Energy and Minerals Regulatory Commission

E-mobility Charging Systems Regulations

Energy Conservation Division, Head

Muna AlMusa
Introduction

Jordan vision is to sustain energy and increase the energy efficiency, in line with the National Energy strategy, Energy Efficiency Action Plan and Green Action plan towards green economy and environment.

Energy and Minerals Regulatory Commission EMRC issued instructions to regulate and license the activities of charging electric vehicles, which contributed to increasing the number of charging points, and owning of more electric vehicles.
EMRC Role

- To regulate and organize the Energy sector fairly and transparently manner, to sustain and maintain the system, and balance between supply and demand.
- To play a key role in preparing legislations, directives, codes, standards and instructions for a competitive and feasible market.
- To Grant licenses and approvals for the qualified and eligible players in (electricity, mining and minerals, radiation and Nuclear).
- To Evaluate the performance of the sector.
- To Design the energy tariff.
E-mobility progress in Jordan

- EV in Jordan growth rate is high, people like to use it is cheaper, less maintenance, better features, clean Energy with zero emissions.

- Regulations for EV stations are reviewed and updated from time to time.

- The required infrastructure in progress and a lot of local and international concerns in this market.

<table>
<thead>
<tr>
<th>year</th>
<th>Electric Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>9</td>
</tr>
<tr>
<td>2015</td>
<td>336</td>
</tr>
<tr>
<td>2016</td>
<td>900</td>
</tr>
<tr>
<td>2017</td>
<td>8000</td>
</tr>
<tr>
<td>2018</td>
<td>18000</td>
</tr>
<tr>
<td>2019</td>
<td>22000</td>
</tr>
</tbody>
</table>
Regulating EV activities

EV charging station services prices:

1- Private station points (122 JD /k.W.h) = 2.77 L.E = 0.17 $

2- Public station points (0.157 JD /k.W.h) = 3.65 L.E = 0.22 $

3- Residential electric vehicle meters up to 1000 kWh. (122 JD/kWh)

4- Residential electric vehicle meters above 1000 kWh (265 f/kWh)
The instructions for licensing electric vehicle charging activities include all the necessary requirements and the principles that ensure: Build, operate and own a charging station, in an ideally way, taking into consideration regulatory, technical, environmental, security and safety issues.

http://www.emrc.gov.jo/Pages/viewpage?pageID=23
أنشطة محطات شحن المرکبات الكهربائية

تبرّعات ومستندات تنظیمیة

• القوانین
• قانون الكهرباء العام
• التعليمات
• تعليمات ترتیبیّة شحن المرکبات الكهربائية

الترخیص

استنادا إلى المادة رقم 3 من هذه التعليمات، فإنه لا يجوز لأي شخص أن يشتري أو يسكن أو يدير أو يشل محطة شحن المرکبات الكهربائية دون الحصول على ترخيص أو رخصة مصرفية عن الهيئة. لذلك تقوم الهيئة بمنح التراخيص أو رخص واصل التعليمات المتعلقة للأنشطة محطات شحن المرکبات الكهربائية العاملة والكاملة.

جفت هيئة تنظیم ضمان الطاقة والخدمات لخدمات شحن المرکبات الكهربائيه اشتیق حیش محطات شحن المرکبات الكهربائيه التالية:

• شحن محطات مقاتبة لشبكة الرابیة الحديثة للخدمات الزراعیة والموضوعات (المصدر):
The location of all main public stations are determined on EMRC website, besides plug share app. which specifies all available individual charging points:

المواقع العاملة حاليا في محطات المناصير

1- بين دوار المدينة ودوار الداخلية
   https://goo.gl/maps/74tQv75MnyS

2- ماركا قرب الترخيص
   https://goo.gl/maps/UmWMg13RPX62

3- السورو، طريق السلط
   https://goo.gl/maps/u8yJLj7WH3s

4- محطة القدس
   https://goo.gl/maps/1tZQ8SPPaon

5- الحصن، طريق عمان-اربد
   https://goo.gl/maps/LsTAuPdWvck

6- وادي صقرة، اشارات الحدائق
   https://goo.gl/maps/t6h7JWXWPD92

7- الحزام الدائري
   https://goo.gl/maps/zfTwZM8rGG72

8- الببغاء مقابل الأقمار الصناعية
   https://goo.gl/maps/YqScWldErmr

9- البيادودة
   https://goo.gl/maps/YvzSYu3V7pM2

10- البحر الميت
    https://goo.gl/maps/jtRYGtXhwMp

11- القطرانة
    https://goo.gl/maps/QeHXV46GGtA2

المواقع العاملة حاليا في محطات جلف

---------------------------------------------------------------------

1- خلدا، امتداد شارع الجاردنز
   https://goo.gl/maps/DE31rE17YMV

2- المدينة الطبية
   https://goo.gl/maps/RtPXbB5G9G22

3- العقبة.
   https://goo.gl/maps/PkBPRoS845p

المواقع العاملة حاليا في محطات توتال

---------------------------------------------------------------------

https://goo.gl/maps/px5EM8MafKMYyK3z8
More than 300 approvals were issued for the installation of residential meters with EV charging price, after the verification of the requirements, and in coordination with the relevant distribution companies.
Types of electric vehicles

- Pure electric vehicles (PEV).
- Hybrid electric vehicles (HEV).
- Plug in hybrid electric vehicles (PHEV).
- Fuel cell electric vehicles (FCEV).

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019*</th>
</tr>
</thead>
<tbody>
<tr>
<td>هجين</td>
<td>33058</td>
<td>37642</td>
<td>10000</td>
<td>10000</td>
</tr>
<tr>
<td>كهرباء</td>
<td>878</td>
<td>6974</td>
<td>9478</td>
<td>10989</td>
</tr>
<tr>
<td>بنزين</td>
<td>32153</td>
<td>24868</td>
<td>12216</td>
<td>12216</td>
</tr>
</tbody>
</table>
Electric Vehicles Charging Systems

The EV charging systems is defined as an establishment of different types (levels) and technologies that have sub-charging stations, and used to charge electric vehicle batteries - the vehicle that moves by one or more electric motors with plug point or in partially – using transmission grid, distribution grid, or using renewable energy sources.
Level 1:

A. Low current (about 12 A).
B. Less power (up to 2 Kw).
C. More time (max 12 h).
D. For home.
E. Safe and easy to use by individuals.
Types of charging

Level 2:

A. Current (up to 32 A).
B. Up to 8 Kw.
C. Less time (max 3 h).
D. Specific installations more expensive.
Types of charging

**Level 3:**

A. phase up to 32 A.
B. Up to 40 kw.
C. less time (30 minutes).
D. main stations.
E. Expensive infrastructure.
Public transportation

Jordan adopted many pioneer projects to enhance roads, infrastructure, services and buildings’ envelope meeting the global requirement standards, and the quality of living, in Amman and all other cities.

- 2 E-buses in Petra Development and Tourism Region Authority (PDTRA) to serve the tourism travels.
- Greater Amman Municipality introduced 135 buses with capacity of 59 and 42 passenger using euro 5.
- BRT bus rapid transit. To serve more than thousands of users daily in Greater Amman Municipality GAM.

11/26/2019
Public transportation

☑ The Old Hejaz Railway which connects Syria to Saudi Arabia.

☑ The more recent Aqaba Railway (ARC) connects Jordan phosphate mines to the port of Aqaba. (trucking of phosphate is required from Shidyia Phosphate mine to the rail terminal at Aqaba Hejaz).
Public transportation

- Contribute to growth in the Jordanian economy:
  1. Construction period: 1.4% (about 10,000) increase in FTE jobs (Full-time equivalent), 3% increase in GDP.
  2. Operations period: 0.4% (about 2800) increase in FTE jobs (Full-time equivalent), 0.6% increase in GDP.
- Increase transit traffic which strengthens Jordan’s contribution to regional trade and economic integration with its neighbours.
- Support competitiveness and development of Aqaba port.
E-mobility facts

1- limited number of electric vehicle charging stations versus huge number of electric cars (22,000 electric cars)
2- Limited used technologies and applications
3- Charging average duration is 20 minutes
4- High costly investment, construction and infrastructure
5- Charging tariff (cost of electrical distribution operating system, approved profit margin for the owner)
6- improve coordination between relevant parties.
7- capacity building
8- the demand to introduce Light rail T, and micromobility.
1. Enhance the legislations.
2. Incentivize and encourage investment in Clean Energy.
3. Adopt all sustainable solutions and enabling the environment.
4. Energy management solutions to balance between supply and demand.
5. Establish new indicators reflect the customer services.
6. Develop Smart grids and data bank.
7. Better Coordination between involved and affected parts.
8. Increase awareness within all sector to
9. R&D, awareness, plans …and transfer the know how.
Sharing is caring .......
Thank you