

NEW CONSTRUCTION AND HOME RENOVATION GUIDE

BUILDING A GREENER FUTURE



WHEN PREPARING TO BUILD OR RENOVATE YOUR HOME

- To make existing homes more efficient, begin with an energy audit to identify opportunities to improve energy efficiency. Visit [HomeEnergySquad.net](https://www.homeenergysquad.net) for more info.
- Consider choosing an Xcel Energy registered contractor that is familiar with utility rebates available for energy efficient equipment. To find the list visit [xcelenergy.com/ContractorSearch](https://www.xcelenergy.com/ContractorSearch).
- Xcel Energy has a Efficient New Home Construction program. Visit [xcelenergy.com/EfficientNewHome](https://www.xcelenergy.com/EfficientNewHome) to learn more.
- Consult with your contractor to ensure you're taking advantage of helpful resources such as:
 - ENERGY STAR® Certified Homes program requirements: www.energystar.gov.
 - Make sure your contractor understands the Department of Energy's Zero Energy Ready Home program: www.energy.gov.
 - Make sure contractor installs all ENERGY STAR appliances. See ENERGY STAR Product Finder: www.energystar.gov.



PARTNERS IN ENERGY
An Xcel Energy Community Collaboration

EDEN PRAIRIE AND XCEL ENERGY ARE PLEASED TO WORK TOGETHER
TO ACHIEVE OUR COMMUNITY ENERGY GOALS.



Resources and tips to guide you to an energy-efficient home, new or renovated.

Applicable to single-family homes, duplexes, and fourplexes.			
Category	Minnesota 2015 Current Energy Code Requirement	Department of Energy: Zero Energy Ready Home Requirements ¹	Above Code Option and Recommendations
Envelope			
Roof/Attic/Ceiling Insulation	Minimum R value: R-49	Minimum R value: R- 49	Minimum R value: R-55 to R-60
Wall Insulation	Wood frame wall insulation: R-20	Mass Wall R-Value: 15/20 Wood frame wall insulation: r-20+5 or 13+10	Add continuous R -5 insulation on exterior or advanced framing.
Foundation Insulation	Foundation wall insulation: R-15 Slab insulation: R-10	Foundation Wall insulation: 15/19 Slab insulation- 10, 4ft deep Grade 1 insulation per RESNET standards.	Foundation wall: R-15 or R-20 Slab insulation: R-10 under slab and Grade 1 insulation per RESNET standards.
Window	U-Value: 0.32	U-Value: 0.27	U-Value: 0.27 - 0 .28
Air Sealing	Air changes per hour (ACH) under 3.0.	Receive a professional air blower door test. House should have ACH at 2.0	Hire energy consultant to look for air leaks prior to gypsum being installed. Receive a professional air blower door test. House should have ACH at less than 2.0
Rim joist	R-Value: 20	R-Value: 20+5 or R- 12+10	R-Value: 20+5 or R- 12+10
Mechanical			
Heating (Furnace, combo heater/condensing boiler, High Pressure)	Heating equipment must not exceed oversizing of 40% and cooling equipment shall not exceed oversizing of 15%. Minimum 82% annual fuel utilization efficacy (AFUE) for gas systems. Minimum 84% AFUE for electric systems.	95% AFUE for HVAC equipment. Electric heat pump: 9.5 HSPF/15 SEER/12 EER air-source w/electric or dual-fuel backup ASHRAE 62.2 Whole-house mechanical ventilation system: 1.2 cfm/W; heat exchange with 60% SRE	Have HVAC contractor conduct a heat load assessment to ensure proper sizing. Use ENERGY STAR certified products, -AND- 96+% AFUE for gas furnace, -AND- Install an ECM (electrically commutated motor), -OR- 95% or higher AFUE for standard, combined, or condensing boilers. -OR- Electric heat pump: 9.5 HSPF/15 SEER/12 EER air-source w/electric or dual-fuel backup
Water Heater/Hot Water	Hot water pipes shall be insulated to a minimum of R-3. Water Heaters: Gas systems efficiency factor (EF): EF >0.67 Electric systems: EF >2.0	Pipe insulation: R-3 Gas/propane systems of ≤ 55 gallons: EF = 0.67 Gas/propane systems of > 55 gallons: EF = 0.77 Electric Systems, EF = 2.0	ENERGY STAR certified products. -AND- Recommend R-3 pipe insulation from hot water source to point of discharge. Consider a combined boiler and water heater. -OR- Electric storage water heater, EF = 2.2 -OR- Gas storage water heater, EF = 0.7 -OR- Tankless water heater, EF = 0.9

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Mechanical			
Ventilation (i.e. stove hood)	Airflows greater than 30 cfm at building intake and exhaust. Building ventilation system designed +/- 10% of system's design capacity.	Ventilation fan must have a minimum efficacy of 1.4 to 2.8 cfm/W. Heat exchange with 60% SRE. Install motorized dampers on units.	Install a heat/energy recovery ventilator (HRV or ERV) with a 60% SRE (sensible heat-recovery efficiency) -AND- Install motorized dampers on units as well
Secondary Heating (doesn't include baseboard heating)	N/A	Heat pump HSPF: 10	Consider a heat pump. If using in-floor heater, install a combined boiler and water heater.
Thermostat	Programmable thermostat	Programmable thermostat	Smart Thermostat
Air conditioning	13 SEER (seasonal energy efficiency ratio)	13 SEER	15+ SEER
Lighting/Appliances			
Exterior Lighting	75% of bulbs have to be high efficacy (e.g. LED or CFL)	80% of fixtures must meet ENERGY STAR requirements (~70-80% efficacy).	90% of bulbs should be LED -AND/OR- Install lighting controls such as motion sensors.
Interior Lighting	75% of bulbs have to be high efficacy (e.g. LED or CFL)	80% of fixtures must meet ENERGY STAR requirements (~70-80% efficacy).	90% of bulbs should be LED -AND/OR- Install lighting controls (such as motion sensors in bathrooms and basement).
Lighting Sensors Tied to Security or Remote Access	N/A	N/A	Install motion sensors on exterior lighting.
Appliances	N/A	ENERGY STAR dishwasher, refrigerator, and ceiling fans.	All ENERGY STAR appliances.
Renewable Energy Ready			
Roof Area	N/A	Review PV-Ready checklist (resource 2) for minimum roof area requirements within +/- 45° of true south.	Review PV-Ready checklist (resource 2) for minimum roof area requirements within +/- 45° of true south.
Hookup Ready	N/A	Electrical wiring is hookup ready.	Electrical wiring is hookup ready.
Proper Orientation	N/A	Review PV-Ready checklist noted in Zero Energy Ready homes requirements (resource 2).	Review PV-Ready checklist noted in Zero Energy Ready homes requirements (resource 2).
Shading	N/A	Location does not have significant natural shading.	Location does not have significant natural shading.
Electric Vehicle Ready			
Hookup Ready	N/A	N/A	Wires run to garage at proper voltage (at least Level 120 V).
Sub-meter or Separate Meter Installed/Ready	N/A	N/A	Submeter or separate meter installed/ready for EVSE.

¹ More information on the Department of Energy's Zero-Energy Ready Homes program requirements can be found at <https://www.energy.gov>.