



Helping Communities face the challenge and impacts of growth while maintaining community character and a sense of place.

FACT SHEET: 6

Energy Efficient Design in the Planning Process

iTRaC is the Nashua Regional Planning Commission's new approach to community planning that focuses on integrating transportation, land use and environmental planning. The program was developed to assist communities in dealing with the challenges of growth in a coordinated way that sustains community character and a sense of place.

What is Energy Efficient Design?

Communities are increasingly incorporating energy efficient design into the planning process. Site design techniques that take advantage of sun exposure, infiltrating stormwater, and landscaping reduce a development's energy consumption and environmental impacts. These planning techniques can be used in designing housing and non-residential developments, deciding on density levels, integrating different land uses, and designing transportation and circulation systems. Energy efficient planning principles can be implemented and upheld through subdivision and site plan review regulations, zoning ordinance, and building codes.

Current building codes represent the minimum legal energy efficiency for structures. These standards are not uniformly enforced and baseline studies in states with similar codes indicate many structures are not built to code. Standards focus on the building envelope and mechanical systems, yet disregard natural and renewable means of reducing a building's environmental impacts. From building orientation utilizes passive solar, to installation of green roofs that treat stormwater and reduce energy costs, energy efficient design can reduce utility bills by 30-75%!

Providing a set of incentives for energy efficient design may draw interest among builders and developers. While the initial cost of energy efficient systems is typically higher than conventional systems, paybacks are usually seen in less than ten years, and as quickly as a few years. Incentives can help lessen the initial cost burden by providing a subsidy through tax deferments, deductions, credits, or abatements. Other incentives include: expediting the site/subdivision approval time, awarding developments a special certification status, and providing density bonuses. The developer may also be eligible to take advantage of net metering or receive a refund for excess power generated on site and returned to the grid. Whatever strategies a community chooses to use, it must first identify energy efficient development as a community priority in the Master Plan.



*Green Roof on the TF Moran building in Bedford, NH
Picture courtesy of TF Moran*

Statewide Energy Planning Support

New Hampshire has several statutes that underline the State's support and commitment to energy conservation and helps communities ensure that they have clean, reliable and affordable energy while maintaining a healthy environment.

- **RSA 674:17 I (j)** - encourages the use of solar, wind, or other renewable energy systems. When these zoning provisions are combined with enabling legislation for performance standards under RSA 674:21 I (h), communities can develop a comprehensive zoning article that provides incentives to developers in exchange for meeting a number of energy efficiency performance standards.
- **RSA 674:36 II (k)** - lays the groundwork for the protection of energy sources through the establishment of lot standards, street orientation, and other requirements.
- **RSA 674:44 II (i)** - when supported by the Master Plan, communities may also include energy efficiency language in their site plan review regulations as allowed as an innovative land use control.
- **RSA 72:61-72** - allows municipalities to adopt property tax exemptions for property owners that have installed solar, wind-powered, or central wood heating energy systems on their property.



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Resources for Energy Efficient Development

The following resources provide an overview and case studies on various energy efficient tools, designs and projects in New Hampshire, New England and throughout the country:

- Leadership in Energy and Environmental Design (LEED), US Green Building Council – <http://www.usgbc.org/LEED>
- NH Office of Energy and Planning State Energy Plan – <http://www.nh.gov/oep/programs/energy/StateEnergyPlan.htm>
- City of Burlington, VT, Energy Efficiency Guide – http://www.ci.burlington.vt.us/planning/dguide/energy_efficiency.pdf
- City of Boulder, CO, Residential Building Guide – <http://www.ci.boulder.co.us/buildingservices>
- Quantifying the Business Benefits of Sustainable Buildings, Centre for Sustainable Construction – <http://www.usgbc.org/docs/LEEDdocs/BREbusiness%20benefits%20summary.pdf>
- Energy-Conserving Development Regulations: Current Practice, APA Planning Advisory Service, Report #352 – NRPC library

Benefits of Energy Efficient Development

Municipality

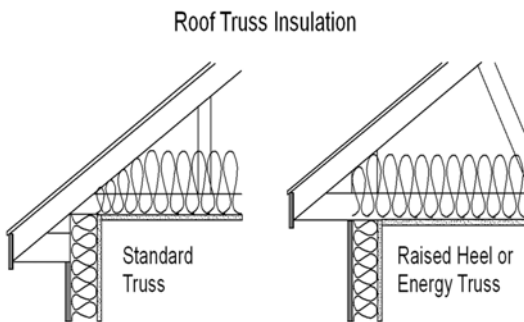
- Less CO2 emissions from buildings
- Reduces the amount of waste sent to our landfills
- Process allows more coordination from beginning to end of the project
- Energy efficient appliances reduce the demand on water and energy
- Better indoor air quality in public buildings
- Increased productivity and health
- More efficient use of land

Developer

- Reduction in energy use
- Decreases waste through recycling and reuse of materials
- Investment appeal - green buildings becoming 'popular'
- Reduced operational costs for occupant
- Incentives provided by the community, (i.e., expedited review process)
- Risk management benefits - worker safety and health, liability loss, etc.



*Passive solar design - a house oriented towards the sun with solar panels
Picture courtesy of Alan Mak, September 2005*



A Raised Heel/Energy Truss provides full insulation over exterior walls resulting in energy savings and reducing the likelihood of ice damming

Picture courtesy of NH Office of Energy and Planning

Implementing Energy Efficient Design in your Community

For communities just beginning to explore energy efficiency a good first step is to adopt language into development regulations (such as **subdivision or site plan review regulations**) that requires optimization of passive solar heating and cooling opportunities. Communities can then adopt additional **building codes** that exceed the state energy codes for residential and non-residential construction. This requires an established building inspector and code enforcement system. Finally, the most comprehensive method is to adopt a performance **zoning ordinance** encouraging the voluntary implementation of energy efficient practices for new construction in exchange for a set of incentives or bonuses.

For assistance with implementing energy efficient design into your development review process, please call NRPC.

For more details on this topic or an overview of the entire iTRaC program, contact Camille Pattison, iTRaC Program Manager, to schedule the iTRaC introductory presentation. camillep@nashuarpc.org

