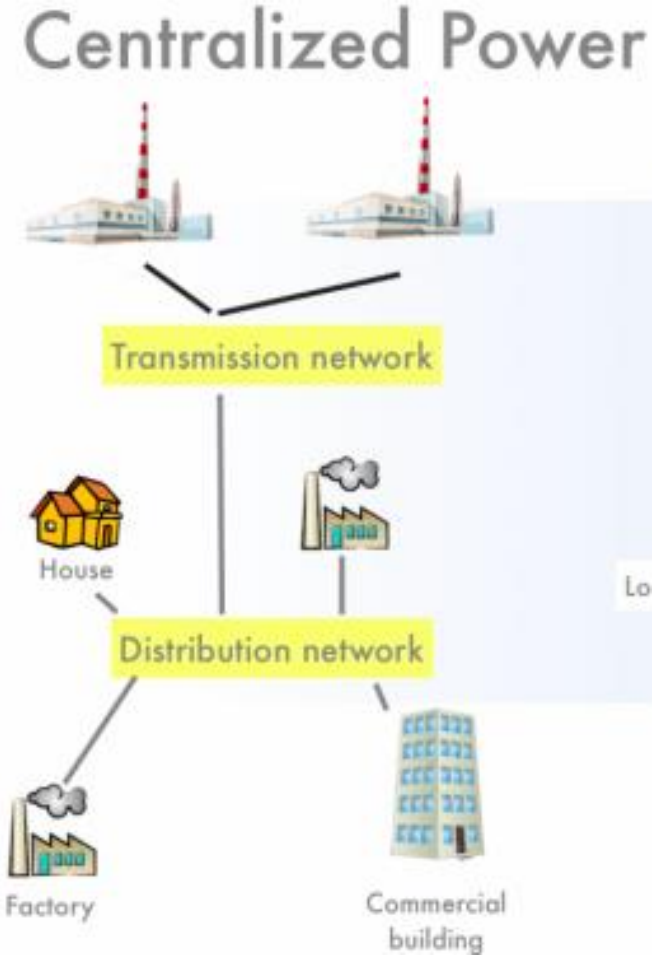
Ty Gourley, Program Officer
Hillman Family Foundations


Pittsburgh 1950s


Pittsburgh 2015

Energy Evolution

Centralized generation, regulated transmission and distribution, integrated delivery systems, AC based



Energy Evolution

Distributed generation, flexible interconnection networks, deregulated markets, demand response, efficiency incentives, renewable standards, AC/DC hybrid and DC based systems

District Energy Guiding Principles

1. Be uniquely Pittsburgh. Don't transplant the model but leverage our particular strengths to become the model
2. Engage with and promote change within legacy institutions
3. Build cross-sector, public-private partnerships
4. Seek technology innovation through research, development AND deployment (using demonstration pilot projects when necessary, followed by scaling)
5. Focus on outcomes from Day 1 with a particular emphasis on measures of sustainability, efficiency, and economic development (require a value proposition for individual projects and overall)

District Energy Guiding Principles

6. Use open data and analytics to identify opportunities, evaluate risk, and measure outcomes
7. Leverage local/public dollars for increased investment
8. Embrace coordination, transparency and stakeholder participation
9. Maximize local manufacturing and workforce development/job creation opportunities
10. Avoid possible physical and cyber security vulnerabilities
11. Get the business/economic and policy/regulatory frameworks right

Renewable DC Microgrid Installation in Harmar

PITT OHIO
SUPPLY CHAIN • GROUND • LTL • TL

Motivation:

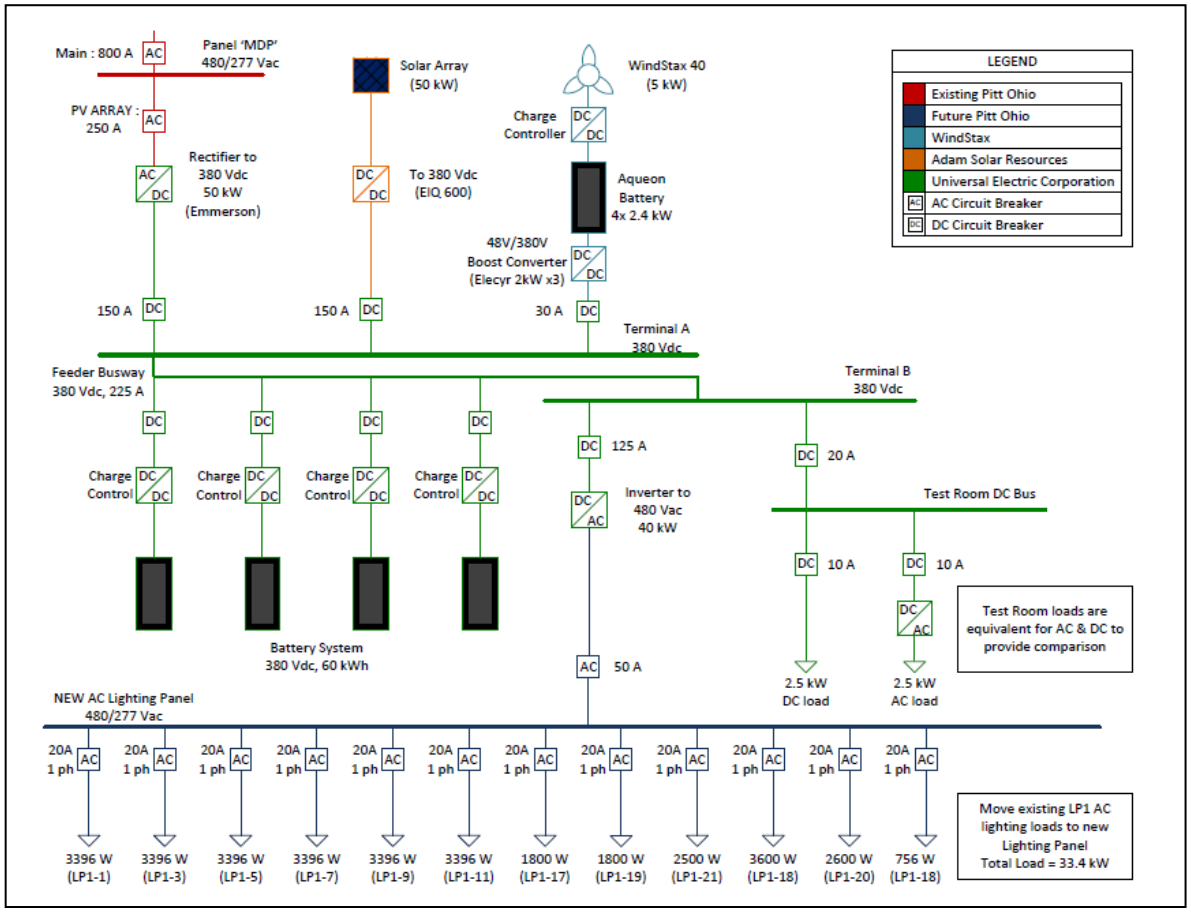
- Improve the environmental and social sustainability performance of their business (a regional trucking company)
- Promote Pitt-Ohio and the Pittsburgh region as leaders in environmental sustainability through the use of direct current (DC) power

Project Overview:

- 50 kW of solar power
- 5 kW of wind power
- 70 kWhr of energy storage
- Power converters
- DC distribution architecture and components
- DC laboratory space

Example of Community Deployment

- Renewable DC microgrid installation (PITT OHIO)
- Collaboration of regional organizations



PITT OHIO
SUPPLY CHAIN • GROUND • LTL • TL

UNIVERSAL ELECTRIC CORPORATION

PCTI
A Power Conversion Company

WindStax™
Wind Power Systems

ASR
ADAM SOLAR RESOURCES

elecyr
Saving The Power

AQUION ENERGY

Sargent Electric Company

BDA Engineering, Inc.

Energy Innovation Center

- Objective:

… to contribute to socially responsible workforce development, foster energy and sustainable technology advancement, and assist in job creation through a commitment to diversity, innovation and comprehensive education.

- Multiuse Facility
  - Promote collaborative research between universities and industry
  - Train professionals in energy related technical disciplines
  - Development of the Pittsburgh region as a national center for energy technology