



Building Science Q&A with Ryan Jaramillo of Recurve, 9/1/10

Ryan Jaramillo, of home energy performance contractor, Recurve, was a guest speaker at the GreenTown Los Altos Fall 2010 Speaker Series. After his talk (available in 3 episodes on the [GreenTown Youtube channel](#)), he answered questions from the audience.

Roofing and Insulation

Q: What type of environmentally friendly insulation do you recommend?

A: The most common and cheapest is cellulose, typically recycled newspaper that has been treated by a natural product, borate. It works well and we use it mostly in attics and walls. The best insulation is a spray foam that has a really high R value. You can get a lot of insulation in a small amount of space.

Q: Some of the ways houses are built around here make your job almost impossible. What I'm thinking of in particular is the hardwood floor with crawl space underneath. How do you make that comfortable?

A: We do it every day. It really is possible. The older inefficient homes were built to breathe and now they're not supposed to breathe. So that's all stuff that we'd be able to talk to you about but there's a lot of potential there. For the PG&E rebates, that's the perfect house. Doing the little things will make a huge difference. We've gotten old, 100 year-old homes up to LEED standards.

Q: We need a new roof to replace our cedar roof, which is 20-23 years old. We love the look of it and would like to replace it with something attractive but natural. Do your auditors make recommendations about the type of roofing?

A: We try to steer clear of the roof but could make recommendations and put you in contact with the right people. We focus on the house itself.

Q: Do radiant barriers [those materials that look like aluminum foil or mylar and get stapled to the inside of your roof] work?

A: These companies have done a great job of marketing themselves but the product doesn't do anything for you. Don't get it.

Energy Audits

Q: What is the optimum time of year to do an energy audit? Isn't it hard to tell how much heat is lost when it's warm outside?

A: We can still diagnose problems as long as we know what your concerns are. For example, we can still do an audit in the summer even if your biggest problem is staying warm in the winter.

Q: What is the price of an audit?

A: The usual price is \$399 and up, depending on size of home. We do have a special deal right now for Los Altos and Los Altos Hills residents. For \$199, 1-2 Recurve experts will come to your house and spend about half a day and run the tests on the house. Then we put together a recommendation based on projected energy savings and relative cost of improvements. We look at your energy bills, get a baseline of your usage. Then if you do the improvements, you can see how much you've saved.

Q: How much auditing of commercial buildings do you do?

A: We focus on residential. I like the residential because I like interacting with the home owners. It's very tangible. If make improvements on big commercial buildings, you can see the energy reduction. But if you deal with a homeowner who is really pissed off about not being comfortable and you make them comfortable, it's really great.

Rebate Programs

Q: You mentioned that the PG&E rebate program offers rebates of \$2-3,000. Does that imply that the total cost of implementing these changes would be much larger? Would cost \$5-10,000 to actually implement some of these changes?

A: That depends on the house. The lowest would be around \$5000 for a retrofit. The way PG&E rebate works, you have to do enough to make a 20% reduction in energy consumption. If you don't get a 20% reduction, then you don't get any money. We would help you get there and it usually takes between \$5,000-12,000 to get you there depending on the house.

Q: Over what time period does that 20% reduction get measured?

A: It's based on energy models. We take your bills and we feed all this information into this model and then it tells you the projected savings from the various retrofit projects and how much your bills are going to go down. So, it's making assumptions and you want to double check a year from now and see if it actually worked. But the money itself is based on the predictions of this energy model.

Q: What is the “prescriptive package” for the rebates (from PG&E)?

A: There are two packages: basic / prescriptive and then there’s the advanced. We are talking more about the advanced in which you have an energy audit done and then we figure out how to reduce your bills by 20% and then you get \$2000-\$3500. The prescriptive package is a more basic package where you just do quick air sealing, quick attic insulation, you seal your ducts, you get some plumbing insulation put in and then for that job, they will give you \$1000.

Q: Do you help homeowners with both types of rebate programs?

A: yes

Q: So, if I’m a DIY [do-it-yourself] guy, I wouldn’t be eligible for the rebates because we have to use your service to get the modeling? Is there like a self-serve [energy] modeling?

A: There’s nothing for the DIY-er. A lot of people are capable but there are a lot who are not. The key is doing it properly and also measuring the results. The last thing we want is for people to spend their time and their money on something that doesn’t work.

Q: Besides your company, what other companies are qualified to do this? Is your modeling software proprietary? Does each company have their own? Is there a specific model that’s used by PG&E?

A: There are a couple different computer models. There’s one, EnergyPro, that most of us are using. We actually are also a software company and we are developing software for the industry. So the report we generate for you, if you have us do an audit for you, is done using our software. There are about 4 different programs that can be used and they all have the same output so they’re going to tell you the same numbers and they have to qualify and they’re screened. There are other contractors out there and if you go to the [California Building Performance Contractors Association] [website](#), you can see a listing of them. They’re all home performance contractors. They all do it the right way.

Q: Approximately how much would it cost to implement the “prescriptive” program - let’s say for a 2,000 square foot home?

A: It varies. Usually it ends up being \$7-11,000 to do all of those different things if you have a 2,000 square foot home. What we have found is that people want the “advanced” because if you do that you’re usually going to get a 20% improvement and so you’re going to qualify for more money. We’ll

help you figure out which path works for you. The idea is to maximize the rebate and reduce your costs. We want to build a solution for you with the lowest cost and the highest amount of rebates.

Q: Do homeowners need to use someone [contractor] that's on that website or do they just have to be a licensed contractor?

A: You have to use someone that is qualified for this pilot program. So, if you don't use the people on that list, you won't qualify for these particular rebates.

Q: For the pilot program, if we were to use someone like you [Recurve] for the audit and then saw that the way to achieve a 20% reduction was, let's say, with a new roof and new windows and then we used other contractors for that and then you came back and audited the work, then would that be sufficient?

A: No, in order to qualify for these particular rebates, you have to use the contractors on the list to actually do the work.

Q: Other than the PG&E rebates in this pilot program you've described, are there other sources of rebates and/or tax credits?

A: Right now there is a \$1500 tax credit for a high-efficiency furnace or air conditioner and that only lasts until the end of the year (2010) and that can be done by anyone. There are time limits on a lot of these things. There are other PG&E rebates. For example, you can get a \$300 rebate for a high-efficiency furnace. There are solar thermal tax credits and rebates where you can get 30% of your total solar thermal system back. Again that's part of the audit. That's part of my job is to sit down with you and say here's what exists, this is what you need, and this is how much you get back.

Q: What's the range of improvements that you see with your service?

A: It varies. 20% is the baseline for the rebate. For 20% rebate, you get \$2,000. For every 5% beyond that, you get another \$375, capped at \$3500. We've done net zero homes. What that means is that your house produces more energy than it consumes. We do that all the time. Savings are across the board. We've done little things that reduce your bills by 5% and then we've done a full blown remodel where a house is on its own – off the grid.

Whole House Fans

Q: Do you recommend whole house fans for cooling if people don't have air conditioners?

A: Yes, all the time. Whole house fans are perfect for our climate. Whole house fans are fan installed at your ceiling and, rather than using your air conditioner, if you want to cool down your house, the second that the air outside is cooler than inside your home, you open a couple of windows and turn on this fan and it pulls all the cool air into your home and exhausts all the heat up into your attic and it works really, really well.

Appliances

Q: I'm wondering about appliances in our house. My washer and dryer are probably 12 years old. They were the best when I bought them, front loading. Are they obsolete now? Are there better ones for energy efficiency?

A: Yeah, there's a lot out there now and there's a lot of money out there right now. There are PG&E rebates for things like washers and dryers and dishwashers and that would also be part of the audit. Part of the audit is our recommendations for things that we can do to help you but another part is what are things that homeowners can do themselves on simple things that can make a big difference.

Solar Panels and Solar Thermal

Q: Does Recurve install solar? Talk about the pricing. Do you do lease programs or does the consumer need to buy the whole unit outright?

A: It varies. At Recurve, we do solar thermal which is solar hot water and we usually tie it into our heating systems. It's a really efficient way of heating your home. For solar electric, we don't have crews that actually install it so what we actually do for you is to create a "solar marketplace" where we can help you get the lowest price and put you in contact with one of our solar representatives who can give you all the options as far as financing.

Q: How does the solar thermal work? Is it a huge tank on your roof?

A: The way solar thermal works is it looks just like normal solar panels – usually each one is 4' x 8'. It collects the energy from the sun and it heats hot water and that would be dumped into a storage tank in your house and used for domestic hot water use. It can also be tied to your heating system. So the sun could provide all your domestic hot water needs and also temper the water for your space heating. Works really well.

Q: For solar thermal heating, do you have to have radiant hot water heating system or can you have a forced air furnace?

A: You can use it with a forced air furnace. You get a hydronic air handler and you run the hot water from your tank over this air handler and, rather than using a gas furnace to heat the air, you actually

heat the air with these hydronic coils. If you have an old furnace now and want to upgrade to a solar thermal system, it can be cost-effective. We would help you assess whether it's cost-effective or not.

Q: What maintenance do solar panels require?

A: it depends on the panel installed and who installed it. Usually it's pretty plug and play and requires very little maintenance if it's done well. There are different warranties for different systems. Anything that's done well should last a long time, easily over 10 years without maintenance.

Q: I understand that older solar panels used to have a half-life where their efficiency would degrade over time as much as a few percent per year. Do you know anything about that?

A: I do know a little bit. Not enough to really get into the details. It varies from case to case.

Q: Do the newer panels have the same problem?

A: They don't. They shouldn't, although they do degrade somewhat over time. Most panels do.

PG&E Smart Meter

Q: Have you dealt with the controversial PG&E smart meter.

A: We deal with it all the time. Did you get one installed and had problems with it?

Q: We did, but didn't have any problem. I know a lot of people have complained that they are not accurate.

A: It may have been that their bills weren't being accurately recorded before and now they are. that's one. Other times, PG&E does make mistakes. So, tracking your energy bills is still worthwhile. We'll do a bill analysis for you, so if there is a month that you weren't charged or something looks funny, we can let you know and we can contact PG&E for you. The benefit of the smart meter is that you can actually monitor your use. There's a lot online that you can access. You can actually monitor and see how much you're using. So, if you make little adjustments, a week from now you could see how you reduced your energy. So, it's very helpful. Some people are loving it. Some people are hating it.

Specially Priced Home Audit

Q: Is the specially priced audit still \$199 for Los Altos and Los Altos Hills residents the same no matter how large a home one has?

A: It's going to be the same across the board for you guys. Yesterday morning I was in a 6,000 square foot house and that audit was about \$1500. But for you, it will be \$199.

Q: In making my home more efficient, is it only just reducing my PG&E bill? Or are there other things like water usage or something?

A: Yes, we look at water usage all the time (particularly hot water). We can recommend shower heads. In a lot of homes, it takes a really long time to get hot water in certain faucets. We can fix that problem. So, we do look at water, although the majority of recommendations will focus on reducing your gas and electric bill and improving the comfort and health of your house.

Furnace

Q: if you're replacing a furnace in a fairly open plan house, do you typically replace it with a forced air one or is that no longer considered a good option?

A: Forced air is great if it's done well. A lot of people can't stand forced air because it's really dry heat that blows across the room. If it's engineered well, it can feel a lot like radiant heat. The type of heat is another thing that we can actually address. If you really want a cozy type heat, if we do a new system, we can completely transform the heat in your house without going fully to radiant heat. We can do a lot with forced air. Forced air is cheaper than radiant. I personally like radiant better, but we can do a lot with forced air. There is really no sacrifice that you are making with forced air other than the comfort side of things. The benefit of forced air is that you can filter the air in your house. That's something you can't do with radiant.