Minnesota Department of Labor and Industry

STATEMENT OF NEED AND REASONABLENESS

Proposed Amendment to Rules Governing the Commercial Provisions of the Minnesota Energy Conservation Code, Minnesota Rules, Chapter 1323.

INTRODUCTION

On June 1, 2009, the Department adopted rules governing the commercial provisions of the Minnesota Commercial Energy Code by incorporating by reference the 2004 edition of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. ("ASHRAE") Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings, with amendments.

Since that time, the International Code Council, Inc. ("ICC") developed and published the 2012 edition of the International Energy Conservation Code ("IECC"). This publication contains energy efficiency requirements for new and remodeled residential buildings (see Residential Provisions) and commercial buildings (see Commercial Provisions). The Department is proposing to adopt chapters 2 to 5 of the commercial provisions of the 2012 IECC, with amendments, to comply with the minimum energy provisions mandated by the American Recovery and Reinvestment Act of 2009 ("ARRA").[1]

The Department convened a rulemaking Advisory Committee to recommend changes to the commercial energy code.[2] The Advisory Committee was comprised of a diverse membership from industry, state agencies, architects, engineers, manufacturers, suppliers, educators, building owners and managers, and others. A complete listing of those members of the Advisory Committee can be found in Exhibit A. Additionally, pursuant to Minnesota Statutes, section 326B.106, subdivision 1, the Department consulted with the Construction Codes Advisory Council ("CCAC") on October 19, 2012. The CCAC reviewed a draft of the proposed rules and received an update on 1323 and a brief history on the commercial provisions of this code from the Department.

ALTERNATIVE FORMAT

Upon request, this information can be made available in an alternative format, such as large print, braille, or audio. To make a request, contact Colleen Clayton at the Department of Labor and Industry, 443 Lafayette Road North, St. Paul, Minnesota 55155, phone (651) 284-5867 and fax (651) 284-5749.

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[1] In 2009, Governor Pawlenty signed the "Governor's Assurance Certification" to receive American Recovery and Reinvestment Act ("ARRA") funding. A copy of the Governor's Assurance Certification can be found at: www.dli.mn.gov/PDF/docket/1323letter.pdf. The Minnesota Department of Commerce received this funding in its energy security section. In relevant part, the ARRA requires states that receive this funding to implement a commercial building code that meets or exceeds the most recent IECC or achieves equivalent or greater energy savings. The Department of Labor and Industry has the rulemaking authority to implement a commercial building code.

[2] A list of the meeting dates with links to meeting notes can be found at www.dli.mn.gov/CCLD/rm/1323agendas.asp

STATUTORY AUTHORITY

The Department's statutory authority to adopt the rules is stated in the following Minnesota Statutes:

> **326B.02, Subdivision 5. General rulemaking authority.** The commissioner may, under the rulemaking provisions of chapter 14 and as otherwise provided by this chapter, adopt, amend, suspend, and repeal rules relating to the commissioner's responsibilities under this chapter, except for rules for which the rulemaking authority is expressly transferred to the Plumbing Board, the Board of Electricity, or the Board of High Pressure Piping Systems.
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> **326B.101. Policy and purpose.** The State Building Code governs the construction, reconstruction, alteration, repair, and use of buildings and other structures to which the code is applicable. The commissioner shall administer and amend a state code of building construction which will provide basic and uniform performance standards, establish reasonable safeguards for health, safety, welfare, comfort, and security of the residents of this state and provide for the use of modern methods, devices, materials, and techniques which will in part tend to lower construction costs. The construction of buildings should be permitted at the least possible cost consistent with recognized standards of health and safety.
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> **326B.106, Subdivision 1. Adoption of code.** Subject to sections 326B.101 to 326B.194, the commissioner shall by rule and in consultation with the Construction Codes Advisory Council establish a code of standards for the construction, reconstruction, alteration, and repair of buildings, governing matters of structural materials, design and construction, fire protection, health, sanitation, and safety, including design and construction standards regarding heat loss control, illumination, and climate control. The code must also include duties and responsibilities for code administration, including procedures for administrative action, penalties, and suspension and revocation of certification. The code must conform insofar as practicable to model building codes generally accepted and in use throughout the United States, including a code for building conservation. In the preparation of the code, consideration must be given to the existing statewide specialty codes presently in use in the state. Model codes with necessary modifications and statewide specialty codes may be adopted by reference. The code must be based on the application of scientific principles, approved tests, and professional judgment. To the extent possible, the code must be adopted in terms of desired results instead of the means of achieving those results, avoiding wherever possible the incorporation of specifications of particular methods or materials. To that end the code must encourage the use of new methods and new materials. Except as otherwise provided in sections 326B.101 to 326B.194, the Commissioner shall administer and enforce the provisions of those sections.

Under these statutes, the Department has the necessary statutory authority to adopt the proposed rules.

REGULATORY ANALYSIS

Minnesota Statutes, section 14.131, sets out eight factors for a regulatory analysis that must be included in the SONAR. Paragraphs (1) through (8) below state these factors, followed by the agency's response.

(1) a description of the classes of persons who probably will be affected by the proposed rule, including classes that will bear the costs of the proposed rule and classes that will benefit from the proposed rule

The classes of persons who likely will be affected by the proposed rules include building officials, engineers, architects, commercial building contractors, mechanical contractors, suppliers, building owners and managers and other building users.

The classes of persons who will likely bear the costs of the proposed rule include building owners who build new buildings or add to, alter, renovate or repair existing buildings subject to this code. Only the existing building portions that are added, altered, renovated, or repaired must meet the new energy efficiency requirements of the code.

The classes of persons who will likely benefit from the proposed rule include building owners and ultimately, the general public, because the proposed rule will improve energy efficiency standards and provide better environmental protection by updating regulations for the energy efficient design of commercial buildings.

(2) the probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenues

The probable costs to the agency or any other agency for the implementation and enforcement of the proposed rule include costs associated with educating those who administer and enforce the code and costs for new code books. The costs associated with the proposed rule will be negligible because agency personnel are already required to obtain continuing education and training.

The Department does not anticipate any new effect on state revenues.

(3) a determination of whether there are less costly methods or less intrusive methods for achieving the purpose of the proposed rule

There are no less costly or intrusive methods for achieving the purpose of the proposed rule. The purpose of the proposed rule is to update the rules that regulate heat loss control standards. Specifically, the proposed rule adopts and amends the 2012 IECC because it is the most comprehensive standard that belongs to the family of ICC codes adopted in other chapters of the Minnesota State Building Code. The adoption of this code will provide uniform and predictable application and enforcement of the code, which will tend to lower costs by reducing the need for review by local and state boards and other entities responsible for code interpretation and review. The IECC achieves the same purpose as the currently adopted ASHRAE Standard 90.1 but also satisfies the ARRA requirements and better coordinates with other building codes sections.

(4) a description of any alternative methods for achieving the purpose of the proposed rule that were seriously considered by the agency and the reasons why they were rejected in favor of the proposed rule:

The Department did not review any other national model codes because the IECC is the most comprehensive energy code available for the purposes of adoption. Additionally, the IECC is part of the family of ICC codes. The Department has already adopted multiple ICC codes. This code is coordinated with the other ICC codes adopted or proposed for adoption in Minnesota Rules.

(5) the probable costs of complying with the proposed rule, including the portion of the total costs that will be borne by identifiable categories of affected parties, such as separate classes of governmental units, businesses, or individuals:

The proposed rule does not require compliance for existing buildings unless the buildings undergo certain modifications. The proposed rule will only apply to new construction or any addition, alteration, or repair. It is difficult to identify actual compliance costs associated with the construction or remodeling of a new or existing building because these costs depend on a building's design, use, age, extent of the alteration and condition. There may be negligible costs to individuals responsible for interpreting, applying, and enforcing this proposed rule, including building officials, designers, contractors, and installers. Most procedures and documents already exist in Minnesota rules so changes will likely involve minor revision to current practices or documents that currently exist and will not create a need for new procedures or documents.

(6) the probable costs or consequences of not adopting the proposed rule, including those costs or consequences borne by identifiable categories of affected parties, such as separate classes of government units, businesses, or individuals:

The probable costs of not adopting the proposed rule include an increase in costs to obtain outdated equipment and materials. The Department anticipates the probable consequences of not adopting the proposed rule include confusion about application and enforcement of an older code when a new code is available. The family of ICC Codes is designed to work together as they reference each other within the body of each individual model code provision. The Department has recently adopted several of the 2012 ICC Codes at the same time and intends to adopt more 2012 ICC codes in the near future.[3] Therefore, if this proposed rule is not adopted, it could create confusion in other rule chapters that adopt and incorporate the 2012 ICC model codes when they reference the IECC.

(7) an assessment of any differences between the proposed rule and existing federal regulations and a specific analysis of the need for and reasonableness of each difference:

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[3] The following 2012 editions of ICC codes were adopted in Minnesota Rules: in July 2014 – Chapter 11 of the International Building Code (Minnesota Rules, Chapter 1341, Minnesota Accessibility Code), International Residential Code (Minnesota Rules, Chapter 1309), International Existing Building Code (Minnesota Rules, Chapter 1311) and Chapter 30 of the International Building Code (Minnesota Rules, Chapter 1307, Minnesota Elevator Code); in August 2014 – International Energy Conservation Code Residential Provisions.

There is no federal commercial energy code. Minnesota agreed to meet certain energy conservation standards in exchange for ARRA funding (described above). Adopting this code will comply with the minimum federal regulations recommended in the ARRA.

(8) an assessment of the cumulative effect of the rule with other federal and state regulations related to the specific purpose of the rule. . . . '[C]umulative effect' means the impact that results from incremental impact of the proposed rule in addition to other rules, regardless of what state or federal agency has adopted the other rules. Cumulative effects can result from individually minor but collectively significant rules adopted over a period of time.

There is no cumulative effect related to the specific purpose of the rules. This purpose of the proposed 1323 rules is to update the Commercial Energy Code that also complies with the standards set in the Governor's Assurance Certification. There is no cumulative effect because the 2012 IECC is consistent with the standards agreed to in the Governor's Assurance Certification.

Although there is no cumulative effect related to the specific purpose of the 1323 rule, it is one chapter of the approximately twenty-two chapters that make up the Minnesota State Building Code, which is a single set of coordinated building construction regulations that apply throughout the state of Minnesota. There are no other building codes that can be used or enforced in this state. The rule is coordinated as part of the Minnesota State Building Code and with other state agencies' non-building regulations, when applicable.

PERFORMANCE-BASED RULES

Minnesota Statutes, section 326B.106, subdivision 1, authorizes, in part, the Department to establish, by rule, a code of standards for construction. This statute requires the code to "conform insofar as practicable to model building codes generally accepted and in use throughout the United States." At the same time, this statute mandates that, "to the extent possible, the code must be adopted in terms of desired results instead of the means of achieving those results, avoiding wherever possible the incorporation of specifications of particular methods or materials."

The Commercial Energy Code, as proposed, establishes minimum requirements for building systems using prescriptive and performance-based provisions and is founded on broad-based principles that make the use of new methods, materials, and construction practices possible. The proposed rules are intended to incorporate the philosophy required by Minnesota Statutes, section 326B.106.

ADDITIONAL NOTICE

This Additional Notice Plan was reviewed by the Office of Administrative Hearings and approved in an amended order dated November 7, 2014, issued by Administrative Law Judge Jim R. Mortenson. Judge Mortenson approved the Additional Notice Plan contingent upon the inclusion of the following organizations:

1. Minnesota Chamber of Commerce
2. The Building Owners and Managers Association of Duluth

They are added below as items "l" and "m," respectively.

Our Notice Plan also includes giving notice required by statute. We will mail the Dual Notice, which will contain an easily readable and understandable description of the nature and effect of the proposed rule, to everyone who has registered to be on the Department's rulemaking mailing list under Minnesota Statutes, section 14.14, subdivision 1a. We will also give notice to the Legislature per Minnesota Statutes, section 14.166.

The Department will mail the Dual Notice to the following interested parties:

a. All municipal code officials and others involved in code administration. This list includes all municipal building officials responsible for administration of the Minnesota State Building Code.
b. Minnesota Mechanical Contractors' Association
c. Minnesota Society of Professional Engineers
d. Association of Minnesota Counties
e. League of Minnesota Cities
f. American Institute of Architects - Minnesota
g. Building Owners and Managers of Minneapolis and St. Paul
h. Minnesota Manufactured Home Association
i. Minnesota Department of Commerce
j. Builders Association of Minnesota
k. Builders Association of the Twin Cities
l. Minnesota Chamber of Commerce
m. The Building Owners and Managers Association of Duluth

Our Notice Plan does not include notifying the Commissioner of Agriculture because the rules do not affect farming operations per Minnesota Statutes, section 14.111.

Our Notice Plan does not include notifying the Council on Affairs of Chicano/Latino People because the proposed rules do not have their primary effect on Chicano/Latino people; therefore, Minnesota Statutes, section 3.9223 does not apply.

CONSULTATION WITH MMB ON LOCAL GOVERNMENT IMPACT

As required by Minnesota Statutes, section 14.131, the Department consulted with Minnesota Management and Budget (MMB). The Department did this by sending MMB copies of the documents that were sent to the Governor's Office for review and approval on the same day they were sent to the Governor's office. The documents included: the Governor's Office Proposed Rule and SONAR Form; the proposed rules; and the near-final SONAR. The Department did this before publishing the Notice of Intent to Adopt. On October 30, 2014, the Department received a response from MMB that stated, in part, the following:

"Based upon the information provided to me by the Department of Labor and Industry, there does not appear to be significant costs to local units of government that are not recoverable through local fees as a result of this proposed rule."

The Department will submit a copy of the cover correspondence and the response received from Minnesota Management and Budget to OAH at the hearing or with the documents it submits for ALJ review.

DETERMINATION ABOUT RULES REQUIRING LOCAL IMPLEMENTATION

As required by Minnesota Statutes, section 14.128, subdivision 1, the agency has considered whether these proposed rules require a local government to adopt or amend any ordinance or other regulation in order to comply with these rules. The Department has determined that a local government will not be required to adopt or amend an ordinance or other regulation to comply with these proposed rules. The State Building Code is the standard that applies statewide. Minnesota Statutes, section 326B.121, subdivision 1, mandates compliance with the State Building Code whether or not a local government adopts or amends an ordinance. As a result, an ordinance or other regulation is not required for compliance. If a city wishes that its ordinances accurately reflect legal requirements in a situation in which the State Building Code has superseded the ordinances, then the city may want to amend or update its ordinances.

COST OF COMPLYING FOR SMALL BUSINESS OR CITY

Agency Determination of Cost

As required by Minnesota Statutes, section 14.127, the Department has considered whether the cost of complying with the proposed rules in the first year after the rules take effect will exceed $25,000 for any small business or small city.[4] The Department has determined that the cost of complying with the proposed rules in the first year after the rules take effect will not exceed $25,000 for any small business or small city because the proposed rules do not require any construction to occur within the first year after the rules take effect. Any small business or city contemplating new construction or remodeling will decide whether or not to undertake the construction or remodeling project and when that construction or remodeling will occur. Because no new construction or remodeling is required by the proposed rules within the first year after the rules take effect, no new construction or remodeling need be undertaken within the first year.

Additionally, any small business in the construction industry will likely pass any additional costs that occur resulting from code changes to the customer. Any additional costs will not be borne by the small business but by the building owner. A small city will likely need to purchase new code books and attend training to learn about new code changes, but this cost will not exceed $25,000 for the small city.

The costs of construction are subject to many variables, including the current construction economy, material costs, and local labor costs.

Small businesses and cities will never build the exact same building under the existing code and under the proposed rules. The number of variables and the fact that the new rule will provide for cost savings as well as increased costs, makes it unlikely the specific set of provisions that apply to a specific building on a specific site will increase the cost by more than $25,000.

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[4] A small business is "any one business that has less than 50 full-time employees." Minnesota Statute section 14.127. A small city is "any one statutory or home rule charter city that has less than ten full-time employees." Id.

LIST OF WITNESSES

If these rules go to a public hearing, the Department anticipates having the following witnesses testify in support of the need for and reasonableness of the rules:

1. Staff from the Department of Labor and Industry, if necessary

RULE-BY-RULE ANALYSIS

GENERAL.

1323.0010 INCORPORATION BY REFERENCE OF THE INTERNATIONAL ENERGY CONSERVATION CODE (IECC)

Subpart 1. General. This subpart is amended to properly incorporate by reference the commercial energy (CE) provisions of the 2012 edition of the International Energy Conservation Code (IECC). The existing language in this subpart is deleted because it incorporates by reference the ANSI/ASHRAE/IESNA Standard 90.1-2004, "ASHRAE Standard 90.1." ASHRAE Standard 90.1 will no longer be incorporated. Instead, this Commercial Energy Code will incorporate by reference the Commercial Provisions of the IECC to replace ASHRAE standard 90.1. However, IECC section C401.2 requires compliance with one of three options, the first of which is ASHRAE 90.1.

Subp. 2. Mandatory chapters. This new subpart states the mandatory commercial energy chapters of the IECC, chapters two through five, that must be applied and enforced, except as qualified in Minnesota Rules, Chapter 1300 and as amended in Minnesota Rules Chapter 1323. Not all chapters of the Commercial Provisions are adopted into this code because the State Building Code administrative provisions are in Minnesota Rules, Chapter 1300. IECC chapter one is the administrative chapter.

Subp. 3. Replacement chapters. This new subpart references another Minnesota Rule chapter that applies in lieu of Chapter 1 (CE) in the IECC. That is, Chapter 1 (CE) and any references to code administration are deleted and replaced with Minnesota Rules, Chapter 1300. This subpart is necessary because Chapter 1 (CE) is not incorporated into the proposed rule and code users must know where to locate administrative provisions for this code.

1323.0020, REFERENCES TO OTHER INTERNATIONAL CODE COUNCIL (ICC) CODES.

Subparts 1 to 11. These new subparts state that references to other ICC Code references in this IECC have a different meaning in this code. Specifically, other Minnesota Rule chapters replace the ICC Codes because a particular ICC Code is not adopted in Minnesota. For example, references to the International Building Code ("IBC") are replaced with Minnesota Rules, Chapter 1305 because Chapter 1305 adopts and amends the IBC. References to the International Property Maintenance Code ("IPMC") do not apply and are deleted because the IPMC is not adopted or replaced by any Minnesota rule.

1323.0030 ADMINISTRATIVE PROCEDURE CRITERIA.

This new rule part references the location of the administrative and enforcement provisions that govern the application of this rule. This rule part is necessary because Chapter 1 of the commercial energy provisions of the IECC is not adopted. Therefore, it is necessary to provide the code user with the location of the administrative provisions that govern this proposed rule.

1323.0100 ADMINISTRATION FOR COMMERCIAL ENERGY CODE.

Application. This rule part is new and adds administrative provisions in addition to those in Minnesota Rules, Chapter 1300. Items A through I specifies situations the code applies.

A. Scope. This new subitem clarifies the code applies to building structures, building sites, associated systems, and associated equipment. This clarifying language facilitates uniform application and enforcement of the code.

B. Additions, alterations, renovations or repairs. This new subitem clarifies that the code applies to additions, alterations, renovations, or repairs to structures by providing specific circumstances under which a building must comply with this code. The new subitem also contains a list of conditions found in the 2012 IECC that are exempt from code compliance because they do not increase the energy use of the building. In fact, some will make the building more energy efficient. This clarifying language facilitates uniform application and enforcement of the code.

C. Change of occupancy or use. This new subitem clarifies that the code applies to changes to a structure's occupancy or use by referencing Table C405.5.2(1) and (2) that contains interior lighting power allowances to show what building area types must comply with the requirements of this code. This clarifying language facilitates uniform application and enforcement of the code.

D. Change in space conditioning. This new subitem clarifies that the code applies to the conditioning of nonconditioned space that is altered to become conditioned space by identifying the specific circumstances. This clarifying language facilitates uniform application and enforcement of the code.

E. Compliance. This new subitem clarifies that residential and commercial provisions of the IECC requirements apply to residential and commercial buildings, respectively. This language will provide uniform application and enforcement of the code.

F. Mixed Occupancy. This new subitem clarifies that the code applies to structures that contain both residential and commercial occupancies. That is, that the commercial provisions apply to the commercial occupancies and the residential provisions apply to the residential occupancies even in mixed-occupancy buildings. This language will provide uniform application and enforcement of the code.

G. Compliance materials. This new subitem clarifies that the building official is permitted to approve other compliance materials that meet the intent of the code. This language clarifies that designers are permitted to use energy compliance computer software if approved by the building official.

H. Low-energy buildings. This new subitem states that the code does not apply to buildings or portions of buildings separated from the remainder of the building by building thermal envelope assemblies if listed criteria are met. The code still applies to the building, or portion thereof, within the building envelope assemblies. There are two exempt buildings, or portions thereof, that are not subject to the building thermal envelope provisions of the code. They are exempt because they use little or no energy. This language will provide uniform application and enforcement of the code.

I. Information on construction documents. This new subitem states what is required on construction documents, including examples of specific information. This language supports uniform application and enforcement of the code by clarifying required information the builder or designer must provide to the building official for a complete review of construction plans as they pertain to applicable energy code requirements. This information is necessary so that field inspections can be conducted based on the plans and specifications that have been reviewed by the jurisdiction. The information on the construction documents will help provide clarity and consistency in both the enforcement process and during the plan review and inspections.

1322.0201 SECTION C201, GENERAL.

IECC Section C201.4, Terms not defined. This is a new rule part states the method to use when a term is not defined in the code, the Merriam-Webster Collegiate Dictionary. The Merriam-Webster Collegiate Dictionary is recognized as providing ordinarily accepted meanings.

1323.0202 SECTION C202, GENERAL DEFINITIONS.

A. **Modified Definitions.** Definitions contained in this subsection modify the definitions in section C202 of the IECC.

Approved. The IECC definition is modified to coordinate the definition of "approved" with the other chapters of the Minnesota State Building Code that contain the same definition. The definition gives the building official discretion to approve new materials or technology while maintaining quality and the purpose of the rules because objective, reasonable criteria on which approval is based is listed in the definition. It is reasonable to provide coordinated definitions of frequently used terms throughout the building code to avoid conflicts between terms from one chapter to another.

Building Thermal Envelope. This definition is modified to correct an omission from the 2012 IECC definition to include "air barrier" as part of the building thermal envelope assembly and rephrases "and any other building elements" to "and any other building envelope components" for clarity. The air barrier is an important component of the building thermal envelope. The change will ensure that this definition is consistent with accepted building science, which incorporates the air barrier, and adds clarity.

Infiltration. This definition is modified by adding the phrase "or the imbalance between supply and exhaust air systems" to the definition and deleting "or both". The additional language is necessary to address the negative pressure affect that mechanical appliances and ventilation systems have on a building's envelope, which is not addressed in the 2012 IECC. The appliances

and ventilation systems increase infiltration air leaks in the building envelope because of the negative pressure exhaust systems create.

B. Added Definitions. Definitions contained in this subsection are added to section C202 of the IECC because they are terms that are used in this rule.

Code. "The code" or "this code," as used in this rule chapter, means Chapter 1323 of the Minnesota Rules which incorporates by references the commercial provisions of the 2012 IECC, as amended. This definition is added to distinguish the use of the term "code" in this rule chapter from the definition and use of the term "code" in other chapters of the State Building Code.

Continuous insulation (ci). This definition is added because it is referenced in IECC section C402 and Table C402.2, but is not defined. This definition is similar to the definition in ASHRAE 90.1 with a slight modification, which replaces the words "building envelope" with "building thermal envelope" to distinguish between insulation systems that have significant thermal bridging effect and continuous insulation, which does not have a significant thermal bridging effect.

Roof replacement. This definition is added to clarify the specific requirements for roof replacement projects because no definition currently exists in the 2012 IECC. A definition is necessary because a new subpart is proposed below that contains insulation requirements for roof replacement (see C402.2.1.2). The definition clarifies what constitutes a roof replacement project as compared to, for example, a roof repair, that is subject to different requirements.

1323.0303 SECTION C303, MATERIALS, SYSTEMS, AND EQUIPMENT.

IECC Section C303.1, Identification. This proposed amendment modifies section C303.1 by adding a sentence to the end of the section that reads, "Materials shall be designed for the intended use, and installed in accordance with the manufacturer's installation instructions, any listing, or certifications required." This additional language ensures that materials and equipment used in a building will meet the manufacturers' installation instructions, any listing requirements, and be installed by an individual certified for these installations, if required by the manufacturer. It is reasonable to require materials to be installed as the manufacturer intended.

1323.0402 SECTION C402, BUILDING ENVELOPE REQUIREMENTS.

Subpart 1. IECC Section C402.2.1.2, Insulation requirements for roof replacement: This new subpart adds a subsection to IECC section 402.2.1, Roof assembly, pertaining to the insulation requirements for roof replacement work. The IECC does not exempt roof replacement work from compliance with the roof envelope R-Value requirements, located in Table C402.2. This new subsection provides a limited exception to required roof R-values when there is not enough space between the existing rooftop conditions (existing equipment, structures, etc.) and the space needed to install the normally required amount of insulation. In circumstances when there is not enough space to comply with the insulation requirements, the required maximum insulation thickness will be dictated by the space available because of the existing rooftop conditions. This is a reasonable requirement and exception because the cost that would result from altering existing roof obstacles to meet new roof insulation requirements would be disproportionate to the energy savings from the thicker insulation. That is, the cost would be much greater than the benefit.

Subp. 2. IECC Section C402.4.1.1, Air Barrier construction. The proposed amendment modifies the section to correct a typo in the national code by correcting the section reference in subitem 3, regarding recessed lighting, from "C404.2.8" to "C402.4.8." There is no section C404.2.8. Section C402.4.8 is titled "Recessed lighting." Minor grammar changes were made for consistency with other code amendments.

Subp. 3. IECC Section C402.4.5.1, Stairways and shaft vents. The proposed amendment modifies section C402.4.5.1 by deleting the second paragraph and subitems 1 and 2 from the section. Specifically, the language pertaining to vent dampers opening automatically and the thresholds that trigger them is deleted and replaced with a reference to Minnesota Rules, Chapter 1305. Minnesota Rules, Chapter 1305 addresses stairway and shaft vents so the proposed amendment avoids redundant or conflicting codes.

Subp. 4. IECC Section C402.4.5.2 Outdoor air intakes and exhausts. The proposed amendment modifies section C402.4.5.2 by combining and reorganizing the exceptions for clarification. No substantive changes are proposed. Proposed exception 1 clarifies that gravity exhaust and relief dampers are permitted only in buildings less than three stories. This is reasonable because gravity dampers can open and close due to wind pressure, which permits uncontrolled air leakage. Uncontrolled air leakage should not be permitted in buildings three stories or higher because the wind pressure increases with the height of the buildings because there are fewer obstacles, such as other buildings, to block or slow down the wind. Also, "stack effect" (warmer air rising) is more prevalent in taller buildings than shorter buildings. Stack effect exacerbates uncontrolled leakage by exerting a negative pressure on dampers at lower levels of the building.[5] Exception 1.3 is not incorporated into the exception because it applies to Climate Zones 1, 2, and 3 and Minnesota is located in Climate Zones 6 and 7. Exception 2 is modified by adding the word "Nonmotorized" to the beginning of the exception to clarify that it applies only to nonmotorized dampers.

1323.0403 SECTION C403, BUILDING MECHANICAL SYSTEMS.

Subpart 1. IECC Section C403.2.1, Calculation of heating and cooling loads. The proposed amendment modifies section C403.2.1 by deleting the language after the first sentence in the section, adding new language and adding Table C403.2.1, Climatic Data Design Conditions. The ASNI/ASHRAE/ACCA Standard 90.1 ("Standard 90.1") is permitted in IECC C401.2, item 1. This table replaces the design load calculations in ANSI/ASHRAE/ACCA Standard 183 referenced in the 2012 IECC. Table C403.2 provides specific design conditions for several representative Minnesota cities and is an expanded version of the Table in Standard 90.1. The locations listed in the table represent the temperatures that will be used for heating and cooling equipment load design in that city or in areas near those cities. The expanded table content is carried forward from current Minnesota Rules, part 1323.0642, which is proposed to be repealed in this rulemaking. The title of the table is modified from "Outdoor Design Conditions" to "Climatic Data Design Conditions" to coordinate with terminology that is used by the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) for this data.

Subpart 2. IECC Section C403.2.2, Equipment and system sizing. The proposed

[5] Because the warm air that is rising needs to be replenished at the lower levels of the building, negative pressure forms on the dampers.

amendment adds a third exception to the IECC code section that permits the heat load calculations and cooling load calculations to be adjusted to a point of 10 percent greater than the calculated peak heating or cooling loads. Oversizing of heating and cooling equipment is required to bring the building back to the desired temperature if the temperature is "set-back" lower for heating or higher for cooling. Without oversizing, the equipment is not able to overcome the temperature difference for either heating or cooling modes.

Subpart 3. IECC C403.2.4.3.1, Thermostatic setback capabilities. The proposed amendment relocates language from Minnesota Rules, part 1323.0643, subpart 1, entitled "Setback controls," which is proposed to be repealed in this rulemaking, here. The 2012 IECC section is entitled "Thermostatic setback capabilities." The relocated language is carried forward in lieu of the language in the 2012 IECC section because it specifies the target heating and cooling setback requirements for thermostatic controls, clarifies the automation requirement and provides a wider range of setpoints than the IECC language.

Subpart 4. IECC Section C403.2.4.5, Snow melt system controls. The proposed amendment modifies IECC section C403.2.4.5 by changing the title of the IECC section from "Snow melt system controls" to "Freeze protection and snow melt system controls." The title change is necessary freeze protection requirements are added to the beginning of this subpart. The current freeze protection requirements are in Minnesota Rules, part 1323.0643, subpart 4, which is proposed for to be repealed in this rulemaking. The freeze protection language from part 1323.0643, subpart 4, is added to the IECC section because this IECC section is silent on freeze protection and regulates control of snow and ice only. The freeze protection requirements include heat tracing system shut off capabilities, which are necessary to provide energy conservation when freeze protection is not needed in warmer conditions. This proposed amendment is reasonable because Minnesota experiences deep freezing annually. The freeze protection requirement will protect the snow melt system from freezing and the pipes from breaking.

Subpart 5. IECC Section C403.2.6, energy recovery ventilation systems. The proposed amendment modifies IECC section C403.2.6 by modifying exception 2.1 by adding the phrase "except when higher volumes are required to maintain safe operating conditions" to the end of the exception. The proposed amendment also adds two items to the list of exceptions. Added exception 10 exempts systems that exhaust fumes that are toxic, flammable, or corrosive, or paint fumes, or dust. Added exception 11 exempts commercial kitchen hoods used to collect and remove grease vapors and smoke. These two new exceptions are necessary because the exhaust from these types of systems will damage an energy recovery ventilator.

Subpart 6. IECC Table C403.2.6, Energy recovery requirement. The proposed amendment modifies the title of Table C403.2.6 to read, "Exhaust Air Energy Recovery Requirement." This modification is necessary to correct an oversight by the code publisher. The information in the table was duplicated from ASHRAE Standard 90.1 but the title of the table was not duplicated correctly.[6] This modification will coordinate the table in the proposed rule with the table in the ASHRAE Standard. The content of the table remains unchanged.

Subpart 7. IECC Section C403.2.7, Duct plenum insulation and sealing. The proposed amendment modifies IECC section C403.2.7 by deleting the language in the section and

[6] The table, with the accurate title, from ASHRAE Standard 90.1 is attached to this document as Exhibit B.

replacing it with modified requirements from Minnesota Rules, part 1346.0603. These modifications provide insulation values for duct locations that are not covered in the IECC. It is reasonable to explicitly require ducts be protected from physical damage and from other types of damage, such as moisture and weather-related elements. IECC Sections C403.2.7.1, Duct construction, C403.2.7.1.1, Low-pressure duct systems, C403.2.7.1.2, Medium-pressure duct systems, and C403.2.7.1.3, High-pressure duct systems, are not amended but are included in the proposed rule for context.

Subpart 8. IECC Table C403.2.7, Minimum required duct and plenum insulation. The proposed amendment adds a table from the current Mechanical Code, part 1346.0604, with modifications.[7] The table contains duct insulation R-value requirements, which are typically found in the building provisions of the Energy Code for other parts of building envelope systems. The table is added to this rule because the Mechanical Code will reference this section for duct insulation requirements.[8] This table provides specific requirements for ducts based on duct locations. The R-values, vapor retarder, and weatherproof barrier requirements are different for interior ducts and exterior ducts. The R-values in this table reflect the general minimum R-values of R-6, and R-8 for supply and return ducts in unconditioned spaces or where located outside the building. Additional specific duct locations and the associated R-values, such as "Within cement slab or within ground," are carried forward from Minnesota Rules, part 1346.0604, without change.

Subpart 9. IECC Section C403.2.8.1, Protection of piping insulation. The proposed amendment modifies section C403.2.8.1 by deleting the phrase "exposed to weather" to require all piping to be protected from damage that occurs and not limited to protection from weather. This section is also modified grammatically for clarity and adds additional piping insulation requirements. The added requirements provide protection for piping insulation where it is subject to damage, whether it is inside or outside of the building. If piping insulation is not protected in all areas, it might sustain physical damage that will reduce the efficiency of the piping system. Reduced piping system efficiency may result in problems such as equipment overheating from an insufficient amount of water to cool equipment during operation or a loss of control to heat or cool in spaces within the building.

Subpart 10. IECC Section C403.2.10.1, Allowable fan motor horsepower. The proposed amendment modifies this section by adding the phrase "exhaust fans" after "return/relief fans," in the second sentence. This modification is necessary because the fan power limitation should include exhaust fan power, in addition to the fans listed in exception 2. Exhaust fan motors need to be properly sized to reduce energy costs. This section is also modified by replacing the word "floor" with the word "motor" in this subsection to correct a typographical error in the 2012 IECC. There is no such thing as fan floor horsepower but there is fan motor horsepower.

Subpart 11. IECC Table C403.2.10.1(2), Fan power limitation pressure drop adjustment. This table is modified by adding two rows at the end of the table for air blenders and preheat coils. These devices are added to the table because due to Minnesota's climatic conditions,

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[7] As of the date of this analysis, Minnesota Rules, Chapter 1346 is undergoing rulemaking. The table referenced in Minnesota Rules, part 1346.0604, is proposed for deletion.

[8] As stated above, Minnesota Rules, Chapter 1346 is undergoing rulemaking. The proposed deletion of the table and the reference to this code is anticipated to be approved and become an adopted rule by the end of 2014.

some HVAC systems require additional components to assure adequate mixed air temperatures during very cold outdoor conditions to prevent system piping from freezing.

Subpart 12. IECC Section C403.4.2.1, Static pressure sensor location. The proposed amendment modifies section C403.4.2.1 by deleting the last sentence in the section that states, "For sensors installed down-stream of major duct splits, at least one sensor shall be located on each major branch to ensure that static pressure can be maintained in each branch" and replacing it with the following, "Sensors shall be located in a position so the controller setpoint is optimized to maintain the minimum static pressure required for system operation throughout its range." This modification is a necessary to prevent unnecessary system expense and complexity that results from installing multiple sensors. This language is similar to language contained in current Minnesota Rules, part 1323.0653, subpart 3 and is also a recognized engineering practice.[9]

Subpart 13. IECC Section C403.4.3.3.3, Two position valve. The proposed amendment deletes the requirement for hydronic systems with power exceeding 10 horsepower to have a two-position valve and replaces it with a requirement for all heat pumps to have a two-position automatic valve interlocked to shut off the water flow when the compressor is off. This modification is necessary to ensure that all heat pump systems employ the use of the two-way valves. Hydronic heat pumps, regardless of horsepower, must use automatic valves that interlock the system to shut off water flow when the compressor is not operating. A water flow shut off valve that is interlocked with a compressor is an important energy savings feature because it keeps heated water in the tank where it will remain warm versus allowing the water to flow through the piping even though the water is not needed at that time, which causes a substantial heat loss as it travels through the system.

Subpart 14. IECC Section C403.4.5.4, Supply-air temperature reset controls. The proposed amendment modifies this section by adding a sentence at the end of the main paragraph that states, "Zones with constant loads shall be designed for the fully reset supply temperature." This language requires that a space with a constant cooling load, which may represent a small fraction of the total air handling unit capacity, is not prohibited from resetting the supply air temperature for the remainder of the air handling system. This language is necessary to ensure the rest of the system and the rooms served by the system are provided with supply and return air based on the requirements for each specific room.

1323.0404 SECTION C404, SERVICE WATER HEATING (MANDATORY).

IECC Section C404.7.3, Covers: The proposed amendment modifies section C404.7.3 by adding two sentences that read, "Covers for heated swimming pools shall comply with Minnesota Rules, part 4717.1575, the Minnesota Department of Health pool cover safety standard. Pools heated to more than 90°F shall have a pool cover with a minimum insulation value of R-12." Similar language is in the current Minnesota Rules, part 1323.0745, section 7.4.5.2. It is reasonable to add this language to the IECC section to clarify these rules are coordinated with other agency rules.

1323.0405 SECTION C405, ELECTRICAL POWER AND LIGHTING SYSTEMS (MANDATORY).

[9] Minnesota Rule, part 1323.0653 is proposed to be repealed in this rulemaking.

IECC Section C405.8, Conductor sizing; voltage drop. The proposed amendment adds a subsection to IECC section C405 pertaining to conductor sizing and voltage drops. This requirement is needed to identify voltage drop requirements as they pertain to conductor size to provide the maximum voltage drops permitted for electrical distribution systems. This language ensures that the required amount of power will be available to operate the building's equipment by reducing the voltage from the feeder lines to the branch lines. A drop in voltage causes a loss of power that is perpetuated to the building through the feeder lines. Correctly sizing these conductors will ensure that the minimum amount of power necessary will be supplied to the equipment while still allowing the equipment to operate at its peak efficiency. The transformer efficiency and motor efficiency requirements are important because these transformers require significant power use, but they also establishing a minimum voltage drop for that equipment, which helps to reduce energy consumption.

Effective Date. In accordance with Minnesota Statute, section 326B.13, subdivision 8, the Commissioner has found that it is necessary to establish February 14, 2015, or as soon after as possible, as the effective date of the proposed Commercial Energy Conservation Code. The proposed language sets February 14, 2015, or five days after publication of the rule in the State Register. The commissioner has found that the earlier effective date is necessary to protect public health and safety.

Because the other Minnesota Building Code chapters have an effective date of February 14, 2015, including the Minnesota Residential Energy Conservation Code, it is necessary that the Minnesota Commercial Energy Conservation Code become effective at the same time to minimize confusion, conflicts or misapplication of specific and interrelated code requirements by commercial energy engineers, designers and municipal inspectors. This is important because the other Minnesota Building Code chapters adopt the respective 2012 edition of an ICC code that contains coordinated references. A common effective date provides a more streamlined implementation of the rules scheduled to be effective in February of 2015.

One statutory consideration for an earlier effective date is the need for time for training individuals to comply with and enforce the rule. The 2012 IECC is now in print and various formal and informal training opportunities on the new code for installers and inspectors have begun in the fall of 2014 and will continue through February 2015.[10]

Repealer. The following rule parts are repealed because the amendments correspond with the ASHRAE Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings, that is no longer being adopted. The Department is now adopting the 2012 IECC, with new amendments so these rule amendments are no longer applicable.

1323.0230 SECTION 2, SCOPE.
1323.0320 SECTION 3.2, DEFINITIONS.
1323.0513 SECTION 5.1.3, ENVELOPE ALTERATIONS.
1323.0543 SECTION 5.4.3, AIR LEAKAGE.

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[10] The first training on the 2012 IECC was conducted on September 24, 2014. For a calendar of this and other Construction Codes and Licensing Division trainings related to the 2012 updates, please go to: www.doli.state.mn.us/CCLD/EducationCalendar.asp

1323.0550, SECTION 5.5, PRESCRIPTIVE BUILDING ENVELOPE OPTION.
1323.0562 SECTION 5.6.2, COMCHECK OPTION.
1323.0581 SECTION 5.8.1.5, SUBSTANTIAL CONTACT.
1323.0642 SECTION 6.4.2, LOAD CALCULATIONS.
1323.0643 SECTION 6.4.3, CONTROLS.
1323.0644 SECTION 6.4.4, HVAC SYSTEM CONSTRUCTION AND INSULATION
1323.0651 SECTION 6.5.1, ECONOMIZERS.
1323.0652 SECTION 6.5.2.1, ZONE CONTROLS.
1323.0653 SECTION 6.5.3, AIR SYSTEM DESIGN AND CONTROL.
1323.0657 SECTION 6.5.7.2, FUME HOODS.
1323.0672 SECTION 6.7.2, COMPLETION REQUIREMENTS.
1323.0681 SECTION 6.8, MINIMUM EQUIPMENT EFFICIENCY TABLES.
1323.0690 SECTION 6.9, WATER CHILLING PACKAGES AND ONCE-THROUGH COOLING SYSTEMS.
1323.0741 SECTION 7.4.1, LOAD CALCULATIONS.
1323.0745 SECTION 7.4.5, POOLS.
1323.0780 TABLE 7.8, PERMFORMANCE REQUIREMENTS FOR WATER HEATING EQUIPMENT.
1323.0871 SECTION 8.7.1, DRAWINGS.
1323.0872 SECTION 8.7.2, MANUALS.
1323.0891 SECTION 8.9.1, ELECTRICAL ENERGY DETERMINATION.
1323.0911 SECTION 9.1.1, LIGHTING SCOPE.
1323.0944 SECTION 9.4.4, EXTERIOR BUILDING GROUNDS LIGHTING.
1323.0991 SECTION 9.9.1, COMCHECK OPTION.
1323.1114, SECTION 11.1.4, COMPLIANCE.
1323.1121 SECTION 11.2.1, SIMULATION PROGRAM.
1323.1132 SECTION 11.3.2, HVAC SYSTEMS.
1323.1300 SECTION 13, OTHER BUILDINGS.

CONCLUSION

Based on the foregoing, the proposed rules are both needed and reasonable.

11/7/14
Date

Ken B. Peterson
Commissioner

This Statement of Need and Reasonableness was made available for public review on November ____, 2014.

EXHIBIT A

List of Commercial Energy Code Committee Members

Name	**Association**
Scott Nelson	Department of Labor and Industry
Don Sivigny	Department of Labor and Industry
Mumtaz Anwar	Association of Minnesota Building Officials
Clark Kube	Association of Minnesota Building Officials
Steve Kismohr	Midwest Energy Efficiency Alliance
John Smith	Building Owners and Managers Association
Bruce Nelson	Minnesota Department of Commerce
Alison Lindburg	Fresh Energy
Dave Bryan	American Institute of Architects

EXHIBIT B

TABLE 6.5.6.1 Exhaust Air Energy Recovery Requirements

Zone	% *Outdoor Air* at Full Design Airflow Rate					
	≥30% and < 40%	≥40% and < 50%	≥50% and < 60%	≥60% and < 70%	≥70% and < 80%	≥80%
	Design Supply Fan Airflow Rate (cfm)					
3B, 3C, 4B, 4C, 5B	NR	NR	NR	NR	≥5000	≥5000
1B, 2B,5C	NR	NR	≥26000	≥12000	≥5000	≥4000
6B	≥11000	≥5500	≥4500	≥3500	≥2500	≥1500
1A, 2A, 3A, 4A, 5A, 6A	≥5500	≥4500	≥3500	≥2000	≥1000	>0
7,8	≥2500	≥1000	>0	>0	>0	>0

NR—Not required

6.5.7 Exhaust Systems

6.5.7.1 Kitchen Exhaust Systems

6.5.7.1.1 *Replacement air* introduced directly into the hood cavity of kitchen exhaust hoods shall not exceed 10% of the hood exhaust airflow rate.

6.5.7.1.2 Conditioned supply air delivered to any *space* with a kitchen hood shall not exceed the greater of:

a. the supply flow required to meet the *space* heating or cooling load
b. the hood exhaust flow minus the available *transfer air* from adjacent *spaces*. Available *transfer air* is that portion of outdoor *ventilation* air not required to satisfy other exhaust needs, such as restrooms, and not required to maintain pressurization of adjacent *spaces*

6.5.7.1.3 If a kitchen/dining facility has a total kitchen hood exhaust airflow rate greater than 5,000 cfm then each hood shall have an exhaust rate that complies with Table 6.5.7.1.3. If a single hood, or hood section, is installed over appliances with different duty ratings, then the maximum allowable flow rate for the hood or hood section shall not exceed the Table 6.5.7.1.3 values for the highest appliance duty rating under the hood or hood section. Refer to ASHRAE Standard 154 for definitions of hood type, appliance duty, and net exhaust flow rate.

Exception: At least 75% of all the *replacement air* is *transfer air* that would otherwise be exhausted.

6.5.7.1.4 If a kitchen/dining facility has a total kitchen hood exhaust airflow rate greater than 5,000 cfm then it shall have one of the following:

a. At least 50% of all *replacement air* is *transfer air* that would otherwise be exhausted.
b. Demand *ventilation system(s)* on at least 75% of the exhaust air. Such *systems* shall be capable of at least 50% reduction in exhaust and *replacement air system* airflow rates, including *controls* necessary to modulate airflow in response to appliance operation and to maintain full capture and containment of smoke, effluent and combustion products during cooking and idle.
c. Listed *energy* recovery devices with a sensible heat recovery effectiveness of not less than 40% on at least 50% of the total exhaust airflow.

6.5.7.1.5 Performance Testing: An approved field test method shall be used to evaluate design air flow rates and demonstrate proper capture and containment performance of installed commercial kitchen exhaust *systems*. Where demand *ventilation systems* are utilized to meet 6.5.7.1.4, additional performance testing shall be required to demonstrate proper capture and containment at minimum airflow.

6.5.7.2 Laboratory Exhaust Systems. Buildings with laboratory exhaust *systems* having a total exhaust rate greater than 5000 cfm shall include at least one of the following features:

a. VAV laboratory exhaust and room supply *system* capable of reducing exhaust and *makeup air* flow rates and/or incorporate a heat recovery *system* to precondition *makeup air* from laboratory exhaust that shall meet the following:

$$A + B \times (E/M) \geq 50\%$$

Where:

A = Percentage that the exhaust and *makeup air* flow rates can be reduced from *design conditions*.

B = Percentage *sensible recovery effectiveness*.

E = Exhaust airflow rate through the heat recovery device at *design conditions*

M = *Makeup air* flow rate of the *system* at *design conditions*.

b. VAV laboratory exhaust and room supply *systems* that are required to have minimum circulation rates to comply with code or accreditation standards shall be capable of reducing *zone* exhaust and *makeup air* flow rates to the regulated minimum circulation values, or the minimum required to maintain pressurization relationship requirements. Non regulated *zones* shall be capable of reducing exhaust and *makeup air* flow rates to 50% of the zone design values, or the minimum required to maintain pressurization relationship requirements.