



Renewable Energy in Tourism Initiative

Best Practices in the Tour Operator Sector





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(Photo courtesy of Natural Habitat Adventures © Mike Bruscia)



EXECUTIVE SUMMARY

Tour operators are tasked with mapping the pathway for renewable energy and energy efficient strategies in the travel industry. They are stewards of the environmental realm as well as educators for both the traveler and the destination's populace.

The tour operator may be the person leading a group of visitors into an area or they may be in the office, helping the traveler plan a trip. It is their commitment to sustainability that presents itself and can influence the traveler to advance this same commitment. Also, as today's travelers become more environmentally aware, the tour operator has to solidify their positioning in this matter.

By implementing renewable energy and energy efficiency practices in the place of business, the industry is positioning itself as a leader, both as a practitioner and an educator. Simple retrofits in lighting and HVAC ("heating, ventilating, and air conditioning" a.k.a. climate control) are two easily recognized methods. Another proven process for the local tour operator comes from the recognition they obtain from the community and other businesses. One company rewards their employees who utilize mass transit for commuting to work while another tour operator business places recycle bins about town.

Out in the field there exists another whole set of opportunities for the tour operator to support sustainable energy practices. They often use solar, wind, or hydro-generated energy resources to supply power to a portion, if not all, of the lodging facility and for appliances. Using alternative fuels or changing to more efficient motors for transport vehicles are two more adaptations they make, which have a positive impact on climate change. Educating the traveler is vital, specifically when in remote, isolated areas.

Whether the tour operator is leading a group into a popular destination or into a fragile environment, they are responsible for the footprints left by everyone in the group and maintaining the site's sense of place. It is the socio-cultural relationship to the business practice that

reinforces the necessity facing tour operators – one that says they must be good stewards of the earth. Only by supporting and attaining renewable energy and energy efficiency practices will they continue to be "in business".

This **March 2008** edition of the Renewable Energy Tourism Initiative (RETI) *Best Practices in the Tour Operator Sector* draws upon the experiences, insights, and resources provided by Escape Adventures (EA), Alaska Wildland Adventures (AWA), G.A.P. Adventures (GAP), Wilderness Safaris (WS), First Choice Holidays (FCH), Natural Habitat Adventures (NHA), and Intrepid Travel (IT). Additional input is expected from these and other tour operators in the coming months.

Researchers reviewed information published on- and off- line, including media reports and information supplied by these lodging providers and conducted telephone interviews, when possible. Independent verification of claims made was not available to the researchers. Difficulties and challenges in implementing renewable energy practices plus return on investment information may also be currently incomplete. This publication is a work in progress and information will continue to be refined and distilled to enable a quick comparison of renewable energy options in future editions.

Seven major areas of renewable energy investment emerged from this research, each falling into one of two general categories. The first highlights short term efficiency projects that require modest capital investment. The second addresses long term initiatives that involve more structural changes, green building construction technologies, and renewable energy resources. In all the areas identified below, management focus and staff buy-in are critical.

The full Best Practice document provides additional detail and links to resources on each of the outlined best practices.



Best Practices in the Tour Operator Sector

Tour Operator Best Practices at a Glance

Short-term Initiatives

1. **Development of Environmental Standards for Suppliers and Affiliate Properties** – As strongly evidenced by one of the respondents, there is a social component which drives this initiative. The dedication to improve one's practice trickles down to all.
2. **Purchase of Renewable Energy Credits (RECs) or Carbon Offsets** – All of the responding tour operators participate in such programs whether for office, retail, and/or employee travel energy consumption.
3. **Lighting/Small Appliances Retrofits** – A very reasonable expense as evidenced by all participants is the usage of compact fluorescent bulbs and replacing appliances with Energy Star models.

Long term Initiatives

1. **PV Systems** – Two of the responding tour operations detailed their commitment to installing and resultant usage of solar powered systems. It is interesting to note that small scale systems can present more challenges than a larger system as technology is not currently geared to site specifics of a small use system.
2. **Hydro-powered Battery System** – One tour operator has installed a small-scale hydro system that powers up batteries through a “trickle down” method for running equipment. The challenge to this system is not using too many of the batteries at one time.
3. **Alternative Motor Fuels** – Most interesting is the tour operator company that utilizes waste vegetable oil. Since these vehicles do not use any “road” fuel, they do not pay road use tax. This particular company has experienced positive feedback from local citizens who see their use of biodiesel promoted on their “Veggie Trucks”.

4. **Open Concept Office** – No walls, no barriers. This allows for better heating and cooling system, lighting systems, and general office operations. Utilization of optimal placement of work stations can roll over into other settings.

Further Questions & Concerns

1. **Quality Information** – *Many of the practices presented in this draft do not contain Return on Investment or other critical metrics to allow rigorous comparison of renewable energy options. Without this type of information or a method of independent, objective assessment it is difficult to distinguish ‘PR’ speak from substantive progress.*

Q: Among the wide range of tourism eco-labeling programs, are there mechanisms to provide third-party assessments of renewable energy practices?

2. **Carbon Offset Verification** – *There is no independent verification of carbon offset programs. This includes verification of the calculations of the cost of offsets and the certification that funds are being invested as promised and having the desired effect of offsetting, reducing, or otherwise mitigating CO2 emissions.*

Q: Are independent standards and verification necessary for a robust carbon offset program?

3. **Technical Information** - *Many of the suggested best practices require complex technical and operational information for implementation. There is currently no easy way to share and access the information in these best practices, distinguishing important areas of co-operation from legitimate areas of competitive advantage.*
4. **Q: How does the industry address the issue of information sharing?**



BACKGROUND

RETI Best Practice Manuals

The Renewable Energy in Tourism Initiative (RETI) was developed to feature industry leaders that have adopted best practices in renewable energy and energy efficiency and to provide information and guidance to businesses interested in realizing the benefits. The best practice manuals were designed for tourism businesses of all sizes. Through the use of case studies, each manual highlights and outlines renewable energy adoption and adaptation strategies that maximize energy efficiency, minimize environmental impacts, and result in cost savings or increased profitability across six tourism sectors: accommodations, airlines, cruise lines, public lands agencies, ski resorts, and tour operators.

These best practice manuals are intended to serve as an inspiration and guide to other businesses interested in realizing the benefits of adopting renewable energy initiatives and supporting a healthy planet. RETI is part of a broader objective of creating a comprehensive set of best sustainable business practices in each designated tourism sector.

Best Practice by Definition

A best practice is a process, technique, or innovative use of resources – such as technology, equipment, personnel, and data – that has resulted in outstanding and measurable improvement in the operation or performance of a tourism business. Each best practice will have demonstrated success by significantly and measurably improving outcomes in one or more of the following three areas of business performance:

- Operational factors;
- Financial objectives; and
- Marketing objectives

In addition to business outcomes, the best practices outlined in the RETI manuals help to eliminate, minimize, or mitigate the environmental impact of the business through pollution prevention, carbon emissions reductions, and/or carbon offsets, etc.

Content Acquisition and Validation

Sustainable Travel International (STI) was responsible for acquiring and validating the content included in this document. To identify industry leaders in each segment, STI made public announcements via its E-newsletter, other online outlets, and through word of mouth, then accepted nominations from various stakeholders and completed a due diligence process. Interviews were then conducted with representatives from each company or organization identified, representatives were asked to review each applicable best practice document, verify the information contained therein, and provide constructive feedback. No on-site verification of researched activities was involved, though many of these activities have been verified through other procedures.

Industry Overview and Sustainability Initiatives

Tour operators are frequently the front-line image of the travel industry. Consumers rely on their tour operator to provide them with a positive experience in host communities and destinations. A tour operator's choice of guides, attractions, accommodation, food services, transportation, and attitudes towards environmental preservation not only affect the destination community, but they also leave a lasting impression on the traveler. By taking a proactive approach towards renewable energy initiatives and sustainability, tour operators are able to influence the development of such practices in the locations where they operate while encouraging guests to adopt more sustainable practices in their everyday lives and decisions. As the "face" of the tourism industry, there is increasing pressure from the consumer market to address energy-related issues, and a number of tour operators are solidifying their position as industry leaders in responsible business practices by implementing renewable energy and energy efficiency projects and policies in both the corporate office and ground operations settings.



Best Practices in the Tour Operator Sector

For most tour operators, the primary reason for implementing renewable energy and energy efficiency practices is simply to reduce their emissions as much and as quickly as possible, in order to slow the progress of global climate change and position their organization as an industry leader. The reduction of energy use and costs are also strong drivers, as is the need to fulfill consumer desire to support sustainability in business.

Tour operators are doing a number of things to improve their efficiency and reduce their carbon footprint within their own operations, from changing light bulbs to installing solar photovoltaic, hydroelectric, and wind systems. Perhaps more important, however, are the changes that many have helped make to the environmental practices and policies of their suppliers and affiliates, as well as locally affected communities, by utilizing business relationships and contributing knowledge and other resources. The result is a great improvement in efficiency and energy use not only by the tour operators themselves, but the entire collective of businesses, organizations, and communities that their operations affect.

Case Study Participants

The best practice case studies discussed below include Escape Adventures (EA), Alaska Wildland Adventures (AWA), Wilderness Safaris, First Choice Holidays, G.A.P. Adventures (GAP), Wilderness Safaris (WS), First Choice Holidays (FCH), Natural Habitat Adventures (NHA), and Intrepid Travel (IT).

Some of the most effective initiatives include:

- Reduction of diesel generator use through solar power and advanced battery technology (WS)
- Purchase of more fuel efficient aircraft (FCH)
- Support vehicle fleet powered by waste vegetable oil (EA)
- Hydroelectric system to power off-grid lodge (AWA)
- On-site, grid-tied solar PV systems producing enough energy for all operations (EA)
- Development and dissemination of environmental standards for suppliers and affiliate properties (FCH, GAP)
- Wind-powered water pumps (WS)
- More efficient appliances, such as hold-over deep freezers and refrigerators (WS)
- Solar water heaters (WS)
- Purchase of Renewable Energy Credits (RECs) or Carbon Offsets for office, retail, employee or customer travel energy consumption (FCH, EA, GAP, IT, NHA, AWA)



BEST PRACTICE CASE STUDIES

Case Study: Escape Adventures

Escape Adventures (EA) is a leader in first-class cycling and multi-sport vacations. They offer 50 different tours from their two bases of operations; Moab, Utah and Las Vegas, Nevada. Though they are mostly a mountain bike operator, EA has grown during their 17 years of business to incorporate road biking, hiking, and multi-sport trips from the Great Basin to the Pacific Ocean.



*Escape Adventures mountain biking trip in Moab.
(Photo courtesy of Jared Fisher)*

EA's energy-saving best practices are centered on the following initiatives:

- Onsite solar PV systems that provide enough energy to power both their Moab operations and their Las Vegas bike tour warehouse
- Fleet of support vehicles fueled by waste vegetable oil
- "Ride to work" program for employees, in which they are paid US\$5 for every day they do not drive a car to work
- Purchase of RECs for the retail bike shop and office in Las Vegas (which are not yet solar-powered), as well as offsets for employee travelⁱ

Background Information on Best Practice – Solar Panels

EA's location in Moab, Utah is regarded as the mountain biking capital of the world. Located in a high-traffic, high-visibility setting, their bike shop is fashioned from an old renovated gas station in front of the local grocery store. EA knew that if they put solar panels on top of the bike shop, everyone would see it, and it would stimulate interest and conversation. Jared Fisher, Tour Director and Owner of Escape Adventures, emphasizes this reasoning: "We didn't do it to save money; that wasn't our initiative. We did it to get the word out, because we care."ⁱⁱ Another big motivating factor also cited by Fisher was the reduction of carbon emissions.

Steps in Implementation

We made contact with a solar PV specialist. Ours was out of state (Colorado) and they were OK with coming down to Utah. It started with the energy audit. That determined the size. Then we paid a 25 percent deposit of US\$18,000 to start the construction of the PV framing. That took about 3-4 months before we began installing. That was a stumbling block though because we needed special permits to erect it on a gas station canopy that was nearly 50 years old. That took another 3 months. The final straw was to hook it up with the power company on a net metering program where they buy back the energy we don't use. It gives us a credit. This process took more than a year to complete. It wasn't easy but it was a great learning experience and it made our current PV install in Las Vegas a breeze.

Resources Required

When EA initially investigated the cost of installing the solar panels, the unit they needed was about US\$120,000 - completely out of their budget. During efforts to find an affordable solution, their solar contractor suggested that EA conduct an energy audit. The audit helped EA understand the distribution of their energy use and provided them the information they needed to minimize their energy consumption. Simple



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steps were taken to reduce their energy needs, such as installing energy-efficient light bulbs and appliances and turning powered items off when they were not in use. As a result, EA now only needed an 8 kilowatt (kW) solar panel system instead of a 13kW system, reducing the price from US\$120,000 to US\$70,000. The simple changes they made cost less than US\$2000, and consequently, they were able to save US\$50,000 on their solar panel system.ⁱⁱⁱ

Monitoring and Evaluation

Essentially we monitor the system monthly by evaluating our energy bill and the power produced. All the systems now days are computerized so they keep track digitally. We also must keep the panels cleaned each month. This entails getting up on the canopy and using a hose and a squeegee to clean them. It takes about an hour. Overall, the monitoring of the system is easy. “Anyone could do it,” says Fisher.^{iv}

Success Factors and Benefits

EA’s energy bill was lowered by approximately US\$200-300 per month, and while every dollar helps, this was not a huge success factor for them. Rather, the advertising value they gained as a result of the installation has been phenomenal. “That alone has paid for the system,” says Fisher. “We’ve gotten great plugs and write-ups in a lot of magazines, and people know what we’re doing now. It’s created awareness and a lot of publicity for us. Money is not our driver though; we’re just happy to be able to do what we’re doing with the funds that we have.”

Federal and state tax credits have also been significant. Fisher estimated the federal write-off for the first year to be about 30 percent of the cost of the system. In addition, the State of Utah gave them a US\$7,290 tax credit, bringing their total tax write-offs to US\$30,000 in the first year alone. Through the federal (U.S.) system, a certain percentage of the solar panel system can continue to be written off for a number of years.

In December, 2007, EA also installed a new 5kW PV system on their tour warehouse in Las Vegas. In this case, the State of Nevada required EA to connect their

system to the power grid so that excess energy could be distributed. The State compensated for this arrangement in the form of a US\$3,000/kW rebate, in this instance totaling US\$15,000 for EA.^v



High-visibility solar panels on Escape Adventure’s bike shop, Moab.
 (Photo courtesy of Jared Fisher)

Background information on Best Practice – Veggie trucks

“Vehicles are one of the biggest polluters out there,” notes Fisher. “We invested [in vegetable oil trucks] because we were tired of pumping CO₂ into the atmosphere.” Escape Adventures looked at several different options for alternative fuels, including natural gas, biodiesel, and both waste and straight vegetable (veggie) oils. “We decided to go with waste veggie oil, because it’s the purest form of clean energy, and it’s also recycling at the same time. Straight vegetable oil presents a problem, because it’s a food source, whereas waste veggie oil is going to the dumpster. Biodiesel is a step in the right direction, but in the process of making it, you still have to use energy and burn coal, so in essence, you’re creating carbon emissions in order to avoid them later. With waste veggie oil, we use our veggie trucks to go pick up the oil (burning only clean energy in the process), save it from going to the landfill, and then use it to create more clean energy. Aside from maybe the electric car that’s powered by PV panels or a wind turbine, this is the cleanest form of energy use for vehicles. And it’s the only form of energy that can power big vehicles, and that’s what we have.”



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Steps in Implementation

We worked with a company in Missouri to custom design our system so that we would not have to compromise space in our vehicle for a special tank. It tucks away nicely under our van(s). The design took about a month. And the entire process including install took about 4 months. We now have the template to replicate our system and can have it done in four weeks and on the road!



One of Escape Adventure's all-terrain "veggie trucks" © Darter
 (Photo courtesy of Jared Fisher)

Resources Required

The vehicles do require more maintenance than traditional vehicles, and to address this, EA has hired a full time employee dedicated to the maintenance of their veggie fleet. The filters have to be changed more often, and it is important to make sure that the fuel is clean – it is waste after all, and could very well have food remnants. EA also had to modify the diesel engines to be compatible with the veggie oil, which essentially involved installing an extra fuel tank with a heater on each van. These conversions cost approximately US\$2,000 per vehicle.

Monitoring and Evaluation

This is a big one. Monitoring the vehicles is a two-person process. The guides must monitor the vehicles vital signs all through the tour. It does require training and an untrained guide could essentially get stuck on

the side of the road. But the monitoring is simple. They just need to read a couple gauges and know when to switch between fuels. The second person is the vehicle manager who essentially recharges the van when it comes back from tour. He is in charge of replacing filters and refueling the vehicle. Our vehicles can travel up to 1500 miles before refuel. At the end of the year we totally flush our systems in each vehicle. After all there were French Fries in the grease!

As far as monitoring our fuel consumption, we base that on previous years overall fuel use divided by the number of trips and locations. It is pretty simple. We definitely save a lot of money.

Success Factors and Benefits

The trucks save about US\$10,000 in fuel costs per year; and EA is realizing a three-fold benefit – a significant savings in fuel costs, positive customer relations and media attention. "Alternative fuel sources can create a lot of conversation, and you can't really put a price on that kind of publicity. Most people are just concerned about the bottom line, and if it costs them too much, or they don't save enough, they simply don't do it. But a lot of people forget about the other reasons behind it, like creating a healthy planet, or generating publicity and free advertising. Doing something unusual is what will make the story, and that's what we're doing here," explains Fisher.

It must be noted that occasionally this type of publicity can bring unwanted attention and criticism to your endeavor. However, as EA attests, even the bad news is good news. "There have been five lawsuits that have come up over the past decade concerning people who have been using vegetable oil essentially for free, and who have thus been avoiding paying road taxes. All five of those cases were overturned by the governments of those states, in some cases accompanied by a policy change to allow people to legally run vegetable oil and not have to pay road taxes. We're not paying these taxes either, so we're on the radars of these state and federal agencies to come after us. But we're definitely ready for them. I've been waiting on that call for a long time, but it hasn't come yet. The federal government even asked us to use clean fuels from alternative fuel



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sources; it's one of our requirements as a concessionaire in Canyonlands National Park. They asked us what we were doing and we told them that we were using waste veggie oil, and they thought that was one of the coolest things they'd ever heard and gave us a permit to do it. We'll probably turn around and get bitten by the same people in the end, but it's going to be a great story."^{vi}

EA has seen a noticeable increase in patronage due to their environmental efforts. Both past and present customers commend them on what they are doing, and they have received calls from strangers who praise them for their great environmental initiatives. EA has recently experienced an increase in response from the local communities where they operate after they made their efforts more visible with solar panels on top of their store and trucks labeled "Fueled by Vegetable Oil to Save the Environment". EA has also earned new clients who have chosen them strictly because of their environmental policy, an encouraging sign that their investment is resulting in broader market appeal.

Not only have EA's efforts paid off financially and philosophically, but they have also realized internal benefits. Employee moral has increased while their turnover rate has decreased, simply because team members are proud to be part of such a dedicated and responsible organization.

Thanks to the success of their renewable energy efforts, EA has earned community recognition that has allowed them to initiate a number of offshoot environmental efforts, such as their roadside recycling program in Las Vegas. "We put out recycle containers at a little whistle-stop place 20 miles outside of [Las] Vegas, because bicyclists were just tossing their plastic water bottles away, since there was no other place to put them. It was irritating to us and to the bikers, who would prefer to recycle, but also didn't want to haul their empty bottle with them. So we put some bins out there with a sign that says, 'Compliments of Escape Adventures', and people loved it. It cost us US\$20, and we go out there once every 10-14 days to collect the bottles and cans, and people come into our store all the time, saying, 'You guys are awesome! Thanks so much for doing that!'"^{vii}

Replicability

Many tour operators can implement the initiatives that Escape Adventures has adopted; but it takes research, effort, and capital. Fisher will be the first to tell you that sustainability comes only with strong efforts and dedication. "No one said that being a sustainable business would be a walk in the park. That's not going to happen; there will be problems. If you want to be sustainable, you're going to have to put effort into it. You're going to put money into it, and it's not going to be easy. You have to be willing to try things and to learn from your mistakes. That's how things are going to change in this world—not from people sitting around, waiting for it to get easier. So that's what we're doing."



Tire recycling at Escape Adventures © Darter
(Photo courtesy of Jared Fisher)

Challenges and Pitfalls

There has been a great deal of trial and error during the implementation of the fuel systems in the veggie trucks, but ongoing issues have been avoided due to the expertise of a full-time veggie oil specialist. In general, EA's philosophy is to take challenges as they come, learn from them, and then move on. "You have to have a good attitude going into something like this," Fisher says. "And you have to be creative and look at the big picture, way down the road. A visionary CEO who can do those things is going to see great successes for the three P's: People, Profit, and Planet."^{viii}



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Lessons Learned

Fisher's primary advice: "Do an energy audit – you'll save an incredible amount just by waking up to what you're using." Any company can make the changes that brought EA's solar needs from 13kW to 8kW. It is simply a matter of measuring your energy consumption and addressing the many opportunities that are available to minimize that energy use.

For those interested in taking their sustainability initiatives to the next level, veggie oil is a great option. "If you're going to use veggie oil – and I would encourage you to do so – it's important that you have a specialist who understands how it all works and who's not afraid to take it all apart and put it back together," says Fisher.

Escape Adventures' closing advice: "It takes time to get things rolling. You have to be patient, and you have to feel good about what you're doing; otherwise you're wasting your time. People who do the right thing are going to feel good about what they're doing regardless of the cost, and that's where we sit. And by doing the right thing, it's going to pay off. But the feel-good factor is really cool. That's one of my favorites."^{ix}



*Sustainable energy practices: get 'rolling' and stay cool!
(Photo courtesy of Jared Fisher)*

Case Study: Alaska Wildland Adventures

Kirk Hoessle, the President of Alaska Wildland Adventures (AWA) says that his company has attempted to follow best practices in energy and resource conservation since its inception in 1976. They have an in-house "Greenworks" manual that outlines goals and procedures, which is regularly revised and updated.



*One of the cabins at AWA's Kenai Backcountry Lodge
(Photo courtesy of Kirk Hoessle)*

AWA owns and operates two lodges in Alaska's backcountry. One of them, Kenai Backcountry Lodge, is off the grid in the Kenai National Wildlife Refuge, utilizing a hydroelectric system as an alternative for running a diesel generator for power. AWA also documents the annual electricity and fuel used throughout its operations, and has purchased sufficient carbon credits to be carbon neutral since 2007.^x

Background Information on Best Practices

Kenai Backcountry Lodge is isolated from civilization, accessible only by boat or plane.



*Rafting across Skilak Lake to Kenai Backcountry Lodge
(Photo courtesy of Kirk Hoessle)*



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Since its establishment in 1996, Kenai Lodge has generated its own electrical power. Initially, the lodge had a small diesel generator that provided direct power and also charged batteries for extended power when the generator was not running. While this system is reasonably efficient and capable of providing power most hours of the day without constantly running the noisy generator, the owners sought to improve upon the system with a renewable energy plan. After examining available alternatives, a “low drop, high flow” hydroelectric system was determined to be the most practical and efficient solution. This style of small-scale hydro power utilizes a very small stream that flows through the property and allows the battery bank to trickle charge, providing a constant flow of electricity all day and night without burning any diesel fuel.^{xi}



*AWA's "low drop, high flow" hydroelectric system.
(Photo courtesy of Kirk Hoessle)*

The primary goals of this project are numerous, including saving money in fuel costs, minimizing fossil fuel use, and eliminating the noise and exhaust of a diesel generator. AWA also wanted to demonstrate to the industry that innovative technologies can be applied in remote settings to achieve quantifiable savings, as well as provide a solid success story to communicate to guests, in hopes that it will inspire them to make personal sustainable initiatives an aspect of their everyday lives. The strategy was part of AWA's overall company-wide strategy to continually examine everything they do and find ways to do it better.^{xii}

Steps in Implementation

The small hydro project consists of creek water traveling through a six-inch PVC pipe that drops a total of 18 vertical feet over a length of 200 feet and into a turbine. The PVC pipe is lashed to wooden supports that travel above ground and down the hillside from the creek above and behind the lodge. The pipe is reduced to two two-inch flexible hose and finally two one-inch nozzles as it enters the turbine. As the water's pressure is elevated, it spins the turbine, and the resulting electricity travels through wires that charge the batteries in the bank. The water that spins the turbine continues on its usual course out the other side of the turbine housing and into Skilak Lake. The batteries are stored in a nearby shed, connecting to the electric system via underground wires. The battery bank consists of 24 six-volt golf cart batteries, weighing about 60 pounds each.^{xiii}

The “low drop/high flow” turbine was obtained from a company in New Brunswick, Canada. It is a small turbine that directly and fully charges the batteries. Since DC power comes out of the batteries, there is an inverter to convert the power to AC before it goes out to the appliances, with a power regulator built into the wall next to the inverter in the shed where the batteries are stored. The regulator notes the charging level of the batteries and also ensures that the batteries do not become overcharged. If there is an overcharging situation, the regulator transfers the power to a heat sink – which is a series of big resistors with a fan that dissipates the extra energy as heat. This does not occur when guests are at the lodge and using power. The AWA staff removes the batteries at the end of the operating season to a location so that they can be monitored to prevent damage from occurring.^{xiv}



*Hydroelectric system turbine
(Photo courtesy of Kirk Hoessle)*



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Resources Required

The total cost of the system was approximately US\$3,000, not including the design time or construction labor. Research was conducted over two to three years as it was difficult to find all the resources necessary to design a custom system. Ultimately, AWA hired a local wilderness resident, who had experience in designing systems for other backcountry outposts, to coach them through the process and determine the specific materials they needed. Assistance was also provided by the suppliers of various components of the hydroelectric system. Research and installation was accomplished by staff at an estimated cost of US\$2,000. Since this work was woven into regular staff hours, this cost is not considered to be an additional expense.

The system is very simple and has not broken down since its installation. It saves roughly US\$2,500 to US\$3,000 in fuel costs per year. After accounting for recovering the US\$3,000 cost of the system, AWA estimates their total cost savings to be US\$17,500 or more, primarily in avoided fuel costs. Non-quantifiable variables such as enhanced guest experience (due to the lack of a noisy generator) and broader market appeal are an added value to the project as well.

Monitoring and Evaluation

Because certain appliances are energy intensive, they cannot be run simultaneously on the limited power of the batteries; therefore, the system must be monitored to ensure that batteries are not drained below thresholds that would damage them. To monitor and conserve energy use at the lodge, there is a timer on the freezer, and they check the amount of energy stored in the batteries before running the laundry machines. If necessary, they wait until the charge is built back up sufficiently before running energy intensive appliances.^{xv}

Replicability

This system is obviously dependent on environmental conditions surrounding a lodge and its energy requirements. With only a sufficient vertical drop and a decent flow of water, this system could at the very least

complement an existing energy plan, and at best, supply 100 percent of a building's power. Of course, it is important to design a system specifically to meet a site's capabilities and needs.^{xvi}

Success Factors & Benefits

The system has been amazingly reliable and affordable. It gets shut down at the end of every operating season, disassembled, and stored for the off season. Each year it gets reassembled, and it starts up with minimal maintenance.

The benefits are as follows:

- Reduction in use of fossil fuel
- Quiet (no noisy generator in constant usage)
- Reduced risk of fuel spills
- Reduced need for purchasing, hauling and handling fuels (saving time, money, and physical labor)
- Modeling a clean energy system that Lodge visitors enjoy seeing and learning about



*An isolated cabin on the Kenai Backcountry Lodge property
(Photo courtesy of Kirk Hoessle)*

Challenges and Pitfalls

Site-specific, small-scale hydro projects are still in a very early developmental stage and the research process requires persistence and dedication. Suppliers can be helpful to some extent, but offer little towards site-specific challenges. AWA was very fortunate to work



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with a local contractor who had extensive knowledge of the regional nuances and had experience in designing similar systems. Fortunately, the challenges posed by this type of endeavor are becoming less as recent emphasis on greener operations expands.^{xvii}

Lessons Learned

The importance of supporting the project with an adequate budget, empowering site management to take on the project, and providing continued encouragement throughout the planning process were key lessons learned.

Special projects of this nature can take away from basic operating needs of a particular site. If not approached collaboratively with site staff, success can be thwarted. Once the project was designed and the parts were in place, help outside of site staff was recruited by company management to assist site staff in completing the project. This allowed the project to be completed in a timely fashion without draining the morale of site staff.



Cabin interior (Photo courtesy of Kirk Hoessle)

Case Study: G.A.P. Adventures

G.A.P., an acronym for Great Adventure People, caters to customers who want to travel off the beaten path, immerse themselves in the local culture and environment, and experience the real world in a sustainable manner.^{xviii}



GAP adventurers (Photo courtesy of G.A.P. Adventures)

G.A.P. Adventures (GAP), the largest adventure travel company in Canada and a world leader in active travel, provides services to more than 60,000 travelers annually. They offer over 1000 small group adventures in 100+ countries on all seven continents. Bruce Poon Tip founded the company in 1991 and now has more than 500 staff members in offices around the globe who provide travelers with authentic experiences.

Some of their most effective energy-related best practices include:

- 100% green energy in their head office in Toronto and concept stores in Calgary, Toronto, Melbourne and New York. They purchase wind and low-impact hydroelectric power as an offset from companies such as Bullfrog Power, which is then returned to the grid
- Through GAP's Planet Positive Program, their goal is to plant 1 million trees in 18 months while supporting re-growth projects in Africa, Asia and Central America.
- GAP's tree-planting program includes offsetting emissions from all GAP owned marine vessels and



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corporate flights. This also includes planting one tree per passenger.

- Travelers are provided with the opportunity to offset the CO2 emissions of their flights with funds invested in renewable energy projects, such as a solar energy project in Costa Rica, a wind energy plant in Madagascar, and a methane collection project that produces clean power in South Africa.^{xix}
- GAP is currently in the process of evaluating CO2 emissions for all of their tours and will be providing travelers with the opportunity to offset their GAP Adventures tour.
- Open-concept offices, which use less lighting than traditional separate, closed offices. Managers still have their own offices and make an effort to turn lights off every time they leave the room
- Installation of compact fluorescent lighting
- Providing a US\$25/month subsidy for staff who use public transportation
- On tours, public transportation is used when possible
- GAP requests information on a potential supplier's environmental practices when considering new contracts
- Annual participation in the Toronto Clean Air Commute through which GAP has won an award for the past 7 consecutive years with 100% office participation for using cleaner methods of commuting to work (i.e. public transit & carpooling)
- GAP offers 15 volunteer tours which give travelers the opportunity to help improve the basic living conditions of local people and contribute to environmental conservation. Through GAP's Project Peru tour, travelers work alongside a local host family to build a Peruvian cooking stove which uses approximately 50% less wood than conventional methods and results in the reduction of eye and

lung infections especially among women and children.



A GAP traveler works with a local family to build a cooking stove.
 (Photo courtesy of G.A.P. Adventures)

Background Information on Best Practices

"Having recently spent some time in the Arctic, I saw first-hand the effect global warming is having in one of the most affected areas of the world," explains GAP founder and CEO Bruce Poon Tip. "It was a reminder of the importance of our commitment to reduce our ecological footprint and to always strive to do more."^{xx}

"GAP's initiatives are a reflection of Poon Tip's philosophy, which helped shape the company from the time it was established in 1991," says Liz Manning, GAP's Sustainable Tourism Assistant. From the very beginning, there has always been an emphasis on the social impacts of the tours on the communities in which they operate. In addition, there is also an emphasis on low-impact tourism and this is carrying over into their current operations as GAP increases their focus on the environment, due to their rapid growth as well as the expansion of their operations geographically. This has also caused GAP to look more critically at the criteria that they want their local operators to meet.^{xxi}

Steps in Implementation

GAP began its energy related initiatives seven years ago by participating in the weeklong Annual Clean Air Commute challenge. GAP then encouraged staff to commute to work year round using cleaner methods of transportation by providing a monthly subsidy. The next

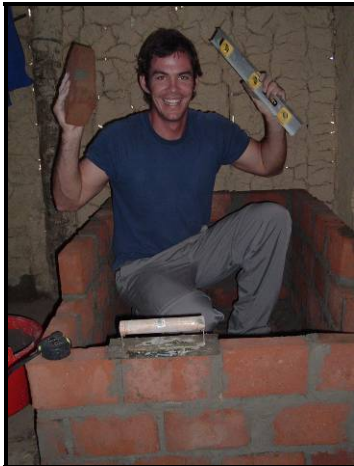


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step was to put the Head Office and Concept Stores on green power. GAP then partnered with Trees for the Future to plant 1 million trees and Sustainable Travel International to provide travelers with a way to offset their flights.

Resources Required

GAP’s Sustainable Tourism Department, Executive team and staff have been instrumental in developing and continually improving upon GAP’s commitment to responsible tourism and environmental initiatives. Resources needed include an investment in time, capital and participation of all GAP staff and travelers.



A GAP traveler builds a cooking stove brick-by-brick (Photo courtesy of G.A.P. Adventures)

Monitoring and Evaluation

GAP sends members of their Operations Team into the field to ensure that the information provided on suppliers’ applications is accurate. GAP also conducts research to identify the greatest areas of potential improvement for local operators, as well as ways to help them achieve these improvements.

With the help of Conservation International, GAP has developed an Ecotourism Operator Standards to formalize a commitment to their beliefs. Every year these standards are re-examined and, where appropriate, targets are raised or new standards are added.

Replicability

The initiatives we have taken to limit our environmental impact and our use of green energy at our Head Office and Concept Stores could certainly be adopted by other operators. There are a growing number of companies that offer this type of service, so it has become increasingly important to do some research in order to find a green energy company that best suits your needs and the size of your business.

Success Factors and Benefits

GAP has experienced a 40 percent growth in customer base every year for the last five years. Their environmental and social commitments have been a deciding factor for many of their customers in choosing them over another tour company.^{xxii}

GAP has also received much positive response through Planeterra, the nonprofit foundation they established in 2004 to increase the positive impact the company and its guests can make on the communities they visit. Planeterra supports 20 local community projects, nonprofit organizations and international charities that focus on the areas of health, education, community development, environmental conservation, and employment skills training. Included in the list of projects that are supported through Planeterra is the funding of scientific research on the effects of Climate Change on Polar Bears in the Arctic and some renewable energy projects as well, such as a solar energy project in Costa Rica, a wind energy plant in Madagascar, and a methane collection project that produces clean power in South Africa.^{xxiii}



Local students gain valuable skills while pitching-in on GAP projects (Photo courtesy of G.A.P. Adventures)



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Challenges and Pitfalls

GAP's tour practices have traditionally been tailored to Latin America, where their operations began. As they expand to other areas of the world, GAP found a number of challenges in adapting their practices to the special circumstances of each of these new areas.

Operating in very remote areas has presented unique challenges. At times, they are faced with finding the best option when there are not a lot of options to begin with, such as recycling in remote areas of Africa. GAP has addressed this largely through customer education: encouraging guests to bring reusable water bottles and rechargeable batteries with them, for example, and making other recommendations, both prior to their departure and through tour leaders. GAP's philosophy is to do the best they can with the circumstances they have; if they cannot control the way things are done in the field, they can at least try to encourage their travelers to take little steps to limit their impact.^{xxiv}

Lessons Learned

One recommendation to tour operators GAP stresses is the need for a thorough evaluation of the social and environmental impacts of their operations. It is also important to strive for a balance between customer demand and the philosophy of your business. GAP has found that the best approach is to find a meeting ground between these two forces, and not cater solely to one or the other.^{xxv}



GAP staff & travelers joining an Earth Day beach clean-up, Barbados
 (www.gapadventures.com)

Case Study: Wilderness Safaris

Wilderness Safaris' (WS) operations cover seven to eight million acres in southern Africa. They employ 2500 people in seven countries and operate 60 camps total with 75 percent running on some type of renewable energy. The remaining camps are on a list for future improvements, but for Managing Director Keith Vincent, the change cannot happen quickly enough.^{xxvi}



Wilderness Safaris' "Best of Namibia Wing" adventure
 (www.saplaces.co.za)

Background Information on Best Practices

WS faces the unique challenge of operating solely in remote locations that are isolated from readily available sources of power. They have traditionally addressed this by using diesel-powered generators, but are currently employing alternative options and further investigating a number of technologies to limit the use of these generators as much as possible.

Best practice technologies employed by WS include:

- Solar water heaters (solar geysers)
- Free-standing solar panels outside each room for lighting
- Sinewave inverters and accompanying battery packs and recharging generators to power primary energy consuming items, such as office and kitchen appliances, lights, laundry facilities, and ice machines



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- Hold over panels in freezers and refrigerators with slow-release technology to keep goods cold for long periods without using electricity
- Wind generators to power water pumps (currently under investigation)^{xxvii}

Resources Required

Vincent estimates that the total cost for the systems they have installed to date is US\$100,000. They employed the help of two contractors, as well as the expertise of two electrical engineers with whom they've worked for many years. It has taken a measurable amount of time for WS to achieve their energy accomplishments to date. Over the past five years, WS continues to refine systems that have been implemented. Their energy initiatives begin with an energy audit and assessment of their needs. After decisions are made regarding how best to move forward, individual systems are phased in to company operations. Each process requires a period of trial and error, but despite these initial challenges, the knowledge they gain as a result eases future development and related energy initiatives.^{xxviii}



Each tent has its own solar panel at several WS Zambia camps
(www.wilderness-safaris.com)

Replicability

Many tour operators who operate lodges have the ability to implement the energy initiatives that WS has embraced; mostly it takes motivation and investment.

These technologies are readily available, quickly gaining popularity, and are constantly improving.^{xxix}

Success Factors and Benefits

To date, the total estimated savings in fuel costs for all camps has been US\$500,000. Vincent estimates a reduction of two tons of CO₂ per day, though no scientific evaluation has been conducted. WS's energy projects have also had a very positive impact on the surrounding local communities. These initiatives have allowed Wilderness Safaris to bring sustainable technology to the local villages, providing expanded access to electricity, education on renewable energy, and demonstrating that these technologies are not only more environmentally friendly, but also economically viable options. As a company, WS operates on seven to eight million acres of land, so the accumulated benefit is quite large. Their presence has also helped indigenous communities realize that conservation and wildlife protection are more financially lucrative than exploiting these resources in other ways.^{xxx}

Lessons Learned

Vincent warns those interested in similar technologies to not cut corners. WS attempted to take the easy path on some projects, and it resulted in only 75 percent success as a result, and they incurred substantial costs trying to fix problems that resulted from this approach. Another lesson learned the hard way is that it is easier to start from scratch than to revamp an old system. While the truth in this statement is heavily dependent on each particular project site, in general, WS found it to be easier to abandon their old systems for completely new ones.

Vincent encourages others to follow in the steps of Wilderness Safaris. Implementing these strategies and technologies may not be easy, but "we have to try. Some things are going to work, and some things aren't. But we have to try."^{xxxi}



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Beta Box: First Choice Holidays

First Choice Holidays (FCH) is part of one of the world's leading international leisure travel companies, TUI Travel PLC headquartered in Crawley, England. TUI Travel PLC was formed by the merger of First Choice Holidays PLC & Tourism Division of TUI AG of Germany in September 2007. It operates in more than 180 countries worldwide from 20 source markets. TUI's businesses are divided into four principal sectors: Mainstream, Specialist, Activity, and Online Destination Services.^{xxxii}



Aliathon Holiday Village pool deck
 (Photo courtesy of James Wittingham)

The Mainstream sector comprises their tour operators from across Europe including First Choice Holidays in the UK & Ireland incorporating their retail and airline businesses. The Specialist sector consists of specialty tourism providers in the UK, continental Europe, and North America. The Activity sector contains marine, adventure, and experiential divisions. The Online Destination Services sector comprises their incoming agencies, online accommodation to consumers and businesses, specialized services to cruise lines and meetings, and incentives activities businesses.

For a company both as large and as broad in scope as FCH, the greatest impact they have is on the practices of their suppliers and affiliate properties. FCH acts as a force for positive change by encouraging these companies, largely during contract negotiations, to employ environmentally responsible tourism measures and other best practices into their businesses. Their

large customer base provides them an enormous amount of influence, and because of this, they have been able to affect the energy efficiency practices of not only their own operations, but also those of hundreds of other suppliers as well.

James Wittingham, the Environment Manager for First Choice Holidays TUI Travel PLC, says that as far as their airline business (First Choice Airways), the company has purchased 12 new Boeing 787 Dreamliners to be inaugurated in 2009. These will be 20 percent more fuel-efficient and therefore emit 20 percent less carbon dioxide and 40 percent less Nitrogen oxides than current comparable airliners. They have also switched to an energy provider that supplies energy on renewable energy tariffs for all head offices and 80 percent of associated retail shops.

Background Information on Best Practices

As a means of educating their suppliers and affiliate companies, First Choice Holidays assisted in the development of Travelife, a comprehensive set of supplier standards. Developed in conjunction with the Federation of Tour Operators (FTO), suppliers, NGOs, experts, destination governments, and other European trade associations, Travelife includes a shared database, an audit system, and an awards system.



To date, First Choice has audited their top 300 properties and plans to help train these hoteliers to meet and exceed proscribed standards. The effort has been particularly concentrated in their flagship properties (Holiday Villages), where experts are dispatched to develop improvement programs with managers. It is estimated that the first four audits completed and assessed to date will result in annual resource efficiency net savings of approximately £800,000 GBP, after improvements are implemented.^{xxxiii}



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Two of the most successful examples of FCH's influence include the Javelin Sunsail Club in Turkey (a major redevelopment opening Summer 2008) and the Aliathon Holiday Village in Cyprus. "These two properties, though not owned by TUI Travel PLC, are supported solely by our customers," said Jane Ashton, Head of Corporate Social Responsibility at FCH.^{xxxiv}

The Javelin Sunsail Club is currently being constructed to top green-building standards. In addition to other various water- and energy-saving techniques, all guest rooms will have well-insulated green 'living' roofs, lighting design will be efficient, and automated building controls will disable lighting, ventilation, and television power to guest rooms when not in use.



*"Living" green roofs used at the Javelin Sunsail Club
(Image courtesy of James Wittingham)*

The Aliathon also employs many energy-saving techniques, including efficient lighting, facilities management strategies such as automated air conditioning controls and highly insulated doors and windows, and solar hot water heaters. The resulting energy and water savings significantly outperforms the benchmarks for Mediterranean hotels specified in the Sustainable Hotel Manual of the International Business Leaders Forum and Conservation International, beating each category by nearly 40 percent.

Challenges and Pitfalls

Communication has been a challenge, as well as engaging a large number of employees in their initiatives. To address this, FCH created Awareness to

Action, a series of sustainability workshops intended to relate the impact of each department's work on the environment, and how they could minimize the negatives and increase the benefits. The tools used in these workshops have been developed in conjunction with the Travel Foundation (a UK-based responsible tourism charity) and is now available to the public at: www.thetravelfoundation.org.uk/training_for_change.asp.^{xxxv}

Beta Box: Natural Habitat Adventures

Natural Habitat Adventures (NHA) is helping to lead the tour operator sector toward energy efficiency and carbon neutrality. NHA currently offsets 100 percent of the emissions from transportation and accommodation related fuel consumption involved in their trips, and they provide their customers the option to do the same for the transportation emissions required to get to and from the starting point. All office energy use, as well as printing and shipping, is offset by the purchase of wind credits from their energy providers. The company's founder and director, Ben Bressler adds that NHA has a "bike-to-work" program whereby staff receive points for free Patagonia clothing and gear for each day they use alternative transportation to get to work.^{xxxvi} NHA also developed the world's first hybrid safari vehicles, slated to be released in March 2008.



*NHA's safari vehicles will run on hybrid technology © Patrick Endres
(Photo courtesy of Natural Habitat Adventures)*

As a member of the Adventure Collection, NHA was instrumental in procuring a commitment to action toward carbon neutrality from all other members in the



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group. They routinely share their experiences with other companies to help them in emissions reductions and other environmental efforts. NHA has also partnered with the community of Churchill, Manitoba - where they take visitors on polar bear expeditions - to become less energy consumptive by providing the entire town with compact fluorescent light bulbs (CFLs) and a machine to recycle used bulbs.



*Sights from NHA's polar bear expedition © Mike Bruscia
(Photo courtesy of Natural Habitat Adventures)*

As a result of their high quality tours and strict environmental standards, National Geographic Adventure magazine added NHA's Antarctica expedition to its "25 Best New Trips '08" list. The adventure, which departs in February with a World Wildlife Fund climate change expert on board, will be the world's first carbon neutral Antarctic trip.



*Floating through the sea ice in Antarctica © Emily Supernavage
(Photo courtesy of Natural Habitat Adventures)*

Beta Box: Intrepid Travel



Intrepid Travel Pty Ltd. (IT) operates small group adventure trips, currently in 95 countries throughout Asia, Australasia, Africa, the Middle East, Europe, and Latin America. They employ approximately 700 staff and provided services for over 60,000 travelers in 2007. The head office is in Melbourne, Australia, with regional offices in New Zealand, Thailand, Cambodia, Vietnam, China, India, Kenya, Morocco, the United Kingdom, the United States, Ecuador and Peru.



Water seller in Morocco. (www.intrepidtravel.com)

In December 2006, IT announced its goal to be a carbon neutral company by the end of 2009. To accomplish this, they created a Climate Change Committee, comprised of 12 head office staff, and hired a Carbon Offset Manager to establish and implement their Carbon Reduction Strategy. This strategy includes the mandatory offsets of all staff flights and mandatory offsets of all flights sold in Australia, with view to the flight offset program soon being expanded to their other international sales offices. Intrepid currently purchases offsets through Origin Energy's Carbon Reduction Scheme, investing in genuine sustainable energy projects that build a long term solution to climate change - energy efficiency programs in homes, waste composting programs, tree planting and a micro-hydro electricity project in China.

In order to reduce carbon emissions during their trips, IT uses public transportation whenever possible, favors smaller locally owned and operated accommodation and includes and encourages eating of local non or minimally processed food, reducing the 'embodied energy' – fuel and water consumed through food production and transport. IT encourages participation



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in longer trips instead of several short ones and is expanding their range of low emission trips including walking trips within Europe. A selection of Intrepid trips are currently being audited for their carbon emissions. Offsets for these trips will be tested later this year, with view to rolling out offsetting to all 460 plus Intrepid trips in 2009.

IT's global offices and retail stores are undergoing regular energy audits with building and lighting retrofits undertaken as needed. 'Green power' (electricity from 100% renewable sources) has been chosen where this is an available option.

IT have assisted their Australian staff to green their own homes by providing a 6-pack of compact fluorescent

lamps and offering home energy and water audits at a 73 percent discount (with IT paying 46 percent of the cost, and 27 percent provided by a government incentive).

Intrepid's Carbon Reduction and Neutrality Program has thus far cost them over US\$120,000 to implement. In taking responsibility for their company, employee and traveler contributions to climate change, IT considers these actions to be important investments in the future viability of the company and in the destinations visited. "Close to 40 percent of our travellers are repeat business and many of them cite responsible travel practices as a strong reason why they would travel with IT again," says Jane Crouch, the Responsible Travel Manager at Intrepid Travel.^{xxxvii}

ADDITIONAL RESOURCES

- Adventure Collection: www.adventurecollection.com
- Alaska Wildland Adventures: www.alaskawildland.com
- Aliathon Holiday Village: www.aliathonvillage.com
- Bullfrog Power: www.bullfrogpower.com
- Club Javelin: www.sunsail.com/clubs/destinations/javelin
- Escape Adventures – Environmental Commitment: www.escapeadventures.com/environment
- First Choice Holidays – Environmental & People: <http://www.firstchoice.co.uk/environment>
- G.A.P. Adventures Sustainable Tourism: http://www.gapadventures.com/sustainable_tourism/sustainable_tourism
- Golden Fuel Systems: www.goldenfuelsystems.com
- Intrepid Travel: www.intrepidtravel.com
- Natural Habitat Adventures: www.nathab.com
- Planeterra Foundation: www.planeterra.org
- Travelife: www.travelife.eu
- The Travel Foundation: www.thetravelfoundation.org.uk
- Wilderness Safaris: <http://www.wilderness-safaris.com/conservation/>



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Credits

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Sustainable Travel International was subcontracted by the above partners as the lead author of the RETI best practices series, with guidance provided by an industry advisory board. Board members include Mr. Chris Adams, Director of Online Marketing, Miles Media, Inc. and Mr. Tim King, Program Manager, Colorado State Parks. Coordination for the RETI project has been provided by Tara Low and Wendy Kerr, Leeds School of Business, University of Colorado at Boulder. Principle Investigators for the project include Dr. Patrick Long, Director, NCCST and David Corbus, Senior Mechanical Engineer, National Wind Technology Center, NREL.

The best practices are a collaborative effort, and final information reflects consensus from the editorial board and contributors. Further contributions are welcomed from all industry members, should be merit- and science-based, with participation being nonexclusive.



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