



Setting the Standards for
Home Energy Efficiency

Conducting Quality Assurance Oversight Remotely - Timely Feedback in a Long Distance Partnership

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Presentation Outline

- ✓ "Virtual" QA as part of the new RESNET QA
- ✓ Overview of RESNET Virtual QA Draft Protocol
- ✓ Virtual QA Demo & Lessons Learned
- ✓ Overview of USGBC Virtual QA Draft Protocol
- ✓ Remote Monitoring of Testing

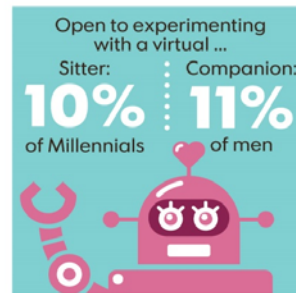
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Interesting Stories

USA SNAPSHOTS®

Rise of 'Ex Machina'



Source Intel's "Architecting the Future of the Smart Home 2025" survey of 2,500 U.S. adults
TERRY BYRNE AND KARL GELLES, USA TODAY
February 26, 2016

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Interesting Stories



EYE OF THE BEHOLDER: Commercial technicians at Franklin, Tennessee-based Lee Co. use smart glasses to snap photos and create short videos, making it easier to visualize and demonstrate mechanical issues to customers.

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"Virtual" QA as part of the new RESNET QA

✓ RESNET Standard Amendments for Quality Assurance

- 904.3.3.2.5 Virtual QA Field reviews. QA Field reviews not completed on-site, in-person by a Quality Agent, may be completed remotely using video technology and processes, protocols, and procedures approved by RESNET.
- 904.3.3.1.5 "Virtual" QA Field reviews. All HERS Raters and RFI's must annually receive a minimum of one (1) on-site, in-person QA Field review on a completed home and also one (1) on-site, in-person QA Field review on the same or a different home before drywall is installed. All subsequent QA Field reviews, for completed and pre-drywall homes, may be performed using a "virtual" QA Field review methodology specified by RESNET.

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"Virtual" QA as part of the new RESNET QA

✓ RESNET Standard Amendments for Quality Assurance

Public Comments on "Virtual QA"

- Lack of detail on how to do, which needs to be included in the Standards
- Should not include in Standards until after processes and procedures are fully developed
- Insufficient "beta" testing. To do properly, need much more extensive testing and procedure development
- Insufficient communication by Working Group with industry who could help to better develop protocols
- Proposed methodology by Working Group is overly complicated
- Need to be mindful of new technologies which are being rapidly developed
- Suggestion that "remote" may be more appropriate than "virtual"

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Overview of RESNET Virtual QA Draft Protocol

✓ Roles & Responsibilities

- QAD
- Rater
- Virtual QA Assistant (could be the Rater)
- Helper (optional)



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Overview of RESNET Virtual QA Draft Protocol

✓ Roles

- QAD
 - No change
- Rater
 - No change



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Overview of RESNET Virtual QA Draft Protocol

✓ Roles

- Virtual QA Assistant
 - “Eyes and hands of the QA”
 - There are multiple ways to conduct Virtual QA Review, all of which require a Virtual QA Assistant (VQA). This Assistant must, at a minimum, be a certified HERS Rater or Rating Field Inspector.
 - Options for Virtual QA Assistants:
 - A QAD oversees the Rater acting as the VQA at the Rater’s initial site visit to complete a rating on a dwelling;
 - A QAD oversees the Rater acting as the VQA as the Rater completes a “re-test” of a dwelling previously rated by the Rater, replicating the Rater’s own results;
 - A QAD oversees another Rater or RFI acting as the VQA testing and inspecting a dwelling previously rated by another Rater, guiding them through the dwelling.



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Overview of RESNET Virtual QA Draft Protocol

✓ Roles

- Helper
 - Not required but allowed
 - A helper may be used during this quality assurance process. Please note on documentation, and state verbally, that a helper is present. If a Rater/RFI or QAD is uncomfortable with the helper at any time, the helper may be asked to leave.
 - Helpers are permitted to act as a general helper (e.g., run the camera, clean props, prep for test, etc.).
 - Helpers are NOT permitted to be involved with any aspect of the evaluation of the minimum rated features and may NOT discuss testing with the Rater/RFI during the Virtual QA evaluation.



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Overview of RESNET Virtual QA Draft Protocol

General playbook of what is and isn't required and allowable so that VQA is being performed consistently throughout the industry.

- ✓ **Minimum Requirements**
- ✓ **Preparation by QAD (including VQA) and Rater**
 - Remote preparations for QAD (and/or Virtual QA Assistant)
 - On-site preparations by Rater (and/or Virtual QA Assistant)
- ✓ **Process guidelines**
 - For when VQA is the Rater
 - For when the VQA is not the Rater
 - What to do when it is not working...
- ✓ **Appendices**
 - Helpful tips, not requirements

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Virtual QA Demo & Lessons Learned

- ✓ Rater in Colorado doing a mock inspection
- ✓ Demystify this a bit
- ✓ Let's check in with him and see what it's like

Copy and paste this into Browser

<https://hangouts.google.com/call/j6emjfdmvaadmculd3c5fnfrye>

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The Technology



Let's watch a video demo

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The Ugly



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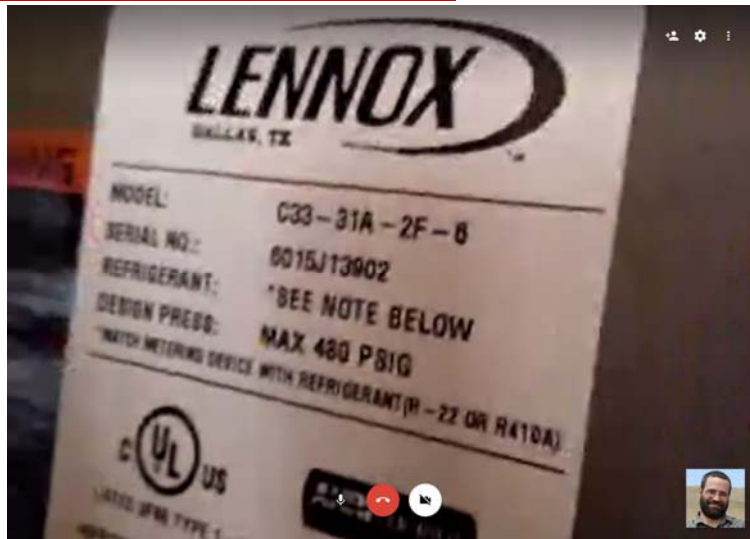
Better



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Same House



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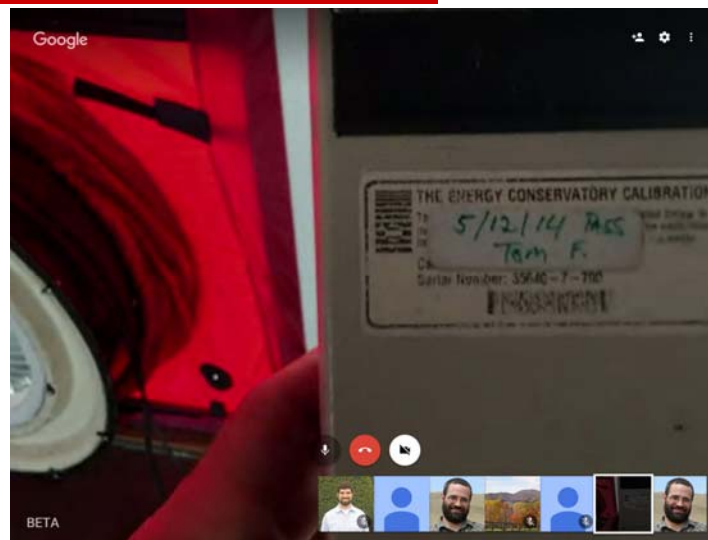
Best



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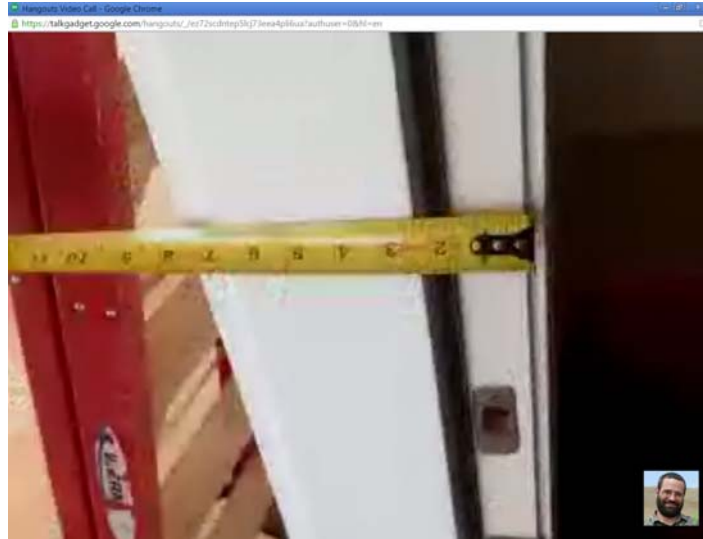
More Shots/Ideas with Virtual QA



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Checking the Easy Stuff



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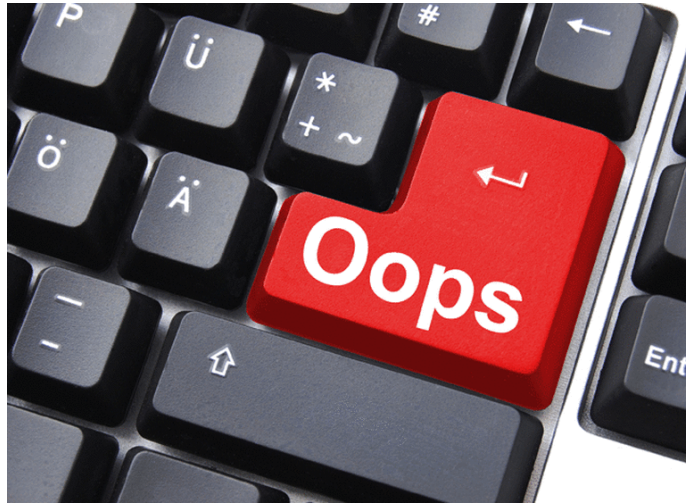
Can you hear me?



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Lessons Learned



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Lessons Learned



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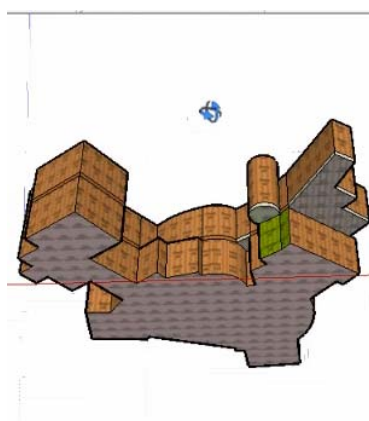
Don't Get Lost in Space



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Don't Get Lost in Space



Above grade Walls - Gross area				2nd Fl AGW Calculator			
Notes	Length	Height	Total	Notes	Length	Height	Total
155				2nd Fl AGW Calculator			
157 Garage				2nd Fl AGW Calculator			
158 2x4	11.2	9	100.8	2x4	183		
159 2x4	23.5	9	211.5	2x4	11	4	44
160 2x4		9	81	2x4	20		180
161							
162 2x4				2x4			
163 2x4				2x4			
164 2x4				2x4			
165							
166							
167 2x4	35	9	315	2x4	35	8.13	284.55
168 2x4				2x4			
169 2x4				2x4			
170 2x4				2x4			
171							
172 2x4				2x4			
173 2x4				2x4			
174 2x4				2x4			
175 2x4				2x4			
176							
177							
178 2x4	44.12	9	397.08	2x4	44.12	8.13	360.90
179 2x4				2x4			
180 2x4				2x4			
181 2x4				2x4			

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Don't Get Lost in Space...Ask ?'s



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USGBC LEED Homes VQA Protocol

Background

- ❑ GBCI/LEED staff attended last years RESNET Virtual QA presentation and realized the process could help their Providers meet their Field Audit Quota
- ❑ A LEED QAD working group was formed, tasked to;
 - look at RESNETs process from a LEED perspective and find out what works and what doesn't
 - to align the RESNET and GBCI process as much as possible
- ❑ After several Beta tests the "Remote" QA process is now formally adopted and is included in the 2017 LEED QAD manual.
- ❑ Will be released to all qualifying QAD'S in April 2017.

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USGBC LEED Homes VQA Protocol

- ❑ The LEED Remote QA process is very similar to RESNET VQA.....with a few additions
- ❑ **Now known as "Remote QA"** feeling is that with a qualified QAD it is the same outcome as an onsite side by side QA visit
- ❑ **Eligibility** - QADs /Providers and Green Raters have to be in good standing. Green Rater has 1 onsite field review past 2 yrs with assessment of 4+/5. QADs annual assessment grade has to be an average 4.5 /5 or above, with no score below 4 in past 2 quarters
- ❑ **Instructions for Sampled projects**
- ❑ **An OFFLINE pre recorded option**....for job sites or situations where there is poor connectivity

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USGBC LEED Homes VQA Protocol

OFFLINE Findings

- ❑ Our Group (US-Ecologic) performed several ONLINE Remote QA Multi Family projects in Pittsburg and Florida....I was based in Charlotte NC and as long as the connection was good, I found I could verify the credits and have good dialog and training opportunities with the Rater
- ❑ Using the same projects we turned attention to the OFFLINE protocol
- ❑ Initially we were using smart phones (both flavors) and quickly found.....
- ❑ Hard to maintain a consistent flow of video. It kept breaking into 30 second – 1minute segments
- ❑ Hands free rig for recording is critical
- ❑ It took a very long time...hours to upload to One Drive
- ❑ Ate up a ton of data space

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USGBC LEED Homes VQA Protocol

OFFLINE Findings

- ❑ We needed a separate recording device that had detachable storage for easier upload from laptop /computer. We found a go pro like device and hands free rig for under \$100
https://www.amazon.com/gp/aw/d/B000LZ4JLO/ref=pd_aw_sim_sbs_107_2?ie=UTF8&psc=1&refRID=7V3X1WXZNEADD8Z49K7R
- ❑ https://www.amazon.com/WiMiUS-Action-Waterproof-Camcorder-Batteries/dp/B01FLVPZCU/ref=sr_1_5?s=photo&ie=UTF8&qid=1478276202&sr=1-5&keywords=action+camera
- ❑ We set up another inspection with the new gear which worked much better... upload still took a whilewe used two different methods One Drive and a YouTube channel ...we didn't find much difference between the two.

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USGBC LEED Homes VQA Protocol

OFFLINE Findings inspection.

- ❑ Because you don't have the opportunity to ask a question follow up is all but guaranteed
- ❑ Timing and turn around will be very important. It is critical the video is uploaded by the Rater and reviewed by the QAD in a timely manner.
- ❑ Follow could be could be a phone call for clarification or could be the rater has to go back to the job site and re verify some items..... In this case timing is critical to ensure the items will still be still available
- ❑ Having this expectation upfront will help motivate/generate a better review

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USGBC LEED Homes VOA Protocol

- ❑ Some Raters may find it hard talking out loud to themselves
- ❑ Recommended to perform in house dry runs as mentoring/training to establish your process. Refine and find out what works best for you and the Rater
- ❑ Clear out loud thinking process is critical...Raters need to be able to communicate well enough so the QAD understands what their thought process and inspection process is.
- ❑ **Big Plus ...**The Rater shows what they think they know eg Borate on interior

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Remote Monitoring of Testing

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Cloud RESNET / ICC 380

Platform

- Web portal
- Account
 - Ind. users
 - Ind. control

Quality Assurance Report
ACH50 865 CFM x 60 (21600) volume

Share Reports

Report results directly into:
Reporting software
3rd party databases
In house development

Phone or Tablet

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2017 Conference
Scottsdale, AZ - Feb 27 - Mar 1

Presentation Review

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QUESTIONS?

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