

Energy Code Enforcement: Best Practices from the Southwest

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The Southwest Energy Efficiency Project is a public interest organization dedicated to advancing energy efficiency in Arizona, Colorado, Nevada, New Mexico, Utah, Wyoming. For more information, visit www.swenergy.org.



Introduction

The energy code is an integral part of the package of codes and standards developed for the building industry. Experience shows, however, that energy codes often result in much less energy savings than expected based on theoretical calculations. A 2005 report by the Building Codes Assistance Project (BCAP) showed compliance rates from multiple evaluation reports ranging from less than 10% to more than 70% across the U.S.¹ Why, then, are actual energy savings so far below anticipated gains, and compliance levels often so low? With full compliance to all building codes, buildings will achieve the energy savings anticipated at design. However, construction practices and building inspection processes are sometimes subpar. As a result, code compliance and actual energy savings are sub-optimal.

Local and state governments that adopt newer energy codes assume that all aspects of the code will be enforced, but this is not always the case. This assumption is undermined when the support, education and directive to enforce the code are not both readily available and clearly communicated to building department staff and the industry. This report will explore the advantages of setting in place a proven process to achieve compliance with the latest energy codes.

New Codes, New Challenges

The American Recovery and Reinvestment Act (ARRA) calls for the adoption of certain codes and standards at the state and local level, and a plan for achieving 90% compliance by 2017. ARRA requirements include the 2009 International Energy Conservation Code (IECC) and the ASHRAE 90.1-2007 commercial building standard.

The adoption process can be cumbersome, and new energy codes commonly receive backlash from the industry that is charged with implementation. After code adoption, the work falls to the local building departments, design professionals, building professionals and trades to comply with and enforce the energy code. Implementation of the energy code is the weakest link in the chain of events integral to constructing energy-efficient buildings in the United States.

The key stakeholders who are involved in code adoption, implementation and enforcement must work together to create a plan for achieving compliance with the building codes. The plan must be understood by the building industry, easily enforceable by the building department, and supported by the policy-makers and legislative players.

A Model for Success

This report presents the successes of the Town of Parker, a community of approximately 50,000 people located about 20 miles southeast of Denver, Colorado. In 2008, Parker's building

department issued 26 commercial and 146 residential building permits. Parker is successfully enforcing the energy code, meeting the ARRA compliance requirements, and promoting a simple methodology for achieving energy code compliance.

Today, Parker's building department can claim builder compliance in many of the code requirements that have been ignored by other building departments. For example, they collect heating and cooling design load calculations. Also, their designs for building plans have details that include air infiltration reduction measures, and descriptions for vapor control and thermal control areas of the building enclosure. Because of Parker's practices, local builders are educating themselves on best building practices and manufacturer instructions to construct energy-efficient buildings. Random performance testing of prescriptively built homes in Parker has shown HERS scores in the mid-60 point range.²

The steps that Parker took to achieve high compliance rates can be duplicated by other local jurisdictions. The U.S. Department of Energy (DOE) could use their methodology as a template to follow as they strive to help states and localities reach the 90% compliance goal as documented in ARRA. If replicated elsewhere, the Parker model has potential to dramatically boost energy code compliance in local jurisdictions throughout the country.

The Changing Market of Energy Codes

Building code enforcement is an important function of building departments across the United States. For many decades building departments have been the essential mechanism for cities and counties to ensure the construction of safe, secure and durable buildings in which people can live and work. Building codes have been instrumental in supporting U.S. economic growth, as building longevity is critical to community infrastructure, risk management, and the financial tools that have funded building construction.

Today's building departments operate essentially the same as they did fifty years ago, although modern technology allows some jurisdictions to streamline tasks and accelerate the review of building plans. Many building departments have added sustainability as a goal and may enforce green building and energy codes, but most continue primarily to enforce life and safety requirements.

Energy Codes Ramp Up

Major changes to the energy code started with the release of the IECC in the late 1990's.³ Simplified, prescriptive values for insulation, u-factors, and solar heat gain coefficients of windows and doors were introduced to the energy code at that time. But the building department inspection process has not changed much until recently. During the first decade of

the 21st century, chief building officials, county commissions, city councils, and state building commissions faced the convergence of energy requirements with the traditional life and safety requirements.

When gasoline prices hit \$4.00 per gallon in the summer of 2008, consumers and businesses immediately became aware of the potential impacts to energy costs of heating and cooling buildings.⁴ In parts of the U.S., a sizeable portion of buildings are still heated by oil. Also, natural gas prices have risen dramatically at times during the past decade as well. As the prices of these commodities increased, building departments saw a steady increase in energy-efficiency retrofits such as insulation, windows and heating equipment. At the same time, industry, advocacy organizations, and DOE exerted a push for improved efficiency.

States, public utility commissions, and local communities are starting to adopt green building codes which include stringent energy-efficiency requirements. The goal of these codes is to reduce emissions, provide economic growth by keeping spendable money in the region, provide energy security, and create a sustainable environment for residents and businesses. In California the Public Utilities Commission has developed an energy plan requiring the construction of net-zero buildings starting in 2020.

ARRA and a New Focus

The ARRA requires states or localities to adopt specific versions of the energy codes by 2017. This law, for the first time ever, specifies a compliance target of 90%. This is an unprecedented level of compliance to energy code, which has historically been relegated to simple visual inspections of wall insulation.⁵

Catherine Zoi, former Assistant Secretary for the DOE's Office of Energy Efficiency and Renewable Energy (EERE), told attendees at the 2009 ICC Annual Conference that energy efficiency and conservation are a central initiative of the Obama Administration. Zoi highlighted the challenge of addressing low code compliance of existing buildings. "The Alliance to Save Energy suggests that, even for places where the energy code has been adopted, only 50% of the buildings meet the energy provisions of the code," she explained. "We're going to fall well short of our energy saving objectives if we don't have this get better."⁶

Challenges of Energy Code Enforcement

There are three primary challenges associated with the adoption of a new energy code: the adoption process, training, and enforcement. Lack of training is typically mentioned first. However, the adoption process precedes it, because the local community must assess the

reasons for the adoption and the associated needs of the community, find relevance, and provide impetus to the adoption process.

There are additional challenges associated with the improper management of the energy code: acceptance and lack of champions. Historically, building departments in the southwest have not had the resources or infrastructure to support the enforcement of codes outside of the structural, plumbing, electrical, and mechanical codes. In many cases, the requirements of the energy code are interpretive and not specific, as they are in an electrical code, for example. Because of the nature of the energy code, the compliance rates are lagging and have much room for improvement.

Adoption

Adoption of the energy code in most southwestern states typically occurs at the local government level. (Arizona, Colorado, and Wyoming are “home-rule states. New Mexico, Nevada and Utah have statewide building codes, but in all states except New Mexico the state-level regulation must be adopted and enforced by each local municipality.) After communities adopt newer energy codes, building departments become painfully aware of the additional work levied upon them, and often struggle to find ways to accommodate the workload changes.

Training

Legislative bodies and building departments are insufficiently trained on the intricacies of the energy code. While there are no-cost educational opportunities available today on the Internet,⁷ most building department staff continue to prefer classroom and field training opportunities, which are not typically free. In today’s economic environment, many jurisdictions have reduced their training budgets such that building department staff often need to pay their own travel expenses, and in some cases use personal vacation time, in order to maintain the continuing educational requirements of the International Code Council (ICC). Most legislative bodies are insufficiently educated on the purpose and need for a strong energy code. Many legislators don’t have a good understanding of the long-term economic and environmental benefits of ensuring that residents and businesses have access to energy-efficient housing and commercial buildings.

Enforcement

Building departments in communities that have an energy code in place sometimes believe they are enforcing the energy code, just as they enforce other codes. Yet the level of expertise on staff for inspecting energy code requirements is minimal when compared to electrical, plumbing, or structural requirements. The issue is that many construction workers are

installing products incorrectly, and building inspectors, builders, and the trades do not recognize incorrect product installations.

The role of enforcement is very challenging due to the interpretive nature of the code. As an example, untrained inspectors typically look at an exterior wall assembly, view insulation between framing members, and interpret the assembly as complying with the code and building plans. But because insulation is not easily verified by eye, due to density, gaps, compression, moisture, thickness and so-forth, a visual inspection may be insufficient. Thus, new codes require testing procedures to demonstrate code compliance. This allows the inspectors to verify building performance using quantitative tools, and eliminates incorrect interpretation and insufficient methods of determining code compliance.

Another enforcement challenge arises with window installation. Building inspectors for many years have not required the National Fenestration Resource Council (NFRC) label to remain on windows until after inspection. Without the label, inspectors have no way to verify whether the installed windows meet the plans or the energy code. Verifying mechanical equipment sizing is also under-enforced even though the requirements have been in the model energy code since 2000.⁸ Inspectors cannot easily enforce the code if practices such as retaining labeling and equipment sizing are not being performed.

Acceptance and Champions

Most building departments do not have an energy code expert on staff to provide insight into the code and provide that resource to the building industry. Many building departments have a Master Electrician or a Master Plumber on staff, but very few building departments have a Master Energy Efficiency Expert. Without such an advisor, building departments have no in-house expertise to draw from, nor a way to clarify the details of the energy code. If the building department does not have an energy code champion, the value of enforcing the energy code may not be embraced.

The Traditional Approach to Energy Code Adoption

Energy code implementation typically relies exclusively on building department staff, and energy code education usually involves building department staff only. Education of other building industry personnel is expected to occur within each industry. Integrated training and knowledge-sharing between building departments and with builders and developers is minimal. The traditional formula for the building department includes:

1. Adopt the energy code
2. Purchase the energy code

3. Staff review of the energy code
4. Attend training on the energy code
5. Employ what was learned at training
6. Attend additional code trainings or educational institutes
7. Employ what was learned at training
8. Repeat steps 6 & 7 as needed.

The following provides more detail on the steps of the old approach, for purposes of comparison to the Parker Solution.

1. **Adopt the Energy Code:** When the energy code adoption process starts, the chief building official, or the most senior staff, works with the legal department, councils and commissioners, and planning and zoning staff. The code is adopted and the building industry starts building to the new code requirements at a defined future date, typically six months after local government approval.
2. **Purchase the Energy Code:** Prior to the code adoption the chief building official may be the only individual on staff to own a new energy code book (the code to be adopted). After the code is adopted the building department then authorizes funding to purchase additional copies of the code for staff use.
3. **Staff Reviews:** Once copies of the code are available for staff use, the inspectors, plan reviewers, permit technicians, and other staff will review the energy code. Typically, the staff is looking for a summary of the differences between the new code and the previous code. Such independent review may be detailed or superficial, dependent upon each individual's interest in the code.
4. **Energy Code Training:** State ICC chapters typically hold an annual educational institute where training is provided for code enforcement officials to obtain ICC continuing education credits (CEUs).
5. **Application of Learning:** After building department staff is educated, they implement, as best they can, what was learned at the training. The staff references any training handouts as well as the code book to improve compliance with the energy code.
6. **Additional Trainings:** Some staff members have the opportunity to attend additional classes, which reinforce principles taught previously. Additional courses satisfy further CEU requirements for ICC certifications. Ongoing training supports detailed knowledge

of the code and the reasons for specific code requirements, as well as understanding the relationship between the energy code and other building codes.

The Parker Solution

Through an integrated training approach, the Town of Parker overcame the following challenges:

- Insufficient training opportunities
- Industry lack of knowledge of the energy code
- Industry lack of knowledge of best building practices

The Parker building department recognized a need for all who use the code to understand its requirements. They postulated that if the building department staff does not understand sections of the energy code, then perhaps the building trades do not either.

The Chief Building Official (CBO), Gil Rossmiller, observed that the code does not teach how a building works. He recognized that builders did not understand how the building systems are interconnected, and how product installation impacts the operation of a building. As a result, he identified the need for many trades and builders to become educated on building science and how a building should operate. By understanding the science of how a building works, individuals are better able to understand the important role of specific sections of the energy code, and how components within the building affect other components.

Integrated Training

The Town of Parker launched an aggressive and integrated outreach and education effort. One free energy rating was offered to each homebuilder to visualize and learn how the builder's houses were performing. The Parker building department offered training to a wider range of involved parties, including all staff, builders, and trades. In some cases, it was mandatory for builders and tradesmen to attend trainings to understand best practices. Manufacturing representatives, distributors with knowledge of the industry's best practices, and local experts were enlisted in the training effort for maximum leverage. Builders were trained to recognize and insist upon correct installation by their contractors.

Cross-Industry Awareness

Rossmiller trained his field inspectors to look beyond their current field inspection. For example, when an electrical inspection was occurring, the inspector would also verify if penetrations through the building envelope were sealed. The electrical inspector does not

need to be an expert in air sealing, but does need to recognize that gaping holes do not meet the intent of the air sealing requirements in the energy code.

Phased Implementation

Parker also enforced sections of the energy code in phases, in order to allow for specific training and ensure better compliance. As an example, it was not expected that the heating and cooling contractors would need to know the Air Conditioning Contractors Association (ACCA) Manual J requirements on the first day the energy code was adopted. Future implementation dates were set for areas of the code that required additional training for the building department and the trades. Trainings on more obscure and complex building requirements were offered numerous times before the enforcement phase started.

Local to Regional Champions

Rossmiller was initially designated as the energy expert on staff, but since the implementation of the 2006 IECC, many of the Parker staff have become champions and experts on the energy code. Rossmiller became the go-to person for questions on the energy code from inside the building department as well as the building industry. The Town of Parker invited building department staff from surrounding jurisdictions to participate in their trainings and events in order to learn their processes to improve energy code compliance. Thus, Parker encouraged and developed energy code champions, within and beyond town borders.

A New Approach, with Greater Compliance

The implementation process pioneered in Parker can be replicated in other small jurisdictions and, with modification, can be implemented in larger jurisdictions. The seven steps are simple and sequential, and provide a methodology and process that a jurisdiction can follow.

1. **Early Code Training:** Training on the new code starts before the code is adopted. This includes making the code available to all building department staff.
2. **Inclusive Training:** Offer in-house training to building department staff, builders, and trades.
 - a. Offer industry-specific trainings such as mechanical equipment sizing, air infiltration best practices, insulation installation.
 - b. Manufacturing trade associations and manufacturers can assist building departments by providing lists of trade contractors who can participate in the trainings.

3. **Relate Energy Code to Building Science:** Teach building science and how a building works. This accelerates understanding the energy code and helps field inspectors recognize energy code requirements. Start from the outside, educating all from the outside to the inside of the building. And teach builders and contractors why they should go beyond minimum energy code requirements, and how to do so using best building practices.
4. **Energy Ratings:** Work with energy raters to offer free, or minimal cost, energy ratings to each builder so that builders get quantitative feedback on how well they are doing in constructing energy-efficient, code-compliant homes. Leverage utility or other programs to fund rating costs. When builders visually see duct leakage, air infiltration, current flashing practices and so forth they better understand the requirements of the building codes.
5. **Internal Champions:** Designate an energy code champion in the building department who is committed to the energy efficiency cause. Make sure this individual thoroughly understands building science principles and the subtleties of full energy code compliance, and has the time to support and assist other inspectors. Educate department staff on this person's role and importance, similar to plumbing and electrical experts in the building department.
6. **Phased Roll-Out:** Phase in energy code enforcement requirements; doing so allows time and reasonable sequencing of all basic and supplemental educational opportunities for staff, trades and builders.
 - a. Mechanical equipment sizing is more time consuming to learn than flashing techniques and water resistive barriers. Therefore allow increased time to learn this part of the code, and provide interim milestones to assist industry. For example:
 - i. Provide a milestone for documenting mechanical equipment on plans.
 - ii. Another milestone for submitting Manual J with plans.
 - iii. Another milestone for submitting correct Manual J, and so forth.
 - b. Mechanical design education may require more time than the typical six month adoption process. In some cases, depending upon industry knowledge, the process could take 12 to 18 months for one component of the mechanical design.
 - c. Where possible, give a one-year heads-up to the building industry to provide sufficient time for them to become educated on a new energy code.

7. **Field Inspection:** Trained field inspectors are familiar with basic building science and able to recognize and educate trades and builders in the field on best practices that comply with the building codes.
8. **Outreach:** Volunteer to teach energy code-related courses for the local ICC Chapter. This provides exposure to other jurisdictions and expands the energy code champion's role beyond their own jurisdiction.

For more detailed information and specific questions about how the Town of Parker implemented this process, please contact:

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Case Studies

The following pages present case studies from building departments in four southwest states. Each municipality or county has implemented specific protocols to improve construction practices and enforcement for their communities. In many cases these local jurisdictions have followed a path similar to that of Parker for improving construction practices. No other southwest municipality has implemented the new process across their entire building department, but the case studies show that enforcement practices are achievable across multiple types of local jurisdictions.

Salt Lake County, UT – Mechanical Sizing Training for Industry

New Chief Building Official Recognizes Educational Needs of Energy Code from Field Inspector

When former HVAC contractor turned ICC Combination Inspector, Brent Urnsbach, approached his new building official in 2008, little did he know that his employer would support his efforts in educating the trades and support the state in their energy code educational needs. The State of Utah had adopted the 2006 International Energy Conservation Code (IECC). However, enforcement was lacking on the important provision of mechanical sizing, which had been part of the IECC, IMC (Mechanical) and IRC (Residential) Codes since 2000.

With the support of Chief Building Official, Mike Durfee, as well as upper level administration up to the Mayors' Office, Urnsbach began educating county staff, builders and contractors on how to interpret and perform accurate load sizing calculations as specified by Air Conditioning Contractors of America (ACCA Manual J). Training also includes study of duct design (Manual D) and Equipment (Manual S), both important components in the proper design of residential HVAC systems. Urnsbach notes, "It's a lot more challenging to do this than we thought it would be. There are so many variables in performing load calculations and so many [people] simply lack this important training."

They started by educating the building department staff, builders, and contractors in their county. The first steps included understanding the importance of design temperatures and how to read a load calculation report.

Three years later, Urnsbach and others in the state have developed an educational training curriculum to assist builders, code officials, developers, HVAC contractors and HVAC distributors to perform load calculations, duct sizing, and equipment selection. All are important elements of an integrated process of designing a "right-sized" heating system.

Today Urnsbach is the county's energy code specialist. In that role he supports the county to attain its sustainability goals and has the support of the Mayor's Office to assist other building departments to improve energy code compliance.

Urnsbach has also been tapped by the Utah State Energy Office and the Utah Building Energy Efficiency Stakeholders (UBEES) to train building departments and the building industry across the state. He and Salt Lake County have been instrumental in supporting the monthly UBEES Morningside Energy Code trainings and webcasts at the Capitol Complex on energy codes and best building practices for Utah.

Today Urnsbach receives ten to fifteen inquiries per week from other Utah building departments, HVAC contractors, builders and design professionals seeking assistance with understanding heating and cooling sizing calculations.

Other steps in progress include working with the HVAC industry to require education and licensing for all installers/technicians in the industry; educating industry about the new ENERGY STAR version 3 requirements and the ACCA Q15 standard; and educating about benefits gained when mechanical duct systems are located in conditioned space.

Code Adoption History

- 2004: State adopted 2003 IECC
- 2007: State adopted 2006 IECC
- 2010: 2009 IECC chapter 5 adopted for commercial buildings
- 2010: 2006 IECC Chapter 4, IRC Chapter 11 adopted code for residential buildings

Partners

- UBEES
- Utah State Energy Office
- RMGA (Rocky Mountain Gas Association)
- ICC Utah Chapters
- HVAC suppliers
- Utah Clean Energy

Benefits

- Improved energy code compliance
- Builders and trades educated on HVAC practices
- Economic savings to consumers for lower utility usage



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City of Westminster, CO – Residential Energy Code Compliance

Decision to Enforce Code brings Best Building Practices to Residential Construction

Prior to the adoption of the 2006 IECC, the only requirement for showing energy code compliance in the City of Westminster was a signed statement from the designer that the building met the requirements of the energy code. No plan or field inspection for energy code compliance was performed.

When the city started the adoption process for the 2006 codes, including the International Energy Conservation Code (IECC), the building official made a decision that the city would enforce the energy code like any other code.

Building Official Dave Horras asked for a volunteer to help lead the department learn and enforce the energy code. No energy code expert was on staff at that time and a plans examiner, Shaunna Mozingo, volunteered to be the energy code lead/champion in the department.

Mozingo received training in building science, energy codes, and mechanical equipment sizing. She met with expert building department staff from neighboring jurisdictions, went in the field, reviewed plans, and became the city's energy code expert.

Horras and Mozingo made a decision to start by enforcing insulation, air barriers and air infiltration, and to educate staff and trades on these components of a residential structure. The City contracted with a code trainer to educate staff, and teamed with neighboring communities to offer trainings to contractors on best building practices.

All city inspectors were required to attend building science and energy code trainings held in-house. The department felt that was important for inspectors and trades to understand the concept behind the requirements which these trainings provided.

The department then reached out to trades and builders before adopting the 2006 IECC and educated them on the new procedures and inspection requirements. The department explained what the city was doing, why they were doing it, and how it was addressed in the energy code.

Today the city consistently receives accurate mechanical system sizing calculations and whole home model results from performance path compliance.

Code Adoption History

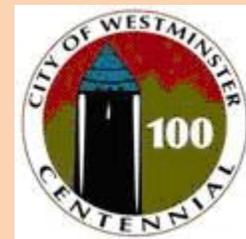
- 1989: Adopted 1986 MEC
- 2001: Adopted 2000 IECC
- Skipped 2003 IECC
- 2007: Adopted 2006 IECC
- 2010: Adopted 2009 IECC

Partners

- Colorado Chapter of ICC
- E-Star Colorado
- EnergyLogic
- Governor's Energy Office
- Industry representatives
- Town of Parker

Benefits

- Insulation inspected to RESNET grading standards
- Department staff understand building science fundamentals
- Trades are building to industry best practices
- Consumers are achieving energy savings (improved HERS score)



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Pima County, AZ – Mechanical Sizing Compliance

Mechanical Sizing – Partnering with Utilities for Contractor Education

Pima County, Arizona, was an early adopter of the 2000 International Energy Conservation Code (IECC) in 2001, when the IECC was only on its second version. The county adopted the 2006 IECC in 2007 and became a USGBC LEED for Homes Provider in May 2008. The new housing push was simultaneously reaching its peak (800+ residential units built in June 2006) and the county recognized the need to improve mechanical systems code compliance.

The building official, Yves Khawam, and the program manager of the Green Building program, Rich Franz-Ünder, reached out to their local utility, Tucson Electric Power (TEP), to assist in improving compliance with mechanical systems. TEP was operating a successful HVAC replacement program requiring contractors to become trained on ACCA Manual J and D. The utility also provided rebates for accurately sized equipment.

The county elected to create two compliance paths. First, if the contractor was participating in the TEP program, the county would accept the signed TEP enrollment form for the home as compliance. The utility program provided training and quality assurance including load calculation verification and field inspection of the mechanical systems. The second path was directly through Pima County, which would accept Manual J calculations and an approved home inspection.

The county also worked with the Alliance of Construction Trades (ACT). The president of this alliance grasped the importance of mechanical sizing and championed the need for contractors to become trained on ACCA Manuals J, D, and S. This created a triad of support: TEP, ACT, and Pima County simultaneously emphasizing the importance of sizing mechanical equipment accurately.

Throughout 2011, Pima County provided one-to-one education to contractors unaware of Manual J, reiterated the importance of using ACCA approved software and calculation sheets, and produced a guide for contractors to accurately complete Manual J.

As the county moves toward adoption of the 2012 IECC, the building department will team with partners to offer training within their facilities for trades, plan reviewers, designers, and builders.

Code Adoption History

- 2001: Adopted 2000 IECC
- Skipped 2003 IECC
- 2007: Adopted 2006 IECC
- 2013: Planned adoption of 2012 IECC
- 2013: Planned adoption of voluntary net zero energy code

Partners

- Tucson Electric Power
- Alliance of Construction Trades
- Hamstra Heating and Cooling
- Industry representatives

Benefits

- Building Department leveraged existing utility program
- Department staff gain knowledge over longer period of time
- Improved communication with HVAC trades
- Consumers benefit by improved comfort and energy bill savings
- Utilities benefit by meeting their state efficiency requirements



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City of Las Vegas, NV – Commercial Window Compliance

Decision to Fix Deficiency with Commercial Fenestration Enforcement Educates Industry

The City of Las Vegas became active with the energy code when they adopted the Model Energy Code (MEC) in 1986 and then the 2003 International Energy Conservation Code (IECC) in 2005. The city originally only reviewed the U Factor x Area (UA) alternative path inputs (typically Micropas® reports) submitted by builders for plan review.

As the first decade of the 21st century rolled along, home builders voluntarily complied with the ENERGY STAR New Homes program, which resulted in many new homes being built beyond the base code. This continues today through NV Energy's Energy Plus program, which exceeds the 2006 IECC by approximately 30 percent. The program achieves approximately 70 percent market penetration in NV Energy's service territory. Successful engineering and Home Energy Rating System (HERS) firms support the residential industry. Comfort Engineering stands out as a company that has been successful in training mechanical sizing code compliance.

The city turned to the commercial building industry in 2006 with a requirement to scan the COMcheck report onto the plans. In addition, Las Vegas Senior Plans Examiner, Don White, and the local ICC chapter proposed an amending ordinance to the 2006 IECC for site-built windows to comply with the code.

The 2006 proposal was unsuccessful, but local energy advocates again pushed for commercial fenestration amendments to the 2009 IECC. Frank Fisher, a sales engineer in the window industry, brought on board the glazing industry and participated in the development committee process. All contractors associated with the glazing industry, a glazing trade association and others came together to amend the code for commercial fenestration.

The City of Las Vegas adopted the amended 2009 IECC in December 2009 but delayed the enforcement of the code until July 2011. During this 18-month period the building department began educating the building industry and started enforcing 2006 IECC commercial fenestration requirements. The education of commercial designers, developers, glazing industry, and union trades continues today. Training on the National Fenestration Resource Council (NFRC) Component Modeling Approach (CMA) software has been extensive in the Clark County area.

The city has since developed code submittal requirement packages that developers and industry can use to show compliance.

Code Adoption History

- 1986: Adopted 1986 MEC
- 2005: Adopted 2003 IECC
- 2007: Adopted 2006 IECC
- 2009: Adopted 2009 IECC (effective July 2011)

Partners

- Southern Nevada Building Officials
- Southern Nevada ICC Chapter
- Clark County
- Glazing industry in Southern Nevada
- Fenestration industry
- Comfort Engineering, Las Vegas

Benefits

- Commercial building fenestration meets code requirements
- Mechanical systems sized correctly
- Trades are building to industry best practices
- Building occupant comfort improves



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Conclusion

The Parker Solution is a simple process to bring industry and building departments together with the shared goal of constructing efficient buildings that meet the energy code criteria. Over the past seven years, the Town of Parker has demonstrated that this approach provides unique advantages to enforcing the energy code and achieving high compliance rates. These advantages are conferred, quite simply, through building departments and the trades being educated together on best building practices and energy code requirements, in a phased roll-out of training and enforcement deadlines. This approach provides optimal conditions for the trades and builders to understand inspection criteria, how they relate to best building practices, and what to look for during field inspections.

The Town of Parker is now seeing average rating scores of HERS 65 throughout the community. (The lowest HERS score in 2011 was an impressive HERS 57; the highest a HERS 79.) This includes lower priced, entry level homes near 1,000 ft² and larger higher priced luxury homes 5,000 ft² and larger.

The case studies show that many municipalities and counties are beginning to implement similar practices independently. The local jurisdictions highlighted in these case studies show that communities of all sizes can improve energy code compliance by teaming with utilities, state efficiency programs, and trade associations. Starting with one building code practice and improving code compliance prepares the building department and building trades to improve compliance across all building components.

Building officials and others interested in improving code compliance in their communities are invited to contact the author, the building official at the Town of Parker, and individuals listed in the case studies for more details on how the new processes were put into place.

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