

LOCAL GOVERNMENT ENERGY
PLANNING TEMPLATE GUIDE



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GREAT PLAINS INSTITUTE

Planning for Energy

Planning for energy at the local level is a relatively new concept that many local governments are not prepared for. There are several reasons local governments will want to consider energy as either a component of their comprehensive plans, or to have a standalone energy plan. There is a transformation in the energy market that allows consumers to have more options in how they use and increasingly how they produce energy. Local governments are understanding that they can be more involved in how the energy system functions in their communities. Climate change requires that carbon emissions be reduced and this necessarily needs to happen at the local level.

Planning for local energy resources, infrastructure, and energy-related development is essential in consideration for how a community wants to grow, change, and develop. These are critical determinants of a community's character, economic vitality, and environmental footprint. A community can no more ignore energy in its plan that it can ignore housing, or natural resources, or commercial development. A comprehensive plan that does not address energy resources is, today, an incomplete plan.

This document, along with the Energy Planning Workbook, provides a basic framework, a template, for addressing energy use, energy resources, and energy development in the comprehensive plan. Cities will need to decide how best to use the document for their purposes. For instance, some cities may wish to integrate energy throughout the plan while others will include it as its own section. Either way, including energy in comprehensive plans will follow the same fundamental framework as other common issues that includes this three step process:

1. **Identifying Existing Conditions**
2. **Setting Desired Conditions**
3. **Identifying Possible Strategies**

In the context of energy, this document provides Minnesota communities guidance for addressing resources, consumption, and technologies in each of the three steps:

1. **Energy resources and use** that Minnesota communities have and the types of energy development that should be addressed in comprehensive plans.
2. **Examples of desired conditions** (vision and goals) for energy use and development for both the public and the private sector
3. **Possible strategies** that local governments can use to achieve an energy vision and community energy goals.

Step 1: Identify Your Community's Existing Conditions

In order to develop energy goals, communities first need to know their existing resources, level of energy consumption, and current portfolio of strategies. The Existing Conditions assessment should include an energy profile of the community. The energy profile can provide current and projected energy consumption, type and quantity of local, developable energy resources, and an inventory of existing energy programs and market transformation tools.

Existing Conditions: What Are Your Energy Resources?

Imagine that your community discovered oil and gas reserves within city boundaries. Would it make sense to plan for how those oil and gas reserves would be developed? To enable the landowners to develop their energy reserves in a manner consistent with the community's character and desired future?

Minnesota communities are now faced with exactly these questions, albeit not for new oil resources. Distributed energy resources that Minnesota communities need to address in local plans include:

1. **Solar resources** – areas with access to sufficient direct sunlight for the production of energy
2. **Wind resources** – areas that have access to sustained wind at sufficient speeds to produce energy
3. **Biomass resources** – plants and organic matter that can be converted to useable energy
4. **Efficiency resources** – existing energy consumption that can be systematically reduced

All of these resources are developed or used at the community scale. Property owners will request local building and zoning permits for solar and wind installations. Biomass (solid waste, organics, tree trimmings, agricultural products) is collected, stored generated and used in the community. Buildings and appliances and lighting use local contractors, need local permits, and affect local property values when they are improved to incorporate energy efficiency.

Where do you find information on local energy resources?

Solar Resource

The University of Minnesota developed a state-wide solar resources map at a 1-meter resolution that maps solar resources; those areas that have suitable access to direct sunlight for solar energy production. The data is now being maintained by the Department of Commerce. The Metropolitan Council can provide GIS data and provide additional assistance on quantifying communities' solar resources. The Minnesota "Solar Suitability App" can be found at <https://solarapp.gisdata.mn.gov/solarapp/>.



Energy Resources

Fuel or feedstock that can be used to produce energy for use or sales in the market. Minnesota's energy resources include direct sunlight, wind power, organic matter (wood, crops, waste) that can be burned or converted to another fuel, and opportunities to reduce energy or power use and free up for existing energy capacity for new uses.

Solar Energy Existing Conditions

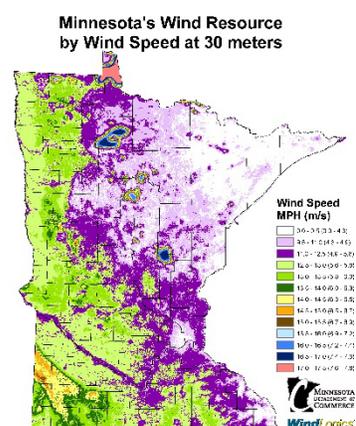
- A. Include a solar resource map of your community in the land use or natural resources section of the Comprehensive Plan.
 - o Solar data can be downloaded and clipped to your city's footprint.
- B. Identify your community's "solar reserve," including the total reserve and the rooftop reserve.
 - o Use the clipped data to calculate the solar reserve on rooftops in your community by clipping the solar data to building footprints. This will help to identify the top buildings for solar development, and allow businesses and residents to better understand their solar resource.
 - o Use the calculator in the workbook to set realistic goals for how much energy could be generated from rooftop solar in your community.
 - o Technical assistance is available to communities who don't have the GIS ability to conduct their own analysis.
- C. Identify how many existing solar energy installations are in your community, and the total capacity of the installations in kilowatts (KW).

Wind Resource

The Minnesota Department of Commerce has developed wind speed maps at 30, 80, 100 meter heights. These maps have approximately a 500-meter resolution, which is not accurate enough for specific site analysis but does show in broad terms the wind resource in a community. The Department of Commerce can provide GIS data for communities to use in identifying wind resource areas and the likelihood of wind energy development.

Wind Energy Existing Conditions

- A. Include at least the 30-meter wind energy resource map of your community in the land use or natural resources section of the Comprehensive Plan. For rural communities, consider including the 80-meter wind resource map. This can be downloaded from the [Minnesota Department of Commerce](#).
- B. Identify those areas of the community that may have a distributed wind resource (30-meter height). For rural communities, identify if there are utility scale (80-meter height) resources.
- C. Identify how many existing wind energy installations are in your community, and the total capacity in kilowatts (KW).



Bioenergy Resource

Biomass or bioenergy resources are quite varied, and sources of information depend on the type of biomass that may be in the community or region. Biomass development opportunities range from agricultural products used to produce ethanol, to the wood waste and tree trimmings to power district energy systems. District Energy St. Paul's combined heat and power plant in downtown Saint Paul uses biomass, produces 33 MW of electricity and 65 MW of heat (<http://www.districtenergy.com/technologies/combined-heat-and-power/>).

Biomass Energy Existing Conditions

- A. Describe the type of biomass resource that exists in your community, and include in the economic competitiveness or public utilities section of the Plan. Examples include

agricultural products used for ethanol or biodiesel, agricultural waste products, wood waste.

- B. Identify industrial or utility operations that use process heat (potential biomass users).
- C. Inventory gas stations that offer E85 or biodiesel, anaerobic digesters in rural communities, or any other business that uses biomass for energy.

Energy Efficiency Resource

The Regional Indicators Initiative (RII) provides a community-wide assessment of energy use (gas and electric) and vehicle transportation energy. Electric and natural gas use are broken into residential, commercial, and industrial categories. The RII also provides total vehicle miles traveled within the community's borders (and the equivalent GHG emissions), allowing the community to evaluate transportation energy efficiency. Communities within Xcel Energy electric service area can request a "community energy report" that will provide customer class breakdowns of electric energy use and participation rates in renewable energy and efficiency programs.

Energy Efficiency Existing Conditions

- A. Identify total community's total energy use, and energy use broken down into energy types (electric, natural gas, gasoline) in the public utilities or economic competitiveness sections of the Comprehensive Plan.
- B. Identify the community's residential, commercial, and industrial energy use for at least electric and natural gas. Include these data in the housing or economic competitiveness sections of the Plan.
- C. Develop and include energy efficiency metrics, such as electric energy use per square foot of building space, per job, or per resident.
- D. Inventory the energy efficiency incentive, financing, or technical assistance programs available to residents and businesses.

Existing Programs

The initial strategies for achieving local energy goals can leverage or co-promote existing programs and incentives. The availability of these programs depends on which energy utilities serve the community, which county the community is in, and what actions the community has already taken. All utilities in Minnesota are required to reduce energy use by 1.5% every year, and have a variety of incentives that local governments can use to capture local efficiency resources. Check with your local utilities, the [Minnesota Department of Commerce](#), and the [DSIRE website](#) to inventory local energy programs.

Step 2: Setting Desired Conditions

Now the community has identified its energy resource and development existing conditions. The next step is to set desired conditions: where does the community want to be regarding energy development and use at the end of the planning horizon (usually 20 years out for a comprehensive plan)? Desired conditions are forward-looking aspirations that are generally informed by a public engagement process, that reflect the community's priorities on particular issues. Using the existing conditions as a baseline, communities should develop goals that are aspirational, yet achievable.

Use the clean energy calculator that accompanies this document to help determine goals to set around solar energy, energy efficiency, and transportation. The calculator allows cities to input energy consumption and solar resource to determine what they could reasonably achieve through efficiency and clean energy development as the relate to energy consumption.

Desired conditions will vary greatly depending on the type of community, the type of local energy resources, and existing energy use patterns. Communities should consider setting energy goals in the following categories:

- Broad energy or climate protection goals
- Address specific energy resources, such as total renewable energy resources use or goals specific to particular resources; solar, wind, biomass, efficiency
- Development or technology specific goals, such as a goal to increase the use of alternative fuel vehicles or improve multi-family housing energy efficiency to a standard higher than building code
- Energy goals that capture co-benefits of clean energy use; improving equity, creating local jobs, improving habitat or water quality

Examples of Desired Conditions

Some examples of desired conditions (goal language) include:

- Reduce greenhouse gas emissions 80% by 2050, from a 2005 baseline, to match the State of Minnesota GHG reduction goals.
- Secure 50% of the community's electric energy from renewable energy sources, including 10% of its electricity from local renewable energy resources, and 100% of municipal building electricity by 2030.
- Identify potential industrial combined heat and power (CHP) opportunities in existing businesses and proposed industrial sites, and develop economic development to encourage development of CHP.
- Increase fuel economy of city vehicle fleet 20% by 2025, and by 40% by 2040.
- Install electric vehicle charging stations in every public and private parking lot or ramp by 2030.

State of Minnesota Energy Goals

Many communities adopt the Minnesota energy or greenhouse gas (GHG) reduction goals. Minnesota has set a mandatory **80% GHG emission reduction target by 2050**, from a 2005 emission baseline.

The **2025 GHG reduction target** is a **30%** reduction from 2005 baseline.

For renewable energy, Minnesota set an aspirational solar energy target equal to **10%** of electric retails sales **by 2030**.

Source: MN Dept. of Commerce, MN Pollution Control Agency

- Increase participation of low- and moderate-income housing in the utility’s energy efficiency programs so that 80% of buildings will have made improvements by 2040.
- Assess critical public facilities for potential for “renewable energy plus storage” installations to improve the resiliency of these facilities.

Step 3: Selecting Strategy Priorities

Now the community has identified its existing conditions for energy resource and development and has identified its desired conditions for energy resource development. The third component of including energy in the comprehensive plan is identifying how to get from where you are, to where you want to be; what are the strategies for realizing your desired goals?

Strategies are the tools in the local toolbox that communities use to achieve desired outcomes: programs, regulations, operational procedures, and public investments. Many local government officials and staff believe that local government has little opportunity to affect energy use and development. But the tools that local governments have at their disposal for achieving energy goals are quite extensive and varied. Fortunately, local governments don’t have to create new kinds of tools; local government merely have to adapt existing tools to energy goals. The following framework provides a decision-making process for understanding and prioritizing local energy strategies:

Tool Category	Tool Description	Energy Strategy Examples
Encouragement	Public engagement and educational efforts to encourage private sector residents and businesses to take action consistent with the desired goals.	<ul style="list-style-type: none"> • Co-promotion of utility efficiency or renewable energy incentives • Creation and dissemination of energy efficiency educational materials • Engage community in energy goal setting exercise, such as Partners in Energy
Incentives	Financial or regulatory inducements to encourage private sector actions consistent with the desired goals.	<ul style="list-style-type: none"> • Enabling PACE financing • Regulatory incentives within zoning • Expedited permitting • Technical assistance for private sector developments to incorporate net-zero or solar-ready designs
Regulation	Zoning, ordinances, licensing, permitting standards that are designed to require actions consistent with the desired goals.	<ul style="list-style-type: none"> • Requiring energy efficiency or renewable energy within PUD ordinances • Energy benchmarking ordinance • Removing zoning barriers to renewable energy • Adopting an energy stretch code (SB 2030)
Public Demonstration, Leadership	Public investment in and demonstration projects using local energy resources	<ul style="list-style-type: none"> • Participation in GESP • Installing solar on public buildings • Adopting net-zero energy standards for public facilities • Sponsoring a community solar garden for community residents and businesses