**Nov 16, 2023 QUESTIONS AND ANSWERS**

**MATT KAVANAGH’s website for homeowner energy consulting:**

A: [www.greeninsight.green](http://www.greeninsight.green) (email: Matt.Kavanagh@greeninsight.green)

**INTERCHANGEABLE BATTIERS FOR LAWN CARE**

00:40:53 Holly What was the brand of electric weed wacker, leaf blower, etc you use for lawn care? Thank you.

 01:11:41 Joanne “Stihl” battery operated is made in USA

A: Matt uses lawn equipment with “EGO” batteries (equipment and batteries are sold in Lowes and Home Depot)

**WHOLE HOUSE BATTERY**

00:43:53 Philip Did you install a whole house battery to your PV system?

00:58:40 Michael Could your battery system run a well pump (3HP) and your HP water heater with the initial surge ? at minimum Im looking to be able to run my well pump and water heating if the grid goes down

A: Matt Kavanagh: yes, batteries can be purchased with specs for peak load, or/or sized for total energy storage. My whole house battery has a peak load which handles my critical appliances

01:31:41 Michael: does your battery system account for the days there is less solar resources and snow on the panels - how long can you operate on your battery system.

A: (Matt) With normal (full) loads, my whole house battery will operate ~1.5 days

**COMMERCIAL-SCALE BATTERIES**

01:10:27 Erick: An interesting take on commercial-scale batteries is “Energy Dome” https://energydome.com/

01:10:52 Erick : Components: carbon dioxide, steel and water.

01:12:54 Erick Short form: Get a big balloon filled with CO2. Compress it when you have extra electricity and store the heat in an insulated water tank. Then use the stored heat to gasify the liquid CO2 and run it through a gas turbine. Interesting from the viewpoint of alternatives to “the duck curve”…

**EV BATTERIES**

01:18:10 Erick That takes better vehicle-to-load technology though.

01:15:59 Joanne: Do you plan on replacing the battery in your Volt?

01:16:26 Erick I saw an article recently that, at least in the lab, recycled lithium-ion batteries were at least as efficient as virgin-mined Li-ion batteries.

01:17:51 Erick: Another odd take. given that 10 kWh batteries are expensive, one wag said: “just buy the batteries and get the car for free” ;)

01:38:01 Angus: Even ev cars will end up helping the grid. Evs will be used as backups

01:25:10 Joanne : The Chevy volt replacement battery is $12000

01:25:49 Joanne: I have 78000 miles on mine

**AIR SOURCE HEAT PUMPS**

00:43:41 Michael any concern with using heat pump to manage climate in house in mid-Atlantic area with very hot summers and very cold winters?

A: (Steve)In summer, a heat pump is a high efficiency A/C. In winter, the ”Cold Climate” heat pump operates below zero (F)

00:51:35 Holly Does [a heat pump] use existing duct work?

00:52:31 A: Angus It could if the ducts are in good condition and properly sized

**GROUND SOURCE “geothermal” DESIGN**

00:48:55 Gerald How much area is required to maintain a ground source heat pump?

00:50:15 Angus: It's usually in linear ft if pipe at temp. It's around 250 per ton

01:15:37 Angus There's a geothermal company in NY that brings a machine into a basement and digs loops long enough to power over a hundred apartments.

**REMOVE SNOW ON SOLAR PANELS?**

00:58:02 David: What do you do with your solar panels when it snows on them?

01:00:54 Angus I wait for it to melt. They still work but less production. Some people sweep, but I would never do that unless I was off grid. Loss from Snow is expected and built into predicted production.

01:18:43 Shoshana: I have ground mounted panels. I break off the snow dams at the base of the panels, but I don't scrape the panels.

**SOLAR DESIGN**

00:38:23 Jonathan (question about Matt Kavanagh’s analysis: Does the roi (Return on Investment) assume that solar output of panels stays consistent over 30 years?

A: (Matt and Pat): ROI assumes solar degradation of 2.5% per year (this is the spec on the installed solar panels)

01:01:43 Michael We just need a 20% larger system in NJ to generate the same amount of energy that is generated in CA that's is why solar works every where it is just an issue of space at the same panel efficiency.

01:06:21 Michael NJDEP is about to issue their guidance and requirement for EOL for solar panels - the issue is Cd and Ag in thin film may make that haz waste per the EPA TCLP test - but DEP could define them as universal waste

**JIM PRICE HVAC COMPANY “www.ComfortableHomes.com”**  Jim@Comfortablehomes.com

01:11:55 Jim Price: We only installed high efficiency Cold Weather Heat Pumps all year in 2023.

01:13:53 Jim Price: Air Source Heat Pumps are now so efficient you can supply 100% of the heat for your house without any back up heat. (No heat coils required).

01:24:26 Jim Price: I can answer any questions you have concerning the benefits of Cold Weather High Efficiency Heat Pumps.

01:22:30 Jim Price: For the first time in NJ history it is now a lower cost to operate a heat pump than to use Natural Gas, Oil, or Propane.

01:29:37 Jim Price: During Covid we could not get the emergency back up coils so we did not install them but left the ability to add it later if needed. It turns out all the way down to 5 degrees F without Back up coils none of our customers without the coils could not heat there house. Accidental test case but, it proved the coils were not required.

**MATT KAVANAGH HOME ENERGY CONSULTING www.greeninsight.green**

01:23:03 Holly: If we hire Matt, does he then have companies he recommends if we want solar panels, geothermal, regular heat pumps, etc?

A: Matt: yes, I recommend 3 bids to companies, for each phase of Building Electrification

**WILL THE ELECTRICAL GRID HANDLE FUTURE LOADS?**

01:31:55 Erick Any comments on the push to electrification out-pacing the grid’s ability to deliver? Another article recently said that we could pump 30-40% more electricity through the grid than we do if we put in real-time monitoring.... Yet another article claimed that the utilities aren’t interested in low-cost solutions since there are incentives for big projects

01:28:15 Erick: Scientific American or Science News. I’ll try to find it.

01:29:31 Erick: Please send me an e-mail link to erick.erickson@onmail.com and I’ll see if I can find the article and send it to you.

01:34:45 Angus Electrification basically involves winter loads. The grid is most used in the summer. Heat Pumps do not add to overall max load

01:35:58 Michael : The grid will go through updating and expansion to meet load because its required to meet load by state and federal laws the question is are we going to do this in a planned manner or by the seat of our pants - Smith has a bill this lame duck session to required grid planning which for some reason the NJ electric utilities have not been fully supportive of in the pass but that may be changing.

**REFERENCES**

Add yourself to BE webinar announcements: email request to Steve Miller stevemiller@comcast.net

**Matt Kavanagh home energy consulting:** [**www.greeninsight.green**](http://www.greeninsight.green)**Matt.Kavanagh@greeninsight.green**

All house-related utility and IRA rebates and tax credits are summarized at <https://docs.google.com/document/d/10vSXEtbjYZ3fBYhZbBahOLVxXrn82QKHkJGHGTRnvyg/edit>

01:21:35 **Jim Price business: “Comfortable Homes”** Jim@Comfortablehomes.com

01:31:51 Angus I'm not sure how I got signed up for this meeting what is the organization running this meeting and how do I get on the Monthly meetings? I love to talk projects angus@brightalt.com

A: (Steve) added angus@brightalt.com (and all other 2023-11-16 registrants) to announcements of monthly BE webinars

01:08:55 Sue : Would like some info on air-source heat pumps?

A: (Steve): most monthly BE webinars are focused on air source heat pumps.

Index to all 2 years of heat pump webinars:
<https://climate.smiller.org/50x30/building-electrification/All-heat-pump-webinars.html>

Index to over 400 references on heat pumps and HVAC:
<https://climate.smiller.org/REF/>