
An experimental research project analyzing ways in which film production can reduce carbon emissions and environmental impacts, conducted by Earthmark/Green Media Solutions.

AWAY WE GO: A Pilot Study of Sustainable Film Production Practices

A production of Earthmark/Green Media Solutions New York, New York
In association with
Eco Futures Canberra, Australia
Verification by TerraChoice Environmental Ottawa, Canada
Major Funding for this Study was provided by the National Business Leaders Forum on Sustainable Development of Australia
Authors:
Meredith Bergmann
Katie Carpenter
John Rego
Copyright © 2008

ACKNOWLEDGMENTS?

If we are lucky, we might meet one or two real visionaries during our lifetime, people whose convictions are practiced in their day-to-day life. Executive Producer Mari Jo Winkler is such a person. Mari Jo is a true environmentalist, who out-greens even the most fervent

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org.

environmental activists. We thank her for giving us the opportunity to work with her and her excellent team, and can truly say that we learned as much from her as she did from us. This project could never been completed without the tireless work of Eric Papa and Kelli O'bier, who no matter how long their production day was, always made some extra time for us.

We are also indebted to Jane Evans, head of physical production at Focus Features, who recognizes a good opportunity and a great cause when she sees one. It is clear why she continues to be a leader in her field.

A special thanks to producers Ed Saxon and Peter Saraf for their enthusiasm and support. And to Director Sam Mendes, who gracefully submitted his movie to serve as a platform for this pilot project. We are grateful to him for his progressive attitude, his tolerance of our occasional intrusions, and for his enormous talent that will help the rest of the world see what can be accomplished without any sacrifice of artistic quality Finally, we are grateful to Paul Jordan and NBCU for supporting us throughout this process.

The team that we had the privilege to work with exemplified an understanding of the environmental issues that are challenging our world and realized the effects from their industry; as a result, they were willing to try new practices and technologies.

The filmmaking community is populated with forward thinkers, individuals willing to try new mediums and styles to communicate a message. The level of cooperation we experienced during the film's production proved that vision is not only relegated to actors, writers and directors, but that it pervades every department and rank in the film production process.

Finally, our thanks to the Earthmark advisors who guided this process. This pilot would not have been possible without the leadership of Molly Harriss Olson and Phillip Toyne of Eco Futures and the National Business Leaders Forum in Australia, who offered their wisdom and counsel from down under. Also indispensable were our friends at the Council on the Environment of New York City, David Hurd and Marcel Van Ooyen. Other advisors gave us the benefit of their media and production experience, for which we are exceedingly appreciative especially Jennifer Lenihan, John Picard and Lydia Dean Pilcher. May the road ahead be filled with green lights and green movies, until the climate crisis is resolved.

We would like to express our gratitude for the guidance and support of the following organizations:

Bahati Productions

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .

Big Beach Productions
Council on the Environment of New York City
Connecticut Film Center Enterprise Rent-A-Car
Environmental Media Association
Eco Futures
Epimedia
Focus Features
Haddad's Inc.
Motion Picture Association of America
NBC-Universal
New York Production Locals
NYC Mayor's Office of Film Theatre & Broadcasting
Panavision
Producer's Guild of America
Seventh Generation Products
Tri-State Biodiesel
The Climate Project
Walton Hauling

Earthmark/Green Media Solutions would like to thank the following individuals who gave their time and wisdom

Brent Baker
David Bausch
Joe Bellais
Jon Bergholz
Pam Bernini
Tyson Bidner
Josh Cook
Henry Dunn
Jane Evans
Henry Fernaine
Laurie Gersch
David Hurd
Sue Hall
Bruce Heller
Kelly Helstrom
John Heminway
Cindy Horn
Kevin Keefe
Kris Keefe

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .

Mitch Kessler
Ellen Kuras
Rich Mancuso
Lisa Martin
Michael Molitor
Michel Nishan
Rebecca Nyquist
Katherine Oliver Marcel
Van Ooyen
John Picard
Lydia Dean Pilcher
Paul James Pelligrini
Dan Romero
Evelynnda Rivera
L. Jeremy Richardson
Carol Rosenberg
Mark Sonderskov
Kathleen Sedehi
Kristen Sampiere
Peter Saraf
Ed Saxon Kodi Smith
Anita Sum
Mollie Zipkin

LETTER FROM THE EXECUTIVE PRODUCER

I have worked on over a dozen feature films as line producer, production manager or executive producer and filmed all over the country with many diverse crews and budgets. In recent years, I have become especially focused on the environmental impacts of film production. On three movies in particular over the last few years, I focused on ways in which we could make our film sets greener. Each time I finish a film, I have a list of initiatives that I want to execute for the next film, to reduce its environmental impacts and make it "greener" than the last.

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org.

When the team from Earthmark approached me to ask if I would be willing to participate in this pilot project for carbon reduction and analysis of film production, I was excited by the possibility that my goals might converge with those of another group equally committed to greening entertainment production. Working together, we had the chance to open new doors, reach even more ambitious environmental goals and push the bar higher for the whole industry. I was impressed by their knowledge and access to environmental trends and best practices, and felt confident that it would be a good fit for us.

Collectively, we learned a great deal from the process, and achieved a great deal more than we thought possible. Even more remarkably, we were overwhelmed by the positive response of the entire cast and crew – they were for the most part thrilled to be a part of this groundbreaking experiment. When we wrapped the production, they all expressed pride that we had been a part of the fight against environmental degradation and global warming.

I fully intend to take what we learned onto my next film and every film going forward, in the hope that this experience will inspire other filmmakers and also our partners, vendors and audiences as well. We all hope that they will take what they learn from the experience, follow our lead and set the bar even higher in the years ahead.

Best,
Mari Jo Winkler

Executive Producer

AWAY WE GO

EXECUTIVE SUMMARY

The motion picture industry is a multi-billion-dollar business with significant capital and global influence. Film production relies on many different sectors to complete the production of a movie. Given that the average cost to make and market a major motion picture is over \$100 million¹, changes within the movie industry could attract wide attention and positively influence the practices of other sectors.

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org.

The goal of this pilot study was three fold: first, to reduce the carbon emissions of the production, AWAY WE GO (working title), in measurable and verifiable ways; second, to decrease other adverse environmental impacts of film production; and third, to stimulate awareness and action among contractors and vendors that would spread green attitudes and impacts beyond the scope of the production.

By prioritizing four principal areas of the production – transportation, energy, waste and construction/set materials – the production team was able to achieve substantial reductions in greenhouse gas emissions as well as environmental impacts. It is important to note that this pilot study was initiated in order to evaluate the potential reduction in carbon emissions that might be achieved during the shooting of a feature film, only the pre-production process and the actual production itself. It is understood by all involved that the comprehensive work of making a movie from concept development through post-production and distribution has much higher carbon emissions which can only be measured by monitoring the full multi-year process.

For transportation, the production team reduced the number of shoot locations, rented hybrid vehicles and reduced truck idling time. For energy used in generators and production vehicles, they pioneered the use of alternative fuels (biodiesel made from reclaimed fry grease and soy – chosen because this was the least controversial in terms of source). For waste management, they hired contractors with experience recycling and removing separate waste streams, thus a substantial portion of their waste was redirected away from landfills. Finally, construction chiefs and art directors made an effort to favor low-VOC (volatile organic compounds) paints, and set materials were donated to organizations that could make future use of them.

The carbon emissions level from the AWAY WE GO movie production was calculated and verified to be approximately 975 metric tonnes of CO₂. See Full report at www.greenmediasolutions.net for more details.

Highlights of the carbon-reduction achievements included:

- On location, in Connecticut, B5 biodiesel from reprocessed, reclaimed fry grease was used. In Arizona, the fuel used on set was 5% biodiesel blend produced from soy. In Florida, a 99% soy biodiesel blend was used to operate non-critical generators, and no problems occurred with these generators.
- Including the fuel used to power the generators and vehicles, a total of 18,094 gallons of diesel fuel were used. 6,570 gallons, or 36.3%, were a biodiesel blend that ranged from 5% to 99%, equating to approximately 2,209 gallons of pure biodiesel consumed during the production.
- The blended biodiesel average cost was 12.7% less than standard diesel fuel. In terms of the carbon emissions generated by combustion, biodiesel fuel emits 7% less carbon per unit

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .

than regular diesel fuel. Had the film used blended biodiesel fuel for all of its diesel needs, the movie could have saved \$33,000 over the course of the production.

1 "Research and Statistics". Motion Picture Association of America. 2005. UTC 23 October 2008. <<http://www.mpa.org/researchStatistics.asp>>

2 Fuel generated from waste grease is often considered to emit 10% less carbon than traditional diesel and similar statements have been made by the scientific community about sustainability produced by biodiesel production. Regardless, the analysis conservatively focuses on point of combustion.

- Hybrid rental cars were driven 45% of the total rental car miles driven during the production.
- Prius hybrid car service was used 32% of the time. This service would have been used more often had there been wider availability.
- Using hybrid cars saved the production \$15-\$41 for each hybrid rental in fuel cost. 150 hybrid rental cars were used during the shoot.
- When hybrid vehicles were not available, the production team rented compact, high-MPG cars. They used public transportation and carpooling whenever possible for commuting to and from the production office.

The AWAY WE GO production team implemented numerous other environmentally beneficial strategies:

- By distributing branded aluminum water bottles to members of the cast and crew, and providing refilling stations on all locations, the crew was able to avoid sending over 14,000 plastic water bottles to landfills over the course of the production.
- The production used three-perf film stock, which uses 25% less stock and 25% less chemicals in the manufacturing and the processing.
- The craft services team purchased organic food from local purveyors throughout the shoot, generating economic benefits to local farms and suppliers of organic ingredients. Plastic plates, cups and utensils were replaced with sugar and corn-based dinnerware, keeping

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .

hundreds of pounds of plastic and Styrofoam out of landfills.

- The wardrobe department used low-energy washers and dryers every night for the maintenance of costumes.
- The sound department used both recyclable and rechargeable batteries whenever possible and made special efforts to dispose of other batteries properly, keeping them out of landfills.
- The production team adopted sustainable habits in the production office, programming copiers and printers to double-sided settings, using porcelain plates and mugs, stainless steel utensils, and installing CFL task lighting wherever possible.

Efforts in waste redirection produced substantial results. In Connecticut, which housed the central office and ten- out-of-fourteen shooting locations, the production generated an estimated 53,991 pounds of waste, which were separated into 19,986 pounds of compost, 6,361 pounds of recyclable material, and 27,643 pounds of general waste. An estimated 49% of all waste was diverted from landfills.

The positive environmental results of the production team's efforts far exceed the carbon emission reductions measured. They helped blaze a trail for their industry colleagues and left important lessons for future production teams to benefit from and expand upon. Their experiences will influence the making of many feature films for years to come.

LESSONS LEARNED

The production team and environmental consultants learned several powerful lessons from the experience on *AWAY WE GO*, which we hope will inform and improve all of our future productions. A set of best practices will gradually evolve from these experiences, and we hope they will be taken and enhanced by more producers and their colleagues in the years ahead.

Waste

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .

With a competent and experienced waste carter recycling and waste programs can be extremely effective and relatively easy to implement. Should a film production desire to measure the diversion rate (amount of trash not sent to landfills), steps must be taken to include in the contract that the carting company be required to weigh and report the tonnage for each recyclable (bottles, cans, plastic, paper and compostable and municipal solid waste). The contracts should stipulate that bills to their production must be accompanied by the recycling tonnage report in order to release any payment. Beyond carbon counting, these reports are valuable public relations tools that can illustrate the production industry's green operations.

Transportation

Carbon reduction by using hybrid vehicles should be implemented at every opportunity. By asking the rental agency to default the productions rental requests to hybrid and/or compact cars will save money on gas and reduce the carbon emissions of the production. The leverage of the film production industry can certainly be used to work with major car rental agencies in order to provide increased access (and supply) to hybrid transportation. A hybrid car service should be used when available to shuttle cast and crew to and from the airport. A number of good services now operate on both coasts. During this production, no one complained about the use of hybrid cars and the cast and crew were happy to oblige, as they knew it was a simple way to contribute to the effort. It should be noted that hybrid SUVs were requested, however, due to their size and weight, most are less efficient than a compact or a standard hybrid vehicle, so they were used at a minimum and only when necessary.

Energy

During the production, we were able to secure permission from major east coast and national vendors of generators and production vehicles to use alternative fuels made from soy or reprocessed, reclaimed fry grease. This initiative had two purposes: first, to reduce the carbon emissions resulting from the production; second and more important, to dispel any myths that clients had about biodiesel by demonstrating the efficiency of the fuel.

Alternative fuels have several benefits in terms of health, carbon saving and cost reduction. Alternative fuels continue to improve in quality at a rapid pace. However, real strides can only be achieved as engine and vehicle manufacturers increase testing. As industries look for sustainable sources of energy, it will be the progressive engine and vehicle manufacturers (whose products accommodate these fuels) that will benefit. Finally, great strides are being made in terms of solar power; the industry looks forward to the improved technology that will enable solar to be used at a greater degree for major productions.

Construction

While wood from sustainable sources is more widely available than ever before, sustainable

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .

set construction at the time of the pilot remained an obstacle. It is still challenging to find FSC certified wood in the northeast that meets the rigorous requirements of film and set construction. There are two chief constraints to using a sustainable wood source; the first is the cost (FSC wood, for example, is 25% more than its standard counterpart). The second is the limited choice. This is the result of several factors; a certified sustainable provider (FSC for example) has to have his entire supply chain certified, not just the wood. This includes the grower, to the broker to the transporter. Secondly, storing the wood is problematic; imagine that for every cut, the vendor would have to have enough space to stock a duplicate of sustainable quality. Finally, vendors have several wood certifications that they may choose from: FSC, PEFC, SFI, all have their own certification process, fees, and paperwork. As one can imagine this makes it very complicated for the vendors who have to choose among the certifiers, not to mention the added cost of using the certification label and their membership fees. On the upside, with the emergence of LEED construction, certain certified woods are being stocked more readily. Another positive achievement is the progress made on low or no-VOC paints. These paints are now being offered in a greater variety of colors and saturations than before are prices that are competitive to standard paints.

Accounting

It should be noted once again the important role that the accounting staff plays in the process of measuring carbon emissions. It was our experience during this pilot was that it was not possible for the accounting department to track expenses as they occurred, because most receipts were not handed over until the very end of the production.

For future cases, since the accounting departments, along with the production staff dictate the procedures for expenses, a process should be decided upon at the very start of pre-production for collecting the information necessary to estimate the carbon emissions. This would include receipts and inventory lists for items such as truck and generator rental, standard and diesel gas, and car rentals.

Finally, when possible, the burden of reporting should, be the responsibility of the vendor (as mentioned in the Waste section).

Water Bottles and Craft Services

Although the purpose of the AWAY WE GO pilot focused on the task of counting carbon-producing activities, there were other sustainability programs in place that proved to be successful from both an environmental and behavioral aspect.

Earthmark/Green Media Solutions worked closely with the production department to implement a water bottle reduction program and a craft services program, both of which focused on either reducing or replacing the use of plastics.

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .

Aluminum Sigg brand bottles were used in place of traditional plastic, disposable water bottles. The production set up water stations consisting of five gallon water dispensers that the crew could freely access. By measuring the water bottle consumption of a typical production of similar size, the benefit of reusable water bottles is obvious. That production used 1469 plastic water bottles over the course of a week, both on set and in the production office. In comparison, the crew of *AWAY WE GO* used almost no bottled water (except for when shooting lengthy in-car scenes), preventing over 14,000 plastic bottles from circulation over the course of the production.

The craft services initiative was successful from a local, economic development and organic perspective. The production team worked with several local farmers to supply the crew with organic and locally grown produce, cheese, and meat. The craft service team was asked to use PLA utensils and sugarcane plates, averting thousands of plastic plates and utensils from entering landfills.

Being Location Efficient

When the push to achieve production efficiencies converges with the desire to go green, the production team can score a double-win -- allowing the filmmakers to both save money and reduce their carbon footprint. Nowhere on the production timeline is this more evident than in the location selection process -- which presents both a challenge and an opportunity. The *AWAY WE GO* script called for many additional locations than were ultimately shot because the budget-conscious producers worked with the creative team to achieve plausible and diverse landscape backdrops that were not as far-flung as the original script called for.

They substituted the campus of the Taft School in nearby Waterbury, Connecticut for the University of Wisconsin's Madison campus, while exteriors in Stamford, Connecticut and interiors in New Haven played the role of locations set in Montreal. They also substituted a location in Florida for a town in South Carolina, allowing them to consolidate locations within driving distance of each other rather than flying cast and crew around the Southeast.

They were motivated by budget concerns, but they achieved green goals. The key is to engage early, start the conversation at the beginning of pre-production when location scouting is being planned. If the production team and the key creative people engage together in the discussion of locations, they can achieve enormous cost-savings and carbon-savings through the simple process of production efficiency.

For the Film Producers of the Future

Our experience on this pilot project has taught us that feature film production is an extremely high-pressure and anxiety-producing activity -- as long as the movie industry is locked in such tight competition for box office dollars, there is little chance this pressure will decrease substantially. It is true, however, that the benefits of greening a production are numerous, and

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .

can help relieve the anxiety in ways we did not expect. Not only did the process reduce carbon emissions, redirect waste and decrease other negative environmental impacts of production, but also, we found that it can also save money; produce positive public health benefits and inspire local community development.

It can also engage the cast and crew in refreshing, more positive and informative conversations between scenes -- instead of just "hurry up!" and "what's taking so long?" On the set of *AWAY WE GO*, crewmembers and extras were overheard talking about the "green quotes" which executive producer Mari Jo Winkler, used to include on each day's Call Sheet -- brief factoids she had been collecting about our impact on the environment. Examples included:

- "Americans spend more money on the purchase of garbage bags than the combined GDP of ninety of the world's developing countries."
- "The average American used seven trees per year in paper, cardboard and wood products."
- "Every winter, the energy equivalent of all the oil that flows through the Alaskan pipeline in a year leaks out through drafty American windows."

The call-sheet quotes inspired conversations on set among cast and crewmembers feeling newly empowered by small bits of environmental information. It was just one small effort that encouraged more production staff members to relax and participate in this pilot project, and perhaps take these ideas with them to their next set or stage. In short: enlarge the conversation, enable the whole team to be a part of it, and the green production initiatives will spread more easily and widely through your future film sets, and beyond.

We are poised on the brink of an era of enormous change; industries will need to adapt to future conditions where carbon emissions and environmental impacts may be monitored, or reduced and possibly offset. Compliance, which is now voluntary, may be mandatory in the future. Producers who become early adopters of sustainable approaches to film production will blaze the trail for what will soon be a nationwide call to action.

It is important to remember that this pilot was among some of the first of many steps in a long journey. Each step will add to a body of knowledge that producers and their colleagues will share with each other to improve the sustainability of their business. What will be critical is that the willingness to try new carbon reduction strategies exists among the production team members, and that there will be leaders to champion these programs in the future.

Please think before you print this article

The Producers Guild of America Green Committee is dedicated to educating, promoting and inspiring industry professionals to engage in environmentally conscious sustainable production practices. To learn more, please visit us on [Facebook](#), [Twitter](#) or www.pgagreen.org .