The

"IT'S-NOT-EASY-BEING-GREEN"

FILMMAKER/CINEMATOGRAPHY/VIDEOGRAPHY

WORKSHOP

Presented at the "Planet in Focus" Film Festival, October 26, 2008, Toronto, Canada.
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http://www.planetinfocus.org/
http://www.greenscreentoronto.com

This workshop will offer an overview of some of the current options (equipment and practices) for the individual camera person or small crews that may be considered as green options. This outline suggests topics and will serve as a guide and link to articles and products referred to in this exploration of a greener and cleaner path. Evolving Green practices are more about developing a mind-set than a set of formulas!

Introduction:

Media production is now pretty much an IT activity with digital tools for planning & scripting, digital Pre-Viz and storyboards, digital acquisition, digital post-production and storage as well as digital delivery and online distribution. Finding the 'greenest' path through all this could equate to an MA if not a PhD, but since information is overloading all of us we need to rise to the occasion and find out for ourselves what makes sense economically as well as eco-logically . Purchasing a cleaner or greener product can offer a return in durability, along with finding a sensible green path through it all. Sensible is the key word here; its fine to buy a new electric car but designing it to go 0-60 in four seconds is missing the point of it all. Vendors bombard us with new cameras on almost a monthly basis, a flawed practice that entices us to purchase a newer, cheaper digital acquisition tool (camcorder) that is sooo much better than the one they offered us just a short while ago.

The term 'video camera' is now part of our lexicon as a motion imaging device, but like the term 'film', video camera can mean capturing to video-tape, hard-disk-drive or solid state cards or even compact flash cards. Well its digital and digital is good, isn't it? Pretty much, as the digital revolution continues unabated and now means efficiency, robustness and effectiveness.

So, for us tree-huggers some of the issues that might come up are: 1) how necessary is it to shoot on the newest digital-solid state capture device?***** 2) Is digital going to replace film any time soon; and is this a good thing?****** 3) Are small format camcorders making inroads into professional production? (see page 5) 4) How eco-friendly is the manufacturing process for cameras, film, tape, hard drives etc.?(a tougher question) My students always want to know “what is the cheapest camera that I can buy to shoot my feature on?” They never ask what is the cheapest word-processor to write their script on! Digital camera manufacturers are pouring massive resources into matching the qualities of film in their sensors in terms of sensitivity, latitude and colour depth. They are getting closer all the time and for most video, online, television documentary and non-theatrical production, digital (video-tape, HDD or Solid State) are now standard. This is aided and abetted by the fact that Post is now virtually 100% digital. Film may soon become an elite capture medium for larger budget projects and DOPs with a preference for certain image subtleties. However one upside of film cameras is that perfectly good filmed images can be captured on a 50 year old camera while video cameras are well known to be expensive doorstops within 2-3 years.

The availability of inexpensive DV and HDV pro-sumer cameras, not to mention the abundance of fully professional cameras, make digital motion-image capture the mode de jour. Sometimes what we consider a 'green' option is actually a budgetary consideration, so we need to do some homework and be honest with ourselves. Will curiosity and an Internet search will help us make decisions to use products less damaging or products that offer a smaller carbon footprint, are more earth friendly etc? The short answer is yes but its not always that simple!

In this workshop we will attempt to present some of the pros and cons of a number of the more obvious options that filmmakers have access to. The products we are showing are not all that are available (time and space is limited) but are representative of what's in use by professionals at a variety of levels of production from individual shooters to major televisions series; usually a good indication of the acceptance and/or durability of a product. We are also offering links to products or articles describing the use of products, in some cases supported by endorsements or case histories describing that product in use by recognizable industry professionals. Local dealers have supplied samples of equipment that we are showing and are listed at the end of this document. Interactive Q&A is welcome to enliven the session.

***** *One of the most popular films at HotDocs 08 was; “Garbage – The Revolution Starts at Home” was shot on a VX1000 (the camera that started the digital revolution in the early 90s.*

****** *While film processing is an eco-challenge and is declining in use; film cameras are often 10 or 20 (or even 30) years old!*

Agenda topics to be explored in the Workshop will include the following:

- Office practice, Planning, Pre-production, Research!
- Trade Magazines – replace with Free E-Zines and digital subscriptions.
- Cameras – film or digital technology?
- Media – Film, tape, HDD, Flash or Compact Flash.
- Power- AC or batteries (Pb-Acid, NiM-Hydride, Li-Ion ?)
- Re-charging batteries – AC or Solar.
- Lighting – Incandescent, HMI (Gas Burst), Fluorescent, LED, Sunshine.
- Three-point lighting with one light (now that's efficiency).
- On-Set/location practice.
- Post Production and Distro suggestions

Some other questions we will and deal with:

Are there any signs that Filmmaking is getting greener (in spite of itself)?
Do smaller cameras, smaller batteries yielding more footage save money, save the environment and do they achieve professional results?

What green options exist for cinematographers in cameras and capture media? Options now include a plethora of cameras in all price ranges that capture on tape, HDD, Solid State and Compact Flash Memory. What opportunities or trade-offs do these technologies offer?

Batteries and chargers. Lead-Acid, Nickel-Metal-Hydride, Lithium-Ion all sound potentially lethal; so is there an earth-friendly option here? What is a smart charger and will charging from a Photovoltaic (Solar) panel keep you green?

Are there any breakthroughs in lighting that will reduce the Watts used on set or location? How do we get a perspective on Incandescent, Fluorescent and LEDs. And what about sunshine? (mirrors and reflectors)

How does all this relate to, or feed in to Post-Production work-flow and how can we continue to reduce our green footprint after the cameras are finished capturing images.

We hope to offer some useful suggestions for ways to remain as environmentally friendly as possible while creating your new masterpiece.

These are some questions that come to mind; please feel free to ask others.

Some fun and challenging ways to green!

http://www.greenfilmalliance.org/

http://www.sundancechannel.com/thegreen#/bigIdeasContest:overview

http://www.2-pop.com/artman2/publish/25K_X-Prize_Offered_For_Best_Green_Idea_Video.shtml

Production Office, Planning, Pre-production, Research!

If IBM, in an attempt to save energy and prevent waste, can save $1.6 B off their bottom line by reducing data centers and vendor costs, then if every independent producer, service provider and filmmaker in North America (or the world) shaved a few hundred (or better yet a few thou per year), the savings would probably be equivalent. Maybe we can even set an example; as many companies are already doing. It starts with a few (of us) and extends out to the world! See page 10 & 11.

In Canada the paperless office is still pulp-fiction! Most companies lack a comprehensive document management policy and one of the results is rampant printing. A Blue-box is not a company paper management policy. I mention this because film or TV production is dependent on hundreds of charts and forms, not to mention numerous re-writes of numerous scripts etc. I always tell my students to plan their projects on paper because the cost of a sheet of paper is minuscule compared to cost of delays on set or location. But, planning can also be done on a notebook computer. Since we all have one, we may have to ignore what went into producing and shipping it (there are green ratings). But we can make better use of our time and planning sessions by capitalizing on the tools at hand and by being knowledgeable of the production process and options to maintain or improve production values efficiently. In general a better planned production is invariably a project with better production value and a green 'mind set' will also reduce waste, carbon footprint and leave people in a good mood.

Some things that we can do are:

Consider use of e-versions of documents (e-mail rather than print), also e-zines and e-subscriptions.
Print on smaller sized paper and on both sides.
Include a line item in your budget for assessing environmental impact and carbon footprint.
Ask funding institutions to accept e-mail submissions to save time, energy and paper.
Use FTP for file exchange, including screening of rushes.
Use USB Key/iPod rather than CDs.
Use scanner for sending and archiving documents.
Buy paper with post-consumer recycled component.
Turn PCs and peripherals off at night. Connect to power bar (with an on-off switch).
Try energy-efficient lighting; compact fluorescents are now kinder and gentler. Some LEDs are now available (makes sense if you amortize over five or more years and is the next big thing).
Lower thermostats a degree or three.
Evaluate and audit energy consumption.
Use biodegradable and non-toxic cleaning products (vinegar, baking soda, lemon juice-yup!)
Buy fair-trade coffee (even if it does make you trendy!)
Use cloth or recycled shopping bags instead of disposables.
Use e-Fax.
Green or Carbon Neutral your Website. http://www.carbon-neutral-website.org/
For recommendations on paper towels, tissue and toilet paper – http://tissue.greenpeace.ca
Try to buy 'non' or the least disposable products (office and otherwise). Its frustrating that printers are less expensive to buy or repair than their ink cartridges. If buying now consider printers that offer dry inks and no print-heads!
Consider video-conferencing (Webcam or Skyping) and Long-Pen rather than flights.
When you look for a new office try to find one with a skylight.
Fill your office with plants. Green plants are superheroes!
Oh yes, (showing my bias) shoot with an old camera and an even older crew. Costs will balance out and the results will amaze you.

Transport: Try to use Hybrid or Low-fuel vehicles.
Try to use carpooling, car-share, bicycle, public transport or trains.
Hire local crews rather than fly numerous people around.

Cameras – film or digital technology?

Why do I always tell my students; “shooting video makes you stupid”?
A GOOD CREDO MAY WELL BE: THINK & PLAN FILM – SHOOT & POST DATA

If you’re considering buying an affordable HD camcorder, you might consider three formats, tried-and-true HDV, up-and-coming AVCHD, and the ever-more-affordable DVCPRO-HD. Consider solid state capture on P-2, Express (SxS) or Compact Flash; BUT do you really need new?

Some examples:
Panasonic HPX170 ($5,195 street) Canon XH A1 ($3,299 street) Sony PMW EX-1 ($7,199 street)
Affordable HD (reviews, compares some of above cameras) Canon XL H1A HDV Camcorder
http://www.digitalcontentproducer.com/hdhdv/depth/affordable_hd_formats_0908/index.html
http://pro.sony.com/bbsc/ssr/micro-xdcamexsite/
http://provideocoalition.com/index.php/cameras

So are small format cameras making an impact on television and/or theatrical production?
The short answer is yes! Here are a few examples:

Some inexpensive cameras doing major duty on major TV series/networks.

HDV Infiltrates Regular Television Productions
http://www.tvtechnology.com/article/11650

“Guiding Light” – revolutionized by shooting Multi-camera on Canon XH G1s.
http://www.studiodaily.com/main/searchlist/9769.html

“Lovespring International”, new LifeTime sitcom shoots with Canon XL H1.
http://www.studiodaily.com/main/technique/craft/f/shooting/6788.html

WLS-TV uses JVC HDV cameras for live HD remotes
http://broadcastengineering.com/hdtv/wls-tv-jvc-hdv-camcorder/

New and innovative Digital Cinema Camera systems:

Arriflex D-21	High-end Cinema Digital	(35mm sized sensor)	www.arri.com/
Dalsa	High-end uncompressed	(35mm sized sensor)	www.dalsa.com/dc
Ikonoskop	S-16 sized chip, uncompressed data.		www.ikonoskop.com/home/
Red-One*	High-end - low cost	(35mm sized sensor)	http://www.red.com/
Panasonic	Varicam (variable speed HD)		www.panasonic.com/business/provideo/app_hd.asp
Phantom	Cinema Digital High-Speed Camera		www.visionresearch.com/index.cfm
SI-11	High-end, compact size HD camera		www.siliconimaging.com/**Digital**Cinema/
Sony	F-23, F-35, High end HD & Cinema Digital		http://pro.sony.com/bbsc/ssr/product-F35/
Thomson	Viper/Infinity High quality HD camera		www.thomsongrassvalley.com.

- Rodney Charters csc, asc travels the world with a RedOne in carry-on
  http://www.reel-show.tv/index.html?vidId=00074

AND; for something different; perhaps a new trend: **Canon & Nikon Put On THE BIG SQUEEZE**

http://www.dv.com/columns/columns_item.php?articleId=196604392

FORMATS AND COMPRESSION

In a phrase, compression means – reducing the total amount of data while retaining (you hope) image quality. There can be trade-offs. What does this have to do with being green? Less Data means fewer tapes, hard-drives or solid-state units to handle and/or store. Digital purists want their images uncompressed but for some new Digital-Cinema cameras, that can mean as much as 1.5 Terabytes for an hour of material. However, you can choose a small format camera (Pro-sumer) that utilizes HDV or AVCHD compression and provide you with an hour of material per 2.5 Gb (or less). The choice of format and workflow will impact the amount and type of media used. An over-looked benefit of shooting HiDef in North America (or even HDV) is that it can be output to PAL for distro into European markets.

Mini-DV (DVCam, DVC-Pro) are standard definition; OK for the Webcast and some networks but this is declining as it hardly makes sense to produce in SD with HD being regulated into being (09).
HDV - (MPEG-2) Canon, Sony and JVC have HDV cameras, but formats are NOT compatible.
AVCHD – (H.264, MPEG-4), Panasonic and Sony have Pro-sumer cameras (not compatible). This codec may soon transition into professional cameras.
DVCPro-HD - Proprietary Panasonic format(s).
XD-Cam HD - Proprietary Sony format(s) (MPEG-2)
HD-Cam – Sony HiDef format with mild compression is standard format for broadcasters
Cinema Digital Cameras – for the most part utilize proprietary codex that record to portable storage. Most use mild compression; Dalsa (Canadian) and Ikonoskop (Swedish) are uncompressed.

The most common delivery format to networks is still HD-Cam (many still accept D-Betacam) and some even broadcast SD up-rezzed to HD . At some point in the not too distant future, standard definition will no longer be accepted at all, but file based programs may become acceptable (don't hold your breath just yet). As a filmmaker some of the key questions you need to ask (yourself) are, what level of picture quality are you satisfied with for the particular application. Shoot tests and look at them with your editor to determine what you feel is appropriate for the client and/or application.

Can you shoot Standard Definition and up-rez for broadcast? Perhaps; but check with your client and/or network (and offer them results of your tests). If you hope to shoot material on HDV or AVCHD cameras; also check with the network you are dealing with, to see if they will accept any or a percentage of the show on material shot with a pro-sumer camcorder (it may be subject matter that will override format or technical considerations but don't assume anything). The engineers can tell and they report back to program heads. But we have all heard many stories of content winning out over technically challenged material; but again don't count on this getting you through.

While these are not all strictly 'green' issues; as I have pointed out, efficiency and planning can help balance your bottom line, efficiency and effectiveness enabling you to fight the good fight where and when you feel it is most warranted.

Media – Film, tape, HDD, Flash or Compact Flash.

Portable Recorders (HDD and Flash Memory) Today with portable recorders, cameras can now be format agnostic and film lab, tape-transfer and courier costs may well be history. Time and distance are no longer significant. Another bonus feature is that you can record two (or more) formats simultaneously when shooting (eg. Tape and portable HDD or Flash). Several companies are now offering half and even one Terabyte portable drives for moving data around (physically and electronically). These are now almost ridiculously inexpensive, so much so, that almost by extension there are also other companies offering online storage for those who would prefer not to deal with hard-drive warranties and all the fine print and providing you are comfortable parking your precious data somewhere out in cyberspace. While these concerns may not be eco-specific, they can offer a reduction in media used or other efficiencies and if you save some money, it could mean being able to buy stainless steel water bottles or coffee cups (instead of plastic) for your crews next time out.

Those who have the opportunity to shoot film will most likely continue to do so for aesthetic or nostalgic reasons. I am an old film guy, so I understand the arguments and most individuals like myself shoot both, but the bottom line is that for practical reasons, almost all non-theatrical, a lot of TV series, MOWs and even some movies are now shot on digital formats. The biggest shift at the moment is away from original acquisition on film or tape to Hard-Disk and Solid State (Flash) media.

Those who are still more comfortable using tape, can consider re-using your tapes but the argument always is - is it worth the risk? TV News departments do this all the time (30-40 times or more). High quality tape will hold up fairly well but there is a danger of increasing dropouts and most in the production community would rather not risk it with a new client or project. Which is where Portable Hard-Disk and Solid-State Cards are now winning the day. Since tape cassettes eventually and inevitably end up in land fill sites (by the box and the truckload) many conscientious producers are adopting Hard Disk or Solid State which are endlessly re-usable (at least a thousand cycles) without the danger of dropouts or degradation. The caveat is that camera and production management must have an organized plan for logging, digitizing and/or transferring media to a master hard-drive or NLE edit workstation as there is the danger of recording over the original media. Feature films shooting high-end digital formats now duplicate or mirror original capture to two or even three back-ups. This for example, does have tricky implications for insurance companies who expect production companies to vault originals. This also brings up the question of what is the efficiency in terms of the time and hard drive space and the efficacy of the storage medium. To increase the possibilities of saving resources for yourself as well as the earth; do your research, then PLAN AND TEST; TEST AND PLAN!! Suggesting a blanket solution is folly as every project and every workflow is different.

To extend the discussion, there is always a concern about archiving or vaulting masters or replicating sub-masters. It is wise to talk to your Post and/or replication house, to try to sort through all of this and protect yourself from catastrophic losses and also of course eco-friendly options. There is a caution, and that is that none of these systems are bullet-proof in terms of long term storage. There are horror stories about early video-tape masters whose coatings turned to dust after a few decades and there is evidence that hard-drives will loose their data after a couple of years in storage (ie. if not used). As in; the hard-drives in the computer that you use on a daily basis are fine because the data is refreshed during periodic scans and de-frags. A reputable and savvy duplication/storage facility may offer answers. And it has recently come to light that while archiving a feature film master costs about $12,000 per year on film, the cost of archiving and protecting a film in a digital format is in excess of $200,000 per year. Admittedly not stuff you really want to know, but better to know something of the devils in the closet than to be blindsided at some time in the future.

Power- AC, batteries (Lead-Acid, NiCad, NiM-Hydride, Li-Ion ?)

Lead-acid batteries, are the oldest type of rechargeable battery. Their ability to supply high surge currents means that the cells maintain a relatively large power-to-weight ratio. These features, along with their low cost, make them attractive for use in cars to provide the high current required by automobile starter motors. A gelled form (won't spill or leak) is fairly common for portable battery blocks and are common in production units.

Nickle-Cadmium - The principal advantages of NiCad over other rechargeable types is lower weight for a given quantity of stored energy, good charging efficiency, small variation in terminal voltage during discharge, low internal resistance, and non-critical charging conditions. They can be used in place of regular batteries in most applications. NiCad batteries can supply high surge currents. This makes them a favourable choice for boats, cars, cordless power tools and camera flash units, as well of course they have been popular in film and video cameras (and accessories) for decades. Their relative economy and reliability is offset by a memory problem which can shorten their life if not discharged properly.

Nickle Metal-Hydride, abbreviated NiMH, is a rechargeable battery similar to a nickel-cadmium battery but using a hydrogen-absorbing alloy for the negative electrode instead of cadmium. A NiMH battery can have two to three times the capacity of an equivalent size NiCd. However, compared to the lithium-ion battery, the energy density is lower and self-discharge is higher.

Lithium-Ion batteries are now very common in consumer electronics and are currently increasingly popular for portable electronics, with one of the best energy-to-weight ratios, no memory effect, and a slow loss of charge when not in use. The major downside is that they can cost 2 or 3 times a NiCad. In larger configurations they can also overheat and even explode. Flight regulations limit the number of Li-Ion batteries you can place in baggage. Fortunately, the batteries used on Pro-sumer cameras fall well below these thresholds.

NiMH and **Li-Ion** will both tolerate rapid charging and have excellent life cycle and discharge profile. The knock against common AA, AAA and 9 Volt rechargeable batteries is that they don't last as long as regular disposable batteries, hence millions of batteries get sent to waste sites and end up polluting dump sites around the world. While more expensive than standard batteries Li-Ion are robust and reliable and will last through hundreds of charges. This is a habit worth getting used to, and worth the added expense of the better quality battery-charger combinations

Re-charging batteries – AC or Solar. The absolute cost of recharging a battery from household current is negligible. Solar charging can be considered where one has 12 or 30 volt appliances and power interruptions are frequent. Or see below.

Smart chargers – (will automatically discharge a battery before re-charging) cost more than standard chargers but are more than worth the extra investment in added battery life.

Portable power - Battery Packs can be purchased, custom made or DIY for specific and general applications. Cameras with multiple accessories (Zoom and FF motors, Monitors etc) drawing extra power are often powered from a single larger power source, rather than several smaller batteries. These can also be used to recharge smaller batteries.

Solar Chargers - can be used to recharge batteries or battery packs when power is frequently interrupted or for trips or expeditions where there is no access to household AC for long periods.

Fuel Cell - Just now appearing for a range of (lower power) applications; eco-friendly, zero emissions.
www.jadoopower.com/Applications/CommercialProductsOverview.aspx

Lighting – Incandescent, HMI (Gas Burst), Fluorescent, LED, Sunshine.

An overview: (A basic lighting demonstration will be carried out during the workshop)

Incandescent – creates light by passing current through a resistor (and wasting a lot of that current). It is however a mature technology and core to a DOPs arsenal of fixtures.

Fluorescent fixtures, have been around for a couple of decades and are like household units except more reliable and engineered (to reduce green spike) for film and video lighting. Typified by Kino-Flo an Videscence, these fixtures require a ballast which has now been engineered to eliminate flicker and operate on a fraction of the power required by incandescents.

HMIs have also been around for several decades and require only about a quarter the power of an equivalent incandescent. Expensive but robust and designed for numerous fixtures and applications.

LEDs are the latest spark on the block with even less current draw than fluorescents and much longer life. For now price is a deterrent but is changing and fixtures are meeting more professional needs. The most common fixtures are on-camera news-lights and small units that are finding their way on to sets of some high profile shows.

Published article by Lee Rickwood from EventDV; LED-Lights the Shape of Things to Come.
http://www.eventdv.net/Articles/News/Feature/Gear-&-Now-%7C-LED-Lights-The-Shape-of-Things-to-Come-49667.htm

GO GREEN: Litepanels' HD-friendly broadcast lighting requires a fraction of the energy used by conventional lighting.

New Litepanels™ MiniPlus 5600°K Flood / 5600°KSpot / 3200°K Flood
Ideal to mount on a camera, wall, or any place that calls for a highly portable soft light.

Rosco LitePads - Now brighter (and dimmable) LitePad is truly the "get me out of trouble" light.
http://www.rosco.com/us/video/litepad_ho.asp

The following three online workshops are an interesting intro to some of these lights.

http://www.digitalcinemasociety.org/content.php?page=Lighting%20Workshop

http://www.digitalcinemasociety.org/Popup.php?video=KinoFloSM.mov

http://provideocoalition.com/index.php/freshdv/story/zylight_first_impressions/

Osram-Sylvania page of literature on eco-iniatives

http://www.sylvania.com/AboutUs/EnergyAndEnvironment/ECOLOGIC/default.htm

Oh yes; what can we do with mirrors and reflectors?

Sometimes quite a bit!

On-Set/location practice

Consider re-using tape (caveats all over the place). Capture to hard-disk and solid-state cards are now a viable option (there are even cameras now that record to compact flash cards)(as in your digital still camera/movie mode – but more caveats).

Manage waste on set or location and at your office:

- Leave no trace of your visit (leave it as you found it).
- Plan your transition to tapeless and then to paper reduction (to PDF) or elimination.
- Switch from paper to re-usable plates.
- Switch from Styrofoam, plastic and cardboard cups to ceramic or stainless steel.
- Switch from plastic cutlery to metal.
- Appoint a dishwasher (or team). (lobby union for new category – dishwashers local ;-)
- Recycle used batteries (better yet use rechargeable)(NICd. NiM-Hydride, Li-Ion).
- Send batteries and printer cartridges to Hazardous waste site.
- Source recycled sets, props or costumes.
- Make good use of computer notebook for on-set notes, charts, as well as script, camera & audio sheets.
- Camera test charts, histograms etc. can greatly reduce trips to lab as analysis can be done between DP and Colorist via FTP (even rushes) , e-mail and phone.

Case History #1 - *A Green Studio approach*: *http://www.z47.org/SidGreenerStudio.html*

Scott Gribble is co-founder of Wonderdog Media, Inc., a Tacoma, Washington, Production Company specializing in corporate and commercial videos. Wonderdog Media is known for being on the cutting edge of technology in the areas of interactive DVDs, digital video, high-definition acquisition, multi-camera live production and commercial photography.

Our commitment to creating an environmentally-friendly studio is an evolving process. The changes we've made already have had a wonderful domino effect. Saving on one production front helps us afford other environmentally-sound and energy-saving investments. Even if global warming isn't a personal concern, some of these simple changes can go far to increase a studio's cost-effectiveness and efficiency.

Green Tech Initiatives

ADOBEwww.adobe.com	Has won awards from the US Green Building Counsel for its three headquarters. Environmental building improvements include drought tolerant landscaping, carbon monoxide sensors, and an irrigation system
ANTON/BAUERwww.vitecgroup.com	Uses energy saving light bulbs in all company areas and lead free bulbs with low mercury content
AUTODESKwww.autodesk.com	Provides 3D mapping software for the Easter Island Mapping Project
CANONwww.canon.com	Conducts research in environmentally conscious technologies including polyester produced by microorganisms and plant-derived plastics
HARRISwww.harris.com	Has added ISO 14001 and OHSAS 18001 registrations to its ISO 9001 registration at its Broadcast Communications facilities in Quincy , Illinois
HP www.hp.com	Achieved "Gold" listing– the highest– in the Electronic Products Environmental Assessment Registry
PANASONICwww.panasonic.com	Established the Electronic Manufacturers Recycling Management Company, along with Sharp and Toshiba, to manage collection and recycling programs in the US
SONY www.sony.com	Offers waste management "eCycling" centers for free electronics disposal
WIRELOGICwww.wirelogic.us	Is transitioning all products to new eco-friendly packaging, migrating to the use of polyethylene terephthalate (PET)

Case History #2: Space is limited but here are some notes on a five month expedition; not a green-specific production but a trip across the Arctic during which there was no access to AC power for over five months.

Location Notes on solar recharging system used on "Being Caribou" trip:

What for: A system to keep lithium batteries charged for a Canon GL3 video camera and an Iridium Sat-phone for 5 months while following a caribou herd in Northern Yukon and Alaska in Spring, Summer and Fall.
Components: Solar panel, regulator, battery, and the charging receptacles for the batteries, both converted to cigarette lighter sockets so we could switch back and forth easily.
Wiring: Solar panel (power source) went through the regulator (surge protection and prevents reverse current leakage back out to the panel) which went into the battery (12V) and then into the female end of a lighter socket.
Panel: Uni-Solar 12-volt panel designed for marine, auto and recreational vehicle use. Flexible enough to conform to the contours on the outside of a back-pack or a curved roof but rigid enough that it can't be rolled up. Three models are available. We used model USF-11. Measures 16.7" X 21.8" and weighs 2 pounds. Max voltage is 16.5 volts (fine for any 12volt appliances). Max amperage is 0.62. Photovolatic cells are somewhat fragile but we found this panel very robust (dropped it on rocks a few times, slammed pack on it many times, exposed it to temperatures from –40C to +35C, blizzards, lots of UV, rain, snow and wind.
Regulator: Morningstar Sunguard-4 solar controller. Needs minimum of 6 Volts to operate, which the above panel provides in all but the lowest light conditions (e.g. dawn and dusk).
Battery: Ten 1.5Volt AA-sized batteries were wired together to make a 14Vbattery pack. We used NiMH batteries but there are rechargeable lithiums now, which would be better (lighter and much better at cold temps). We had to baby the battery pack when it was below freezing, keeping it inside our jacket or in our sleeping bag. Once charged this battery pack had the capacity to fully charge one of the big Canon lithium video camera batteries even when nothing was coming into the solar panel. Such storage capacity is important if your weather is unpredictable (i.e. allows you to capitalize and store power on sunny days to recharge appliances when the weather's gone to pot (clouds, storms, darkness etc). One of the guys at a local battery warehouse provided and wired the batteries and even wired the whole system together for us.
Hints: Take spare fuses, spare wire, and a trouble light to troubleshoot in the field. We had to splice in a new wire to replace cracked and corroded wire, a couple times during the 5 months and blew half a dozen fuses because of shorts from such cracked/corroded wires and connections. A Leatherman tool and some electrical tape are musts as well.

RESOURCES:

E-Zines and Trade Subscriptions

Free Subscription to Film & Video
http://www.studiodaily.com/filmandvideo/signup.html

FREE Subscription to Videography! Subscribe at:
http://www.myvidmag.com/Register.aspx?fid=VIDF&status=NEW&key=I7GVYN

Sample digital copy of DV.COM Magazine
http://www.nxtbook.com/nxtbooks/newbay/dv0508/

Sample copy of American Cinematographer
http://www.ascmag.com/magazine_dynamic/nxtbk_pre.php

Support, Sponsors and Sources :

Canon	www.canon.ca/
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Precision Camera Inc.	www.pci-canada.com
PS; Production Services	www.psps.com/
RedOne	www.red.com/
Rosco	www.rosco.ca/
Sony	http://www.sonybiz.ca/solutions/Homepage.do
Source Shop	www.sourceshop.com

SUPPLEMENTARY LINKS FOR GREENFILMMAKER WORKSHOP

Adam Wilt – Blog on professional video camera/post issues.

http://provideocoalition.com/index.php/cameras

http://provideocoalition.com/index.php/awilt/story/three_three_letter_camera

Review of Canon HV30
http://reviews.cnet.com/digital-camcorders/canon-vixia-hv30/4505-6500_7-32786397.html

Adapter for using compact flash cards in SxS Express slots.

http://www.glasseye.com.au/articles/sdassxs/

FAA – travel with Lithium batteries

http://safetravel.dot.gov/whats_new_batteries.html

More info on office practice

http://www.itbusiness.ca/it/client/en/home/News.asp?id=50347

http://www.itbusiness.ca/it/client/en/home/News.asp?id=50349&PageMem=1

Short item on new Distro opportunities

http://www.hubcanada.com/articles.php?aid=10286

BBC definition of Standard Definition.

http://www.bbc.co.uk/guidelines/dq/pdf/tv/hd_delivery_v01_09.pdf

CBC Newsroom now – LEDs (Toronto, French News Studios)

http://www.radio-canada.ca/regions/ontario/tele/cesoirontario.shtml
http://www.cbc.ca/olympics/ondemand/

http://www.colorkinetics.com/ls/

http://www.colorkinetics.com/showcase/installs/?id=203

Five online "acts of green" you can do right now to make a real difference

Canadians have resoundingly responded to the call to complete one million carbon-saving acts. Now here are five online resources to help you join the crusade to vanquish greenhouse gas emissions.

by Brian Jackson

In the face of a global warming crisis, using a non-disposable coffee mug or flicking off the lights when you leave the room might seem too trivial to really count – but when you multiple acts like those by a million, it's a different story.

Canadians posted more than "One Million Acts of Green" to a Web site hosted by partners Cisco Systems Inc. and the Canadian Broadcasting Corporation. The milestone was reached Feb. 3 -- months in advance of the expected finish date, originally planned for the early summer.

The combined acts are estimated to have prevented more than 56.9 million kg of greenhouse gas emissions.

"It's not a complicated idea and I'm sure there are a lot of others like it out there," says Willa Black, vice-president of corporate marketing at Cisco Canada. "But the response has been really great."

Black came up with the concept to match Cisco's marketing position as a supplier of network technology. With a slogan that refers to "the human network effect", the goal was to show how a network could help people and work collaboratively for social change.

Launched Oct. 21, 2008 on TV talk show *The Hour*, the site has about 100 different actions users can participate in to cut back on their carbon footprint. Tasks range from the simple (walk or bike to work instead of driving) to major home renovation projects (insulate your basement, install solar power).

“We're going to keep going, there's so much momentum here and so many schools, communities and businesses are involved,” Black says. “Canadians have embraced this and one in 1,000 Canadians is registered on this site.”

It's a testament to the national consciousness around sustainability issues, she adds.

For Canadians who want to exercise that consciousness, and chip into the 1 million acts of green, ITBusiness.ca has created a list of five suggestions you can implement right now:

1. Do your Web searches with Blackle

Most tasks you do on your computer take place on a white background -- word processing, e-mail, and surfing the Web are no exceptions. Whenever you use Google's search engine, it brings up its results on an all white background. It's done to make the results more readable, but isn't the most energy efficient way to list your search results.

Blackle is built on the simple concept that a monitor requires less power to display a black screen than a white screen. The theory goes that if Google was always black, it would save an estimated 750 megawatt hours in power a year.

"A lot of our every day habits are becoming more eco-friendly," Black says.

You could make your everyday Web search habits a bit greener by using this black search engine. Blackle is powered by Google, so you'll get the same sort of accuracy that you're used too.

2. *Calculate your carbon footprint in one minute*

If you think it's hard to assess just how much greenhouse gas you produce in a year, this calculator will prove you wrong. From Toronto-based Zerofootprint Inc., this tool will ask you four different lifestyle questions and then give you an estimate of your annual emissions.

Knowing how your behaviour leads to pollution is a key step in changing your habits to be more green. Users simply enter how much they drive with what sort of car, the number of flights taken in a year, what they typically eat, and where they live. Then presto, you have a number to compare yourself with other Canadians.

"We built that sort of functionality into our tool too," Black says. "Every single act has carbon savings attached to it."

For example, leaving the car in your driveway and pedaling to work will help prevent around 3 kg of greenhouse gas emissions a year. If you clean your furnace filter once a season, you can save 43.8 kg a year.

3. Make GreenNexxus **your new social network**

GreenNexxus is the social network technology behind the One Million Acts of Green Web site. Users can also sign up for an account on the main GreenNexxus Web site to further green their existence. Site users can participate in green-related conversations on blogs and forums, and pledge to engage in a carbon-cutting activity. Projects are created and groups formed around them to help complete the project. There's also a market for carbon offsets so users can make up for the pollution they pump into the atmosphere from their car tailpipe by funding a carbon-reducing project elsewhere.

"We tried to build a social networking site based around the environment," Black says. “You can complete acts, aggregate them, and immediately see your greenhouse gas savings.”

The social networking site also allowed for new green acts to be added as users recommended them, she adds. It proved a good way to allow members to share information about the green acts they'd completed.

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4. Get PowerWatch **for your next home gadget**

Most people don't make it a practice of monitoring just how much electricity they use. It's not until you get the bill in the mail do you have any real idea of what sort of power you've been drawing from the grid.

PowerWatch seeks to change that problem by providing a small LCD screen that home owners and businesses can place in a visible spot and customize to their liking. Buying a PowerWatch kit gets you three basic parts – the main module that's hooked up to your power distribution panel and reads your incoming electrical usage in volts and current, the LCD screen that displays the information, and computer software that can analyze the data.

Connected to the main module with a wireless network, the monitor can tell you how much power you've used over the month and how much you're projected to use. It can also display the total cost of all that electricity. Users can choose what sort of stats they see on screen.

"We're going to see more and more tools along these lines," Black says. "People are going to take control over managing their lives from an environmental standpoint."

5. Use carbon-free, renewable energy **to power your home or business**

Using electricity has a negative impact on the environment because of the greenhouse gases often associated with producing it. Coal-fired power plants are notorious for their carbon emissions, and still a major contributor to the electrical grid across Canada.

But power bought from a company such as Toronto-based Bullfrog Power Inc. comes from carbon-free, renewable resources. Using wind-power and low-impact hydro generation, Bullfrog generates enough green power for all of its customers and feeds it directly into the energy grid.

“We continue to build new capacity to meet the growing demands from businesses and homes,” says Tom Heintzman, president of Bullfrog.

No new hook-ups are required. When you sign up with the company, you'll start being billed by Bullfrog on a monthly basis instead of your regular electricity provider. Then Bullfrog guarantees to produce an amount of green electricity that is equal to what you take from the grid.

The company is listed under the "Use Green Power" challenge on the *One Million Acts of Green* site.

So far, 287 participants have saved 8,230,680 kg of emissions.