

SUSTAINABILITY CONSIDERATIONS FOR MUSIC & ARTS FESTIVALS IN THE UNITED STATES

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ABSTRACT

This thesis looks at sustainability considerations of music and arts festivals in the United States. While the impact that any festival makes is highly influenced by its size, every festival has some sort of impact on both the local and global environment. Festivals are intrinsically transitory communities that need to meticulously plan and manage the ways in which they will function. More and more festivals in recent years have begun to seriously consider their impacts on the environment and to accordingly change the ways in which they operate. While it is virtually impossible to ensure that a festival will be completely impact-free, there are methods in existence which can guarantee that an event will be as low-impact as is realistically, feasibly, and monetarily possible. While most US festivals are now taking steps toward sustainability, two particular festivals are looked at in depth as case studies and examples of current best practices: The Burning Man Project (Burning Man) and Lightning in a Bottle (LIB).

All of the various planning efforts that run almost parallel to each other and eventually converge come festival time can all be boiled down to just two areas of environmental impact: emissions and resource use. When broken down further, sustainability for festivals can be broken down into five distinct categories: transport of goods and people, power generation, resource and product use and purchasing, waste and sanitation, and water management. All five of these categories are explained and analyzed, and strategies to minimize their impacts are examined. None of these categories are complete at the current time, as all will likely see significant improvements and advances in the coming years.

TABLE OF CONTENTS

| | |
|---|----|
| CHAPTER 1: Introduction..... | 1 |
| CHAPTER 2: Literature Review..... | 8 |
| CHAPTER 3: Sustainability in the Context of Festivals..... | 19 |
| CHAPTER 4: Festival-Specific Sustainability Considerations..... | 34 |
| CHAPTER 5: Case Studies..... | 67 |
| Burning Man..... | 67 |
| Lightning in a Bottle..... | 78 |
| CHAPTER 6: Findings and Recommendations..... | 85 |

CHAPTER 1: INTRODUCTION

As human beings, we have an ingrained sense of sociability that we must keep fulfilled in order to remain balanced and happy individuals. For countless people around the globe, this sociability is best expressed at music and arts festivals. The festival world is truly a world in itself, frequently beyond the realm of mainstream society, and one in which there is much creativity, enlightenment, and progressive thinking. The first name that pops to mind for most people upon the utterance of the words “music festival” is the Woodstock Music & Art Fair, which was originally held for three days in August 1969 in White Lake, New York. Notorious for the half million people that showed up, paralyzing traffic in the surrounding area, copious amounts of mud, and its general mismanagement, Woodstock was in a historical sense merely the first experiment with a social phenomenon which persists to this day. Worldwide, festivals range in size and variation from the epic and diverse 175,000+ person Glastonbury Festival in the United Kingdom to a countless number of more focused, locally-oriented gatherings of a few hundred people in countries across the globe. At the current time in North America, there are approximately 2,500 festivals annually (FestivalFinder.com 2011). Many festivals feature more than just music and art and also include guest speakers, various kinds of lifestyle workshops, and daily yoga sessions.

While the impact that any festival makes is highly influenced by its size, it remains a fact that every social gathering of every sort has some impact on the local environment, as well as the global environment. As a result of their intrinsically temporary natures, festivals are transitory communities that need to meticulously plan

ahead of time and manage the ways in which they will function, even though the length of time in which their complex sets of plans and policies are in place is not very long.

There are a number of areas of environmental impact to consider when looking at comprehensive sustainability in regard to festivals. These categories are outlined by Meegan Jones in her *Sustainable Event Management: A Practical Guide*, as transport, waste management, energy and power, materials purchasing and procurement, and waste reduction and resource recovery (Jones 2010, 3). In their masters thesis in Strategic Leadership Toward Sustainability at the Blekinge Institute of Technology in Karlskrona, Sweden, the international collaborative team of Sarah Brooks, Dan O'Halloran, and Alexandre Magnin illustrate the areas of festival impacts as a "6 Stringed Strategy." According to these authors, the six strings to be striven towards are: 1) producing no waste; 2) using 100% renewable energy; 3) using resource-efficient transportation; 4) working with sustainable stakeholders; 5) creating an atmosphere of inclusion and respect; and 6) driving societal change toward sustainability (Brooks et al. 2007, vi). They justifiably view festivals as a part of the larger global system, whereby they are enveloped by other events, society at large, and ultimately the earth's biosphere (Brooks et al. 2007, 3).

Whichever way one looks at it, the environmental impacts of the various activities which fall under these broad categories are often complex. For instance, the environmental implications of producing no waste are many-sided. On the one hand, keeping non-biodegradable waste to a minimum means that less garbage is sent to slowly decay or resist decay in a landfill, which take up room on our increasingly precious land. On the other hand, all landfill waste must be transported off-site. This is usually done via

trucks, and the more trucks that are required to haul out the waste, the more carbon emissions are created that can then be attributed to the festival. Additionally, when biodegradable waste is not properly composted but is instead sent to a landfill, methane is eventually created. Methane is a potent greenhouse gas with twenty times the heat-trapping potential of carbon dioxide (CO₂) (EPA 2010).

As is the case in many different industries, more and more festivals in recent years have begun to seriously consider their impacts on the environment and to accordingly change the ways in which they operate. While many festivals in Europe and Australia jumped on the sustainability train several years ago, most US festivals have much more recently begun to place an emphasis on sustainability, perhaps somewhat reflecting national trends.

While it is virtually impossible to ensure that an event will be completely impact-free, there are methods in existence which can guarantee that an event be as low-impact as is realistically, feasibly, and monetarily possible. Like everything else in regards to the transition toward sustainable practices, festivals and other gatherings also rely on money for their very existence. Were money not a constraint, there are ways that could almost completely alleviate the environmental impacts of festivals. However, this is an unrealistic scenario, as every festival has a production budget with defined limits, and the majority of this budget goes towards paying artists, production costs, permits, venue payment, and other necessary pieces of the puzzle without which there would be no festival. Therefore, the funding that can go towards environmental considerations is almost always a secondary consideration.

Regardless of actions that some festivals have taken or plan to take to address sustainability concerns, it is obvious that the most sustainable course of action is not having an event at all. While on the one hand it is imperative for future generations that we all be living as sustainably as possible in the present time, on the other it is of immense social importance for us in the here and now that we continue to have festivals and other social gatherings now and into the future. In this way, it is socially imperative – and sustainable – that festivals continue to be held. At the same time, one can make the point that a festival can have a positive effect on the environment, as people leave their daily habits and all converge on one geographic area that is, hopefully, managed in an environmentally-competent manner. While at the festival, attendees are not using electricity in their own homes, are only using their cars except at the beginning and end of the weekend, and are not using household water appliances.

Music and arts festivals are a way of life for thousands of people which include varying types of artists, musicians, producers, managers, organizations, vendors, engineers, and others, all of whom revolve their summers, indeed the entire year for those more intricately involved, around festivals and the larger musical and artistic worlds that encompass them. These are all worthy professions that work toward the elevated goal of artistic, musical, and in some cases spiritual enlightenment, and it is therefore of critical importance that festivals and other gatherings continue to be held long into the future, but in as sustainable a manner as humanly possible.

This thesis will look at music and arts festivals and how they can approach sustainability. There has been very little academic research into festival sustainability in the United States, and as a result most of the academic sources are from Australia and

Europe. While most US festivals are now taking steps toward sustainability, two particular festivals will be looked at in depth as case studies and examples of current best practices. Case studies are a “collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves... Researchers do not focus on the discovery of a universal, generalizable truth, nor do they typically look for cause-effect relationships; instead, emphasis is placed on exploration and description” (Colorado State University 2011). For this thesis, I chose to use case studies as a research method because I wanted to illustrate examples of festivals that represent the current gold standard for sustainable festival management. At the same time, as the definition indicates, I do not view my case studies as a mold in which every other festival should try to fit, but rather as admirable examples of the cutting edge in sustainable management and ideas that other festivals could look to for guidance. Accordingly, I chose to look at The Burning Man Project (Burning Man) and Lightning in a Bottle (LIB) as my two case studies, as these two events are in many respects arguably the most sustainable festivals in the country at the present time.

This thesis will be investigating and seeking to answer the following questions:

- What are the ways in which sustainability applies to festivals?
- What are the methods available to address festival sustainability concerns?
- How have festivals previously addressed sustainability concerns?
- What are the best management practices in regard to festival sustainability?
- Are there any sustainability aspects not previously addressed by festivals and/or by previous literature on the subject?

The research for these inquiries consists of a thorough literature review, including a book recently published specifically on the topic of sustainable event management with an emphasis on festivals, a masters thesis written in 2007 by a group of students in Sweden about strategic sustainable development and how it can be brought to music festivals, as well as other literature on both the science and theories behind both sustainability in general and more specifically its application to festivals and other events. I gained practical and professional experience and knowledge in the summer of 2010, when I acted as the Sustainability Coordinator for The Big Up Music & Art Festival, a first-year festival held on a private farm in Ghent, New York. Other sources include peer-reviewed journal articles, organizational websites, articles, books, and informational interviews with festival organizers. For the case studies, informational interviews have been conducted with environmental staff from Burning Man and LIB. While individualized questions were asked of the different festival staffs, in general I sought answers to the following questions:

- 1) What do you feel sets your festival apart from other festivals in regard to sustainability?
- 2) Are there any constraints or special conditions of your festival that make sustainability especially challenging?
- 3) Are there any initiatives or actions which you have been pushing for, but have thus far proved elusive? If so, what are they and why are they difficult to enact?

- 4) Are you planning or contemplating any significant additions to your festival's sustainability policies for this coming year? If so, what are they and what is the likelihood that they will be implemented?

The following order of chapters will present my research. Chapter 2 will be a literature review, whereby relevant literature that addresses the concept of sustainability and its application to events, including some literature that has a particular emphasis on festivals, is analyzed and discussed. Chapter 3 will give a breakdown of sustainability in the specific context of festivals, and will include a definition of the term "sustainability," discuss the concept of Triple Bottom Line (TBL), and explain the two main areas of environmental impact from festivals. Chapter 4 will elaborate on the general areas of environmental impact explained in Chapter 3 to include all of the different aspects of sustainability that apply to festivals, how they apply, and some methods and techniques that can be used to address them. This chapter will be subdivided according to the different categories. Chapter 5 will discuss and analyze my two case studies. As previously mentioned, case studies will be performed on Burning Man and LIB. Chapter 6 will discuss all significant findings and conclusions, as well as recommendations about future research that could and probably should be considered, as well as other recommendations and ideas.

The idea for this thesis came about as a result of several years of observations and burning questions arising from the my countless trips to music and arts festivals all over the United States, and my unceasing desire to clean them up and ensure that they will be around to enjoy for years to come in a sustainable way.

CHAPTER 2: LITERATURE REVIEW

This thesis will examine the numerous different ways in which music and arts festivals have a negative environmental impact on their grounds and surroundings, including visually tangible effects, impacts upon air quality, and resource use considerations, and what sorts of methods are available to try to mitigate these impacts. The main aspects of events that inevitably lead to adverse environmental impacts and therefore must be properly managed and monitored are transport of goods and people, power generation, waste and sanitation, resource and product use and purchasing, and water management. Depending on the specific site for any given festival, one must also look at biodiversity issues, archaeological considerations, and a myriad of potential other concerns.

In recent years, there has been a trend for producers and managers of festivals to at least *try* to minimize the environmental impact of their events. As such, there has very recently begun to be some literature that has addressed the subject. As Donald Getz notes, “in an era of global climate change, rising energy costs and the risk of scarcity, environmental issues have recently come to the fore in the events literature” (Getz 2008, 64). However, especially relevant pieces of literature are still few and far between, and most of the literature that is out there is not particularly of the scholarly variety.

This shift towards environmental awareness at festivals and other events has been occurring concurrently with the ever-increasing interest in sustainability in the greater world and the proliferation of sustainability consulting as a profitable and important business. Due to the demographics of the people that are involved in the music and arts festival scene – one might call them “hippies” or “neo-hippies” – festivals were among

the first events which began moving towards sustainability. After all, the environmental movement went through a period of revolution in the 1960s, largely as a result of countercultural forces that manifested in events such as student protests and social demonstrations, the creation of hippie agricultural communes, public awareness, and the renewed relevance of liberal philosophy in our country's politics. Adam Rome views the significant growth of environmental considerations after 1960 largely as a result of the intersection of three developments: the flare-up of student radicalism and countercultural protest, the revival of liberalism, and the increasing sense of dissatisfaction among middle-class women (Rome 2003, 527). Certainly the original Woodstock festival was a gathering with a counter-cultural and political focus. After nearly half a century of heady principles, many present-day festivals are almost snobbish in a way, as organizers and participants fancy themselves as above the curve of current progressive thinking. Carlsen et al. believe that "it is not uncommon to hear festivals being described as 'elitist,' and by focusing on 'high culture' excluding large segments of the local population" (Carlsen et al. 2007, 4). While this headier-than-thou attitude is not necessarily a good thing on the whole, these attitudes often come along with a heightened environmental awareness, and that is certainly a good thing.

As a consequence of environmental considerations now being taken into account by festival managers, a lot of the pertinent literature has discussed festival planning in the context of the Triple Bottom Line (TBL) approach. TBL was first coined as a distinct term in 1997 by John Elkington, who described it as a way for companies, governments, and organizations (events included) to measure and report performance with regard to economic, social, and environmental considerations. TBL is therefore a fairly

comprehensive way of accounting for actions and impacts (Getz 2008, 71). As opposed to merely looking at the single bottom line of economic profit, TBL is a very progressive approach for an industry that needs to generate profits in order to survive.

Anne-Marie Hede explains how current research on event evaluation is focused on the intersection of economic, social, and environmental factors – together comprising the TBL – which festivals must manage. While the environmental aspect may be the newest branch of the TBL to be considered by event producers, in the face of climate change, resource crises, and other environmental issues, we are now at the point where environmental considerations cannot be ignored. Hede explains that the TBL approach originated in the corporate world in the early 1990s and soon received a lot of consideration in the resources industries. While TBL has already been used extensively for the evaluation of events, Hede believes that TBL should be applied more to the planning stages in order to be truly effective.

Hede relies extensively on Stakeholder Theory, which focuses on implementing TBL in order for the outcomes of events to be improved for all relevant stakeholders (Hede 2007, 13-14). She finds that charting the economic, social, and environmental interests of all stakeholders is helpful in planning efforts in order to maximize benefits and embrace sustainable practices. Brooks et al. found that the stakeholders with the most impact on the sustainability of a festival are the artists, the audience, the suppliers, and the producing organization itself (Brooks et al. 2007, 40). Carlsen et al. likewise place a large emphasis on the importance of stakeholders, feeling that “research into the roles, responsibilities, and needs of all stakeholders is only a starting point in understanding their importance and the way in which they interact and function to ensure desirable

outcomes from festivals” (Carlsen et al. 2007, 9). These authors stress that the expectations and motivations of each individual stakeholder should be examined in regard to their relation to other stakeholders for the same festival and even between different festivals (Carlsen et al. 2007, 9). Of note, Carlsen et al. exclusively examine festivals in the specific geographic context of Edinburgh, Scotland. However, many of their conclusions emanate important lessons for festivals elsewhere. Getz also highlights the importance of stakeholder expectations, saying that an “event’s worth can only be ascertained, and the event deemed responsible and sustainable, if it meets the goals (or at least does not impede them) of all influential stakeholders, within a political environment (Getz 2008, 64).

Aside from TBL and Stakeholder Theory, Hede talks about a paradigm shift that is occurring as a result of event producers and managers having a new focus on the three-headed focus of TBL (Hede 2007, 13-14). Getz likewise believes that events should be evaluated using the TBL approach, and further elaborates on the paradigm shift that is occurring in the festival and event industry. He labels this paradigm shift as the shift toward “sustainable and responsible events” (Getz 2008, 62). In order to approach this sustainable and responsible events goal, the TBL approach must be used to assess both the value and impacts of events. However, Getz admits that there are significant obstacles to implementing the TBL approach, such as the over-emphasis on economic measures as opposed to non-economic factors and the complexity of comparing tangibles with intangibles. Getz makes the point that governments should become more involved in festivals, thus institutionalizing the new paradigm (Getz 2008, 63-64). Carlsen et al. also acknowledge that monitoring and management of festivals needs to progress beyond

economic impacts to also include social and cultural considerations (Carlsen et al. 2007, 3). However, Carlsen et al. do not specifically discuss the environmental aspect, which is the primary focus of this thesis.

There are some peer-reviewed journal articles which are more focused in scope and look at particular aspects of festival sustainability. Two articles from *BioCycle* discuss the Whole Earth Festival at the University of California-Davis, which is a student-organized event which takes place every May at the university and has had the goal of approaching Zero Waste since its inception. The first article, written by Harold Leverentz and Mark Van Horn in 1999, specifically discusses the waste minimization efforts at the festival back in the late 1990s, which included excluding all materials that were not readily reusable, recyclable, or biodegradable; implementing a collection system that efficiently accommodates recyclable and biodegradable materials; and increasing public knowledge and awareness of the collection system. Additionally, food vendors were required to use materials that could be composted or recycled, and material use was kept to a minimum as finger foods were encouraged over foods that required utensils; those utensils that remained were biodegradable. The festival in 1999 had a waste diversion rate of 81 percent (Leverentz and Van Horn 1999).

As opposed to the Whole Earth Festival of the late 1990s discussed by Leverentz and Van Horn, Derek Downey re-examined the event in 2008 and reported some impressive changes over the years. Most notably, the diversion rate in 2008 was up to 97 percent, as the festival had successfully avoided having any trash receptacles in or around the festival area (the “Zero Waste Zone”) and therefore was extremely close to approaching “Zero Waste” at that time. As opposed to having any disposable items of

any kind, the festival now completely employs reusable dishes and utensils that are washed in an adjacent campus building in an industrial dishwasher (Downey 2008). While certainly feasible on a college campus, this option is not realistic for many festivals held on farms and other comparatively undeveloped locations without permanent infrastructure.

In regards to wastewater, Van Hulle et al. examined the wastewater treatment system at the Dranouter Music Festival in Belgium. Their article clearly demonstrated that activated carbon is an excellent technique for the treatment of wastewater. The pilot-scale test performed as a part of this study included the characterization, design, and operation of an activated carbon filter for the treatment of temporary shower wastewater at the festival (Van Hulle et al. 2008).

Robbins et al. look at the issue of planning transportation strategies for special events such as festivals, which they admit is essential in order to travel to and from events. And yet, they feel that the topic had been previously ignored in event management literature. They believe that transport has been largely ignored because it is intrinsically temporary in nature, as it only needs to be considered at the beginning and end of events, and in the minds of most people only causes short-term problems such as noise and pollution. However, the authors state that the main reason that transport should take a much more significant role in the event literature is the contribution that it makes to greenhouse gas emissions. They feel that as the number of festivals continues to grow year after year, there is a real and significant opportunity to incorporate transport into the regulation and planning of new festivals. Because the authors are British, they cite

several UK festivals as examples, including Glastonbury, Leeds, and Reading (Robbins et al. 2007).

As opposed to environmental impact mitigation strategies, Fred Pearce (writing for *New Scientist*) looks at the practice of carbon offsetting, whereby carbon-removing strategies such as tree planting are practiced as a way to counteract known carbon-emitting activities. While looked to by many as an effective and legitimate alternative to actually cutting down on emissions from an event, the article comes to the conclusion that because of the lack of transparency, the offsetting market is extremely unregulated and covert, which thus leaves it vulnerable to dishonesty and deceit. This lack of transparency thus makes it difficult if not impossible to make sure that the money supposedly going towards offsetting schemes is actually being used for this designated purpose (Pearce 2007, 39).

While any expert in the science of sustainability could rattle off several areas in which festivals could minimize their impacts, one must keep in mind that festivals are very intricate functions which require months of comprehensive planning in order to noticeably create change. Laing and Frost point out that “the lack of academic research focused on green events is juxtaposed with increasing interest by organisers of events in highlighting their green credentials and an increasingly sophisticated market that is more knowledgeable about sustainability practices than ever before” (Laing and Frost 2010, 261). Within the last few years, this has begun to change, and I believe that Laing and Frost have neglected to find some excellent literature that is now out there.

The oldest guide to sustainable music festival management which I have come across is entitled *The Sustainable Music Festival: A Strategic Guide*. This guide was put

together in 2007 as a collaborative master's thesis in the Strategic Leadership Toward Sustainability graduate program at the Blekinge Institute of Technology in Karlskrona, Sweden. The guide was fashioned for use specifically for festival producers, festival goers, artists, and local municipalities. The guide begins by outlining how humans impact the planet and how everything in Earth's system is linked, meaning that impacting one aspect of the system can have far-reaching and unforeseen effects. Wisely, the authors note that sustainability includes both ecological and social considerations, and that both must be taken into account in order to address the problem. The guide goes on to explain that in order to bring about change, we need to understand the "4 Principles for Sustainability" and subsequently plan our actions with these principles in mind. The authors elucidate how music festivals are a part of Earth's system and that they are in a unique position, given their opportunities to spur change along an entire supply chain. The authors utilize a "6 Stringed Strategy" toward addressing the sustainability of music festivals, and then recommend specific actions to address each of these categories. The six strings that the authors constructed are:

- 1) Produce no waste;
- 2) Use 100% renewable energy;
- 3) Use resource efficient transportation;
- 4) Work with sustainable stakeholders;
- 5) Create an atmosphere of inclusion and respect; and
- 6) Drive societal change toward sustainability

Overall, this guide is very comprehensive in that it illustrates all of the different areas in which music festivals impact the environment and explains some ways in which

festival organizers can do things differently in order to minimize the impact of their event in regard to the six strings. However, the guide is not meant to be an exhaustive resource which can be referenced by festival organizers to run their festivals in a completely sustainable manner. Instead, it is meant to show the various ways in which festivals can move toward sustainability (Brooks et al. 2007). For the most part, the specific programs and policies that festivals can adopt are not really explained in detail, but are rather left up to the reader to formulate based upon their supposed newfound knowledge of sustainability.

In early 2010, a more comprehensive guide was written by Australian sustainability consultant Meegan Jones, who has worked on several festivals in Australia and the United Kingdom. As opposed to Brooks et al., Jones' *Sustainable Event Management: A Practical Guide* is a much longer and more comprehensive reference book that looks in detail at each sustainability area of festivals and other large events and discusses all possible options that can be pursued. The book uses several of the larger festivals in the United Kingdom, Australia, Europe, and the United States as case studies to illustrate certain points. Unlike the six string organization of the Brooks et al. guide, Jones organized her book into chapters that revolve around six categories of sustainability, namely marketing and communications; energy and emissions; transport; water; purchasing and resource use; and waste (Jones 2010). In this regard, this book is a much better resource for festival organizers because it is more comprehensive, organizes sustainability into simpler categories, and yet completely addresses all aspects of each category.

Like Hede and Getz, Jones also discusses the importance of stakeholder participation. She divides festival stakeholders into internal stakeholders and external stakeholders. Internal stakeholders include the person(s) responsible for the sustainability of the event and other internal staff members such as the waste manager, production coordinators, sponsorship manager, marketing and advertising staff, site managers, stage/lighting/sound managers, potentially the venue owner (depending on whether or not the owner is involved in the festival itself or not), and others that are integral and part of the actual pre-production and production process. External stakeholders include those people and organizations that are not on the core staff of the festival itself, but are crucial for its successful development. External stakeholders include sponsors, contractors and suppliers, traders, participants/artists/speakers, regulatory authorities, the media, local community members and organizations, industry sector organizations, volunteers, and potentially the venue owner (Jones 2010, 47-55).

Laing and Frost's 2010 article "How green was my festival: Exploring challenges and opportunities associated with staging green events" is also a fairly comprehensive study of environmental sustainability considerations for festivals. These authors discuss and demonstrate, with several case studies, the burgeoning interest in green events, and how there are several aspects of events that must be addressed in order to truthfully boast that they are green. They spell out exactly which areas of sustainable events are currently lagging in research. Specifically, they discuss examining the different types of festival attendees and their behavior, the supply side of the industry, green messaging, and food and beverage issues. In this way, Laing and Frost likewise look at the subject from the paradigm shift approach. Like Jones and Brooks et al., Laing and Frost likewise discuss

several operational issues that festivals need to manage and monitor, and they also stress the importance of key stakeholder participation, akin to Getz and Hede.

Other than the peer-reviewed literature, the Brooks et. al thesis, and Jones' book, there are a plethora of organizational websites that have been consulted, including Leave No Trace, Sustainable Touring, The Sustainable Living Roadshow, Rock the Earth, The Last Tree, Global Inheritance, Reverb, A Greener Festival, Black Rock Solar, Clean Vibes, Change of Atmosphere, EcoGatherings, and The Spitfire Agency. All of these organizations work with festival sustainability to varying capacities, and all have done work in the United States.

CHAPTER 3: SUSTAINABILITY IN THE CONTEXT OF MUSIC & ARTS FESTIVALS

What is sustainability?

In order to fully understand how the concept of sustainability applies to events, and festivals in particular, sustainability should be well defined. Sustainable development refers to the philosophy of meeting society's current needs without compromising the ability of future generations to meet their own needs. This definition was coined by the United Nations World Commission on Environment and Development – also known as the Brundtland Commission – in its 1987 report entitled *Our Common Future*. The Brundtland Commission stated that sustainable development inherently implies limits imposed by the current state of technology and social organization on our natural resources and by the capacity of the earth to absorb the by-products of human activities (Brundtland Commission 1987).

Twenty-three years after the Brundtland Commission report was released, consumption and production levels remain twenty-five percent higher than the planet's sustainable carrying capacity. This means that if people all over the world were to live like the average person in the first world countries, we would need more than two and a half planets to sustain this level of consumption for the global population (UN 2007). Aside from consumption, the looming threat of global climate change has added a newer and more complicated problem to the mix. According to the opening statement of the Stern Review of the Economics of Climate Change: “the scientific evidence is now overwhelming: climate change presents very serious global risks, and it demands an urgent global response” (Stern Review 2007, i). In 2007, the Intergovernmental Panel on

Climate Change (IPCC) released its Fourth Assessment report, which came to the conclusion that “warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level” (IPCC 2007, 72). The IPCC further stated that this warming is “very likely” from human activity and has “had a discernible influence at the global scale on observed changes in many physical and biological systems” (IPCC 2007, 72). While some skeptics nevertheless remain, it is now widely accepted by the world’s governments that climate change is real and that policies need to be developed in order to deal with it. Accordingly, there are now several international legal frameworks that are in place specifically to monitor and reduce greenhouse gas emissions. Some of these international treaties include the UN Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol to the UNFCCC, and the European Union’s Emissions Trading Scheme (Schneider et al. 2010, 221). The United States has been lagging behind international efforts for the most part, notoriously refusing to sign onto the Kyoto Protocol. In general, the US remains more oriented toward voluntary reductions of emissions as opposed to mandatory reductions, as is now the situation in most high-emitting countries. According to the US Environmental Protection Agency (EPA), programs and partnerships across the federal government encourage the improvement of energy efficiency, the conservation of fossil fuels, the sequestration of carbon, and the recovery of methane. These programs are aimed across a broad spectrum of emitters, including large corporations, industrial and commercial buildings, many major industrial sectors, and consumers. However, many of these programs are voluntary and therefore do not require compliance (EPA 2010).

Why does sustainability matter for festivals?

The Brundtland Commission included the alleviation of poverty in its plan for sustainable development, reflecting the social bottom line of sustainability. As a result, planning at the current time must not proceed in detriment to the global economy, but must instead lead to a new era of economic growth (Brundtland Commission 1987). With economic growth as a prerequisite to sustainability, it makes sense that events should continue to flourish, as they tend to bring significant economic benefits to the local areas in which they are held. Hede explains that “businesses are often interested in how special events will impact on their commercial viability” (Hede 2008, 17) – and with good reason. As hundreds and possibly thousands of people head to any given festival, they shop at local stores along the way to buy necessary supplies such as food, beverages, and camping supplies. Sometimes the demand for goods at stores exceeds the store’s normal supply, so forward-thinking business owners will stock up in order to be able to serve the inflated clientele – thus leading to profits that are well above average. Some festival-bound folk stop at local attractions along their route if they have never driven through that area before, in effect helping to support local tourism. After the long weekend of a festival, for many people the most desirable thing that comes to mind is a hot meal at a real restaurant, and most people do not make it very far before stopping at one in the area right around the festival.

In addition to benefiting the local area, festivals also form at least a portion of the economic livelihoods for the staff and artists involved in their production. Some of these economic benefits are short-term and some are long-term. Hede elucidates on this point, as she explains that employees are interested in the short-term with how much they will

make from that particular festival. If the festival is a success and will be held more than once, then the festival may become an opportunity for continued employment (Hede 2008, 17), even if only for one weekend per year. Carlsen et al. make the point that, aside from a direct financial impact, “many events create media and communications opportunities for host locations and positive and extensive media exposure is often cited as a benefit from hosting events (Carlsen et al. 2007, 2).

In order for any given action to be sustainable, that action must be performed in a way that is efficient, equitable, and just – environmentally and socially-speaking – and can therefore persist in that same manner and technique well into the future. It is in this way that the concept of sustainability led to the development of TBL which, as previously discussed, considers environmental, economic, and social factors as the bottom line for events – not just economic, as was the case in the past. The economic bottom line of any festival is making as much of an economic profit as possible. While this is something that takes most festivals several years to successfully accomplish and is of supreme importance for a festival to be able to reproduce itself in the future, the purpose of this thesis is not to look at the economic factors of an event, but rather to mitigate the environmental impacts that will occur at an event in an economically-efficient manner. The fact of the matter is that environmental and social aspects of sustainability must be accounted for regardless of the financial situation, and should therefore be done economically, but not dependent on the financial circumstances of the event.

Many music and arts festivals are by their very nature environmentally and socially-oriented gatherings and it is therefore much easier to account for environmental

and social impacts than it is for other types of events such as corporate conventions and community fairs, where the demographic may not necessarily be pro-environmental. As Laing and Frost explain, “when making the decision to run a green event, not all stakeholders may necessarily be supportive, at least in the first instance. Event planners may need to be armed with information to support the need for and desirability of a green event, including research that supports their introduction and a cost-benefit analysis, to highlight the overall effects (Laing and Frost 2010, 262).

Luckily, one can plan for the environmental impacts of a festival with the economic bottom line in mind. As governments increasingly look for ways to reduce their country’s greenhouse gas emissions, the opportunity arises for festivals to receive government grant money or to receive tax breaks for renewable energy projects. Many environmentally-sustainable products have significant initial investments, but they make more economic sense in the long-term. For example, installing a wind turbine on a festival site has quite the colossal up-front costs, but the savings from the electricity that the turbine will generate over the long-term will lead to decreased utility expenses, which will eventually make up for the cost of the turbine. With a little searching, you may be able to find ecologically-safe cleaning products or hand sanitizers that are just as cheap as traditional products, made by companies that may be interested in being one of the festival’s sponsors. If a company does become a sponsor, it is likely that their products will be given to the festival to use for free. Online carpooling schemes are also often free, and have the added perk of providing useful suggestions about how to successfully have less people drive to the event. Many companies are now labeling themselves as green enterprises, and therefore are only willing to sponsor events that have the same ideals.

Getz makes the point that for sponsors who only want to be associated with sustainable events, they sometimes may be willing to help provide the technology or funding to improve environmental practices (Getz 1997, 36). As Laing and Frost also point out, there are “potential negative implications for future patronage or support, if event planners or managers do not consider green issues as part of their operations and marketing efforts. It is therefore imperative that the research agenda on green events keep pace with industry and societal needs” (Laing and Frost 2010, 262).

In regard to the social bottom line for festivals, several things should be accomplished. First and foremost, festivals should try to make themselves accessible for people without the abundant financial resources to pay for both a weekend pass and all the incidental costs that go along with a weekend of camping. I feel that people should either have to pay to attend or contribute enough of their time to the festival in order to justify them not having to pay. Considering how expensive many festivals these days have become, especially the larger ones, this goal can be accomplished by ensuring that abundant volunteer opportunities are available. This helps out both cash-strapped patrons and the festival itself, as people get attend for free in exchange for working (usually around 15-20 hours total) and the festival receives an abundance of free labor to use at its disposal before, during and/or after the festival. All staff and volunteers should be subjected to a safe work environment and should be treated fairly. Outreach should be conducted with the local community in order to make sure that it is happy or at least appeased. All products that are purchased or used by the festival should be produced ethically and fairly traded, and goods and services should come from local sources whenever possible. Hede notes that a large part of the motivation for people attending

special events such as festivals is related to a social orientation, and special events often have the ability to construct social cohesion where it may not have previously existed. According to one study reviewed by Hede, volunteers often get involved in special events like festivals because of the cultural opportunities that they provide (Hede 2008, 17).

Laing and Frost use the term “green event,” which they define as an “event that has a sustainability policy or incorporates sustainable practices into its management and operations (Laing and Frost 2010, 262). When looking at events, it is very evident how some of the ways in which they are currently run are not very sustainable. For instance, most festivals remain to be powered on diesel generators, which spew toxic chemicals into the air and contribute to global climate change. Many food vendors continue to hand out paper or Styrofoam plates and plastic utensils, which cannot be recycled or broken down and therefore wind up in the trash. While clean paper plates can be recycled, food-soiled paper plates cannot. As opposed to being sited in areas that can be accessed by public transportation, most festivals are instead located in remote locations which require staff, attendees, and participants to drive there. Without proper and effective carpooling incentives, these people usually drive their own vehicles with only a couple of people in each car. All of the various planning efforts that run almost parallel to each other and eventually converge come festival time can all be boiled down to just two areas of environmental impact: emissions and resource use (Jones 2010, 4).

Emissions

Emissions impact the three distinct areas of the earth's biosphere – water, air, and land. Logically, these emissions should be managed and reduced to the largest extent possible. The aspects of events that most significantly contribute to emissions are transport of goods and people, power generation, waste, and product use.

As the largest contributor to CO₂ emissions at most festivals, transport emissions resulting from the movement of people, goods, and supplies is the primary area in which an emissions reduction is desirable. Many festivals are held in remote locations without much if any access to public transportation. While even most remote locations are located within an hour or so of at least a minor transportation hub, this is certainly not always the case. It is clear that in order to mitigate emissions from vehicles, we need to significantly reduce the number of vehicles traveling to each festival. We also need to make travel options other than personal vehicle transport viable and realistic options for all of the different groups of people that comprise festivals. Jones argues that “convenience rather than cost still largely influences audience travel decisions and strategies are needed to dampen enthusiasm for driving” (Jones 2010, 139). The third of the six strings of sustainability as developed by Brooks et al. is to “use resource efficient transportation” (Brooks et al. 2007, vi). Aside from the emissions that arise from transport, there are also other negative impacts from high car volume, such as visual effects, noise, local air quality impacts, and congestion (Robbins et al. 2007, 304).

While there are several strategies that can and should be employed in order to minimize transport emissions, there is a major area of disagreement between myself and some of the other groups of authors who have previously written on the subject, and this

contention goes straight to the root spirit of festivals. Many festivals, at least the ones that I am most interested in, are by their very nature underground or semi-underground events that operate apart from, not in tandem with, mainstream society and popular culture. Most, if not all, of the music that can be found at these festivals cannot be discovered on the radio, on television, at bars or other popular nightlife spots, in mainstream record stores, or stumbled upon at a street fair or public music concert. Many of the people that can be found at festivals are truly at home in the festival environment and would be considered out of place in many mainstream settings. They might be called hippies or neo-hippies, if a label is necessary, and we all know that they are not always completely accepted at certain places. While many people in the US mainstream may think that the hippie movement is dead, this could not be further from the truth. The movement has instead moved underground, and as a result its influence is not quite as evident and noticeable as it once was, with the exception of in certain geographic areas. The common gathering spot for many of these kinds of people is music and arts festivals. While dreadlocked nomads may not necessarily be the people producing festivals or playing in many of the bigger bands, festivals will not be successful if these people are not there. Many of these people spend their entire summers traveling from festival to festival, making stops at various geographic locations along the way to see family, friends, business contacts, and others. They tend to make up the majority of the vendors at many festivals, as many of these people live an artistic or craft-based lifestyle. The main point here is that these people's whole lifestyle is dependent on their ability to get around to numerous off-the-grid locations, not cities or necessarily even towns with train or bus stations. At the same time, while these people may have a lot of vehicle miles traveled,

from my experience they make up for this in other ways. They tend to live off the grid, doing things like growing their own food and making their own clothes. Considering how much less consumerist and more self-sustaining these kinds of people are relative to the average American, I personally do not see any reason nor do I consider it just to ask these people to change this one unsustainable habit of their lives. Like the working rancher who needs his pick-up truck in order to completely fulfill his needs, these people need their cars. It is also important that festivals continue to be held in remote locations because it is at these places that the natural spirit of the planet can be sought out and hopefully discovered. Instead of recommending that all festivals relocate closer to large population centers, it may be more beneficial for society in the long-term that we improve and expand our infrastructure system, so that people are no longer forced to drive to those locations that are well outside of cities but can instead take trains or busses. Regardless of one's opinions about proper festival siting, Robbins et al. point out that the locations of many festivals are quite established at this point (Robbins et al. 2007, 311).

While the exact scope and threat of global climate change remains a controversial topic for some people, events such as festivals are in a unique position because they are temporary installations that require a considerable amount of power for a short period of time. While it is crucial that festivals first and foremost try to keep their energy consumption to a minimum, they can at the same time utilize several of the ever-expanding alternative fuels on the market to reduce the amount of emissions from the power that they inevitably do need to generate. Due to the impermanence of festivals and similar events, most of them currently rely on generators to power machinery such as

speaker systems, stage lights, RV hook-ups, and floodlights. Most of these generators are fueled with petroleum biodiesel – but they don't need to be.

Other than the emissions released from power generation and transport, additional emissions that arise at festivals come from the use of products such as paints and cleaning solutions. Conventional paints and cleaning products release volatile organic compounds (VOCs) to the atmosphere through a process called off-gassing. These VOCs contribute to global climate change when they are released, and are also toxic for people to inhale. As previously discussed, the improper disposal – sending to sit in a landfill – of biodegradable waste is also a significant source of emissions from festivals and other events. When biodegradable waste such as food scraps, paper, and timber is sent to a landfill, it is subjected to an oxygen-free atmosphere, commonly known as an anaerobic environment. When biodegradable waste is left to decompose in an anaerobic environment, it generates a large amount of methane gas. The amount of water that a festival uses also has a direct impact on emissions, as delivery and water/waste water treatment require a considerable amount of energy.

Resource Use

Resource use is the second main area of environmental impact that must be considered at music and art festivals. Resource use must be well thought out when planning for and managing waste and sanitation, resource and product use and purchasing, and water management. At the present time, we are using more than our fair share of our planet's natural resources, which contributes to global climate change, water pollution, and eventually an exhaustion of resources. Given this reality, those purchasing decisions that we make in our everyday lives should be extended, albeit on a much larger scale, to the purchasing and resource use decisions of large-scale events. In general, preference should be placed on using natural and renewable resources and those that can be reused. Non-renewable, one-time-use, and synthetic resources – especially those that have toxic by-products – should be avoided to the most significant extent possible. At the same time, not buying anything unless it is completely necessary is always the most sustainable choice, as even the most sustainable of products use some amount of resources to produce.

As our most precious resource, water must be managed in a sustainable manner. According to the United Nations Food and Agriculture Organization (FAO), water use has been rising at over two times the rate of global population growth in the past century and as a result an increasing number of areas are becoming persistently depleted of adequate water supplies (FAO 2010). This is especially true in swiftly-expanding urban areas located in dry regions, which place a heavy burden on their surrounding water resources. The FAO predicts that by 2025, 1,800 million people will be living in areas “with absolute water scarcity, and two-thirds of the world population could be under

stress conditions” (FAO 2010). Adequate clean water is one of the most important factors for reducing disease and poverty and generally improving the lives of the poor, and is therefore crucial for successful development. Accordingly, one of the United Nations Millennium Development Goals is geared toward reducing the number of people without sufficient access to affordable water to half the current number (Mukheibir 2010, 1027). Even in the United States, water scarcity is a very real problem for many of the western states.

Given the global and local constraints on our water supplies, practicing adequate water conservation, water protection, and waste water management strategies is a necessary piece of the sustainability puzzle for festivals and other events. Several different kinds of water need to be accounted for at festivals, reflecting whether the water is being used for drinking, cleaning, showering, or whether it is so dirty that it can only be considered waste water or sewage. The different categories of water are clear water, blue water, grey water, and black/brown water. Clear water is potable water that can be used for human consumption. Blue water can be used for washing and showering but not drinking, as it comes from rivers, tanks, or other sources that are not filtered and certified for human consumption. Grey water is water that has been used for showers or other washing operations and can be reused for non-contact activities such as toilets or irrigation. Brown/black water consists of toilet effluent and water used for food vendor cleaning operations and must be properly disposed of (Jones 2010, 181). If there is a nearby water body, it should not be negatively affected by festival operations in any way. At the Dranouter Music Festival in Belgium, water was directly discharged to a nearby river because there was no municipal waste water treatment plant in the area. According

to a study conducted on the waste water treatment of the festival, it was determined that dissolved oxygen concentrations in the river were decreasing dramatically as a result of this waste water discharge, which was not being properly filtered at the time of the study (Van Hulle et al. 2008, 1653).

As public marketing agents, festivals can play a large part in showcasing the right kinds of raw materials or products that we all should all be using in our daily lives. When possible, products that are chosen should be local, organic, fair trade, and/or have low carbon footprints. Regardless of the product or resource under consideration, by the time it is purchased by an event it has already had a long life that includes extraction/growing, waste, production, and energy – all managed by workers who may or may not be fairly compensated and treated humanely, at facilities that may or may not be managed sustainably. Therefore, a complete product life cycle impact should be considered, as the line from extraction of raw materials to processing to transport to manufacturing, distribution, sale, re-sale, use, reuse, and/or disposal or recycling is a long one. Two methods that Jones discusses to examine life cycle impact are the life cycle assessment (LCA) and ecological footprinting. An LCA is used to reveal the ecological impact of a particular material or product using a formula which includes energy, materials used, and consequent emissions and by-products to water, land, and air. The end product of LCA evaluates all of these factors together and deduces a final evaluation. Ecological footprinting, by contrast, is a symbolic concept that gives “insight into how our consumption of stuff and consequential natural resource use relates to the biological productivity potential of the Earth” (Jones 2010, 233). Since the planet can only provide a finite amount of resources, ecological footprinting models demonstrate how much of the

planet and its potential for creating natural resources is required to carry out the needs of a specific product or material, or the amount demanded by a specific entity such as an event or even an entire country (Jones 2010, 233).

All events, whether they are single-time gatherings or yearly affairs, should have purchasing policies. These policies should include an overall commitment to sustainable purchasing and overall agenda, energy and emissions, water, toxins and pollutants, forest conservation, re-use and recycling, biodegradability, local supply and product miles, and fair production and trade. One must also watch out for “greenwashing,” whereby companies make false claims about their pro-environmental attributes. TerraChoice highlights the “Six Sins of Greenwashing,” namely the sin of the hidden trade-off, the sin of no proof, the sin of vagueness, the sin of irrelevance, the sin of fibbing, and the sin of lesser of two evils. Reportedly, more than 95% of consumer products were found to be guilty of at least one of the sins of greenwashing, with only 4.5% found to be “sin-free” in 2010 (TerraChoice 2011). Laing and Frost believe that greenwashing often occurs as a result of festival coordinators being very vulnerable to it due to their lack of understanding as to how to implement ground-level sustainable practices or the importance of the comprehensive nature of sustainability. Although they may not be deliberately misconstruing information, they may be merely not educated enough on the subject to present the full truth. Laing and Frost also make the point that greenwashing can reverse the true sustainable practices that may be occurring in other areas of the festival, especially those actions that are behind the scenes and not necessarily advertised (Laing and Frost 2010, 264). In order to check whether specific products are guilty of

greenwashing, you can refer to the EnviroMedia Greenwashing Index

(<http://www.greenwashingindex.com/>).

CHAPTER 4: SUSTAINABLE MANAGEMENT OF MUSIC & ARTS FESTIVALS

The main aspects of festivals that inevitably lead to adverse environmental impacts and therefore must be properly managed and monitored are:

- 1) Transport of goods and people,
- 2) Power generation,
- 3) Resource and product use and purchasing,
- 4) Waste and sanitation, and
- 5) Water management.

The following chapter contains a discussion of some of the many possible strategies that may be employed by festivals seeking to approach sustainability in the 21st century, based on the five categories listed above.

Transport of Goods & People

As previously discussed, transport of goods and people accounts for the largest amount of emissions from most festivals, especially those held in remote locations not in the vicinity of a public transport hub. As a result, it is in this category that an emissions decrease is most essential. Fortunately, there are a plethora of methods available to minimize transport emissions from festivals.

One of the simplest and most effective approaches for any given festival is to organize a carpool, both for attendees and staff. According to Robbins et al., organized carpooling is the primary method being used by festivals that continue to be held in

remote locations (Robbins et al. 2007, 308). Most carpool schemes operate in a similar manner. Basically, one of the festival organizers or an employee of the carpool organization sets up a group page for the festival. A link for this group page is then posted on the festival website, whereupon everyone is presented with the option of clicking on the link. On this group page, people with spots to offer in their cars post the ride, with their origin and time of departure; people who know they will need a ride can look for a spot in a car which is leaving or passing through the location from which they will need a ride. Organized carpooling works best if the festival only offers one carpool service so that everyone who wants to participate in carpooling uses the same service and is thus more likely to successfully find a match with their ride needs. There are several carpooling software programs that can be used by festival organizers to easily and quickly set up an organized carpool. Some of the established services in the United States are GoLoco, eRideShare.com, and RideAmigos. Liftshare.com, which is based in the United Kingdom, has a festival-specific subdivision called FestivalBUDi. As a part of the sustainability efforts for The Big Up Music & Arts Festival in the summer of 2010, I helped FestivalBUDi launch their US division by utilizing their rideshare group services, which were provided for free in exchange for four tickets to the festival. The tickets were used as competition prizes when the company launched its US website. The company created a personalized rideshare site for The Big Up, the link for which was posted on the festival's website, and also provided some effective language to use on the website in order to try to educate people as to why they should consider carpooling. Many festivals are also starting to organize their own carpooling software, thus avoiding the need to go through an outside company.

If executed properly, having an organized carpool alone should reduce the number of cars traveling to the festival. But coupled with the proper incentives, this system should see even more solid results. Some incentives to encourage people to show up in full cars and dissuade them from showing up solo are limiting the number of parking spaces on the festival grounds, charging for parking at an inconvenient and yet not obnoxious level for under-capacity vehicles, or rewarding those who show up in full cars with free drink or meal tickets, VIP upgrade raffle tickets, and/or free parking. Jones does warn, however, that parking fees should not be so high that people decide to park in the streets surrounding the festival in order to avoid paying, as this tends to anger surrounding communities, which always hurts an event's social bottom line (Jones 2010, 153). Aside from incentives, it also helps to provide information that informs people about the impact of their transport choices in order to try to get them to understand why their choices matter. For example, the average gasoline-fueled car with four people in it will have less CO₂ impact than traveling via train. In contrast, one person traveling solo in a car has almost four times the CO₂ emissions as traveling by train (Jones 2010, 155). This information may make some people rethink their driving choices when they see it broken down in this tangible manner. Reminding people just how much gasoline costs these days and that splitting gas costs four ways leads to a great amount of savings is also an incentive.

Another useful way to cut down on transport emissions is to arrange for shuttle bus service from the nearest city to the festival, and vice versa at the end of the weekend. Hybrid charter vehicles are ideal if they are available (Laing and Frost 2010, 263). The effectiveness of shuttles or charter vehicles is highly dependent on both the location and

size of the festival. For example, if the festival is large and people arriving from different states will be converging on one particular airport or train station, having at least one or two shuttles leaving from that airport or station at the start of the weekend and returning back on Sunday night or Monday morning could be quite successful. In contrast, a smaller festival that is located a few hours or so from a major city would have more limited success with a shuttle service, as the crowd for such a festival would probably be more local and people are likely to pile into a car and make the trip with friends. Either way, if there is some form of shuttle service to the festival, the shuttle should drop people off very close to the camping area. This is a very attractive perk to convince people to use the shuttle service, especially because the car parking area is far from the camping area at many festivals (Jones 2010, 158). It should also be stressed that shuttle buses will not have to wait in line at the main vehicle entrance, as lines at some of the bigger festivals often take several hours and can be quite frustrating after a long drive. Factors that contribute to long lines outside the festival gates include a disorganized check-in system and, in rural areas, the roads being ill-equipped for high traffic flows. According to Robbins et al., increased car traffic is one of the greatest impacts to local communities (Robbins et al. 2007, 304). Coventry, which was held in the summer of 2004 in Coventry, Vermont and was billed as Phish's final performance, had horrific traffic outside the festival as a result of the combination of narrow roads and an abundance of mud on the festival grounds, which was a result of several days of rain storms leading up to the event. I waited in line outside the gates for around six hours – and this was nothing compared to what some people had to go through in order to get in. Some friends of mine had to park

their cars on the highway and walk with all of their gear and supplies several miles to the gate.

For festivals which are being held either within cities or along the public transport network of cities, public transportation should of course be highly encouraged. Schedules and ticket prices should be advertised on the festival website and in the festival program. Brooks et al. advocate for the creation of a new festival ticket that includes transportation. They believe that this ticket should have a creative name that makes it distinct and distinguishable from the regular festival ticket (Brooks et al. 2007, 21).

Other than offsite transportation of people and goods, festivals also need to consider onsite transportation. Festivals – especially larger ones – have tons of golf carts zipping around at all hours of the day and night to transport equipment, supplies and people. If possible, these golf carts should run on 100 percent biodiesel, or at least a biodiesel-diesel blend. If there is a locally-available source of biodiesel, this should not be a problem considering that any vehicles that run on standard diesel are also capable of running on biodiesel. Aside from golf carts, production machinery such as forklifts and tractors should also be capable of running on biodiesel. If biodiesel is not available, it is preferable that golf carts are at least electric and not petroleum-powered. However, even electric golf carts require charging from a power supply, and if this electricity is not supplied by renewable energy sources, emissions will still be created. Although at least a small number of golf carts are always going to be necessary, festivals could also look into obtaining bicycles that could be used by those staff that just need to be able to get around quickly and not transport people and equipment.

Aside from tangible initiatives and creative ideas, local sourcing should also be part of the festival's policy. If all products come from local sources, this will lead to a drastic reduction in transport emissions. Along the same lines, local contractors and service providers should also be favored. In addition to local sourcing, it should be festival policy that only one trip per day is made to the nearest town to pick up needed supplies, thus eliminating unnecessary trips and, consequently, emissions. The festival staff should be made aware of when this one trip will be and that they must get their orders in by this time or else they will need to wait until the next day (Jones 2010, 146-147).

After all or some of these changes are put into place, a final option to reduce the transportation impact of a festival is to promote carbon offsetting for audience travel. Offsetting schemes can be geared toward a diverse range of carbon offsetting activities, such as forestry offsets, methane reduction offsets, and renewable energy offsets (Laing and Frost 2010, 263). A quality carbon offsetting scheme should be identified and the festival should forge a partnership with this scheme. This is not quite as straightforward as it sounds, as there are now over thirty voluntary offsetting organizations across the globe, and not all of them are as sustainable as they make themselves out to be. Pearce warns that because of its lack of transparency, the voluntary offsetting market is exceptionally unregulated and thus the consumer is left susceptible to dishonesty and fraud. This system makes it difficult if not impossible to make sure that the money supposedly going towards offsetting schemes is actually being used for that designated use (Pearce 2007, 39). However, Jones points out that there are now a number of certification systems that increase transparency and ensure the integrity of offsetting

projects, and accordingly a project should at the least be certified by one of the voluntary certification standards like the Voluntary Carbon Standard and by one of the sustainable development certifications. She believes that many of the genuine offsetting schemes are community projects and that “with thorough investigation into the offsetting programme you’re considering, you should be able to make an informed choice and support a scheme that is beneficial to conservation and biodiversity, sequesters carbon, encourages development of new technologies, and does not displace people or damage ecosystems” (Jones 2010, 123). Once a proper offsetting project is chosen, it should be well-advertised on the festival website, and those planning on driving to the festival should have the option of buying a ticket that includes a contribution to the offsetting scheme. While Jones argues that this “green tax” should be required for those traveling by car or airplane (Jones 2010, 168), perhaps it should instead be highly recommended for these people and its usefulness explained, so that in the end people can make the right choice on their own without being forced. In my experience, festival people are generally very free-spirited and individualistic, and thus they do not like being told what they *need* to do. If they are made to understand the virtue of doing something, then more often than not they are likely to do it.

Power Generation

Although the majority of greenhouse gas emissions come from the transport of goods and people, power generation is also a significant source, especially at festivals held in remote locations without access to grid power. The traditional method of powering the various types of equipment that need power for a multi-day festival is diesel-powered generators but, as mentioned earlier, there are now many better alternatives that should be considered. Because they present opportunities to find new customers, clean power companies are increasingly sponsoring festivals (Laing and Frost 2010, 263).

Bio-Fuels

One of the best ways to diminish the emissions from an event's generators is to fuel them with a bio-fuel. This is not a perfect fix though, as the current generation of bio-fuels is not completely sustainable. The main area of contention surrounds disagreement on whether we should be using arable land to grow crops for fuel and not for food. Some other concerns with bio-fuels are the environmental impacts of reducing biodiversity, increased rainforest destruction in some developing countries in order to grow bio-fuel stock, negative impacts on food prices, cruel labor conditions, and increased use of genetically-engineered crops (Fawer 2006, 5).

Because of these issues with food crop bio-fuels, one of the most suitable bio-fuels to use at the current time is waste vegetable oil (WVO) biodiesel, which comes from the used cooking and frying oils used at restaurants and factories. Because WVO has already had one purpose, reusing it as a fuel source is a great way to close the product

loop. WVO is already commercially available in most countries, including the United States, and is competitive in price to petroleum diesel (Jones 2010, 90). Considering that the production of biodiesel also emits 80 percent less CO₂ than producing fossil fuels (Bio-Power: Fuels for the Future 2010), WVO is a very attractive option for festivals that want to have sustainable energy production and yet do not have an bottomless budget. The best part is that, with the exception of a filter change and tank cleaning, standard generators run completely fine on high-grade biodiesel. The only reason that generator suppliers may be tentative to allow their generators to be run on biodiesel is that it is necessary to change the filter and clean the generator each time it is run on a different fuel type. It therefore makes the most sense for generator suppliers to commit a part of their fleet to permanently run on biodiesel. Other than WVO, some other bio-fuels that are out there but not yet completely commercially viable are pure plant oil and algae oil (Jones 2010, 90-92).

Since even sustainable bio-fuels are not completely carbon-free, it is also crucial to strategically plan out generator placement, distribution of cabling, loads and usage patterns, and usage peaks and troughs in order to ensure that each and every generator is being used as efficiently as possible (Jones 2010, 86). The same concept extends to an event's lighting, which should be set up and used as efficiently as possible. Lighting efficiency includes phasing out the use of incandescent bulbs for more energy-efficient models such as compact fluorescent lamps (CFLs) and light emitting diodes (LEDs) and, of course, making sure that lights are only switched on when necessary. In order to get the most out of a power crew's meticulous work with generator placement and operational restrictions, it is also probably a good idea to ban vendors from using their

own private diesel generators and to instead supply all generators to those requiring them in order to ensure that all generators at the event meet efficiency standards or self-imposed festival requirements.

Zero-Emission Energy Sources

While biodiesel-powered generators are a great first step towards bringing an event to carbon neutrality, even the burning of biodiesel has some emissions. Therefore, in order to really approach carbon neutrality and to make it clear that your festival is on the cutting edge, some zero-emission energy sources should be used. Some of these zero-emission energy sources are solar, wind, hydrogen fuel cells, pedal power, and hydropower.

One of the most highly-developed zero-emission energy sources is solar power. This power source has become more and more prevalent over the past several years, as many US regions have an abundance of sunshine. According to the Solar Energy Industries Association (SEIA), the US photovoltaics (PV) market has grown at an average rate of 69% per year over the past ten years, expanding from just 3.9 megawatts (MW) in 2000 to 435 MW in 2009 (SEIA 2010). There is an abundance of options for small-scale solar installations at festivals, where experimental and fascinating devices always go over well with the crowd. One of the best opportunities for small-scale solar energy at festivals is with a mobile phone charging station. Over the course of the long weekend of a festival, people will inevitably have to charge their cell phones. In order to do this, people go to their cars and usually turn the engine on as they let their phones charge, also taking the opportunity to get out of the heat and relax in air conditioning for

a while. All of these idling engines are completely unnecessary and avoidable when a cell phone charging station is provided at the festival. Considering the modest power needs of cell phone charging stations, they are the perfect opportunity to introduce some solar power to an event.

There is also now the possibility of having the sun power entire stages. For one-day shows, this is a nearly flawless potential option. However, it gets a bit trickier for multi-day festivals, as the solar-powered batteries must charge overnight. If you get a cloudy day, there is not going to be enough power stored in the batteries in order for them to run the next day. Therefore, a backup power source – a conventional outlet, generator access, or backup batteries – is needed in the unfortunate case of cloudy skies or rain. Fortunately for festival organizers, there are a multitude of solar power providers that have recently stepped up to the plate to make solar-powered equipment at festivals more of a feasible reality, as large-scale installations are very costly and are likely out of the budget for many festivals. In the United States, the premier company which specializes in the events industry is Sustainable Waves. The company offers solar-powered lighting setups, sound systems, stages, and a variety of eco-conscious products and services. They have set up shop at several of the medium-to-large festivals in the United States, including Camp Bisco, Outside Lands, Vans Warped Tour, Virgin Festival, and Telluride Blues & Brews Festival (Sustainable Waves 2010). Another US company that specializes in solar power installations for the events industry is Black Rock Solar. Black Rock Solar is a non-profit organization that concentrates on “building low or no cost solar power in under served communities, by teaching people in those communities how they can do the same, and by supporting policies that will grow the renewable industry” (Black Rock

Solar 2010). They have done projects at schools, hospitals, churches, museums and – as its name implies – the annual Burning Man Festival, which is held in northern Nevada in what annually morphs into the Black Rock Desert.

As an alternative to solar power, wind power is another technology that also relies on the earth's natural processes. Just as solar power relies on the sun, wind power relies on wind resources. Aside from wind itself, getting a significant amount of power from wind is also highly dependent upon infrastructure, namely wind turbines. Turbines are very expensive to make and will therefore not be feasible for many festivals unless they are already present on the festival grounds. However, there are some small-scale providers of portable mini-turbines, which can be utilized to power some less energy-hungry equipment, such as vendor lights. While not actually accounting for an abundance of emissions reductions, this would be an effective demonstration of the potential power of wind that can be harnessed by the festival in future years. Of note, there are federal and state tax incentives for installing wind turbines, and these incentives could be the tipping point for some well-endowed festivals thinking of building a larger turbine. The primary federal incentive for wind energy is called the renewable energy production tax credit (PTC), and amounts to 21 cents per kilowatt-hour (American Wind Energy Association 2011).

Some other zero-emission alternatives are pedal power, hydrogen fuel cells, and micro hydro power. Pedal power is increasingly being seen at festivals, as the energy from people pedaling on stationary bikes has been tapped to power things such as mobile phone chargers, small PA systems, and smoothie blenders. This is also a creative way to put the crowd's rowdiness and boundless energy to work in a fun, safe and productive

way. Sustainable Sound, a company based out of Boston, Massachusetts, has created a pedal powered sound system and stage that relies on both people pedaling on attached bicycles and solar panels (Sustainable Sound 2011). Hydrogen fuel cells are a safe and efficient technology whose only exhaust is water vapor. Hydrogen has an abundance of energy and, unlike almost every other commercial fuel, does not contain any carbon. The main problem with hydrogen is that it can be manufactured, transported, and/or consumed in both efficient and inefficient ways, and it is therefore not essentially a clean fuel source, but can be tailored to be so (Schneider et al. 2010, 457-461). Hydrogen fuel cells are not yet commercially viable; however, it is anticipated that this will change in the near future (Jones 2010, 101). While it is certainly not a new technology, the power of running water can also be tapped to produce micro hydro power at festivals that happen to be sited near a river, stream, or other moving body of water.

Resource & Product Use & Purchasing

Resource and product use and purchasing must account for both emissions and resource use considerations. It should go without saying that before buying anything, you should make sure that you do not already possess sufficient materials on-hand, as reuse and recycling is always more sustainable than purchasing new goods or materials. Although not nearly as significant as the emissions released from power generation and transport, other emissions that arise at festivals come from the use of products such as paints and cleaning solutions. As previously discussed, traditional paints and cleaning products release VOCs to the atmosphere through off-gassing, endangering both human health and the environment. It is therefore a smart idea to use zero or at least low-VOC

paints and cleaning products, many of which are commercially available at competitive prices (Jones 2010, 116). Aside from emissions, conventional paints and cleaning products tend to contain many chemicals that are harmful to both the planet and the body. Eco-paints should be VOC-free, water-based, and ideally have non-toxic pigments (Jones 2010, 285). Some common brands of eco-paints currently available in the US are Bioshield Healthy Living Paints, YOLO Colorhouse, AFM Safecoat, Weatherbos, Green Planet Paints, The Real Milk Paint Co., and Earth Safe Finishes.

Many traditional cleaning products are filled with toxic chemicals, which in my opinion really defeat the purpose of cleaning to begin with. Aside from emitting greenhouse gases, many conventional cleaning solutions also poison waterways, and thus aquatic life, and use non-renewable resources. Eco-safe cleaning products, by contrast, should be solvent, toxin, and phosphate-free, be 100% biodegradable, and use renewable resources (Jones 2010, 283). Some brands of environmentally-safe cleaning products in the United States are Seventh Generation, natureclean, Earth Friendly Products, and Eco Mist Solutions.

It may be possible to strike some sort of a deal with an eco-paint or environmentally-safe cleaning product company for them to supply their goods for use at the festival in exchange for letting them sell and advertise their goods there without paying a vendor fee (Jones 2010, 293). This is an especially good idea with paints, as many of the people at festivals are artists and may be very interested in non-toxic paint options. This could be a very strong selling point for convincing a paint company to sponsor an event, as festivals offer great marketing opportunities for smaller paint companies.

Festivals typically use a lot of wood to build props such as stages, signs, fencing, and sets. If possible, timber should be used from trees on-site or in the local vicinity that have naturally fallen down or otherwise met their end by non-human means. At The Big Up Festival, we worked with forestry experts to reach an ideal forest equilibrium state, in the process creating a trail and campsite network and creating a plethora of timber materials which were used for art installations and permanent infrastructure, including the sound booth, the side stage, fence posts, and signs. This use of native and mostly local materials gave the festival a natural and rustic look. For most festivals, though, it is likely that a whole lot of wood will have to be purchased. In order to guarantee that purchased timber was not logged illegally, it should be certified via one of the various timber certification systems out there, the most prevalent and respected being that of the Forest Stewardship Council (FSC).

The other main tree product that should only be purchased from sustainable sources is paper, which for most festivals includes office paper and other stationary, napkins, paper towels, toilet paper, packaging, and cups. All paper products should ideally be made at least partially from recycled pulp (at least 75%); the remaining virgin pulp should be FSC-certified. However, not all recycled paper is created equal, as there are actually three categories of recycled paper, namely post-consumer recycled paper, pre-consumer wastepaper, and mill broke; post-consumer is the ideal variety. Aside from choosing paper that is made from recycled material, one should be aware that paper bleaching can be a toxic process when it is done with chlorine, which results in the production of the carcinogenic substance dioxin. Therefore, paper should be either elemental chlorine free (ECF), totally chlorine free (TCF), process chlorine free (PCF), or

completely unbleached (Jones 2010, 268). Another good option is choosing paper that is not made from trees at all, but is instead made from other agricultural products such as bagasse (from sugar cane), cotton fiber, kenaf, bamboo, flax, hemp, or wheat straw (Jones 2010, 264-270). Other than the material that paper is made from, the inks and laminates used for promotional posters and fliers, the festival program, tickets, and other documents should also be considered. Vegetable-based inks are preferred, as traditional inks are made from petroleum products that emit VOCs and have toxic residues. Fluorescent and metallic colors should be avoided if possible, as these color schemes usually contain toxic compounds. Laminates and varnishes are also traditionally petroleum-based, thus making biodegradable laminate and low VOC varnish options preferable (Jones 2010, 277-278).

The kinds of food and beverage containers that are provided by vendors should also be managed with sustainability in mind. The most sustainable option here is to have reusable dishware, cups, and utensils that can be washed and reused throughout the festival. This is practiced at the Whole Earth Festival at the University of California-Davis. The festival also encourages vendors to minimize their resource use and accordingly encourages finger foods, so that utensils are not necessary (Downey 2008, 32). However, as previously discussed, the possibility of reusable dishware requires adequate dishwashing facilities in the vicinity of the food vendors. In the case of festivals held on farms or campgrounds, this will probably not be the case. Therefore, biodegradable packaging and serving options should be chosen as the next best option. Rothbury Festival took this approach, as it contracted with all sponsors, staff and vendors

to avoid using non-degradable items at the festival. It was the first festival at which I personally saw corn-based plastic look-alike cups.

At the same time that biodegradable options should be mandated or encouraged, completely unsustainable options such as Styrofoam should be outright banned from festivals. For The Big Up Festival, I added a ban on Styrofoam and plastic bags to all vendors' contracts. There are many resource options that are both sustainable and biodegradable, including potato, palm leaf, bulrush, and bagasse (Jones 2010, 272-273). With the wide range of biodegradable options available, it is also possible to require that vendors use only biodegradable packaging.

Aside from food and beverage packaging, polyvinyl chloride (PVC) banners should be avoided, as the production, use, and disposal of this chemical-laden plastic product is extremely hazardous and it cannot be easily recycled. Instead, non-PVC options such as polyethylene or polypropylene are preferred. Ecophab is a great alternative banner fabric option, as it is made from post-consumer recycled plastic soda bottles (Jones 2010, 277).

Many festivals have merchandise booths which sell, among other things, clothing such as t-shirts, sweatpants, and sweatshirts. Festival staff and volunteers are also usually provided with festival t-shirts to wear when on duty. Traditional cotton, however, is certainly not the most sustainable of materials, as its production is heavily reliant on water, pesticides, and fertilizers. Sweatshops in developing countries are infamous for their extremely poor labor conditions. An increasingly common alternative to traditional, foreign-grown or produced cotton and cotton products is organic cotton, which eliminates most of these downsides. A slightly less sustainable alternative to organic cotton is

Cleaner Cotton, which is grown domestically in the United States and uses far less chemicals than traditional cotton. Some non-cotton clothing material options include hemp, bamboo, Lyocell, PET bottle fabric, modal, and Soy Silk (Jones 2010, 278-281).

Aside from the climate change and air pollution impacts of purchasing decisions, one must also consider the other environmental impacts of the growing or extraction of raw materials. In order to avoid purchasing products from companies that are themselves guilty of greenwashing, it is best to buy products that have been certified by a third party eco-labeling organization – EcoLogo or Green Seal in the United States (Jones 2010, 240). When possible, it is also best to choose food that is certified as US Department of Agriculture (USDA) Organic, which ensures no genetic modification, irradiation, chemical fertilizers or pesticides, sewer sludge fertilizers, and no hormones or antibiotics in meat (USDA 2010). In general, foods that are best to buy organic include, but are not limited to, meat, fish, eggs, and dairy. The option of buying organic should also be weighed against the option of buying local. While local production does not necessarily imply sustainable production by any means, local foods do usually have a lower carbon footprint, as the transport emissions to get them from farm to festival are necessarily low. You will be supporting the local community by purchasing locally made goods, which of course helps the festival's social bottom line. Buying goods that are fairly traded also helps to further elevate the sustainability of an event's social bottom line. While the ideal trifecta of characteristics of any given product is organic, local, and fairly traded, this perfect combination of sustainability is not always possible or realistic, so the individual production practices of specific goods and resources should be considered in order to determine the most sustainable choice (Jones 2010, 260).

Waste & Sanitation

Waste management at festivals and other events is one of the largest and most important tasks, as literally mountains of waste products are created from the consumption of food and beverages, the purchase of various products and materials, excess materials too small to be reused, and broken equipment. Without proper management, the waste created from festivals is extremely disheartening and unacceptable. But with proper management, these impacts can be drastically reduced.

There are three main types of waste from festivals: vendor waste, production waste, and audience waste. There is a certain threshold up until which the festival can predict what kinds of materials will actually wind up in the waste stream from all three waste sources, and the system must, at a minimum, account for the disposal requirements of these different materials. For example, to manage vendor waste, I previously mentioned how clauses can be added to vendor contracts to ban the use of unsustainable materials and mandate the use of biodegradable food packaging and utensils. Production waste can include such materials as batteries, excess cabling, various kinds of plastics, cardboard, empty paint cans, broken light bulbs (which, depending on the type, can contain hazardous materials), scrap metal, broken appliances, waste cooking oils, and endless possibilities of other materials. These various materials should be separated from the regular waste stream of the event, as they include materials that should not go into the standard recycling or trash streams. For instance, batteries must be recycled separately due to the heavy metals they contain, and mercury-containing light bulbs must be handled by an authorized facility. In order to encourage reuse of production materials, Jones

recommends setting up a salvage yard where contractors and staff can bring materials that they no longer need but can possibly be used by others (Jones 2010, 312).

Audience waste is probably the most difficult waste stream to predict, as it is markedly more difficult to control the kinds of things potentially thousands of festival patrons bring with them into the festival. While car searches are almost always conducted, their real purpose is to find banned items such as glass, fireworks, weapons, and other banned items and substances. It would be quite difficult, if not impossible, to add 'unsustainable materials' to this list, as the things that would necessarily be included on this list are quite expansive. Assuming this extreme approach is not taken, it is crucial to try to anticipate the kinds of wastes people will generate and how these wastes can be regulated or processed. Assuming that glass is banned for safety reasons, the audience waste stream will likely consist primarily of plastic bottles, aluminum cans, cardboard and other paper products, plastic shopping bags, plastic beverage cups, food plates and utensils, food packaging, and camping equipment. I have noticed that lots of people leave perfectly good camping equipment at festivals, so having an equipment donation center could be very successful to cut down on camping equipment waste. Like resource and product use, waste management at festivals bridges the gap of both emissions and resource use, and must therefore be approached with both areas of impact in mind.

By having noticeable and highly visible trash, recycle, and biodegradable waste bins, as well as effective methods of letting people know which kinds of things go in which bin, the difficulties of waste separation are minimized from the start. Theoretically, anywhere there is one bin, there should be all three. However, at The Big Up it was evident that there was very little if any biodegradable waste being thrown into the

compost bins at certain locations; only compost bins near food vendors and within the camping areas had any significant accumulations. Bin stations in other areas could have been stocked solely with recycle and trash bins. Bins must be emptied continuously over the course of the weekend, and bin placement will have to be analyzed in order to determine where bins are most needed, how often they are filling up, and whether any spots are particularly vulnerable to audience contamination. Bin tops should be used if available, as they prevent copycat contamination (Jones 2010, 328) and excess amounts of rain from entering the bins. During heavy rainstorms, an effective method of preventing rain from weighing down bags is to have the waste team turn the bins on their sides for the duration of the storm.

For larger events with lots of volunteers, it is ideal to have volunteers stand by the recycling stations to help people understand how to sort their waste. From my personal experiences at both Rothbury and Wakarusa festivals, waste systems that utilize volunteer waste stewards are quite effective. Ideally, most of the waste at a festival should be either compostable or recyclable. Everything else is merely trash, and will end up at the local landfill. While achieving zero waste is something that every festival should be striving toward, this is a goal to be sought after and is not likely to be a quick reality. Brooks et al. consider producing no waste so important that they list it as the first of their “Six Strings of Sustainability” (Brooks et. al. 2007, vi). Some festivals have managed to achieve zero waste, including the Whole Earth Festival (Downey 2008). Assuming there will inevitably be some waste that must be sent to the landfill, everything else is theoretically recyclable or compostable.

Recycling

There are many materials at festivals that could and should be recycled and therefore kept away from the landfill and continue on a recycling loop. Before the waste management planning process begins, it should be understood what kinds of materials the local recycling facility takes, what materials it does not take, and how the different recyclable materials have to be sorted in order to be successfully processed. The last thing that you want to happen is to emphasize separation of recyclables from other waste all weekend long for the hauler to then just throw all of your assumed recyclables right into the landfill as a result of unacceptable amounts of contamination. In order to prevent this, there should ideally be some sort of a system for on-site sorting of the various waste streams.

Materials that should be accounted for in any proper festival recycling plan are plastic, papers, cardboard, metals, aluminum, and timber. Glass is usually recycled everywhere that plastics are, but it is certainly a good idea to ban glass bottles from festivals because broken glass poses a serious safety hazard to bare feet. Most festivals these days do not allow glass to be brought in for this very reason. While some glass will inevitably get into the festival grounds, it can usually be recycled with plastics and can therefore typically be thrown in with the rest of the recyclables. However, this should be double-checked with the recycling facility. Recyclable plastics include water, soda, and beer bottles; cups; hard plastic packaging, and other materials. There is not just one kind of plastic, however, and some recycling facilities only take certain types. The recycling facility should therefore be consulted before festival time in order to determine what kinds of plastics cannot go into the recycling bins and to plan accordingly. It is also

essential to remember that bottle caps usually cannot be recycled and to communicate this to attendees and staff.

Aluminum is another highly recyclable material, even more so than plastics because it does not lose its integrity with each recycling loop, thus maintaining its strength indefinitely and making it an ideal candidate for closed loop recycling. It also takes a lot less energy to create an aluminum can from recycled aluminum than it does from virgin material (International Aluminum Institute 2011). TetraPak, the material that containers of milk and juices often come in, is made of cardboard, plastic, and aluminum, and is therefore made of all recyclable parts. However, the recycling facility needs to be able to separate these containers into their different materials if it is to successfully recycle it (Jones 2010, 357). Aside from these basic recyclable materials, the production process will also likely result in waste materials such as metal, timber, film plastic, and cardboard, all of which can be recycled, but not in the same stream as the plastics, aluminum, and glass.

Composting

Food vendors will likely have a lot of biodegradable waste in the form of food scraps and, hopefully, biodegradable plates, utensils, and cups. As a result, it is crucial for festival organizers to go one of two routes, depending on how the local landfill operates. In the United States, many landfills are now using technology that captures the energy potential of landfill methane, known as biogas. Globally, landfills account for the third largest source of human-generated methane production, which amounts to around thirteen percent of global methane emissions. Considering how potent methane is as a greenhouse

gas, it is crucial that methane generated in landfills is put to productive use. Accordingly, it is now widely agreed that landfill biogas is an important potential source of energy. Research into this potential began in the United States in the early 1970s, and by the 1980s many countries had programs that supported the use of biogas for energy generation (Armijo-de Vega 2010, 101). If methane is indeed harvested at the applicable landfill site, then all biodegradable waste at the event could just be directed to the trash bins and sent to the landfill. While this technology is very useful and makes waste disposal at the festival simpler, the message that it deploys is questionable. Instead of making it seem perfectly acceptable to throw away biodegradable materials, we should be encouraging the values of conservation and proper disposal of compostables and recyclables, both at the festival and in the greater world beyond.

A great idea of Brooks and company – and one that will also allow festivals to make some money – is to sell reusable plates and/or cups with the festival logo on them. This cuts down on waste and also creates a souvenir for people to bring home. They also feel that it would be great if the festival invites vendors that have a system of renting their plates and utensils, whereby they charge a deposit that is then returned when people bring their plates back once they are done eating (Brooks et al. 2007, 15). A similar system is present at the Whole Earth Festival, whereby the Whole Earth Reusable Cooperative owns the dishware and rents them out via a deposit to the vendors, who in turn rent them out to customers for a deposit, which is roughly equal to the cost of replacing the item (Downey 2008, 35). As previously mentioned, this is a great idea when adequate (and water-efficient) dishwashing facilities are available, but not really feasible if not.

In order to prevent compost bins from quickly becoming incredibly disgusting, it is necessary to line them with bin liners. The type of bin liners chosen will depend primarily on the composition of the biodegradable waste that is expected. Wet food waste tends to be heavier, making clear plastic bin liners preferred (Jones 2010, 344). This is also probably the better option if it is anticipated that there will be a lot of audience contamination of the biodegradable waste bins, i.e. if there are no waste stewards on hand to supervise audience waste separation efforts. If this is the case, then the loads of supposedly-biodegradable waste will have to be visually inspected before being sent to their final composting location. Whole Earth Festival has found that the most significant contaminant in its biodegradable waste bins is plastics (Downey 2008, 33). At The Big Up, I likewise found lots of plastic bottles, as well as plenty of aluminum beer cans, in the biodegradable waste stream. If it is anticipated that a large proportion of the biodegradable waste will be lighter items such as cups and plates and will be relatively uncontaminated, biodegradable bin liners are preferred (Jones 2010, 344). Attendees should be instructed on how to properly compost at their campsites.

Aside from audience bins, the waste separation program should also extend to include production waste, vendor waste and bulk on-site storage (Jones 2010, 341). This especially applies to food vendors, who will inevitably have a lot of scraps and excess food that will need to be disposed of. These vendors should therefore be allocated individual compost bins and should be well-informed on the proper procedures to follow to ensure that this biodegradable waste makes it into the biodegradable waste stream of the event, which should be amassed at one central location. Another interesting idea is to

charge vendors that have a lot of landfill waste more than those who either do not have much waste at all or have mostly recyclable or biodegradable waste.

An effective composting and recycling program should try to emphasize source separation by everyone at the festival. Based on my experience, this is a very realistic possibility at festivals where waste separation is explained properly and waste stewards are stationed at the waste stations. Once all of this biodegradable waste is successfully collected and brought to a central waste sorting location, the next step is to then send it off to wherever it will be used to produce compost. If the event organization does not own the land, if the landowners do not want on-site composting, or if the event is so small that biodegradable waste volumes are relatively miniscule, the biodegradable waste could be sent off-site to local farms, community gardens, or handled by an organization that will see to it that the compost will be used effectively (Jones 2010, 345). If the festival or event is being held on private land, the most sustainable option would be to compost on-site. This eliminates the emissions from transporting the waste off-site, and the nutrient-rich compost could be used as an effective natural fertilizer on the property. This was done at The Big Up Festival, where a farm-wide composting program was already in place.

Water Management

Due to the value of water now and its indisputably escalating value in the future, water conservation and waste water management are crucial components of comprehensive sustainability plans for festivals. Water has many different uses at the average festival including, but not necessarily limited to, drinking water, misting, hand washing, cleaning, toilets, showers, food vendors, and grounds maintenance. Not all of these uses will be present at all festivals, as many festivals do not have any showers, flush toilets, or misting areas. However, most festivals do have free water spickets for drinking and hand washing, and it just depends whether this water is trucked in and stored in tankers or is sourced from local groundwater. Either way, free water spickets are an excellent idea because they cut down on bottled water waste and allow the audience and staff to have access to free, clean water on hot and sunny summer days. The last thing any festival wants is a bunch of dehydrated people, as that is an immediate health concern. In order to make up for the income lost from selling lots of bottled water, the merchandise booth can sell steel refillable bottles with the festival's logo on it, which also is a form of advertising throughout the year and a way of changing audience behavior in the world after the festival ends. In order to prevent water from being wasted, taps on spickets should have a spring release so that they only flow when someone is holding them. If the festival grounds are privately owned, water tanks can be set up to capture rainwater and store it, thus reducing the amount of water that will need to be delivered and/or reliance on groundwater (Jones 2010, 186-187).

Depending on location, a lot of water may have to be used for grounds maintenance. In general, water conservation practices that are tailored to the specific

region should be practiced, and can include mulching and drip irrigation (Jones 2010, 186). Sprinklers should always be used at night and not during the heat of the day for a host of reasons, including less evaporation, decreased water magnification effect, and less water demand, as more people use water resources during the day. Permaculture principles should be looked to in order to conserve water and approach sustainability in general. The 12 Principles of Permaculture are:

1. Observe and interact,
2. Catch and store energy,
3. Obtain a yield,
4. Apply self regulation and accept feedback,
5. Use and value renewable resources and services,
6. Produce no waste,
7. Design from patterns to details,
8. Integrate rather than segregate,
9. Use small and slow solutions,
10. Use and value diversity,
11. Use edges and value the marginal, and
12. Creatively use and respond to change (PermaculturePrinciples.com 2011).

Several other practices should be adopted to further encourage water conservation. In order to cut back on unnecessary vendor water use, hoses should not be run from spickets to vendor stalls. Similarly, mops and buckets should be used for cleaning, as opposed to high-pressure hoses which use much more water than necessary. While misting stations are amazingly refreshing conveniences on ridiculously hot days, they also waste a ton of water and should be avoided if possible. If dust is a problem at the festival, a non-hazardous, non-toxic, and organic settling agent should be obtained and mixed in with the water as a way of significantly increasing the effectiveness of spraying, thus reducing the number of times that spraying must occur and the amount of water used for each spraying round. Depending on local health regulations, grey water may be able to be reused for spraying operations. In order to eliminate the need for hand

washing stations near toilet facilities, hand sanitizer stations could be chosen as a less water-intensive option (Jones 2010, 185-187). While admittedly just not as refreshing or indeed sanitizing as washing your hands with good old soap and water, this will effectively reduce water usage quite a bit. There are several VOC, solvent, and alcohol-free hand sanitizers currently on the market in the United States, including CleanWell, OSM, and EO Products. Having one of these companies sponsor the festival could result in free sanitizer being given to the festival production in exchange for the company being allowed to have a complimentary vendor table to sell its products. Aside from hand sanitizer, some other water-related sponsorship opportunities that may exist include water tank companies and spring water companies. A water conservation organization could also be asked to attend in order to help spread the message (Jones 2010, 189).

Waste water management is the other critical area of water management at festivals, and covers the areas of water reuse and emissions to water. Since any water released to the ground surface will inevitably make its way down to the water table, albeit with natural filtration, it is important that harmful chemicals are introduced to surface water as minimally as possible, if at all. As previously discussed, grey water and black water are the two types of wastewater. While black water is not reusable and must be treated as sewage, grey water can and should be reused for non-contact purposes. There are many options for grey water treatment, including reed beds (Jones 2010, 198) and the use of mycelium as a membrane for filtering out solids, microscopic pathogens, and chemical toxins. This method was originally discovered by mushroom expert Paul Stamets in the 1970s, who dubbed it “mycofiltration.” Stamets has since used the technique on farms, at breweries, at recycling centers, at paper mills, and in forests

(Stamets 2005, 58). A great resource for determining how to use the natural web-like structure of mycelium for filtration as well as other useful applications such as pesticides, remediation, and forestry, refer to Stamets' book *Mycelium Running: How Mushrooms Can Help Save the World*.

Emissions to water result from the presence of chemicals in a number of different products, including soaps, paints, and toilet cleaning products. As previously discussed, all of these products now come in environmentally-safe varieties, and these products are therefore much preferred over traditional chemical-laden products. However, care must be taken to avoid products that are guilty of greenwashing. Just as with the rest of a festival's operations, vendors should be encouraged to use only chemical-free cleaning products. Urine also has the potential to affect groundwater quality in a natural setting. As we all know, men sometimes urinate outside when there are not enough toilets, none in the immediate area, or those toilets that are around are disgusting. While urinating on the ground is not the worst thing in the world, this inevitable human byproduct can make its way down to groundwater and throw off the pH balance of nearby water bodies. Therefore, it is prudent to try to deter public urination as much as possible. This can be done by ensuring there are enough toilets, they are cleaned often enough, and they are located in areas where large amounts of people tend to be gathered or pass through. Having open-air urinals available is also a good way to try to prevent men from going outside, as the great outdoors is often a much more compelling choice compared to a raunchy Porto potty.

While on the subject of Porto potties, choosing the right kind of portable toilets for the festival is an important choice, as they incorporate a wide range of environmental

considerations, including chemical and water use, transport and sewage emissions, and sewage treatment – thus also bridging the gap between resource use and emissions. Like other biodegradable wastes, the greenhouse gas that arises from human waste is methane. However, there are several options available to reduce the methane creation from this inevitable by-product of a weekend of good times. As anyone who attends lots of festivals can attest to, the most common type of toilets at festivals remains the Porto potty. While convenient and very common, these kinds of toilets are hardly sustainable, as they use harsh chemicals for sanitation and odor masking and result in a large amount of transport emissions because they require a great deal of room on the back of a truck in order to transport them. Once hauled away from the festival site, the sewage itself must also be transported to a treatment facility, the operation of which results in yet more emissions (Jones 2010, 205). As opposed to the typical strong chemicals that most Porto potty suppliers use, there are some biological alternative products on the market that are just as effective and do not have negative affects on treatment facilities or worker health. Some possible products that can be obtained in the United States include Bio-Blue and Bio-Green. If a festival wishes to really get creative, it can go with one or several of the alternatives to the traditional Porto potty, such as cabin toilets, waterless urinals, and compost toilets. While all of these alternatives certainly have their advantages, compost toilets seem to be the wave of the future for most festivals and other outdoor events. They are basically chemical, water and odor-free and can reduce transportable waste by 80 to 90 percent if the waste is composted onsite. Compost toilets are an especially good idea for festivals that own their own land because they can be installed permanently (Jones 2010, 206-207).

Showers are another factor to consider when trying to sustainably manage water at a festival. Factors that have an impact on the environmental integrity of a festival's showers are water use, grey water management, and water heating. While many festivals still do not have showers available for patrons, many of the larger festivals do now have temporary or even permanent showers on-site, at least for VIP patrons, artists, and staff. If showers are available outside of these areas and are used by the general festival population, people should have to pay for them, as this will generate some revenue and limit the amount of showers and thus water use. Another idea is to charge more for hot water, thus reducing the amount of people that will opt for hot water, which requires power and thus usually results in emissions. In order to conserve water, low-flow shower heads should be utilized, timing mechanisms should be installed, and water pressure should be lowered. Rainwater tanks can also be used to collect and store water for use in showers. If the reservoir is painted black, this can effectively heat the water as well, and this may be the only water heating necessary in places with lots of sun. Having a five minute shower policy in place could be effective if it is prominently displayed. Used shower water is considered grey water, and should therefore not be directed to the same place as toilet waste water, which is considered black water (Jones 2010, 211-213). As discussed earlier, grey water can be used for dust control and grounds maintenance.

CHAPTER 5: CASE STUDIES

Burning Man

Burning Man is a weeklong artistic celebration held the week leading up to Labor Day every year in a 400-square mile desert area north of Reno, Nevada known as Black Rock City and referred to as the playa. The playa is actually a dried ancient lakebed, but every year transforms back into Black Rock City, a temporary city “dedicated to community, art, self-expression, and self-reliance” (Burning Man First-Timers Guide 2010). The city does not have vendors, with the exception of a café and ice concession. Other infrastructure on the playa includes a Department of Mutant Vehicles (DMV), an airport, a recycling center, a radio station, and a newspaper (Burning Man: On the Playa 2010). Over 48,000 people make the annual journey from all corners of the United States and beyond to this extremely unique event in the Nevada desert. The event started in 1986 on a small beach in San Francisco, and has been held every year since and is now greatly expanded. The event is called Burning Man because, on the last night of the celebration, a massive wooden “Man” is burned, symbolizing the culmination of that year’s celebration of Burning Man.

The Burning Man community encourages all who attend to be active participants in the community – no one should be a passive spectator. All attendees (known as “Burners”) are expected to both rely on and express themselves on a level that is not usually practiced in ordinary life (What is Burning Man 2010). According to Mr. Paul Schreer (AKA Blue) – the Burning Man Headquarters Facilities Manager, Project Manager of Recycle Camp, Lighting Designer, and self-dubbed Environmental Guru of Burning Man since 2006 – “at other festivals people go to *see* what's going, at Burning

Man people go to *be* what's going on" (Paul Schreer, pers. comm., March 15, 2011).

Burning Man is more art-based than music-based, as unique sculpture installations, theme camps, imaginative costumes, mutant vehicles, and performances permeate the expansive landscape for the full extent of the weeklong festival. Over 2,000 volunteers donate their time to help out before, during, and after the event each year, and many of them work on the event year-round in varying capacities. Burning Man is such a unique event that the community endures throughout the year to throw regional and local Burning Man events in order to temporarily re-create the magic of Black Rock City.

Ten principles are established to guide the event:

- 1) Radical inclusion,
- 2) Gifting,
- 3) Decommodification,
- 4) Radical self-reliance,
- 5) Radical self-expression,
- 6) Communal effort,
- 7) Civic responsibility,
- 8) Leaving No Trace,
- 9) Participation, and
- 10) Immediacy (Ten Principles 2010).

Even by themselves, these principles emanate a sense of sustainability, and one can go on and on about the details of the numerous facets of sustainability at Burning Man, as it is truly a one-of-a-kind event with no comparison. The environmental responsibility that goes into caring for a weeklong festival held on a fragile desert ecosystem is, after all, no small task. As indicated by Principle 8, Burning Man is guided by the Leave No Trace (LNT) ethos. LNT is a set of seven principles managed by the Center for Outdoor Ethics, and stresses the importance of leaving natural places just as you found them. More specifically, the LNT Principles encourage people to plan ahead and prepare, travel and camp on durable surfaces, dispose of waste properly, leave what

they find, minimize campfire impacts, respect wildlife, and be considerate of other visitors (LNT 2008). The US Department of the Interior Bureau of Land Management (BLM) now considers Burning Man to be the largest LNT event to be held on public land in the United States, according to Lee Ann Mariglia of the Burning Man Communications Department (Lee Ann Mariglia 2011). Interestingly, Burning Man actually worked directly with the BLM to write the standards against which it is annually judged in order to receive a new permit to hold the festival, something that no other festival has done (Schreer 2011). In order to document and ensure compliance with LNT principles, after the event every year a Matter Out Of Place (MOOP) map is created to show which camps were delinquent in their efforts to LNT, including any and all kinds of debris as well as impacts such as burn marks and grey water residue. Each individual campsite is rated based on how it left the land on which it was located, ranging from “High Impact Trace” to “Low to No Impact Trace.” Comprehensive recycling and “AfterBurn” reports are also released after the event each year (Burning Man Environment 2010). The AfterBurn reports document what the assorted departments of Burning Man do, why they do it, what changes occur from year to year, where funds are allocated, successes and failures, and the vision for the future, with a beginning section dedicated specifically to environment (Burning Man AfterBurn Reports 2010).

In the summer of 2006, Burning Man formally adopted an environmental statement, which reads:

Black Rock City LLC is committed to utilizing environmentally favorable solutions as they become financially sound alternatives to the use of fossil fuels and non-renewable materials. We encourage our staff and participants to use these alternatives in their camps in Black Rock City, and further to promote and encourage environmental awareness and make use of emerging technologies. We are determined to promote and continue to support the Leave No Trace principles,

the use of renewable energy, the use of non-fossil fuels, recycling valuable reusable materials, and composting organic waste materials when ever possible.

We are open to suggestions toward making the Burning Man experience environmentally sound and we will utilize new methods and technology as they become suitable to our needs. Help us make Black Rock City environmentally viable (Burning Man Environment 2010).

The environmental statement is a relatively broad, fairly loose, and yet greatly comprehensive and all-encompassing statement to guide the environmental philosophy of the event and all of its departments. It touches on all of the major areas of impact without being too specific. According to Blue, Burning Man does not have an official environmental department or environmental manager. Instead, “Burning Man the company operates under a primarily survival driven agenda... a ‘Department of the Environment’ is not critical to the production of the Burning Man event. Instead, all departments have the same directive, [and] operate in accordance with the Environmental Statement” (Schreer 2011). Accordingly, there are various departments and organizations that deal with the environmental issues of the festival, such as the Earth Guardians, Recycle Camp, and the Playa Restoration Crew. Burning Man also utilizes the 6 R’s, namely Respect, Rethink, Reduce, Reuse, Recycle, and Restore (Burning Man Environment 2010). However, sustainability is a detail-oriented principle, and specific aspects of the event therefore need management and guidance in order for it to realistically approach sustainability.

In 2007, Burning Man’s commitment to sustainability was brought to a new level, as the theme of the festival that year was “The Green Man,” which led to significant environmental improvements for both operations at the event itself and in year-round operations, especially at Burning Man Headquarters in San Francisco (Burning Man

2007: The Green Man). While the Headquarters took recycling and compost efforts up a few notches and rethought and reduced the impacts of the office facilities – important considerations for the overall sustainability of the event because it is not just a festival but a company with yearlong operations – some impressive changes were brought about at the festival itself. Working with Kohler Power, 87 percent the festival’s generators were completely run on B99.9 high-grade biodiesel and many camps used generators powered by biodiesel, which camps had to bring with them. However, this glory was short-lived, as the next year John Deere, the manufacturer of the engines used to power the generators, decided not to allow biodiesel higher than five percent in its engines. As a result, biodiesel was not used in 2008 through 2010, as there are currently no other rental companies that have enough generators and support the use of biodiesel (Schreer 2011). Also in 2007, however, The Man and the art pavilion that surrounds it were powered with an enormous 340 kilowatt solar array, which was subsequently donated to a school (Taylor 2008, 34). The Green Man theme officially represented a paradigm shift toward sustainability at Burning Man, which the event had essentially been working toward for years and continues to do so.

Aside from strictly abiding by the principles of LNT and using as much renewable energy as possible for event infrastructure, Burning Man’s chief environmental strategy is to educate Burners about the most sustainable choice of action so that they can do the right thing themselves. Blue feels that the ability of Burning Man participants “to live up to the high standards that Burning Man sets for itself is directly tied to our ability to do the event and thus it is directly tied to our sustainability” (Schreer 2011). This ability is partially a result of the extensive educational material on the

website about every different environmental impact of the festival and the specific guidelines for art installations, mutant vehicles, and theme camps. In order to guide Burners on the most sustainable choices for their entire experience, there are informational pages on the website to cover bio-fuels, burning, composting, energy, grey water, leaving no trace, lighting, materials, potable water, recycling, transportation, and waste – each with innovative, practical, and resourceful recommendations for how to survive in the scalding desert for a week while at the same time minimizing your impact and abiding by the rules of the event. Each section is complete with tips and hints and Frequently Asked Questions; resource links are provided where appropriate (Burning Man Environment 2010). While many of these areas overlap with the problems and solutions previously discussed because they are applicable to festivals in general, the unique location and requirements of Burning Man mean that more tailored considerations and strategies are necessary. While Blue does not feel there are necessarily any constraints to sustainability at Burning Man, he does believe that remote location, water, and electricity are specific challenges for Burning Man (Schreer 2011).

Due mostly to its remote location, energy and transportation are major areas of environmental impact for Burning Man, as people drive there from all across the country and, unlike most festivals, some continue to drive homemade elaborate “mutant vehicles” as a means of artistic expression and transportation throughout the weekend. While the majority of personal cars and mutant vehicles are still being run on gasoline and diesel, there has been an increase in the number of RVs and buses being run on biodiesel (Schreer 2011). The website emphasizes that all vehicles should be checked for oil drips before being brought to Burning Man. In order to minimize the transport impact to and

from the event, people are encouraged to carpool via the rideshare board. While most festivals seem to have rideshares at this point due to their simplicity and realistic feasibility, Burning Man is unique in that its rideshare board is expanded to include truck, flat-bed, semi, and van-pooling in order to allow people who have to bring lots of materials with them in order to build elaborate camps and art installations to band together and share transportation resources. On March 15, 2011, Burning Man announced a new storage option for Burning Man projects, whereby participants are now being offered the option of purchasing a large shipping container that will be stored near the event and shipped to it every year for a fee. The goal of this system is to “promote cooperation amongst participants to share storage, minimize fuel consumption caused by repeat shipping each year, and improve safety on the highways by reducing the amount of large-scale hauling” (Schreer 2011).

People are encouraged to ride their bikes around the playa and even to the event from the outside world, if they are so inclined and motivated. Blackrock Pedal Transportation is the group that manages all of the bicycling considerations at Burning Man, including the program called the Yellow Bike project, which supplies free bikes, painted yellow, that are made available for anyone to use throughout the week. Yellow bikes cannot be locked up, ensuring that they are truly communal bikes for the enjoyment of all (Burning Man Environment 2010).

In order to power the operation and lighting of the many different art exhibitions and displays throughout Black Rock City, portable generators are required. The Burning Man Environment website gives information and advice to participants about how to use renewable energy. It gives a breakdown of different power sources, namely batteries,

solar, wind and generators. Solar power in particular is highly encouraged, as the festival is held in the middle of a desert. Blue has been pushing for the use of solar powered generators for some of the remote infrastructure locations at the event, with the main hindrance being availability and cost (Schreer 2011). Black Rock Solar was created in order to tackle the ambition of more solar power at Burning Man and beyond. It was founded as a result of the experiences of several of its founders at the Burning Man 2007 Green Man event. The organization works mainly in the state of Nevada, “donating solar technology and the manpower to install it to institutions that would otherwise be unable to afford to purchase it on their own” (Mariglia 2011). The ins and outs of several of the different bio-fuels that are out there are also discussed on the website. In addition to biodiesel, in particular the WVO variety which I previously discussed, it also talks about straight vegetable oil (SVO) biodiesel, butanol, ethanol, and biogas.

Because Burning Man does not have a system in place for compostable and landfill waste – the saying goes “Pack it in, Pack it out” – Burners must take all of their compost and trash with them when they leave. In order to manage personal trash, people need to pack trash bags in the back of their cars and cruise with it all the way home, creating quite the stinky situation, what the Burning Man website refers to as the “Wayback Funk” (Burning Man Environment 2010). As a way to help avoid the Wayback Funk, tips are provided about ways to reduce trash and to make trash lighter and less smelly. In order to manage event infrastructure and clean up waste, Blue is currently in the process of implementing the first phase of a zero waste strategy to improve diversion rates, with the goal being the removal of all recyclable and reusable

materials from the landfill waste stream by 2020. If this plan goes well, he intends to make a zero waste goal an official policy of Burning Man (Schreer 2011).

Composting is highly encouraged at Burning Man, both as the most responsible ecological choice and as a way to avoid the Wayback Funk. Burners are instructed to bring 5-gallon plastic buckets with tight-fitting lids and transport the compost home to use for home gardening, have it picked up by their municipal waste service, or donate it to a local farm. Some great tips are provided beyond what I previously discussed in regard to composting, such as using mesh bags to dry out the compost on the playa (which is possible due to the dry desert air), thus making it less smelly and heavy, and bringing a worm bin to practice worm composting.

Unlike trash and compost, recycling is considerably more organized. Recycle Camp is a theme camp dedicated to the purpose of collecting, crushing, and recycling as many aluminum cans as possible. They bring all cans collected to a Gerlach, Nevada school, which arranges for the cans to get recycled and in turn gets to keep the deposit money. As previously mentioned, Blue is one of the Project Managers at Recycle Camp, which also performs the valuable function of educating Burners about “ecological impact/zero waste/recycling/compost/Leave No Trace and other environmental topics” (Schreer 2011). Aside from aluminum cans, all other recyclable materials – glass, plastic, paper/cardboard, steel, etc. – must be collected from the desert with participants at the end of the week. Beginning in 2007, drop-off locations at all Reno and Sparks area Albertsons and Save Mart supermarkets have been provided free of charge to all participants. Burners are encouraged to use burlap sacks for bottles and cans, as air permeates through this material. Like most other festivals, glass is highly discouraged

from Burning Man, but it is not outright banned. A usable wood and other reusable building material salvage area is organized by Burners Without Borders, an organization that aims to spread the principles of Burning Man to the outside world by engaging in community support projects in a wide variety of needy locations (Burning Man Environment 2010).

Water has its own special considerations at Burning Man, as potable water is not supplied by the event but must instead be brought by Burners. In order to help ensure that people bring enough water and do not have an excessive amount of packaging, it is recommended that camps bring food grade drums or barrels of drinking water, with a system of pumps or hoses to get water out of the containers. It is cautioned that water storage containers should not be left in direct sunlight, as this could initiate leaching, and that water should be purchased close to the event in order to improve gas mileage. The values of conservation are encouraged and explained. According to Blue, the remote location of the event is actually a driving factor for people to pool resources such as water in order to avoid excess cost and supply, as well as to reduce transport costs (Schreer 2011). Other than drinking water, grey water must also be dealt with by participants themselves. Grey water is not allowed to be dumped directly onto the desert surface because the BLM permit does not allow it, and this practice would regardless create a lot of mud if done by everyone and could be a threat to the desert ecosystem. Grey water must therefore be collected, stored, and brought off-site for treatment, or can be evaporated on-site. Evaporation ponds are the most common evaporation method recommended by Burning Man Environment, and details are provided on the website about how to successfully build one (Burning Man Environment 2010).

Burning is another unique situation at Burning Man, as it is kind of the overarching theme of the event. Accordingly, and reflecting a desire not to bring clunky pieces of campsites and art installations back home, Burners often wish to burn these materials at the end of the event. While it is not encouraged to burn materials and duly noted that it is much more efficient to bring materials home and reuse them, many Burners regardless wish to burn, and in line with the free-spirited nature of the event they are given this option. The dusty, sunny, and hot environment of the Black Rock Desert makes reuse difficult anyway, as the dust kills electronics and motors and damages many other materials, and the sun and heat damage wood and plastics. In the event of rain, mud gets everywhere and ruins many otherwise perfectly good pieces of furniture, equipment, camping gear, and carpeting (Schreer 2011). In order to reduce the environmental impact of all of this burning, Burning Man Environment makes several recommendations, such as not burning on the playa surface but instead building your own burn platform or utilizing one of the public burn platforms, not burning toxic materials (many of which are specified), and offsetting the burn with carbon credits (Burning Man Environment 2010). According to Blue, burning is actually a very small portion of the festival's total footprint, and the burning of toxic materials has been taken very seriously. The event has banned the burning of 99 percent of toxic materials, with the exception of fuels, painted wood, and the neon on The Man (Paul Schreer, pers. comm., March 15, 2011). There is also some internal backlash against burning, as many of the more eco-minded participants feel that the event should place an emphasis on people "feeding, sheltering, and clothing themselves with substances that can be produced year after year – permaculture – as opposed to big explosions" (Taylor 2008, 72). A group of these people

collaborated to throw a breakaway festival called Water Woman, held for the first time in October 2009 in Joshua Tree, California (Taylor 2008, 72).

Lightning in a Bottle

Lightning in a Bottle (LIB) is a music and arts festival produced by The Do LaB, a Hollywood-based production company comprised of a group of three brothers and a dozen or so other friends who set out ten years ago with “a healthy measure of can-do attitude and leave-no-trace ethos” (LIB: History, 2011) to create a more natural, grittier, and underground music experience than the Los Angeles nightclub scene could offer. Having changed locations several times, the festival prides itself on finding different beautiful wooded settings to host the event. The festival was held for the first time in the summer of 2000, and through 2003 remained a semi-private event with no more than 200 people in attendance, all of whom received word-of-mouth invitations, and even the extremely personal touch of handwritten invitations in 2002 (LIB: History, 2011).

With a burgeoning reputation for being a festival with a tight-knit and hospitable family vibe and being unofficially dubbed the best forest party in southern California, in 2004 the festival was moved to the Gold Creek Ranch in Lake View Terrace, CA and opened to the public, which led the attendance of the event to skyrocket tenfold over previous years. That year was also significant for the festival because The Do LaB was formally created as an official company with the mission of presenting “the highest levels of art, production, and aesthetic to always challenge people’s preconceived notions of reality and what is possible” (The Do Lab: Who We Are, 2011). In order to properly organize itself, The Do LaB induced a hibernation year for LIB in 2005. Returning in

2006, the festival was held for the next three years at the Live Oak campground in Santa Barbara County, California. Now starting to draw musicians, artists, and attendees from all across the western United States, the festival was moved from July to May in 2007, and to Memorial Day weekend in 2008 “in order to maximize on possible days in which to offer DJ’s, live music, interactive and installation art, workshops, and community” (LIB: History, 2011). LIB was again put on temporarily hold in 2009, as the festival had after three years outgrown Live Oak and therefore needed a new home. LIB returned in 2010 and was held at the Oak Canyon Ranch in Silverado, CA, where it will once again be held this coming May (LIB: History, 2011).

With an emphasis on leaving no trace from the beginning, over the years LIB has become one of the most sustainable festivals in the United States. With a desire to go beyond merely leaving no trace, LIB instead lives and breathes by the slogan “Leave It Better, Leave It Beautiful,” challenging participants to not only completely clean up after themselves but also to make a positive and sustainable contribution to the festival grounds. Some of these contributions include planting native trees and other plants, cleaning water sources, replacing inefficient lighting with efficient bulbs, and installing low-flow sink taps. This is the primary call for participation at LIB, as opposed to the chief emphasis on artistic contribution at Burning Man. Shena Turlington, the Environmental Director of LIB, emphasizes that the festival focuses on sustainability through community. She feels that LIB has “grown over the years by helping the participants grow, through their art, music, educational skills, or other talents and interests. Many of them have discovered these passions and gained increased skills in them at LIB, as well as found people to collaborate with on projects, and then have come

back in following years to feature their art, music, or teach a workshop” (Turlington 2011). Similar to Burning Man, a Green Report is released after the festival each year, documenting where the festival stood that year environmentally-speaking, what was learned from that year’s experience, and how to improve it the following year.

LIB was one of the first festivals to introduce policies such as making stages and art installations from sustainable materials and having free filtered water available. The festival has always tried to use as much renewable energy as possible, and claims to offset 100% of its remaining CO₂ emissions with certified carbon offsets. The first year, B100 pure biodiesel was used for all of the festival’s generators. However, after that first year no generator companies would guarantee performance of their generators for anything above B20 biodiesel. Shena Turlington finds this setback to be “pretty ridiculous as [B100 biodiesel] would only clog the filter and not damage the actual generator, but it’s just one more reason they can blame us if anything went wrong, which we couldn’t afford to take the risk for that” (Turlington 2011). In 2008, 8.4 metric tons of carbon equivalent greenhouse gases were diverted from entering Earth’s atmosphere. Twenty percent of diverted emissions resulted from renewable energy efforts at the festival, including the production of solar energy, use of biodiesel fuel, and the use of energy-efficient lighting. The remaining 80% of diverted emissions arose from the purchase of carbon offsets through Green Mountain Energy, which invests in projects dealing with reforestation, solar and wind energy production, and energy efficiency (LIB Green Report 2008).

In 2010, a decade’s worth of environmental effort culminated in LIB being named one of the fifteen winners – the only one in the United States – of The Greener Festival

Award. The Greener Festival Award is issued every year by A Greener Festival, a non-profit organization which is dedicated to the purpose of assisting music and art festivals and other events around the globe implement environmentally-sustainable practices by supplying educational resources, offering practical information, and exchanging ideas. The stated purpose of A Greener Festival is to “provide information about how environmentally efficient methods are currently employed at music and arts festivals and to provide a forum for discussion about how the impact of festivals on the environment can be limited at future events” (A Greener Festival, 2010). The award judges festivals based on five categories of sustainability: traffic/travel, noise pollution, waste management, land repair/reuse, and water. While LIB has offered free water as a way to cut down on plastic bottle use since 2008, has always used as much renewable energy as possible, and offsets its greenhouse gas emissions, it is notable that A Greener Festival incorporates noise pollution into its definition of sustainability. In order to minimize noise disturbance to neighboring properties, the festival strategically places speakers in spots that allow the sound to be contained as much as possible and amplified sound is turned off at specific times every night in order to minimize disturbance to neighbors and wildlife. The festival recycles and composts as much as possible and vendors are required to use only compostable materials (LIB Environment, 2011). In 2010, 38% of the festival’s waste was diverted from the landfill waste stream, as 21% of waste was recycled and 17% was composted. Waste sorting tips are available on the website, in festival programs, via announcements, on signs, and from waste stewards stationed at bin stations. The website offers explicit lists of what to do and what not to do with waste at the event (LIB Environment – Waste, 2011). Shena Turlington has been trying to

implement the use of compost toilets and the practice of burying compost on the festival grounds in order to transform it into fertile soil that can be used in festival gardens in subsequent years. However, a myriad of health regulations and other legal intricacies have thus far prevented LIB from being able to engage in these activities, reflecting a trend in the United States of being “slower than most countries around the world in terms of sustainability” (Shena Turlington, pers. comm., March 15, 2011). Reportedly, 46 metric tons of greenhouse gases were prevented from entering the atmosphere in 2010 (LIB Environment – Energy, 2011).

Sustainability efforts for 2011 are oriented toward showing people how to live more sustainably – and healthier, which I believe to truly be an integral part of any attempt at sustainability – in their everyday lives, with a major focus on workshops on topics such as do-it-yourself food, fuel, and medicine. Some specific workshops for 2011 are solar cooking, vegetable oil fuel conversion, micro farming, growing mushrooms, beekeeping, growing cooking herbs, worm composting, knowing and using medicinal plants, making organic beauty products, beer brewing, and several others (LIB Environment – More Initiatives, 2011). Shena Turlington explains that the LIB crew wants “people to not only have the time of their lives at the festival, but we want lives to change and touch many others” (Turlington 2011).

In regard to energy, a massive solar array is being constructed to help power the festival and provide electricity to send back to the grid, all vending areas and stages will be powered by biodiesel generators, renewable energy art installations will be constructed, and energy efficient lighting will be used (LIB Environment– Energy, 2011). Group shuttle buses will be available from several major California cities, biodiesel

shuttles will be provided to taxi people between parking areas and camping areas, and single-occupant vehicles are being charged \$20 for parking (Turlington 2011).

Participants are encouraged to offset their travel to the festival, with \$3 offsets that come with a discount for a steel LIB water bottle, a compostable pot, and vegetable seeds being offered. In 2008, reportedly 29% of ticket purchasers who were offered the option of offsetting their transport emissions did so (LIB Green Report 2008). In 2011, proceeds from offset purchases are going to the Big River/Salmon Creek Forests in Mendocino County, California in order to provide assistance to the Douglas Firs, Redwoods, and Coho salmon, which is now an endangered species (LIB Environment – Mission, 2011). Aside from requiring vendors to use only biodegradable materials, LIB also focuses very diligently on using only sustainable materials for stages and art installations. Materials used for such purposes include bamboo, rattan (a type of palm leaf), reused materials, and recycled trash and pallets. All printing is done on recycled paper with low-VOC inks, recycled and low-VOC materials are used to the extent possible, and people are encouraged to bring their own dishes and utensils (LIB Environment – More Initiatives, 2011).

In the environmental sense, LIB is impressively sustainable for a festival of its size and duration. Unlike Burning Man, LIB is a comparatively newer event which is still coming of age and has yet to even find its permanent home. Similar to Burning Man, however, LIB likewise has a loyal following that comes back year after year, with many people looking to collaborate on projects throughout the year and get in on the festival production (Turlington 2011). The Do LaB's emphasis on renewable, non-polluting and recycled materials, dedication to using renewable energy and offsetting the remaining

emissions, successful waste diversion efforts, emphasis on sustainable and healthy living, and goal of not just leaving no trace but to “Leave It Better, Leave It Beautiful” are all core components of a sustainable festival. While it may very well be the most sustainable US music and arts festival at the present time, LIB still has a ways to go if it wants to be truly sustainable. For instance, the current waste diversion rate is impressive, but approaching even the 50% mark will require quite a bit more effort in years to come. Although it is perpetually searching, the lack of a permanent festival site means that there is not any permanent festival infrastructure in place from year to year, and this is certainly an area for growth in a more sustainable direction.

CHAPTER 6: FINDINGS & CONCLUSION

Sustainability is inherently a complex principle that seeks to address all managerial aspects of an event, place, or practice that have an effect on the ability of that event, place, or practice to meet its current needs without compromising the ability of future generations to engage in those same types of activities. While sustainability usually brings to mind environmental considerations, even the very first definition of the term sustainability that was coined by the Brundtland Commission back in 1987 looked at the social aspect of sustainability. The Brundtland Commission also stressed that our actions in the present should not exert a negative influence on the economy if they are to be considered sustainable, but should instead lead to economic prosperity (Brundtland Commission 1987). With this requirement for sustainability in place, it makes sense that music and arts festivals should continue to be held now and into the future, as they usually bring considerable economic benefits to the local areas in which they are held and for those people involved in their production. Since the late 1980s, the concept of sustainability has led to the development of the TBL approach, reflecting the need for comprehensive environmental, social, and economic aspects to be considered for true sustainability.

Because music and arts festivals are intrinsically more environmentally and socially-minded events than many other types of gatherings, it seems to be a slightly easier task to educate audiences at festivals than at events such as conventions or fairs. Environmental and social responsibility fortunately does not have to come at the cost of financial health, as festivals can look to government incentives and strategic organizational sponsorships or partnerships to help keep their costs to a minimum. Social

considerations must also be tended to, including festival access, treatment of staff and volunteers, and community outreach. Social and environmental considerations merge in certain areas, especially when looking at purchasing, which should consider local sourcing and fair and ethical trade.

Environmental sustainability has been the overarching emphasis of this thesis. Social considerations are equally important when looking at sustainability, and I have tried to incorporate social sustainability factors into my analysis of environmental concerns. Because the sustainability of our planet relies on a healthy environment, social management can be looked at as a subcategory of environmental management, as the two are fundamentally tied to each other. I have attempted to break down the different environmental aspects of festivals into management categories, beginning with the belief that all areas of environmental impact can be grouped as either emissions or resource use. With these two overarching impact areas in place, I have divided actual management areas into five distinct categories, namely transport of goods and people, power generation, resource and product use and purchasing, waste and sanitation, and water management. These categories are not completely new, as both Meegan Jones and Brooks et al. (2007) had very similar breakdowns in their respective documents. However, what I have sought to do is to look at what these authors and a multitude of others have said about festival sustainability and attempted to bring it all together into one comprehensive, yet non-exhaustive, document that considers all of the core considerations of true sustainability. Because most of these sources are not from the United States, but are instead mainly from Australia, the United Kingdom, and continental Europe, I have attempted to transfer their most applicable points to festivals

in the United States, as many of these countries have very different environmental and health laws and attitudes than we do in this country.

In the end, I have developed a set of five recommendations that should be worked toward by every festival organizer out there if they wish to pursue a path of sustainability. These five recommendations are basically expanded versions of my five management categories:

- 1) Create and implement incentives to help minimize the amount of cars that are driven to the festival and curtail car travel throughout the festival. Since more cars means more greenhouse gas emissions, the most pressing goal for transport of goods and people is to decrease car volume.
- 2) Minimize the use of fossil fuels and instead opt for bio-fuels or, when possible, zero-emission renewable energy sources such as wind, solar, hydro, pedal, hydrogen fuel cells, and other zero-emissions technologies that are developed.
- 3) Favor the use and purchase of organic, local, and/or fairly traded raw materials and products. When possible, try to reuse or recycle existing materials, as reuse is always a more sustainable option than using virgin resources, regardless of how sustainable they may be.
- 4) Reduce the landfill waste stream of the event, diverting waste from the trash stream and instead increasing the number and volume of items that can be recycled or composted.
- 5) Implement water conservation and waste water management methods that reduce the amount of water used, reuse water other than brown and black

water, and do not disturb the ecosystem of the festival site. For human consumption, free event-provided water should always be favored over plastic water bottles.

In order to further develop a festival sustainability approach for the United States, I looked more closely at my US festival case studies, Burning Man and Lightning in a Bottle. To learn as much as possible about these festivals, I researched their websites and past environmental reports, as well as conducted informational interviews with members of their environmental staffs. While there are certainly many other festivals out there, these two stand out as large US festivals that have taken sustainability to new levels, along with Bonnaroo, Rothbury, Lollapalooza, and others. Regardless, both of these festivals, and by extension every other festival, have much room for improvement. LIB has been struggling to enact a completely thorough composting program and the use of compost toilets and has also had a hard time finding an event-grade generator company which is receptive to using high-grade biodiesel in their generators. Considering LIB is held in the progressive state of California, the lack of generator companies there willing to use biodiesel certainly does not bode well for festivals in other regions of the country. For Burning Man, LIB, and really most festivals outside of urban areas in the United States, transportation appears to be the biggest area of desired future improvement. Due to our poor public infrastructure, many of these festival locations are simply impossible to access without taking personal vehicles. This is unquestionably the biggest area of needed improvement for Burning Man, but change will likely be slow as carpooling/resource pooling and new storage can only do so much. People will continue

to drive to the event due to its extremely remote location, and only when a massive change in personal vehicle power occurs will any real environmental changes occur in this area. The year 2007 was a landmark for Burning Man in regard to renewable power, as biodiesel was used for the majority of the event's generators that year. However, the event has not been able to replicate this in subsequent years, and until it once again adopts more widespread use of biodiesel and solar power for their generators, there will continue to be a sizable emissions impact from the event.

While I have looked at many different methods of minimizing the environmental impacts of the five different sustainability categories, there are without a doubt other techniques that have yet to be practiced or indeed conceived and invented, and I anticipate new ideas to be born and eventually come to fruition in the years to come. One particular area of presumed growth is in power generation and transport, as cleaner and renewable fuels and energy sources are constantly being developed and improved, and this will undoubtedly continue as we attempt to wean ourselves off of fossil fuels as a result of global political turmoil and climate change. Considering that transport is currently the largest area of emissions from most festivals, it is also the area that will likely see the most improvement in the future. More and more eco-friendly materials and products are proliferating by the day, and I anticipate that this will continue as well. While many of these materials and products remain more expensive than their conventional counterparts, as festivals age and amass larger and larger budgets, they should ideally be able to afford to purchase more environmentally-responsible products. Proper waste and water management also should improve for any given festival from one year to the next, as the production teams learn the ins and outs of these systems.

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