

**From:** [Dick Rome](#)  
**To:** [Public Testimony](#); [Parks-Shaw, Ryana](#); [Willett, Nathan](#); [Melissa Patterson Hazley](#)  
**Cc:** [Emily Wolfe](#); [Mary English](#); [Adrien Townsend](#); [Lucas, Quinton](#); [O'Neill, Kevin](#); [French, Lindsay](#); [Rogers, Wes](#); [Robinson, Melissa](#); [Rea, Crispin](#); [Curls, Darrell](#); [Bough, Andrea](#); [Duncan, Johnathan](#); [Platt, Brian](#)  
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To All Concerned:

Concerning ORDINANCE NO. 240434, I encourage you to look at the quality of the residential builds going up in the Kansas City area and adopt the latest and most stringent Energy Codes available. I also encourage you to make it Mandatory for the Inspectors of the codes to do their jobs and inspect all projects thoroughly..This may initially cost the builder and the cities a little more but after the new practices become routine, the costs will fall back in line.

I have heard at Council meetings that adopting the latest codes would cost the builders too much. Again, after they get familiar with the new practices, the casts will increase very little. If the latest codes are NOT adopted there will be a HUGE cost, to the home owner with energy bills, discomfort and indoor air quality/poor environmental conditions. The combined cost to the home owner far outweighs the cost to the builder.

Below is my experience with a well known production builder concerning the house that I bought and am currently occupying.

I am writing this letter because of a huge concern for the homeowners as to the quality of newly built houses including their HVAC systems, (Heating, Ventilation and Air Conditioning).

Those who purchase newly built houses have no choice but to trust that the house is designed and built properly, at least to Code. Most homeowners have no background nor knowledge to test their new houses for issues. Indoor air quality, comfort and energy usage are just a few areas to consider.

ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers) states that a house tighter than 5 Air Changes an Hour under a pressure of 50 pascals (ACH-50) requires Mechanical ventilation to maintain healthy indoor air quality. All houses should be tested. Our house test resulted in an air tightness level of 2.86 ACH-50. I found three holes in walls that I had the builder repair, and our resulting ACH-50 went down to 2.75. Our house requires Whole House Mechanical Ventilation according to ASHRAE 62.2. It has NONE. The CO2 (Carbon Dioxide) level in our house is constantly high resulting in fatigue, dizziness when standing abruptly and others. To make it worse, our house was supplied with a Natural Gas range and oven. There is no mechanical ventilation to the outdoors in the kitchen. The range hood is a microwave oven that does not exhaust to the outdoors. It recirculated into the kitchen. This is a **Serious** Combustion Safety issue. The builder did not understand what I was talking about when I mentioned this issue.

Our house is built with exterior 2x4 framing 16" on center covered with house wrap then the exterior siding. There is no insulation applied to the exterior of the framing or under the siding. There is insulation between the studs. As a result, the West facing walls during the summer months in the late afternoon and early evenings are 85 degrees on the interior sheetrock walls. How easy is it to cool a house to 76 degrees when the walls are 85 degrees? There should be an insulating barrier between the exterior siding and the framing, stud walls.

Most municipalities require some type of Heat loss – Heat Gain, load calculation and duct design for the HVAC systems. ACCA (Air Conditioning Contractors of America) Manual J, S and D, (Load calculations, System components and Duct

design) are the minimum design requirements. WrightSoft and Elite and two software packages that assist with this task. If the builder or HVAC contractor did a load calculation for our house, it was done very poorly and inaccurately. I had our builder add two supply registers in the main living area that were missing. The HVAC system has a listed maximum Duct Pressure Limit of 0.5 IWC, (Inches of Water Column) ESP (External Static Pressure). Our ESP was 0.82 IWC when we moved in. The HVAC supervisor and designer did not know what I was talking about when I mentioned this to him even though these limits are printed on the furnace name plate and he would have to use those limits in his design. I had him replace the Evaporator coil with the proper sized coil which brought the ESP down to 0.70 IWC which is still 40% above manufacturers maximum. The builder did not allow enough room in the framing to run the proper sized ductwork/trunk line to the north side of our house. This issue the HVAC contractor should have noticed and mentioned to the builder. The results to us are the high ESP and the north side of the house is 5 degrees warmer or cooler than the South side of the house depending on the season.

The Public Utility Commission of California did a 10-year study of newly installed residential Air Conditioners. Two of the statistics that they wanted were the running efficiency of the AC and whether the units were installed according to the manufacturer's guidelines. The average running efficiency was 50% of the units' capabilities. None of the equipment was installed according to the manufacturer's guidelines, 0%. This is totally unacceptable and must improve. The homeowners are being cheated and they don't know it and the environment suffers because of the additional energy needed to cool these houses.

*This is another study by **Jim Bergmann** and his **measureQuick** program.*

*Over 90% of residential HVAC installs have a detectable fault according to **Jim Bergmann** and his **measureQuick** program.*

*That means almost all installs are bad in some way.*

*This is a known problem, but how do we fix it?*

Additionally, I'm going to point out the issues with Window and Door Installations. Doors and windows require proper flashing on all four sides to the frame opening. In our neighborhood development that has 71 houses, the windows and doors are simply nailed onto the siding and the house wrap is draped over the top flange of the window. The city inspector inspects the installation of the front windows only, from his car. He doesn't look at the windows on the side nor the back of the house. Many neighbors have water leaking in through their windows and doors.

These are just a few of the common issues found in new house construction and HVAC. The builders and HVAC contractors seem to be OK with this quality of work. I have mentioned several ways and places to obtain education to our builder to become aware of these issues and correct them. They are just not interested. The homeowner and their family are the ones suffering with this quality of work and many times do not know that they exist.

The other side of these problems are the city inspectors. They also don't seem to understand the Codes and the Building Science and let these poor building practices continue.

My hope in providing this information to you is to have you look at the New Home Construction and HVAC trades and insist that they alter their practices to using Math and Science rather than rule of thumb and seat of the pants practices. Have them follow the **Most Current** building codes to the letter and follow the manufacturers installation guidelines. Have them test their buildings and installations during the construction process and correct errors discovered. Finally Educate the inspectors and have them inspect each building thoroughly. Have them not let the builders and HVAC contractors slip by with poor work practices.

To summarize this, I have a quote from an HVAC, Home Performance, Building Science authority who has written training books and lectures extensively.

*"If you don't measure - you're just guessing. If you don't commission - you're not measuring.*

*With all the changes to regulations, standards, and technology, the residential HVAC industry must embrace commissioning to ensure that every new piece of equipment is installed and operating properly."*

*Let's not allow contractors to guess when building houses in our cities and neighborhoods.*

There are additional issues with my house. OSHA requires that Fall Protection is worn whenever the workers are six feet or more above ground. I witnessed 19 houses being built where the crews NEVER wore fall protection. There is failure of compaction of the soil against the foundation and before the flatwork is laid. This results in driveways and sidewalks sinking. There is negative grading with all of the houses on my block resulting in pooling and standing water. None of the bath fans in our house move 50 CFM. They are not tested, they are just installed with no resting. Water pressure and expansion tank pressures were incorrect in our house resulting in the failure of our water heater. Water temperature was 138 degrees, well above the recommended maximum of 120 degrees. This is a serious SAFETY issue. The garage doors were missing hinges and there were stripped screw holes. There were cracked framing members and nails that did not meet their intended locations resulting in poor structure.

Below are several books and websites that address these issues with solutions and right practices.

With much concern;

Dick Rome

Websites:

Building Performance Institute, Inc. [www.bpi.org](http://www.bpi.org)

Building Science Corporation [www.buildingscience.com](http://www.buildingscience.com)

American Society of Heating, Refrigeration and Air-Conditioning Engineers [www.ashrae.org](http://www.ashrae.org)

Air Conditioning Contractors of America [www.acca.org](http://www.acca.org)

Construction Instruction [www.constructioninstruction.com](http://www.constructioninstruction.com)

Books

Measured Home Performance: Guide to Best Practices for Home Energy Retrofits in California by: Rick Chitwood

Real-World Zero Net Energy Homes for California by: Rick Chitwood

A House Needs to Breathe...Or Does It? By: Allison A. Bailes III, PhD

Energy Free Homes for a Small Planet by: Ann V. Edminster

No Regrets Remodeling by: The Editors of Home Energy Magazine

