Minnesota **GreenStep Cities** Workshops

Achieving sustainability through proven best practices

Best Practice 6.5: Adopt Climate/Energy Action Goals

November 1, 2017 9am to 11am

GreenStep Cities Workshop and Webinar
At the League of Minnesota Cities or Available via Webinar

8:45	Registration, Coffee, & Refreshments
9:00	Welcome & Introductions
9:10	Overview of BP 6.5: **Abby Finis**
9:15	LoGoPEP: **Becky Alexander, LHB & Brian Ross, GPI**
10:00	Watts 'N Drops: **Alexis Troschinetz, CERTs**
10:15	Solar Financing: **Pete Lindstrom, Mayor of Falcon Heights**
10:45	Closing Discussion and Questions
11:00	Adjourn

Our workshop series is supported with generous funding from the McKnight Foundation and Siemens.

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Ingenuity for life

Best Practice Action 5 [1 2 3 4 5] [all actions]

Adopt climate mitigation and/or energy independence goals and objectives in the comprehensive plan or in a separate policy document, and link these goals to direct implementation recommendations.

Implementation Tools | Star-level Examples | Who's doing it

★ Specify numeric targets (reductions in energy usage, GHG emissions) and target dates for at least city operations (for example, Massachusetts challenges cities to reduce energy use 20% within 5 years); adopt infrastructure resiliency goals. Report stand-alone sustainability plans under action 24.5

★★ Address climate protection in the private sector by, for example, establishing policies with numerical targets to reduce vehicle miles traveled, or setting a percentage renewable energy generation target for the entire city, such as a "25 by 25" goal (generating 25% of a city's electricity, heating and/or transportation fuels from renewable resources by 2025).

★★★ Adopt an agressive goal, such as the Rochester, MN mayoral goal of carbon-free by 2031; adopt social resiliency goals around education (STEM curriculum), population mix (retention of millennials, racial/income diversity). Report adopted sustainability plans under action 2.5

Prodded by young people, cities take aggressive climate action

Elizabeth Dunbar · St. Louis Park, Minn. · Mar 21, 2017 Environment

St. Louis Park High School iMatter members Sophia Skinner, left, Jayne Stevenson, center, and Lukas Wrede, right, are interviewed inside the school on Wednesday. *Evan Frost | MPR News*

TOOLS AND BEST PRACTICES FOR
LOCAL ENERGY PLANNING

NOVEMBER 2017

MINNESOTA LoGo PEP

Presented by:
Brian Ross, AICP, LEED GA | Great Plains Institute
Becky Alexander, AIA, WELL AP | LHB, Inc.

The development of this presentation is supported by the Department of Energy, Office of Energy Efficiency and Renewable Energy (EERE), under Award Number DE- DE-EE0007229. This project was made possible by a grant from the U.S. Department of Energy and the Minnesota Department of Commerce. The team includes LHB, Great Plains Institute, and the University of Minnesota's Energy Transition Lab and Center for Science, Technology, and Environmental Policy.

WHY ENERGY PLANNING?

MINNESOTA LoGoPEP

RESOURCES TO DEVELOP

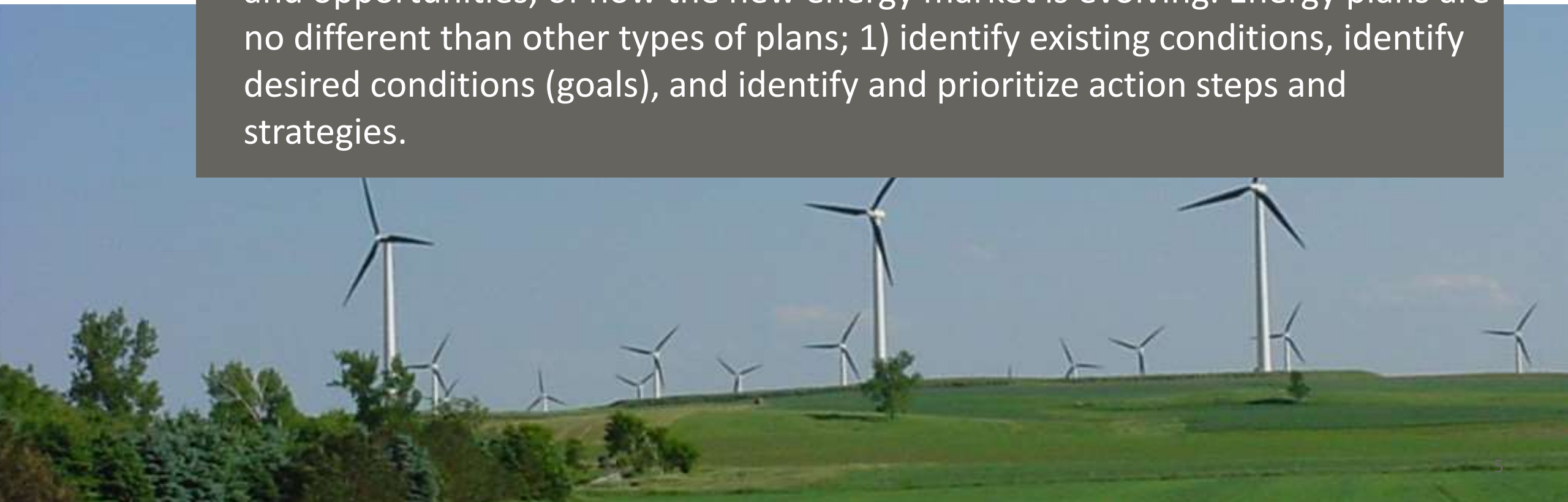
Energy planning involves thinking about energy as a development resource. Cities should plan for energy development for the same reasons that cities plan for development of other resources in their community.

WHY ENERGY PLANNING?

MINNESOTA LoGoPEP

LOCAL GOALS AND PRIORITIES FOR DEVELOPMENT?

As local energy resources become more valuable, development pressure is higher, and communities need to recognize the local implications, both risks and opportunities, of how the new energy market is evolving. Energy plans are no different than other types of plans; 1) identify existing conditions, identify desired conditions (goals), and identify and prioritize action steps and strategies.



WHY ENERGY PLANNING?

LOCAL ROLE IN STATE AND FEDERAL CLIMATE AND ENERGY GOALS

Cities
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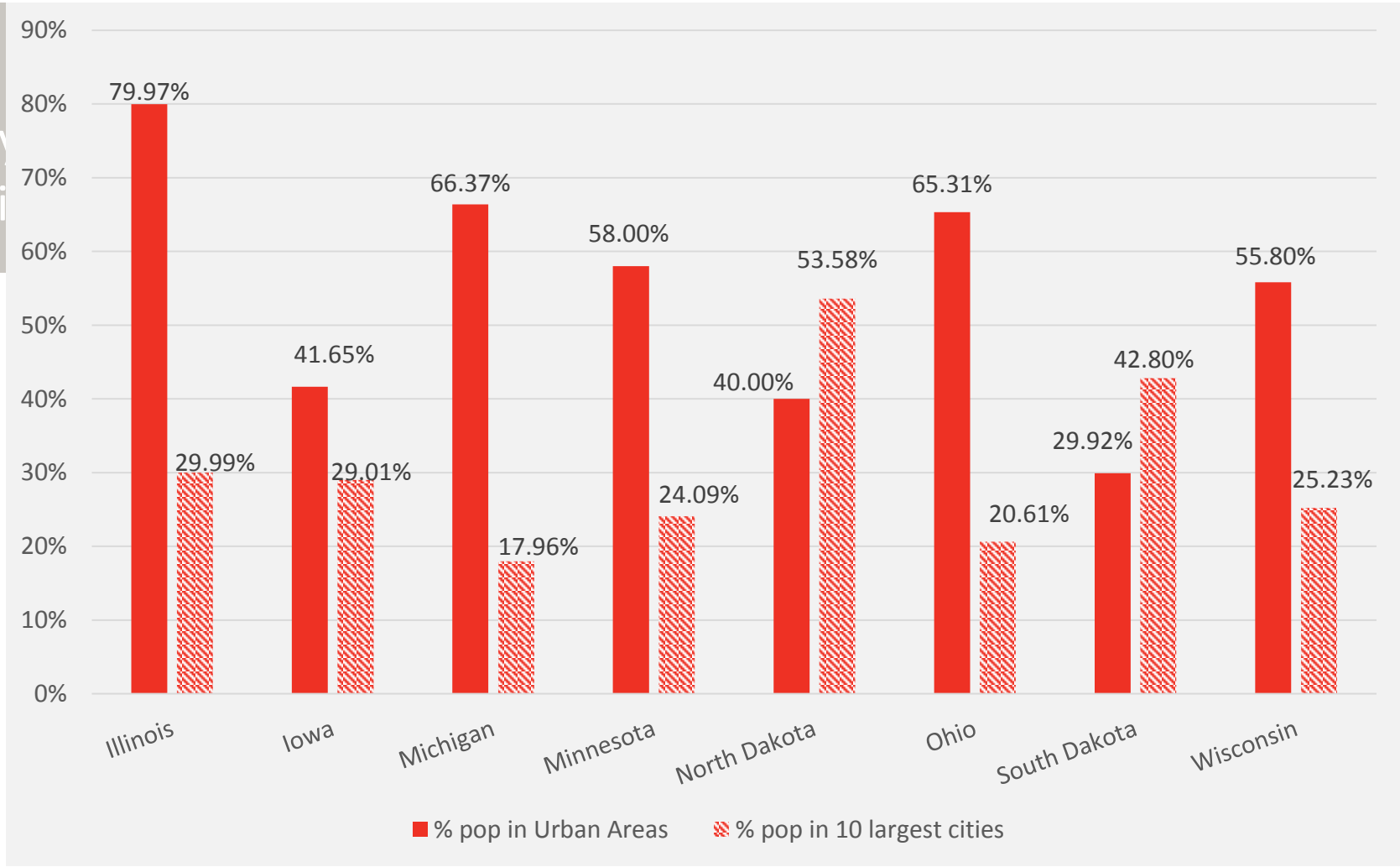


IF YOU REMEMBER ONE THING . . .

Local governments are essential partners to meeting State and national energy/climate goals.

- ✓ **Local energy resources are economically competitive**
- ✓ **Communities determine how local development occurs**
- ✓ **State and national goals will be implemented locally**

Photo credit: U.S. DOE SunShot

EXISTING CONDITIONS

Existing conditions help communities know where they are. In the case of energy, it is beneficial for communities to know their energy profile: how much energy they use and where it comes from. Compiling an inventory of existing programs, resources, tools, and projects can help a community understand its energy landscape and allows a more comprehensive understanding of these factors to better shape the energy future.

ENERGY USE PROFILE

Assess what kind of energy is used and how it is used within city boundaries.

1. **Energy consumption by fuel**
   - Electricity
   - Natural Gas
   - Other fuels
   - Transportation fuels
2. **Energy consumption by sector**
   - Commercial & Industrial
   - Residential
   - City Operations
   - Transportation
3. **Carbon intensity of electricity**

CLEAN ENERGY RESOURCE

Determine what clean energy resources are available in your community and how much. Different tools are available to map and calculate solar and wind resources, while energy efficiency can be measured through benchmarking.

Understanding these resources and where they exist can help cities set goals and prioritize development opportunities.

INVENTORY OF EXISTING PROGRAMS

Compile an inventory of existing government, community, and utility programs to help navigate the energy landscape. Programs can include:

- **Incentives** (e.g. Utility Rebate Programs)
- **Technical Assistance** (e.g. GESP)
- **Financing Mechanisms** (e.g. PACE)

Also document city efforts to support clean energy in your community.

EXISTING CONDITIONS

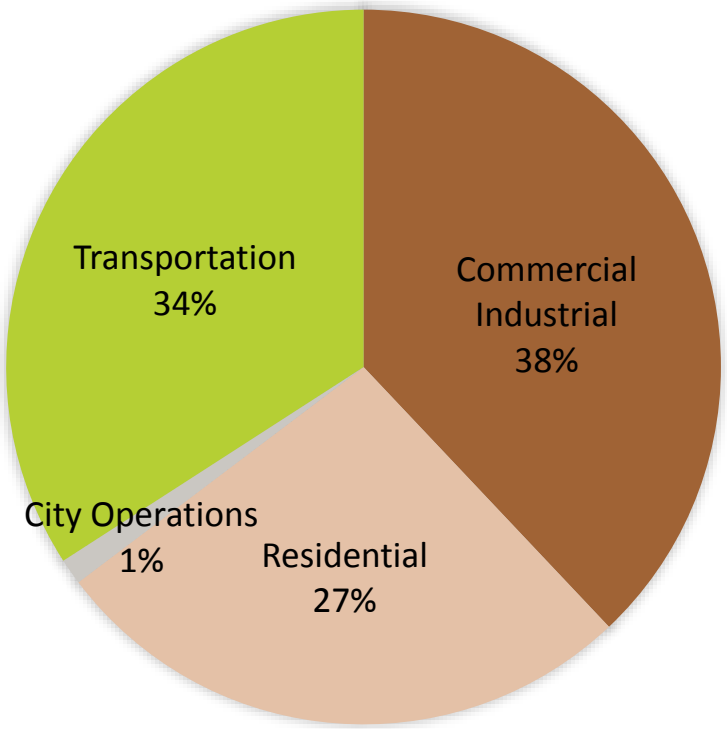
ENERGY USE PROFILE

In order to establish a baseline to be able to set goals and measure progress, cities will need to assess their current energy consumption. This is done by gathering data for the commercial and industrial, residential, city operations, and transportation sectors. Much of these data can be collected from the Regional Indicators Initiative (note that city operations is not included in RII data and transportation is provided as vehicle miles traveled).

SECTOR	ENERGY (MMBtu)	EMISSIONS (tonnes CO_2e)	% OF TOTAL
Commercial/Industrial	2,250,824	236,436	38%
Residential	2,031,373	166,684	27%
City Operations	69,613	7,312	1%
Transportation	N/A	212,550	34%

* These numbers represent an average Twin Cities suburb. Actual data will vary.

GREENHOUSE GAS EMISSIONS BY SECTOR



REGIONAL INDICATORS INITIATIVE

Measuring City-Wide Performance

Tracking the performance of Minnesota cities through key indicators is essential to assessing progress and promoting efficiency. Use this website to learn about the Initiative, explore the data, understand the results, and get involved.

ENERGY
BRITISH THERMAL UNITS

WATER
GALLONS

TRAVEL
VEHICLE MILES

WASTE
POUNDS

GHG EMISSIONS
CARBON DIOXIDE EQUIVALENTS

EXISTING CONDITIONS

CLEAN ENERGY RESOURCES

RESOURCE	WHAT IS IT?	HOW TO FIND IT	HOW TO MEASURE IT
Solar	A city's solar resource includes areas with access to sufficient direct sunlight for the production of energy. It can be found on the ground or on rooftops.	In Minnesota, cities have access to the Solar Suitability App developed by the University of Minnesota, which can help identify the solar resource at a 1 meter resolution.	Solar energy is measured megawatt-hours.
Wind	A city's wind resource includes areas that have access to sustained wind at sufficient speeds to produce energy. A quality wind resource is typically found at 30 meters and higher.	The Minnesota Department of Commerce has developed wind speed maps at 30, 80, and 100 meter heights, which at 500 meter resolution can give a city a general sense of its wind resource.	Wind speed is measured in meter/second at the various heights. A good wind resource is greater than 5 meter/second.
Biofuels	Biofuels are the conversion of organic material (biomass) into energy. The resources can include food and yard waste, tree debris, and other organic material generated in urban areas. These can be used to generate electricity, heat, or transportation fuels.	Because bio resources vary, there is not good information available to know the resource in a given location. Cities should measure organic waste generated within their community and in surrounding areas that they could access.	Biomass is measured in tons. If a community has a bioenergy plant, they would measure generation capacity in MW or cubic feet for biogas.
Efficiency	The existing energy efficiency resource is energy consumption that can be systematically reduced through conservation, more efficient operations and technologies, and systems such as combined heat and power and district energy.	Regional Indicators Initiative provides a community-wide assessment of energy use for electricity, gas, and transportation energy. B3 Benchmarking and Energy Star Portfolio Manager can help public and private buildings benchmark their energy consumption against historical data, national averages, and code-based benchmarks.	Energy efficiency is measured in MMBtu for buildings, and vehicle miles traveled for transportation energy use.

EXISTING CONDITIONS

EFFICIENCY RESOURCES

Efficiency resources:

- Building energy efficiency
- Transportation energy efficiency
- Demand response
- Combined heat and power (CHP)
- Capturing “waste” heat

Transportation Energy Use Profile

Transportation energy is almost exclusively attributable to car and truck travel, and is estimated by the vehicle miles traveled (VMT) within the City boundaries (regardless of through traffic or with an origin or destination in the City).

VMT includes commercial and freight vehicles, personal cars, and mass transit vehicles. VMT does not capture energy attributable to rail and airplanes, but those are generally a very small portion of transportation energy. RII data shows that 221,560,110 vehicle miles are traveled annually in White Bear Lake. The greenhouse gas emissions associated with this travel is approximately 97,089 tonnes of CO_{2e}. The estimated costs of vehicle transportation fuel in White Bear Lake is $39.2 million each year.

The fuel mix for light duty vehicles predominantly includes gasoline, which makes up 88% of all fuels. The remaining 12% is primarily flex fuel (E85, which is a blended fuel with up to 85% ethanol), making up 77% of alternative fuels. Electric vehicles are emerging as a popular alternative to combustion engine vehicles and will be worth noting in future energy profiles.

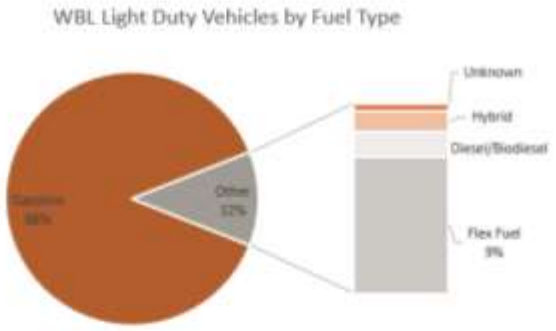


Figure 4 USDOE City Energy Profiles

Alternative Data Source for Transporation:

Regional Indicators provides VMT and associated carbon emissions for participating cities. The Minnesota Department of Transportation is another source of community VMT, however the community will need to calculate its own carbon emissions.

At the Federal level the USDOE City Energy Profile also provides estimates for VMT, based upon a slightly different data set and method. The USDOE data also includes estimates of the type of vehicles used in the city, and the number of vehicles that use alternative fuels (based on vehicle sales and registration data for the area).

Efficiency Resource

The City’s efficiency resource is measured by looking at current energy use. The greater the energy consumption, the greater resource available for Grand Marais to be more efficient. As noted in the energy use profile, the energy use - and therefore the efficiency resource - is largest in businesses as compared to households. Total building energy use in the commercial and industry sector is 55% of the City’s total building energy use. Further, electricity is a greater use among businesses, while heating fuels dominant residential energy use. It is also important to note that while commercial buildings consume a majority of the energy, they comprise only 20% of the square footage, and represent little over 10% of the number of buildings.

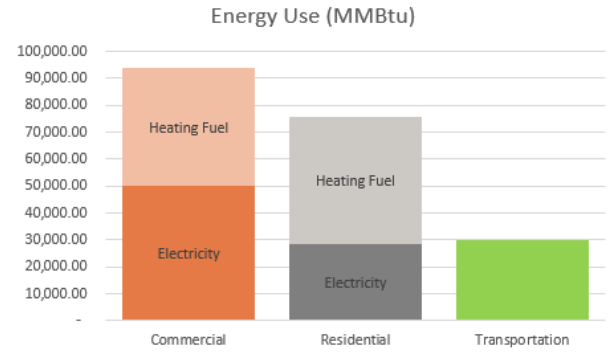


Figure 6 Data Source: 2013 Regional Indicators Initiative Report

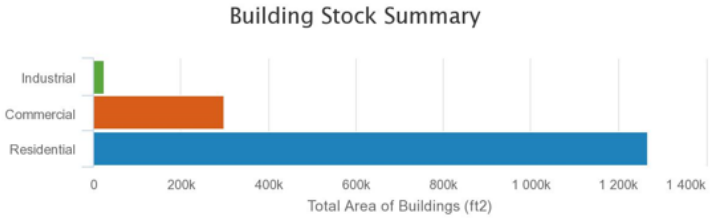


Figure 7 Source: Cities LEAP Energy Profiles, NREL

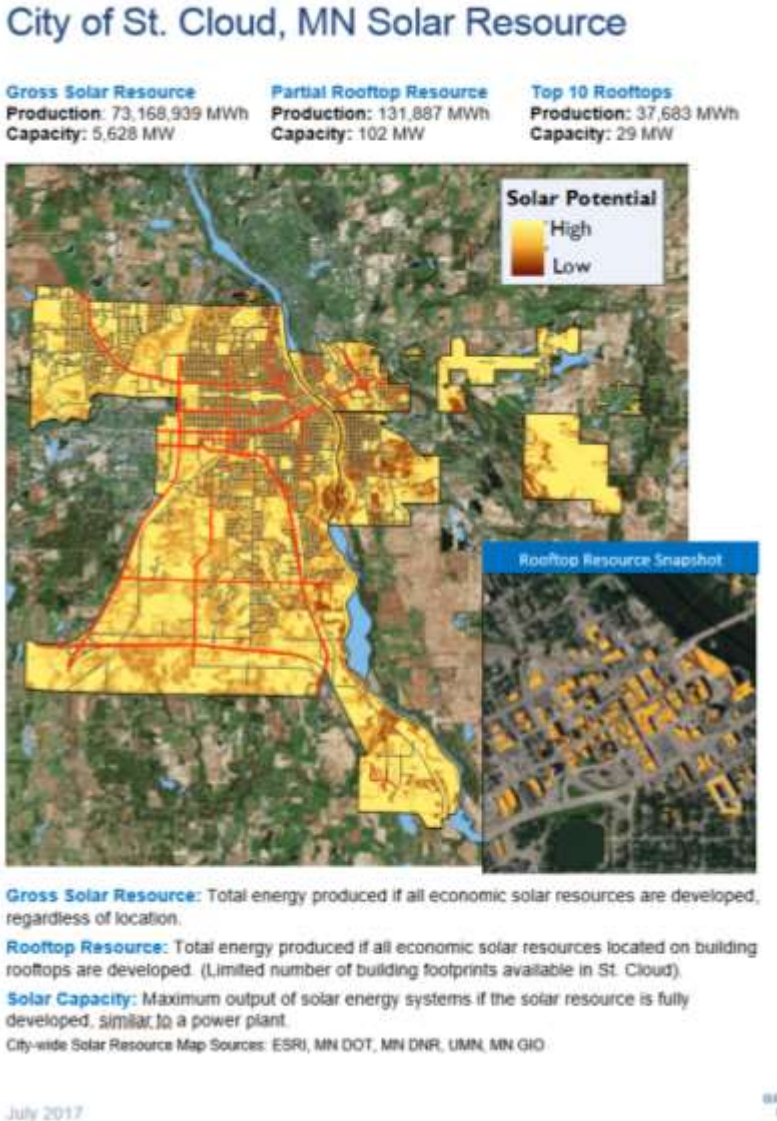
Focusing on commercial and industrial building energy use is a potentially high-impact strategy for capturing the City’s efficiency resource; a single successful efficiency investment could reap the efficiency benefits of dozens of residential successes. Particularly for commercial institutions in Grand Marais’ downtown and Highway commercial districts, a substantial portion of the energy use (lighting, heating, cooling) can be reduced using existing technologies and management tools; nationally, commercial energy use in these categories can be reduced by 30%, on average, without affecting productivity or quality of use.

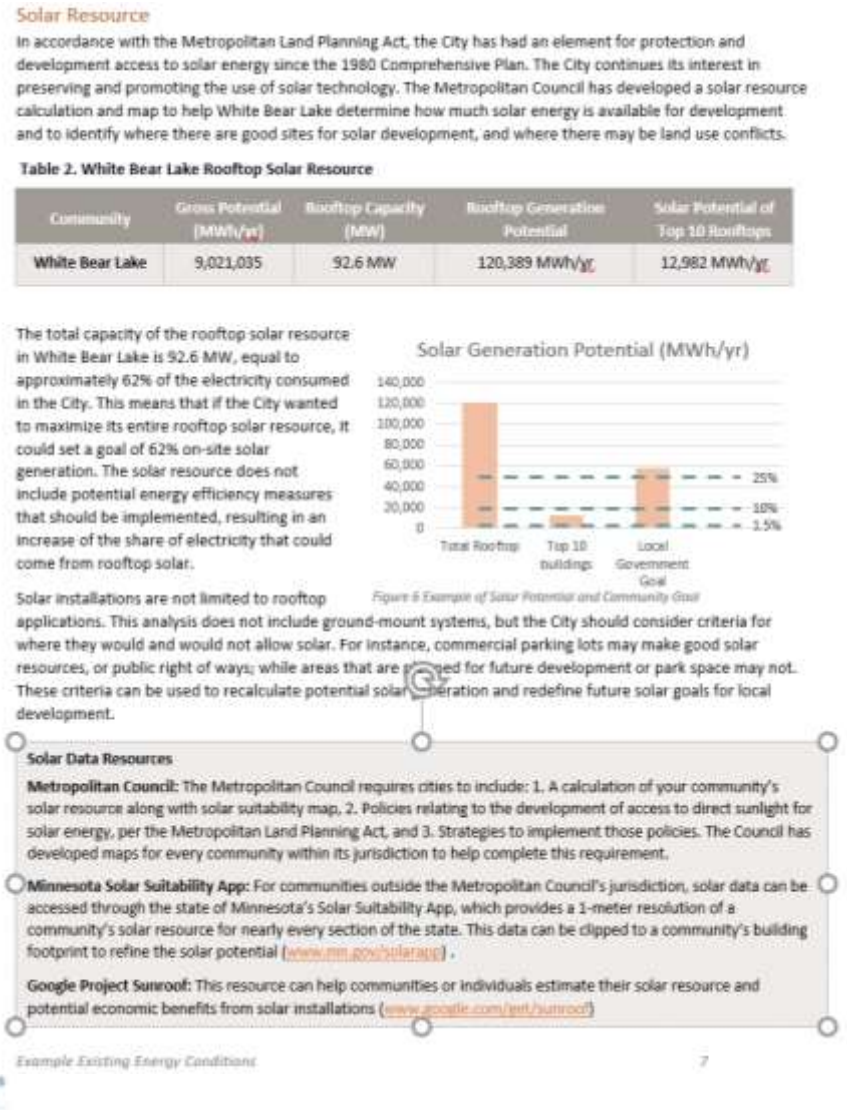
EXISTING CONDITIONS

SOLAR ENERGY RESOURCES

Solar resources:

- An area that is unshaded for 4-8 hours, year round, including solar noon, both now and into the future.
- State-wide solar resource map at 1-meter resolution.





EXISTING CONDITIONS

WIND ENERGY RESOURCES

Wind resources:

- Sufficient wind power to economically produce energy year round.
- Annual average wind speed of 12 mph.
- Urban areas have poor wind resources, but still important to document in order to set stage for development thresholds.

Wind Resource

Wind Resource

A good wind energy site needs to meet a number of characteristics, the most important of which is a good wind resource. Other characteristics include soils that can support the weight of the turbine; a site large enough to accommodate safety setbacks from neighboring properties, structures, or other uses; and surrounding land uses for which the visual impact and potential nuisances will not create a conflict. Regarding the wind resource, the height the rotor needs to be above any disturbance within an ideal radius of 500 feet. The Distributed Wind Energy Association offers this guidance:

> The industry guidance on minimum wind turbine height states that the lowest extension of a wind turbine rotor must be 60 feet above the ground, assuming no surrounding obstacles. Where obstacles are present, the wind turbine rotor should be at least 30 feet above the tallest obstacle within a 500-foot radius. If trees are not fully grown, then the tower height must be adjusted for the growth over the next two or so decade, the life of the wind turbine.

White Bear Lake is a community with suburban characteristics that may not be suitable for towers above a certain height. More appropriate tower heights for this community type would be at 30 meter heights. The Minnesota Department of Commerce developed wind speed maps at a 500-meter resolution to give a general sense of the wind resource at various tower heights; these are not adequate for a specific site assessment.

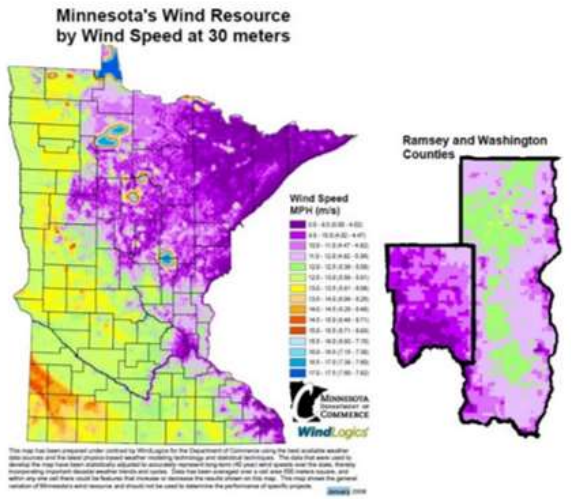


Figure 8 Minnesota Wind Resource Map, Minnesota Department of Commerce

A good rule of thumb is that 12 mph is typically the minimum average annual wind speed for a good wind resource. At 30 meters, much of Ramsey and Washington Counties, including White Bear Lake, have an average wind speed of less than 10 miles per hour. The wind resource available at 30 meters is below the optimal speed needed for a productive wind energy system, suggesting that taller towers would be necessary from a production standpoint.

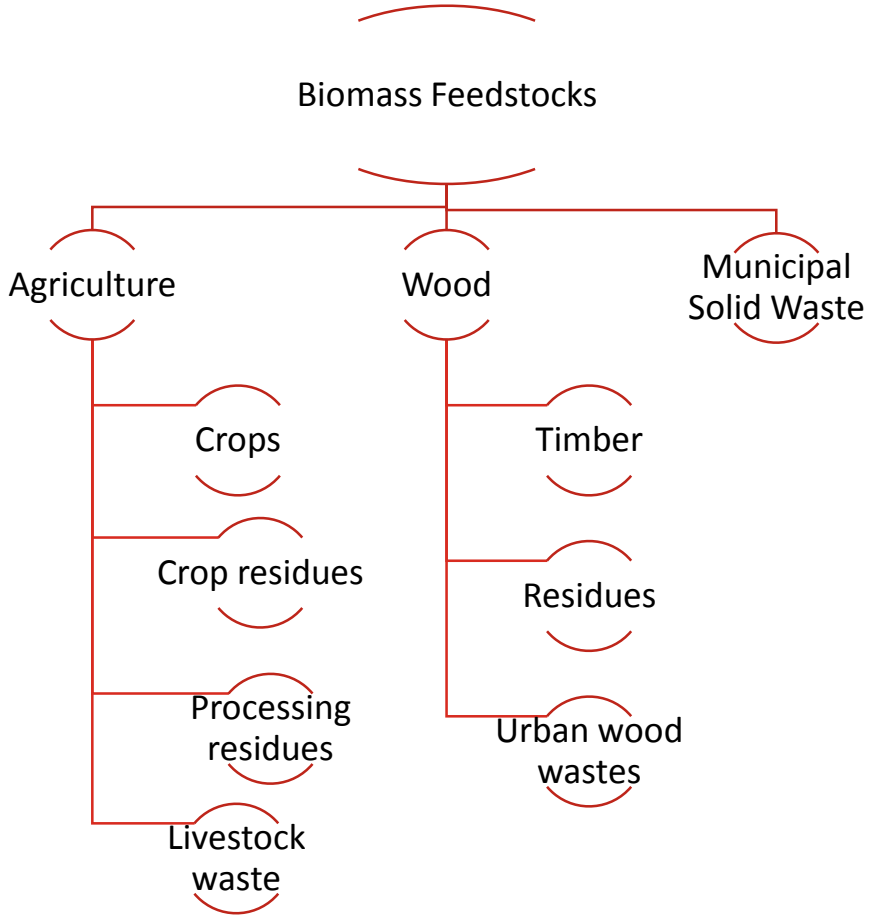
While the City does not have many opportunities for wind energy development, residents and businesses can participate in Xcel Energy's Windsource® or Renewable*Connect programs. These programs provide the clean energy benefit of having local wind (and solar) energy, although the economic benefits are realized elsewhere. According to Xcel, three businesses are subscribed to a total of 19,200 kWh of wind energy, and 380 residences are subscribed to a total of 910,825 kWh of wind energy.

EXISTING CONDITIONS
BIOMASS ENERGY RESOURCES

Biomass resources include:

- Wood waste from tree trimming and removal
- Solid waste that can't be recycled
- Agricultural wastes such as corn stover
- Agricultural products used to create fuels
- Food or agricultural processing residues
- Landfill gas

Source: Koda Energy Website
http://www.kodaenergy.com/



Adapted from: https://www.xcelenergy.com/staticfiles/xe-responsive/Energy%20Portfolio/Renewable%20Energy/Renewable%20Development%20Fund/RDF-completed-biomass-R&D-Biomassfeasibility-Report.pdf

DESIRED CONDITIONS

Desired conditions are forward-looking aspirations that are determined through a public engagement process to reflect the community's priorities. Using the existing conditions as a baseline, communities can develop goals and policies that are aspirational, yet achievable.

SETTING GOALS

- Set broad **energy** or **climate protection** goals
- Address specific **energy resources** that are available in your community
- Set **development** goals to improve energy efficiency of new buildings
- Consider specific **technologies**, such as goals for alternative fuel vehicles and public charging stations.
- Set goals that capture **co-benefits**: improving equity, creating local jobs, and improving habitat or water quality.

EXAMPLES OF COMMUNITY GOALS

Our community will:

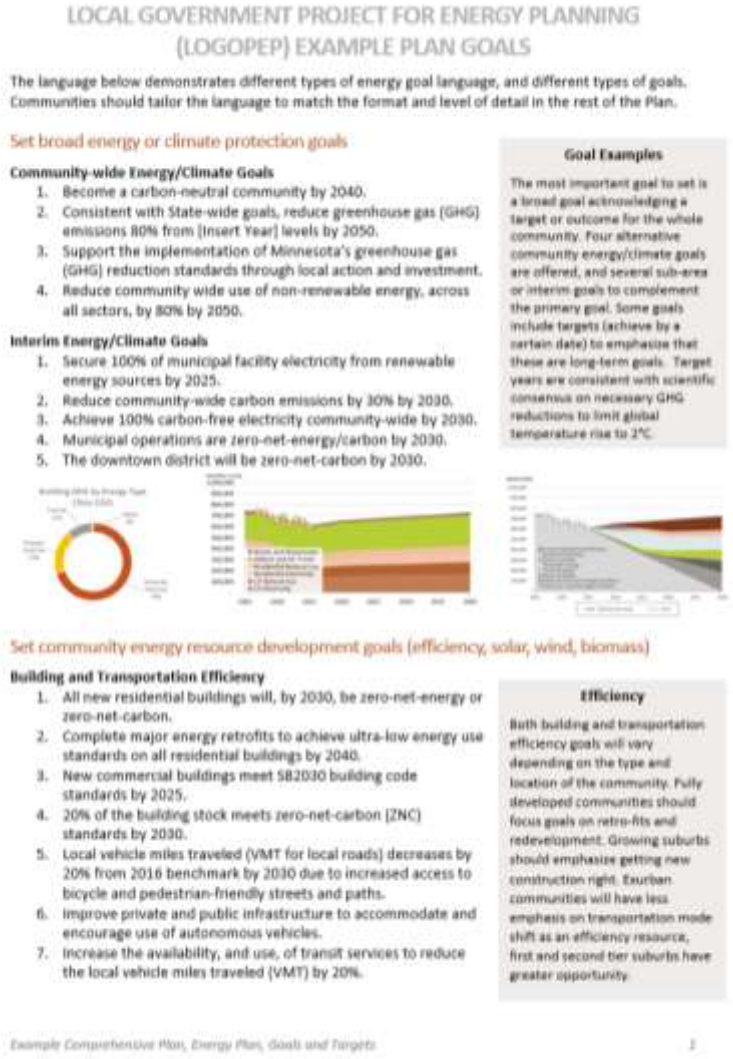
- Reduce **greenhouse gas emissions** to match the State's reduction goals of 30% by 2025 and 80% by 2050.
- Secure 50% of the community's energy from **renewable energy sources** by 2030.
- Identify potential opportunities for **bioenergy** development.
- Install **electric vehicle charging stations** in every public and private parking lot and ramp by 2030.
- Increase participation in utility **energy efficiency** programs for residents so that 80% of homes have made improvements by 2040.

DESIRED CONDITIONS

COMPREHENSIVE PLAN EXAMPLE GOALS/TARGETS FOR CLEAN ENERGY PLANS

LoGoPEP Example Goals document:

- Community-wide energy or climate protection goals
- Community energy resource development goals
- Low-carbon or carbon-free technology deployment goals
- Co-benefit goals



LOCAL GOVERNMENT PROJECT FOR ENERGY PLANNING
(LOGOPEP) EXAMPLE PLAN GOALS

The language below demonstrates different types of energy goal language, and different types of goals. Communities should tailor the language to match the format and level of detail in the rest of the Plan.

Set broad energy or climate protection goals

Community-wide Energy/Climate Goals

1. Become a carbon-neutral community by 2040.
2. Consistent with State-wide goals, reduce greenhouse gas (GHG) emissions 80% from [Insert Year] levels by 2050.
3. Support the implementation of Minnesota's greenhouse gas (GHG) reduction standards through local action and investment.
4. Reduce community wide use of non-renewable energy, across all sectors, by 80% by 2050.

Interim Energy/Climate Goals

1. Secure 100% of municipal facility electricity from renewable energy sources by 2025.
2. Reduce community-wide carbon emissions by 30% by 2030.
3. Achieve 100% carbon-free electricity community-wide by 2030.
4. Municipal operations are zero-net-energy/carbon by 2030.
5. The downtown district will be zero-net-carbon by 2030.

Goal Examples

The most important goal to set is a broad goal acknowledging a target or outcome for the whole community. Four alternative community energy/climate goals are offered, and several sub-area or interim goals to complement the primary goal. Some goals include targets (achieve by a certain date) to emphasize that these are long-term goals. Target years are consistent with scientific consensus on necessary GHG reductions to limit global temperature rise to 2°C.

Set community energy resource development goals (efficiency, solar, wind, biomass)

Building and Transportation Efficiency

1. All new residential buildings will, by 2030, be zero-net-energy or zero-net-carbon.
2. Complete major energy retrofits to achieve ultra-low energy use standards on all residential buildings by 2040.
3. New commercial buildings meet SB2030 building code standards by 2025.
4. 20% of the building stock meets zero-net-carbon (ZNC) standards by 2030.
5. Local vehicle miles traveled (VMT for local roads) decreases by 20% from 2016 benchmark by 2030 due to increased access to bicycle and pedestrian-friendly streets and paths.
6. Improve private and public infrastructure to accommodate and encourage use of autonomous vehicles.
7. Increase the availability, and use, of transit services to reduce the local vehicle miles traveled (VMT) by 20%.

Efficiency

Both building and transportation efficiency goals will vary depending on the type and location of the community. Fully developed communities should focus goals on retro-fits and redevelopment. Growing suburbs should emphasize getting new construction right. Exurban communities will have less emphasis on transportation mode shift as an efficiency resource, first and second tier suburbs have greater opportunity.

Example Comprehensive Plan, Energy Plan, Goals and Targets 1

DESIRED CONDITIONS

Metropolitan Council Local Planning Handbook:

- Sample goals to meet the Solar Element requirement
- Recommendations for other energy goals in the Resilience Element

SOLAR RESOURCE DEVELOPMENT LOCAL PLANNING HANDBOOK

SOLAR RESOURCE DEVELOPMENT REQUIREMENT

The Metropolitan Land Planning Act requires that the Comprehensive Plan shall contain "an element for the protection and development of access to direct sunlight for solar energy systems."

To ensure success in incorporating the solar resource development requirement within the comprehensive plan, it is important to highlight a generalized comprehensive planning flow chart, for reference:

To satisfy the solar resource development requirement within statute, your community should include a policy or policies relating to the development of access to direct sunlight for solar energy systems within the comprehensive plan. Your community should also include any strategies needed to implement the policy or policies.

In order to formulate your community's policies and strategies, you can begin by setting solar visions or goals within the comprehensive plan. Please see examples below of solar goals and visions, solar policies, and solar implementation strategies:

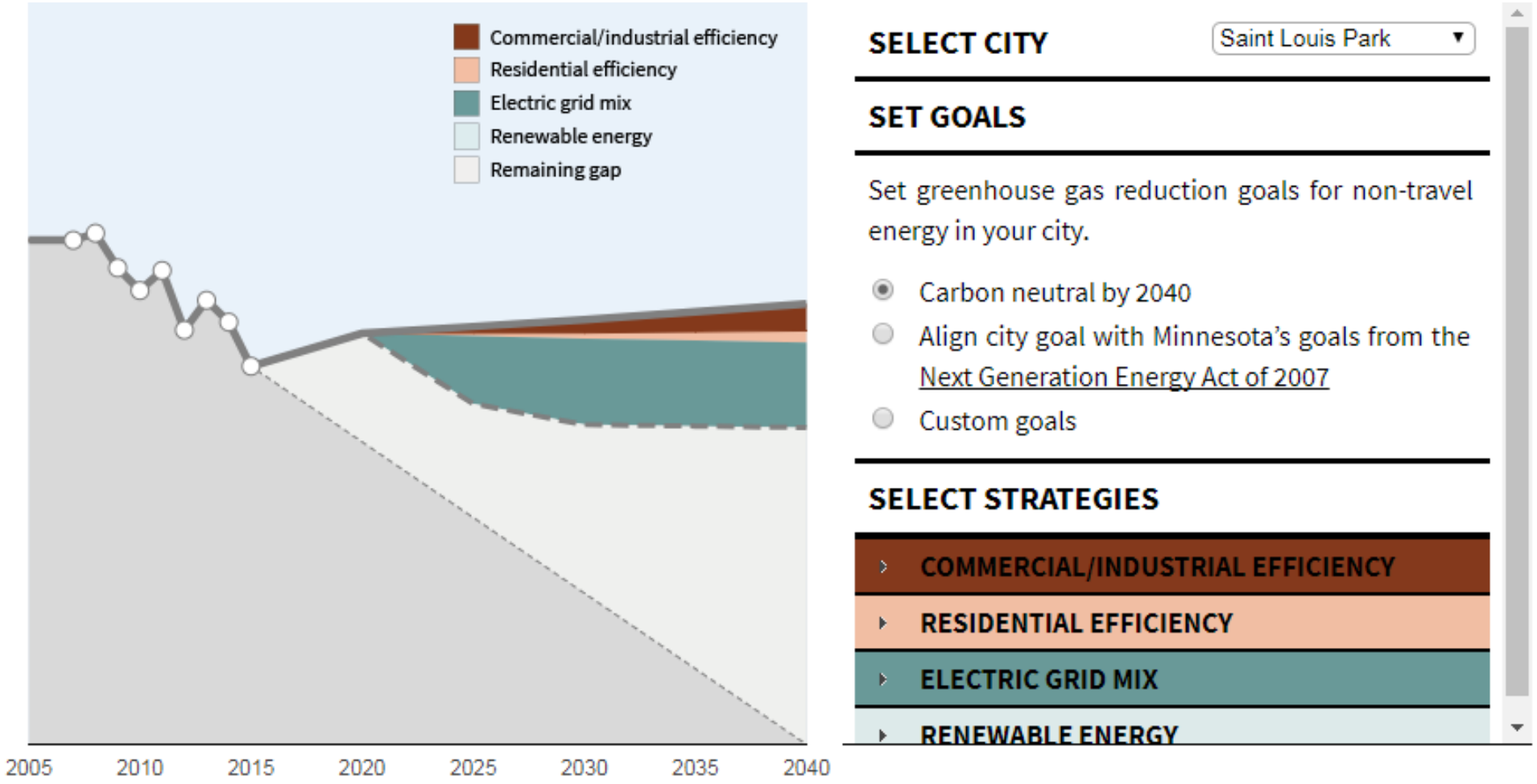
Solar Goals by Community Type

1. Urban Goal – Balance between the benefits of urban forests and the benefits of enabling solar development.
2. Urban Goal – Create local community solar garden opportunities for residents and businesses who have limited on-site solar resources or do not own land or buildings.
3. Urban Goal – Redevelopment projects will evaluate on-site solar resources and incorporate solar development into designs.
4. Suburban Goal – Encourage residential solar development that maintains community character.
5. Suburban Goal – Increase energy resilience of critical facilities such as police, fire, and emergency and hazard response centers.
6. Suburban Goal – Fairly balance the development rights of land owners with solar resource with the community character rights of adjacent landowners.
7. Suburban Goal – Protect access to solar resources in new developments and subdivisions, enabling individual land owners to choose to self-generate energy.
8. Agricultural Goal – Encourage solar garden or farm development on marginal farmland rather than prime agricultural soils.
9. Rural Goal – Enable solar garden development that enhances the community's and landowners' ability to limit non-rural housing or commercial development.

Solar Goals by Plan Element

1. Economic Goal – Increase use of local energy resources to capture job creation opportunities and diversify local economic base.
2. Housing Goal – By 2030, all new housing has solar generation or is built to "solar-ready" standards.
3. Land Use Goal – Encourage solar garden development on closed landfills and brownfields.
4. Resilience Goal – Encourage investment in electric grid infrastructure and solar development that makes electric service more reliable and resilient to weather-related disruptions.

CREATE A TRAJECTORY
WEDGE DIAGRAM TOOL

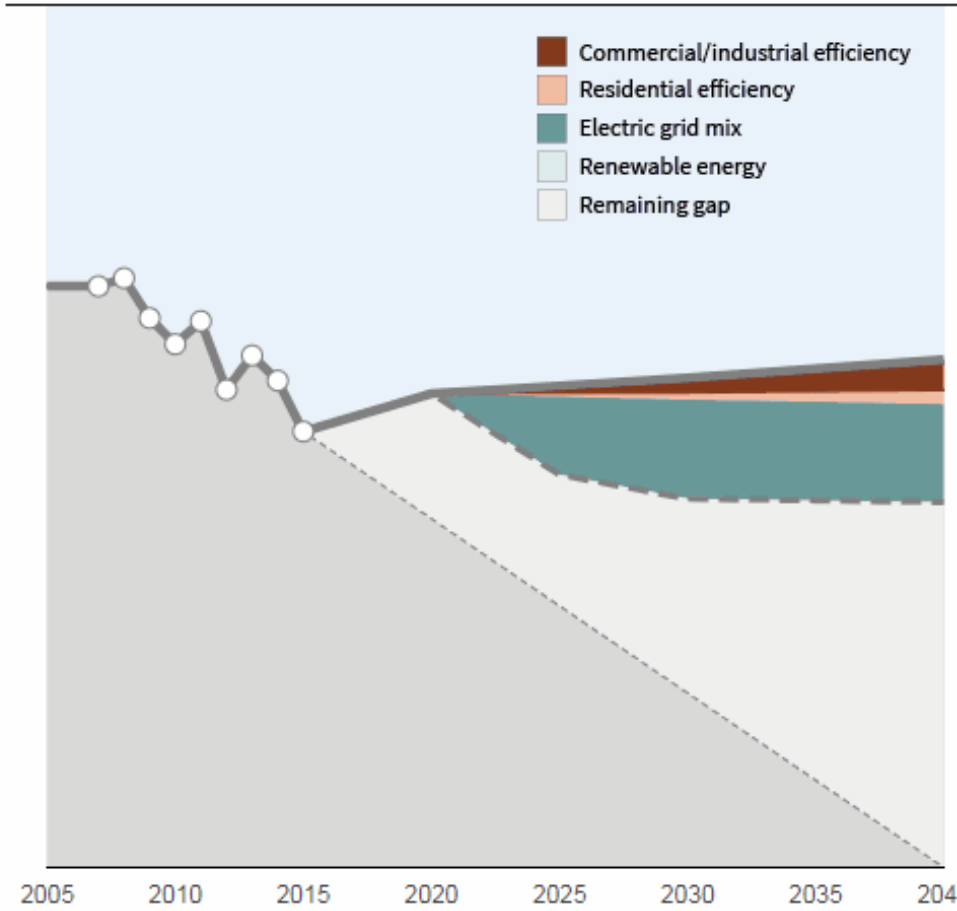


GREENHOUSE GAS EMISSIONS REDUCTION PLAN | NON-TRAVEL ENERGY

Saint Louis Park

MINNESOTA LoGoPEP

This tool allows users to explore a city's potential energy futures through an interactive diagram that shows forecasted city-wide greenhouse gas emissions from building energy consumption. Starting with historic baseline data and a business-as-usual forecast, users can set reduction goals and visualize the predicted impacts of reduction "wedges" that can be achieved through actions taken by residents, businesses, utilities, and local and state governments. Three reduction strategies that represent the impacts of existing policies are shown by default, including: Commercial/Industrial Energy Code Enforcement, Residential Energy Code Enforcement, and Planned Portfolio Mix Changes. To learn more, check out the methodology document. The tool only evaluates non-travel energy, which comprises 55% of statewide emissions. To comprehensively address city-wide emissions, local governments should also consider vehicle travel, air travel, waste, wastewater, and agricultural emissions.



SELECT CITY Saint Louis Park

SET GOALS

Set greenhouse gas reduction goals for non-travel energy in your city.

- (•) Carbon neutral by 2040
- ( ) Align city goal with Minnesota's goals from the Next Generation Energy Act of 2007
- ( ) Custom goals

SELECT STRATEGIES

- COMMERCIAL/INDUSTRIAL EFFICIENCY
- RESIDENTIAL EFFICIENCY
- ELECTRIC GRID MIX
- RENEWABLE ENERGY

Business-As-Usual Emissions (404,952 tonnes CO2e) Action Plan (28% reduction) Goal (100% reduction)

STRATEGIES

Strategies are the tools in the local toolbox that communities use to achieve desired outcomes: programs, regulations, operational procedures, and public investments. The following are examples of the types of strategies cities can include in their comprehensive plans.

ENCOURAGEMENT

- Promote Windsource® on city website
- Promote utility rebate programs through city communications
- Encourage net zero energy development
- Engage community in energy goal setting exercise

REGULATION

- Require energy efficiency and renewable energy within PUD ordinance
- Adopt an energy benchmarking ordinance
- Remove zoning barriers to renewable energy
- Adopt an energy stretch code (SB 2030)

INCENTIVES

- Enable PACE financing
- Offer regulatory incentives within zoning
- Expedite permitting for clean energy projects
- Offer technical assistance for private sector developments to incorporate net-zero and/or solar-ready designs

PUBLIC DEMONSTRATION, LEADERSHIP

- Participate in the Guaranteed Energy Savings Program
- Install solar on rooftops of public buildings
- Adopt net-zero energy standards for public facilities
- Sponsor a community solar garden for community residents and businesses

STRATEGIES

Sustainable Buildings 2030 Energy Code

ENCOURAGEMENT

- Encourage zero net energy development
- Adopt SB 2030 (or equivalent code) as a preferred and recommended design and construction standard
- Create a local recognition program for new development and renovations that meet SB 2030, zero net energy (ZNE), or zero net carbon standards

REGULATION

- Require SB 2030 within PUD ordinance or other optional path to basic zoning
- Support adoption of an energy stretch code (SB 2030) by the State
- Commit to adopting SB 2030 when stretch code is enabled

INCENTIVES

- Provide low cost financing for development or buildings meeting SB 2030
- SB 2030 is an option with the PUD (or other regulatory flexibility) ordinance

PUBLIC DEMONSTRATION, LEADERSHIP

- Adopt SB 2030 (or ZNE equivalent) for all new or substantial renovations of public buildings

STRATEGIES

Electric Vehicles

ENCOURAGEMENT

- Provide educational materials on lifecycle costs, public charging options, and myth-busting

REGULATION

- Require EV-ready parking within parking minimums
- Require EV infrastructure within PUD ordinance or other optional path to basic zoning
- Reduce commercial business parking minimums if EV charging is installed

INCENTIVES

- Include EV charging infrastructure as an optional amenity within PUD or regulatory flexibility ordinances
- Create a local “bulk-buy” or participate in a larger bulk-buy program, aimed at city residents
- Work with municipal utility to set incentive EV charging rates, or promote existing program

PUBLIC DEMONSTRATION, LEADERSHIP

- Purchase EVs for the public fleet
- Install EV charging at public facilities
- Require all new construction of public parking areas to have EV charging options
- Consider options for EV charging in the public ROW

RESOURCES

ENERGY USE PROFILE

Regional Indicators Initiative:

Measured energy and emissions data for Minnesota cities

http://www.regionalindicatorsmn.com

Xcel Community Energy Reports:

Measured energy, emissions, and program participation data for enrolled cities in Xcel's service territory

https://www.xcelenergy.com/working_with_us/municipalities/community_energy_reports

DOE City Energy Profiles:

Estimated city energy and emissions data for U.S. cities

https://apps1.eere.energy.gov/sled/#/

CLEAN ENERGY RESOURCES

Metropolitan Council Community Pages

Solar resource data for communities within the metro region

https://lphonline.metc.state.mn.us/commportal

Solar Suitability App:

Map of solar potential in Minnesota

https://solarapp.gisdata.mn.gov/solarapp/

Minnesota Wind Speed Maps:

Maps of Minnesota wind resource

https://mn.gov/commerce/industries/energy/technical-assistance/maps.jsp

ENERGY PLANNING AND ACTION

LoGoPEP Energy Planning Tools

http://www.regionalindicatorsmn.com/energy-planning

- A brief guide on how to incorporate energy and/or climate resilience in a city's request for proposals
- An energy planning guide and workbook
- An example analysis of energy existing conditions
- A solar energy calculator to assist in setting solar energy development goals
- A wedge diagram tool for energy and greenhouse gas reduction planning with an associated menu of feasible city actions

GreenStep Cities

Best practices to help cities achieve their sustainability and quality-of-life goals

https://greenstep.pca.state.mn.us/

CALL TO ACTION

Create a policy foundation for energy action that includes goals

Integrate energy action into local government processes using the tools that are available to you

QUESTIONS?

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CREATE A TRAJECTORY

SOLAR ENERGY CALCULATOR

Use the solar energy calculator to assist in setting clean energy goals and greenhouse gas emissions reductions. Input data into the outlined boxes.

Electricity Use	MMBtu/year	tCO2e/year
Total Electricity Use	1,651,586	197,565

Statewide Electricity Goals	MMBtu/year	MWh/year
State Solar Goal of 1.5% by 2020	24,774	7,261
State Solar Goal of 10% by 2030	165,159	48,405
25% Renewables by 2025 RES	412,897	121,013

Solar Generation Potential	MW	MWh/year
Total Generation Potential	1,530	1,988,351
Total Rooftop Generation Potential	220	286,513
Top 10 Buildings Generation Potential	22	28,490
Public Buildings Generation Potential	-	

Local Government Goals		
Renewable Electricity Share		%
Renewable Electricity Generation	-	**MWh/year**
Renewable Electricity Capacity (Solar)	-	**MW**
Greenhouse Gas Reduction	-	tonnes CO_2e

Results

In order to see your results, follow the instructions below to populate the user inputs.

CREATE A TRAJECTORY

WEDGE DIAGRAM TOOL