

The Parker Story: Gil Rossmiller, Chief Building Official

Parker adopted the 2000 IECC in 2001 or 2002, no enforcement at any level, I started as the building official in June 2003, current staff does know where their copy of 2000 IECC is or what the requirements are. So begins the story.....

Begin monthly builder meetings to educate on 2003 International Code in August 2003.

Adopt 2003 IECC along with IPC, IMC, IBC, IRC, IFC and IFGC January 1, 2004

Parker decided to concentrate on residential energy compliance first because this will have the biggest impact.

Continue with builder/inspector monthly training and start job site training for trade contractors but the theme has changed from not only education now includes expectations.

January 2004

First step was to educate and require water resistive barrier and flashing inspection. Held classes taught by local suppliers of house wrap materials for builders and building department personnel. Gave builders a time line for compliance and provided many job site trainings to help/enforce that the installation was correct. At the same time these details were required to be on the construction plans, as all residential master plans were being updated to the 2003 IRC. This is an important step to make certain that each builder understood the importance of a reasonably durable exterior building shell. If the building shell does not adequately keep water and air from the inside of the wall assembly, it does not matter how well you do anything on the inside of the building. Keep the bulk water out, drain away from the building and you have a great start on a building that will perform as intended/designed. This is the first of many code requirements that are not in the energy code but have a direct effect on how energy efficient the building will be.

June 2004

Builders at this point had a good handle on the installation of the water resistive barrier and related opening flashing. Now we started education on insulation installation, as before we used insulation suppliers teach the manufactures installation requirements. The builders and trade contractors were amazed how well they could relate to all of the pictures of the unacceptable installation methods. Why? Because that is exactly what they had been accepting as 'normal' installation for years and years... poor installation. After a day of classroom education, builders had two weeks to comply with proper installation methods. During the two weeks we completed several on site trainings. After the two week time frame, there were many installations that failed, but it did not take too long for trade contractors to realize that it was more cost effective to install correctly the first time. During this same time frame we introduced the 'Building Thermal Envelope' concept, with questions like, 'Is your crawlspace inside or outside the building thermal envelope' and 'Is your HVAC ductwork inside or outside the buildings thermal envelope?'

September 2004

Now that builders had and understood the need for a reasonably defined building thermal envelope, we gave them a year to provide Manual J, S and D for each model they were building. This would include an HVAC plan showing ductwork and we required duct tightness testing along system commissioning. In other words is the system performing as designed? See Parker ['Requirements for September 1, 2005'](#)

This by far was the most difficult and time consuming for us to date. Because we required duct tightness testing at rough (before gypsum board was installed) the practice of using building cavities for return air 'ducts' was not possible. This resulted in ducted returns and the redesign of each home to accommodate the new ductwork. This was welcome news to the HVAC trade contractors, but as you can imagine not so welcome news to the builders. The HVAC trade contractors were grateful for the space, but were not particularly excited when they realized that the Manual J calculations showed that they had been installing equipment that was twice the size. How could equipment half the size still condition the space??? The next year was filled with training sessions both classroom (one each month with the HVAC folks for about a year) and in the field. I made Hundreds of field visits to verify testing procedures and installations. In the end all builders had redesigned each model (some more than once) and had reasonably functioning HVAC systems. In the beginning builders and HVAC contractors were not happy, but in hindsight many have told me it was a necessary step and would never go back the old HVAC systems.

Summer 2006

Now that the new HVAC systems were up and running the question from the HVAC folks was 'Now that you have made us design and install equipment that is half the size, how do we know the builders are building a reasonable building shell???' , an excellent question that deserved an answer. Over the several months Parker provided a home energy rating for each builder. Builders provided a home and invited their trade contractors (especially the HVAC people) and we did the testing with everyone. The HVAC folks concerns were satisfied when each of the homes tested were at least 15% more energy efficient (also the level needed for an 'Energy Star' home) than the code required at the time. The homes were also reasonably air tight. The builders were happy to see that all of their efforts were having positive results.

January 2007

Adopted 2006 IECC

We started training on the changes for the 2006 codes in August of 2006. Air barriers, mechanical ventilation and asking the question to builders ‘when combustion air is ducted into the furnace room, is the furnace room inside or outside the buildings thermal envelope?’ were the bigger changes. Air barrier details were added to the construction plans, in all the areas required by section 402.4 (see #6 [2006 IRC master plan update document](#)). As we had done before, we provided classroom as well as field training for builders and field inspectors on the proper location and construction of air barriers.

As a result of the performance testing (Home Energy Ratings) homes were reasonably air tight and with the addition of air barriers the homes would be tighter. We amended the code to require mechanical ventilation [link to 2006 IRC amendments here](#) although there was a choice for ventilation strategy, I nudged the builders toward outside air (see number 3 in the [2006 IRC master plan update document](#)) ventilation strategy. The answer to the question: ‘When combustion air is ducted into the furnace room, is the furnace room inside or outside the buildings thermal envelope?’ was that the furnace room was outside the buildings thermal envelope. I allowed the outside air to make up for combustion air with some equipment requirements (refer to number 7 in the 2006 IRC master plan update document)

January 2010

Adopt the 2009 International codes including the IECC effective January 1, 2010. The transition to the 2009 IECC was not difficult as all contractors and designers had been brought up to speed with trainings I had started in August of 2010. Many of the new requirements were small steps for most folks. Small changes were needed to master plans. I did amend the IRC and required whole house mechanical ventilation. Why? Over the last several years almost every builder was using the performance path for energy code compliance. This provided many blower door test results. The results showed that houses in Parker were very tight. The current average is 2.5 ACH50. This relates to an average natural ACH of about .10 and just to verify that the builders that were using the prescriptive path (for energy compliance) would have the same results, Parker provided a Home Energy Rating for those builders. You guessed it, same results. This is a testament to builders, designers and my staff that when basic building practices are done properly (and what is expected is inspected) the results are outstanding.

OK back to required whole house ventilation. Parkers (see #11 in [2009 IRC amendment](#)) required builders to have a whole house ventilation strategy. Unlike in 2006 were I nudged designers toward outside air (supply only strategy) designers and builders needed to decide for themselves. All builders are using an exhaust only ventilation strategy along with outside air duct into the return air system. The low cfm exhaust fan satisfies the ventilation requirement and the outside allows them to keep the power vented water heater and not need any combustion air.

Summary:

Parker's road to energy code compliance has been long and time consuming, but the benefits have been outstanding. Today Parker does not worry if a building will comply with the energy code, the designers and builders know that this is a requirement and expectation. The policies and procedures set up through the years will produce the desired result for builders and code enforcement personal alike: A building that is safe and energy efficient.

Creating an 'Energy Code Champion' was instrumental to the success of this endeavor. This person is an invaluable resource for staff and contractors alike. Developing a time line for compliance and keeping with it. Making certain that both staff and contractors are on the same page before moving on to the next step. **There absolutely nothing wrong with baby steps.**

Take your time based on your comfort level and time constraints. The importance here is that you have plan for compliance.

At some point during the process builders and trade contractors will make the realization that these practices just make sense.

Builders realize that they hired the insulation trade contractor to install the insulation correctly, not incorrectly. The same can be said for all trade contractors. The question is not are you building a wall (or HVAC system, fireplace, floor cantilever, etc.) the question is HOW are you building this assembly. It is amazing how much more energy efficient a building can be when good building practices and just plain common sense is applied. Questions like: Did the HVAC designer use the framing plans to lay out the ductwork? And others go to the common sense part.

The other statement from contractors that comes up over and over "I have been building this way for years and years and I need to change now, why?" The trick here is to help them realize for themselves that there is a better way. I relate this to: "Trying to explain to your child what it is like to have children" not possible to explain is it, your child makes this realization when they have their own kids.

The same can be said for any trade contractor when asked about HOW and WHY they have building a certain way for years. Typically the answer "I was taught this way or 'I have always done it this way'" are typical responses. Framers are shown that three stud corners have been allowed by code for years and allow the corners to be insulated. The same can be said for Advanced Framing methods. HVAC contractors make the realization that old practices do not work when they are (gently told) that testing is required.

- Patience, Do not get in a hurry
- Education, Continuous for staff, builders and designers
- Partnering, You the builder and the designer are after the same results
- Empathy, This is not simple for you or the builder
- Options, The code provides options, let the designer make those choices