

DOCKETED

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From: Sean Armstrong [<mailto:seanarmstrongpm@gmail.com>]

Sent: Monday, May 16, 2016 11:43 PM

To: Tommy Young

Cc: Andy@promiseenergy.com; Jonas Villalba; Adam Boucher; Trisha Miller; Michael Winkler; Saxton, Patrick@Energy; Brook, Martha@Energy; Pennington, Bill@Energy; Eric Rubin; Lathey, Vasudha; Nehemiah Stone

Subject: Re: Fw: ZNE 2020 & TDV : 250 Hours that drive it

Hi Tommy,

Thank you for your hospitality tonight--I had a great dinner and a great time. I loved our super hero self-disclosure. :)

Regarding the 250 hours of peak electricity consumption each year that is the foundation of Time Dependent Valuation (TDV) and potentially California's 2020 ZNE definition, there is, within that way of looking at "the problem" a profound mismatch between AB 32, "The Global Warming Solutions Act" and TDV, which is fundamentally a measurement of current billing practices by utilities. I know you know this, but I can't help but get frustrated when I see how clearly the utilities have redefined the problem so that burning gas has been redefined as the solution--burning more gas!

This is why I gnash my teeth and rend my clothes when TDV comes up--that stupid metric just encourages gas space heating and gas DHW, and punishing decarbonization via electrification of Heating and DHW. TDV is a nonsense metric--it's just a window into the business practices of a gas utility, not about stopping Global Warming. TDV just how the utilities profit from their ongoing gas infrastructure investments, and the CEC is just going along with climate change deniers' metric instead of following the law. That Davis Energy Group report you linked to, the ZNE Technical Feasibility study from 2012--did you notice how they didn't even ASK how to reduce global warming? They defined the all-important question as either TDV or Site BTU, not greenhouse gas pollution or how to stop Global Warming. Perhaps the CEC and CPUC should have asked the Air Resources Board?

But consider that the CPUC's Executive Director was caught soliciting a bribe of \$1M by PG&E in return for support on their rate structures (<http://www.utilitydive.com/news/cpuc-executive-director-to-step-down-amid-utility-scandal/344747/>), and two more PG&E executives were fired. Oh, and the Davis Energy Group that authored that bullshit ZNE-means-gas report sold out in 2015 to the Gas Technology Institute (<http://www.utilitydive.com/news/cpuc-executive-director-to-step-down-amid-utility-scandal/344747/>), and now the DEG serves to "promote...clean natural gas." (<http://www.gastechnology.org/news/Pages/GTI-International-Announces-Acquisition-of-Davis-Energy-Group.aspx>)

The utilities are gas companies except SCE, who are (unsurprisingly!) supportive of decarbonized sourcing of all-electric residential energy that PG&E and The Gas Company have always resisted, but are the agreed-upon solution to global warming. The gas companies establish their pricing metric developed with their bribed CPUC commissioners (not being mean, just factual), and then the CEC enforces it via Code.

What we all need to focus on is that AB 32, which is the law that animates the ZNE target, makes no mention of TDV but goes into detail on carbon dioxide pollution causing Global Warming. It turns the law upside down to interpret it as supporting burning gas for even one more day. AB 32 is literally ONLY interested in Global Warming Solutions, and burning gas is the problem. So if TDV ZNE includes gas, then we're all just stupid puppets or getting paid for going along with the gas utilities' redefinition of the problem being the solution.

Thank you for doing so much research into how ZNE TDV is defined, and providing the back-up documentation. You're right to call bullshit on TDV--it's total bullshit!--and I hope we can agree that we need to use our super powers to save the Earth, and not be the unwitting henchmen of cigar-chomping crooks. :)

Warm regards,
Sean

On Mon, May 16, 2016 at 4:42 PM, Tommy Young <tyoung@e3cainc.com> wrote:

From a year ago - I had been referencing the CEC numbers regarding ZNE & TDV. Please let me know if your takeaway is something different.

Good seeing you guys!

Tommy

From: Tommy Young
Sent: Monday, April 6, 2015 2:34 PM
Subject: ZNE 2020 & TDV

Steve and Mason – Good Afternoon,

It was a pleasure getting the chance to speak with you at Thursday's event. Matt Christie came over and asked me something along the lines of: "Where did you get this definition of ZNE being only about 250 hours of the year?" and I realized I should have been more specific and apologize for any confusion I created. Trying to explain the CEC's ZNE TDV definition is near impossible – but I have it below as well as the reference to the 250 hours of the 8760 hours that drive TDV. The [ZNE Feasibility Study](#) uses the 250

hour metric in its calculations and concludes that PV systems would need to be sized 80% larger if Site-kBtu ZNE was the goal.

I realize in my attempt to be concise I oversimplified my answer to you. What follows is the background to my comment.

Defining Zero Net Code Building

“A Zero Net Energy (ZNE) Code building is one where the net of the amount of energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building, at the level of a single “project” seeking development entitlements and building code permits, measured using the California Energy Commission’s Time Dependent Valuation (TDV) metric. A ZNE Code Building meets an Energy Use Intensity (EUIs) value designated in the Building Energy Standards by building type and climate zone that reflect best practices for highly efficient buildings.”

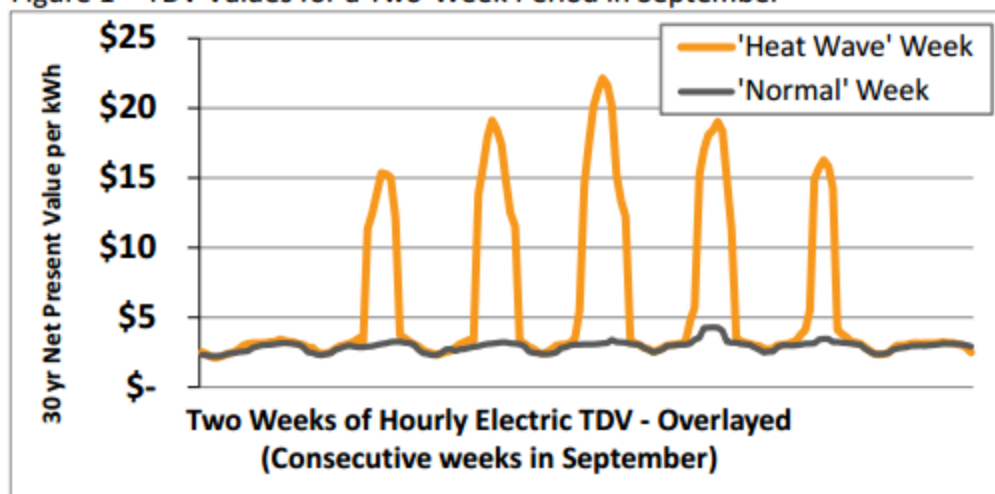
-- Energy Commission, “2013 Integrated Energy Policy Report”, January, 2014, pg. 3

3.1.2 Time Dependent Valuation (TDV)

Pacific Gas & Electric Company, “The Technical Feasibility of Zero Net Energy Buildings in California”, December, 2012, pg. 14

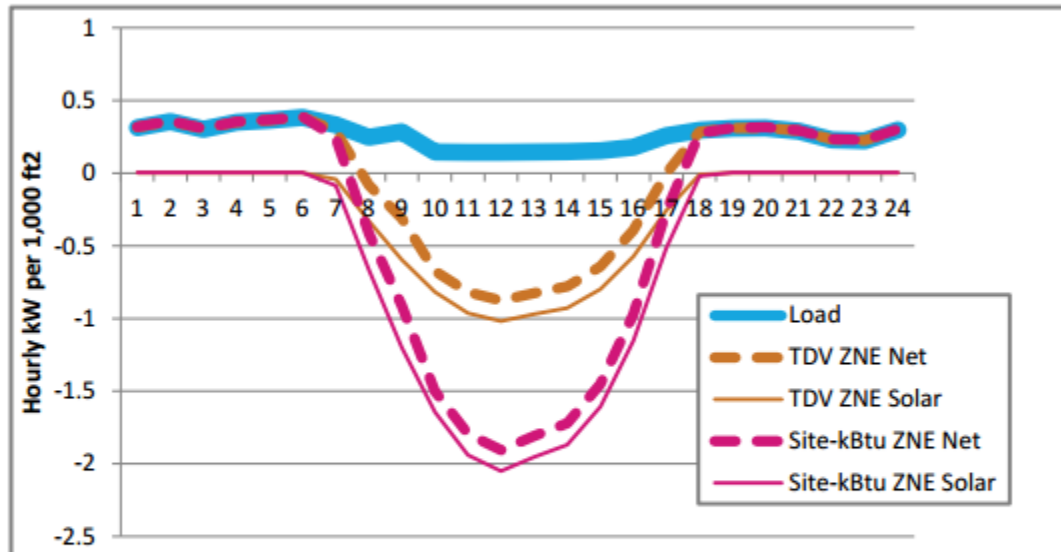
As the name implies, TDV assigns a different cost to energy use for each hour of the year. Most variation is comparatively small throughout the year. However, for the 250 hours of the year that the TDV methodology recognizes as the driver for new generation and transmission needs, the valuations can spike notably.

Figure 1 – TDV Values for a Two-Week Period in September



6.2.1 Single Building Load Profiles

Figure 12 – CZ12 Single Family Residence Peak Hourly September Loads



This graph once again illustrates the significantly higher level of PV required to reach a ZNE residential target using a Site-kBtu metric as compared to a TDV metric. Note that the area under the Solar curve is far greater than the area under the Load curve because the solar electricity shown here is used in the ZNE calculations to offset natural gas energy use as well, but the natural gas load is not pictured.

For buildings that are more consistently off-peak, such as homes, the choice of metric can be significant, with Site-kBtu requiring a PV system approximately 80% larger as compared to using a TDV\$ ZNE metric

Best Regards,

Tommy M. Young | CEO

E3 CALIFORNIA, INC.

2701 Cottage Way, Suite 9

Sacramento, CA 95825

ph: [916.382.7786](tel:916.382.7786)

mo: [916.627.6486](tel:916.627.6486)

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**Partner and Project Manager
Redwood Energy**

707.826.1450
1887 Q Street
Arcata, CA 95521

www.redwoodenergy.net