Environmental & Clean Energy Initiatives in Minneapolis

Cam Gordon
City Council Member, Ward 2
City of Minneapolis

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Minneapolis by the Numbers

- 400,070 residents
- 166,110 households
- 49.2% homeownership
- 2.22 people per household
- $46,682 Median household income
- $30,256 Income per capita
- 23.7% individuals in poverty rate
- 29.5% with Bachelor Degree
- 17% with Grad or Prof degree
- 232,068 residents in the labor force
- 223,741 residents employed
- 3.6% unemployment rate
- 312,218 jobs in the city
- 22.2 minutes avg. commute time
- 60.7% commute driving alone
- 33.7% by any other means
By the Numbers cont.

- 57.4 square miles (149 sq km)
- 37% of land is for residential Use
- 12.3% is for parks & open space
- 5.7 is for industrial
- 7.6% is water
- 21.2% rights of way
- 4 watershed management orgs
- 22 Lakes
- 1000 miles of water piping
- 25 billion gallons of treated water
- 170,000 tons of solid waste
- $13 million/year city electric bill
- 5.9 million tons of CO2
- 100 community gardens
- 8,000 water hydrants

- 1063 miles of streets
- 3,800 city employees
- 28,000 street lights
- 800 signalized intersections
- 100,000 street signs
- 80 skyways
- 1000 miles of water piping
- 101,000 water meters
- 44 degrees 58’ 48” N Latitude
- 93 degrees 15’ 49” W Longitude
- 950 feet elevation
- 44.0 average annual temperature
- 13 days 90 degree F or higher
- 156 days below freezing
- 28.3 inches annual precipitation
Decades of Environmental Degradation

- Plan to get storm water away as soon as possible
- Bury the creeks, ponds and swamps
- Outlaw farming
- Ignore efficiency in building design
- Bury and burn waste (even in your own back yard)
- Design to serve the single occupancy car
- Permit polluting industries to contaminate air, soil and water
History of Working on Energy and the Environment

- 1994 established a staff level Environmental Coordinating Team (ECT) and its citizen counterpart, the Citizens Environmental Advisory Committee (CEAC)

- 1996 Adopted a Minneapolis Energy Plan

- 2003: The Minneapolis City Council adopted Resolution 2003R-133 which initiated the development of the Minneapolis Sustainability Program and the use of sustainability principles to guide City decision making.

- 2005: adopted 24 Sustainability Indicators with numerical 10-year targets
Put our money where our mouth is

- Staff – Sustainability Coordinator and Energy Manager
- LEED silver standard required for city buildings
- Fleet, fuels, options
- Training / requirements for staff
- Solar, geothermal, green roofs
- Energy efficiency
- Environmentally preferable purchasing policy
- Low environmental impact cleaning
Greening Our Buildings

Green Roofs
on City Hall and the Basketball Arena Downtown
Minneapolis Convention Center
2600 solar panels
Hiawatha Maintenance Facility
Integrating Across the Enterprise

Tree canopy and city trees program
Protected bikeways
Organics Collection
Green Homes North
Bike Sharing and Car Sharing
City separates sewer systems
County and city promote rain barrels, gardens
City imposes a storm water fee
Urban Agriculture
Natural & Pollinator Friendly Landscaping
Focus Climate Change

“Minnesotans should expect ...intense heat waves...more prevalent water- and insect-borne diseases and greater number of days with low air quality”
What Could Climate Change bring to Minneapolis

- Warmer average temperatures
- Warmer low and winter temperatures
- Shorter winters
- More total precipitation
- More severe precipitation

- Reduced relief during heat waves increased humidity and higher overnight lows
- More pests, disease
- Stormwater challenges & flooding
- More freeze-thaw cycles & damage to infrastructure
Recent Responses to Climate Change

- Greenhouse Gas Inventories Report
- Climate Action Plan
- Energy Vision
- Energy Pathways Study
- Clean Energy Partnership
- Fossil Fuel Divestment Resolution
Climate Action Plan

- Reduce Greenhouse Gas Emissions
  - 15% by 2015, 30% by 2025, 80% by 2050
- By 2015
  - 17% reduction in energy use
  - 10% electricity from local, renewable sources
  - Double transit ridership
  - 30 more miles of protected bikeways
  - 0% increase in waste generated recycle half of that
  - Compost 15% or more of all waste
Municipal Energy Utility?

- 2013 a Twenty Year Franchise Agreements ending
- Minneapolis Energy Options & Grassroots organizing for Proposed Ballot Initiative
- Study of municipalization of electric and natural gas utilities
- Grassroots campaign for a ballot imitative
In 2040, Minneapolis’s energy system will provide reliable, affordable, local and clean energy services for Minneapolis homes, businesses, and institutions: sustaining the city’s economy and environment and contributing to a more socially just community.
Minneapolis Clean Energy Partnership

Both major utility companies agree to partner to
  Realize our energy vision
  Implement our climate action plan

Council approved, utilities signed to
  Shorter 5 year franchise agreements
  MOU Formalizing Partnership & Board
  Joint Work Plan
  Community Energy Vision Advisory Committee
Partnership Structure

- Partnership Board
  - Mayor
  - City Coordinator
  - Two City Council Members
  - Two (each) high-level utility representatives

- EVAC
  - 15 community representatives

- Planning Team
  - Staff from the city, Xcel Energy, CenterPoint Energy
Clean Energy Partnership Goals

- Increase Energy Efficiency
- Increase Renewable Energy
- Develop Strong City-Utilities Collaboration

Advancing equity and other environmental benefits

Strategies

- Community and stakeholder engagement
- Data and information
- Policy levers

Segments

1-4 Unit Residential  Multi-family  Small Commercial  Large Commercial  City Enterprise
Work Plan

Residential 1-4 Unit:
- Pilot Programs
- Solar gardens/renewable programs
- Financing options
- Policy levers
  - Ex: disclosure energy bills

Multi-family:
- Solar gardens
- Financing options

Large Commercial:
- New/coordinated utility programs
- Benchmarking

Small Commercial:
- Pilot Programs
- Partners in Energy Program

City Enterprise:
- Community Solar Gardens
- Infrastructure Planning and Econ Dev
- LED Street Lighting
- Natural Gas Infrastructure for City fleet
What More, What’s Next

Zero Waste?

Plan coming in 2016
Net zero homes?
Daylighting creeks?
Compost toilets?
Geothermal under streets?
Grey water for homes and gardens?
Anaerobic digesters?

Case Study:
Prospect North & the University Avenue Innovation District
Prospect North and the University Avenue Innovation District

THE VISION

PROSPECT PARK URBAN INNOVATION DISTRICT:

A dynamic, engaging place that attracts, connects and inspires thinkers, doers and makers who power the region’s new economy
Boundaries

- 2 Cities
- 3 LRT Stations
- 370 Acres
Talent retention and recruitment
- Economic competitiveness and growth
- Equity
- Health
- Vitality
- Connectedness
- Sustainability and resiliency
District Energy Vision & Guiding Principles: Sustainable District Systems

- District energy, heating and cooling
- District stormwater
- District parking
- District greenspace network
- Eco-District
- District carbon goals
- District waste management
District Stormwater System

CLEAN + EFFICIENCY + RE-USE + PLACEMAKING
District Energy Vision & Guiding Principles: Guiding Principles

**Sustainability**
- Develop alternative energy solutions and a model of efficient energy that supports a healthy community and environment.
- Foster partnerships with government, industry, the neighborhood, and the local stakeholders.

**Resilience**
- Deliver reliable, cost-competitive, and equitable energy solutions to customers under a financially sustainable model.
- Implement adaptable infrastructure solutions that are flexible to market and technology changes and can evolve with the changing needs of the area throughout redevelopment.

**Innovation**
- Establish the District as a national model and living laboratory for the development of innovative and integrated energy systems.
- Differentiate the District as a destination district that promotes a culture of environmental stewardship, economic growth, and community prosperity.
The Proposed District Energy System: Study Area - Upcoming Development
UAD’s Energy Vision

Solar PV
Energy Efficiency
Heat Pumps
Low-Temp, Fresh Water Loop
Low-Temp Plant
Future Energy Sources
Thermal Storage
Solar Thermal
Organic
Waste Heat Recovery
Combined Heat and Power
Refrigeration Heat Recovery
Wastewater Energy Recovery
The Proposed District Energy System: How it works - Wastewater Energy Recovery

Wastewater Main Energy Capture

Winter Heating Season
Heat extracted from wastewater main used to heat buildings

Summer Cooling Season
Heat from buildings rejected into wastewater main to cool buildings

Heat Pumps
Low-Temp, Fresh Water District System Loop
Heat Exchanger
Wastewater Main
Let’s work together to help people realize their dreams and make this region an internationally recognized leader for a healthy environment and sustainable future.
Thank You & Questions