WHAT IS THE REGIONAL INDICATORS INITIATIVE?

The Regional Indicators Initiative (RII) measures annual performance metrics for 20 Minnesota cities committed to increasing their overall efficiency and level of sustainability.

The Initiative supports planning for sustainability by defining a baseline, tracking a business-as-usual trajectory, establishing targets, and measuring outcomes of sustainable strategies at a city-wide scale.

OUTLINE

• Background, Purpose, and Scope
• Key Findings
• Explore the Data
• Next Steps
BACKGROUND

Minnesota Pollution Control Agency’s GreenStep Cities Program:

- Choose from 28 best management practices (BMPs)
- GreenStep Cities tracks which BMPs cities have adopted, but does not currently have a method of tracking the effectiveness of these strategies
- GreenStep Cities Pilot

Regional Indicators Initiative Pilot
- Edina
- Falcon Heights
- Saint Louis Park
REGIONAL INDICATORS INITIATIVE

PURPOSE/GOALS

Promote efficiency and sustainable change at the scale of the city through the following tasks:

- Collect 4 years of performance metric data for 20 cities
- Evaluate trends within the collected data
- Forecast business-as-usual outcomes based on the data
- Establish targets for reduction based on statewide greenhouse gas reduction goals
- Correlate reduction strategies with performance metrics
- Develop effective communication strategies to convey this information to cities
- Document the process so that the Initiative can serve as a replicable model for other regions
The Regional Indicators Initiative tracks data for, 27% of total MN population, 1,452,425 people.
REGIONAL INDICATORS INITIATIVE

METRICS

ENERGY (IN BTUS): electricity, natural gas, and district energy consumed citywide (subdivided into residential and commercial/industrial)

WATER (IN GALLONS): potable water consumed citywide (subdivided into residential and commercial/industrial)

TRAVEL (IN VEHICLE MILES TRAVELED): on-road distance traveled within city limits

WASTE (IN POUNDS): citywide municipal solid waste managed via recycling, composting, combustion, and landfilling (prorated from countywide data)

COMMON METRICS

GREENHOUSE GAS EMISSIONS (IN TONNES CO$_2$E): citywide greenhouse gas emissions associated with each of the four indicators

COST (IN DOLLARS): cost estimates associated with each of the four indicators

ADDITIONAL DATA

DEMOGRAPHICS
All data is reported both as a total as well as in units/capita. Residential data is reported in units/household, and Commercial/Industrial data is reported in units/job

AREA
City Area (sf)

WEATHER
Heating Degree Days
Cooling Degree Days
Precipitation (in)
Average trends for 20 Minnesota cities from 2008-2011
THE ‘CHECK MARK’ TREND
TOTAL ENERGY USE 2008-2011 (MMBtu/year)

MINNEAPOLIS
ST. PAUL
ROCHESTER
DULUTH
RICHFIELD
HOPKINS
ST. LOUIS PARK
ST. ANTHONY
EDINA
FALCON HEIGHTS
MAPLEWOOD
WHITE BEAR LAKE
COON RAPIDS
OAKDALE
SHOREVIEW
EAGAN
EDEN PRAIRIE
MINNETONKA
WOODBURY
LAKE ELMO
CONSISTENCY ACROSS DATA SETS
THE ‘CHECK MARK’ TREND

ENERGY/YEAR

ENERGY/CAPITA/DAY

RESIDENTIAL
ENERGY/HOUSEHOLD

COMMERCIAL ENERGY/JOB

ELECTRICITY/CAPITA/DAY

NATURAL GAS/CAPITA/DAY
COMMERCIAL/INDUSTRIAL ENERGY IS GREATER THAN RESIDENTIAL AVERAGE OF 2008-2011 DATA (TOTAL AND BY CITY TYPE)

COMMERCIAL/INDUSTRIAL vs. RESIDENTIAL ENERGY USE

60% 40%

64% 36%
57% 43%
50% 50%
TOTAL POTABLE WATER USE
(gallons/capita/day)
RESIDENTIAL WATER USE IS GREATER THAN COMMERCIAL/INDUSTRIAL WATER CONSUMPTION - 2011

COMMERCIAL/INDUSTRIAL vs. RESIDENTIAL WATER USE

42% 58%

CENTRAL/STAND-ALONE CITIES

INNER-RING SUBURBS

OUTER-RING SUBURBS
RESIDENTIAL WATER USE IS INCONSISTENT BETWEEN CITIES

WATER AND ENERGY CONSUMPTION - 2011 (per capita/day for 20 cities)

Gallons/capita/day

- 53
- 37
- 53
- 47
- 44
- 75
- 66
- 67
- 96
- 34
- 41
- 71
- 84
- 74
- 85
- 91
- 66
- 88
- 32
- 58 (AVERAGE)

- 42
- 7
- 58%

- 77
- 60%

- 112 (AVERAGE)

KBtu/capita/day

- 103
- 135
- 129
- 100
- 81
- 112
- 148
- 92
- 105
- 119
- 112
- 127
- 147
- 125
- 155
- 112
- 155
- 162
- 169 (AVERAGE)

- 199
- 243
- 222
- 186
- 179
- 178
- 179
- 128
- 101
- 96
- 156
- 157
- 71
- 50

- 40%

- 60%
THE REGIONAL INDICATORS INITIATIVE

ENERGY
BRITISH THERMAL UNITS

WATER
GALLONS

TRAVEL
VEHICLE MILES TRAVELED

WASTE
POUNDS

GHG EMISSIONS
CARBON DIOXIDE EQUIVALENTS

TOTAL VEHICLE MILES TRAVELED
(VMT/capita/day)
VEHICLE MILES TRAVELED INCREASES AT GREATER DISTANCES FROM CENTRAL CITIES

VMT/CAPITA/DAY - 2011

CENTRAL/STAND-ALONE CITIES: 19.5
INNER-RING SUBURBS: 21.4
OUTER-RING SUBURBS: 30.1
REGIONAL INDICATORS INITIATIVE

VEHICLE MILES TRAVELED IS LOWER THAN MN AVERAGE

VMT/CAPITA/DAY - 2011

MN AVERAGE, 29.1
RII AVERAGE, 26.1
TOTAL WASTE PRODUCTION (pounds/capita/day)
WASTE MANAGEMENT
WASTE MANAGED (POUNDS/CAPITA) - 2011

- Recycled
- Incinerated
- Landfilled

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<th>Incinerated</th>
<th>Landfilled</th>
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TOTAL GREENHOUSE GAS EMISSIONS (tonnes CO$_2$e/capita/year)

US AVERAGE (2011) - 17.3

WORLD AVERAGE (2011) - 4.9
A COMMON METRIC
BREAKDOWN OF GREENHOUSE GAS EMISSIONS - 2011 (all 20 cities)

- RII follows the method outlined in the ICLEI Community Protocol
- Many cities have done greenhouse gas inventories, but this is the first state-wide effort of this scale
- For RII cities, energy is the largest contributor to emissions
- RII’s primary metrics comprise over 90% of all in-boundary emissions
- Other emission sources were also calculated, including air travel and wastewaster
SO WHAT?
TOTAL GREENHOUSE GAS EMISSIONS FROM PRIMARY SOURCES (tonnes CO₂e/year)

40% reduction from 2005
SO WHAT?
PROJECTED POPULATION GROWTH - ALL RII CITIES

Population Growth

- TOTAL Business as Usual
- TOTAL NGEA Target
- POPULATION
SO WHAT?
TOTAL GREENHOUSE GAS EMISSIONS FROM PRIMARY SOURCES (tonnes CO₂e/capita/year)

RII data

- TOTAL Business as Usual
- TOTAL NGEA Target
- PER CAPITA Business as Usual
- PER CAPITA NGEA Target

49% reduction due to population growth
EXPLORE THE DATA

TOTAL ENERGY - 2011 (kBtu)
EXPLORE THE DATA
TOTAL ENERGY - 2011 (kBtu/capita/day)

REGIONAL INDICATORS INITIATIVE
EXPLORE THE DATA
RESIDENTIAL ENERGY - 2011 (kBtu/household/day)
TOTAL EDINA RESIDENTIAL ENERGY USE - 2011 (kBtu/capita/day)

- Electricity
- Natural Gas

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<th>Cities</th>
<th>Timeline</th>
<th>Add Averages</th>
<th>Normalize</th>
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<td>By Population (per capita)</td>
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<td>By Weather/Rainfall</td>
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<td>Lake Elmo</td>
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</tbody>
</table>
EXPLORE THE DATA

WEATHER NORMALIZED - EDINA RESIDENTIAL ENERGY USE - 2011 (kBtu/capita/day)

- Electricity
- Natural Gas

149
147
146
147

CITIES
- ALL CITIES
- ALL CENTRAL / STAND-ALONE
- Duluth
- Minneapolis
- Rochester
- St. Paul
- ALL INNER-RING SUBURBS
- Richfield
- Hopkins
- St. Louis Park
- St. Anthony
- Edina
- Falcon Heights
- Maplewood
- ALL OUTER-RING SUBURBS
- White Bear Lake
- Coon Rapids
- Oakdale
- Shoreview
- Eagan
- Eden Prairie
- Minnetonka
- Woodbury
- Lake Elmo

TIMELINE
- ALL YEARS (2008-2011)
- 2008
- 2009
- 2010
- 2011

ADD AVERAGES
- Central/Stand-Alone Cities
- Inner-Ring Suburbs
- Outer-Ring Suburbs
- MN State average
- US Average

NORMALIZE
- None
- By Population (per capita)
- By Weather/Rainfall
- By Household
- By Job
EXPLORE THE DATA
TOTAL ENERGY - 2008-2011 (kBtu/capita/day)

CITYs:
- All Cities
- All Central/Stand-Alone
- All Inner-Ring Suburbs
- All Outer-Ring Suburbs
- Minneapolis
- Saint Paul
- Rochester
- Duluth
- Richfield
- Hopkins
- Saint Louis Park
- Saint Anthony
- Edina
- Falcon Heights
- Maplewood

TIMELINE:
- All Years (2008-2011)
- 2008
- 2009
- 2010
- 2011

ADD AVERAGES:
- Central/Stand-Alone Cities
- Inner-Ring Suburbs
- Outer-Ring Suburbs
- MN State average
- US Average

NORMALIZE:
- None
- By Population (per capita)
- By Weather/Rainfall
- By Household
- By Job
CORRELATIONS WITH GREENSTEP CITIES

**ENERGY**
1 | Efficient Existing Public Buildings  
2 | Efficient Existing Private Buildings  
3 | New Green Buildings  
4 | Efficient Building and Street Lighting and Signals  
5 | Building Reuse  
15 | Purchasing  
17 | Efficient Water and Wastewater Facilities  
25 | Green Business Development  
26 | Renewable Energy (will affect GHG emissions)  
28 | Business Synergies

**TRAVEL**
7 | Efficient City Growth  
8 | Mixed Uses  
9 | Efficient Highway-Oriented Development  
11 | Complete Green Streets  
12 | Mobility Options  
13 | Efficient City Fleets  
14 | Demand-Side Travel Planning  
15 | Purchasing  
27 | Local Food  
28 | Business Synergies

**WATER**
15 | Purchasing  
17 | Efficient Stormwater Management  
20 | Efficient Water and Wastewater Facilities  
21 | Septic Systems

**WASTE**
5 | Building Reuse  
15 | Purchasing  
22 | Solid Waste Reduction  
25 | Green Business Development
NEXT STEPS

• Obtain data for 2012 for all twenty cities

• Measure data in five additional cities including those outside of the metro area

• Establish targets for each metric and include in city comprehensive plans

• Use regional indicators to:
  – Inform BMP choices
  – Establish policy
  – Obtain funding
  – Verify outcomes
CONCLUSIONS

- We can measure community-wide data and normalize by jobs, population, households and weather

- Greenhouse Gas Emissions form a ‘check-mark’ trend

- Energy is the largest part of the CO2 pie

- Commercial/Industrial energy consumption is greater than Residential; however...

- Residential water use is greater than Commercial/Industrial

- Energy consumption consistently forms a ‘check mark’ over the four years
CITIES

- Coon Rapids
- Duluth
- Eagan
- Eden Prairie
- Edina
- Falcon Heights
- Hopkins
- Lake Elmo
- Maplewood
- Minneapolis
- Minnetonka
- Oakdale
- Richfield
- Rochester
- Shoreview
- Saint Anthony
- St. Louis Park
- St. Paul
- White Bear Lake
- Woodbury

UTILITY COMPANIES

- Xcel Energy
- CenterPoint Energy
- Minnesota Power
- Comfort Systems
- MN Energy Resources
- Peoples Cooperative Power Association

OTHER PARTNERS

- Urban Land Institute
- Minnesota Department of Commerce
- Minnesota Pollution Control Agency
- Orange Environmental