NTEU CHAPTER 280 - U.S. ENVIRONMENTAL PROTECTION AGENCY, NATIONAL HEADQUARTERS
BEN FRANKLIN STATION, BOX 7672, WASHINGTON D.C. 20044 - PHONE 202-566-2788
INTERNET http://www.nteu280.org **E MAIL** Murphy.JamesJ@epa.gov

Inside The Fishbowl
Official Newsletter of NTEU 280

February 2007 **Volume 22 - Number 9**

PRESIDENT	Bill Evans	(202)566-2789
EXECUTIVE VICE PRESIDENT	Dwight Welch	(202)566-2787
SENIOR VICE PRESIDENT	Diane Lynne	(202)566-2786
CHIEF STEWARD	Rosezella Canty-Letsome	(202)566-2784
VICE PRESIDENTS	Dr. Arthur Chiu, M.D.	(202)564-3296
	Bill Hirzy	(202)566-2788
	Anne-Marie Pastorkovich	(202)343-9623
	Diane Rains	(410)305-2908
	Dr. Freshteh Toghrol	(410)305-2755
SECRETARY	Jeff Beaubier, Ph.D.	(202)564-7642
TREASURER	Dr. Bernard Schneider	(703)305-5555

EDITOR Diane Lynne (202)566-2786

MAIN UNION NUMBER (202) 566-2785

UNION FAX NUMBER (202) 566-1460

NTEU Chapter 280 Website: www.nteu280.org

NTEU National Website: www.nteu.org

Link to NTEU Membership Form: https://www.opm.gov/forms/pdf_fill/sf1187.pdf

Table of Contents

*1. State of the Union for Federal Workers and the Top Ten List

*2. Library Closings

* 3. Laboratory Closings

* 4. OMB Risk Assessment Bulletin

*5. Competency Assessments

*6. Ask the Lawyer Column: Guest Columnist Tom Passman, Esq. , Employment Law Expert

*7. X-BYTES – A Column by Dwight Welch, NTEU Chapter 280 Exec.V.P.:

- Manager Plus or Minus

- Adventures in Alternative Energy Part 2, Building an Emergency Battery Backup System (To Be Used with Solar Electric System)

*8. "Law & Order: Special Victims Unit" to Highlight

Pesticide Testing on Humans on Tuesday February 6th, 2007

PARS Update – Did you read the Fishbowl special PARS Edition that was e-mailed on January 26, 2007? If you didn't receive it, hit reply and let me know, so I can re-send it.

Let us know your experiences with PARs (good and bad) so we can develop Qs and As to assist our members with PARS issues.

1. State of the Union for Federal Workers

You Belong to a Powerful Group! NTEU won a vote to represent 30,000 workers in Customs and Border Protection. What does that mean for you at EPA? Well, according to The Washington Post's Federal Diary Columnist, Stephen Barr in his January 19, 2007 column, *" Bush administration officials have closely followed the election battle because the union that is certified as the winner will gain a larger voice in workplace issues and perhaps even policy debates on Capitol Hill."* The more powerful NTEU becomes (by increased membership) the more influence they have with Congress and the Administration in protecting your rights and influencing your benefits. NTEU's agenda for you appears below:

Tuesday, January 23 2007

Statement of NTEU President Colleen Kelley On State of the Union Address

As the president prepares to deliver his State of the Union address tonight, I would urge him to consider the state of our nation's federal workforce. These 1.8 million dedicated federal employees contribute a great deal to the strength of our country and the ability of the federal government to deliver needed services to our citizens. Yet this administration has continuously shown a disregard for their contributions. The fact is that morale is dangerously low among employees in all federal agencies including those who work at the front lines of our homeland security, those who protect our food and drugs, those who guard our nation's financial industries, and those who collect our country's revenues. That is not surprising, of course, in the wake of continuing administration efforts to turn federal jobs over to the private sector; attempts to strip federal employees of many of their vital civil service rights; the unwillingness, year after year, to provide federal agencies with adequate resources or workers with a fair pay raise. These actions reverberate far beyond the federal workforce and hurt our country. Clearly, the state of our nation would improve significantly if federal employees received the respect they earn every day by their performance—and if their agencies were appropriately funded so they could accomplish their missions of service to the public.

TOP TEN Federal Places to Work

According to the January 31, 2007 Washington Post Column, *The Federal Diary*, by Stephen Barr, the Government Agencies with the highest rates of job satisfaction are:

1. **Office of Management and Budget**
2. **Nuclear Regulatory Commission**
3. **NASA**
4. **National Science Foundation**
5. **Justice Department**
6. **State Department**
7. **National Credit Union Administration**
8. **Social Security Administration**
9. **U.S. Agency for International Development**
10. **General Services Administration**

What does it take for EPA to get on the list? Let me know your thoughts on what detracts from your job satisfaction at EPA and we can present a list to management at one of our labor–management partnership meetings.

2. Library Closings

Go to the link below to read the Seattle Post Intelligencer's January 22, 2007, article on the national controversy over the closings of Environmental Protection Agency libraries which came to Seattle when librarians from around the country "told EPA officials the agency is undercutting its own workers, its scientists and the public." The article asserts that "across vast stretches of the heartland, EPA scientists, university researchers and others have scrambled to locate documents once easily found by librarians in the agency's regional headquarters,"said participants in the America Library Association annual conference.

http://seattlepi.nwsource.com/local/300615_epalibraries22.html

"Any documents that have not been authored by or for EPA staff members can't be digitized or placed online, because such a move would violate copyright laws, according to Linda Travers, the acting assistant administrator for EPA's Office of Environmental Information, which is handling the library closures. These documents include one-of-a-kind reports authored by contractors and the recipients of EPA grants, says Dotty Biggs, a retired EPA librarian. In addition, EPA's plan does not include digitization of documents generated by states, local governments, and tribes—all of which is irreplaceable material that will no longer be accessible, she says." This is one of the troubling conclusions in an article for Environmental Science & Technology magazine entitled "Scientists protest U.S. EPA library closures." The article was posted January 24, 2007 at http://pubs.acs.org/subscribe/journals/esthag-w/2007/jan/policy/jp_epa_libraries.html.

Environmental Science & Technology magazine (http://pubs.acs.org/est) is a peer-reviewed journal published in Washington, D.C. by the American Chemical Society, a nonprofit educational, publishing and research organization. The author, Janet Pelley, isIa freelance writer for the magazine.

3. Lab Closings

NTEU is fighting lab closures at FDA and is working with EPA to prevent lab closures.

NTEU Calls FDA Plan to Close Labs 'Short-sighted'

NTEU President Colleen M. Kelley sharply criticized a proposal by the Food and Drug Administration (FDA) to consolidate its 13 regional laboratories where scientists and researchers perform duties critical to the safety of food, drugs and medical devices.

According to preliminary information, FDA's Office of Regulatory Affairs (ORA) plans to close between seven and nine laboratories—more than half of the current facilities, leaving only four to six labs. The FDA intends to release a final list of lab closures in April once a workgroup completes its analysis.

NTEU responded to the information by immediately issuing a message to employees and by teaming up with Public Employees for Environmental Responsibility (PEER) to raise public awareness of the negative impact of the plan. In a Dec. 21 press release, NTEU warned that the proposed restructuring would reduce FDA's ability to act quickly in emergency situations and result in the loss of highly-skilled employees who choose to leave the government rather than take involuntary reassignments. To read NTEU's press release, click here or visit www.nteu.org/PressKits/PressRelease/PressRelease.aspx?ID=1000

4. OMB Bulletin on Risk Assessment Called "Fundamentally Flawed"

Thanks to Alisha Prather, House Committee on Science and Technology, for granting us permission to reprint this:

For Immediate Release Contact: Alisha Prather, 202.225.6375

January 11, 2007

Chairmen Agree - OMB Bulletin "Fundamentally Flawed"

(Washington, DC) Last May, House Chairmen **Bart Gordon** (D-TN, Science & Technology), **John D. Dingell** (D-MI, Energy & Commerce), **Henry A. Waxman** (D-CA, Oversight & Government Reform), and **James Oberstar** (D-MN, Transportation & Infrastructure) wrote to the National Academy of Sciences when they initiated their review of the White House Office of Management and Budget's (OMB) Proposed Risk Assessment Bulletin.

The four Chairmen urged the NAS to either expand the scope of their review to address policy and funding issues in addition to the scientific issues raised by the Bulletin - or to clearly define the scope of their review.

On the basis of their scientific review, the NAS committee concluded unanimously today that the OMB Bulletin is "fundamentally flawed" and the committee recommended that OMB withdraw the Bulletin.

Chairmen offered comment today on the NAS report issued by the National Research Council:

"OMB overstepped its authority and expertise by issuing this Bulletin. Congress has repeatedly rejected one-size-fits all approaches to developing scientific and technical information and now it has been rejected by the experts at NAS as well. OMB should withdraw this Bulletin promptly and abandon its attempts to micromanage agencies' work," said **Chairman Gordon**.

"OMB should follow NAS's recommendation and abandon its costly requirement for superfluous analysis that ignores the specific statutory directives Congress gave the agencies," said **Chairman Dingell**.

"This White House initiative jeopardizes the agencies' ability to develop science-based policies that protect human health and the environment. The National Academy report is a stringent rebuke, and I urge the Bush Administration to withdraw this fundamentally flawed proposal," said **Chairman Waxman**.

Also commenting on the matter, Energy & Commerce Subcommittee on Environment and Hazardous Materials Chairman **Albert Wynn** (D-MD) said, "I am deeply troubled by the affect that OMB's proposed risk assessment analysis would have on our most vulnerable and disadvantaged constituents. I agree with the NAS's assessment that the OMB's proposed changes to risk assessment analysis would enable agencies like the Environmental Protection Agency to ignore the needs of certain segments of the population such as infants, children, the elderly, low income and minority communities. These are the communities most affected by hazardous waste and disposal issues and these are the communities that need the safeguards of environmental laws the most. We must ensure that they receive all the protection they are entitled to under the law."

Read the January 11, 2007, National Academy of Science Press release at: http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=11811.

That press release said in part: *"We began our review of the draft bulletin thinking we would only be recommending changes, but the more we dug into it, the more we realized that from a scientific and technical standpoint, it should be withdrawn altogether," said John F. Ahearne, chair of the committee that wrote the report, and director, ethics program, Sigma Xi, The Scientific Research Society, Research Triangle Park, N.C.*

The committee agreed with OMB that there is room for improvement in federal risk assessments and that additional guidance would help. However, it concluded that the bulletin would not accomplish its stated goal of enhancing the technical quality and objectivity of federal risk assessments. OMB should instead issue a different type of bulletin that outlines goals and general principles for risk assessments, but that directs federal agencies to develop their own technical guidelines to meet those goals and principles. "The new bulletin should draw on the risk assessment expertise that exists in *federal agencies and the organizations that advise them," Ahearne said.*

5. Competency Assessments for Mission Critical Occupations

On January 17, 2007, the Environmental Protection Agency provided a briefing to NTEU officials on its plan to run a survey, the Competency Assessment Tool, on 19 "Mission Critical Occupations" (MCOs) within the Agency, many of which comprise NTEU bargaining unit employees. The Agency intends to make the survey available to three occupational series (Toxicologists, Grants Specialists, and Contracts Specialists) in January of 2007, and the rest of the 19 MOC's throughout the year. The survey is being run in connection with the Presidents Management Agenda, and will be used solely as a means for the Agency to plan future human resources needs especially training needs. The survey itself calls for employee self-evaluation on the core competencies of particular occupations.

National NTEU negotiator, Rick Bialczak has drafted the following agreement between the EPA and NTEU on the Competency Assessment Tool, which was not signed as of 2/6/07:

1) Employee and supervisor survey entries will be and will remain anonymous, and the Agency will not maintain any means by which to link such survey entries to the employee or supervisor.

2) Employee and supervisor survey entries will not be used for any purpose other than an evaluation of human resource needs. In particular, the CAT entries and results will not be used in connection with individual employee evaluations, Performance Assessment Recognition System (PARS), employee awards, or RIFs.

3) Employee participation is voluntary, and the Agency track of individual employee participation only for the purpose of reminding employees of the survey to ensure a useful pool of data.

4) The Agency will provide NTEU with data derived as a result of the survey.

5) The Agency will share the Mass Mailer describing CAT prior to distribution, and consider comments from NTEU.

6) This agreement covers the nineteen occupation covered by attached Exhibit A.

From OARM's Q & A : *The U.S. Office of Personnel Management (OPM) defines a competency as a measurable pattern of skills, knowledge, abilities, behaviors and other characteristics that an individual needs to perform work roles or occupational functions successfully. Competency assessments are one of the many strategic workforce planning activities the Agency is using to determine the current status and future needs of its workforce. The purpose of a competency assessment is to determine whether the Agency's workforce possesses the critical skills and behaviors to successfully accomplish its future mission goals and objectives. To make these*

determinations, the Agency will focus its review and analysis of the aggregate data on each group of employees surveyed, not the individuals surveyed. The Agency will be using an online competency assessment tool to conduct the competency survey.

.

Exhibit A

#	EPA Mission Critical Occupations	Occupation Series
	Cross-cutting MCO: Leaders	
1		
	Scientist:	
2	Toxicologists	0415
3	Geneticist	0440
4	Ecologists	0408
5	Biologists	0401
6	Economists	0110
7	Chemists	1320
8	Physical Scientists	1301
9	Health Scientists	0601
10	Environmental Engineers/Mechanical Engineers	0819/0830
11	Attorneys	0905
	Program and Management Support:	
12	Information Technology	0334/2210
13	Environmental Protection Specialist	0028
14	Human Resources Specialists	0201
15	Public Affairs /Information Specialists	0301/0340/

	(includes Program/Admin. Specialists)	0343/1035
	Financial Resource Management:	
16	Grants Specialists	1101
17	Accountants/Auditors	0510/0511
18	Financial Specialists	0501
19	Contract Specialists	1102

6. Ask the Employment Lawyer

Q. ***There currently appears to be a trend at EPA where senior managers are creating a hostile work environment via disparate treatment of older workers and workers in ill health. It appears these workers are being singled out and treated more severely because of absences and lowered performance because of their chronic and/or long term illnesses. The net result is dismissal or forced disability retirement. Most, if not all, of these workers are over 50 and have more than 20 years service.***

How do we successfully combat this negative trend?

A. It would be very difficult, if not impossible, to maintain a class action for disabled,older employees as each employee has unique physical and mental characteristics. Also, disciplinary and adverse actions are usually not easily susceptible to class treatment because each adverse action has a different set of facts. While there have been class actions based on race discrimination challenging the disproportionate percentage of such actions brought against minorities, you would first have to do a statistical analysis of the disciplinary and adverse actions taken to determine whether they had a disproportionate impact on older employees. I doubt if such an analysis could also be done for "workers in ill health" as this term is not recognized

under the Americans with Disabilities and the Rehabilitation Acts, only employees who are suffering from physical and/or mental handicaps which are defined in the EEOC regulations. See 29 CFR Part 1630.

A better approach would be to take meritorious cases through the grievance-arbitration process in an effort to establish a pattern and practice of a hostile work environment against older workers and workers in ill health. Handicapped employees should request reasonable accommodations for their disabilities, and if denied, they should grieve, not seek disability retirement which should be a last resort only if the employees cannot be reasonable accommodated. While federal employees can also use the EEO process in lieu of the negotiated grievance-arbitration procedure, the latter is likely to be more expeditious and get management's attention if the Union supports the case to arbitration. After management has lost several test cases, it is much more likely to settle future cases and to avoid situations which lead to the abuse of older workers in ill health.

Another option would be to strengthen the collective bargaining agreement to provide more protections for older and disabled employees, spelling out the reasonable accommodations which are available when necessary. While there are no easy answers to the issue posed which is not unusual as employers often seek to force out employees who are eligible for retirement, the approaches outlined may help bring about a change in the work environment. Tom Passman, Esq., Passman & Kaplan, Washington, D.C.

We've corralled some of the top employment lawyers in town to participate in our new feature: *Ask the Employment Lawyer*. Send me your employment questions. Do you think you are a victim of discrimination in your office? Do you have questions about the EEO process or want information on mediation options? Have you received a reprimand? These guys charge big bucks, but will provide generic answers for free. E-mail your question to Lynne.Diane@EPA.GOV with the subject line: "Ask the Lawyer" or use the interoffice mail and direct your question to Diane Lynne UN-200-T. Your name and office will not be put in the newsletter. We may not be able to address all the questions, but we will try.

7. X-BYTES A Column by Dwight Welch, Executive Vice President

MANAGERS PLUS OR MINUS – THE BATTLE CONTINUES: DEFENDING OUR MEMBERS

The EPA responses to budgeting priorities and political pressures have resulted in the closing the libraries and the threat of lab closures. In addition, the PARS agreement has left many of us wondering how we'll fare under this new system.

MANAGER PLUS

We did have a Manager Plus this month, however, perhaps fearing retaliation, he asked us not to run an article on him.

MANAGERS MINUS

Luis Luna, Assistant Administrator, OARM - Potomac Yard Coverup.

By now all of you have read the all employee memo from Assistant Administrator Luis Luna telling us that our new "green building," Potomac Yards (PY) is wonderful. Included in the memo was a discussion of how indoor air monitoring concluded that there were no problems in PY. Those of us who are old-timers in OPP may remember that the air monitoring in Crystal Mall 2 after the asbestos remediation fiasco also told us the air was "safe." But the union's collection of 24 samples of dust taken throughout the building revealed that, if CM-2 had been a school, it would have been shut down immediately. We were let down by EPA, GSA, OSHA, local and state health officials, so what confidence do we have now?

The plain fact is that PY is a "green building" sitting atop a "brown field." The union received the remediation plan that it requested. The union had a number of issues with the remediation plan which have never been addressed. The ground upon which PY is situated was polluted with a variety of known and suspected human carcinogens. These pollutants included PCBs, asbestos, arsenic, lead, and other metals. The remediation plan called for heating the soil in the site to drive off the pollutants. While this might work for volatile contaminants such as PCBs, it would have little effect on things like arsenic, asbestos, and lead.

The principle objection that the union has to the "remediation plan" is that there were no core samples taken. A thirty foot column of soil needed to be extracted and analyzed, but this was never done or at least was not evidenced in the "remediation plan." I have voiced this concern, conducting a core sample, in order to give employees peace of mind, but have been refused. I brought this concern all the way to Luis Luna who refused even to discuss it.

Another serious concern with the "remediation plan" is that the levels of arsenic in the report were all blacked out. How high were the arsenic levels? We have no idea. Why were these figures blacked out? We have no idea. This makes me feel secure and trusting, how about you?

Luis Luna is a good listener, but on many occasions, such as this, he falls quite a bit short. If Mr. Luna is sincere that he cares about the health and well being of the employees at PY, he would find a way to get those core samples done and well as enquiring into why those arsenic figures were blacked out of the official report..

<u>Melissa Hatfield, Mike Hamlin - Labor Relations - Suppressing Exculpatory/Mitigating Information in a Disciplinary Action</u>

Union officials should not take vacations around the Christmas holiday season; this is when some managers do their most evil work. Currently, the Agency is trying to take a severe adverse action against an employee. While I cannot talk about the case at this juncture, I can talk about the information request that this union submitted in connection with this case. The union requested certain exculpatory information in support of the employee's case, but the Union's request was denied by Labor Relations' Melissa Hatfield.

Ms. Hatfield's reply denied the request on several bases. The first was that the Union did not express a "particularized need." Holy common sense Melissa, the particularized need was that the employee was being disciplined and needed to defend his/herself.

But the second "reason" for denying the request really takes the prize. Quoting Ms. Hatfield, "Second, all the documents relied upon by the proposing official in making his recommendation to suspend.....were included as attachments to the 'Notice of Proposed 14 Day Suspension.'"

Holy Bill of Rights, Melissa, the requested documents were exculpatory communications, communications which might disprove and/or mitigate the charges against the employee. Of course management did not consider this information, if they had, they may not have been proposing their 14 day suspension.

The third basis for denial was that the full disclosure of facts we sought was protected by "attorney-client privilege." Holy coverup Melissa, obviously management does not operate as if it lived "inside a fishbowl" (to quote our greatest Administrator Bill Ruckleshaus.)

I filed a grievance with Ms. Hatfield's boss asking for the withheld information. Mike Hamlin called me and asked if he could answer Step 1 or did I want to keep it at Step 2 with Ken Venuto. Being a nice guy, I granted him an after the fact extension but it was a waste of time. The response was another denial to our very reasonable request to obtain the full investigatory report in the matter as well as all of the affidavits, rather than the cherry-picked version that management relied upon in their suspension decision. I've now sent it to Ken Venuto for Step 2.

All of us are pleased to hear that Ms. Hatfield received a bronze medal for superior service in 2006. Obviously, labor- management PARTNERSHIP was not a criteria. Think how much more we could accomplish for the betterment of EPA professionals if we weren't wrangling over common-sense issues, like sharing an entire investigative report when an adverse action for an employee hangs in the balance.

Jim Gulliford - Assistant Administrator for OPPTS - Non Scientists Should Not Make Science Decisions

Way back when I was President, as well as the newly (union) elected National Partnership Council Co-Chair, I sent an e-mail to Mr. Gulliford suggesting an introductory meeting. This e-mail was ignored. It was only when I wrote to Administrator Johnson, that a meeting was finally arranged.

Months later Mr. Gulliford met with NTEU 280 President Bill Evans, Chief Steward Rosezella Canty-Letsome, and myself. Unlike our get acquainted meetings with other new Assistant Administrators, the meeting with Mr. Gulliford was contentious and hostile. While a blow by blow description is not warranted here, suffice it to note that the three NTEU 280 reps complained about the treatment of scientists, including the fact that it was generally the less educated and the non-scientists who were promoted into management. Mr. Gulliford admitted with some apparent pride, that he too, was a non-scientist. He did not think it important that managers actually understood science. EPA's War on Science apparently has another ally.

ORD Management - With the Unions Tied Up in an ORD Meeting, Assistant Administrator Meets with Employees without Union Representation

On December 13th, ORD simultaneously conducted two operations in EPA's War on Science. The Office of Research and Development is one of the last bastions of science (as opposed to clerical science) left in the EPA. Operation one was an all day meeting of the ORD Partnership Council to discuss outsourcing administrative, clerical, and IT positions. Operation two was a "skip level" meeting between employees and the Assistant Administrator WITHOUT UNION INVOLVEMENT OR NOTIFICATION.

Since the issues of the all-day outsourcing meeting concerns mostly the HQ AFGE union, Local 3331, I will leave comment up to them except to indicate that I defended the NTEU-EPA Collective Bargaining Agreement with regard to career ladder promotions.

However it is the activity of the Assistant Administrator, George Gray which most concerns me. In at least one office under ORD, there is a plan afoot, a reorganization, to make it easier for non-scientists to get into positions of power and influence while keeping the scientists back. NTEU 280 intends to fight the continued War Against Science (and scientists) by supporting the reorg option which will not undermine scientists against the option that does. More specifics about this in the next issue of INSIDE THE FISHBOWL.

With most of the Union "big guns" distracted by the all day outsourcing meeting, employees met with the Assistant Administrator without union representation. While their other program management was absent from this meeting, the management favorites are likely to report back on employee comments.

Maybe after this article, Dr. Gray will meet with the union. Hopefully, he is at least a scientist.

MANAGER PLUS AND MINUS - Ken Venuto - No Union Involvement on PARS Change

The ink was barely dry on the PARS agreements with the various unions, and now management intends to implement a unilateral change. In the NTEU PARS agreement (and I assume most other unions also), PARS was de-linked from awards. But now under the President's Management Agenda, EPA must march lock step with all of the other agencies and re-link them. OK, no big deal it's getting more and more like the old 5 tier system. At the last conference call between the Unions and EPA management, management indicated that in their effort to reconfigure PARS to re-link awards, they would be contacting other agencies for input. When I asked if the Unions would have any pre-decisional input, Mr. Venuto, the new Office of Human Resources Director, answered a flat, "No." In an agency which is allegedly practicing partnership, the Unions should have some involvement in this process. So for this reason, we give Ken Venuto a Manager Minus. However, we appreciate Mr. Venuto's honesty. For years now, the Agency has been preaching partnership, but on every issue, People Minus, DFAS, PARS, etc. the Agency has implemented first and negotiated later as either an afterthought or when the Unions filed against them. This is not how partnership is supposed to work, and it doesn't even make the grade for traditional Impact and Implementation bargaining. So we have to give Mr. Venuto a Manager Plus for being the first manager to be honest with us on the subject of partnership.

Adventures in Alternative Energy Part 2, Building an Emergency Battery Backup System (To Be Used with Solar Electric System)

In contemplating this series of articles, I originally planned that Part 2 discuss my building of a solar electric generating system. However, the subject is too complex to present in 5 or 6 pages. Also, do I start from the solar panels inward, or from the batteries outward. In first discussing building an emergency battery backup system, if one is on limited funds, this system can be built and solar panels and appropriate controls added later. While the solar panels, without a system to convert the electricity produced into useful power, is practically worthless, the battery backup system can be utilized immediately to provide power to a home in the event of power failures. You can then add on solar panels later. (I started with 8 panels, then increased them to 10, then 15. I started with 8 batteries, later increased to 16, now 24. The latter turned out to be a mistake regarding solar electric systems.)

A Word on Equipment Retailers

Again I endorse no particular products or retailers, I am simply relating my real life experiences in the subject of solar energy. First I surfed the web, a really scary place. I immediately eliminated companies that install systems, since I was doing it myself. I narrowed it down to three companies with Better Business Bureau ratings (or similar). These companies are Solatron Technologies (http://www21.overture.com/d/sr/?xargs=15KPjg1ghSlJXyl%5FruNLbXU6TFhUBMxd%5FwsZQwTMAlSssNry9yR5MnLa7AmsB9Rehv6Q7ZxeTM8aAVKPL7mo2J, *www.partsonsale.com*/d/search/additionalListing.jhtml?mkt=us&lang=en_US), The Alternative Energy Store (http://home.altenergystore.com,) http://rc10.overture.com/d/sr/?xargs=15KPjg1glSqJauwuz1IPXeHbGPx1wElp%2D99rgfCuJ8Hada82Q8Au1%5FPpPxt8R4O%2DUU533UuPPh6vgbK%5Ffln and Northern Arizona Wind & Sun (*www.solar-electric.com).* /d/search/additionalListing.jhtml?mkt=us&lang=en_US

Solatron has a great website, packed full of useful information including information about solar scams such as "bait and switch." I eliminated them when I called and they pulled a bait and switch on me. (Didn't have the solar panels advertised and wanted to sell me something else instead, but then refused to switch out the different rack I wanted.) I made my first purchase from Northern Arizona Wind & Sun where I purchased most of my equipment because they had the best price at the time, and then bought my batteries from The Alternative Energy Store. I found a friendly salesman at AES, Ben Farmer, who gives me competitive prices in addition to a 10% discount since I've purchased more than $10K from them, so I got all of my addition equipment from them.

Generally the sales people from most sites (except Ben) are rude and act as if they don't want to sell you anything. None of the sales people have a really good technical grasp and you must consult other sites to get really good technical information. (Solartron has the best technical information of a retail sales website.) Many sites mention the "world wide shortage" of solar panels. And this is probably true. As a rule of thumb, solar panels are easier to get in the winter when there is less sun, and wind-electric turbines easier to get in the summer when there is less wind. Other products are readily available.

An Overview of my System Components

15 Kyocera 125W panels, one Outback VFX 3648 (3600 watts, 48 volts) power panel (inverter, charger, breaker boxes), one Outback MX 60 Solar Charger, one outback Mate (optional, NOT, controls and monitors system), one Outback collection box (outside strings of solar panels

attached to breakers in box), Two Seas solar panel racks, wiring, battery temperature monitor, lightning arrestors and miscellaneous.

Step One - Chose a System Voltage

In part one of this series (See INSIDE THE FISHBOWL December 2006), I discussed the necessity of first determining what you need to run. If its something small, such as a single computer, then you should purchase a pre-made system (available at The Alternative Energy Store). However, if you are running a group of core appliances such as refrigerator, well-pump, TV, you need to build or buy a more substantial system. Systems in the U.S. come in four sizes: 12V, 24V, 48V and 60V. In other countries they also sell 36 volt components but they are not UL listed in the U.S. and should be avoided. 60 volt components are hard to find. If you are running something small 12 or 24 volt will do, however, if you are running substantial appliances, 48 volts is the way to go.

For those of you who understand Ohm's Law, you already know why. For those who don't it works like this. The higher the voltage the more efficient the transmission of electricity (less is lost as heat.) So for instance with 10 amp wire, you can put 120 watts of 12V, 240 watts of 24V, and 480 watts of 48V with equal efficiency. Putting 120 watts of 48V through 10 amp wire will save you a lot in electrical loses when compared with 12V and 24V. I recommend wiring a size or two larger than what is called for in order to conserve waste energy. But wire is cheap, the real savings come later with regard to expensive components which I will get into in Part 3 of this series.

Some companies, such as the local Banner Power will build a battery backup system for you. I went to their website, but they didn't give prices. I suspect you can build the same thing much cheaper, even if you hire an electrician to do it.

Building an Emergency Backup System

<u>The Power Panel (Inverter, Charger, and Circuit Boxes)</u>

Unless you are only running lights and/or resistance heaters (no fan) and/or running special RV type appliances, you must convert the DC current (created by solar panels and/or stored in batteries) to 120/240 volt AC. So at the heart of any backup or alternative energy system is the inverter which will convert 12, 24, or 48 volt DC into 120/240 volt AC. The charger, necessary for non-solar grid powered backup systems is necessary to keep your batteries charged. (It is also a convenient option with solar powered systems as I explained in part one of this series.) The circuit boxes control your AC on one side and the DC on the other side. You can save yourself, as I did, about $400 or $500 by building the power panel yourself from components. Unless you are a master electrician, I would recommend against it. Indeed, even if you are I would recommend against it. With a pre-made power panel, there are only a few quick connections, AC on one side, DC on the other side. By assembling the power panel from components, it will take you all day or longer. So even if you have hired an electrician to do the work, you will save a ton of money by buying the preassembled panel; the electrician's hourly wage will greatly exceed the $400 or $500 saved. The only advantage to having wired it myself, I found, was that now I completely understand it.

I bought the Outback 3648, (3600 watts, 48 volts), but other brands may be just as good. Outback, I have found has stellar technical service and warrantee. I zapped my outback controller twice with static electricity and they replaced it both times.

The Inverter

This is a complex subject, there are many types to chose from. But first a discussion of direct current (DC) vs alternating current (AC). Graphing a DC current on a chart, you will have one straight line (at say) 120 volts DC. However, graphing power company created 120 volt AC you will see a sinwave. (Looks like a "S" on its side.) The power will go from 0 to 120 volts positive, back down to 0, then to 120 volts negative and then back to 0. This happen 60 times a second! A light bulb run on household current blinks on and off 60 times a second but you don't see it because the human eye cannot distinguish blinks faster than about 20 times a second. (A movie film uses 24 frames per second and you see it as a smooth motion and not a succession of frames.)

Now let's examine a hypothetical 120 V generator and a 120 V motor. (Home generators are normally 240 V splitting the current into 2 - 120 volt sides.) The generator (alternator) and motor are mechanically alike, except for the circuitry and function. The generator turns mechanical energy into electrical energy, the motor turn electrical energy back into mechanical energy. Here's how they work. Both have a coil on an iron or steel bar spinning within a field of permanent magnets. In the generator as the coil approaches the magnet, the voltage goes up,

as it recedes, the voltage goes down. In the motor, the coil becomes an electromagnet. First it is attracted to the magnet when at 120 V positive, then repelled by the magnet when it becomes 120 V negative. Indeed, if you unplug, a fan, turn the switch on, spin the blades with your finger, you will find, if tested with a volt meter, that it will generate AC electricity. An ungeared motor will spin at 3600 rpm as does the generator.

Two Types of Inverters

There are two basic types of inverters: modified sinwave and true sinwave. The former is smaller, lighter, and less expensive. The latter is larger, heavier and more expensive. But they are like incandescent vs. flourescent bulbs. The true sinwave will pay for itself by lasting longer and being more durable. The modified sinwave uses electronics to alternate the DC into AC, the true sinwave inverter uses a heavy coil of copper wire. If the modified takes too big a load, it fries or, at best, trips a breaker; the true sinwave can tolerate larger surges. Indeed, my Outback 3600 watt can withstand a 5 second 7200 watt surge and a 20-30 minute 5,000 watt load.

The surge wattage is important. An appliance with let's say a 5 amp (600W) operating load may use 10 amps (1200W) upon start-up. This is because the motor must overcome inertia. It takes more power to get it moving than to keep it moving. Let us say you are running nearly 3600 watts on a 3600 watt inverter. In the event of a power failure, or let's say you are starting up a system in a remote cabin, a surge created by all the appliances shifting over at one time might fry the modified inverter or trip the main breaker. You would then have to shut down all circuits, reset the main breaker, then turn on one circuit at a time. With the true sinwave inverter, you are good to go.

But the big difference comes in terms of performance and wear and tear on appliances. Relating back to the discussion of the electric company's sinwave supplied power, the true sinwave inverter produces a rising then falling voltage similar to (in some cases BETTER than) the utility company. However if you chart the modified sinwave inverter on a graph you will see, a dash at 120 volts positive, and a dash at 120 volts negative. The modified inverter changes voltage from one extreme to another and back, 60 times a second. This modified sinwave will run a motor, but it is like running a high performance engine on low octane gas. The motor will run considerably more noisy on the modified sinwave inverter. (On one web site they compare the sound of the same refrigerator being run on true v. modified sinwave. When run by the modified sinwave inverter, the refrigerator runs considerably more noisy. Field reports also indicate that the life of the motor may be cut down by as much as 40 or 50%. If you are running an appliance all or most of the time off of an inverter, pure sinwave will save you money in the long run.

With TVs and monitors, the modified sinwave will create a lot of video “noise” and some electronics such as some computer printers will not run at all.

Vented vs. Unvented

Unless you are in an extremely dusty or salty environment, you want vented. Vented inverters can produce more power for the same investment. My Outback 3600 watt in the vented version only produces 3,000 watts in the unvented version.

Grid-Tie vs. Battery Systems

Since I was building a backup system, I chose the Battery System option. In a grid-tie system, the produced AC current directly into the grid, however, if the grid is down, you are without power. However, some grid-tie inverters can be used for both. It charges batteries first, but when the batteries are charged, the excess, not being used, is fed into the grid. There are other ways in which to utilize excess solar or wind power which I will discuss in Part 3. The Outback VFX 3648 can also be programmed to run a generator at certain times or to use the grid when power is cheap and to run off of the battery bank when kilowatt hours are more expensive. (They have peak and off peak hours in California, for instance.)

The Charger

The charger, to power up your batteries after the power failure is over is a necessity in a backup only system, but is also recommended even when your battery charging is done by the sun. With some Power Panels, (e.g. Xantrex) the charger must be ordered separately. With others like Outback, the charger is included.

The Breaker Boxes

Here is where the power panel pays off. The circuits are preconfigured. The only decisions you have to make are the sizes and numbers of AC breakers. So you may wish to have one large breaker and then use a store bought circuit breaker box for your branch circuits. This is what I did. When my system was set up, I merely had to switch my grid circuits to the alternative energy circuits. You can also set up the AC box to handle branch circuits instead. The Outback breakers were more expensive than the GE ones (which I already had anyway) so I went with the first option.

The Battery Bank

You can never have too many batteries. More batteries means more reserve power. But what kind of batteries to buy? First off, don't use car batteries. These batteries have thin lead plates and are meant to supply high peak amperage but won't last up under many heavy discharges. You must use storage batteries, such as marine batteries. The storage batteries can't handle as high a peak, but can take prolonged discharge. The lead plates are much thicker. But even with storage batteries you should not discharge below 50% too often. More on this in "How Many Batteries Do You Need?" below.

Storage batteries come in three types, liquid, AGM (Acid Glass Mat), and gel. The latter are the so-called "maintenance free" batteries. They have their pluses and minuses. All are lead-acid.

The liquid type is most familiar. It's advantages are they are the cheapest and can tolerate an overcharge; you can potentially store more power in them than the other types. The disadvantages are you must check and refill the liquid (use distilled water) every month or so. More often if you routinely overcharge them. The liquid batteries can produce extremely flammable hydrogen and provisions must be made to vent the hydrogen to prevent accidental explosions. If knocked over, the acid will leak out and cause damage as well as ruin the battery (though you can purchase fresh acid.) The liquid batteries must routinely be overcharged to synchronize the voltages as well as to remove sulfation. Sulfation is the deposit of lead sulfate on the battery plates. If not routinely equalized, the sulfation will make the battery useless.

In the AGM battery, the acid is soaked in fiberglass mats between the plates; in the gel batteries, the acid is in gel form. Both types have essentially similar properties except gel batteries cost a bit more, and can't be charged quite as high voltage-wise as the AGM. I went with AGM. The AGM and gel cost more, but last twice as long. 5-7 years for liquid as opposed to 10-15 years for AGM and gel. The AGM and gel don't require any maintenance. No adding electrolyte, no

equalizing to remove sulfation. If knocked on their side, they will not leak. (Indeed, the batteries can be used on their side or even under 30 feet of water.) They don't vent hydrogen gas, but here's the big negative–if they do, the battery is ruined. If the AGM or gel batteries are charged beyond their charging point, the vents will vent hydrogen and the battery is no good. However, this down-side is easily off-set with good charge controllers which won't let this ever happen.

The gel batteries are the most expensive, but when compared to flooded acid or AGM batteries they are the cheapest in terms of lowest cost per month, lowest cost per cycle (Discharge/recharge)

Battery Setup

In a 12V system, you have the batteries all hooked up in parallel. The voltage at the termination point is 12 volts, adding batteries gives you more wattage, most reserve power time. With 24 or 48 volts, the batteries are connected in series in sets of two or four respectively. Then each string, each set of 4 (48V) can be connected in parallel. The voltage at the termination is 48 volts, each string added adds addition reserve power time.

How Many Batteries Do You Need?

Referring to my last article, you need to calculate the daily usage in kilowatt hours (in a solar system) or anticipated usage in kilowatt hours for the length of the blackout period desired. The general rule of thumb is to calculate the kilowatt hours needed, then buy at least twice the battery power needed. So for instance if your need is 10 Kw hours, then you need 10,000 watts divided by 48 volts (in a 48 volt system) equals approximately 210 amp hours. Thus you should get at least 8 - 12 volt 210 amp hour batteries. (2 - 4 x 12 volt strings of 210 amp hour batteries.)

If you are using your system strictly as a back up during blackouts this rule of thumb is OK. However, if you are building a solar electric system which discharges on a daily basis you may want to increase the battery number from 2X to at least 4X to 6X. Consider the below chart supplied by my battery manufacturer.

Cycling Ability vs. Depth of Discharge

	Typical Cycles per Battery	
Capacity Withdrawn	Gel	AGM
100% (completely discharged)	450	200
80%	600	250
50%	1000	500
25%	2100	1200
10%	5700	3200

As you can see from the chart, if you were to drain the batteries fully in a power outage twice a year, the batteries would still last 10 years. However, if you were to do this on a daily basis as with a full time solar electric system, then the batteries would be shot in less than a year. Even at a 50% routine discharge your batteries would be shot in less than two years with AGM, 3 years with Gel. To get a 10 to 20 year life out of your batteries in a solar electric system, you would want to keep your discharge rate at 10%.

Controllers/Volt Meters

With the Outback system there is an additional controller/voltmeter called the Mate. The Mate controls and monitors the entire battery backup as well as solar charging systems. In any system, a good digital voltmeter is a near necessity. It should show tenths of volts. For instance in a 48 volt system 48V is half charged, 47.2v is discharged, 49.2v half charged, and 51.2v (and above) is fully charged. With only a couple of volts between full and half or half and empty, the voltmeter must have at least 0.1 volt sensitivity if you are to monitor the reserve power you have left. Additionally I purchased an Amp–Hour meter which shows me how much below full charge I am in term of amp-hours.

Next Article

In the next article I will be getting into the fun stuff–installing the solar panels and associated equipment.

8. "Law & Order: Special Victims Unit" to Highlight

Pesticide Testing on Humans on Tuesday February 6th, 2007

Thanks to Stephanie Hendricks of the Pesticide Action Network for contributing the summary below:

On Tuesday, February 6th, NBC will air "Loophole," an episode on the crime drama "Law & Order: Special Victims Unit" that focuses on the controversial EPA rule allowing intentional dosing of human beings in pesticide experiments. Physicians for Social Responsibility – Los Angeles (PSR-LA) and Pesticide Action Network North America (PANNA) are calling for the public to contact NBC to support this type of programming.

In the episode, several children and their families —including a Honduran immigrant family — are unwittingly tested with a dangerous organophosphate pesticide (a class of acutely toxic chemicals) by a fictional chemical company. In real life, EPA's human testing rule contains loopholes that allow chemical corporations to test pesticides on women and children. A 2005 Congressional report written by Senator Barbara Boxer's and Congressmember Henry Waxman's staff revealed human testing studies where pesticide corporations told their subjects they were ingesting vitamins or drugs. No study of the well-documented long term effects of pesticide exposures were conducted in follow-up of those test subjects.

"Loophole" reminds the public of EPA's all too real life "CHEERS" program, where the federal government proposed in 2004 to offer low income families in Florida $970, a camcorder, and some clothes if they would record "routine exposure" of their one and under infants to household pesticides. **The script is careful to point out the opposition of EPA staff scientists to the human testing rule made by EPA political appointees.**

Executive producer Neal Baer, MD, is known for incorporating scientifically accurate information on his show to educate the public on important issues.

"It is so important and valuable for the people who are victimized by this kind of bad corporate behavior shown in "Loophole" to be able to understand how they can fall prey to intentional human dosing studies. I think 'Law & Order' has done a great job of raising public awareness," declared Martha Arguello, Director of the Health and Environment Programs at Physicians for Social Responsibility Los Angeles who consulted on the story.

Dr. Margaret Reeves, senior scientist at Pesticide Action Network North America was pleasantly surprised at the scientific accuracy. "Even though they created a fictional pesticide for the episode, it very much demonstrated the harmful health effects we see with organophosphate pesticides." Reeves heads up a campaign to ban organophosphates. PANNA has partnered with EarthJustice and the Natural Resource Defense Council to sue EPA over the human testing rule.

Stephenie Hendricks

Public Information & Media Director

Pesticide Action Network

North America

49 Powell St. 5th Floor

San Francisco, Ca.. 94203

415 981-1771 ext 355

stephenie@panna.org