Regional Spotlight

Vehicle electrification: On the “green” road to destination sustainability

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**A R T I C L E   I N F O**

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**A B S T R A C T**

Energy security is a significant concern to the travel and tourism industry, this especially being the case in the United States (US). In response, one of the largest destinations in the country has spearheaded two initiatives supporting changes in travel patterns. This regional spotlight commences with an overview of US environment and energy security concerns. It then reviews government-based policies supporting green practices before showcasing Drive Electric Orlando and Green Destination Orlando as exemplar initiatives promoting destination sustainability at the local level. The spotlight paper concludes by highlighting the efforts of the transportation sector in contributing to destination-wide sustainability.

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1. Introduction

Travel and tourism is the largest services export industry in the United States (US), lending a direct correlation to economic growth with the total contribution of travel and tourism to US GDP standing at 8.6% in 2012 (US Travel, 2014). More specifically, the travel and tourism industry generated $180 billion in travel exports in 2012 and supported 14.9 million jobs, with 1 in every 9 jobs directly or indirectly generated by travel and tourism (US Travel, 2014). Over the years the travel and tourism industry has experienced many threats with international terrorism and economic uncertainty widely viewed as those impacting the industry most significantly over the past decade. These two “high profile” threats aside, one of the current and longer-term threats to travel and tourism in the US and beyond is unstable and high-priced energy costs. Although much of this debate has focused on the impact, missing to date is scrutiny of the impact on the private vehicle, with drive tourism a significant contributor to travel and tourism in many mature markets including France, the UK, Australia and the US. With particular regard to the US, 79% of all person trips are taken by car as compared to only 16% by air (Timothy, 2011) so demonstrating the significant contribution of the private vehicle to US domestic tourism.

One of the solutions advanced by the motor vehicle industry globally to counter the instability of prices has been its inroads in the electrification of cars with a wide variety of electric and hybrid vehicles now available on the market. Not only does this help economically but it also, and very significantly, enhances the industry’s green footprint. However, despite what seem on the surface obvious benefits to purchasers, to date sales have been slow in most markets, this despite the significant sums invested in electrification infrastructure to date. For example, in 2009, ECOtality was awarded US $99.8 million from the US Department of Energy (DOE) to deploy electricity chargers in major cities and metropolitan areas across the US. In addition, drivers who qualified received a residential charger at no cost and reduced labor charges for installation. ECOtality is one of the largest electric vehicle charging companies partnering with Nissan Leaf. In 2010, ChargePoint, a provider of electric vehicle charging infrastructures, received a $15 million matching grant funded by the US government to install 4600 home, public, and commercial charging points in the US. ChargePoint also received an additional $3.4 million from the California Energy Commission to install residential and commercial charging points in the State of California.

With the instability of energy prices a very real threat to vehicle usage, its impact on travel to and around destinations is significant with reductions in levels of demand to drive-tourism destinations a very real cause for concern! As such, this regional spotlight provides a brief overview of the wider environmental and energy security concerns respective to the US before introducing the response by national government to create policies encouraging green motor vehicle travel practices nationwide. In an attempt to be one of the leading “green” mass tourism destinations in the world, Orlando in Central Florida, USA is one such destination that has taken the initiative to invest in green travel infrastructure and provide a suitably green “environment” to help drive future changes in travel behavior. In turn, such initiatives are contributing to Orlando’s longer-term goal to...
become a “sustainable” destination and gain competitive advantage in an increasingly competitive international marketplace. The regional spotlight thus concludes by showcasing two initiatives for destination sustainability in Orlando, spearheaded by the cooperation and collaboration of both the private and public sector. Rather than downscale its activities, Orlando is seeking to maintain market popularity albeit in a more sustainable manner and one which resonates strongly with both its large drive tourism markets.

2. US environment and energy security concerns

Oil dependence and greenhouse gas (GHG) emissions are major concerns to the US economy, environment, and energy security. For example, the US relies heavily on foreign oil to power its transportation sector. According to the US Energy Information Administration (US/EIA, 2014), the US imported approximately 49% of the petroleum that it consumed in 2012. Approximately two-thirds were imported from Canada, Saudi Arabia, Venezuela, Nigeria, and Mexico. Because transportation accounts for approximately 71% of US petroleum consumption, reducing dependence on petroleum-based fuels generally, and foreign-supplied petroleum in particular, both support the US economy and US energy security.

Interestingly, transportation is also responsible for 33% of the total carbon emissions in the US (DOE-EERE, 2013). According to the US Department of Energy’s (DOE) Office of Energy Efficiency and Renewable Energy (2013), the US transportation sector has the technical potential to reduce the reliance on oil and reduce its GHG emissions by more than 80% by 2050. In response to the DOE report, widespread government-based initiatives have been implemented throughout the country to improve motor vehicle fuel efficiency and reduce GHG emissions. In 2010, for example, the DOE awarded $2 billion to support 30 factories which produce batteries, motors, and other EV components (US Department of Energy, 2011). In 2012, the government earmarked $268 million for battery, fuel cell, electric vehicle production, and electric vehicle supply equipment (e.g. charging equipment) and research and development (US Department of Energy, 2013).

As recent as February 2014, the US DOE committed up to $12 million in funding to advance the production of cost-competitive, high-performance carbon fiber material for vehicles. Carbon fiber is a strong, lightweight material that can replace steel and other heavier metals to lower the cost and improve performance of many technologies, including fuel-efficient vehicles and renewable energy systems such as solar and wind turbines. Carbon fiber derived from biomass can be less costly to manufacture due to the raw material prices and the energy intensive processes used in manufacturing while offering greater environmental benefits than traditional carbon fiber produced from natural gas or petroleum. The aforementioned funding is directed to ensure that US vehicle manufacturers remain competitive in the global marketplace. By investing in lightweight carbon fiber materials for vehicles, the DOE is helping US manufacturers to reduce vehicle weight to improve fuel efficiency. Reducing a vehicle’s weight by 10% can improve fuel economy 6–8% (US Dept. of Energy/Clean Cities, 2013).

The US DOE Office of Efficiency and Renewable Energy’s Vehicle Technologies Program (VTP) manages efforts to help make cars and trucks more energy-efficient. Road vehicle transportation electrification initiatives aim for improved efficiency and increased reliance on domestic fuels while lowering costs and reducing impacts on the environment. Consequently, new generation vehicles such as the hybrid vehicle, the plug-in hybrid electric vehicle (PHEV), and the all-electric vehicle (EV) have entered the marketplace and have tremendous potential in reducing petroleum usage and GHG emissions (Divya and Østergaard, 2009; Jorgensen, 2008; Turton & Moura, 2008). As an incentive for consumer adoption, tax credits have been extended based upon battery capacity. Commercial properties received benefits for installing compatible charging infrastructure. Although not attributable solely to this initiative, according to the US Energy Information Administration, transportation energy consumption was lower in 2012 as compared to 2011 (US/EIA, 2014).

3. Government policies and destinations

So how has the US responded to the transportation electrification programs to the benefit of destinations? Well, in response to gasoline and diesel-powered vehicles generating such large volumes of GHGs, smog-forming compounds, particulate matter, and other air pollutants the US DOE’s Clean Cities Initiative is one such initiative at the local level designed to reduce petroleum consumption in transportation. The specific mission of Clean Cities is to create strong, innovative partnerships at the local and national levels utilizing three key strategies. The first strategy is to replace petroleum with alternate and renewable fuels. The second is to reduce petroleum consumption through smarter driving practices and fuel economy. The third is to eliminate petroleum use through idle reduction and other fuel-saving technologies and practices. Through 2012, Clean Cities has saved more than 5 billion US gallons of petroleum since its inception in 1993 (US Dept. of Energy/Clean Cities, 2013). For perspective, approximately 133 billion gallons of gasoline was consumed by the US in 2012, according to the EIA (US/EIA, 2014). The highest recorded gasoline consumption on record was 142.35 billion gallons in 2007.

Another notable initiative has been spearheaded by the Rocky Mountain Institute (RMI), a small research institute dedicated to rethinking the picture of US energy. RMI’s strategic focus has been to map and drive the transition from coal and oil to efficiency and renewable energies. In response, RMI launched the nationwide program in 2010, Project Get Ready (RMI, 2014). Leaders from Project Get Ready work with cities and industry to develop and disseminate best practices for electric vehicle integration and adoption (RMI, 2014). More specifically, Project Get Ready is an initiative to help cities shift away from fossil fuels in the transportation sector by implementing a network of plug-in charging stations. ChargePoint America, for example, is a provider of electric vehicle charging infrastructures. The ChargePoint America program has fostered the adoption and readiness of electric vehicles throughout the US, made possible by the American Recovery and Reinvestment Act through the Transportation Electrification Initiative administered by the Department of Energy (ChargePoint, 2014). The objective was to accelerate the development and production of electric vehicles to reduce petroleum consumption, reduce GHG production, and create jobs (DOE, 2014). Currently, ChargePoint offers more than 15,000 places to charge. The ChargePoint America program has guided the electric vehicle industry forward with the support from Google, Facebook, Target, Whole Foods and Disney and with automobile partners including BMW, Nissan, Mercedes Benz and Chevrolet (ChargePoint, 2014). Every 10 s, a driver connects to a ChargePoint station in the US. To date, ChargePoint drivers have saved over 3.5 million gallons of gasoline and avoided 36 million US pounds of CO₂ emissions by plugging in and charging over 4 million times (ChargePoint, 2014).

4. Orlando goes green

With its 59 million annual visitors (Visit Orlando, 2014), Orlando in Central Florida is one such destination making a
concerted effort to promote change in travel behavior, primarily within the destination, and to serve as a viable destination “platform” to promote change towards sustainability more broadly. Initiatives supporting the migration towards more sustainable practices have been primarily supply-oriented, suggesting outreach efforts towards the consumer (tourists) are necessitated. Stakeholders from the public and private sectors of Orlando have taken such comments on board and have launched two tourist-facing “sustainability” initiatives; Drive Electric Orlando (DEO) and Green Destination Orlando (GDO). Orlando is an ideal destination to launch and showcase sustainable practices by embracing tourists as the stewards of behavioral change due to its sheer scale with it now being the leading US travel destination (DEO, 2013). Furthermore, Orlando offers seven of the top theme parks in the world, the second largest convention center in the US, hosts 10 million business travelers each year, offers 117,000+ hotel rooms in a three county area, and is the world’s largest market for rental cars (DEO, 2013). As such Orlando’s size, scale, layout, and critical mass serve as an ideal pilot center for green initiatives.

The first, Drive Electric Orlando (DEO) is an electric vehicle network for electrification adoption and promotion. Consumer adoption has been minimal to date. In the US, only 1% of total vehicle sales were electric vehicles even though the infrastructure is available in municipalities nationwide (WSJ, 2013). The premise of DEO is thus three-fold. First, the consumer will receive extended test drive of an electric vehicle, with the potential to influence the future purchase decision towards a more environmentally friendly vehicle. Third, renting an electric vehicle is beneficial to the wider destination environment. DEO’s goal is to put millions of drivers behind the wheel of an electric vehicle, many for the first time. One of the advantages of using Orlando as a “trial” destination is the typical tourist drives short distances, i.e. from a hotel to the theme parks, to the convention center, and to restaurants and attractions, making it easy to see all that Orlando has to offer on a single charge. DEO has brought together a network of partners which include Sea World, Universal Studios, and Walt Disney World, the Orange County Convention Center, Pointe Orlando, and the Central Florida Hotel and Lodging Association. Partners also include Chevrolet and Nissan, 22 local hotels and resorts, the Expressway Authority, Darden Restaurants, the City of Orlando, and Orlando International Airport. Benefits and privileges include competitively-priced electric vehicle rentals, over 300 charging stations located at hotels, theme parks, and numerous other attractions, free valet and overnight charging at many area hotels, free GPS standard in all Enterprise electric vehicles, and free use of the CLEAR security lanes at the airport. To date, there are more than 14,000 rooms with access to charging stations. In addition, DEO is currently working with major local and international corporations to offer green-travel for conventions. The Orange County Convention Center, for instance, offers four conveniently located charging stations at no cost to meeting attendees (DEO, 2013).

DEO, as depicted, is one of many components for reaching destination sustainability. Green Destination Orlando (GDO) was formed in 2010, also as a community-based effort (Green Destination Orlando, 2014). GDO is working collaboratively with non-profit organizations, government entities, and businesses to establish and promote Orlando as the recognized premier “Green” destination for leisure, convenience, and business travelers, including but not limited to the transportation electrification initiative by DEO. GDO’s vision is to provide a sustainable experience throughout a visitor’s stay in Orlando. Although an ambitious target, in part due to the sheer size of the destination, the level of stakeholder engagement to date demonstrates the seriousness with which the destination is taking on the challenge.

GDO is currently undertaking a comprehensive self-reporting exercise to communicate Orlando’s destination sustainability attributes and performance indicators. Leaders representing a cross-section of Orlando’s travel and tourism industry, including the city government, hotels, resorts, restaurants, and multiple transportation entities are active participants in the multidimensional research and data collection project. Sustainability reporting strategically positions cities competing for national and international travelers. The sustainability reporting exercise provides an opportunity for the stakeholders of Orlando to advance awareness, demonstrate tangible improvements resulting from Orlando’s sustainability initiatives, and create best practices for destination sustainability. Central Florida’s travel and tourism industry is standing together, taking a powerful step toward ensuring that travel and tourism-related experiences offered in Orlando are both environmentally friendly and financially competitive. DEO and GDO extend well beyond a leisure or business travel and tourism experience. DEO is part of a larger effort to revolutionize the American transportation sector and reduce America’s dangerous dependence on oil. GDO, likewise, is broader in scope, focused on securing the destination-wide Central Florida hospitality community for a more sustainable future. It is far too soon to measure Orlando’s respective contribution to the US’s economic, environmental, and energy security due to the infancy stages of DEO and GDO. Regardless of its immaturity to date and its early stage of implementation, Orlando as a destination has exemplified a commitment to becoming one of America’s model communities through its adoption of vehicle electrification as a means to drive the destination down the road to further destination sustainability.

References