

# GreenStep Cities Best Practice #1

## - final draft for comment through May 2010 -

**Efficient Existing Public Buildings: Work with utilities and others to assess and finance energy and sustainability improvements for existing structures.**

**Category:** Buildings & Lighting

**Required** for Category B and C cities

### Summary

In city buildings the owner is also going to be the tenant for most of the building's life; all cost savings from short and long-term efficiency investments will accrue to the city and its taxpayers. In such a circumstance, energy and water efficiency opportunities are almost always justified on a purely economic basis, even without considering the benefits from reducing greenhouse gases, lowering exposure to fuel price volatility, or meeting sustainability goals. Most existing public buildings were not designed to use energy and water efficiently, and even those that are designed well are infrequently managed to capture efficiency opportunities. Energy efficiency opportunities abound in existing buildings. Many of the opportunities not only reduce operating costs, but improve occupant quality of life, create higher resale value, and improve worker productivity.

### Best Practice Actions

- Category A cities must complete at least one Action if they choose to implement this best practice.
  - Category B and C cities must implement this best practice by completing at least Actions (1) and (2).
  - Category C cities must complete at least one additional Action among (3) through (7). Completing this additional Action allows this best practice to be counted as implementation of two best practices.
- (1) **REQUIRED FOR CATEGORY B AND C CITIES:** Enter monthly public building data into the Minnesota B3 database.
  - (2) **REQUIRED FOR CATEGORY B AND C CITIES:** Audit (or, for large buildings, recommission) all buildings in the bottom third of the B3 energy performance ranking and implement all energy efficiency opportunities with a payback under 5 years, using an appropriate technical assistance and financing programs.
  - (3) Complete energy efficiency improvements in at least one city, school or park district building (in addition to buildings addressed in Action 2) via retrofit and retro-/re-commissioning, with financing at attractive interest rates under MN's PBEEEP program or related lease-purchase financing, energy performance contracting, or other cost-justified program.
  - (4) Participate in other state or utility programs that provide rebates or co-funding for energy efficiency improvements to public buildings.
  - (5) Renovate and operate at least one city-owned building to meet or qualify for a green building standard.
  - (6) Create an internal loan fund for making public building improvements based on an energy or green building standard.
  - (7) Install in at least one public building at least one of the following energy efficiency measures:
    - a. A distributed energy technology: micro-turbine, fuel cell, reciprocating engine.
    - b. A ground-source geothermal system where net greenhouse gases are less than those generated by the system being replaced.

See the *Renewable Energy* best practice for a building renewable energy action.

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## Implementation Resources

(tied to the relevant action by number)

- (1) The Minnesota Buildings, Benchmarks and Beyond (B3) database compares each building's performance to what it should be if built and operated to code, compares a building to others of its type, and ranks buildings in regard to energy performance: <http://www.mnbenchmarking.com>
- (2) For technical assistance and financing for MN cities, see the MN Office of Energy Security: <http://www.energy.mn.gov>
- (2) and (3) The EPA's Rapid Deployment Energy Efficiency (RDEE) Toolkit provides detailed program design and implementation guides for 6 energy efficiency programs applicable for existing school and government structures: [http://www.epa.gov/cleanenergy/energy-resources/ee\\_toolkit.html](http://www.epa.gov/cleanenergy/energy-resources/ee_toolkit.html)
- (3) See the state-wide Public Building Enhanced Energy Efficiency Program (PBEEEP): [www.pbееep.org](http://www.pbееep.org)
- (3) Background on energy service companies (ESCOs) and energy savings performance contracts: <http://www.naesco.org/resources/esco.htm>
- (4) The Minnesota Office of Energy Security operates ongoing and one-time financial programs: <http://www.energy.mn.gov>
- (4) DSIRE (Database of State Incentives for Renewables and Efficiency) is a one-stop source of information on the status of state programs and local utility programs, policies, and incentives: <http://www.dsireusa.org/>
- (5) Leadership in Energy and Environmental Design (LEED) for Existing Buildings and LEED for New Construction and Major Renovations are national certification standards: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222>
- (5) Green building standards such as LEED include operational standards addressing important non-energy issues such as toxicity, indoor air quality and integrated pest management.
- (6) As an example, the City of St. Paul has begun investing \$1 million over several years into an Energy Conservation Investment Fund. The Fund is a revolving loan account that supports energy-efficiency investments with a documented payback of less than ten years for City-owned buildings. The Fund enables the City to retrofit existing facilities to conserve energy, reduce CO2 emissions, and provide for substantial long-term savings for taxpayers. For details contact the City Sustainability Coordinator, Anne Hunt, [anne.hunt@ci.stpaul.mn.us](mailto:anne.hunt@ci.stpaul.mn.us)
- (7a) Distributed energy technologies are small-scale power generation technologies located close to the load being served. They aim to improve the net efficiency of fuels, lower costs, improve reliability and reduce emissions. See *Small Is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size* (Rocky Mountain Institute: 2002): <http://www.smallisprofitable.org>
- (7a) A 2005 microturbine installation at the Hennepin County Home School in Minnetonka resulted in annual utility savings of \$8,000: <http://tinyurl.com/22wg4vp>
- (7b) Geothermal heating systems can increase greenhouse gas emissions by 40% over high efficiency natural gas furnaces due to the higher CO2 emissions from the typical coal-fired electricity in Minnesota that runs the geothermal pump. Thus a geothermal system replacement should be analyzed for CO2 emissions, which can be lowered by purchasing renewably generated electricity such as wind: [http://www.nextstep.state.mn.us/res\\_detail.cfm?id=267](http://www.nextstep.state.mn.us/res_detail.cfm?id=267)

## Benefits

- Four of the five most cost-effective ways to cut emissions — improving insulation, lighting, air-conditioning and water heating — are relatively simple building retrofit measures, according to the consultant McKinsey & Company.
- Building retrofitting will not only help cities achieve real and meaningful reductions in greenhouse gas emissions, it will also create new, green jobs for blue-collar workers.
- Investments in retrofits can produce immediate economic impact, as most of the money is spent on labor costs for workers who tend to spend this money locally and increase its multiplier effect: \$1 million spent on retrofits creates between 8 and 11 jobs and generates about \$300,000 in taxes, according to estimates.
- According to *Energy Efficiency: Engine of Economic Growth - A Macroeconomic Modeling Assessment* Environment Northeast: 2009), all the money that government agencies, utility companies, and others are spending on efficiency programs not only saves energy, it pumps cash back into the economy - from \$6 to \$8.50 for every \$1 spent: [http://www.environmentnortheast.org/public/resources/pdf/ENE\\_ExecSum\\_EnergyEfficiencyEngineofEconomicGrowth\\_FINAL.pdf](http://www.environmentnortheast.org/public/resources/pdf/ENE_ExecSum_EnergyEfficiencyEngineofEconomicGrowth_FINAL.pdf)

### **Connection to State Policy**

- Energy utilities are required to demonstrate annual efficiency or conservation reductions under the 2007 Legislature's Next Generation Energy Act.

[www.MnGreenSteps.org](http://www.MnGreenSteps.org)