Formula E Championship
Racing for an electric future

The opportunity for Miami
Formula E Championship
Racing for an electric future

The opportunity for Miami

1. Introduction
2. Local economic externalities
3. Local social externalities
4. Local environmental externalities
Formula E can contribute to a global value creation and Miami can be a part of it*

<table>
<thead>
<tr>
<th>Green Growth</th>
<th>Social</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>additional EVs sold</td>
<td>$ 194 billion</td>
<td>4.0 billion oil barrels</td>
</tr>
<tr>
<td>$ 550 billion savings for consumers fuel energy (NPV)</td>
<td>Savings on healthcare costs from pollution reduction</td>
<td>saved (2.5 years Japan’s current consumption)</td>
</tr>
<tr>
<td>extra sales in the car industry</td>
<td>Significant quality of life improvement in cities</td>
<td>avoided (2 years of Italy’s annual emissions)</td>
</tr>
<tr>
<td>$ 181 billion</td>
<td></td>
<td>900 million tonnes of CO₂eq</td>
</tr>
<tr>
<td>42,000 permanent jobs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>created in the car industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$ 750 billion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>saved on CO₂ costs (NPV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Global value creation

- *All the data showed in this document is obtained as a result of Ernst & Young calculations, which are based on:
  - Public available data,
  - experts research studies,
  - Ernst & Young internal methodology.

- **For a low scenario analysis

---

**LOCAL impact**
- Average $10 million of visitor spending per event
- 240 jobs per event
- +25% community pride increase

**SPONSORS**
- Green image
- New market niches
- Brand visibility

---

*Submitted into the public record in connection with the FIA Formula E Championship on 02/26/14

**Todd B. Hamon, City Clerk**

Page 2  FIA Formula E Championship – The opportunity for Miami
1. Introduction. Local short-term and long-term externalities: Opportunities for Miami

**Long-term economic impact**
- Increase in visitors
- Eco-tourism
- Business R&D
  - Creation of business clusters
  - Investment attraction
  - Highly skilled labor force
  - Technology development

**Waste**
- Decrease in waste generation
- Increase in recycling and reuse

**Water**
- Water savings
- Water quality improvement

**Emissions and air quality**
- Emissions savings
- Air quality improvement

**Energy**
- Renewable energy development
- Energy efficiency improvement
- Decrease in energy consumption

**Environmental value**

**Traditional event impact measurement**
- $10 million spent per event by visitors
- $2.6 million of tax collection
- About 240 FTE jobs generated

**GDP & Taxes**
- Income effect
- Increase in economic activity
- Employment

**City attractiveness**
- Increase in visitors
- Eco-tourism

**City image**
- More than $6 million contribution to the city image and reputation

**Pride**
- More than 25% rise in the community pride
- Political support
- Positive feedback

**Social welfare**
- Educational programs
- Research
- Sustainable lifestyle
- Increase in quality of life
- Purchasing power
- Positive feedback
- Change in lifestyle

**Social awareness**
- Social feedback

**Political impacts**
- Policy creation
- Political support

**Social value**

**Infrastructural**
- Urban renewal

**$10 Million**
- $10 million spent per event by visitors
- $2.6 million of tax collection
- About 240 FTE jobs generated

**$38 M/yr**
- $38 M/yr

**$80M in 5yr**

**$40-50M in 5yr**

Submitted into the public record in connection with items 02.1 on 02-28-13

Todd B. Hannon
City Clerk

Page 3

FIA Formula E Championship – The opportunity for Miami
2.1 Local economic externalities. Short-term and long-term externalities

**Short-term externalities**
- Taxes
- Employment
- Revenues
- City attractiveness

**Long-term externalities**
- Business R&D
- GDP & Taxes
- Investment
- City attractiveness

FE generates economic activities far beyond the event's organization. The expenditure on one event would generate about $2.6 million of tax collection in the case of Miami.  

The total increase in economic activity improves employment. The expenditure on one event would generate about 240 FTE jobs in the case of Miami.  

We estimate that a total of $10 million would be spent in one Formula E event in Miami-Dade County by visitors, media, officials, teams and other related organizations or corporate buyers, for the benefit of local businesses.  

FE event will attract tourists that visit the cities in order to attend the event. We estimate that the FE event organized in Miami can initially attract 25,000 unique visitors, being about 56% of them non-residents.

The “income effect” generates a superior household spending resulting from the higher level of production. This increase the economic activity in the long term, that creates employment and improves tax revenues.

In the long term, FE will indirectly encourage the creation of business clusters that will promote the development of a local high-skilled labor force and the development of specific technologies locally available (taking as examples the clusters UK Motorsport Valley® in Northamptonshire and Oxfordshire, and the Italian Motor Valley in Modena area).

FE will attract investment mostly in the long term through the development of research and business clusters, particularly focusing on cutting-edge mechanical, management and electrical engineering as well as fluid mechanics.

The long-term contribution of FE would be modest at best. It is hardly conceivable that Formula E would become a key reason for visiting large cities with many tourist attractions. FE can contribute towards the long-term “greening” of the hosting cities' image, especially those spreading a generally negative environmental perception and therefore attract eco-tourism.

---

1 According to Americans for the Arts, Arts and Economic Prosperity III, The Economic Impact of Nonprofit Arts and Culture Organizations and their audiences, 2007.
2 Supposing that the consumption behavior of Australian Grand Prix attendees (The Guardian, Earth Car or not, Button will emit over 50 tonnes of CO2 this season, Friday 2 March 2007) is similar to the one of FE, and adapting Australian Dollar exchange rate and Price Index to the United States (OECD, August 2, 2012).
3 Conservative approach based on the Australian Grand Prix figures (Ernst & Young, Tourism Victoria, The economic impact of the 2011 Formula 1 Australian Grand Prix, July 2011).
2.2 Local economic externalities. Short-term increase in GDP, employment, and tax collection

Direct local economic impact
- Economic activity from event organization
- Spending from visitors (e.g. lodging, restaurants, transports, ...)

Indirect local economic impact
- Increased intermediate spending from producers
- Income effect through increased household spending

Increased tax revenue for local, regional and national government

Brazil's example
World Cup 2014
- $31 billion for the population in the period 2010-2014
- 3.63 million jobs, 34 of benefits from indirect economic impact
- $9 billion tax collections

Miami case:
Estimated economic benefits from spending from visitors (lodging, restaurant, transport, retail)
- 25,000 unique visitors (Australian F1 GP: 109,234)
- 11,000 county residents and 14,000 non-residents
- $10 million spent FE event visitors in Miami-Dade County
- 240 FTE jobs
- $550,000 in local tax revenue
- $2,050,000 in state and federal government tax revenue
2.3 Local economic externalities. Example of long-term development of local clusters and attraction of global investment

Sectors which contribute to the growth of local clusters

- R&D
- Manufacturing
- Animation & Communication
- Local Cluster
- Tourism
- Hobbies
- Education

Hosting cities will have the opportunity to attract investments through the creation of local clusters. The success of the existing clusters is mainly based on two major strategic assets:
- Local high-skilled labor
- Specific local technologies

The example of 2 regions whose R&D and economy have benefited from racing competitions

<table>
<thead>
<tr>
<th>Motorsport Valley®</th>
<th>Motor Valley</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,000 qualified engineers</td>
<td>Over 35,000 local employees</td>
</tr>
<tr>
<td>4,500 SME</td>
<td>5,000 SME</td>
</tr>
<tr>
<td>$ 9.2b turnover (60% exported)</td>
<td>11 major international investors</td>
</tr>
<tr>
<td>30% of sales turnover spent in R&amp;D</td>
<td>$ 19.9b in exports (2008)</td>
</tr>
</tbody>
</table>
3.1 Local social externalities. Short-term and long-term externalities

**Short-term externalities**
- **Social awareness**
  - FE will demonstrate the high performance of EV’s, communicating the environmental issues linked. Inhabitants will be directly impacted by the message.
- **Social welfare**
  - During the event, there would be a minor disruption of the local welfare (incidents, overcrowding, congestion, noise, a potential decrease on the environmental quality...).
- **Community pride**
  - Community pride would increase by more than a 25% perceived. FE will encourage the population’s involvement through volunteerism, increasing the sense of belonging. Locals will be proud of its city hosting such an event, specially for being the first one having a sustainability component. The influence would be higher if the city hosts the opening or the closing race, and if the city hosts a race during the next championship, or if it turns into a global reference of the FE championship.
- **City image**
  - FE race will make the city more visual to the public and therefore link the image of the city to and sports event, a green city, attractive for tourism and technology research. If the organization of the event is perceived as well managed by the host city, its positive image will increase. Ernst & Young estimates that FE will contribute by more than $6 million in building the city image and reputation.

**Long-term externalities**
- **Social awareness**
- **Social welfare**
- **City image**
- **Community pride**
- **Infrastructure**
- **Political impacts**

The long-term impact will be higher, due to the positive feedback generated by the event and the change in the lifestyle of residents.

- Raising the environmental awareness leads to a change towards a sustainable lifestyle, increasing the quality of life of locals (less environmental impacts, more EV, etc.)
- If the city keeps on hosting FE races and the local feedback of the first race is positive, the pride will be higher.
- The impact on the city image will be higher in the long term as the green image will settle with time. FE would become part of a reputation-enhancement strategy, aiming to show initiatives towards CleanTech research, infrastructure improvement, and environmental protection.
- The event transforms in a significant way the interest of people and especially students on the EV and sustainability.
- There is a possibility of an urban renewal happening in the long-term in the host city, a more conscious society will demand the creation of "green" neighborhoods or eco/smart-buildings, etc.
- Locals will demand a political support and the creation of policies linked to EVs, renewable energies and sustainability.
3.2 Local social externalities. Raising awareness from a local to a global dimension

The objective is to increase the population awareness about environment and sustainability through the different forms of the social legacy:

- Improved image of the cities hosting the Formula E
- Gains in education and training provided by the competition's experience and temporary jobs
- Social inclusion of underprivileged youngsters and elderly people under volunteering programs
- Activities oriented towards environmental issues and sustainable development
- Improvements obtained with investments in health and safety

<table>
<thead>
<tr>
<th>Miami</th>
<th>Volunteers 2,000</th>
<th>Spectators 100,000</th>
<th>+Tourists and locals 200,000</th>
<th>Global Audience 300,000,000</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000 volunteers for FE</td>
<td>Spectators directly interested in the competition</td>
<td>Tourists and locals attracted by the competition</td>
<td>People following the competition through different media</td>
<td></td>
</tr>
</tbody>
</table>

Submitted into the public record in connection with Items D24 and D25 on 02-28-13

Todd B. Hannon
City Clerk
4. Local environmental externalities. Measuring local externalities over the long-term: Environmental

**Short-term externalities**

- **Emissions and air quality**
  - Hosting the event itself will cause the emission of CO₂ due to transportation, the spectators, etc. Also the air quality will decrease due to the emission of particulate matter.

- **Energy**
  - Hosting the event will increase the energy consumption locally.

- **Waste**
  - The event will generate a higher amount of waste coming from the event itself and the spectators attending to it.

- **Water**
  - FE race will raise the local water consumption (by attendees and the water consumed for staging the event). Also there will be a decrease of the local water quality due to pollution and discharges.

- **Noise**
  - Hosting the event can cause a raise on the generation of noise due to overcrowding, traffic, and so. It is important as it can cause a disruption of the quality of life on locals during the event.

**Long-term externalities**

- **Emissions and air quality**
  - As a consequence of the social and political awareness towards sustainability generated by FE race, there would be emission savings due to an improve of the efficiency, the development of the local EV market and renewable energies and higher energy efficiency.

- **Energy**
  - In the long term the local energy consumption will decrease due to social awareness. Also there would be an improvement on the energy efficiency in the city and a promotion of green energy sources.

- **Waste**
  - A potential change in the lifestyle of the communities linked to a raise of the social awareness would lead to an increase on the recycling habits and a decrease of the waste generated.

- **Water**
  - in the long-term, the competition could generate water savings and an improvement on the quality of local water resources as a consequence of a social awareness linked to its consumption and conservation.