

BIG ISLAND AMATEUR RADIO CLUB

Hawai'i Island

April 2014

BIARC NEWSLETTER

President's message

This month, I'd like to focus on Emergency Communications, or Em-Comms.

What happens to emergency communications when a hazard or disaster strikes? Hopefully, nothing.

Hopefully, emergency communications systems are well-thought-out, robust, periodically exercised, and transition from day-to-day mild-mannered reporter mode to superhero mode with minimal effort. Except, that is not always the case. Various predisposed differences and limitations to developing a comprehensive systems end up produce emergency communications systems flawed or have gaps.

During the three towers' collapse (building #1, #2, and #7) of September 11, 2001, as the incident played out, it became apparent that general two-way radio communications among the various responding jurisdictions and agencies was not clockwork.

For example, besides not being able to tune to common and tactical frequencies, the use of 10-code differed from one agency to another; and even within the same jurisdictions causing gaps in communications and messages with erroneous information. The use and issue with 10-code can be found locally as well. Local police and Fire 10-codes differ. Police still use 10-code as Fire dropped the usage altogether replacing 10-code with clear text and common English as required by the National Incident Management System (NIMS).

During the September incident, there was also a lack of clarity as to who was in charge. Was it Police or Fire? Was it the Local or Federal government? Was it this jurisdiction or that jurisdiction? All-in-all, 911 was a huge eye-opener in emergency communications as what could



HANSON



Emergency Responder Liaisons at the Hilo Emergency Operations Center (EOC).

Photo by Bill Hanson

go wrong went wrong and it was clear the system was ready for an overhaul.

When "The Big One" — so to speak — hits here locally, whether it's a hurricane that has the potential to wipe out 20,000 plus homes, an earthquake that severs transportation routes around the Island, or even an incident on the west coast of California some 2,500 miles away that results in possible disruption of barge service of the approximately 93% of food, to include approximate 98% of all consumer goods imported to Hawaii Island, any one of multiple hazards carry the potential to impact all of us here on this Island.

Where will we as individuals be? As BIARC members, what assistance could we offer to emergency communications, if called upon to assist?

BIARCS members view themselves as hobbyist. I, for one am very interested in learning more about and wanting to do QRP. It's an excuse for me to exercise, get out in the backcountry, and make contacts in circumstances that could mimic an emergency. BIARC mem-

bers are into DX, or CW, and/or digital as well as other communications paths as part of work and play. We should pursue, enjoy, and make the best of our varying tastes and likes in communications; adding to "the spice of life."

When it comes to emergency communications, as BIARC members we also possess the capability to put our talents and passions to work in benefitting the greater good. At the least, staying up to date on the latest information from authorities will help us make well-informed personal emergency decisions. At the most, each of us could play a very important part in assisting local emergency management authorities in the performance of their mission, goals, and objectives in emergency communications. But the question is how can BIARC members accomplish this?

What's needed are several things of which the most important is BIARC members, whom desire to, position themselves to assist in formal emergency communications by building, promoting, and fostering essential relationships with local lead and partnering

emergency response organizations.

It is possible that BIARC could one day become an emergency response support organization, or at the least that BIARC members as individuals could. The choice is ours collectively and as individuals.

As we know, when it comes to emergency management, FEMA wrote the book. FEMA offers numerous courses and classes in virtually every subject matter pertaining to managing emergencies.

But, interestingly enough, from all those courses and classes and the billions of dollars spent on developing better plans to safeguard lives and property, FEMA cites one specific factor that takes priority over everything else that the nation, states, local governments, communities, businesses, individuals, and even radio clubs should have ready and in place when going into a hazard or disaster that is more important than anything else.

Any guesses to what that answer might be?

What the answer is not, is perhaps just as important. The answer is: (1) Not how much we know, (2) Not what company work/ed for, (3) Not what position(s) we hold/held, and (4) Not what we did, or even our personal or professional accomplishments. The answer is (5) not even what we can bring to the table to a hazard or disaster. So, what is the answer if it is none of the above?

The answer is Relationship. The quality of relationships going into an incident is the answer. The energy spent in developing and fostering relationships one with another is the answer. The time and effort taken in building up versus tearing down is the answer. Forging strong working relationship with lead and partner organizations is what is essential in going into an incident, and perhaps more importantly, what will bring us all out of that incident in the best shape possible.

In the near future, BIARC or at the least BIARC members may be asked to take part in or be part of local Em-Comms. That day has been a long time coming and is fast approaching. It is my hope that you as a BIARC member will consider your worth to and value yourselves as a critical asset to the overall vitality of local emergency communications. It is my hope that you will consider taking steps to increase your knowledge of local emergency communications guidelines that will require conformity and personal commitment, should you desire to be part of the big picture. As with all emergency management activity, actions taken pre-land fall are key and always the focus. The same holds true for emergency communications.

Mahalo,
Bill Hanson
NOCAN
BIARC President

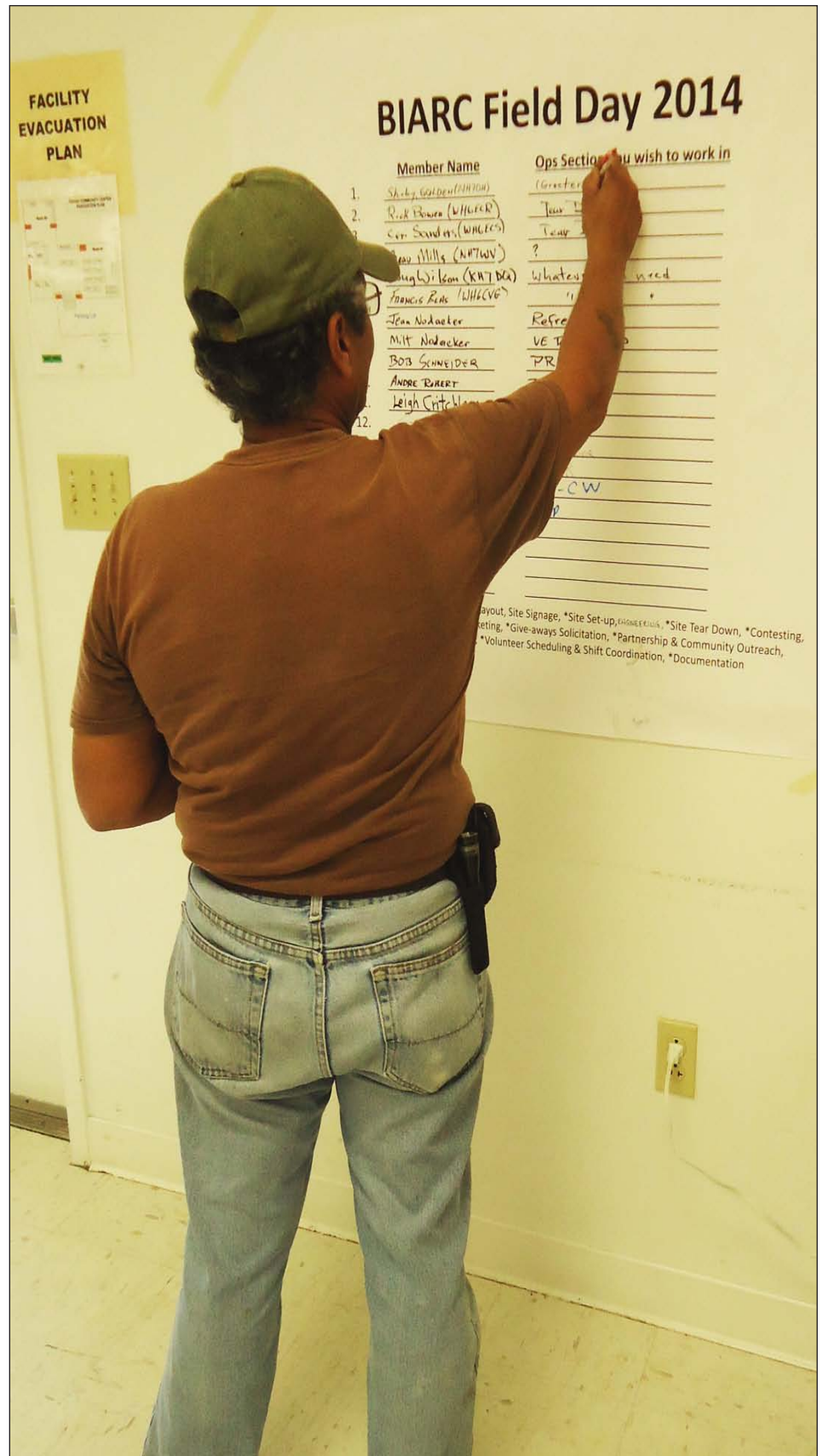


Photo by Linda Quarberg/WH6LQ

Nick Rivera, team leader of the HPP CERT group, signs up to assist at BIARC Field Day 2014. There are still lots of ways to help out, so sign up for Field Day at the April 12 meeting.

Big Island Amateur Radio Club

P.O. Box 1938, Hilo, HI 96721

www.biarc.net

Officers for Calendar Year 2014

President: Bill Hanson, N0CAN, 989-4700

Vice President: Milt Nodacker,

AH6I, 965-6471

Secretary: Leigh Critchlow, WH6DZX, 930-7330

Treasurer: George Bezilla, WH6EFN, 961-6323

Directors — 2014-2015

Toni Robert, N0INK, 937-2183

Directors — 2013-2014

Mary Brewer, WH6DYW, 985-9595

John Buck, KH7T, 885-9718

John Bush, KH6DLK/V63JB, 935-5500

(Club License Trustee:

Paul Ducasse, WH7BR, 985-9222)

Standing Committees (as of December)

Service/Awards: vacant

Education & Testing: Milt Nodacker, AH6I

Emergency: Paul Ducasse, WH7BR

Equipment: Milt Nodacker, AH6I

Health & Welfare: Barbara Darling, NH7FY

Membership: vacant

Hospitality: Jean Nodacker, WH7WT

Newsletter: Leigh Critchlow, WH6DZX

Repeater: Bob Schneider, AH6J

Webmaster: Curt Knight, AH6RE

Special Committees

Hamfest Chair: Bob Schneider, AH6J

co-Chair: Doug Wilson, KH7DQ

QSL Bureau Chair: Barbara Darling, NH7FY

Meetings and Get-Togethers

Membership meetings: Second Saturday of each month at 2 p.m. at the Keaau Community Center

Friday Lunches: A group meets for lunch every Friday at 11:30 a.m. at Kow's Chinese Restaurant in Hilo at 87 W. Kawailani St., just above Kinoole Street behind the Shell station.

East Hawaii Net

The East Hawai'i Net meets on Monday, Wednesday and Friday mornings at 8AM HST on the 146.76 MHz repeater.

ARES Emergency Net

Meets Saturday evening at 1900 HST on the 146.76 repeater. Backup is 146.76 simplex.

All are welcome to check in.



Repeaters

* Linked to other repeaters covering the Big Island and Maui.

** Linked to the WIN system, which includes 71 repeaters in the US, Australia, Canada and Japan.

*** Linked to the XO network, Hawai'i statewide. Contact WH6FM for info.

Frequency:	Trustee:	Location:	Tone:
*145.29-	WH6FC	HOVE - Ka'u	100 Hz
146.66-	(TBS)	Ocean View	100 Hz
146.68-	KH6EJ	Kea'au (limited range)	none
*146.76-	KH6EJ	Kulani	none
*146.82-	KH6EJ	Mauna Loa ARES	none
146.88-	KH6EJ	Pepeekeo, linked for emergency only	none
*146.92-	KH6EJ	Ka'u Police Dept	none
*146.94-	KH6RS	Haleakala Maui Civil Defense	110.9 Hz
147.02+	KH6HPZ	Haleakala Maui RACES	103.5
147.04+	KH6HPZ	Mauna Loa RACES	none
*147.16+	WH6DEW	Hualalai Kona	100.0 Hz
*147.32+	NH7HI	North Hawai'i Comm. Hospital Hilo	100 Hz
*147.38+	KH7T	Waimea East (experimental)	none
*442.35+	KH6RS	Kaanapali Maui	136.5 Hz
*442.50+	KH6EJ	Kea'au	none
443.40+	KH7MS	Kona	100.0 Hz
443.40+	KH7MS	Ocean View	77.0 Hz
443.65+	(TBS)	Ocean View hub and standalone repeater	none
*444.225+	KH6RS	Haleakala Maui Civil Defense	110.9 Hz
*444.45+	KH6EJ	Parker Ranch GS Camp	88.5 Hz
***444.90+	WH6FM	Hilo - linked to WIN system	100 Hz
***444.775+	WH6FM	Hilo - linked to XO network	123 Hz

BIARC ARRL Field Day 2014

Update from the president:

Update for the BIARC ARRL Field Day 2014 event includes the announcement of Wailoa Art Center as a second working location for this year's field day.

The Wailoa Art Center, located near King Kamehameha's statue in downtown Hilo, will be home to Field Day HF operations providing essential communication support to Hilo Wal-Mart Field Day ops.

Current Field Day working Group is as follows:

Agamata, Chris	F&B
Agamata, Paul	Engineering
Bezilla, George	Planning
Blas, Francis	Planning
Bowen, Rick	Tear-down
Critchlow, Leigh	PSAs
DeLima, Arlen	Set-up
Golden, Shirley	Greeting & information
Mills, Beau	Planning
Motomura, Harvey	Digital Station
Nodacker, Jean	F&B
Nodacker, Milt	Testing and VE
Robert, Andre	Documentation
Robert, Toni	Planning
Sanders, Ceri	Tear-down
Schneider, Bob	Planning, PR, and VE
Sellers, Sid	CW Station
Wilson, Doug	Planning

Everyone is invited to join the BIARC ARRL FD workgroup!

The Field Day Planning Meeting Schedule

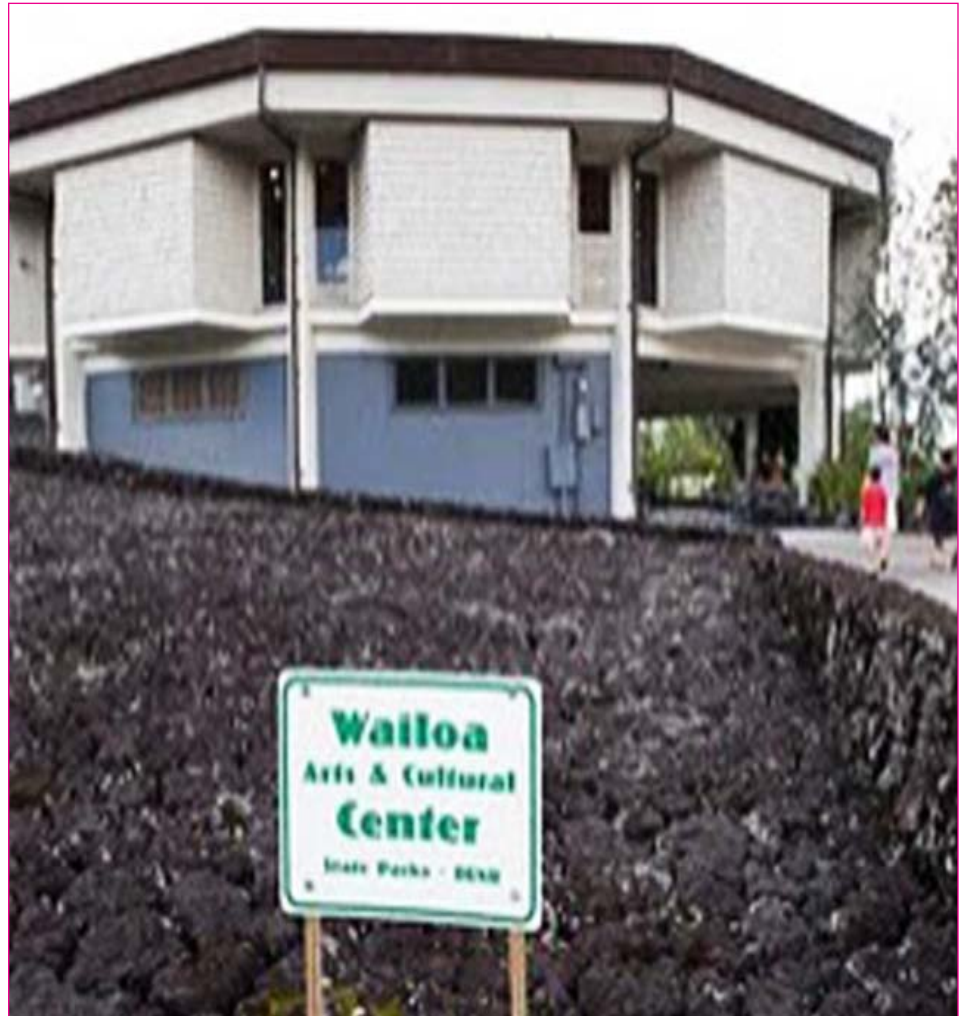


Photo by Audrey Hord

The Wailoa Art Center, located near King Kamehameha's statue in downtown Hilo, will be home to Field Day HF operations, providing essential communication support to Hilo Wal-Mart Field Day ops.

continues on the following dates:

Wednesday, April 9 — 5:30 PM to 7:00 PM

Keaau Community Center

Wednesday, April 30 — 5:30 PM to 7:00 PM

Keaau Community Center

Wednesday, May 14 — 5:30 PM to 7:00 PM

Keaau Community Center

Wednesday, June 11, — 5:30 PM to 7:00 PM

Keaau Community Center

April 2014						
Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1 Board Mtg 1700 hrs	2	3	4	5
6	7	8	9	10	11	12 General Meeting 1400 hrs
13	14	15	16	17 VE Testing	18 Good Friday	19 Tsunami Awareness Day
20 Easter Sunday	21	22	23	24	25	26
27	28	29	30			

BIARC 2014

May 2014						
Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
4	5	6 Board Mtg 1700 hrs	7	8	9	10 General Meeting 1400 hrs
11 Mother's Day	12	13	14	15	16	17 Work Day Mauna Loa Repeater Site Tech Class
18	19	20	21	22	23	24 Tech Class VE Testing 0830 to 1630
25	26 Memorial Day	27	28	29	30	31

Minutes

Big Island Amateur Radio Club general membership meeting March 8, 2014 Keaau Community Center

President Bill Hanson, N0CAN, convened the meeting shortly after 2 p.m., with 30 hams, two Technician Class students and a local Community Emergency Response Team leader in attendance. Also present: Vice President Milt Nodacker, AH6I; Treasurer George Bezilla, WH6EFN; Secretary Leigh Critchlow, WH6DZX; Directors Toni Robert, N0INK, John Bush, KH6DLK, and John Buck, KH7T; Marvin Kitchen, WH6DPO; Rod Diamond, NH7MT; Gregg Datlof, WH7FC; Mark Morabito and Travis Schnepf, students in Milt's current Technician Class; Richard Darling, AH7G; Barbara Darling, NH7FY; Mike Last, NH7JT; Robert Oliver, NH6AH; Bill Carlson, KH7E; Arlen DeLima, WH6EJZ; Norm Paik, NH7CT; Tom English, WH6EBS; Paul Ducasse, WH7BR; Linda Quarberg, WH6LQ; Doug Wilson, KH7DQ; Andre Robert, WH6EBA; Stanley Gapol, WH6ASV; Brent Watson, WH6DPP; Sidney Sellers, NH7OD; Nick Rivera, CERT; Rick Bowen, WH6ECR; Ceri Sanders, WH6ECS; Kim Fendt, KD0QLR; Sean Fendt, KH6SF; Jean Nodacker, WH7WT.

During the regular round of introductions and updates, we learned that Richard is waiting for his 331st QSL country card to arrive in the mail; Barbara's son, David Robbins, K1TTT, a BIARC member living in Peru, Massachusetts, has just published his third book: *"Building a Super Station- 30th Anniversary"* (see story elsewhere in this newsletter); Milt's latest Technician Class started Thursday, March 6; Ceri and Rick are the proud new owners of a pair of Extra Licenses.

Bill announced that BIARC's annual ARRL Field Day will be in two locations on June 28. As announced earlier, a big event geared to attract several thousand participants will be presented, along with other



Photo by Linda Quarberg/WH6LQ

HPP resident Rod Diamond gives the membership a peek into the world of total off-grid living.

groups and agencies, at the Hilo Walmart. This will run most of the day on that Saturday, offering lots for folks to see, do and learn. The goal is for us to build more exposure of amateur radio to the public, "rather than us preaching to the choir," said Bill. Over at Wailoa Center, BIARC also will host the traditional 24-hour Field Day activities, with radios and antennas set up for demonstrations and contesting. Bill again asked for volunteers to sign up to help plan and put on the Field Day activities.

Milt said guest speaker Jim Kennedy, K6MIO, will focus on F2 propagation at the April 12 meeting, a change in topic from that previously announced. And, Jim will move his program about "Ham Radio as an Xtreme Sport" to the August meeting. Milt predicts a couple of great programs from Jim. "He's a good presenter, and knows his stuff on atmospheric physics," said Milt.

March program

Milt started the session with an entertaining and informative segment on solar energy based on a recent Wikipedia research project. Then he yielded the

podium to HPP resident Rod Diamond, who gave the membership a peek into the world of off-grid living right next to a power line. Rod moved to Puna in 2000. He was getting a haircut at a friend's house, when the proverbial lightbulb went on above his head. His hair was being trimmed with an apparatus powered "with sunshine." He started small, as he built his present photovoltaic paradise. From store-bought batteries, he's upgraded three times, to an impressive bank of high-quality, high-functioning batteries he tends with care. He understands what they need, to ensure a long, productive life, and he provides it in well-structured fashion. He built a tracker for his solar panels. It glides easily and he pulls it by hand to follow the sun. He's found that 10 kilowatts per hour is the perfect amount to power a house. With Rod's uncle, Marvin Kitchen, contributing, along with input and Q&As from the audience, it was an enjoyable interlude. We learned the best way to discover how good your distilled water is: Use an ohm meter. Pure, distilled water

won't conduct electricity because it is just that: Pure. There are no loose ions, no ions at all in perfectly distilled water. We learned about various types of batteries and their past, present and projected future uses. Rod said he used to have a backup diesel generator, but now has no backup power. Even on the darkest day, he gets 8-12 KW a day. He said his motto about solar energy is "too much is enough." Rod also gave the audience a glimpse into the current and future status of large-scale solar, introducing us to such facilities as solar updraft towers, solar steam systems and humongous PV arrays. The future's so bright, we gotta wear shades. And, as some folks pointed out: We can start our personal ventures into the world of solar right where we are now. Pick up some little solar yard lights and poke them in along your walkway. If the power goes out, they'll come in handy as stand-in flashlights and keep you from bumping into a wall. Set up a small system to power a main appliance. Incremental inspiration: Get what you can afford and move ahead when

Minutes

you can. Self-reliance, even in small steps, makes you feel good. And it cuts down on the monthly HELCO bill.

The group then took a break for a special dessert buffet homage to St. Patrick's Day,

courtesy of Hospital-ity Chair Jean Nodack-er. The ice cream was

green and minty, the melon shamrock nicely carved and the delectables decorated with a "touch-o-the-Irish." Thank you, Jean.



Business meeting

Length of business meeting:

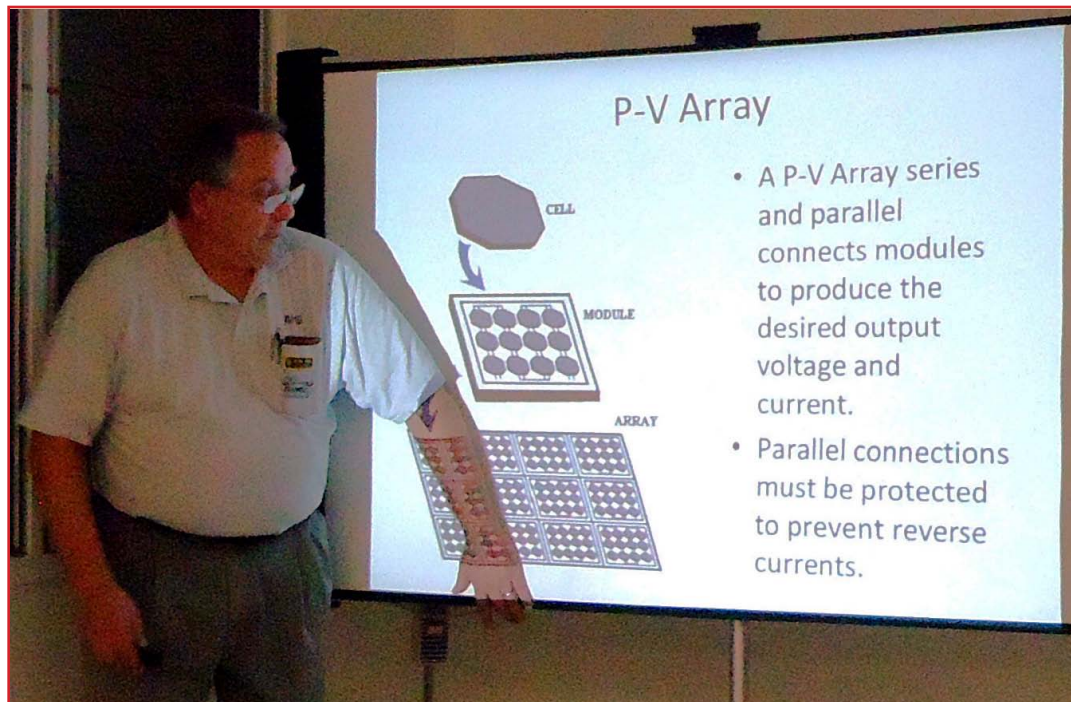
Robert moved and Richard seconded a motion that the business portion of the monthly meeting last no longer than 30 minutes and/or past 4:15 p.m. John Buck said he believes the business meeting should take "as long as it takes." The motion was defeated.

Bylaws revisions: Bill introduced this agenda item. The matter had been tabled at the February meeting.

Milt moved, and Toni seconded the motion, that the tabling action be removed, thereby bringing the matter back into play. The motion passed.

Milt then moved, and Tom seconded the motion, that the bylaws and proposed revisions be referred to a committee for further consideration and work. Committee will report back to membership at April meeting. The motion passed.

Bill asked for volunteers to serve on this ad hoc working



Photos by Linda Quarberg/WH6LQ

Milt starts the March program session with an entertaining and informative segment on solar energy based on a recent Wikipedia research project. (See more on this presentation later in the newsletter.)

committee. Tom, Doug, Sean, Toni, Robert and John Bush volunteered. Bill appointed Doug to chair the panel.

Minutes of February meeting:

Milt moved, and Barbara seconded the motion, to approve the minutes as printed in the March newsletter. The motion passed.

Refreshments review: The hospitality committee received a round of rousing applause.

QSL Bureau: Barbara reported that 67 cards arrived over the last month from Norway, England, Iceland and Latvia, for a total of 1,765 so far this year.

Treasurer's report: George reported that the bank balance stands at \$4,381.56. Paid-up membership stands at 84, including six who paid dues at this meeting.

Upcoming events: Bill offered a brief preview of programs, activities and presentations available to the BIARC ohana in 2014. There are activities with Civil Defense, classes, work days at Mauna Loa, Pepeekeo and Kulani repeater sites, the ARRL Kids Day in August, Field Day in June, a "fox hunt" in September, Hamfest in October and the Christmas party in December. Plans also are in the works for a Fourth of July BIARC Fam-

ily Day in Volcano, and Doug and Linda have offered their front yard for the festivities.

Milt moved, and Doug seconded the motion, that we adopt the activities schedule, subject to revisions, when needed. The motion passed.

Bill noted that the BIARC website will be updated, with ideas to be presented to the membership. The meeting was adjourned at 4:18 p.m.

The next meeting will be at 2 p.m. Saturday, April 12, at the Keaau Community Center.

Respectfully submitted,
Leigh Critchlow,
Secretary

Just what is a
Volunteer Examiner
— — aka a VE — —
and what is his
or her role?

What does a Volunteer Examiner (VE) do?

Volunteer Examiners (VEs) are U.S. licensed Radio Amateurs holding a General Class license or higher, who offer their time to administer the FCC licensing exams through an FCC authorized Volunteer Examiner Coordinator (VEC) organization.

The ARRL VEC is the largest VEC organization in the United States.

A team of three or more ARRL VEs is able to test candidates applying for a new license or upgrading an existing license.

10-meter mission in 2014

10-10 Spring Digital, CW QSO Parties on tap



Photo by Curt Knight/AH6RE

Destination 10-10: All Technician Class Licensees have 10-meter privileges. So: All aboard!

Irene, NH7PE, received a 2012 10-meter Contest certificate for first place-single operator, phone-only, low-power, Hawaii, with a score of 1,410 points. You, too, can receive a certificate by submitting your logs, just follow the rules to learn where, how, when — and in what format — to send them.

From her station in Waawaa, NH7PE reported that 10 meters was “hopping” for the March 1-2 ARRL DX Contest. As DX, Hawaii was to contact the 48 contiguous states and the Canadian provinces. Irene reports that she heard a Maine station AND a Rhode Island station, but did not contact them due to pile-ups. Rick, WH6LU, contacted all but one state!

On March 5, at 2:15 p.m., Guantanamo Bay, Cuba station KG4KJ was calling Japan and the Pacific, split on 28.555 up, 28.560! Listen for 10-10 Cradle of the Confederacy Chapter from near Pike Road, Alabama on 28.350 MHz at 2 p.m. HST on Wednesdays. Or, try to join New Zealand’s Down Under Chapter at 12:30 p.m. Fridays on 28.530 MHz. Have lunch while you QSO

Start preparing for the Ten-Ten Spring Digital QSO Party, April 26-27, with the May 3-4 Spring CW QSO Party following soon after. For further details, check www.ten-ten.org.

All Technician Class Licensees have 10-meter privileges, so try your hand on HF!

The Aloha Chapter of Ten-Ten International Net, Inc. meets on 28.490 MHz, with an alternate frequency of 28.487MHz, every Monday evening at 6:30 p.m. HST. If you don’t hear me, don’t just listen, call “CQ!” Help keep 10 meters in amateur radio hands.

Thanks and aloha.

— — — Irene, NH7PE



Operate in the digital area of 10 meters using digital modes (RTTY, PSK, JT65, etc.) only, for 48 hours. Logs are due by May 12, 2014.

The 48-hour 10-10 Spring CW QSO Party will be May 3-4. Use only the CW area of 10 meters.

Exchange for all 10-10 contacts is: call sign, name, 10-10 number and QTH (state or province, and country). If you don’t have a 10-10 number, record a zero in the log. Logs must be postmarked by May 19.

There’s no better time than now to monitor and use the 10-meter band. Don’t just listen, call CQ!

— Irene, NH7PE



Congratulations to BIARC’s own Inoke Mills, WH7DI, shown here at his Boy Scouts Eagle Scout induction.

WH7DI is Eagle Scout

Inoke Mills, WH7DI, is the newest Eagle Scout in Boy Scouts of America Troop 7, which is sponsored by the Keaukaha Ward of the Church of Jesus Christ of Latter Day Saints. He is the son of Janet, NH7AK, and Beau, NH7WV, Mills and is a junior at Keaukahu High School.

For his Eagle service project, Mills made 60 rescue spine boards for the Hawaii County Civil Defense CERT Teams. The boards will be used for training, and for rescue operations in the event of a large-scale disaster.

Mills is a Native Hawaiian, as are the majority of the members of Troop 7, which consists of young men from Keaukaha and Panaewa. He enjoys all aspects of scouting, especially water activities. His career goal is to become a para-rescuer with the Air Force. He encourages the rest of his brothers to make it their goal to attain scouting’s highest honor.

Since its introduction in 1911, the Eagle Scout rank has been earned by more than two million young men.

Requirements include earning at least 21 merit badges and demonstrating Scout Spirit through the Boy Scout Oath and Law, service and leadership. This includes an extensive service project that the Scout plans, organizes, leads, and manages. Each Eagle Scout is presented with a medal and a badge that visibly recognizes his accomplishments.



BIARC Newsletter

Story/photo/ad submittal deadline for May edition: April 20
email to lcritchlow@mac.com

BIARC vet takes a look at the Elecraft K3

Editor's note: A couple of BIARC members are considering purchase of the Elecraft K3, and sought advice from John Buck, KH7T, on the transceiver and its options. John is familiar with this radio. During an in-depth discussion via email, a lot of information surfaced. Those involved in this exchange of facts and analysis thought it might be of interest to others, so submitted it for publication here. Additional ideas are invited. Send them in writing by April 20 for inclusion in the May BIARC Newsletter.

Question to KH7T:

I would appreciate your comments and advice about the rig I am planning, based on your experience. I've already talked to you about antennas, and those books you lent to me are very helpful so that part is in process. Meanwhile, I need to nail down what my rig will be. I would prefer to get a really good system that will satisfy me for a long time, rather than start out with something limited and then grow later. Life is short!

I am looking at the Elecraft K3. I prefer that to the KX3 because it is larger ... mostly the same capabilities but in a bigger box. I've looked at a few others, but this seems to be among the most positively viewed, and you had positive words about it yourself.

A BIARC member

KH7T answers:

I have found my K3 to be the best choice for me. Some people have given up the K3 because it has so many settings that can be optimized or possibly abused. It was too fiddle susceptible for them. In at least one case, Richard D., you know him, gave up his K3 and recently stated that he may eventually get another one. Fred replaced his K3 after trying out the latest and greatest side by side and decided the preferred the other for his operation.

I like K3 because the company has not stopped improving the product, both hardware and firmware. And they plan to keep the changes available to existing customers for modest cost for hardware and free for firmware. ALL of the other companies issue upgraded models for new prices.

Elecraft does incorporate the existing mods in the newer serial numbers so the existing mods do not have to be incorporated by the recent buyer. The performance of the new and old is exactly the same and has not been obsoleted by other companies' attempts over the last few years to come up with K3 beaters.



~ Ask Elmer ~

Some do have better speaker audio but external powered speakers solve that. You want two speakers or stereo headphones for use with the second receiver.

Question to KH7T:

... That said, there are a number of options and I'd appreciate your view of the advisability of getting them...

1) KRX3-F subreceiver — a second receiver in the same box. How useful is this? I see it enabling us to listen to two nets simultaneously (e.g. 40M and 2M) during emergency nets. Other uses seem a bit limited (e.g. compensate for selective fading). All in all, it does not seem compelling and it requires its own additional set of roofing filters, but I may be missing something that you know about.

KH7T answers:

I have the second receiver connected to the same antenna for chasing DX in the same band. I believe it is possible to set up to use with two separate bands like 2M but check for sure. It may be silent while transmitting. I have not checked out this setup but I believe it is a good idea. If you want to use the second receiver on other bands be sure to read how to do it before buying

Question to KH7T:

2) KAT3-F internal antenna tuner.

I'm concerned that if the antenna tuner is integrated in the rig, there is less flexibility to try other tuners or tune in other ways. On the other hand, the tuning is somewhat automatic and if we are switching bands, it would make it smoother. What is your opinion about an internal antenna tuner such as this?

KH7T answers:

Absolutely get the internal tuner when you get the built in 100W amplifier unless you do not intend to go portable and you do intend to get the KAT500 external tuner for eventual use with the KPA500. The internal tuner is bypassed when using an external tuner. In no way does it interfere with use of external op-

tions. The KAT500 integrates perfectly with the K3 and works as well as the internal tuner. Both are excellent tuners.

The exception to this statement is if you want to go with a bigger amplifier or if you really wanted to use a remote tuner for that big antenna on the other end of your football field at the top of your 200 foot tower. I do like the tuner providing 3 antenna outputs as well as the second antenna connection of the K3. I can hook up 4 antennas: 3 to the external tuner and 1 to the K3 for local work.

Question to KH7T:

3) P3-F panadapter with spectrum analyzer and waterfall display? What is the advantage of the integrated system over a separate spectrum analyzer? How useful will I find this?

Having used the P3 after working with LP-Pan and other systems, I would not be without it. It displays up to 200 kc on the band the A receiver is on. There is a mod that allows use on the second receiver but I do not need it. I do have the VGA adapter plug in card and really like the larger external display.

I am using a cheap 15" monitor along side my computer monitor. The second monitor also displays decoded CW, PSK, and RTTY on the screen along with the waterfall. Most people that try the P3 really like it as an aid to receiving and seeing what is going on near by the operating frequency. I like it because it does the well integrated job without tying up my computer display. It is very useful for spotting band openings and choosing just the right frequency for breaking into the DX or contest pile up. It is also helpful in evaluating received signals to help an operator evaluate transmitter and mike settings.

A spectrum analyzer has the capability to show wider bandwidths and frequencies outside the K3 range. The analyzer is useful for tuning repeater filters if you need that capability. There are cheap sdr radios that with proper computer software do a good spectrum display.

If I had to make the choice, I would chose the P3 with the big display over the second receiver.



K3 rear panel view

But I use both, a lot. The integration of the P3 with the K3 works very well.

Question to KH7T:

4) Integrated amplifier to generate 100W signal. I'm sure I want 100W rather than 10W. The question is whether I would be better off getting the 500W amplifier later and starting with the rig now. How important is it to have 500W? I hear of folks working with 100W or less and doing quite well.

KH7T answers:

I like the 100W option. You can still run 5 or 10 watts when you want to. Even after I got the 500W amplifier, I kept it turned off until I got the 300th country DXCC confirmation. I am using the 500W to finish up 5 band DXCC on 40 and 80 meters. And on 160 I really need the 500 watts to work some of what I can hear.

In my opinion, a beam antenna is worth a lot more than the 500W or even 1500W. The beam lets you hear much, much better along with increasing your talk power nearly as much as the amplifier. With a good multi-band beam, I was eventually able to work most of what I heard using 100 watts SSB. Lower power is even more useful on CW and PSK. Of course, the amp makes it even easier for the other guy to hear me. 100W with a good beam is very good.

Adding the amp is awesome. Just do not use it for PSK and many of the digital modes and also not for most local work. Some say life is too short for QRP. But then is QRP with a good antenna really QRP? This is an ongoing religious issue. Let me make my position clear. PUT OFF THE BIG AMPLIFIER until you get experience. Learn when to change bands with propagation. Learn to work a pileup without QRMing everyone else.

Question to KH7T:

5) K144X-V adapter to enable 2M operation as well as 160M to 6M. This just seems appropriate. Any comments?

KH7T answers:

If I did not have the 2M external transverter, I might get the K144XV for my home station all mode use. You may still want a good 2M/440 fm radio separately. With the 10 watts you may want a 50 or 100 watt brick amplifier for

use in this area. Again a good vertical antenna and a several element beam are good to play with. My 20 watt transverter with the K3 has worked the moon (with a big amp) but the frequency range is the lower half of 2 meters so FM use with our local repeaters is very limited.

The K144XV is unrelated to 160M and 6M. 6M again with a good beam is a lot of fun when it is open. This is frequently just now but when the sunspot cycle fades out then my 6M gets little use unless I put up big antenna with amplifier for moon bounce. 160 needs a large low angle antenna, like a 600 foot rhombic pointed the right direction. I have made contacts with and inverted L, but it is hard. 160 is probably better when the sun spot cycle is lower than it is now.

Question to KH7T:

6) KBPF3 general coverage bandpass filter to provide receiver coverage outside of ham bands. This just seems fun. Are there any issues with this?

KH7T answers:

Not that I know of. I believe that there is a mod to improve the capability at the very low end. There is a new ham band coming that will be interesting, especially with the big rhombic.

Question to KH7T:

7) Roofing filters. What is the difference between 5-pole and 8-pole filters? I am looking at the standard 2.7 kHz for SSB, 13kHz for FM, 6kHz for am, and 200hz and 500hz for digital and CW. I do plan to pursue CW as well as work on digital.

KH7T answers:

I recommend looking at http://www.elecraft.com/K3/Roofing_Filters.htm especially the second column. Also see http://www.elecraft.com/K3/K3_filter_plots.htm to compare the various filters.

The 8 pole are more expensive. Fundamentally, the 8 poles have steeper skirts and the 5 poles have better far away suppression. As the article above states, the K3 is designed to take advantage of the 8 pole while not having adverse effects from the far away concern. The steeper skirts are not always better but can help slice a very strong signal off the edge. The DSP does a better job on very narrow filters

than crystal filters by avoiding ringing.

I have the standard 2.7 for SSB and I use it for AM listening. 13 for FM and I believe that new firmware allows AM with this filter. I added 1.8 narrow SSB and data. I added 500 for CW. The second receiver has 2.7 and 500. I might choose a pair of 400s instead of matching 5 pole 500s and a pair of 2.8s if doing it again and I might choose 2.1 instead of the 1.8. You certainly do not need to load up the second receiver. You can add filters later. All plug in. I admit it is a little tedious to get to them.

Keep in mind that the K3 does not have to have extra crystal filters except for FM or for transmitting AM. The built in SDR with DSP filtering is quite competent when dealing with narrower bandwidths within the selected filter range. Filter choice is very personal. Leave out the 6kc one unless you really want standard AM transmit. Leave a slot open for when you discover you really want an additional choice. I suspect the 200 will not help much even for CW when you use the DSP to select narrower bandwidths like 100 or 50Hz. Diversity with 2 antennas is very useful if you have two separate location or polarization antennas and so the matching of filters is needed to benefit. The 8 pole filters are built matched. Matching the 5 pole is a cost.

Question to KH7T:

8) I am not looking at any other options, because this seems like a lot. Is there something I am missing? Is there something I should not bother getting?

KH7T answers:

KTCXO3-1 TCXO (0.1 ppm typ) High Stability Ref. Osc. It is nice to be on frequency. KDVR3 Digital Voice Recorder is very useful for contests. KFLMATCH - Matching of 5 pole filter pair offsets to 40 Hz. (200 Hz, 500 Hz and 2.7 kHz 5-pole filters only) KXV3A - RX Ant., IF Out and Xverter Interface. If not included in the K3-f with the 144MHz module. Proper cables.

Publish this in the newsletter. I bet we get several new ideas.

The typos and opinions are mine.

73 with aloha, John KH7T@arrl.net

EARC Education News

The Oahu-based Emergency Amateur Radio Club-Hawaii just finished its first 2014 Amateur Radio class. A total of 13 students registered and completed the five-week course in Honolulu. Classes were Mondays at the Fleet Reserve beginning March 17. An ARRL-sponsored VE examination was conducted March 24, and all students passed with flying colors. The average score for the group was 93%.

Eight “walk-ins” also participated in the exam, so the VE team administered 17 tests, resulting in a total of 11 new Technicians, two General and one Extra upgrades.

What made it work was the ARRL VE team — Lovell/AH6LL, Claudette/KH6CHW, Ike/KH6IKE, Ed/KH6GMB and Krista/KR1STA. Great job, guys!

And a special mahalo to Milt/AH6I, our Big Island Amateur Radio Club education chair, who provided PPT training material for the classes.

Look for the list of new hams and their calls on the club website once the applications have been processed by the FCC. The website is www.earchi.org.

— Joe Speroni, AH0A

Get a license, or upgrade

***Upcoming dates for VE tests
for all license classes:***

April 17, 6:30 p.m. at Orchidland LDS Church

May 24, 2 p.m. at Kilauea Avenue LDS Church, Hilo

June 28, 1 p.m. at Field Day, Wailoa Center

July 24, 6:30 p.m. at Hilo Community College

Note that the June 28 session will be the last session for the current Technician test. Beginning July 1, the new test must be used.

Contact Milt, AH6I, at 965-6471 or nodacker@gmail.com for more information.

Two-day Technician Class in May

A two-day format of the Technician class will be given on Saturdays, May 17 and 24.

Class sessions will be from 8:30 a.m. to 4:30 p.m., meeting at the Kilauea Avenue LDS Church in Hilo.

Contact Milt, AH6I, 965-6471 or nodacker@gmail.com for more information.

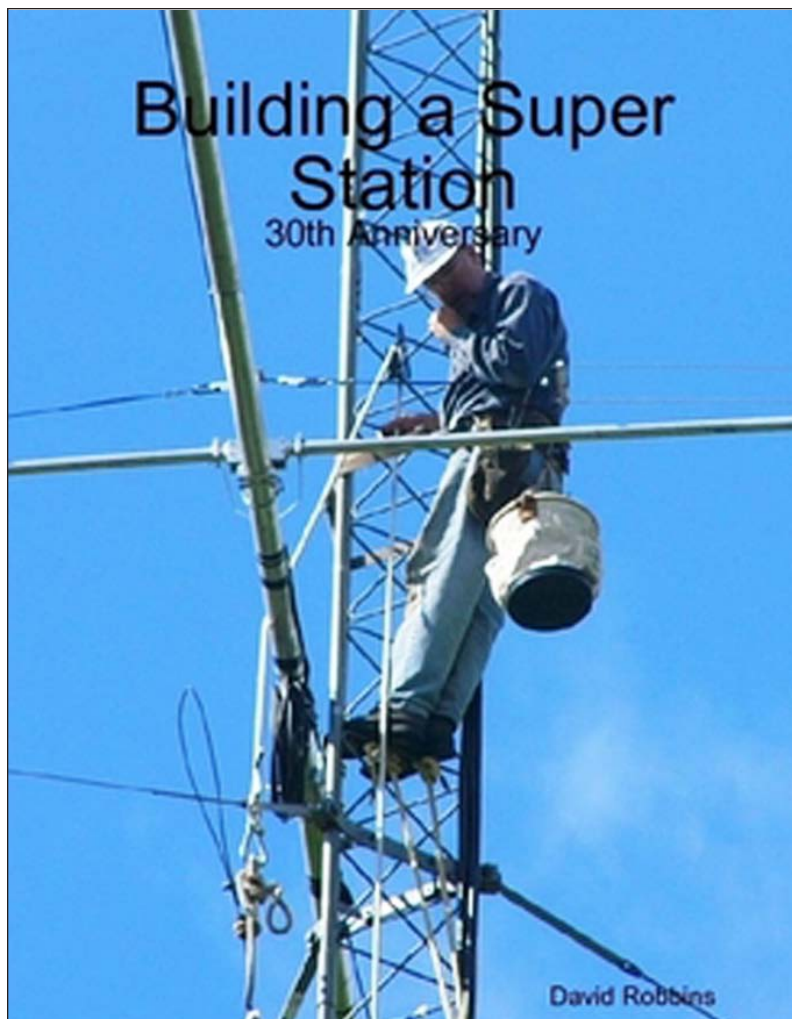
General Class Coming in June

A General license class will be offered beginning June 12 at Hawaii Community College in Hilo.

The class will run six Thursday evenings, from 6:30 to 8:30 p.m., with the testing session following on July 24.

Contact Milt, AH6I, 965-6471 or nodacker@gmail.com for more information.

— Milt Nodacker, AH6I



Author David Robbins, K1TTT, a BIARC member and son of immediate past-President Barbara Darling, offers a great deal on the 30th anniversary edition of his “Building a Super Station.”

The book — fun, witty, insightful and full of all sorts of things that it’s good to know about technology, training, human beings and Murphy’s Law — can be purchased on www.lulu.com for \$139.22 in paperback format. This will ship in 3-5 days. Or, more fiscally prudent hams might want to exercise the other option: download it for free in PDF format, also from lulu.com. Whichever is your pleasure, enjoy this 30-year history of building an amateur radio contest super station — K1TTT — in Peru, Mass., and ride along on David’s saga of building, re-building — and, perhaps, re-re-building — changing and improving the set-up, and an introduction to the visitors and events that have filled the first three decades of the life of super station K1TTT.

“Building a Super Station - 30th Anniversary”
By David Robbins
eBook (PDF): \$0.00
Download immediately.
Paperback: \$139.22
Ships in 3-5 business days
www.lulu.com

All it takes is photovoltaics

(Here is the bulk of Milt's presentation from the March 8 meeting)

Energy from the Sun

Applying solar energy to our lives

Virtually all the energy we consume comes from the sun.

Food – Sun's energy used by plants to convert non-nutritional chemicals into nutritional;

Fossil fuels – Sun's energy collected by plants and stored in the earth for millions of years;

Hydroelectric – Sun's energy raises water into the atmosphere where it can fall to earth and run through turbines to create electricity, and

Wind – Uneven solar heating causes air movement.

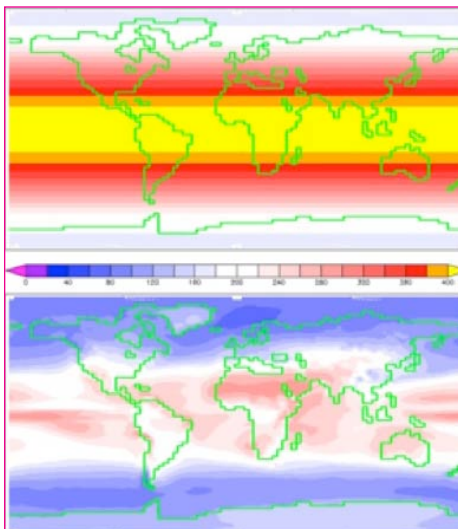
There are only a couple of exceptions:

Nuclear energy – Even here, the case can be made that the heavy elements were produced by solar (star) energy in supernovas, fortunately not the star we happen to orbit.

Geothermal energy – Residual heat from the planet's formation plus nuclear processes in the Earth's core.

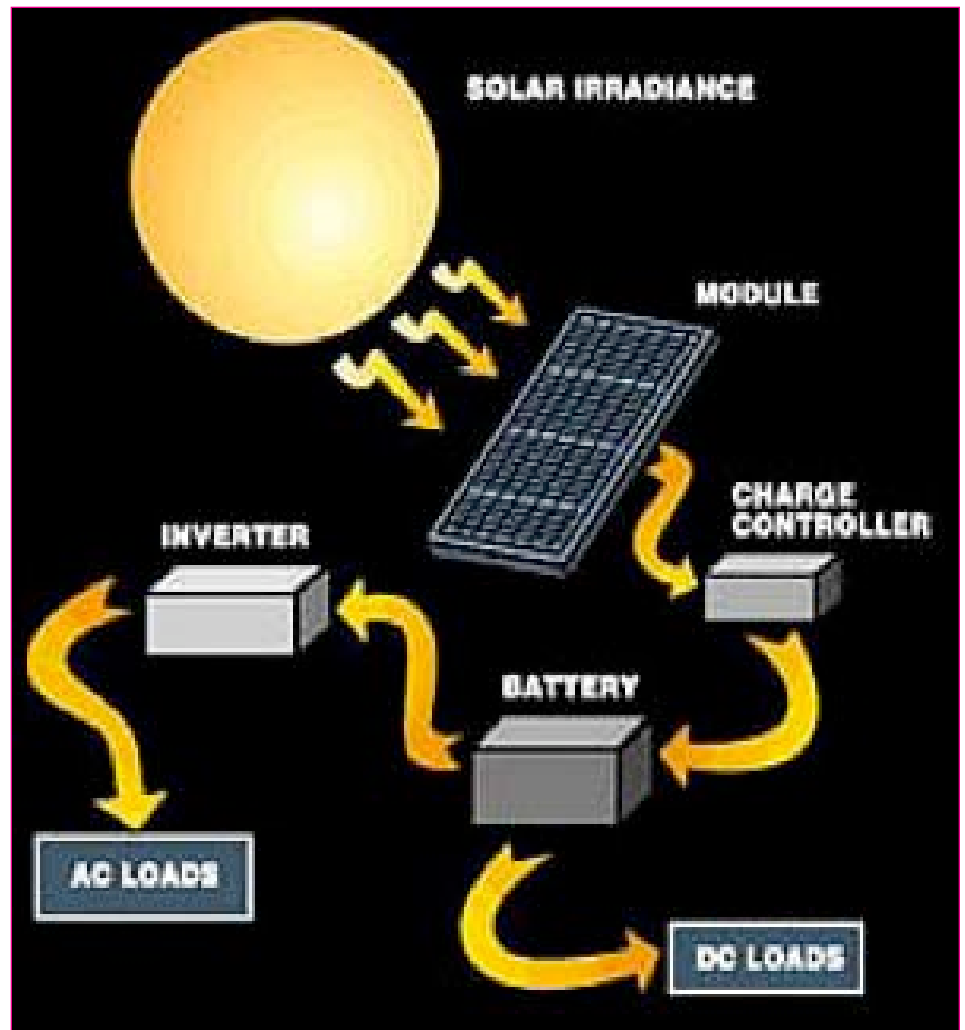
Photovoltaic (PV) Conversion

Our immediate interest is the direct conversion of solar energy into electricity, the most versatile and useful form of energy.



Insolation

Short for incident solar radiation, this is a measure of solar radiation energy received on a given surface area and



recorded during a given time.

(Graphic at left) Annual mean insolation at the top of Earth's atmosphere (top) and at the planet's surface.

The unit is Watts per square meter (W/m^2).

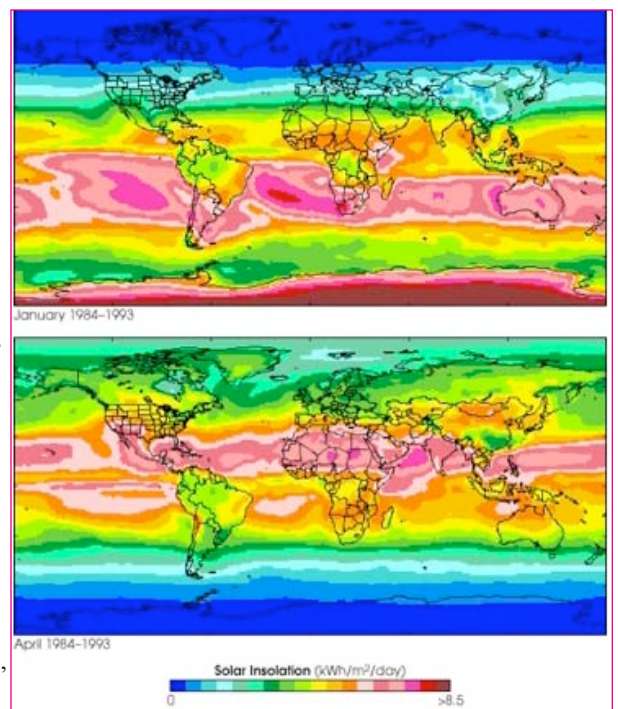
The maps, at right, show seasonal daily averages: the top for ten Januaries, the bottom for ten Aprils.

Note how the seasonal effects of sun angle and day length change the energy available.

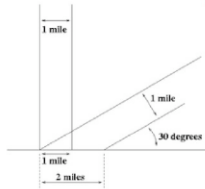
Projection Effect

The insolation onto a surface is greatest when the surface directly faces the Sun.

As the angle increases between the direction at a right angle to the surface and the direction of the rays of sunlight, the insolation is reduced.

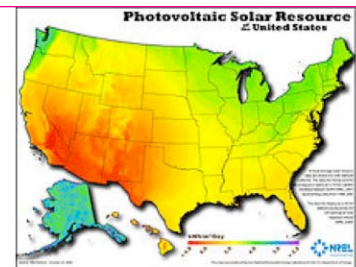
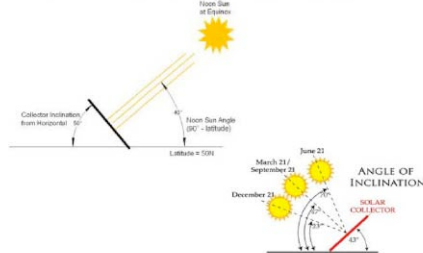


Projection Effect



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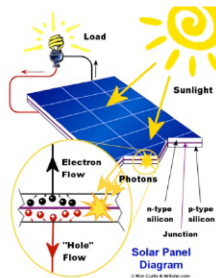
- Some of the projection effect can be offset by the use of a tilt-latitude



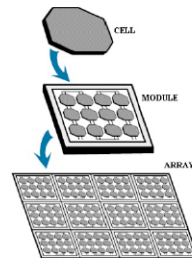
Annual average solar resource data for a tilt-latitude collector.

Inside the P-V Cell

- Photons in sunlight hit the solar panel and are absorbed by semiconducting materials, such as silicon.
- Electrons are knocked loose from their atoms, causing an electric potential (voltage) difference between the "P" and "N" layers of the cell. The voltage difference causes a current to flow.
- The P-N junction (as in a diode) allows the electrons to flow in only one direction -- through the load.

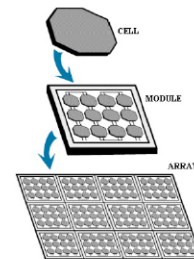


P-V Module



- Each cell produces about 0.5 volts.
- A P-V module consists of series connected cells to produce a useful output voltage.

P-V Array



- A P-V Array series and parallel connects modules to produce the desired output voltage and current.
- Parallel connections must be protected to

Heat Dissipation

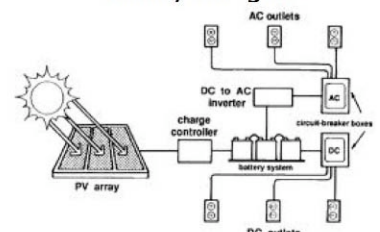
- The solar energy which strikes the panel but does not leave as electricity must leave as heat.
- Solar panels lose efficiency as they are heated.
- When mounting panels, allow for airflow under the panel.

The P-V System

OK, You're making electricity. What else do you need?

- A way to store it for when the sun isn't shining or for peak loads.
- Conditioning for the electricity your devices need.
- Protective devices.

The Simplest Home System Totally Off-grid



Rod Diamond's (NH7MT) off grid PV system

This array can be rotated to track the sun.



Lightning arrestor



1700 Ah at 48 volts



Distilling water for battery maintenance



Additional panels on roof



And even more panels on roof



The electronics



Load leveling



...and here's the definition of "off grid."



Battery Considerations

- Battery life and maintenance
- Battery technologies:
 - Lead Acid - Our familiar auto and deep cycle batteries
 - Nickel-Iron "Edison battery"
 - Potassium hydroxide electrolyte
 - Very tolerant of abuse - life more than 20 years under difficult conditions (overcharge, temperature, vibration)
 - High cost of manufacture
 - High self-discharge rate
 - Regaining popularity for off-grid applications

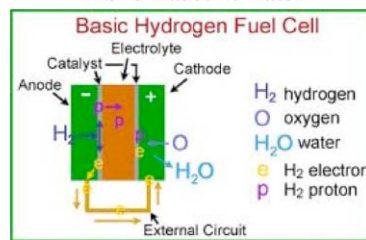
Future possibilities

Hydrogen storage

- During peak production, use the excess power to separate water into hydrogen and oxygen.
- Store the hydrogen until it is needed.



When power is needed, fuel cell converts energy from hydrogen into electricity.
The "exhaust" is water.



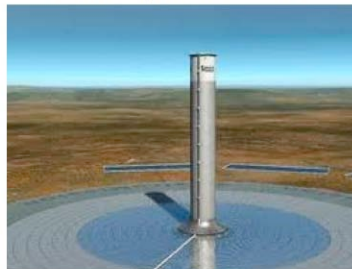
Hydrogen fuel cell



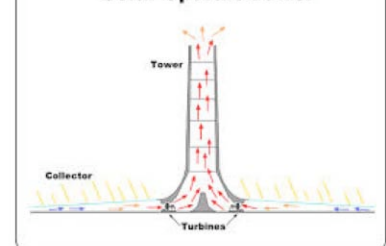
Large scale solar

- Commercial scale power plants
- Attempt to take a diffuse source (sunlight) and concentrate it into saleable energy
- Require large areas of land
- Often far from energy users - require long transmission lines
- Require additional conventional plants for non-solar hours.

Solar Updraft Tower



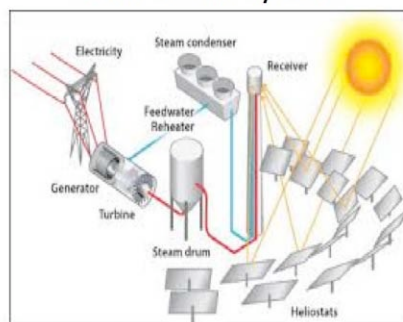
Solar Updraft Tower



Solar Steam System



Solar Steam System



Large PV Arrays



Getting rid of the batteries Grid-connected home systems



Grid-connected systems

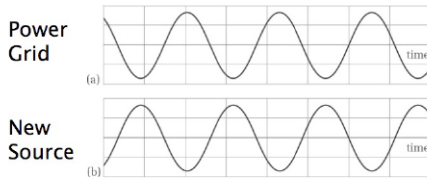
- Use the power company for backup and "storage"
- Excess daytime generation feeds into power grid
- At night or low solar conditions, home draws from the power company
- "Net metering" gives you credit for your contribution to the grid

Grid-connected systems

- Must have power company permission to hook up. In some areas they don't want any more.
- If the power company fails, you have no power

Synchronous inverters

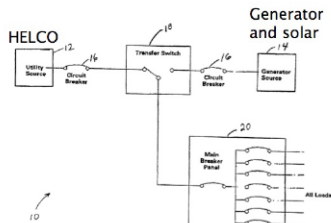
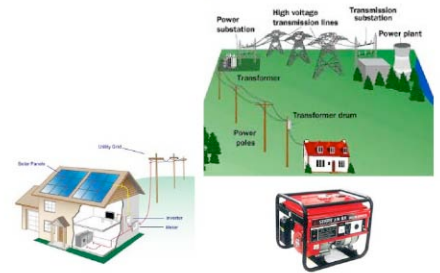
- The power fed to the grid must be synchronized to it - must match voltage, frequency, and phase:



Synchronous inverters

- Most systems use a "microinverter," a small synchronous inverter on each solar panel
- Per electrical code, grid tie inverters must have no output unless they see the power from the power company
- There are undoubtedly some ways to "trick" the inverters into producing, but extreme care must be taken to isolate output from power lines.

The Big Picture



What if you can't afford to solarize your whole house?

An Incremental Approach

- Power only your critical devices with separate solar systems.
- Add systems as you need and can afford them.

An Incremental Approach

- Portable systems can be moved if you need to move.



An Incremental Approach

- Solar chargers for your battery powered devices:



- Priorities at our house

- Communications
- Lighting
- Hot water system

Yours will be different.



In Summary

Solar energy is a diffuse energy source that is best collected near its point of use.

There are many ways to use solar energy, one of the most useful is photovoltaic conversion.

Storage of solar electricity for times of no sunlight is one of

the great challenges to its use.

Most systems use batteries for storage though hydrogen fuel cell technology offers some interesting possibilities.

There are many battery chemistries and technologies. Each is best suited for a particular application. Industrial size solar installations

do not provide the same kinds of economies of scale as other kinds of power generation.

Home photovoltaic (PV) systems can be whole house off-grid, grid connected, or supporting only selected emergency systems.

PV resources should be a part of all emergency communications planning.