



GREEN PRODUCTION GUIDE

A PROJECT OF THE PRODUCERS GUILD OF AMERICA

Unified Best Practices Guide

TABLE OF CONTENTS

About this Guide	Pg. 3
A Note to Producers	Pg. 4
Eco Management	Pg. 5
Production Office Best Practices	Pg. 6 – 9
Locations Department Best Practices	Pg. 10 – 11
Water Best Practices	Pg. 12
Transportation Best Practices	Pg. 13 – 14
Scenic Department Best Practices	Pg. 15 – 16
Props Department Best Practices	Pg. 17
Catering Best Practices	Pg. 18
Compost Best Practices	Pg. 19
Lighting, Sound, Camera, & Special Effects Best Practices	Pg. 20 – 21
Wardrobe, Hair & Make Up Department Best Practices	Pg. 22
Wrap and Post Production Best Practices	Pg. 23 – 24
Appendices	Pg. 25 – 28



GREEN PRODUCTION GUIDE

A PROJECT OF THE PRODUCERS GUILD OF AMERICA

PRODUCERS GUILD OF AMERICA UNIFIED GREEN BEST PRACTICES

About This Guide

The PGA Green Unified Best Practices represents the best current strategies for green production, based on the experience of a wide range of producers working in the field today to achieve sustainability in motion picture and television production.

This guide was created to help independent producers and their production teams reduce the carbon emissions and environmental impacts of their film, TV and New Media productions. It is organized by production phases and departments, and each section is downloadable by department, facilitating crewmembers to focus on the green strategies relevant to their needs.

The first section focuses on what producers need to do to get started—when to make the commitment, how to maximize efficacy and ways to maintain progress. The second section concentrates on how to set up the production office—an important phase which will influence the green achievements of all other departments. The next ten sections cover the production through wrap, editing and distribution.

As we begin 2016, our hope is that filmmakers will begin to incorporate these practices as part of a standard routine, and continue to visit <http://www.greenproductionguide.com> ongoing updates and innovations in sustainability for film and television.

The PGA Green Unified Best Practices Guide was produced by:
Green Media Solutions LLC
Earth Angel Sustainable Production Services LLC

A Note to Producers

The basic principles behind “greening” a production include conserving fuel and energy, avoiding toxins and pollution, saving water and preventing landfill waste, to name a few. Implementing those principles on a film set, where daily life is fast-paced and filled with bright lights and extravagant scenery, can be tricky. Many environmentally harmful behaviors happen when we don’t know, can’t find, or simply don’t have time for the better option. The key is to identify priorities and challenges before production begins.

- Make the commitment, and engage the filmmakers and funders—whether studio or independent—in the conversation early.
- Set achievable goals for yourself and the team, and lead by example.
- Call a meeting with the producing team (Line Producer, UPM and Supervisors) to discuss the sustainability plan and to determine how to best communicate it to department heads at point of hire.
- Hire an Eco Supervisor to help cast and crew implement sustainability practices. His or her responsibilities should include:
 - Locating low-impact vendors and products made with greener materials
 - Circulating educational information and resources.
 - Meeting with individual departments to help them achieve their goals.
 - Monitoring waste diversion strategies and results.
- Hold a pre-production meeting with department heads to announce the sustainability plan, to introduce the Eco Supervisor. Solicit input from department heads regarding ways to make their department greener.
- At the production meeting and a later on-set meeting, communicate green goals and strategies for the production to all cast and crew.
- Include green updates in weekly production meetings. Conduct a mid-point evaluation: compute progress statistics and share lessons learned to keep crew engaged and to re-energize the team.

For ideas on how to effectively communicate green goals to your team, see sample memos in the Appendices at the end of these guidelines.

- Have your Eco Supervisor keep thorough notes and progress reports to email to cast and crew periodically throughout production and after wrap.
- Outline a waste management plan during wrap with department heads, Reach out to other productions that might be interested in purchasing any bulk materials.
- Familiarize yourself with the carbon calculator at www.greenproductionguide.com and consider measuring and offsetting your carbon footprint at the end of your production. (For more information, see Section 12.)

Eco Management

If no one is available to oversee a production's sustainability efforts from the onset, success rates are much lower. The emerging role of the Eco Supervisor is proving crucial to that success. An Eco Supervisor is a resource, a seasoned production professional, and functions as a department head alongside other crew department heads. This person has an exclusive focus on implementing and managing systems from prep through wrap, and problem-solves in conjunction with all departments as the unique challenges of production arise. Depending on the scale of the production, Eco Assistants could be utilized when daily waste management increases dramatically due to a surplus of crew or extras.

Communication and education are the essential tools of an Eco Supervisor during this period of transition to a more sustainable production model. A strong sustainability campaign influences all aspects of a production, as well as the community at large, in a mutually beneficial way. Here are a few of the many responsibilities of an Eco Supervisor:

PREP

- Ensure Production Office, Stage facilities and shops are set up to encourage waste reduction and promote conservation, educate crew on sustainable practices/issues
- Encourage the purchasing of local, environmentally responsible products whenever possible, offer preferred vendor lists
- Meet with all Heads of Department to identify opportunities for sustainable development and implement systems as necessary to attain department-specific goals
- Purchase reusable water bottles for cast and crew, portable water dispensers, waste receptacles and corresponding signage
- Establish carbon tracking method with Accounting department
- Establish with Locations department certified waste hauler who can accommodate our sustainable waste disposal needs and provide LEED diversion reports

SHOOT

- Provide adequate receptacles and signage for all waste streams, monitor waste streams and educate crew on proper waste disposal
- Oversee reusable water bottle strategy, offer suggestions or assistance with the plastic-free hydration system
- Organize food recovery of catering leftovers with local shelters
- Establish scrap gel, scrap film and dead battery collections
- Enforce anti-idling policy whenever possible
- Offer incentives to cast and crew for their environmental efforts
- Monitor production's environmental progress, identify areas of improvement

WRAP

- Oversee striking of sets and material disposal, offer waste diversion efforts compliant with studio's policies
- Collect data from Accounting and compile Carbon Calculator
- Create sustainability report detailing both the production's environmental successes and areas of improvement
- Support the production team and/or studio in getting the sustainability report out as far as possible – make your green success stories known!

The Production Office Best Practices

Taking steps to reduce consumption in the office not only saves natural resources, but can even slash office costs. The Production Office Coordinator has an important role to play. He or she should take the lead in implementing sustainability practices in the production office, be the one for example to look into renewable energy credits through the local utility company or to explore www.greenproductionguide.com for lists of green vendors by category and location and ask potential vendors if they buy locally, recycle, take measures to conserve energy and water, and make efforts to reduce waste.

Keep the green momentum growing throughout production by listing environmental factoids and green updates on daily call sheets. Make them personal (and make sure they get noticed) by including crewmembers in the tips, e.g. "Katie Carpenter uses her Nalgene water bottle every day in lieu of disposable plastic bottles. Did you know that the amount of oil consumed to make, process, label, fill, seal and transport a single bottle of water would fill a single serving plastic water bottle 25 percent."

ENERGY

Lights

- Use fluorescent, CFL or LED lighting.
- Turn off lights before leaving a room.
- Use desk lamps instead of overhead lights where possible, and keep all non-essential lighting turned off.
- Raise the blinds and work by daylight whenever possible.
- Explore alternative energy options, like solar and wind.

Computers and Electronics

- Disable screen savers and program computers to enter sleep mode after several idle minutes. In Windows, find the settings in the control panel—under system preferences for Mac.
- Search via Blackle, Google's energy-saving interface.
- Plug daily use appliances, like computers, printers, monitors and copy machines, into power strips and power everything down when not in use.
- Keep all peripheral equipment unplugged when not in use.
- Use laptops instead of desktops because they are more energy-efficient.
- Rent office equipment instead of purchasing when practical.
- Look for products that have been certified by such groups as:
- EPEAT (Electronic Product Environmental Assessment Tool), an organization that evaluates products for longevity and chemical use, as well as energy efficiency.
- ENERGY STAR certified equipment, which uses less energy than non-certified products.

Heat & Air

- Ask the building manager or landlord about solar and/or wind power options and using natural gas over heating oil.
- Install a programmable thermostat that automatically lowers the heat or air conditioning overnight.
- Lower the thermostat two degrees in the winter and raise it two degrees in the summer. The comfort loss is usually minimal when compared with the energy savings.
- Use fans instead of air conditioning when possible.
- When the temperature allows, turn off fans and open a window.

- Keep doors and windows closed when running heat or air.
- Avoid using space heaters, but when they are unavoidable, be sure to turn them off before leaving the room.

Reduce Petroleum Fuel Use

- Rent hybrid vehicles.
- Employ bike messengers.
- Encourage employees to bike to work.

Ask your local municipality if they will provide bike racks for your building. If not, try to get some donated or discounted so you can visibly support your team's green commute.

- For those that must drive, recommend that they carpool.
- Promote public transportation by providing bus and subway maps at the office.

PAPER

- Promote electronic communication and limit paper offering to when it's specifically requested.
- Choose paper made from at least 30% post consumer recycled content.
- Print double-sided.
- Reuse single-sided sheets for test prints and rough drafts.
- Use dry-erase boards or chalkboards for in-office information sharing.
- Encourage tablet use over hard copies.
- Store information online in web-based emails, or with an online project collaboration tool like Basecamp or a virtual production office like Scenechronize.
- For more sensitive information, use flash drives instead of CDs.
- Choose a thinner font, such as Century Gothic, which, when printed, can use as much as 30% less ink than thicker fonts. Visit www.ECOFONT.com to download thinner fonts.
- Print signage on paper and other biodegradable materials rather than plastic.
- If possible, request that Accounting Departments consider revamping the Production Policies Signoff into a single page form and check reports electronically, saving an estimated 70+ reams of paper over the course of an average size production.

SUPPLIES

- Use rechargeable batteries, remanufactured ink cartridges and soy-based inks.
- Look for office products made with a high percentage of recycled content, and for products certified by Green Seal or another eco-certifier.
- Look for water-based markers that have been approved by the Art and Creative Materials Institute (ACMI).
- Browse thrift stores and used office supply dealers for office furniture.
- Ask for minimal packaging when ordering supplies.
- Share magazines and reuse manila envelopes.
- Carry reusable bags for all shopping runs and errands.

KITCHEN

- Use non-disposable plates, glasses, coffee mugs and cutlery. Look for used items at thrift stores rather than purchasing them new. Be aware that second-hand dishes with novelty logos or chipping images may contain lead.
- If disposables are the only option, choose paper products with high percentages of post-consumer recycled content and corn-based biodegradable plastics.
- Purchase organic and Fair Trade Certified™ coffee and tea, and choose bulk sizes to avoid excess packaging.
- Look for coffeemakers that come with a reusable mesh filter, and invest in a unit with a thermal carafe to keep coffee hot without electricity.
- If using paper filters, choose recycled and chlorine-free products.
- Unplug the coffee maker when it's not in use.
- Regularly defrost refrigerators and freezers and check the temperature.
- Refrigerators should be no higher than 40° (5C) and freezers no higher than 0° (minus 18C).
- Brew coffee in-office, and distribute reusable mugs or compostable hot drink cups.
- Avoid the use of Keurig single serve cups ("K-cups").

Grab a reusable travel mug for coffee runs, and never purchase coffee in a Styrofoam cup.

- Stir beverages with reusable spoons instead of disposable stirrers. If stirrers are essential, choose wood and recycle them after use.
- Choose locally grown fruits and vegetables and organic snacks.
- Submit lunch orders via Google Docs rather than printing menus, and only order takeout lunches from restaurants that serve in recyclable or biodegradable containers.

CLEANING

- Replace chemical cleaning products with nontoxic, biodegradable alternatives that won't pollute indoor air or local waterways.
- Look for the following certifications: USDA organic, Natural Products Association and, GreenSeal. Visit <http://www.goodguide.com> to compare products' environmental and health ratings.
- Purchase products in concentrates and bulk sizes to cut down on packaging waste.
- Use natural sponges and cloth rags instead of paper towels.

Try these safe and economical DIY cleaners:

- Glass: 1/4 cup distilled white vinegar and 2 cups water
- Scouring cleanser: baking soda and water
- Disinfect: hydrogen peroxide
- Grease: lemon juice
- Wood polish: ½ cup white vinegar and 1 teaspoon olive oil
- Unclog drains: equal parts baking soda and white vinegar
- For more natural cleaning solutions, see Real Simple's (realsimple.com) 66 All-Natural Cleaning Solutions.

WASTE REDUCTION

- Ensure staff is informed of office recycling policies and facilities.
- Set up recycling bins next to all trash containers with clear signage detailing the materials appropriate for each bin.
- When you select your waste management company, request that they track your landfill waste and recycling—in weight rather than volume, if possible.
- If possible, compost food and biodegradable waste. See COMPOST for instructions.
- Provide containers for recycling ink and toner cartridges.

Encourage team members to bring their electronic waste from home to be recycled with office e-waste.

- Ask suppliers to take back packaging for larger items.
- Dispose of batteries and compact fluorescent light bulbs as hazardous waste with a certified hazardous waste vendor, and donate or recycle electronic equipment.
- Consider Big Green Box (biggreenbox.com) for batteries and electronics recycling. Visit earth911.org or 1800recycling.com for other local recycling facilities.

Locations Best Practices

While on location, take every measure to manage your waste, conserve water, protect the landscape and respect the local community. During the scout, evaluate each location with an eye toward sustainability options. Remember that cities have different policies regarding recycling and waste removal. Check with local municipalities for details.

Be sure to involve the prep crew and swing gang in greening efforts, especially in terms of water and waste removal. Offset crew are often charged with the task of regulating their own green behavior and benefit from a supportive Locations department.

SCOUTING

- Choose alternative fuel vehicles (hybrids, electric, flex fuel) for long drives.
- When possible, scout locations via public transit, bicycle (with a helmet), foot or carpool.
- After choosing a location, determine ways to reduce your environmental impact there. Work with the location contact to ensure that the best methods for preservation and protection of the site are followed.
- Include public transit information with maps given to cast and crew.

LOCATION PREP

- Try to make all signage out of recycled or recyclable materials.
- Use only elastic bands or string to hang signs on trees—never staples, thumbtacks or tape, all of which can severely damage trees.
- Protect interior locations with corrugated cardboard made with post-consumer recycled content. When available, consider using reusable, cut-to-size, plastic mats.
- Set up garbage and recycling stations according to the location's waste separation guidelines for prep crews. Also set up sustainable hydration systems for prep crews (see WATER BEST PRACTICES - page 16).

WASTE MANAGEMENT

- Hire a waste hauler who will provide recycling services for construction materials, catering, crew waste, and any other materials generated on location.
- Set up garbage and recycling stations according to your hauling company's waste separation guidelines.
- Compost, if possible. See COMPOST for instructions.
- Create easy to read signage that details proper practices for composting and recycling.

Try a DIY Rubbermaid recycling bin. Cut two or three holes in the lid and place a bag underneath each hole for easy sorting.

- Avoid disposing of waste and recyclables in municipal containers when you are unsure of the municipality's recycling policies.
- Provide catering and crafts services with compost and recycle bins (or ask them to bring their own) for the materials they generate.
- Distribute reusable water bottles and set up water coolers instead of stocking bottled water.
- Brew coffee on set and distribute reusable mugs or compostable hot drinks cups.

- Ensure that sufficient waste and recycling bins are placed in the:
 - Staging area close to camera
 - Craft service tables
 - Base camp
 - Catering area
 - Shop and construction spaces
 - Extras holding areas
 - Monitor usage of bins and consider moving them to more convenient areas if they are not being used consistently.

SENSITIVE AND PRISTINE LANDSCAPES

- Contain all vehicle and foot traffic within the production vicinity, and cordon off any areas with particularly sensitive vegetation or wildlife.
- Ensure that all film-related activities are carefully managed to prevent damage to the landscape.
- Reinstate any land or vegetation that are damaged as a result of production activities.
- Scan the area thoroughly before leaving to ensure that nothing is left behind and that the area reflects its pre-production condition.

Water Best Practices

Eliminate plastic water bottles from your production. Research convenient water systems that help conserve water and reduce waste, while keeping the cast and crew hydrated and healthy.

- Distribute reusable water bottles and encourage office staff, cast and crew to drink municipal tap.
- Communicate your sustainable hydration to everyone clearly before shooting. Ask department heads to notify day players of the policy so that they can come prepared with their own bottle.
- Buy a good bottle. The more durable and practical the bottle, the more likely the crew is to hang onto them throughout the shoot. Attaching carabiners to make the bottles more portable is also preferred. Trusted BPA-free brands include Klean Kanteen and Nalgene.
- Avoid using logos on bottles. Once a project's logo is stamped, it becomes a novelty item and crewmembers are less likely to use them on set.
- Big background days? Talk to your Extras Casting company about sending a memo to the background actors informing them of your water policy and asking them to bring their own bottles.
- Install faucet-mounted filters or use filtered pitchers, such as the Brita Ultramax.
- If water bottles are beyond the budget, choose cups made with paper or biodegradable, corn-based plastics.

Contrary to popular belief, bottled water is less regulated than tap. It also requires petroleum-based plastics and fossil fuels to package and ship.

- If the safety of the local tap water is a concern, use BPA-free five-gallon water jugs instead of purchasing single-serving disposable bottles. Get craft service on board with weekly five-gallon water jug deliveries to avoid shortages.
- Source water locally whenever possible. Visit waterfleet.com for on site potable water solutions.
- Consider renting a bottle-less water cooler, which removes chlorine and other contaminants.
- If packaged water is essential, consider Tetra Pak "boxed" water, when available, instead of bottled. Also consider PLA plant-based bottles from vendors such as Norland International.
- Maintain watering stations in the following locations:
 - In the production office
 - By the set
 - At the craft service table
 - By camper/truck parking
 - In extras holding
 - In the hair/makeup trailer
 - In the wardrobe truck

Transportation Best Practices

Transportation is one of the most significant departments for targeting reductions. Research energy conservation opportunities and locate more efficient vehicles. Consider setting an example by reducing your emissions and looking into local sources for biodiesel. Maybe even add a Smart Car to the fleet, just to make sure the message is clear.

According to the American Lung Association, biodiesel emissions contain 90% fewer carcinogens and respiratory irritants than petrodiesel.

BIODIESEL

- If renting, be sure to notify vendors in advance of your choice to use bio-fuels.
- Blends range from B5 (5% biodiesel, 95% standard diesel) to B100.
- Look for biodiesel manufactured from domestic soy that has a BQ9000 accreditation from the National Biodiesel Accreditation Program.
- If the production is new to bio-fuels, use them in generators to start, moving on to other machines when ready.
- Because biodiesel flushes the engine's internal systems, change filters frequently for the first few months after switching.
- Consult with fuel provider on the effect of cold weather conditions on the specific blend of biodiesel to be used.

REDUCE PETROLEUM USE

- No idling.
- Use hybrids and vehicles that run on alternative fuel (CNG, biodiesel, electric, hydrogen, ethanol).
- Have the transportation department/captain keep track of the fuel inventory and monitor their use in specified vehicles.
- Offer incentives for using public transit and carpooling.
- Combine deliveries and errands into as few vehicle trips as possible.
- Maintain vehicles in optimum operating condition.
- Use electric or solar-powered golf carts.
- Offer bicycles for cast and crew to use on site.

Idling for an hour wastes one gallon of gas. It's bad for your health and is illegal in many states, so don't do it!

- Consider rewarding crew members who use public transportation.
- Only fly commercial flights if possible, instead of charter flights or private planes.
- Hold teleconferences instead of flying for in-person meetings.
- Recycle motor oil and antifreeze. Recycling just two gallons of used oil can generate enough energy to power the average household for 24 hours. Visit earth911.org for local facilities.

GENERATORS

Whenever possible, tie into the local power grid instead of using a generator.

Look for base-camp generators that run on solar energy—in the future, they will be more widely available.

- If possible, switch to biodiesel for diesel generators, but notify the equipment vendor first.
- Have the transportation department/captain order a bio-diesel blend of B20 or higher.
- Always use oil drip trays and groundsheets, and notify the locations manager immediately in the event of a spill.
- Reduce emissions with catalyzed particulate filters.
- Whenever possible, power down any generator that is not in use.

**A 36-panel solar system will generate 72,000 watts of electricity—
enough to replace a 1,400 to 1,800 Amp diesel generator and prevent
1 ton of CO2 emissions each day.**

TRAILERS

- Use fluorescent, CFL or LED lights.
- Turn off generators for unoccupied trailers.
- Use environmentally friendly cleaners for trailer maintenance.
- Consider solar powered trailers, if available.
- Consider working with producers to encourage use of multi-room trailers versus single trailers.
- Use only biodegradable and plant-based personal care products in showers and sinks.
- Consider using air-blow hand dryers instead of paper towels.

Set Design, Construction & Scenic Best Practices

Careful and creative planning can reduce set-related waste dramatically. Design and build with strike and wrap in mind. Set up all construction and shop spaces with detailed waste management systems, and make sure the waste hauler is tracking landfill waste versus recycling.

DESIGN

- Begin discussing sustainability methods early.
- Remember the four “R’s”: Reduce, Reuse, Repurpose and Recycle.
- Design for disassembly, so that sets can be easily repurposed and materials easily recovered.
- Incorporate salvaged materials.
- Coordinate the design and shoot schedule to allow for reuse of set walls, platforms and lighting grids.
- Think of wrap during prep, and line up schools, theaters or arts organizations to take donations of used sets and materials.

WOOD

- Use reclaimed or Forest Stewardship Council (FSC) certified wood.
- If FSC-certified products are unavailable, look for farmed maple and birch.
- Avoid luan, a term for plywood products made from imported tropical hardwoods.
- Avoid plywood and particleboard, which typically contain formaldehyde-based adhesives and can release harmful vapors at room temperature.
- Take the pressure off of over-harvested species like mahogany by choosing wood alternatives such as sorghum, bamboo or palm and less popular species like sweetgum, madrone and California oak.
- Repurpose wood sets and set dressing when possible.
- Save sawdust for absorbing unused paints
- When possible, use steel scaffolding instead of wood for platforms.
- Designate an area for wood scraps, and check the pile before using new materials.
- Recycle any wood scraps that cannot be donated, or hire a wood chipper to convert wood waste into garden mulch.

PAINT

- Use no-VOC or low-VOC paints, sealants and lacquers.
- Look for paints certified by Green Seal or other such organizations
- Avoid spray paint but properly dispose of aerosol/krylon cans when they are necessary.
- Avoid use of Styrofoam for sculpting whenever possible. Try using biofoam as an alternative.
- Use plant-based paint strippers.
- Buy gallon cans made from recyclable steel instead of plastic five gallon buckets.
- Use leftover paint from previous productions as primer.
- Consolidate like colors of unused paint, clearly label the cans and donate them or use them on a future production.
- Run rollers and brushes over a sheet of cardboard to remove excess paint, and store them in plastic bags between uses.
- Never rinse excess paint down the drain. Start an “excess paint” bucket to be disposed of as hazardous waste.

- Dry out and recycle empty paint cans.
- Dispose of used paint supplies including brushes, rags, and containers, as hazardous waste.

OTHER MATERIALS & SUPPLIES

- Whenever possible, rent instead of building or purchasing a structure.
- Source building materials locally.
- Choose biodegradable materials, such as canvas, paper, wood and cardboard, and materials with high percentages of recycled content.
- Look for sustainably produced materials, such as bamboo, cork, and Homasote.
- Avoid products containing the following ingredients:
 - Formaldehyde
 - Polyvinyl chloride (PVC)
 - Phthalate plasticizers (often referred to as “fragrances” on product labels)
 - Brominated flame retardants (when possible)
 - Chromium
 - Chromate copper arsenate
- Use no-VOC or low-VOC and solvent-free caulk and adhesives.
- Look for water-based glues like Elmer's or Sobo.
- Use solvent-free butcher's wax.
- Choose a slower setting joint compound, like Murco 100, to avoid harsh solvents and preservatives.
- Use rags instead of paper, and rinse and reuse them as much as possible before discarding.
- Shut off the power, HVAC, catwalk, house lights and all appliances when not in use.
- Allow rechargeable batteries to fully drain before recharging.
- Use screws, instead of nails or glue, so that construction materials can be easily salvaged.
- Recycle metal, carpet, polystyrene, pallet wrap, sash and non-rechargeable batteries.

Props & Set Decoration Best Practices

During the creative process, there are many opportunities for efficiencies in the selection of props and set decoration. Explore eco-friendly alternatives to traditional products and methods. Carry reusable bags while shopping for props and set dressing. Call in advance to find out about the environmental policies of vendors, and support businesses with superior environmental policies. Consider toting a reusable water bottle to avoid last minute plastic packaging purchases, and ask the driver to refrain from idling between stops.

SET DRESSING/PROPS

- Borrow or rent set items instead of purchasing. Studios often have set materials available onsite.
- Talk to your product placement rep if you have one about incorporating sustainable brands/products on screen.
- Search flea markets and second hand shops for props, and purchase new items made with sustainable resources.
- Look for less toxic sprays, adhesives, cleaners and other solvent-based products.
- Visit <http://www.goodguide.com> for to compare products' environmental and health ratings.
- Look for the ACMI AP (Approved Product) certification seal for art materials.
- Use hybrids or fuel-efficient vehicles when collecting props and set dressing, and consolidate purchases into as few vehicle trips as possible.
- Consider green-themed set dressing and props, such as recycle bins, or characters carrying reusable water bottles or bags.

FABRICS AND FIBERS

- Reuse, borrow or rent materials whenever possible.
- Look for carpet made with natural fibers—wool, sisal, jute, coir or sea grass—or with recycled PET plastic bottles.
- Use only low- or no- VOC adhesives.
- Look for organic cotton, linen, kapok and wool for bedding, and wood pulp and bamboo for towels.
- Donate used materials to local schools, community centers and charities.

FOOD

- Compost any inedible food props.
- Donate clean, fresh produce and packaged food props to a food bank or shelter. The Good Samaritan Act protects individuals and organizations that donate food items to nonprofit organizations. Visit feedingamerica.org to understand provisions of the Act.

GREENS

- If possible, rent or borrow plants and other greens.
- Opt for organic compost and soil rather than conventional products, which typically contain petroleum-based ingredients.
- Look for native, organically grown plants.
- Ensure that plants get the proper amount of light and water throughout the shoot.
- Donate or replant locally after the shoot.
- Compost any plants that expire.
- Return plastic pots to retailers for reuse.

Catering & Craft Services Best Practices

Hire caterers who work with local farmers and use organic ingredients. When possible, encourage all food service departments to set up composting stations. Consider looking for local farms that will remove compost materials from your location.

FOOD

- Hire caterers who offer local and USDA organic produce, humanely raised meat and dairy, and vegan/vegetarian options.
- Look for the Fair Trade Certified™ label before purchasing imported food products like tea, coffee and chocolate.
- Purchase condiments in bulk.
- Look for the following labels when purchasing beef, poultry or eggs:
 - The American Grass-fed Association
 - Animal Welfare Approved
 - Certified Humane Raised and Handled
 - Demeter Certified Biodynamic
 - Food Alliance
 - USDA Organic
- Avoid the following and any other endangered fish species:
 - Chilean sea bass
 - Shark
 - Bluefin tuna
 - Orange roughy
 - Visit montereybayaquarium.org for fish details by species.
- Offer snacks that can be enjoyed without dishes.
- Avoid individually wrapped snacks, or support companies that have switched to biodegradable packaging.
- Obtain as accurate a head count as possible before ordering food.
- If grilling outdoors, use propane or natural gas.
- Turn off and unplug all kitchen appliances when not in use.

Never use Styrofoam!

- Use reusable plates, cups, utensils and linens instead of disposable dishware and napkins.
- If disposable dishes and cutlery are essential, use biodegradable versions.
- Distribute reusable water bottles and coffee mugs.
- Look for paper products with a high percentage of post-consumer recycled content.

DISPOSAL

- Set up recycling and compost next to all trash bins with clear signage directing where to put materials.
- Use cleaning supplies made from natural ingredients.
- Use trash bags and liners made with recycled or biodegradable materials.
- Ask the catering company to bring containers for recycling and compost waste generated onsite.
- Donate fresh leftovers to a local church or charity. Locate a non-profit that is able to pick up safely handled food, assess its quality and distribute it locally.

Set up sustainable waste stations wherever heavy waste will occur – when there's a bin for trash, recycling, and composting at every location, far more waste can be diverted from landfill.

Compost Best Practices

Composting food saves landfill space while creating valuable nutrients for the soil. Municipal composting efforts have also increased in recent years. Work with your Eco Supervisor to find the best local composting service for your production's needs.

- Hire a waste hauler that transports compost.

Americans send roughly 96 billion pounds of food waste to landfills each year, according to the US Department of Agriculture, which is more than 25% of all food prepared in the US.

- Choose sturdy containers with lids, and line them with biodegradable trash bags.
- Set up composting stations in the following locations:
 - Staging area close to camera
 - Craft service tables
 - Base camp
 - Catering area
 - Shop and construction spaces
 - Extras holding areas
- Choose disposable items made with corn-based, biodegradable plastics.
- Compost all food scraps.

Lighting, Camera, Sound & Special Effects Best Practices

There are many opportunities within these departments to conserve energy. Rechargeable batteries, digital cameras and more efficient lighting are a healthy start, but there are many other ways to cut the environmental impact of these teams at the heart of the production.

LIGHTING AND GRIP

- Integrate fluorescent or LED lighting instead of incandescent bulbs whenever possible.
- Dispose of spent CFLs, which contain mercury, as hazardous waste.
- Look for petroleum-free backings and adhesives.
- Use dimmers to reduce energy use between bright shots.
- Turn off all lighting that's not in use.
- Designate containers for collecting expendables that can be reused and label each clearly.
- Save color gels for future productions, donate them to an organization that can reuse them, or, if your recycling center takes unmarked plastics, recycle them.
- Consider purchasing long-lasting glass dichroic filters.

CAMERA AND SOUND

Film

- If shooting digitally, record to a hard drive, flash drive or other reusable media instead of film or tape.
- View digital dailies directly from the hard drive or on digital systems instead of transferring them to a disk, when possible.
- When using traditional film, discuss shooting in 3-perf, which uses 25% less film and processing chemicals, with the post-production team.
- Recycle all unused film and packaging with a certified electronic waste hauler.

Equipment

- When renting equipment, look for the ENERGY STAR certification and ask for tips for using the machine efficiently.
- Unplug all equipment that features a stand-by mode, which will continue to draw energy when not in use.
- Use rechargeable batteries such as iPower 9-volts, Ansmann NiMH AAs, or Sanyo Eneloop AAs.
- Set up an on-set receptacle for battery recycling, possibly in the sound department, where all dead batteries can be put. The production office can later manage the shipping to a battery recycler such as GREEN BOX.

SPECIAL EFFECTS

- Identify potential environmental hazards before the shoot, and take every precaution to avoid and mitigate harm.
- Avoid burning petroleum-based materials, including plastic, rubber and diesel fuel.
- If possible, use propane and water-based smoke fluids for fire effects.
- Use biodegradable snow products when possible.
- Recycle all scrap metal. Visit earth911.org or 1800recycling.com for local facilities.

TIPS FOR GRIPS

- Set up an area to collect off-cut sheet materials, and check the pile for small projects before cutting into new material.
- Set up waste cans for wood scraps and sawdust only.
- Wet mop or HEPA vacuum dust as it accumulates.
- Provide containers to sort expendables into piles, designating which to recycle, which to return to the manufacturer, which to donate and which to reuse.
- Recycle expendables that can't be reused. Sash, zip cord and black wrap are recyclable. Make sure there are clearly labeled receptacles for these items on set.
- Until a process is established for recycling Duvatine, donate it to local organizations and film schools.
- Organize pre-cut gels by color and size so that they can be easily reused.

Wardrobe, Hair & Makeup Best Practices

Healthier and more sustainable options for clothing, hair and makeup are bountiful. Visit the green vendor directory on www.greenproductionguide.com to find environmentally friendly sources.

WARDROBE

- Use laundry detergents free of phosphates and fragrances.
- Choose powder detergents over liquids, which are heavier and require more energy to ship.
- Wash clothing in cold-water cycles.
- Line dry whenever possible.
- Use ENERGY STAR certified washers and dryers.
- Reuse coat hangers and garment covers.
- Purchase clothing made from USDA organic cotton, wool, hemp, bamboo, linen and ahimsa silk.
- Avoid new materials made from petroleum, such as vinyl and polyester.
- When possible, purchase second-hand and vintage clothing.
- Donate no longer needed clothing at the end of production.
- Repair damaged garments instead of replacing them.
- Encourage a textile recycling initiative for scrap fabrics. Many farmers' markets host textile-recycling programs.
- Purchase clothing made in the U.S. and Fair Trade Certified™ imports.
- When possible, avoid clothing that requires dry cleaning.
- If dry cleaning is necessary, look for services that do not use perchloroethylene (PERC), a carcinogenic chemical that can remain on clothing after dry-cleaning and pollute surrounding air.
- Look for services that offer "wet dry-cleaning," which gently launders with water and biodegradable solvents, or CO2 cleaning, which uses compressed liquid CO2.
- Bring reusable garment bags and skip the plastic.
- Return wire hangers to the dry cleaner.

HAIR & MAKEUP

- Purchase products from signatories of the Compact for Safe Cosmetics, a pledge to produce safer products and provide ingredient transparency.
- Purchase cruelty-free makeup and hair care products, meaning they contain no ingredients currently being tested on animals.
- Look for products made with organic ingredients.
- Don't trust the term "natural," which is unregulated and does not mean a product is chemical-free.
- Avoid aerosols.
- Purchase products that can be refilled, and look for products with recyclable or biodegradable packaging.
- Place recycling bins near hair and make-up stations, and take advantage of programs like Origins' Return to Origins Recycling Program, which recycles empty cosmetic containers returned to their stores, regardless of brand. Visit www.origins.com/customer-service#/Commitment for details.

Wrap and Post Production Best Practices

Post-production provides another prime opportunity to keep the green momentum going once shooting has stopped. All the plans for reuse, repurposing and recycling come together during wrap. Wrap efficiency is dependent, in part, on how carefully the set has been designed for disassembly. Steps that designers can take to ease green deconstruction include leaving materials in relatively standard sizes—rendering them more salvageable at wrap, and using only screws and bolts, instead of nails and glue guns, to enable easy break down. (See SET CONSTRUCTION for more details.)

Editing, distribution and events also provide opportunities to conserve energy redirect waste and reinforce the green messaging of your production.

WRAP

- Think of wrap as an opportunity to repurpose or donate materials, including lumber, scenery, paint and props.
- Before the production wraps, consult your Eco Supervisor and look for local organizations that can assist with selling or donating set props and materials. Provide them with a list of items that will be available, including dates for when they can be picked up.
- Outline a waste management plan with department heads that identifies set materials to be recycled and where they should be collected.
- Look for waste haulers who offer C&D (construction and demolition) debris recycling and can recycle difficult materials such as concrete and sheetrock.
- Recycle all wood, nails and screws that can't be donated.
- Recycle all scrap metal.
- Make arrangements to safely dispose of any chemical waste with a local hazardous waste vendor.
- Ask the waste disposal company to provide figures for production waste sent to the landfill and waste recycled.

EDITING AND DISTRIBUTION

- When possible, use digital post-production workflow systems. By sharing dailies and work in progress cuts digitally, you not only save the energy used in the printing process, but you also reduce your fuel use by avoiding messengers and shipping.
- Distribute promotional materials and electronic press kits (EPKs) online.
- Choose recycled paper and soy-based inks for print materials.
- Minimize media packaging, and choose cases made from renewable materials.
- Consider promoting the production's environmental achievements in the Special Features section of the DVD and in the media.
- Power down the edit room, including all computers and monitors, at the end of each workday.
- Follow PRODUCTION OFFICE guidelines for other post-production office procedures.

EVENTS

- Use email-based communications and invitations instead of paper and postage.
- Use EPA approved corn or soy-based inks for signage.
- Print signage on recycled paper and foam core boards made with high percentages of post-consumer recycled content. UV flatbed printers will print one-sheets directly onto paper-based boards.
- Purchase recycled carpets.
- Look for lanyards made from recycled plastic bottles.
- See THE PRODUCTION OFFICE and CATERING & CRAFTS SERVICES for more “green event” best practices.

MEASURING AND OFFSETTING YOUR CARBON FOOTPRINT

- Download the carbon calculator at www.greenproductionguide.com and read through the instructions carefully to make sure you understand how to do the calculation. See the carbon calculator tutorial for step-by-step support. Once you have filled in the requested information, the resulting footprint calculation can help illuminate areas for improvement on your next production.
- If you choose to move forward with the purchase of a carbon offset, first contact your studio, your filmmaking and/or funding team, or your environmental consultant for guidance. They may have information and experience to share. Talk to your production team to see if there are any people who have a preference, a cause or a specific offset they’d like to support. There is a wide range of carbon reduction and offset providers who can facilitate purchasing an offset. For instance, you could capture methane from a landfill, or replant a tropical rainforest, or build a solar energy farm. The International Carbon Reduction and Offset Alliance is one resource to survey a variety of providers. Do your own research into carbon offsets as well, and find a way to use your film to leave a lasting legacy on the planet.

APPENDICES

1. Sample Memo to Production Team (Source: YOU DON'T KNOW JACK)
2. Sample Environmental Sustainability Report

APPENDIX #1

Sample Production Team Memo

To be sent digitally and posted physically in production office, early in pre-production

Hello everyone! I have met some of you, but for those I haven't I am Jocelyn, the new Green Steward for The Miraculous Year. I will be helping to coordinate our green initiative across the entire production so that we are all working together to reduce our carbon footprint.

The Miraculous Year is a green production committed to addressing climate change by reducing waste and working for carbon neutrality. Please review and follow these best practice guidelines. Below is some information about our Green Standards and Green Practices.

I will be periodically sending you emails throughout the production with updates about our efforts and strategies to streamline our procedures. Becoming more conscious of our environment means changing many of our habits and working together in new ways.

Please feel free to call me or email me about any questions you have. I am compiling a list of green vendors and practices and procedures that will be available for everyone, electronically, at the end of the production.

Thank you!
Jocelyn Jacobs

COMPOSTING

Once in a landfill organic matter becomes increasingly hot and produces methane gas, a greenhouse gas. To combat this we will be disposing our compost in the compost bin.

We are providing composting bins on set. ALL OF THE FORKS, PLATES AND CUPS USED ON SET (including catering and crafty) ARE CORN PRODUCTS AND ARE COMPOSTABLE and should be thrown in the compost bin. Compost bins will have green compostable bags and be marked "Compost".

Throw food in the compost bin. Once in a landfill organic matter becomes increasingly hot and produces methane gas, a greenhouse gas. Compost the following:

- All Fruits and Vegetables
- All fish and meat products, including bones
- All food products without packaging
- All bakery items
- Cuttings from the floral/green departments
- All soiled or un-recyclable corrugated paper

So, all the dirty tissues and napkins that you can't recycle can be composted!

WATER

Our goal is to eliminate plastic water bottles on set. To this end we have provided everyone with a stainless steel water bottle. Water coolers will be on set everyday to re-fill your bottles. We understand people lose them and forget them, so compostable cups will also be provided.

RECYCLING PAPER/CARDBOARD

- Place used paper in recycling bins throughout office and set.
- In the office cardboard should be placed in the larger blue bins located in the kitchen and by the Transpo area.

BOTTLES/CANS/PLASTIC

- Bottles, cans, and plastic containers should be placed in the large recycle bins located in the kitchen and on set.

REDUCE/RE-USE ELECTRONICS

- Turn off computers, printers, monitors, copy machines, and appliances when not in use.
- Unplug chargers for cell phones, cameras, and other equipment.

TRANSPORTATION

- Use public transportation, bike, or walk.
- Improve your vehicles fuel efficiency by keeping the tires full and getting regular engine tune-ups.
- Park trucks when possible, instead of letting them idle.

PAPER

- Read documents electronically as much as possible.
- Copy double-sided
- Place paper with one clean side in the reusable paper bins located by the printers and copy machines.
- Utilize single sided reusable paper for printing or copying.
- Please bring all cardboard boxes to production office for reuse.

PLASTIC

- Use reusable water bottles in lieu of plastic water bottles.
- Use reusable cloth bags rather than disposable plastic ones.

Thanks so much for your help!

Sample Subject-Specific Memos

RE: Green Production
From: Eco Supervisor
To: Production Team

PAPER MEMO

First, the shocking facts:

Approximately 1 billion trees worth of paper are thrown away every year in the U.S. Every day American businesses generate enough paper to circle the Earth 20 times. Each ton (2000 pounds) of recycled paper can save 17 trees. Those 17 trees alone would absorb 250 pounds of Carbon Dioxide each year.

How can we help as a production?

Whenever possible, send emails instead of paper memos to get that message out - this email saved 65 sheets of paper. All documents generated from the Production Office will have electronic versions. They will be e- mailed out to the crew. If you must print and or make copies of a document, remember you use half as much paper if you simply double side the document. Waste paper can also be used as scrap paper for jotting down notes, taping up petty cash receipts or making origami. Mega Playground, the building which houses the production office, has many receptacle bins specifically designated for paper waste (they also have cans and plastic bins). The paper waste is then separated and picked up by the City of NY and brought to a proper recycling facility. There will also be bins on set to recycle. Please remember to look for them.

What can you do as an individual?

Newspapers usually generate a huge amount of paper waste. If you get a newspaper delivered to your home or if you pick one up on the way to work, think about this:

- Recycling a single run of the Sunday New York Times would save 75,000 trees.
- If every American recycled just one-tenth of their newspapers, we would save about 25,000,000 trees a year.
- If all our newspapers were recycled, we could save about 250,000,000 trees each year!

WATER MEMO

First, the shocking facts:

Americans will buy an estimated 25 billion single-serving, plastic water bottles this year. 1.5 million barrels of oil is used annually to produce plastic water bottles for America alone - enough to fuel some 100,000 U.S. cars for a year.

Like all plastic, these bottles will be with us forever since plastic does not biodegrade; rather, it breaks down into smaller and smaller toxic bits that contaminate our soil and waterways.

How can we help as a production?

We all know how important it is to keep hydrated (and if you don't, find out here) Instead of opening a bottle of water, grab a reusable cup/glass and drink from that.

The kitchen in the production office has a great water cooler that uses UV light to filter and reduce heterotrophic bacteria and biofilm. Cooooo! This Production will also be supplying crew with eco-savvy stainless steel water bottles for use on set. By using your water bottle you'll not only be helping us in our effort to keep green, but you'll look cool too, and have a souvenir from our film! On set there will be water stations/coolers available to fill & refill your bottles.

What can you do as an individual?

Don't be shy when the only source of water you're staring down is our good friend the tap. New York has some of the cleanest and best tasting tap water (hence why our pizza and bagels are the best), and if you don't believe me take it from the Department of Environmental Protection's 2008 Drinking Water Supply and Quality Report Apparently NYC water even helps prevent tooth decay!

Still intimidated by the tap? There are plenty of 'On-Tap Filters' that you can buy that attach directly to your faucet. However, the people over at Tap'd NY might beg to differ that the filter isn't necessary.

ENERGY MEMO

First, the shocking facts:

In the typical U.S. household, appliances and home electronics are responsible for about 20 percent of your energy bills. Heating and cooling are responsible for about 56 percent.

Homes lose an average 50 percent of their heat through the walls and loft spaces. Insulation to protect those spaces may seem costly, but in the long run, it's more energy efficient.

North America accounts for roughly 25 percent of all the worlds' energy usage annually.

How can we help as a production?

Nearly 28 percent of all energy usage is accredited to transportation (What about the other 72 percent?). A very simple energy saving tip is not leave your vehicle idling. A common sense study proved that idling engines get approximately ZERO miles per gallon. Idling for just 10 seconds uses more gas than simply restarting your engine.

What can you do as an individual?

While most electronics offer an 'energy efficient' sleep/standby mode, don't be misled. Nearly 75 percent of electricity used by electronics is consumed while in their standby mode. If you plug your electronics into a power strip, switch the strip off when you're not using them. This will help you lesson your CO2 emissions and lesson the energy bills impact on your wallet.