A Community-University of Minnesota Partnership for Sustainability:

The Resilient Communities Project

City Engineer’s Association of Minnesota Annual Conference
January 29, 2014

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Center for Urban and Regional Affairs (CURA) – U of MN
What Is Resilient Communities Project?

New model for university–community collaboration
Connects U of MN + local communities to advance sustainability and resilience
One-year community partnership – RCP as matchmaker

Matches community projects with U of MN graduate and undergraduate courses
Sustainability + Resilience

**Sustainability**
recognizes the interconnectedness and interdependence of environmental, economic, and social systems; takes a long-term perspective

**Resilience**
adaptive + responsive to changing circumstances; recognizes the need for flexibility and collaboration
Capitalizes on multiple intersecting opportunities + trends

- Community motivation to respond to changing demographic, fiscal, and other conditions
- Increased public awareness of need for sustainable + resilient approaches
- Reduced staff and economic resources
- Growing student interest in sustainability + resilience, as well as “real world” experience
- Increased focus on university-community engagement
- Faculty expertise in sustainability + resilience

Resilient Communities Project
How does RCP work?

RFP for community partner
Community identifies projects (15–30) and project leads
RCP + city collaborate to:

- clarify and scope projects
- identify relevant community partners and stakeholders

RCP matches each project with one or more U of MN courses
Students complete the project as part of regular coursework
Final presentations + work products delivered to community
**Partner Community**

- Provide single point of access to faculty + courses
- Expand conversation beyond planning department
- Infuse energy + creativity
- Enhance local capacity + collaboration
- Establish long-term relationship with U of MN
- Increase visibility as a leader in sustainability

**Students**

- Provide efficient + *meaningful* access to community-based projects
- Offer critical “real world” educational opportunities
- Demonstrate value of multidisciplinary approaches
- Enhance long-term capacity for sustainability-related and community-based work
For the Community Partner. . .

Potential to make **significant progress** toward sustainability and resilience

- **Fall 2013**
- **Summer 2014**

**complete 15–30 locally relevant projects**
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Paul Ammerman
Community Development Director
City of North St. Paul

Morgan Dawley, PE
City Engineer, City of North St. Paul
WSB & Associates, Inc.
2013–2014 Partner:
City of North St. Paul
North St. Paul Projects

Live/work housing
Living streets and capital improvements
Green energy initiative
Neighborhood identities
Fiber optic network development
Community identity and branding
Downtown revitalization strategies
Civic engagement and communication
Environmental education
Redevelopment-ready community
Public art and public history
Master redevelopment plan
Silver Lake trail connection
Community gardens and local food
Staff development and retention
Development of underutilized parcels
Housing Conservation and Aging in place
Energy conservation initiative
Emerald Ash Borer Management Plan
Bulk Waste Pick-Up Program Evaluation
Documenting the RCP-North St. Paul Partnership
Storm Water Management

U of MN Departments

Housing Studies
Civil Engineering
Law School
Landscape Architecture
Communication Studies
Liberal Studies
Graphic Design
Gerontology
Journalism
Architecture
Marketing
Environmental Education (UMD)
Org Leadership, Policy and Development
Urban and Regional Planning
Educational Psychology
Human Resources and Industrial Relations
Public Policy
Environmental Science, Policy and Mgt
Forestry Management
Social Work
Public Health
Green Energy and Conservation

City Goal: Capitalize on the City’s municipal electric utility by promoting and incentivizing alternative modes of energy generation and energy conservation approaches, in order to reduce peak demand and make progress on the community’s effort to become certified as a Minnesota GreenStep City.
Green Energy and Conservation

OLPD 5501: Principles and Methods of Evaluation—create evaluation plan for existing energy conservation programs

PA 5721: Energy and Environmental Policy—identify additional energy conservation approaches the City can incentivize

LAW 7012: Land Use, Energy and Environment Clinic—conduct an audit of City ordinances to identify barriers to green energy options

OLPD 8595: Evaluation Problems—conduct a comprehensive evaluation of existing energy conservation programs in North St. Paul
Green Energy and Conservation

Outcomes:

• Surplus power buyback agreements
• Develop new regulations to permit alternative energy & distributed energy systems
• District energy approaches
• Net-zero carbon development
• Distributed generation systems
Living Streets and Capital Improvements

City Goal: Address initial public opposition to implementing the Living Streets Plan adopted in 2011 by documenting long-term cost savings from a Living Streets approach to street design and reconstruction, and creating a community input process to support planning for future reconstruction projects.
Living Streets and Capital Improvements

PA 5253: Designing Participation Processes—develop prototype community engagement process for street reconstruction projects

PA 8081: Making Sustainable Transportation Work—document the economic and health benefits of Living Streets and make policy recommendations for implementation

ARCH 3250: Community-Based Projects—develop design prototypes that for key priority intersections, corridors, and/or connections

PH 6100: Topics in Environmental Health: Urban Ecosystems—analyze the environmental impacts of a Living Streets approach in North St. Paul
Living Streets and Capital Improvements

Outcomes:

• Developed a framework for ways in which the city might educate, communicate, and collaborate with residence to yield a supportable plan.

• Spring semester courses will build on fall semester results to:
  
  ▪ identify and document the potential economic, health, environmental, and design impacts of Living Streets approaches.
  
  ▪ make recommendations for implementation.
Stormwater and Urban Hydrology

City Goal: Identify issues within watersheds and lakesheds to improve water quality as well as evaluate options for system enhancement through future planned capital improvement projects for street and utility reconstruction. Create opportunities for cooperative efforts with neighboring communities and two separate watershed districts.
Stormwater and Urban Hydrology

CE 5511: Urban Hydrology and Water Quality

• Model of existing infrastructure and system using SWMM or P8 to determine phosphorus and total suspended solids loading on lakes within the city. Most are tributary to impaired water body Kohlman Lake.

• Evaluate various storage, infiltration, and treatment techniques, determine cost effective method of pollutant loading mitigation.

• Make suggestions for pollutant reduction within CIP project areas.

• Calculate Effective Impervious Area (EIA) for City and compare to Total Impervious Area (TIA).
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Minnetonka’s Strategic Profile

– We will be **responsible stewards** of the city’s physical assets, human capital and financial resources.
– We will protect and enhance the unique **natural environment** of our community.
– We will maintain quality **public safety** for our residents and businesses.
– We will work to meet the **transportation** needs of our residents and businesses.
– We will support well-planned, responsible **community development**.
– We will provide excellent **recreational** amenities.
Previous Work

2010 Opus Station Study

2011 Shady Oak Station Study


City-Identified Projects

- Business and Surface Water Protection
- Conservation Development Standards
- Density and Housing Options
- Green Roofs and Rooftop Gardens
- Housing Program Evaluation
- Light Imprint Streets
- Mid-Price Housing Study
- Neighborhood Identities Project
- Parking Regulations
- Post-Development Critique

- Private Property Tree Inventory
- Redevelopment White Paper
- Storm Water Illicit Discharge Training
- TOD Redevelopment Policy
- Transportation Demand Management Policy
- Village Center Business Associations
- Village Center Connections
- Water Conservation Education
- Water Resource Prioritization Plan

Source: City of Minnetonka, 2013
Storm Water Management and Illicit Discharge

Project Goals

- Develop storm water management tools for a site that impacts an important natural resource

Course

- ARCH 8567: Building and Site Integration in Sustainable Design
REDESIGNING THE URBAN WATER CYCLE
A VISION FOR RIGGEDALE MALL 2030

Below: Pre-settlement Water Cycle Flow Diagram & Chart

Below: Existing Water Cycle Flow Diagram & Chart

Impervious Surfaces Diagram Showing Primary Ridge Dale Site and Surrounding Extended Site Boundaries

7.2 Million SF Impervious Surfaces
During a 1” rain event, the amount of stormwater runoff generated from the impervious surfaces on the site would be enough water to fill about 7 Olympic swimming pools.

REDESIGNING THE URBAN WATER CYCLE
A VISION FOR RIDGEDALE MALL 2030

- permeable paving
- tree trenches
- bio-swales
- rain gardens
- green roofs
- low-flow fixtures
- water reuse system

Water Resources Prioritization Plan

Project Goal

- Develop prioritization plan to guide investment in supporting preservation and restoration of community’s water resources

Courses

- ESPM5295: GIS in Environmental Science and Management
- CE5511: Urban Hydrology and Land Development
Water Resources Prioritization Plan

- **Phase 1:** Estimate leaf litter nutrient and chloride surface transport within 4 priority watersheds
  - Crane Lake, Glen Lake, Lake Windsor and Shady Oak Lake
- **Phase 2:** Model feasibility and cost of BMPs and recommend most cost effective solution
Green Roofs and Rooftop Gardens

Project Goals

• Promote green roof or rooftop garden projects
• Understand perceptions and attitudes
• Evaluate options for encouraging green roofs in developments

Courses

• AGRO5321: Ecology of Agricultural Systems
• PA5242: Environmental Planning, Policy and Decision Making
Green Roofs and Rooftop Gardens

RESULTS

• Benefits
• Economic, Environmental & Social Impacts
• Best Practices
  – Policy
  – Design
  – Maintenance
• Challenges and Opportunities
• Recommendations

Bellingham population ~ 82,000
Minnetonka population ~ 50,000
Green Roofs and Rooftop Gardens

COMING 2014 – TONKA ON THE CREEK
RCP-Minnetonka Partnership

Community Benefits

- Significant progress on city’s work plan
- High-quality and innovative results
- Facilitated discussion about sustainability within the organization
- Publicity
- Networking and connections

Source: City of Minnetonka. 2013
Thank you!

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