

From: [Harvey Sachs](#)
To: [Waltner, Meg](#); [Andrew deLaski](#); [Joanna Mauer](#); [Louis Starr](#); [Hunt, Marshall](#); [Bryan Boyce](#)
Cc: [Steven Nadel](#); [Hillbrand, Alexander](#)
Subject: RE: Andrew's summary of this weeks CUAC and furnace meeting
Date: Tuesday, May 26, 2015 1:01:14 PM

Good point, Meg.

My guess is that AHRI will come back with a "compromise" with some numbers, i.e, applying diffusers for some sizes, perhaps in some shares. I think too much has been conceded to go back to 100% self-powered diffusers.

But, I could be wrong.

harvey

From: Waltner, Meg [mailto:mwaltner@nrdc.org]
Sent: Tuesday, May 26, 2015 3:20 PM
To: Harvey Sachs; Andrew deLaski; Joanna Mauer; Louis Starr; Marshall Hunt; Bryan Boyce
Cc: Steven Nadel; Hillbrand, Alexander
Subject: RE: Andrew's summary of this weeks CUAC and furnace meeting

Adding Alex here and also attaching my notes from last week's meetings.

One other issue that I think may come up again next week is whether to account for the cost of new diffusers for VAV units on CAV buildings. The latest modeling did not include diffuser change costs based on the Taylor Engineering study which showed that you could use the same diffusers (I believe down to a 65 degree supply temp). The manufacturers said they were going to look into this study further and may come back next week asking for these costs to be accounted for.

Thanks,
Meg

MEG WALTNER
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Please save paper.
Think before printing.

From: Harvey Sachs [mailto:HSachs@aceee.org]
Sent: Saturday, May 23, 2015 8:09 AM
To: Andrew deLaski; Joanna Mauer; Louis Starr; Waltner, Meg; Marshall Hunt; Bryan Boyce
Cc: Steven Nadel
Subject: Re: Andrew's summary of this weeks CUAC and furnace meeting

Superb summary, Andrew, and thank you very much.

I'd add just a couple of notes that might help.

- I doubt we'll get the sales-weighted data from AHRI. We have 5 OEMs at the table. The 2 who are missing have significant market shares, and the 5 seem to fear that publishing w/o their numbers would reward them with some information they would love to have. I'd like to be wrong, but that's how I understand it.
- My sense is that converging on EL 3 (or higher) will feel like a defeat to the OEMs. One place where we could compromise w/o much loss of savings might be on the 80 v. 81 TE. They've stressed that there are two areas of uncertainty on this: the increase of fan energy at 81 (deferred to the next round), and the extent of redesign needed for the larger heat exchangers – whether more tubes or longer ones. That redesign, in some unknown (probably small) fraction of cases could also impact cabinet size and thus conversion curb fraction.

So, if it looks like we'll get EL 3 or higher, we might not want to fight to fiercely on the 81. But, that's just one perspective for us all to consider.

Thanks for all the work on this.

harvey

From: "adelaski@standardsasap.org" <adelaski@standardsasap.org>

Date: Saturday, May 23, 2015 at 6:42 AM

To: Joanna Mauer <jmauer@standardsasap.org>, Harvey Sachs <hsachs@aceee.org>, "lstarr@neea.org" <lstarr@neea.org>, "mwaltner@nrdc.org" <mwaltner@nrdc.org>, Marshall B Hunt <MBH9@pge.com>, Bryan Boyce <bboyce@energy-solution.com>

Cc: Steve Nadel <snadel@aceee.org>

Subject: Andrew's summary of this weeks CUAC and furnace meeting

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Hi all: Here's my quick summary of the meeting this past weds and thurs. CC'ing Joanna. Others should add as they see fit. I'll send around a poll to schedule a call.

We focused only on the analysis. Key takeaways:

#1. Cost effectiveness of 82% furnace has deteriorated to the point where the simple payback is now up around product life. NPV at 3% and 7% still positive. However, LBL said they made a mistake on product life - should avg 23, not 26 years, which may or may not be enough to tip NPV's into negative territory. Regardless, I acknowledged when asked by industry that the analysis seems to be pointing to 81 as the likely standard. Bob W asked if we should vote, but we said we wanted to put off votes on levels and dates until we can consider the overall package.

#2. The CUAC results LCC didn't change much from the last meeting despite 19 changes implemented by contractors. Results seems to be settling down/converging which the group seemed to acknowledge suggested that we were getting close on the analysis. Consultants

ran two sensitivities to address industry concerns about economizer operation and one other issue (which I'm forgetting now). Neither seemed to matter very much. So industry seemed to agree they could be left out.

#3. Detlef showed an approach for estimating when a curb is required. Curb is really important since it impacts first cost by a \$1000 to more than \$2000 and cuts savings due to pressure drop across the curb. However, LBL had not applied the method to the LCC because they didn't have time and they hadn't seen a quick way to do it. After some push back from us, they came up with a method overnight on how to apply Detlef's method as an average and the group agreed they should make this change. This change will smooth out the CSE curve and LCC results since the curb will come in on percentage of units at each TSL rather than getting applied to all replacement units at TSL 3 (the previous methodology). It's reasonably likely that this change will move the min LCC result up to at least TSL 3 for all classes (but we'll see.)

#4. Everyone seems to agree that IEER needs to better address fan energy. Industry and DOE seemed to be saying that the time to do that is before the next iteration of the standard.

#5. DOE through out their choice model approach for estimating repair versus replace. It had predicted an unrealistically high incremental rate, which resulted in a huge impact on shipments and MIA. They reverted to their usual approach of estimating a price elasticity of demand. The new approach still shows a pretty good hit to sales -- around 10% at EL3 for PC1 if my memory serves. We debated a bit whether it was at all realistic to expect such a hit when the cost of a new compressor is 80% the cost of new unit. We agreed they'd do a sensitivity with precise elasticity set to 0.

#6. We all agreed we come to the next meeting prepared to talk about levels.

Also, DOE did not have answers for us on our legal questions, but I again pointed our previous rules where DOE did two dates, moved effective dates up from the date expected by the statute and used two metrics. In all cases, action was in response to a joint recommendation. We don't have an example of DOE adopting a prescriptive measure through regulation.

That's all from me. Have a good weekend!

- Andrew

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----- Forwarded message -----

From: **Detlef Westphalen** <detlef.westphalen@navigant.com>

Date: Fri, May 22, 2015 at 4:15 PM

Subject: RE: CUAC/CWAF: Negotiated Rulemaking

To: "Cymbalsky, John" <John.Cymbalsky@ee.doe.gov>, "ebantle@fmcs.gov" <ebantle@fmcs.gov>, "adelaski@standardsASAP.org" <adelaski@standardsasap.org>, "pdoppel@hvac.me.com" <pdoppel@hvac.me.com>, "jill.hootman@trane.com" <jill.hootman@trane.com>, "mbh9@pge.com" <mbh9@pge.com>, "John.Hurst@lennoxintl.com" <John.Hurst@lennoxintl.com>, "charlie.mccrudden@acca.org" <charlie.mccrudden@acca.org>, "karen.meyers@rheem.com" <karen.meyers@rheem.com>, "NMislak@ahrinet.org" <NMislak@ahrinet.org>, "hsachs@aceee.org" <hsachs@aceee.org>, "Michael.Shows@ul.com" <Michael.Shows@ul.com>, "Istarr@neea.org" <Istarr@neea.org>, "mterzigni@smacna.org" <mterzigni@smacna.org>, "rusty.tharp@goodmanmfg.com" <rusty.tharp@goodmanmfg.com>, "mwaltner@nrdc.org" <mwaltner@nrdc.org>, "Robert.Whitwell@carrier.utc.com" <Robert.Whitwell@carrier.utc.com>, "Sami.Zendah@Emerson.com" <Sami.Zendah@emerson.com>, "Armstrong, Ashley" <Ashley.Armstrong@ee.doe.gov>, "JMauer@standardsasap.org" <JMauer@standardsasap.org>, "Dave.Winningham@alliedair.com" <Dave.Winningham@alliedair.com>, "BBraddy@trane.com" <BBraddy@trane.com>, "Diane.Jakobs@rheem.com" <Diane.Jakobs@rheem.com>, "Jim.Deltoro@carrier.utc.com" <Jim.Deltoro@carrier.utc.com>, "GFernstrom@msn.com" <GFernstrom@msn.com>, "David.Calabrese@daikin.com" <David.Calabrese@daikin.com>, "Chandra.Gollapudi@emerson.com" <Chandra.Gollapudi@emerson.com>
Cc: "jramirez@fmcs.gov" <jramirez@fmcs.gov>, "ebhoffman@fmcs.gov" <ebhoffman@fmcs.gov>, "GJRosenquist@lbl.gov" <GJRosenquist@lbl.gov>

Attached are spreadsheets summarizing our investigation of the IEER differentials for gas heating and for heat pumps.

Brief information regarding methodology for selection of pairs:

- a. HP vs. AC – Most manufacturers have only a slight model number change (e.g., 50HC-D12 vs. 50HCQ-D12, CPH090 vs. CPC090), so if the catalogs and owner's manuals had the same capacity, specific features (e.g., VFD), dimensions listed for both a HP and AC version, then we considered them a pair.
- b. Gas heat vs. No heat – Similarly, the manufacturers we included had a slight model number change (e.g., 50TC vs. 48TC) or another specific code for heating method.

Everybody have a great weekend!
Thanks,
Detlef

From: Cymbalsky, John [mailto:John.Cymbalsky@EE.Doe.Gov]

Sent: Friday, May 22, 2015 4:06 PM

To: 'ebantle@fmcs.gov'; 'adelaski@standardsASAP.org'; 'pdoppel@hvac.me.com'; 'jill.hootman@trane.com'; 'mbh9@pge.com'; 'John.Hurst@lennoxintl.com'; 'charlie.mccrudden@acca.org'; 'karen.meyers@rheem.com'; 'NMislak@ahrinet.org'; 'hsachs@aceee.org'; 'Michael.Shows@ul.com'; 'lstarr@neea.org'; 'mterzigni@smacna.org'; 'rusty.tharp@goodmanmfg.com'; 'mwaltner@nrdc.org'; 'Robert.Whitwell@carrier.utc.com'; 'Sami.Zendah@Emerson.com'; Armstrong, Ashley; 'JMauer@standardsasap.org'; 'Dave.Winningham@alliedair.com'; 'BBraddy@trane.com'; 'Diane.Jakobs@rheem.com'; 'Jim.Deltoro@carrier.utc.com'; 'GFernstrom@msn.com'; 'David.Calabrese@daikin.com'; 'Chandra.Gollapudi@emerson.com'

Cc: 'jramirez@fmcs.gov'; 'ebhoffman@fmcs.gov'; Detlef Westphalen; 'GJRosenquist@lbl.gov'

Subject: Re: CUAC/CWAF: Negotiated Rulemaking

Please be on the lookout for files from Detlef based on our conversations yesterday.

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