New Mexico Gap Analysis

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Prepared by the Building Codes Assistance Project and the New Mexico Regulation and Licensing Department for the United States Department of Energy

BCAP Dedicated to the adoption, implementation, and advancement of building energy codes
Building Codes Assistance Project (BCAP)

BCAP is a non-profit advocacy organization established in 1994 as a joint initiative of the Alliance to Save Energy, the American Council for an Energy-Efficient Economy, and the Natural Resources Defense Council. BCAP focuses on providing state and local governments in the U.S., as well as stakeholder organizations, with support on code adoption and implementation through direct assistance, research, data analysis, and coordination with other activities and allies. With over sixteen years of experience supporting numerous state energy offices and city building departments, along with tracking code activities across the country, BCAP is well-positioned to assist in local and statewide activity to advance energy codes. As a trusted resource, BCAP is able to identify and navigate past policy and programmatic pitfalls to help states and jurisdictions put the best possible strategy in place to improve efficiency in both new and existing buildings. Our work brings together local efforts, identifies national-scale issues, and provides a broad perspective, unbiased by corporate/material interests. BCAP also hosts OCEAN—an online international best practice network for energy codes—and is increasingly working abroad to gather and share best practices that provide value across organizations.
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Acronyms and Abbreviations

ACEEE – American Council for an Energy-Efficient Economy
AECC – Albuquerque Energy conservation Code
AIA – American Institute of Architects
ARE – Architect Registration Examination
ASHRAE – American Society of Heating, Refrigerating, and Air-Conditioning Engineers
BEA – Broadly Experienced Architect
BCAP – Building Codes Assistance Project
BGNM – Build Green New Mexico
BPI – Building Performance Institute
CCAG – Climate Change Advisory Group
CIC – Construction Industries Commission
CID – Construction Industries Division (New Mexico Department of Regulation and Licensing)
CLIMAS – Climate Assessment for the Southwest
CEUs – Continuing education units
DOE – Department of Energy
ECAP – Energy Code Ambassadors Program
ECMD – Energy Conservation and Management Division
EEBA – Energy & Environmental Building Alliance
EECBG – Energy Efficiency and Conservation Block Grants
EMNRRD – New Mexico Energy, Minerals and Natural Resources Department
EPA – U.S. Environmental Protection Agency
EPE – El Paso Electric
ERC – Energy Resource Conservation
HERS – Home Energy Rating System
HiP – High Performance
HPBO – High Performance Building Ordinance
IBC – International Building Code
ICC – International Code Council
IECC – International Energy Conservation Code
IFC – International Fire Code
IRC – International Residential Code
LEED – Leadership in Energy and Environmental Design
MEC – Model Energy Code
NAHB – National Association of Home Builders
NCARB – National Council of Architectural Registration Boards
NFPA – National Fire Protection Association
NMCBO – New Mexico Conference of Building Officials
NMED – New Mexico Environment Department
NMECC – New Mexico Energy Conservation Code
NMHBA – New Mexico Home Builders Association
NORA – Northern Rio Arriba Electric Cooperative
OCEAN – Online Code Environment and Advocacy Network
PNNL – Pacific Northwest National Laboratory
PSFA – Public School Facilities Authority
RLD – New Mexico Regulation and Licensing Department
RECA – Responsible Energy Codes Alliance
RESNET – Residential Energy Services Network
SEC – Socorro Electric Cooperative
SEO – State Energy Office
SEP – State Energy Program
SFMO – New Mexico State Fire Marshal Office
SWCCI – Southwest Climate Change Initiative
SWEEP – Southwest Energy Efficiency Project
ULI – Urban Land Institute
UMC – Uniform Mechanical Code
UPC – Uniform Plumbing Code
USGBC – U.S. Green Building Council
**Executive Summary**

The purpose of the New Mexico Gap Analysis Report is twofold: 1) document and analyze the strengths and weaknesses of the state’s existing energy code adoption and implementation infrastructure and policies; and 2) recommend potential actions state agencies and local jurisdictions can take to achieve 100 percent compliance with the national model energy codes. The report is organized into five sections: **Introduction, Adoption, Implementation, Stakeholders, and Conclusion.** The Adoption, Implementation, and Stakeholders sections each conclude by listing some of the state’s current best practices and making multiple recommendations for actions that would improve energy code compliance.

The **Introduction** section provides an overview of relevant state demographics and the impact of the construction boom and subsequent decline. It also covers New Mexico’s energy portfolio, emphasizing the state’s energy-intensive economy and high per capita energy use, along with the potential savings available through model energy code implementation. For instance, full compliance with the 2009 International Energy Conservation Code (IECC) would yield up to 15 percent savings in residential energy use and up to four percent savings in commercial energy use while saving millions of dollars on utility bills for homeowners and businesses.

The **Adoption** section takes a close look at the federal, state, and local polices regarding building energy codes in the state. This section starting on page 13 covers the legislative and regulatory update process for the New Mexico Energy Conservation Code, the statewide minimum energy code currently based on the 2006 IECC and ASHRAE Standard 90.1-2004. After describing the roles of the New Mexico Energy Construction Industries Commission and the New Mexico Construction Industry Division in code development, the section highlights the state’s energy efficiency standard for state-owned buildings as well as local achievements through voluntary green building and above-code programs. While not necessarily widespread, these programs set an example for other communities to improve their energy-efficient construction practices and help the enforcement, design, and construction industries become accustomed to the requirements of the national model energy codes as they call for greater levels of energy savings.

The Adoption section makes five major recommendations, in addition to multiple related recommendations. The core recommendations are listed below.

To improve energy code adoption practices in New Mexico, the state should:

- Provide additional support and promotion of programs to lead the market forward on energy efficiency and high performance buildings. If the state mandated advanced building practices such as ENERGY STAR, Build Green New Mexico, or LEED-based requirements for state-funded buildings, it would not only preserve state resources but also encourage these advanced building practices by setting the right example.
Solicit Pacific Northwest National Laboratory (PNNL) to create a state-specific REScheck and COMcheck compliance software tools to streamline and support the enforcement of the new code.

Invite affordable housing groups that help offer the concerns and issues for low-income individuals, such as the state’s official housing agency, MFA, the New Mexico Mortgage Finance Authority or another consumer advocacy group.

And engage and strategize with utilities and cooperatives on code development and compliance. An example would be working with utilities and cooperatives to develop an incentive program that supports the Blower Door test or any other component of the 2009 NMECC. Utilities can become more involved with programs supporting code compliance because these programs can be considered another demand-side management effort. Additionally, the energy efficiency of new construction aids utilities in predicting changes to system wide demand.

While enforcing the statewide energy code is mandatory within New Mexico’s jurisdictions, compliance levels and local commitment to the intent of the code do not meet the current goals. It is critical that the state advance energy code implementation to capitalize on the energy and financial savings available through compliance with the energy codes. Beginning on page 31 of the report, the Implementation section covers the roles of state and local agencies, the design and construction industries, utilities, and other stakeholders in:

- Promoting the adopted energy codes;
- Administering enforcement and compliance infrastructures that are efficient, feasible, and cost-effective; and
- Providing code officials and building professionals the resources to carry out their responsibilities.

This section begins with the state’s outreach efforts to local jurisdictions, consumers, and building professionals, particularly through traveling presentations on the energy code by CID staff and the compliance resources available on the CID website. The potential for collaboration through existing partnerships with the state homebuilders association, consumer outreach initiatives by select utilities, and local technical college training programs present some opportunities to raise awareness of building science and energy code enforcement issues.

Code enforcement and building professionals in New Mexico vary in their knowledge of, and attitudes towards, energy codes. As is the case in many code enforcement departments across the country, health/life-safety codes are a much higher priority than energy codes during building inspections. Some local code enforcement officials appear aware of the general requirements of the energy code when performing inspections, but in most jurisdictions there does not appear to be any formal checklist process or certification of energy code compliance, or general emphasis on strict, consistent enforcement.
While there is generally better energy code implementation in larger cities, code community stakeholders have highlighted the need for better energy code infrastructure and practices in most locations across the state. Enforcement and building professionals alike have struggled in the wake of the recession and the collapse of the housing market as inspection department revenues have fallen and thousands of homebuilders in the state have left the industry. Major openings exist to develop third party enforcement infrastructure to assist in code compliance.

The Implementation section makes 13 major recommendations. To improve state efforts to support local jurisdictions with energy code implementation, including:

- The state should offer additional outreach and sharing of resources with special attention to the “full or partial service” building departments.
- The state should provide web-based training on energy codes.
- RLD should have trainings outside the metropolitan areas and work to include more rural communities.
- RLD should have trainings outside the metropolitan areas and work to include more rural communities.
- The state should institute a new program for compliance measurement and verification.

Beginning on page 47, the Stakeholder section underscores the importance of seeking and strategizing with utilities, other state and local agencies, environmental and energy efficiency organizations, consumer groups, and other interested parties as each can play crucial roles in promoting codes, funding and improving the energy code infrastructure, providing technical expertise and materials, and strengthening support for building energy efficiency on the national, regional, state, and local levels. Three of the five stakeholder recommendations made for expanding or developing new partnerships include:

- Stakeholders should organize a consumer outreach program to promote the benefits of energy codes.
- The state should work with utilities to devise strategic solutions for code compliance such as withholding utility power until energy code provisions are met.
- The state could help encourage and incentivize building professionals to become involved in the Building America workshops.

The Conclusion section provides a summary of the myriad benefits of energy code adoption and implementation in New Mexico and concludes with Figure #12 on pages 50 and 51, a summary list of the most important recommendations made in the report (with page numbers for quick reference). Appendix A offers a list of other energy code resources from the U.S. Department of Energy (DOE) and Pacific Northwest National Laboratory (PNNL).
Introduction

Energy codes have arrived. As one of the principal instruments in the energy efficiency policy toolbox, codes benefit society in a number of important ways: they reduce energy use, which decreases greenhouse gas emissions and pollution, save consumers and businesses money, lessen peak energy demand, increase utility system reliability, and improve indoor air quality.

Recent improvements in the stringency of the model energy codes—not to mention the development of the first green codes—continue to raise the floor and ceiling for energy-efficient design and construction to levels that were almost unimaginable a few short years ago. Meanwhile, the Recovery Act has provided states and cities with unprecedented funding and incentives to adopt the model energy codes, and more places are taking advantage of these opportunities than ever before.

Their ascent is part of a larger transformation in the way advocates, policymakers, industry and utility representatives, and the general public view energy efficiency as a viable and cost-effective component of a comprehensive solution to our current economic, environmental, and energy concerns. Energy efficiency is widely considered one of the lowest-hanging fruits since the cheapest and cleanest fuel source is the one we do not burn. Nowhere is this more apparent than in the building sector, which accounts for almost 40 percent of total energy use and 70 percent of electricity use.\(^1\) Moreover, the average lifespan of a building is roughly 50 years, meaning that current building energy policies will affect energy consumption until 2060 and beyond.

Yet, for all this recent progress and promise, energy codes are still falling well short of their potential. In municipalities across the country, energy code enforcement and compliance remain woefully insufficient or completely absent. While development and adoption are the necessary first steps of the energy codes process, they alone do not guarantee compliance. To ensure that energy codes accomplish their missions to reduce energy use and save money, states and cities must develop and carry out effective and realistic energy code implementation strategies.

In collaboration with the U.S. Department of Energy, BCAP has undertaken a new program to improve energy code compliance in 15 states, including New Mexico, by analyzing the gaps in the existing energy code infrastructure and practices and providing compliance planning assistance and on-the-ground technical support to energy code stakeholders in the state. The first phase of the program is the Gap Analysis Report, which identifies barriers to successful energy code adoption and implementation, opportunities for improvement, available resources, and key stakeholders and potential partnerships.

State Overview

New Mexico is known as the “Land of Enchantment” because of its bright, abundant heritage and breathtaking landscapes. Cultures and tribes have journeyed through New Mexico for centuries. Pueblo, Apache, Navajo, Athapascan, and other Native American tribes have traveled over the lands of New Mexico and, from the south, people from Mexico and even Spaniards have ventured in. Europeans and Americans joined the population around the 1880’s when railroads expanded to the state, making travel
and commerce more convenient. The incredible diversity creates the vibrant culture special to New Mexico.

New Mexico is the fifth largest state in the U.S. and encompasses climate zones three through seven, which varies from a hot arid climate to cold in the upper west to central portion of the state throughout the Colorado Plateau and the Southern Rocky Mountains.

New Mexico is like many other states in the west: substantial land size with low population density; its 2009 population was 2,009,671. As the map indicates below, New Mexico’s major population centers include Santa Fe, Las Cruces, Farmington, Albuquerque, and Roswell.

For more information on the code requirements of the three climate zones in New Mexico:
Construction Overview

Although construction might be minimal when compared to the rest of the nation, building is significant enough to be a strong economic driver in the state’s economy. As Figure 2 illustrates, the total annual residential housing units permitted saw an upturn in early 2005 to late 2006 and then tapered off. Within the last year, single family housing units dropped nearly 20% with 979 units from 2008 (5,126) to 2009 (4,147).

The commercial construction outlook is about the same. According to the Urban Land Institute’s (ULI) Emerging Trends in 2011 report, Albuquerque has fair to modestly poor prospects for investment and development prospects. Unfortunately, ULI did not provide an outlook for any other cities in New Mexico, but as the state’s largest city and center of commercial activity, one would expect that the rest of the cities in the state will not experience strong growth in the commercial sector in 2011. However, RLD reports there are pockets of growth that pepper the state. For example, Las Cruces has a higher volume of commercial construction than Albuquerque, implying that ULI’s investment and development prediction may not be entirely indicative of the state’s commercial construction outlook.

Figure 2: Permits by Year
Energy Portfolio

New Mexico is a leading U.S. producer of crude oil and natural gas and is ranked eighth in the nation for total energy production. Its natural gas production alone accounts for nearly one-tenth of the U.S. total. Although rich in energy resources, New Mexico has low energy demand due in part to its small population. It is the transportation and industrial sectors that lead the state’s energy consumption. The state exports roughly 1,763 trillion Btu annually and their primary energy source is coal. The residents benefit from a low electricity rate at 10.05 cents/kWh, which is 1.15 cents below the national average. Though, that isn’t reflected in their consumption ranked at 22nd in the nation (349 million Btu per capita).

Potential Savings from Energy Codes

New Mexico is in the process of an update to their state code, the New Mexico Energy Conservation Code (NMECC). The update would have gone into effect on January 1, 2011 with a six month grace period however is being stalled for review as required by the new political administration that came into being on January 1st, 2011. The proposed code update is equal to or better than the 2009 IECC. BCAP performed an analysis of New Mexico’s potential savings, were they to adopt the model code, and calculated a $2,024,025 annual savings in residential energy consumption alone. This is calculated by multiplying the average annual number of new single-family residential permits over the past five years by the median energy savings if the home is built to current model standards. These savings assume 100 percent code compliance.

Adoption

Federal Policy

Although energy code adoption occurs on the state and local levels, the federal government—through Congress and the U.S. Department of Energy (DOE)—plays a significant role in advancing energy code development, determining the relative effectiveness of national model energy codes, and supporting state-and local-level adoption and implementation.

EPAct

The Energy Policy Act (EPAct) of 1992 required DOE to determine whether the most current model energy codes would improve energy efficiency for residential and commercial buildings. It also mandated that the DOE make a new determination within twelve months for every subsequent revision of these codes. Each state would then have two years to certify that it had revised its own energy code.

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II The national average residential electricity cost was 11.2 cents per kWh as of March 2010.
What is required by an energy code?

- Depending on your location (climate zone) there are requirements for insulating ceilings, walls, and sometimes floors, foundations, basement walls, and slab edge
- Less insulation is allowed for mass walls, and more is required for steel framing
- Also dependent on climate zone, there are requirements for windows, skylights, and doors
- The building shell, also known as the building envelope, must be caulked and sealed to limit air movement
- Duct insulation
- Pipe insulation
- Duct sealing to reduce air leakage
- Heating, ventilation, air conditioning (HVAC) and water heating equipment efficiencies and control requirements for commercial buildings
- Some residential lighting requirements
- All commercial lighting
- Heated swimming pool covers and controls
- The energy code applies to all new residential and commercial buildings, as well as additions/alterations/renovations to existing buildings
- Compliance paths include prescriptive, total building envelope UA (tradeoff method), and simulated performance

The Recovery Act

In February of 2009, Congress passed the American Recovery and Reinvestment Act of 2009 (Recovery Act), which had three immediate goals: create new jobs and save existing ones, spur economic activity and invest in long-term growth, and foster unprecedented levels of accountability and transparency in government spending. To help achieve these goals, the Recovery Act provided states with stimulus funds through the State Energy Program (SEP) and the Energy Efficiency and Conservation Block Grants (EECBG) to adopt the 2009 International Energy Conservation Code (IECC) or equivalent for residential construction and the ASHRAE Standard 90.1-2007 or equivalent for commercial construction, as well as achieve 90 percent compliance with the codes by 2017. As a stipulation for receiving SEP funds, Governor Richardson wrote a letter to DOE assuring that state officials would begin actions to achieve these goals. Based on the governor’s assurance and the State Energy Plan submitted by New Mexico’s Energy, Minerals, and Natural Resources Department, through the Energy Conservation and

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iii A scanned copy of the letter can be found here:
http://www.recovery.state.nm.us/docs/assurances/EnergyAssuranceLetter030309.pdf
Management Division, DOE awarded $31,821,000 of SEP funds to the state for energy efficiency and renewable energy programs.\(^8\) DOE also approved New Mexico’s Energy, Minerals, and Natural Resources Department EECBG program plan and awarded $9,593,500 formula grant, a portion of which New Mexico will use to adopt, implement, conduct trainings to meet 90% compliance goal.

### State Policy

In the United States, building energy codes are adopted on the state and local levels. This is due, in part, to the diverse range of cultures and climates found across the fifty states, as well as a host of historical political influences that shaped federal-state and state-local relations. The process differs from state to state, but in most cases codes are adopted through a legislative process, a regulatory process, or a combination of both, although a handful of states are strongly home rule and permit local jurisdictions to adopt energy codes. Every state is unique in how it conducts business and creates policy, and each state requires its own particular strategy for achieving the best possible code for its local governments, citizens, and businesses.

### Political Environment and Energy Code Adoption

New Mexico is a progressive Dillon’s rule state\(^iv\), which means that every jurisdiction must meet or exceed the state code. For years, the state has been a vanguard in advanced building technology, maybe due in part to its strong Native ancestry and resident’s affinity to low impact living, such as the use of adobe earthen buildings.

The first New Mexico Building Code was authorized by the Construction Industries Licensing Act of 1978, which has been updated in three year cycles since it was passed. The state’s building energy code, the New Mexico Energy Conservation Code (NMECC) has been mandatory for all local jurisdictions since its inception. In 2003 the Construction Industries Commission (CIC) adopted the 2003 IECC, with an effective date of July 1, 2004. The next update occurred in 2007 to the 2006 IECC, which went into effect on January 1, 2008. A six-month grace period allowed builders to choose either the new code or the 2003 IECC until mid-2008. Commercial buildings were exempt from the 2006 IECC but subject to ASHRAE 90.1-2004. The proposed 2009 NMECC includes several state-specific amendments that are helpful in

\(^iv\) Chief Justice Dillon’s ruling confirmed that a state legislature has complete control or jurisdiction over a local government, except for expressly granted powers and instances. The powers that are granted to local governments are usually defined and expressed through the state constitution or through statute.
achieving the requisite energy savings, but these amendments may also create an enforcement bottleneck as REScheck and COMcheck may not be used to demonstrate compliance.

**Gap:** REScheck and COMcheck may not be used to demonstrate compliance.

Recommendation #1: CID should solicit Pacific Northwest National Laboratory (PNNL) to create a state-specific REScheck and COMcheck compliance software tools to streamline and support the enforcement of the new code.

The CIC is responsible for adopting and amending statewide construction codes. Recommendations are channeled through the Construction Industry Division (CID) from various state departments including the New Mexico Regulation and Licensing Department (RLD) and the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) and then CID presents recommendations to the nine members of the Commission. Codes are reviewed at least every three years, following the publication cycle of the new model building code editions.

Although the CIC adopts and updates the state code, it is the CID, a division of the New Mexico Regulation and Licensing Department that is responsible for administering the codes including the NMECC. The state code applies to all new construction.

New Mexico’s current energy code is the 2006 NMECC, which went into effect on January 1, 2008 and cites the 2006 IECC for residential buildings and ASHRAE 90.1-2004 for commercial buildings. The code is mandatory statewide and REScheck and COMcheck may be used to demonstrate compliance.

Historically, the state has been involved with energy code advocacy work. For instance, they send several representatives to DOE’s annual code conference, generally from the two most involved departments: Regulation and Licensing and Energy, Minerals, and Natural Resources. Owing to BCAP’s presentations given during the annual DOE conference, employees of the state are familiar with and have used BCAP’s website, OCEAN (Online Codes Environment and Advocacy Network), and its resources. Both departments are also active in the International Codes Council (ICC) development process for the IECC. Department members have traveled to participate in the 2009-2010 ICC code development cycle, including the 2010 final action hearings in Charlotte, North Carolina.

**Recent Energy Codes-related Legislation**

In July of 2010, the CIC adopted the 2009 NMECC that included amendments to achieve 20 percent energy savings beyond the 2006 IECC. The 2009 NMECC would be fully effective in July of 2011.

Adopting the 2009 NMECC was a methodical process supported by the CID and the RLD, who convened a Code Change Committee to review the 2009 IECC and address increasing the efficiency of the New

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\(^{\text{For comparison, the 2009 edition achieves up to 15 percent energy savings beyond the 2006 IECC.}}\)
Beginning July 2009, the Code Committee consisting of twenty individuals representing the interests of state and local government, designers, and builders deliberated on a weekly basis to discuss energy modeling and cost analysis of over 50 code proposals. Additional participants in the development process included members of the public and more than seventy organizations that offered an array of support. “All relevant code change proposals were approved by the Code Change Committee and the appropriate Technical Advisory Committees before the final package was forwarded to the CIC for approval.” The package includes measures to increase energy savings beyond those set forth in the 2009 IECC, increase flexibility of the code where needed, provide consistency with other New Mexico codes and deemed feasible by the various business, governmental and advocacy members of the Code Change Committee.

**Gap: Certain consumer groups are not included in the update process.**

Recommendation #2: Although CID made an effort to include a wide range of stakeholders within the creation of the 2009 NMECC, BCAP suggests inviting affordable housing groups that help offer the concerns and issues for low-income individuals, such as the state’s official housing agency, MFA, the New Mexico Mortgage Finance Authority or another consumer advocacy group.

**Other New Mexico Building Codes**

In addition to the NMECC, New Mexico has the following twelve mandatory codes:

- 2006 New Mexico Earthen Building Materials Construction Code (Phase III)
- 2006 New Mexico Non-Load Bearing Baled Straw Construction Building Code (Phase III)
- 2006 New Mexico Existing Building Code
- 2006 New Mexico Historic Earthen Buildings
- 2006 New Mexico Plumbing Code – referencing Uniform Plumbing Code (UPC)
- 2006 New Mexico Swimming Pool, Spa and Hot Tub Code (Phase III)
- 2008 New Mexico Electrical Code
- 2006 New Mexico Solar Energy Code (Phase III)
- 2006 New Mexico Mechanical Code – referencing 2006 Uniform Mechanical Code (UMC)
- 2003 International Fire Code (IFC)
- National Fire Protection Association Fire Prevention Code 1

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\[vii\] Updates to the 2006 codes have been adopted for nine of the twelve and will be effective as of January 1, 2011.
With the exception of the two fire codes (2006 IFC and National Fire Protection Association Fire Prevention Code 1), the construction codes are supported and enforced through CID efforts.

The ICC and National Fire Protection Association (NFPA) provide fire codes, some of which have been adopted by New Mexico’s State Fire Marshal Office (SFMO) to assure standardization of life safety concerns for its citizens. The two primary codes are the ICC International Fire Code 2003 for new construction and NFPA Fire Prevention Code–1. The SFMO provides fire training academy, fire service support, arson investigations, and code enforcement. It is the Code Enforcement Bureau that supports the life safety of occupants in buildings, structures and facilities, as well as the prevention of fire and the reduction of property losses due to fires. Local jurisdictions must meet or exceed of the two previously mentioned fire codes and administer them.  

Additionally, nine of the twelve codes are on an informal three year update cycle, with the next update being effective January of 2011 and harboring a six month grace period for compliance with either the 2006 or 2009 code.

**Energy Codes for State-funded Facilities**

Through Executive Order 2006-001, Governor Richardson championed the first advance building initiative at the state level, which requires New Mexico to adopt specific standards to implement and facilitate the use of high performance energy efficient green building practices for all state funded existing and new buildings. The Order declared that state-funded facilities must be built under guidance of the Leadership in Environmental and Energy Design (LEED) rating system created by the United States Green Building Council (USGBC). Additionally, Governor Richardson encouraged the push towards a sustainable built environment for New Mexico and outlined four specific goals:

- New construction larger than 15,000 ft² and/or 50 kW peak electrical demand must be built to LEED Silver standards and achieve a minimum delivered energy performance standard of one half of the U.S. energy consumption for that building type as defined by the U.S. Department of Energy.
- Projects between 5,000 and 15,000 ft² must achieve a minimum delivered energy performance standard of one half of the U.S. energy consumption for that building type as defined by the U.S. Department of Energy.
- All other new construction, renovations, repairs, and replacements of state buildings must employ cost-effective, energy efficient, green building practices to the maximum extent possible.

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LEED incorporates advanced building principles including water efficiency, energy savings, sustainable materials and resources, and indoor environmental quality.
GAP: Though these standards have been effective since January 16, 2006, there seems to be little knowledge of the energy efficient and green standards for state buildings and, consequently, no enforcement.

Recommendation #3: The state should provide additional support and promotion of programs to lead the market forward on energy efficiency and high performance buildings. If the state mandated advanced building practices such as ENERGY STAR, Build Green New Mexico, or LEED-based requirements for state-funded buildings, it would not only preserve state resources but also encourage these advanced building practices by setting the right example.

However, groundwork was made in the education sector: the Energy Conservation and Management Division (ECMD), under the EMNRD, worked with the Public School Facilities Authority (PSFA), the Public Education Department, and school districts throughout the state to address energy efficiency and green building design standards for public schools. They convened a Public Schools Clean Energy Task Force later named High Performance (HiP) Schools Task Force that was first advisory in nature but continued through a $4 million award to the PSFA by the state legislature.¹⁶

One would not expect that code enforcement on state buildings differs in some locations. Most state buildings are inspected by the CID except for those within the limits of the city of Albuquerque and Bernalillo County. There was an agreement with the state that Albuquerque’s and Bernalillo’s building departments would have purview over state buildings constructed within their respective local jurisdictions.

Statewide and Regional Climate Change Initiatives

New Mexico is a state concerned about the environment and their citizen’s wellbeing. Their Climate Change Advisory Group (CCAG) has made great strides in the state climate policy realm and the New Mexico Climate Master™ Program ix was introduced to influence behavioral changes that have a positive effect on the environment. This program presents courses and coursework so citizens learn how to live a more climate-friendly life.¹⁷ Additionally, New Mexico was a founding member of both the Western Climate Initiative and the Southwest Climate Change Initiative.

In February of 2006, Arizona Governor Janet Napolitano and New Mexico Governor Bill Richardson signed an agreement to create the Southwest Climate Change Initiative (SWCCI). The two states have been collaborating through their respective Climate Change Advisory Groups x to identify opportunities to reduce greenhouse gas emissions and promote climate change mitigation, energy efficient technologies and clean energy sources. Since its inception, SWCCI has also partnered with the Nature

ix New Mexico Climate Master Program is a free, educational program administered by the New Mexico Environment Department. Topics discussed include: climate change science, home energy, transportation water, food, renewable energy, consumption & waste, behavior change, and outreach.

x New Mexico’s Climate Change Advisory Group was created a year prior in June of 2005. More information and publications are available here: http://www.nmclimatechange.us/
Why Climate Change Initiatives Matter

New Mexico is concerned with the potential impacts of climate change on the environment and the economy. Building energy use accounts for roughly 40 percent of energy use in the nation—and in New Mexico, much of that energy comes from non-renewable sources—energy codes are a vital tool for reducing energy use and, thus, greenhouse gas emissions, not to mention saving money.

Energy savings built into new construction will accrue over the life of the building. Considering that buildings typically last from 50-100 years, adopting energy codes not only impacts new building energy performance, but also the energy performance of existing buildings until 2060 and beyond. This makes energy codes an important long-term policy for mitigating climate change and supporting New Mexico’s economy.

However, in order to be fully and optimally effective, these policy recommendations require the additional development of supporting policies and infrastructure, such as training the workforce most involved with buildings and codes (contractors, builders, architects, financial institutions, and building design professionals to name a few). To remedy this, a portion of the state’s stimulus funds will be focused on trainings throughout 2010-2011. Furthermore, the CCAG stated, “there are considerable benefits to both the environment and to consumers from adoption of the policy options offered, but careful, comprehensive, and detailed planning and implementation, as well as consistent support, of these policies will be required if these benefits are to be achieved.”

Now with eleven partners spanning from Canada to Mexico and supported by the Western Governors Association is the regional drive to combat climate change called the Western Climate Initiative, which is “a collaboration of independent jurisdictions who commit to work together to identify, evaluate, and implement policies to tackle climate change at a regional level.” Each partner submitted their own climate action plan, and New Mexico submitted the findings of the CCAG’s 2006 report.

Overview of Green Building and Above-code Programs

The state offers guidance for advanced building efforts by way of three codes: Earthen Building Materials Construction Code, Non-Load Bearing Baled Straw Construction Building Code, and Historic Earthen Buildings. Through Executive Order 2006-001, green building has been mandated for state buildings over 15,000 ft². Additionally, the Governor’s office has a few initiatives underway to encourage private sector design and construction of energy efficient, sustainable buildings, one being the 2009 Sustainable Building Tax Credit. The tax credit is available to new and renovated buildings that have substantially reduced energy consumption; commercial buildings must achieve USGBC’s LEED certification and residential buildings must be certified by LEED, ENERGY STAR, or the Building Green New Mexico rating system. The program is administered by New Mexico’s EMNRD and based on third-party validation of the building’s level of sustainability.

New Mexico has many resources available for citizens who wish to voluntarily adopt sustainable practices for their buildings, such as the How-To Guide to LEED Certification for New Mexico Buildings, which provides designers and builders the information and tools they need to build green.

The state will likely see growth in the green building sector especially in response to Governor Richardson’s Green Jobs Executive Order from January of 2010. His fourth goal was for the state to become the “center of excellence for green building and energy efficiency” and “remain a leader in green building and develop a sustainable energy efficiency renovation industry.

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xii The amount of the tax credit is based on the qualified occupied square footage of the building and the sustainable building rating achieved, and is available for either the Personal Income Tax (PIT) or the Corporate Income Tax (CIT). On average, commercial buildings tax credits range from $3.50 per ft² for LEED New Construction Silver certification to $6.25 for buildings that achieve LEED New Construction Platinum. For residential buildings, the tax credits range from $5.00 per ft² for buildings that achieve LEED Homes Silver certification to $9.00 per ft² for buildings that achieve LEED Homes Platinum.

xiii Resources can be found at www.cleanenergyNM.org

xiv A link to the How-To Guide to LEED Certification for New Mexico Buildings: http://www.emnr.state.nm.us/ecmd/documents/LEEDGuidebook_000.pdf

xv The Green Jobs Executive Order can be found here: http://www.governor.state.nm.us/press/2010/jan/011210_01.pdf
with a supporting cluster of green building product manufacturers.” Governor Richardson had a vision to create and support a building energy efficiency renovation sector and was optimistic about maintaining leadership in new construction of green buildings, while also further developing New Mexico’s green building product manufacturers.

Though green building efforts are typically more prevalent at the local level, the state and region prove to be a hefty competitor in the green building realm. Currently, the state has 46 LEED certified projects and 310 registered projects. With about 6,079 U.S. Environmental Protection Agency’s (EPA) ENERGY STAR for Homes certified projects, the state holds 0.5% of ENERGY STAR homes in the country. Furthermore, as awareness and education is offered to the populace on the benefits of ENERGY STAR for Homes, the trend is increasing; 732 homes (of the 6,079 previously mentioned) were built within the last year and gained a 13% market penetration. The southwest states comprise approximately 34% of the nation’s market for ENERGY STAR for Homes and nearly a quarter of U.S. LEED registered buildings, leading the nation on advanced building practices.

Additionally, New Mexico utilities have a plethora of incentive programs available to support energy efficiency. PNM Resources is an electric utility based in Albuquerque and the state’s largest electricity provider, serving nearly 500,000 customers. PNM has several rebate programs, including: Commercial Energy Efficiency Rebate Program, ENERGY STAR for Homes Builder Rebate Program, Performance-Based Solar PV Program, Business Lighting Rebates, Advanced Evaporative Cooling Rebate, Power Saver Program, Peak Power Saver Program, Refrigerator Recycling Rebate Program, Home Lighting Discount, Advanced Evaporative Cooling Rebate Program, and a Residential Energy Efficiency Rebate Program.

Xcel Energy provides electricity and natural gas to eight states throughout the U.S., New Mexico among them. The utility offers the following rebate programs: Refrigerator Recycling Program, Water Heater Rebate Programs (includes solar heaters), Lighting Efficiency Rebates for Commercial Buildings (new construction and retrofits), Motor and Drive Efficiency Rebate and Residential and Low Income Home Energy Service.

El Paso Electric (EPE) Company serves a small portion of southern New Mexico and offers an array of efficiency-related rebates: Commercial Efficiency Program; EPE Saver High Efficiency Cooling Program; EPE Saver Home Efficiency Program; and, lastly, Small and Medium System Renewable Energy Certificate Purchase Program.

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xvi Southwest states include: Arizona, California, Colorado, Hawaii, New Mexico, Nevada, and Utah.
xvii Additional details for commercial rebates and incentive programs are available in Xcel Energy’s Business Programs Summary: [http://www.xcelenergy.com/SiteCollectionDocuments/docs/CRS-3054.pdf](http://www.xcelenergy.com/SiteCollectionDocuments/docs/CRS-3054.pdf)
As the electric grid expanded throughout the west and New Mexico, much of the state received their electricity through electrical cooperatives. Today, there are 19 distribution cooperatives and one generation & transmission cooperative that serve the state (see map to the right). Several cooperatives offer energy efficiency programs and rebates: Central New Mexico Electric Cooperative has a Residential Energy Efficiency Rebate Program; Lea County Rural Electric Cooperative has a home energy audit program; Navopache Electric Cooperative have Time-of-Use Rates; Northern Rio Arriba Electric Cooperative (NORA) have Time-of-Use Rates; Roosevelt County Electric Cooperative offer financing assistance for energy efficiency improvements through an Energy Resource Conservation (ERC) program; and, lastly, Socorro Electric Cooperative (SEC) has Time-of-Use Rates available for their members.

**Gap: Utilities are not engaged in activities that promote the energy code.**

Recommendation #4: The state should engage and strategize with utilities and cooperatives on code development and compliance. An example would be working with utilities and cooperatives to develop an incentive program that supports the Blower Door test or any other component of the 2009 NMECC. Utilities can become more involved with programs supporting code compliance because these programs can be considered another demand-side management effort. Additionally, the energy efficiency of new construction aids utilities in predicting changes to system-wide demand.

**Building America**

Since 1994, the DOE’s Building America program has been raising the bar for energy efficiency and quality in new and existing homes. Working with national laboratories and the residential building industry, its goal is to improve the quality and performance of today’s homes while continually working towards net-zero energy homes. To qualify, homes must receive a score of 70 or less on the HERS index, though the program’s innovative house-as-a-system approach can reduce a home’s average energy consumption by as much as 40 percent with little or no impact on the cost of new construction. Building America approaches have been used in more than 42,000 homes across the country to date. These homes typically sell within weeks while other new homes sit on the market for months.

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A consumer may pay 3 or 4 times as much per kilowatt-hour for "peak" electricity as compared to "off-peak" electricity. Time-Of-Use pricing creates an incentive for discretionary demand so that power use shifts towards the off-peak timeframe. Utilities that use this approach within their service territory observe a leveling of electrical usage which may mean fewer generators are required.
The HERS Index Explained

The HERS Index is a scoring system that provides a scale for measuring the energy efficiency of a new home compared to a reference home that was built to the 2004 IECC, which is assigned the score of 100 points. The lower a home’s HERS Index, the more energy efficient it is. Every one point decrease in the HERS Index corresponds to a one percent reduction in energy consumption compared to the HERS reference home. For example, a home that scores an 85 is 15 percent more efficient than the HERS reference home, and a home that scores zero is a net zero building (see www.resnet.us for more details). Both ENERGY STAR for Homes and Building America intend to increase the stringency of their requirements in the coming months.

Through its Builders Challenge program, new homes that meet stringent qualifications can earn an EnergySmart Home Scale label. Builders Challenge is similar to ENERGY STAR for Homes in that both programs assist and reward builders who build homes more efficiently than standard practice. However, the energy threshold requirements for the Builders Challenge program are different than those of ENERGY STAR.

Several cities across the state including Albuquerque, Bernalillo, Cedar Crest, Los Lunas, Rio Ranchos, and Sandia Park are partners in the Building American Program. States can improve their housing stock by encouraging and subsidizing builders to learn about Building America approaches.

Gap: Limited support for above code programs.

Recommendation #5a: The state should encourage builders to attend a Building America-sponsored training (see http://eeba.org/housesthatwork/index.html for locations)

#5b: Awards presented by CID or EMNRD to builders who achieve the Energysmart (or equivalent) certification in order to raise public awareness and drive demand for energy efficiency and raise the bar in New Mexico for advanced homes.

Local Policy

Local energy code adoption varies greatly from state-to-state. In strong home rule states, local jurisdictions have full authority to adopt energy codes that best fit the needs of their community, while others must meet a statewide minimum first. On the other end, some states mandate a minimum-maximum energy code that prohibits local jurisdictions from diverging from the state code whatsoever. Most states, such as New Mexico, falls somewhere in between, mandating a minimum code, but allowing some flexibility to go beyond it in progressive jurisdictions.

IBC and IRC

Although the NMECC is mandated, a number of communities in New Mexico still choose to adopt the International Building Code (IBC), which covers commercial construction, and the International Residential Code (IRC) for residential construction.
Several communities choose to adopt the International Building Code (IBC), which covers commercial construction. The IBC’s Chapter 13 references the IECC—which, in turn, references ASHRAE Standard 90.1-2007 as an alternative compliance path—but does not reproduce it. In theory, then, the IBC is equivalent to the IECC and Standard 90.1, but only if the jurisdiction also adopts the IECC. The municipalities in New Mexico that adopt the IBC eliminate Chapter 13 altogether or choose not to also adopt the IECC, as well. Therefore, in practice, adopting the IBC is not equivalent to adopting the IECC.

For single-family residential construction, the situation regarding energy code adoption looks a little more promising when you include the IRC. Chapter 11, the energy efficiency chapter, references the IECC as an alternative compliance path, yet it also includes prescriptive energy efficiency requirements that are slightly less stringent than the IECC. This gives the building and design industries the option of taking an easier compliance path, which reduces these codes’ impact on energy savings as compared to the IECC.

In New Mexico’s case, the adoption of either the IBC or IRC should not affect energy code efforts because they are required to have a NMECC equivalent or better.
The cities and counties of New Mexico must meet or exceed the 2006 NMECC and the threshold will potentially change to the updated code, the 2009 NMECC. There are a few avant-garde localities that have climate and sustainability initiatives underway that included the adoption of their own above codes, including Taos, Santa Fe and Albuquerque.

Local Climate Change Initiatives

Albuquerque was one of the first cities in New Mexico and the nation to sign the U.S. Conference Mayors Climate Protection Agreement. The agreement was later signed by 141 mayors at their annual meeting in June of 2005.32

In 2007, the city leaders of Albuquerque launched a campaign called AlbuquerqueGreen, its mission was to educate and empower citizens to transform their city into a sustainable one. This means “day-to-day
recognition that economy, society, and environment are interconnected, and that Albuquerque must demonstrate leadership by making wise and innovative choices to ensure Albuquerque is a sustainable community.” To decrease the city’s carbon footprint, green goals were created for every sector\textsuperscript{xix} as well as voluntary actions for citizens were listed on the city’s website. Albuquerque has made progress through numerous partnerships and collaborative efforts; examples include investing in the city’s public transit infrastructure by adding more shuttles in their downtown area, providing free parking at city meters for hybrid, alternative fuel, and fuel efficient vehicles, and employing a bus fleet that runs off alternative fuels.\textsuperscript{34} Among some honors and awards they have received are the Home Builders Association of Central New Mexico recognized Albuquerque with the Build Green Leadership Award and the city was selected for the Siemens Sustainable Community Award.

Akin to Albuquerque are the efforts under way in Santa Fe. The city of Santa Fe is dedicated to becoming more energy efficient and utilizing renewable energy resources. The city adopted the U.S. Conference of Mayors’ Climate Protection Agreement in 2006 which sets a goal of reducing citywide greenhouse gas emissions to seven percent below 1990 levels by 2012.\textsuperscript{35} Additionally, they have instituted a Sustainable Santa Fe Plan.\textsuperscript{36} Under this, the city addresses several subjects, including: green house gas inventory and reduction, green building codes, renewable energy, water conservation, solid waste reduction, and education.

**Local Green Building Overview and Initiatives**

Green building initiatives have taken flight at the local level. There are voluntary programs such as Build Green New Mexico (BGNM) which encourages homebuilders to use technologies, products and practices that are more energy efficient, reduce pollution, preserve natural resources, and improve overall durability and reduce maintenance.\textsuperscript{37} Earthen construction, also known as adobe or rammed earth, is another New Mexico building technique supported by organizations such as the Adobe Association of the Southwest which offers several workshops on the benefits of earthen buildings.

Voluntary programs are the first step in moving the market and, eventually, the market transforms, such as the case in the cities of Albuquerque, Santa Fe, and Village of Taos that enforce advanced code programs.

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City of Albuquerque

Since the early 1990's, Albuquerque has been active in the green building trade. Since 2005, Albuquerque has been working towards improved building performance and standards for building and renovating that required all city buildings adhere to standards set by the U.S. Green Building Council. As strong supporters of the 2030 Challenge, the city instated their Green Path Program, which “encourages, and facilitates, voluntary design and construction of energy efficient buildings that substantially exceed code minimum. Only the most energy efficient buildings meet Green Path criteria.” Additionally, in December 2009, their 2009 Interim Albuquerque Energy Conservation Code (AECC) went into effect and aims to reduce greenhouse gas emissions by requiring new buildings, and existing buildings undergoing alterations, to be more energy efficient. The code applies to commercial buildings, multi-family residential buildings like apartments, and single-family dwellings. The AECC requires a minimum HERS rating of 70, therefore the code is 30% more efficient over the 2006 IECC. Six hundred forty-eight single family homes were permitted in Albuquerque from January 1, 2010 to October 31, 2010 compared to 489 the previous year, indicating that construction surprisingly increased which also allowed the code to make a sizeable impact on the local building infrastructure. The city estimates a proposed savings of $25.00 a month on a 2000 ft\(^2\) home for heating and cooling.

City of Santa Fe

Santa Fe has several sustainable measures underway and in October of 2009, the city adopted their Sustainable Santa Fe Plan, which includes a Residential Green Building Code, city-wide energy efficiency, and a water conservation program.

The Residential Green Building Code has been in effect since July 1, 2009; all new applications for single-family residential buildings in the city of Santa Fe must complete the residential green building checklist and submit the checklist to the Housing and Community Development Department before building permits are approved. The six-section Residential Green Building Code has been designed to be consistent with the NMECC and compliments the ENERGY STAR for homes as well as local utility incentive programs.

\(^{xx}\) Of the 489 homes in 2009, 421 were pre-2009 AECC and 68 were Green Path Homes which are a minimum of HERS 60 or 40% more efficient than 2006 IECC.


Village of Taos

In response to adopting the 2030 Challenge, the town hired a consultant firm using funds from the Community Development Block Grant money to prepare the High Performance Building Ordinance (HPBO) the city could adopt. The consultants worked with a Steering Committee and a Technical Review Committee to prepare the HPBO, which was later adopted by the town council and made mandatory for residential and commercial construction and will be implemented in four phases from 2009-2012:

Phase I: Taos requires all commercial buildings 6,000 ft$^2$ or greater built in 2009 to achieve LEED certification, including completion of at least 3 of the LEED water conservation credits, as a condition for obtaining a Certificate of Occupancy. Beginning in 2010, all new commercial buildings must achieve LEED certification, including completion of at least 3 of the LEED water conservation credits, as a condition for obtaining a Certificate of Occupancy. Residential applications for homes greater than 3,000 ft$^2$ must submit a HERS\textsuperscript{xxiii} index of 85 or less.

Phase II: beginning January 1, 2010, residences of any size must have a HERS index of 80 or less to obtain a certificate of occupancy, commercial building of any size requires a confirmed rating of LEED certified or better with 3 water conservation points.

Phase III: January 1, 2011 to December 31, 2011: residential construction for building permits issued in 2011 calendar year 2011 are the same as the requirements for residential construction in phase II except that a HERS rating of seventy five (75) or better must be projected and confirmed as conditions for obtaining a building permit and a certificate of occupancy.

Phase VI and onwards: permits for residential construction applied for during the 2012 calendar year will require a HERS rating of seventy (70) or better must be projected and confirmed as conditions for obtaining a building permit and a certificate of occupancy.\textsuperscript{41}

Renewables

Energy efficient construction also brings down the cost of renewable energy options for homeowners and operators of commercial buildings. For residential buildings, when homes are equipped with energy efficiency measures, the overall energy demands of the home decreases, which allows homeowners to

lower the size of solar PV and solar hot water equipment on their rooftops. By buying smaller-scale equipment, costs are lowered for homeowners—potentially resulting in increased market penetration for these technologies and lower cost by way of economies of scale for manufacturers. The same principle applies to the provision of on-site energy generation for commercial buildings. Taken as a whole, renewable energy production at the building level also compliments utilities’ efforts to meet the renewable portfolio standard goals adopted by many states such as New Mexico.

**Adoption Summary**

**Current Best Practices**

- New Mexico potential adoption the 2009 NMECC, when fully implemented has greater efficiency levels than the 2009 IECC. The state incorporated sustainable practices in the 2009 NMECC, such as: requirements of lighting efficiency minimums, programmable thermostats for new residential construction, and ventilation fans that must be ENERGY STAR rated. Though specific to their climate zone, other states in the U.S. could definitely learn from the code and how the state curtailed energy consumption.
- New Mexico incorporates green building practices incrementally into their building codes, examples include: requiring solar water heating systems, water conserving fixtures, and reclaimed/gray water systems.
- Additionally, in developing the 2009 NMECC, CID made an impressive effort to include a wide range of stakeholders within the Code Change Committee and also invited community and other organizations to contribute throughout the process to create a cost-effective package for the state. BCAP commends these efforts.
- Utilities and cooperatives are actively incentivizing energy efficiency options for their customers through successful rebate program design and execution. This experience – not to mention the relationship cultivated with their customers – presents great precedent for other programs that can be energy code focused.

**Gaps and Recommendations**

**Gap: REScheck and COMcheck may not be used to demonstrate compliance.**

Recommendation #1: Since the 2009 NMECC includes several state-specific amendments, CID should solicit Pacific Northwest National Laboratory (PNNL) to create a state-specific REScheck and COMcheck compliance software tools to streamline and support the enforcement of the new code.

**Gap: Certain consumer groups are not included in the update process.**

Recommendation #2: Although CID made an effort to include a wide range of stakeholders within the creation of the 2009 NMECC, BCAP suggests inviting affordable housing groups that help offer the concerns and issues for low-income individuals, such as the state’s official housing agency, MFA, the New Mexico Mortgage Finance Authority or another consumer advocacy group.
GAP: Though these standards have been effective since January 16, 2006, there seems to be little knowledge of the energy efficient and green standards for state buildings and, consequently, no enforcement.

Recommendation #3: The state should provide additional support and promotion of programs to lead the market forward on energy efficiency and high performance buildings. If the state mandated advanced building practices such as ENERGY STAR, Build Green New Mexico, or LEED-based requirements for state-funded buildings, it would not only preserve state resources but also encourage these advanced building practices by setting the right example.

Gap: Utilities are not engaged in activities that promote the energy code.

Recommendation #4: The state should engage and strategize with utilities and cooperatives on code development and compliance. An example would be working with utilities and cooperatives to develop an incentive program that supports the Blower Door test or any other component of the 2009 NMECC. Utilities can become more involved with programs supporting code compliance because these programs can be considered another demand-side management effort. Additionally, the energy efficiency of new construction aids utilities in predicting changes to system wide demand.

Gap: Limited support for above code programs.

Recommendation #5a: The state should encourage builders to attend a Building America-sponsored training (see http://eeba.org/housesthatwork/index.html for locations)

Recommendation #5b: Awards presented by CID or EMNRD to builders who achieve the Energysmart (or equivalent) certification in order to raise public awareness and drive demand for energy efficiency and raise the bar in New Mexico for high performance homes.

Implementation

While energy code adoption is the necessary first step in the energy codes process, it does not guarantee compliance. To achieve the desired energy and financial savings available through energy codes, states and cities must carry out energy code implementation, a term used to describe all of the activities needed to prepare state energy offices, local building departments, the building industry, and other stakeholders for compliance with the energy code. This includes outreach to stakeholder groups, on-site, classroom, and web-based training, establishing and utilizing enforcement infrastructure, tools, and systems, and other educational and organizational efforts.
Overview of State and Local Implementation Policies

Code enforcement responsibility falls in the hands of CID except for 14 jurisdictions that have either full-service or part-service building departments. Full-service means these localities enforce their own codes and part-service implies they might employ CID for some portion of the enforcement such as plan review. Improved communication between CID and these local communities would benefit the state in many respects, one example being raised awareness and information exchange of the various local energy codes and their implementation structures with CID processes.

At the state level, the implementation standards and criteria set in law ensure a better than average adoption rate, but there are no penalties - such as violations or fines for noncompliance - expressly stated within the state law to achieve a 100% enforcement rate: “this rule applies to all contracting work performed in New Mexico on or after January 1, 2008, that is subject to the jurisdiction of CID, unless performed pursuant to a permit for which an application was received by CID before that date, except that commercial buildings, which comply with the requirements of the 2004 edition of ASHRAE/IESNA 90.1, are excepted from the requirements of this rule.”

With CID having nearly full jurisdiction over the state, New Mexico presents a unique opportunity for investment of code practices and policies; of most concern is the implementation and enforcement side of the NMECC, which will require for more focus and support.

Outreach

Energy codes have come a long way, but there are still many people unaware of their benefits, including most consumers and some policymakers. Many code officials and building and design professionals are also uneducated about energy code benefits and requirements. Outreach involves all of the activities states and local jurisdictions can undertake to raise awareness of the need for energy codes, promote their adoption and implementation, and identify opportunities for training, technical assistance, and other support. Given the diversity of the energy codes community across the country, execution of strategic outreach campaigns can improve understanding of code changes, create buy-in, and can lead to greater levels of compliance.

State’s Role in Promoting Codes

New Mexico had an energy code long before there was a national model energy code. They have a history of informing local jurisdictions and engaging the building community about the importance and value of the energy code, especially the upcoming implementation of the 2009 NMECC. With Recovery Act funding, the CID is currently making great strides to provide support by offering training

xxiv The jurisdictions are as follows: Albuquerque, Artesia, Bernalillo, Clovis, Corrales, Farmington, Las Cruces, Rio Rancho, Ruidoso, Santa Fe, Taos, Bernalillo County, Dona Ana County, and San Juan County.
opportunities throughout the state. As the state is very rural, these training efforts logically convene in population centers which have historically had good attendance rates.

To assist in the implementation of the 2009 NMECC, staff from two state departments and CID solicited input from stakeholders and the building community to develop a more inclusionary training plan for the state’s building community. This created a schedule for several free one and two day trainings that will be offered in the cities of: Farmington, Santa Fe, Albuquerque, Roswell, and Las Cruces. Each session would host trainings for three audience types:

1. state, municipal, county building officials, authorities having jurisdiction, and plan reviewers
2. design professionals, members of the construction industries, and product suppliers
3. real estate and mortgage finance professionals, members of state, county and city governing bodies, and other interested community members.

Generally, CID gives deference on code adoption, implementation, and enforcement for the jurisdictions that have their own building departments. Given the structure of the state and the fact that many of these jurisdictions implement their own programs, CID could remain respectful of these communities, yet become more informed of these codes and discover ways to collaborate on the common goal of statewide enforcement.

Many code and building officials from these full-service areas have expressed the need for resources and that CID could provide more outreach including the sharing of regional resources and information or joint training efforts.

Local Government’s Role in Promoting Codes

CID supports the energy code throughout most of the state, leaving little work at the local level. However, the local governments with their own building departments must promote and enforce the energy code within their jurisdiction. A fraction of these jurisdictions reported not having adequate resources to support the energy code or create outreach materials.

Those with above or green code programs, such as Santa Fe and Albuquerque, have a historical practice of good communication and promotion; when a code update or programmatic change is on the horizon, the same avenues are instituted. A lot of their success may be found in the support from the consumer and building communities.

Stakeholders’ Role in Promoting Codes

As stated earlier, utilities are becoming more involved with programs supporting code compliance because they are often considered another demand-side management effort. Additionally, the energy efficiency of new construction aids utilities in predicting changes to system wide demand. New Mexico utilities and cooperatives have many energy efficiency programs available but none that directly promote energy codes. The state could work with the many utilities and cooperatives to begin a program that includes ensuring energy code enforcement before receiving electrical services. These
groups can raise awareness of energy efficiency issues, often directly to energy consumers. When consumers start caring about energy issues, it increases demand for energy-efficient construction, which creates an environment in which improved construction practices and techniques required to meet the provisions of the latest energy codes become standard practice. This, in turn, allows for the adoption and implementation of even more efficient energy codes.

Another stakeholder is the Southwest Energy Efficiency Project (SWEEP) for the southwest region. This energy efficiency advocacy group completed a study in 2003 entitled *New Buildings in the Southwest Energy Codes and Best Practices* which examines the potential for and benefits from adopting and enforcing up-to-date residential and commercial energy codes. Since then, in November of 2008, SWEEP co-authored *New Mexico Energy Efficiency Strategy: Policy Options* with the American Council for an Energy-Efficient Economy (ACEEE) and ETC Group, LLC where they stated that, “according to the Energy Efficiency Task Force convened by the Western Governors’ Association, building energy codes are very cost-effective. The extra first cost for complying with energy codes is usually paid back through energy savings in seven years or less. Building energy codes are saving large amounts of energy and money in aggregate in states with well-implemented, state-of-the-art energy codes.”

According to the International Codes Council (ICC) southwest regional representative, New Mexico has exceptional state-specific amendments and encourages the state to focus resources towards enforcement. The general progression for building inspectors is to acquire experience in the field, then get their plans examiner certification, and become plans examiners. However, the process is reversed in New Mexico. ICC feels the state should focus more support to create a solid workforce of plan examiners; of the 300 ICC certified professionals in the state, only quarters (75) are plans examiners. As is typical in other states, there appears to be a disengaged relationship between the local ICC chapter and state officials.

Additionally, the New Mexico Home Builders Association (NMHBA) is supportive of energy code adoption and implementation. The NMHBA was invited and actively participated in the 2009-2010 code update process. In an issue statement, the NMHBA reported concern over the cost of building code implementation and also commended CID for their important work. The NMHBA is cognizant of the funding structure sustaining CID activities and believe that funding is subject to “annual political whims of the state legislature, often resulting in mismatches between needs and available funding.” Their recommendation included the following:

> Code adoption and code enforcement are extremely important for the public, as well as contractors in New Mexico. The Construction Industries Division (CID)

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xxvi “The cost burden of compliance with building codes, the availability of home inspectors, permit fees, and adoption of new codes should always be weighed against the cost of a home to be sure homes are attainable. For example, new code requirements intended to increase safety or quality of life are meaningless if they increase the cost of the new home to such a level that the new housing becomes unattainable for many.”
must function as managers of inspection resources and as the “clearing house” for code interpretations to promote statewide consistency.

The public has a right to expect professional and adequate building code compliance services for the fees collected, but this is often not the case. CID must be properly staffed by appropriately trained people who are capable and willing to enforce the standards of health and safety set by the Construction Industries Commission. Funding must be adequate to facilitate this service. Statewide uniformity in contractor licensing facilitate the free and efficient flow of construction services throughout New Mexico. These efficiencies must be recognized and maintained.46

The NMHBA also promotes green and sustainable building practices. In fact, Build Green New Mexico is based upon NAHB’s Model Green Home Building Guidelines. The trade organization suggests that incentives be broadly-based so as to include as many homes and buildings as possible, including existing homes.47 Currently, there are nine active local chapters throughout the state, some that have provided training and CEU opportunities for local jurisdictions outside the purview of CID.

RLD was awarded funding from DOE to embark on the development of Integrated Energy Code Books that will have the 2009 IECC and state amendments into one volume and 3,000 will be distributed during the 2010-2011 scheduled trainings. This will help all in attendance especially give the current handbook for NM Building Officials is now outdated.

GAP: Sustained funding for energy codes

Recommendation #6: The state needs to look beyond Recovery Act funding and begin to strategize long term for funding for compliance of the energy code in the future.

GAP: There is disengagement between CID and “full-service” jurisdictions

Recommendation #7: To ensure statewide enforcement and a 90% compliance rate, local jurisdictions must also be onboard. This calls for additional outreach and sharing of resources with special attention to “full-service” building departments. Joint training opportunities are another welcomed collaboration cited by several building officials.

GAP: The relationship between the state and the NMCBO needs consideration

Recommendation #8: Establish a good working relationship with the ICC chapter, New Mexico Conference of Building Officials (NMCBO). NMCBO holds an annual spring training event where CID
could have direct contact and develop relationships with the building community. CID could also provide insight and help NMCBO meet the education and training goals of their six-year strategic plan xxvi.

**GAP: Handbook for NM Building Officials is outdated**

Recommendation #9: The state could help fund a newer edition of The Handbook for New Mexico Building Officials. The last edition is from 2007 xxviii and is the product of the Joint Practice Committee, which consists of the New Mexico Board of Examiners for Architects, the New Mexico Board of Licensure for Professional Engineers and Professional Surveyors, and the New Mexico Board of Landscape Architects. A new section specifically for the NMECC could be added and include information regarding the updates from the previous code and quick references or frequently asked questions on compliance.

**Enforcement Community**

The enforcement community provides the backbone behind adopted codes, as it is their responsibility to ensure that design and building professionals comply with the provisions of the energy code. While enforcement is most commonly a local issue, states play a crucial role in providing municipalities with the resources and support they need to establish effective enforcement infrastructures and practices. As codes are a moving target, it is also incumbent on states and cities to provide the enforcement community with access to sufficient energy code training and other resources.

**Overview of Enforcement Infrastructure**

The majority of CID’s work takes place in the field throughout the state of New Mexico. The state has 103 cities and counties, 73 of which CID is responsible for permitting and inspections. IN 2009, CID inspected and approved 2,183 residential and 2,067 commercial building permits. CID has oversight fully or partially for the remaining 20 jurisdictions, meaning they may only perform inspections while the localities manage the permitting aspect. Ten local governments do their own permitting and inspections including the cities of Las Cruces, Albuquerque, Clovis, Farmington, Santa Fe, Rio Rancho, Bernalillo, and the counties of Doña Ana and San Juan (please see map depicting this below). Historically, CID employed 75 full time employees for permitting and inspection for all trades, but recently lost 22 staff people mostly due to retirement but the positions will remain vacant as the state is under a hiring freeze.

New Mexico provides a special opportunity for improvement as CID has almost the full state under its purview, allowing for simple infrastructure support. The CID is responsible for overseeing enforcement of energy codes in jurisdictions that do not have sufficient infrastructure.


CID has four Trade Bureaus which oversee and manage all field operations: General Construction, Electrical, Mechanical, and Liquefied Petroleum Gas. The General Construction, Electrical, and Mechanical Bureaus are each responsible for:

- review of residential and commercial building plans before a permit is issued
- inspection of residential and commercial buildings to evaluate code compliance and safety
- oversight of field operations and code enforcement
- examination and certification of all local government building inspectors
- enforcement of applicable state and national building and safety codes, the Construction Industries Licensing Act, and the CID Administrative Code

There are three General Construction Chief Inspectors\textsuperscript{xxix} overseeing large portions of the state who manage the 15+ General Construction Inspectors\textsuperscript{xxx} while about twenty electrical inspectors are given a

\textsuperscript{xxix} A map depicting the territory of each General Construction Chief Inspector: http://www.rld.state.nm.us/cid/GenBureau/PDFs/New%20Mexico%20Gen%20Bureau%20Chief%20Inspector%20Map.bmp

\textsuperscript{xxx} A map depicting the territory of each General Construction Inspector: http://www.rld.state.nm.us/cid/GenBureau/PDFs/New%20Mexico%20General%20Building%20Inspector%20Map.bmp
territory to cover and managed by the Electrical Bureau Chief. Mechanical inspectors are portioned a little differently with one Bureau Chief and one Chief Inspector managing 21 general inspectors, one roving inspector, and another term Mechanical Inspector.

Typically, CID as well as local jurisdictions, do not issue a “stop order” after an inspection and or plan review reveals an energy code violation. Through the inspection process, a correction notice is issued when a code violation is found and the builders are required to fix it. If there is a violation of a provision during the plan review process, the design professional must correct it before a building permit is issued. Some local jurisdictions require a second inspection to ensure the energy code violations have been addressed. Officials have said that of all the codes, it is the energy codes that are especially difficult to enforce because they require repeated inspections and detailed plan review, and the state simply does not have the resources set aside to accommodate the demand.

To assist with code enforcement, the state also utilizes an online permit tracking system called KIVA where builders and citizens may apply for new permits, look up permits already applied for, and figure out whether a permit is necessary for their building project. KIVA access is available on CID’s home page under Online Permitting. State inspectors are provided laptops and wireless cards to access this information while in the field.

CID charges plan review and inspection fees but the revenue is not directly correlated to the services it provides as CID is funded through the New Mexico State General Fund – CID Revolving Fund. All divisions, including CID, are supported by General Fund appropriations determined by the State Legislature. Departments, however, must be self-supporting through self-generated revenue. Revenue received from activities such as permitting and inspection are placed in what’s called a fiduciary fund suspense account and at the close of each month, the money received is transferred from the suspense account into the state’s general fund.

Local jurisdictions that are not covered by CID typically charge fees to cover the costs of code enforcement within their community, such as a permit fee or inspection fees, as Clovis, NM institutes. Currently, Clovis’ enforcement infrastructure includes five inspectors for a population of around 38,000: two general building, one plumbing and mechanical, and one electrical. If asked, the city will also address inspections up to five miles outside their city limits. At nearly three times the size of Clovis is Las Cruces with a population estimate of 93,570 and employs 12 inspectors: four general building, four electrical, and four plumbing and mechanical.

However, in speaking with local jurisdictions, energy code enforcement has not been a priority until the recent awareness push and available trainings for the recently proposed 2009 NMECC.

Map depicting the electrical inspectors:
http://www.rld.state.nm.us/cid/ElectricalBureau/PDFs/New%20Mexico%20Electrical%20Inspector%20Map.bmp

Map depicting the breakdown of Mechanical Inspectors:
http://www.rld.state.nm.us/cid/MechanicalBureau/PDFs/MechanicalBureauCoverageMap.pdf
In the table above, Las Cruces appears to have a higher than average building rate, yet the city's construction has been tapering off since its peak building boom back in 2006. In fact, total permits for 2009 were 7,880 and only three years prior the permits were nearly double at around 14,000. The Las Cruces building department estimated they have approved 6,019 permits so far this year.

**Certification and/or Licensing**

The state is very strict about contractors being licensed. In 1978, New Mexico passed the Construction Industries Licensing Act requiring professionals engaged in construction-related contracting in New Mexico to be licensed out of the 100 various classifications. Working without a license will result in criminal charges and penalties based on the dollar value of the contracting work. “If less than $5,000, the contractor may be sentenced to the county jail for 90 days or to the payment of a fine of $300 to $500, or both. If the dollar value of the contracting work is over $5,000, the contractor may be sentenced to the county jail for 6 months or to the payment of a fine of 10% of the dollar value of the contracting work, or both.”

All code officials, whether they are local or CID employees, must have New Mexico licensing and ICC certification. Code officials maintain their certification through 16 CEU’s annually and are required to renew their ICC certification every three years. For example, CID’s Electric Bureau requires their journeymen electricians to complete at least 16 hours of continuing education every three-years as it serves to ensure regular training on the National Electrical Code, a code that is updated every three years.
The Bureau requires an additional eight hours of training on the code change instructions and eight hours focused on other industry-related instruction.

All state inspectors must have at least three years of journeyman or Forman experience; take and pass the state certification exam and pass the national certification within one year of hire.

**Training and CEUs**

The CID offers certified trainings throughout the year for their staff and makes the training available to local governments not covered by CID, but they are most often scheduled in either Albuquerque or Santa Fe. These are wonderful opportunities, but it also leaves some builders and others trades people who live in far locations with fewer resources unable to attend. The training programs are classroom style and are usually one or two day events. Recently, New Mexico has offered several free training programs focusing on the NMECC in multiple cities across the state. Additionally, the unions in the appropriate trade organizations have trainings in their area of discipline (plumbers/carpenters general construction training).

Local jurisdictions are very good about training their inspectors. Clovis city sends their inspectors to several classroom trainings annually. Las Cruces includes training in their annual budget and when a staff member requires a particular training or credit, they seek out opportunities to meet that CEU requirement.

Some helpful organizations for CEU’s have been the Southern New Mexico Building Officials, who meet generally every other month and also provide annual training opportunities. Some communities have partnered up with their local chapter of American Institute of Architects (AIA) to coordinate CEU’s. New Mexico’s USGBC Chapter also hosts a variety of events, courses, as well as full and half-day workshops are offered on a variety of green building topics, taught by either local experts or national USGBC trainers.

In talking with officials, barriers to energy code training seem to be distance and traveling several hours to attend trainings. A few localities have said the amount of funding available has decreased and so has training.

Because the state does not adopt the IECC code in its entirety and adds its own amendments to create the NMECC, some building and design professionals have voiced concerns that administrators of the code seem to be very confused about what has been adopted. Code interpretation of the 2009 New Mexico version is also causing early anxiety who feel much of the code can be easily interpreted differently in different parts of the state. For CID, enforcement side of the energy code needs more investment.

**GAP:** Funding to attend training has dwindled for local jurisdictions making time and travel to workshops a precious commodity.
Recommendation #10a: Although RLD and CID training efforts are underway for the 2009 NMECC, some officials are concerned about enforcement once the funding from the Recovery Act has been spent. In moving forward, the state will have to be more frugal with the next round of trainings as by then the Recovery Act funding will have been spent but the codes enforcement needs remain. One code official suggested doing online trainings in a webinar format as the various departments supporting the energy code are already in a poor financial state.

10b: Historically, CID held trainings throughout the state and some were opened to nearby local jurisdictions. Some local building departments would have benefited from the trainings had they been given enough time to change their schedules around in order to participate. With the 2009 NMECC training, it seems that the class schedules are widely known and attended even by code officials, but a public announcement of scheduled trainings throughout the state well in advance, would help all jurisdictions to participate.

10c: Energy code trainings generally convene in the same larger cities every year. As much of the state is rural, it makes sense to hold some training outside the metropolitan areas, in all portions of the state. In this way, CID can also learn more about the specific needs and challenges of rural communities.

**GAP:** Building and design professionals concerned code administrators will be inconsistent with code interpretation in different areas of the state.

Recommendation #11: CID could offer “update” trainings that focus on sections of the NMECC that are consistently in question or not in compliance and therefore require further clarification. A focus group might be another option for CID, where they could invite building professionals to provide feedback on their experiences complying with the 2009 NMECC.

**Third Party Infrastructure**

The state, through CID, does not have mechanisms for third party inspectors to perform plan review and inspection as the state will not allow it, but some local officials are in support and are working to change this. Many officials believe it is necessary to establish a third party infrastructure to ensure the effectiveness of the 2009 NMECC, especially to enable blower door testing. Regarding specific requirements in the 2009 NMECC, many code officials not covered in CID territory would like a 3rd party infrastructure to supplement their building department’s enforcement of the new energy code.

**GAP:** There are no mechanisms in place to utilize 3rd party inspectors to supplement energy code inspections.

Recommendation #12a: The state should use its reach and influence to encourage uniformity for energy code implementation requirements and practices, which would reduce the patchwork nature of energy codes and practices in the state that add confusion to the market and reduce compliance.
The state could also encourage local jurisdictions and trade associations to establish uniform CEU requirements for energy code training and minimum certification requirements for code officials and building professionals.

CID could offer “update” trainings that focus on sections of the NMECC that are consistently in question or not in compliance and therefore require further clarification. A focus group might be another option for CID, where they could invite building professionals to provide feedback on their experiences complying with the 2009 NMECC.

Design/Construction Community

The design and construction community—made up of designers, architects, engineers, developers, builders, and subcontractors—are in charge of conceiving and constructing the built environment. It is ultimately their responsibility to comply with the requirements of the adopted energy codes. However, state and local agencies, energy code advocates, and other stakeholder groups share in this responsibility. They have the opportunity to provide the training, tools, educational materials, and support to understand and be able to comply with the code, including how to correctly install materials and use testing equipment. They can also work with the design and construction community to establish a workable compliance process that is accountable, yet flexible, and accommodates local practices and circumstances.

Overview of Design/Construction Community Infrastructure

At the design and construction level, building energy codes are taken seriously in New Mexico. Most architects and builders appear knowledgeable of the energy code and most of its requirements, and are supportive of compliance. Many architects know the required building codes well enough that they should be incorporated from the beginning of the design phase, without hindering the initial architectural concept. Regardless of whether the construction professionals agree with the code or not, new buildings must comply with the existing codes, and some professionals believe they will have difficulty with the upcoming 2009 NMECC.

Certification and Licensing

In order to become an architect in New Mexico, one must become accredited by the National Council of Architectural Registration Boards (NCARB). NCARB certification requires a great deal of professional development hours, as well as the passage of multiple exams. While these development hours and exams focus on the practice of architecture as a whole, sustainable design and energy efficiency make up a significant portion, the idea being that energy efficiency should be incorporated into building design. After accreditation, they must then apply to the New Mexico Board of Examiners for Architects, which requires the requisite education, internship, and passage of all sections of the Architect Registration Examination (ARE). The Board also requests the submission of their NCARB Intern Development Program file.
For individuals who cannot meet the requirements for obtaining an NCARB certificate, but have met other criteria established by NCARB, New Mexico offers an alternative path called the Broadly Experienced Architect (BEA) option. This requires one to apply directly to NCARB and to submit all necessary documentation to NCARB’S BEA Committee for licensing review.

Most architects certified by NCARB join the American Institute of Architects (AIA), the professional organization of architects, which has no requirement for certification besides being a registered architect, but has additional requirements for maintaining membership including training.

**Training and CEUs**

In order to maintain membership with the AIA, all architects are required to earn a specific number of CEUs. A portion of these credits must be earned in sustainable design, of which energy efficiency is a major factor. Training to earn these CEUs are sometimes provided or subsidized by the state or local jurisdiction, but architects are generally financially responsible for earning these credits.

In New Mexico, architects are expected to accumulate 24 contact hours every two years. All 24 hours must be related to public protection, subjects include: health, safety, and promoting public welfare.

**Compliance Measurement and Verification**

Energy codes boast increased efficiency improvements over the last few years, yet it is ever more important for the enforcement and building communities to take extra steps beyond code development to ensure that compliant buildings achieve their predicted energy savings, as many buildings fall short of their potential. The solution to underperforming buildings is measurement and verification, or the process of measuring energy performance and verifying that it matches the expected outcome. On the micro level, this process—known as commissioning for large commercial construction and performance testing for residential construction—involves blower door tests, duct blaster tests, and other performance measurements. On the macro level, it can involve state agencies, utilities, building science professionals, advocacy organizations, and other stakeholders compiling and analyzing building performance statistics to measure compliance and gauge implementation effectiveness.

**Past and Current Activities**

New Mexico has not performed energy code compliance studies but feels they have a high compliance rate. Though the state is familiar with the DOE’s guidance on measuring code compliance, it does not have a process in place to measure and evaluate compliance. However, the state does understand that measuring and verification is a task that must be done to ensure they have achieved the 90% compliance of energy codes. RLD submitted and was awarded funding from DOE to implement tracking and training efforts. Among the tasks is the creation of a comprehensive data warehouse which will be the repository for the state’s building permitting and inspection activities and update the antiquated KIVI system. This work will help RLD and CID acquire baseline data, which will allow the state to begin the compliance process.
GAP: There is no long term, comprehensive plan in place for M&V of the energy code.

Recommendation #13: The state should institute a new program for compliance measurement and verification (M&V). As discussed earlier on page 35, RLD is making strides in this direction with the new DOE funding available through ARRA. Successful completion will allow the state to track the effectiveness of the code and make improvements moving forward with each new code. When designing the program, the state should keep the following in mind:

- The state should review DOE’s guidance on measuring energy code compliance and research the current pilot projects underway in neighboring states.
- The M&V strategy should allow for long term reevaluation of targeted cities to track compliance over time.
- The M&V plan should account for further work needed to resolve deficiencies that are discovered and reevaluation for these problem areas over time.
- Include both an evaluation of CID and local code inspector’s protocol for plan review and inspection of energy code provisions to establish a baseline.

Implementation Summary

Current Best Practices

With CID having nearly full jurisdiction over construction code enforcement across the state, New Mexico presents a unique opportunity for investment of code practices and policies and precedence for jurisdictions that enforce their own codes.

NM appears to do an excellent job in marketing and soliciting involvement in the trainings events for the 2009 NMECC. All the code officials we spoke to throughout the state were all aware of the training opportunities.

Gaps and Recommendations

Outreach:

**GAP: Sustained funding for energy codes**

Recommendation #6: The state needs to look beyond Recovery Act funding and begin to strategize long term for funding for compliance of the energy code in the future.

**GAP: There is disengagement between CID and “full-service” jurisdictions**

Recommendation #7: To ensure statewide enforcement and a 90% compliance rate, local jurisdictions must also be onboard. This calls for additional outreach and sharing of resources with special attention to “full-service” building departments. Joint training opportunities are another welcomed collaboration cited by several building officials.
GAP: The relationship between the state and the NMCBO needs consideration

Recommendation #8: Establish a good working relationship with the ICC chapter, New Mexico Conference of Building Officials (NMCBO). NMCBO holds an annual spring training event where CID could have direct contact and develop relationships with the building community. CID could also provide insight and help NMCBO meet the education and training goals of their six-year strategic plan xxxiii.

GAP: Handbook for NM Building Officials is outdated

Recommendation #9: The state could help fund a newer edition of The Handbook for New Mexico Building Officials. The last edition is from 2007 xxxiv and is the product of the Joint Practice Committee, which consists of the New Mexico Board of Examiners for Architects, the New Mexico Board of Licensure for Professional Engineers and Professional Surveyors, and the New Mexico Board of Landscape Architects. A new section specifically for the NMECC could be added and include information regarding the updates from the previous code and quick references or frequently asked questions on compliance.

GAP: There are no mechanisms in place to utilize 3rd party inspectors to supplement energy code inspections.

Recommendation #10: State and local officials understand current legislation and are concerned about the implementation of the 2009 NMECC, especially without a third party infrastructure established. Many in the field (outside of CID territory) believe the state should create a third party infrastructure for such aspects as the Blower-Door test, which is required in the new code.

GAP: Funding to attend training has dwindled for local jurisdictions making time and travel to workshops a precious commodity.

Recommendation #11a: Although RLD and CID training efforts are underway for the 2009 NMECC, some officials are concerned about enforcement once the funding from the Recovery Act has been spent. In moving forward, the state will have to be more frugal with the next round of trainings as by then the Recovery Act funding will have been spent but the codes enforcement needs remain. One code official suggested doing online trainings in a webinar format as the various departments supporting the energy code are already in a poor financial state.

11b: Historically, CID held trainings throughout the state and some were opened to nearby local jurisdictions. Some local building departments would have benefited from the trainings had they

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xxxiii NMCBO’s strategic plan can be found here: http://nmcbo.com/docs/NMCBO%206%20year%20Strategic%20Plan%20rev1.pdf

been given enough time to change their schedules around in order to participate. With the 2009 NMECC training, it seems that the class schedules are widely known and attended even by code officials, but a public announcement of scheduled trainings throughout the state well in advance, would help all jurisdictions to participate.

11c: Energy code trainings generally convene in the same larger cities every year. As much of the state is rural, it makes sense to hold some training outside the metropolitan areas, in all portions of the state. In this way, CID can also learn more about the specific needs and challenges of rural communities.

**GAP: Building and design professionals concerned code administrators will be inconsistent with code interpretation in different areas of the state.**

Recommendation #12a: The state should use its reach and influence to encourage uniformity for energy code implementation requirements and practices, which would reduce the patchwork nature of energy codes and practices in the state that add confusion to the market and reduce compliance.

#12b: The state could also encourage local jurisdictions and trade associations to establish uniform CEU requirements for energy code training and minimum certification requirements for code officials and building professionals.

#12c: CID could offer “update” trainings that focus on sections of the NMECC that are consistently in question or not in compliance and therefore require further clarification. A focus group might be another option for CID, where they could invite building professionals to provide feedback on their experiences complying with the 2009 NMECC.

Compliance M&V:

**GAP: There is no long term, comprehensive plan in place for M&V of the energy code.**

Recommendation #13: The state should institute a new program for compliance measurement and verification (M&V). As discussed earlier on page 35, RLD is making strides in this direction with the new DOE funding available through ARRA. Successful completion will allow the state to track the effectiveness of the code and make improvements moving forward with each new code. When designing the program, the state should keep the following in mind:

- The state should review DOE’s guidance on measuring energy code compliance and research the current pilot projects underway in neighboring states.
- The M&V strategy should allow for long term reevaluation of targeted cities to track compliance over time.
- The M&V plan should account for further work needed to resolve deficiencies that are discovered and reevaluation for these problem areas over time.
- Include both an evaluation of CID and local code inspector’s protocol for plan review and inspection of energy code provisions to establish a baseline.
Stakeholders

Saving energy through energy code compliance is the ultimate goal of the energy codes process. Yet this outcome requires buy-in, support, and input from a diverse group of energy code champions. On the frontlines are the inspection and design and construction communities, without whom energy codes cannot succeed. State legislators, city council members, mayors’ offices, and other policymakers must understand the value of energy codes and enact policies that assist enforcement and compliance. Utilities, state and local agencies, environmental and energy efficiency organizations, consumer groups, and other interested parties each can play crucial roles in promoting codes, funding and improving the energy code infrastructure, providing technical expertise and materials, and strengthening support for building energy efficiency on the national, regional, state, and local levels.

In New Mexico, as in the case across the country, consumers are not well educated about energy codes. When consumers start caring about energy issues, it increases demand for energy-efficient construction, which creates an environment in which improved construction practices and techniques required to meet the provisions of the latest energy codes become standard practice. This, in turn, allows for the adoption and implementation of even more efficient energy codes.

Supporting Organizations

The New Mexico Building Officials organizes an annual training conference; in 2010 it was on August 18 and 19 in Albuquerque at the University of New Mexico’s Science and Technology Center. The Southern New Mexico Building Officials have also been helpful in training and enforcement activities in the southern portion of New Mexico. Additionally, the Home Builders Association has performed trainings for design professionals in the state.

A large success of the 2009 NMECC was the partnerships and public involvement. Several organizations represented a wide variety of interests during the development process of the 2009 NMECC. They could very well be untapped resources and likely be interested in partnerships were they to be solicited by the state or CID on code-related matters. With the adoption of the 2009 NMECC, a great opportunity exists to include consumer education on code compliance and enforcement through state and local organizations. CID or another state department could work with state grassroots efforts - such as local Sierra Club chapters who are promoting the Cool Cities programxxxv – to create educational materials that would help inform consumers about energy codes, which could in turn increase the demand for new homes that comply with the model energy codes.

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xxxv There are seven cities in New Mexico who are participating in the Cool Cities initiative. Sierra Club’s Cool Cities Program, led by volunteers around the country, is a collaboration among community members, organizations, businesses, and local leaders to implement clean energy solutions that save money, create jobs, and help curb global warming. http://www.coolcities.us/state.php?state=NM
A concerted effort internally among the various state departments and divisions would prove useful in the pooling of resources to unify efforts toward common goals. Both CID and New Mexico Environment Department want to build good, quality buildings that are energy-efficient and curb greenhouse gas emissions.

CID has the opportunity to empower local jurisdictions. Through a point contact, CID could create a person-to-person partnership with the ten local jurisdictions that have their own building departments, yet continue as the clearinghouse of code information and building and permitting statistics. This relationship would break communication barriers and develop into on-going dialogue that may eventually address other code implementation or compliance barriers as the 2009 NMECC slowly takes effect.

**Stakeholders Summary**

**Current Best Practices**

Many organizations have been complimenting the efforts of CID and RLD by promoting energy efficiency to consumers in New Mexico and helping them realize the benefits of incorporating it into their everyday lives. Moreover, organizations such as SWEEP have helped to move the code forward in New Mexico through advocacy efforts, training, and outreach.

**Gaps and Recommendations**

**GAP: Utilities are not engaged in activities that promote the energy code. See also recommendation #4.**

Recommendation #14: The state could work with the many utilities and cooperatives to begin a program that specifically supports energy code enforcement, an example could include the utility inspecting a home or building to ensure requirements of the energy code are met before they can receive electrical services.

Recommendation #15: Enforcement of energy codes has the potential to significantly reduce demand to the electric grid while also decreasing harmful emissions. The importance and affects of energy codes should be highlighted and made a collaborative effort across state government. For instance, New Mexico’s Environment Department has a Greenhouse Gas Cap and Trade Program where regulations have been proposed and are under development. Energy codes provide a less costly process than trading offsets.

Recommendation #16: There are a number of product manufacturers with stake in New Mexico that could organize to promote energy codes. Many of these manufactures pride themselves on producing construction materials that significantly improve energy performance in homes and buildings. Greater compliance will benefit these businesses, as their products become the standard of construction in the
The following is an incomplete list of product manufacturers that have an office or plant located in New Mexico:

- Sto Corp (cladding systems and air/moisture barriers)
- Thomas and Betts Corporation (electrical supplies)
- Nicor Lighting (lighting and lighting equipment)
- Santa Fe Heritage Door Company (doors)
- Squared D (circuit breakers)

**GAP:** There is a lack of demand from consumers for energy codes.

Recommendation #17a: Raise public demand for energy efficiency in housing by offering courses on energy efficiency via partnerships with groups that reach more rural areas of the state.

Recommendation 17b: Seek publicity (e.g., give awards, distribute press releases) for builders who meet the Builders Challenge qualifications in order to raise public awareness and drive demand for energy efficiency and raise the bar in your state for advanced homes.

**GAP:** Architects, although ideally positioned to include energy in the design plans of a building, are not well-educated in energy codes and how to include energy efficiency in the design of buildings.

Recommendation #18a: Research community colleges/trade schools that have potentially received grants for “green jobs” training to coordinate and encourage (and perhaps provide additional funding for) the inclusion of energy code training (and/or RESNET training) for students who may become code officials or building professionals upon graduation. Structure the collaboration to assure that the community college continues to teach the energy code even when the funding is exhausted.

#18b: Work with AIA to gain their support to promote continuing education courses on energy codes in the short-term. In the longer term, build a relationship with AIA to get energy code education added as a core requirement to becoming a licensed Architect.

#18c: Add the BCAP energy code calculator on the state’s website to help educate visitors: [http://bcap-ocean.org/resource/energy-code-calculator](http://bcap-ocean.org/resource/energy-code-calculator)

**Conclusion**

Building energy codes are one of the easiest and most cost-effective ways for New Mexico to secure its energy future. Not only will energy codes help consumers save money on their gas and energy bills, but code compliance also reduces electricity demand and decreases the load on the grid, resulting in a cleaner environment and diverse energy supply. The supportive attitude and infrastructure is already in place in many parts of the state, but ensuring high compliance rates and creating a demand for compliance will help New Mexico continue in the right direction toward greater energy efficiency.

Through greater communication and assumed authority as the organization responsible for the implementation of the statewide energy codes, CID can help pave the way toward energy efficiency.
through codes. Together with other state agencies and local level governments, CID can provide the training and resources necessary to keep the building community up-to-speed on the current energy code and its requirements. They can also shape the local building departments to take an even more active role in energy code enforcement, and the design and construction communities to encourage more awareness and familiarity of the code and the benefits of energy efficiency. By intensifying the implementation of the model energy code, New Mexico will ensure that it reaps all of the benefits they have the potential to provide.

The recommendations made as a result of this gap analysis, summarized below in Figure 12, are meant to guide the stakeholders in New Mexico to meet these goals for code adoption and implementation and help in the development of a compliance action plan. Though some recommendations may require increased funding over extended periods of time, an action plan will help make sure that new construction in the New Mexico achieves 100% compliance to model energy codes now and in the future.

**Figure 12: Recommendations Table**

<table>
<thead>
<tr>
<th>Adoption</th>
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<tbody>
<tr>
<td><strong>State Policy</strong></td>
<td>CID should solicit Pacific Northwest National Laboratory (PNNL) to create a state-specific REScheck and COMcheck compliance software tools. (p. 16)</td>
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<td></td>
<td>Inviting affordable housing groups, such as the state’s official housing agency, MFA, the New Mexico Mortgage Finance Authority or another consumer advocacy group that offer the concerns and issues for low-income individuals (p. 17)</td>
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<tr>
<td></td>
<td>The state could mandate advanced building practices such as ENERGY STAR, Build Green New Mexico, or LEED-based for state-funded buildings. (p. 19)</td>
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<tr>
<td></td>
<td>CID or RLD should engage and strategize with utilities and cooperatives on code development and compliance programs. (p. 23)</td>
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<tr>
<td></td>
<td>The state should create a third party infrastructure for such aspects as the Blower-Door test, which is required in the new code. (p. 23)</td>
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<table>
<thead>
<tr>
<th>Implementation</th>
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<tbody>
<tr>
<td><strong>Outreach</strong></td>
<td>Additional outreach and sharing of resources with special attention to the “full or partial” building departments. (p. 35)</td>
</tr>
<tr>
<td></td>
<td>The importance and affect of energy codes should be highlighted and made a collaborative effort across the state government. (p. 48)</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>The state could provide web-based training on energy codes (p.41)</td>
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<td></td>
<td>CID could offer “update” trainings that focus on sections of the NMECC that are consistently not in compliance and therefore require further clarification. (p. 41)</td>
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<td></td>
<td>RLD should have trainings outside the metropolitan areas and work to include more rural communities. (p. 41)</td>
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<td></td>
<td>The state should begin strategizing for long term funding to support compliance efforts of the energy code. (p. 35)</td>
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<tr>
<th>Enforcement Community</th>
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<tbody>
<tr>
<td></td>
<td>Many code officials not covered in by CID would like a 3rd party infrastructure to supplement their building department’s enforcement of the new energy code (p. 41-42)</td>
</tr>
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<td></td>
<td>Establish an evaluation of CID code inspectors in relation to the plan review and inspection procedures of the energy code. (p. 44)</td>
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</tbody>
</table>
**Design/Construction Community**
The state could help fund a newer edition of The Handbook for New Mexico Building Officials. (p. 36)

**Compliance Measurement & Verification**
The state should institute a new program for compliance measurement and verification (M&V). (p. 44)

**Stakeholders**
Form a coalition with energy efficient products manufactures. (p. 48-49)
Coordinate with NM Environment Department on common goals. (p. 48)

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Appendix A

The Department of Energy (DOE) provides a number of useful resources that can assist states and local governments in their efforts to achieve code compliance. Many of these resources are available at Energycodes.gov. Materials include training presentations and background on DOE-sponsored software programs, Rescheck and Comcheck, which evaluate compliance for residential and commercial buildings, respectively. These software programs, which present prescriptive code requirements and calculate compliance tradeoffs, simplify the process of evaluating a building’s code compliance. By explaining requirements, these software programs can help designers, builders, and code officials streamline efforts to achieve code compliance.

**Resource Guides for Code Officials**

1. ICC/DOE BECP Resource Guide for Code Officials: a comprehensive and easy to read collection of the best resources available from ICC and DOE.
   http://www.energycodes.gov/publications/resourceguides/

**Energy Code Compliance Training Materials:**

1. Commercial PowerPoint Training with links to videos

2. Residential PowerPoint Training with links to videos

3. DOE Guidance for State Compliance Measurement Efforts

**Primer on Rescheck and Comcheck**

1. Commercial Compliance
   http://www.energycodes.gov/comcheck/

2. Residential Compliance
   http://www.energycodes.gov/rescheck/

**Available Downloads**

1. Commercial Basic Requirements Download
   http://www.energycodes.gov/comcheck/download.stm

2. Residential Basic Requirements Download
   http://www.energycodes.gov/rescheck/download.stm

**Users Guides**

1. COMcheck Software Guide
2. **REScheck Software Guide**

**Plan Check and Field Inspection**
1. **Commercial Plan Review Quick Reference Guide**
   http://www.energycodes.gov/training/pdfs/comm_review_guide1.pdf

**Code Notes**
http://www.energycodes.gov/help/notes.stm
References

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20. Western Climate Initiative, About Section. www.westernclimateinitiative.org/
21. Office of New Mexico Governor Bill Richardson http://www.governor.state.nm.us/priorities.php?mm=4
22. New Mexico Energy, Minerals and Resources Department, Clean Energy Tax Incentives: Sustainable Tax Credit http://www.emnrd.state.nm.us/ECMD/CleanEnergyTaxIncentives/sustainablebuildingtaxcredit.htm
27. PNM Resources http://www.pnm.com/about/home.htm
28. Xcel Energy, New Mexico Residential and Commercial Programs & Rebates: http://www.xcelenergy.com/New%20Mexico/Residential/Programs_Resources/Pages/Programs_Resources.aspx http://www.xcelenergy.com/New%20Mexico/Business/Programs_Resources/Pages/Programs_and_Resources.asp


The U.S. Conference of Mayors, Mayors Climate Protection Center [http://www.usmayors.org/climateprotection/agreement.htm](http://www.usmayors.org/climateprotection/agreement.htm)


[http://www.usmayors.org/climateprotection/ClimateChange.asp](http://www.usmayors.org/climateprotection/ClimateChange.asp)


Build Green New Mexico [http://www.buildgreennm.com/](http://www.buildgreennm.com/)


Id at 11.

Id at 14-15.

New Mexico Energy, Minerals and Resources Department - Construction Industries Division, Inspections [http://www.rld.state.nm.us/cid/inspection.htm](http://www.rld.state.nm.us/cid/inspection.htm)

Id.


New Mexico Energy, Minerals and Resources Department - Construction Industries Division, Licensing [http://www.rld.state.nm.us/CID/gettinglicensed.htm](http://www.rld.state.nm.us/CID/gettinglicensed.htm)

State of New Mexico, Regulation and Licensing Department - Construction Industries Division. Continuing Education Requirements. [http://www.rld.state.nm.us/CID/ElectricalBureau/EBureauContinuingEducation.html](http://www.rld.state.nm.us/CID/ElectricalBureau/EBureauContinuingEducation.html)

Id.