

**ARECC Monthly Meeting**  
**Sunday, May 13, 2018**  
**2:00 - 4:00 p.m.**  
**ACEnet Meeting Room**  
**(94 Columbus Road, Athens, OH)**

*ARECC meetings are open to the public.*  
*Anyone interested is invited to attend.*



### **Aquion Batteries**

Interest in stationary battery packs, especially saltwater batteries from Aquion, continues, especially since the company has recovered from bankruptcy. Our last regular ARECC meeting was devoted to a fieldtrip to Mark Cohen's place to see his Aquion Battery installation. About 10 people joined in and explore the eight-battery installation and Mark's wide-ranging talk about the energy transition. Since Mark has contact with an Aquion distributor, he will be exploring the possibility of ARECC organizing a bulk purchase of Aquion Batteries for co-op members.

- Mark Cohen's Aquion Battery installation



The Aquion saltwater batteries are the most ecologically friendly batteries, both in their manufacture and eventual disposal. Here is a detail of their composition:



At this point, Aquion Batteries appear to be the best option for new stationary storage. (However, as we shall see in a separate article, second life Lithium Ion Batteries may also present a very good, less expensive option, both for stationary, as well as portable installations.)

We are eagerly awaiting the availability of Aquion Batteries. On their web site Aquion says:

*Rebuilding after a chapter 11 filing can be difficult and time consuming. There will be a period of time needed in order to regroup, rehire, and requalify the manufacturing process, supply chain, and sales pipeline. There are also improvements to chemistry and form factor of the battery which will take time and effort. All of these efforts will result in a better product for a future market.*

However, some signs are good. Two recent market reports include Aquions as a major supplier for stationary batteries:

- *Global Stationary Batteries for Residential Market 2018 Share- Aquion Energy, AES Energy Storage, Imergy Power Systems*  
From: <http://incrediblenews24.com/category/energy>
- *Global Microgrid Technology Market Share 2018 NEC (A123 Energy Solutions), Aquion Energy, S&C Electric Co and Siemens*  
From: (<http://consumerelectronics24.com/>)

This bodes well for near term availability; however, they are not yet on the market – stay tuned!

- Roger Wilkens



## More Information About Batteries

The Aquion saltwater battery was one of the featured technologies in battery development on the PBS/NOVA documentary, "[Search for the Super Battery](#)" (Season 44, Episode 3). The program is worth a look. There's information on the 18650 "cells" ARECC is looking to give a second life, as well as flywheels, hydro, compressed air, and a lithium metal battery with a solid plastic electrolyte that isn't flammable and doesn't explode (read about it [here](#)). For the non-scientist, the program gives a good introduction to what makes batteries work. In understanding how energy storage works, this [article](#) from the Union of Concerned Scientists is helpful.

The need for energy storage is still a sticking point in the quest to change the way the world gets electric power, but there's [progress](#) being made in both availability and cost.

- Adeline Bailey (Not a scientist)



## Second Life Lithium Ion Batteries

Our Second Life Batteries Project is attracting a lot of interest. We have a loose-knit team of half a dozen skilled professionals – engineers, solar installers, EV carmakers and mechanics. About a week ago, five of us took a field trip out to Dennis Miller's garage, where he is working on his third generation self-designed and built EV, which he is powering using Second Life batteries out of a Chevy Volt. It was a very interesting and engaging visit. Dennis is urging me to use the same Second Life batteries to get my EV VW back on the road. However, the main focus of our group's efforts are aimed at learning how to test and assemble battery packs composed of Second Life 18650 cells, which is different than using Volt packs. We are eagerly awaiting our work area in the MakerSpace, which should be available later this month, where we will be able to disassemble, test and reassemble 18650 battery packs of any size or specification. One

of our goals is to design a DIY kit and manual that will enable ARECC co-op members to come to our MakerSpace workstation and recover their spent battery packs.

The UN's *GLOBAL OPPORTUNITY REPORT 2018* identifies the Reuse and Repower of Second Life Batteries as a major global opportunity. The report says:



*The huge growth in the number of electric vehicles (EVs) on our roads means a growing supply of used batteries, which are considered depleted when their capacity is reduced to 80%. While no longer suitable for mobile energy storage, these batteries could still have long lives in stationary settings. Second-life batteries can be used at utility-scale, commercial-scale, and even in community or local power applications.... There are expected to be as many as 37 million EVs on the road by 2025 ...Worth an anticipated \$93.1 billion by 2025, the lithium-ion battery market is growing at a CAGR of 17%, representing significant business opportunities. Second-life batteries can become an important element in virtual power plants, a market expected to grow from an estimated \$193 million in 2016 to \$709.2 million by 2021, with a CAGR of 29.68%....EVs are forecast to account for 95 GWh of used battery capacity by 2025, no longer suitable for mobility uses...*

These projections as well as other encouraging reports that are beginning to appear, encouraged me to begin planning a local worker cooperative that might both facilitate ARECC members in doing their own recovery and reuse, but also provide flexible employment for a small group of worker co-op members. Since the project is collaboration between ARECC and the Center for the Creation of Cooperation (CCC), CCC could take on the co-op organizing function, while ARECC provides service to its members. Such an employment plus resource recovery effort could be a boon to our area and also to other areas.

As I investigated the legal, regulatory, liability and organizational challenges organizing such a worker co-op would entail, I realized that it would help the worker coop greatly if it could focus on the technical issues of recovering and reusing Second Life batteries, while the Center for the Creation of Cooperation CCC focused on the wider set of issues.

In the past month, we have met with a group from Yellow Springs and an individual from Western Michigan who are interested in working with CCC to organize local worker co-ops to recover and reuse Second Life batteries. We also began the discussion of a



second level co-op that would take over supporting the worker co-ops by dealing with the wider set of legal, etc. issues.

- Roger Wilkens



### **Send In Your Photos!**

Please share photos of your renewable energy installations. This month, we are showing the solar array on the roof of the Unitarian Universalist church in Marietta. The church recently added to their installation and connected the church office building (located next door) to it. Their next energy-related project is to further increase energy efficiency in the 100-plus-years-old structure to harvest as much solar as possible.



### **News from Solar United Neighbors of Ohio**

Ohio solar advocates notched a big victory recently as yet another investor-owned utility has withdrawn its proposal to increase fixed charges on its customers. Duke announced it would withdraw its request for higher fixed charges from its emergency security plan. This decision comes on the heels of AEP's decision late last year to withdraw a similar proposal. Solar United Neighbors' community of solar supporters successfully testified against both proposals.

Fixed charges are monthly fees you incur no matter how much power you consume. Increasingly, utilities are attempting to restructure electricity bills so that more of each bill is made up of these charges. These fees directly affect how much of your bill you can reduce through solar generation, efficiency upgrades, and conservation. Higher fixed charges discourage efficiency and limit our ability to save money by producing a portion of our own power through solar.

Ohio law requires utilities like AEP and Duke to get approval to increase fixed charges from the Public Service Commission of Ohio (PUCO). Part of this approval process includes opportunities for the public to comment on rate decisions.

Two such opportunities are coming up next week for Dayton residents. Dayton Power and Light is proposing a massive 223% increase in its fixed charges. This raises fixed charges by \$114 per year. That's \$114 that can't be saved by solar or energy efficiency. Two public hearings are being held this month for customers to express their thoughts on the proposal:

Solar United Neighbors hopes you can join us in sharing your voice with the PUCO. FirstEnergy is proposing fixed charges in a different case, but that case has not advanced to the public comment phase. Sign up for our newsletter to stay informed when that case reaches the comment phase.

- Luke Sulfridge, SUN Ohio Program Director



Published for the Appalachian Renewable Energy Consumer Cooperative (ARECC). ARECC is organizing this network of energy cooperatives in Appalachian Ohio to help members transition from fossil fuels to renewable energy. First, we'll reduce energy consumption (conservation) and then work towards creating energy from renewable sources. ARECC is a non-profit cooperative operating in southern Ohio. Adeline Bailey, Editor

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