

Energy Innovation Corridor

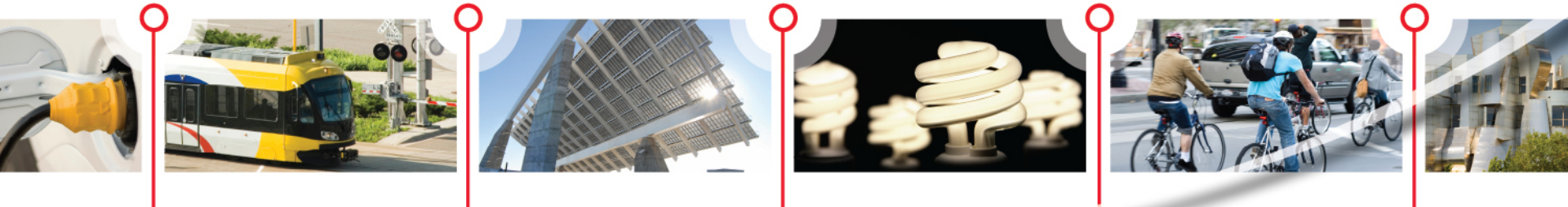
Partnering to develop a cleaner energy
and transportation future for Minnesota





EIC - What is it?

- A first-of-its-kind clean energy and transportation model in an established urban center
- An innovative energy showcase along Central Corridor Light Rail Transit
- Community engagement with measurable, targeted programs for energy efficiency, renewable energy and transportation



Coalition Partners

Public

City of Minneapolis

City of Saint Paul

Hennepin County

Ramsey County

Office of Energy Security

University of Minnesota

Community

Neighborhood Energy Connection

Center for Energy & Environment

Business

Minneapolis BOMA

Saint Paul BOMA

Saint Paul Port Authority

Utilities

CenterPoint Energy

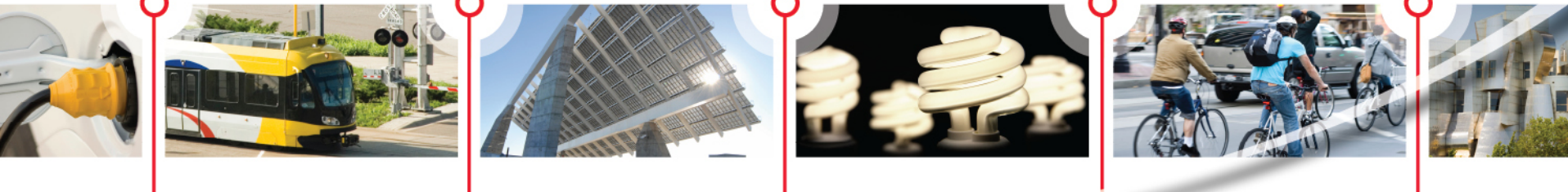
District Energy

Xcel Energy



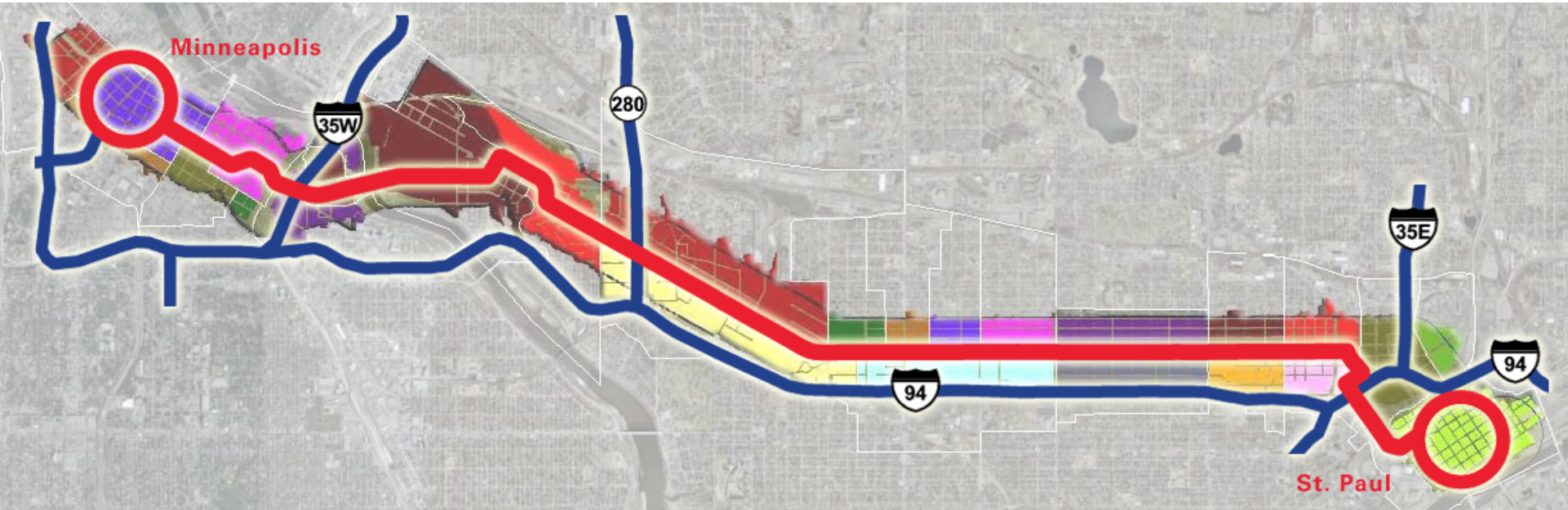
Coalition Goals

- Energy efficiency savings 50% higher than state goals (enough for 7,100 homes)
- 9.5 GWh renewable energy supplied or generated within the corridor (enough for 1,200 homes)
- Reduced carbon emissions and creation of local jobs
- Community involvement in renewable energy, energy efficiency, electrified transportation, car share programs
- Recognized national showcase for energy and transportation





Showcase Area



Four blocks (1/4 mile) adjacent to Central Corridor light rail and all of the University of Minnesota – Minneapolis campus.



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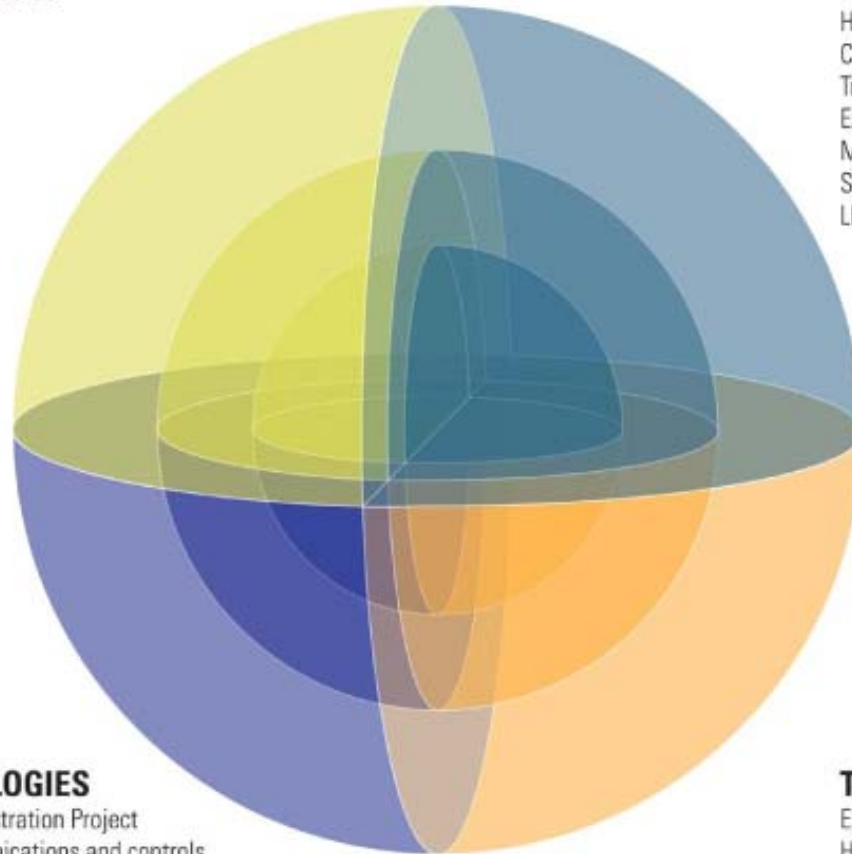


RENEWABLE ENERGY

WindSource
Solar*Rewards
Solar WindSource
Biomethane
Biomass

ENERGY EFFICIENCY

Home Energy Squad
Commercial Quick Fix Program
Trillion Btu
Exergy (IEA Annex 49)
Mass Building Retrofit Program
Sustainable Building Design
LED Lighting



SMART TECHNOLOGIES

Solar Smart Grid Demonstration Project
Digital, two-way communications and controls

TRANSPORTATION

Electric Vehicles
HourCar
Zip Car
Light Rail Development



Renewable Energy

- Solar
 - ✓ Solar Rewards
 - ✓ Solar Thermal
 - ✓ Solar Cities
 - ✓ Solar Windsource
- Windsource
- Bio methane

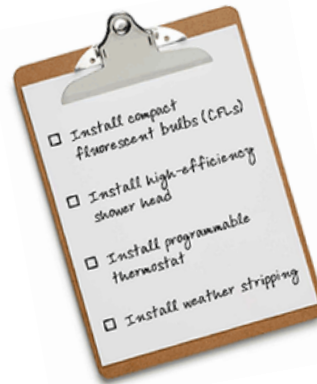


Energy Efficiency

- Multi Family Housing



- Home Energy Squad



- Trillion BTU – St Paul Port Authority

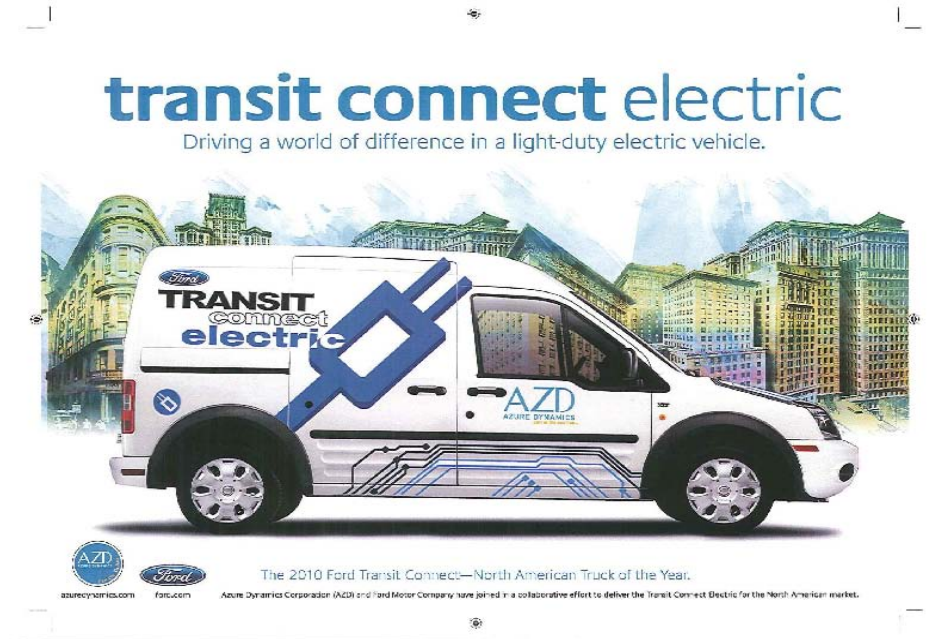
- Collaboration and Partnership in Program Marketing





Transportation Electrification

- Plug in
 - ✓ Electric Vehicles
 - ✓ Plug in Stations
 - ✓ Hour Car/ Zip Car
 - ✓ Light Rail





Smart Technology

Communication Platform

- ✓ Customer Communication
- ✓ System Automation
- ✓ Load Control
- ✓ Environmental Integration



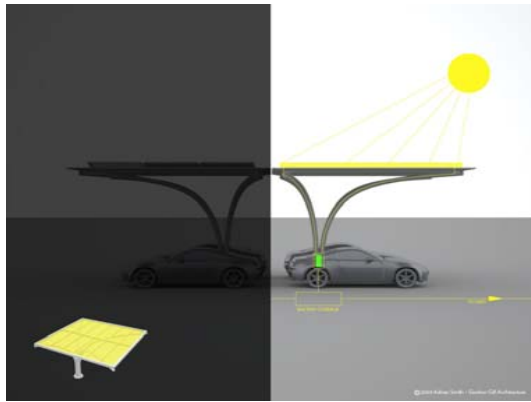
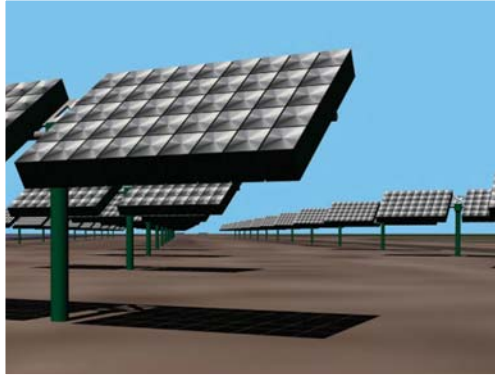


Benefit to Service Area

- Programs developed for Corridor are available to all Xcel Energy customers
- Process and procedures are template for all communities
- Involvement in programs like Transportation Electrification are open to anyone wishing to participate
- Programs provide training and experience for system



Distribution Infrastructure





Issues & Challenges – Zoning & Permits

● Solar

- ✓ Permitting Process
- ✓ Interconnect Requirements (Power Quality and Reliability)
- ✓ Fire Protection
- ✓ State Historical Preservation Office
- ✓ Shading
- ✓ Neighborhood Acceptance

● Windsource

- ✓ Permitting Process
- ✓ Setback Requirements
- ✓ Interconnect Requirements





Issues & Challenges (cont.)

- **Biomethane/Biomass**

- ✓ Permitting Process
- ✓ Odor
- ✓ Traffic
- ✓ Digestate or Ash Disposal
- ✓ Emissions

- **Energy Efficiency**

- ✓ Worker Certification
- ✓ Quality Control
- ✓ Solicitation Restrictions
- ✓ Credit Requirements
- ✓ State Program Rules (Monitoring & Verification)





Issues & Challenges (cont.)

- **Transportation**

- ✓ Permitting Process
- ✓ Technology
- ✓ Security
- ✓ Ownership of Stations
- ✓ Location of Stations
- ✓ Vehicle Standards
- ✓ Interconnect Requirements
- ✓ Worker Certification
- ✓ Bike Path Signs & Restrictions

- **Smart Technology**

- ✓ Communication Platform
- ✓ Security – Cyber Security



www.energyinnovationcorridor.com

