

# E- Rickshaw Operational and Deployment Strategy: Case of Kakinada



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E- Rickshaw Operational and Deployment Strategy: Case of Kakinada

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**Description**

Shakti Sustainable Energy Foundation works to strengthen the energy security of India by aiding the design and implementation of policies that support renewable energy, energy efficiency and the adoption of sustainable transport solutions.

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## Introduction

Kakinada is a tier -III city and district headquarters of East Godavari district, located in the north-eastern part of the state of Andhra Pradesh. It is the 7th most populous city in Andhra Pradesh with Urban Agglomeration (UA -Population) of 3, 25,985 (Census, 2011) and a decadal growth rate of 5.37 %<sup>1</sup>. Kakinada Municipal Corporation is spread over an area of 31.69 sq.km while the urban agglomeration occupies 57.3 sq.km.<sup>2</sup>

The current report - 'E Rickshaw deployment plan and report: Kakinada', is part of the output reports under the project 'Supporting Smart Urban Mobility and Built Environment in Indian Cities' under Grant Ref: G 15 SSEF-140 for the period of October 2015 to January 2017. The main objectives of the project in this phase was to broadly engage with state level officials in two states and have continuous on-ground engagements with targeted authorities in cities on urban transport and built environment towards implementing the Smart Cities Program. This included assessment of existing urban transport scenario in the identified cities for each state to provide handholding support to city teams for smooth initiation of Smart Cities Mission. The project is still ongoing in the second phase of the project which will work on the implementation of this strategy in the City of Kakinada. The report highlights the various aspects of assessment undertaken by project team to verify the feasibility of e-rickshaw deployment in the city. The report also highlights the required institutional frameworks, policy recommendations for e-rickshaw deployment and operational strategy.

Kakinada is one among the first 20 shortlisted Smart cities from India.. The Smart Cities projects include both Pan City proposals and Area Based Development proposals, mainly focusing on improving the infrastructure of the city. Kakinada is one among the smart cities shortlisted from Andhra Pradesh in the first round. The e-Rickshaw project was initiated as a part of smart city proposal. The report focuses on the e-Rickshaw project, as part of improving the last mile connectivity in the city.

The mobility component of Area Based Development and Pan City under Smart City Proposal includes various features such as:

- Development of Non-Motorised Transport Infrastructure
- Improving the road connectivity within and outside the city
- Improving the on-street and off-street parking in the major locations by developing Multilevel Car Parking
- Improving the last mile connectivity in the city by introducing e-Rickshaw as the new green mode of transport

## Mobility Scenario of Kakinada

Kakinada has a city road network of 371 km which includes an arterial network of 124 km. The sub arterial and other local roads network cover about 247 km<sup>3</sup>. The arterial road network has road width varying from 7 m to 18 m in the city. The main spine of the city connecting the northern and southern part of the city runs through the major Commercial Business District of the city, which houses all the commercial locations. The city experiences higher number of trips on two wheelers, which can be observed from the modal share provided in Figure 1. Majority of the trips in the city occur through auto rickshaws and two wheelers (trip length two-wheeler 7 km, Auto rickshaw 8 km). During the evening peak hour, congestion and parking has become the major issue in the city in the commercial locations<sup>4</sup>.

1. Census of India, 2011- the same reference cannot have two numbers
2. Census of India, 2011
3. 2016, Aarvee Associates, Draft Kakinada Master plan- referencing pattern has to be same. Name of author.Year. Name of Publication. Name of Journal. Volume of Journal. Page numbers. Name of publisher.
4. SPA Vijayawada

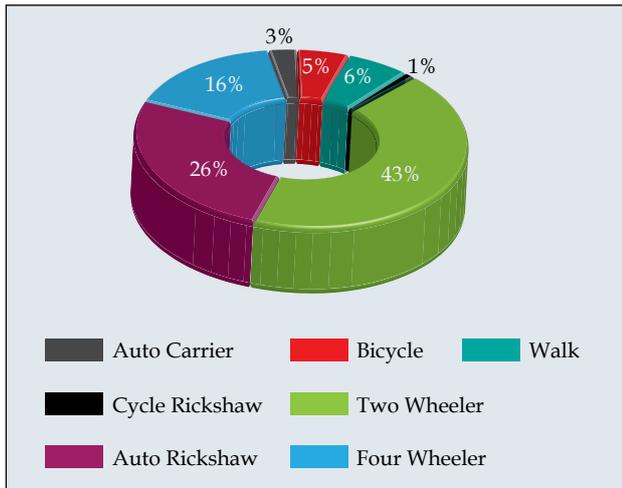


Figure 1.: Modal Share for Kakinada

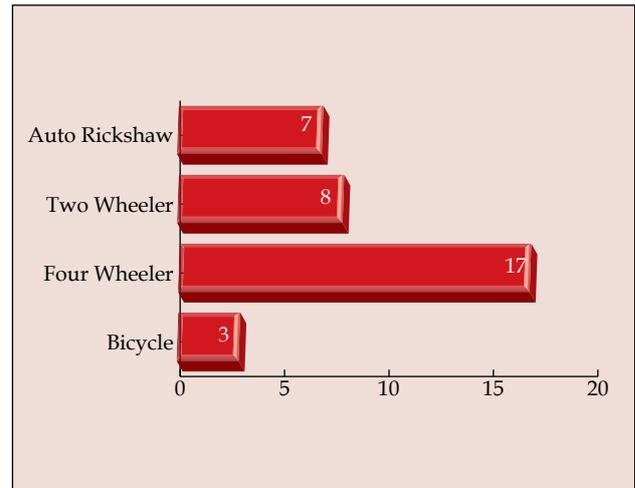


Figure 2.: Trip Length (in Kms) Mode Wise for Kakinada

## Public Transport Scenario

### City Bus

Earlier, an organised city bus service was operated by Andhra Pradesh State Roadways Transport Corporation (APSRTC) which maintains a bus depot. There were defined routes that connected the major locations in the city<sup>5</sup>. However, the city bus service was withdrawn in 1999 due to losses as it could not compete with the fares charged by the auto rickshaws in the city.

### Auto rickshaws

Auto rickshaw is the major mode of transport since the city bus services has not been in operation since 1999. This mode is used for both short and long trips in the city. Auto rickshaws constitute of 7-seater and 3-seater versions. The 3-seater auto rickshaws run for shorter trips whereas the 7-seater auto rickshaws run for longer trips within and out of city to the nearby towns. The minimum fare per km is Rs.20 but for shared auto rickshaw it is as low as Rs. 5, depending on the trip length. The current trip length of auto rickshaws is 7 km and the current modal share of auto rickshaws is observed to be 26% (Figure.1). The number of auto rickshaws has increased from 500 in 2007<sup>6</sup> to approximately 2500 currently<sup>7</sup>. There are approximate 8 major stations (auto-rickshaw stands) in the city<sup>8</sup>.

5. 2007, Wilbur Smith, Comprehensive traffic and transportation study, Kakinada- refer to my earlier comment on the pattern of reference  
 6. CTTS 2007- the full citation is needed  
 7. Data collection from Auto Union Kakinada on 11 July 2016.  
 8. Data collection from Kakinada Traffic Police & Auto Rickshaw Unions on 11 July 2016



Figure 3.: Auto Rickshaws at Kalpana Centre



Figure 4.: Auto Rickshaws at Cinema Road

## Cycle Rickshaws

Cycle rickshaws were the major mode of transport in the city, prior to auto rickshaws. The domination of auto rickshaws has shown a major mode shift from cycle rickshaws to auto rickshaws, which has had a major impact on the livelihood of cycle rickshaw peddlers<sup>9</sup>. Due to ease of accessibility, speed and economic fare, the citizens of Kakinada prefer auto rickshaws and only less than 1 % use cycle rickshaw for the last mile connectivity.

Under the smart city proposal, the city authority has planned to launch E-rickshaws as an aid for improving the livelihood of cycle rickshaw peddlers. The e-rickshaw can run at a speed of 25 kmph with very less maintenance and promote environmental friendly mode of transport and improve the last mile connectivity in the city.

## Need for the Project

As mentioned earlier, the auto rickshaws in Kakinada are a major mode of public transport. Most of these autos have 2 and 3 stroke engines, thus contributing to increased air pollution in the city. Currently about 1,000 cycle rickshaws are operational, with approximate 13 different stands in the city<sup>10</sup>. The current income of the cycle rickshaw peddlers in the city is less than Rs.100 per week, as they hardly conduct 4-5 trips per week. Most of the cycle rickshaw peddlers fall in the age between 45-55 years and live in the suburban villages near Kakinada. The economic and social conditions of cycle rickshaw drivers are poor. These drivers have no means of access to formal financial options from banks. Due to the poor livelihood and lack of any other sources of income, they need to seek shelter under flyover during night time.

The city has planned to introduce cleaner options for intermediate mode of public transport. The main aim of the project is to introduce a clean source of transport, along with improvement in the livelihood of the cycle rickshaw peddlers by operationalizing e-rickshaws.

“The vision behind the project is to improve the livelihood of cycle rickshaw peddlers by introducing e-rickshaws - a new mode of transport, with flexible routes and lower fares compared with auto rickshaw

9. Survey carried out by ICLEISA on Cycle Rickshaws on 11-12th July 2016

10. Survey carried out by ICLEI-SA on Cycle Rickshaws on 11-12th July 2016



**Figure 5.: Cycle Rickshaw Stand near Kakinada Bus Station**

and increase the usage of e-rickshaw for shorter trips in Kakinada”. The project on e-rickshaw focuses on improvement in last mile connectivity of the city.

## Approach to the Project

The project was initiated by conducting the assessment of the existing standards, market and business models of E-rickshaws plying in other Indian cities. Although many cities had a limited scope in replacing the auto-rickshaws with e-rickshaw, the main agenda of the assessment was to understand the operational model, ownership, financial structure and the role of stakeholders (Annexure-1) in operating the system. The learning’s from the research and assessment highlighted various parameters which are important for operationalizing the e-rickshaws in a city. These include:

- Organised system with defined routes and fixed fares
- Availability of subsidy through various schemes for (State and National Level Schemes promoting E-Rickshaws)
- Financial flow of the project
- Roles and responsibilities of all the stake holders involved

## Operational Model for E-Rickshaw

The operational model was developed based on Capex and Opex model. The model prepared as shown in Figure 6 explains the role of each stakeholder involved in operations and maintenance of E Rickshaws. E-Rickshaw operating model in Kakinada is unique as the individuals are the owners /operators of the vehicle and do not pay fee to the government or any third party. The challenge of the project is that the Municipal Corporation has no financial involvement so it’s important to have an operation model which defines the role of every stakeholder involved and also prepare a financial model which provides subsidy to the beneficiaries. The project is funded by the district level banks in the form of loans to each beneficiary. The e-rickshaw business model was thus developed based on interlinking all the players involved in the project.

The national government scheme -FAME India {Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India} encourages hybrid and electric vehicles for better air quality in India by providing subsidy on purchase of hybrid and electric vehicles. However, none of available E-Rickshaw models is notified to receive FAME subsidy. Since there is no national or state level subsidy applicable for E-Rickshaw project, the Municipal Corporation has shown interest in providing the subsidy based on the Schedule Caste (SC), Schedule Tribe (ST) and Kapu caste. As per the discussion with the SC/ST caste, district corporation’s offices, Kakinada Municipal Corporation can provide a subsidy of 50% on the total cost of the vehicle. The beneficiary can run the vehicle only along the provided routes to cater shorter and last mile trips. The Andhra Bank, East Godavari Division has approached the corporation for provision of loan to the beneficiary at minimal interest rates (12 % on the total amount granted per individual). The e-rickshaw business model was developed based on interlinking all the players involved in the project. The flow chart illustration explains the business model of E-Rickshaw project.

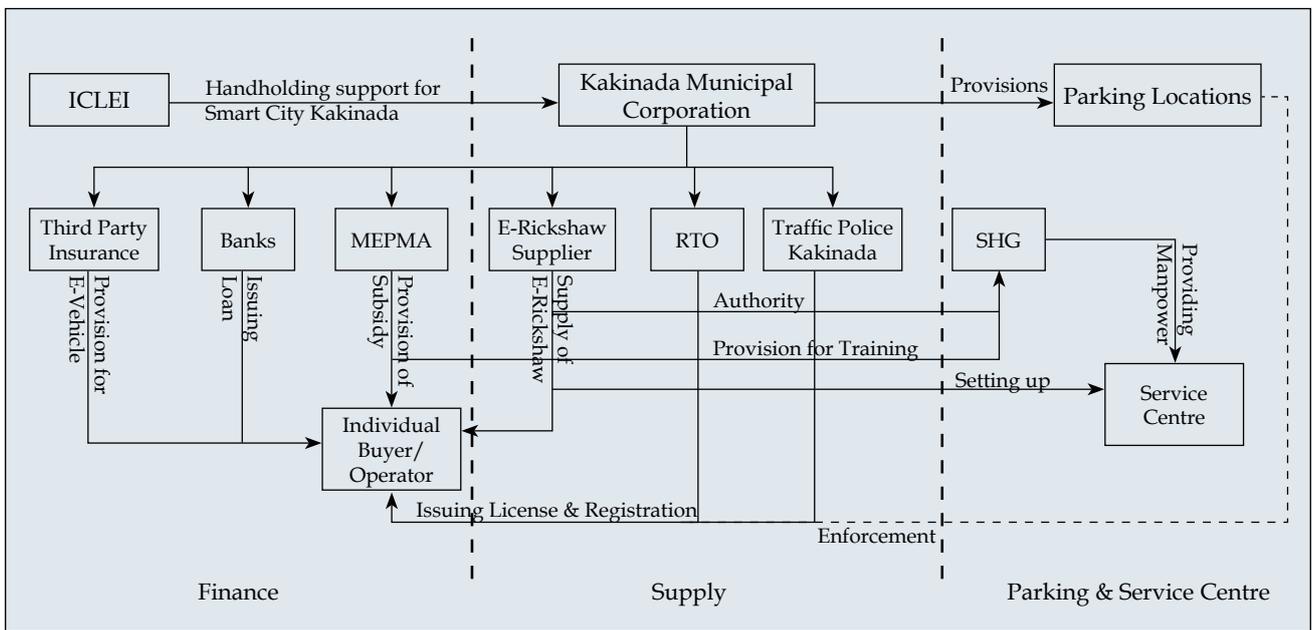


Figure 6.: Operational Model for E rickshaw in Kakinada

### Preparation of Policy Guidelines and Deployment Criteria for Operation of E-Rickshaw, Kakinada

ICLEI South Asia has prepared draft E-Rickshaw registration guidelines for Kakinada Municipal Corporation. The document includes procedural guidelines for licensing registration, fitness criteria, and syllabus for imparting instructions in driving E-rickshaw. The licensing registration involves a detailed procedure of fitness criteria and eligibility criteria of the driver and list of forms and formats for License / Renewal / Duplicate License and their procedures are mentioned. A list of certificates such as ownership of the vehicle and forms of duplicate certificate for vehicle ownership, forms of application for transfer of ownership of E-rickshaw, fitness certificate and form for trade certificate for E-carts are mentioned. The document was prepared based on amendment provided by Motor Vehicle Act on E rickshaws and follows all the details of registration of a vehicle under the Road Transport Authority (Refer Annexure-4).

## Role of Mission for Elimination of Poverty in Municipal Areas (MEPMA)

MEPMA is a State Government body under the Department of Municipal Administration and Urban Development of Andhra Pradesh. It aims at eliminating poverty through formulating strategies to implement poverty reduction programs in urban areas. The role of MEPMA in the project is to identify the beneficiary and evaluate the financial background and check the caste bracket under which the beneficiary can get subsidy. Each beneficiary can enroll by submitting the caste certificate and making a down payment of Rs. 10,000 at the MEPMA division in the Municipal Corporation.

MEMPA will also be responsible for allotting the self-help groups involved in the service centres and charging stations.

## E-Rickshaw Infrastructure

Charging stations are a critical infrastructure of the E-Rickshaw system. The charging station in Kakinada is proposed to be developed as a parking-cum-charging station. Although beneficiaries will be provided with a charger which can be used through domestic power supply, the charging station is provided for the beneficiaries to charge batteries during their convenience in the off-duty hours. Figure 7 explains the model prepared for charging station set up and stakeholders involved in running and maintaining the charging station infrastructure.

For establishing the charging infrastructure will be raised by Municipal Corporation by tapping into Corporate Social Responsibility funds. The Municipal Corporation is responsible for allotting the locations for charging-cum-parking areas. The role of MEPMA will be to appoint self-help group members for its daily supervision during charging of the E-Rickshaw.

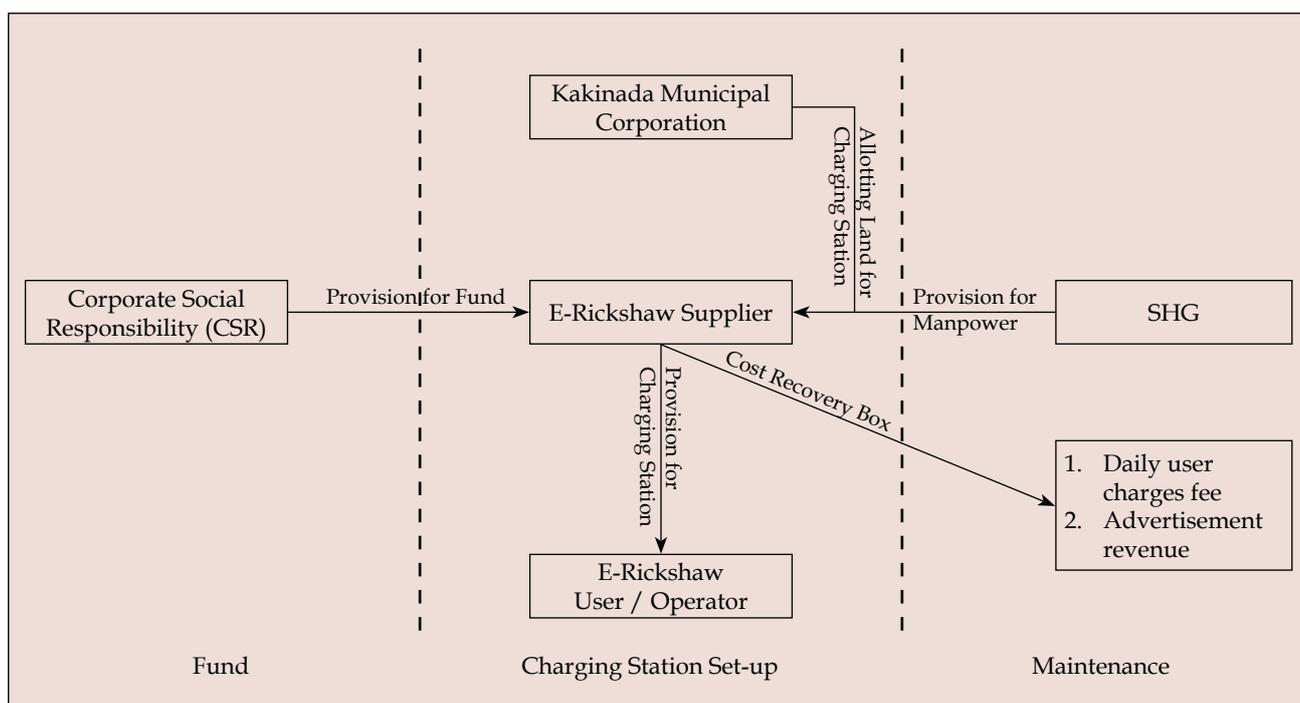


Figure 7.: E-Rickshaw Charging Station Flow diagram

## Selection of Beneficiary

As per the discussions with the city officials, the intention of the project was to benefit the low income earners by offering a better livelihood option. Kakinada Municipal Corporation also encouraged the auto rickshaw drivers who were interested to enrol. In the first phase of the procurement, a few auto rickshaw drivers came forward to enroll in the Kakinada E-Rickshaw Program, although the main agenda was to help the cycle rickshaw peddlers.

The application for the eligibility for buying an E-rickshaw from the Municipal Corporation should follow the below:

1. The individual should be a registered cycle rickshaw peddler/ auto rickshaw driver
2. The individual should not hold any kind of debt from bank or any individual
3. The beneficiary must fall in the age category of 21-45 years
4. The background of the individual should be in the following caste category for obtaining subsidy for the E-Rickshaw:
  - a. SC/ST
  - b. Backward caste
  - c. Kapu caste (OBC Category)

## Routes

Finalising the routes for the new mode was a challenge. The routes were chosen in a manner to give priority to the educational, public, semi-public and major commercial locations of the city. It was also considered not to merge with the existing auto rickshaw routes and not be a parallel competitor in the city. Few locations where the auto rickshaw services were not active were identified. E-Rickshaw routes aimed to capture the shorter routes and cover the distance of areas where auto rickshaws hesitate to operate and also act as a feeder service for auto rickshaws in the city. Figure 8 show cases the proposed E-Rickshaw routes

1. JNTU University to Bhanugudi Junction
2. Railway Station to RTC Bus Complex
3. YSR Fly over to Kalpana Centre
4. Temple Street to TTD Junction (BalajiCheruvu)
5. II-Town to Jaganathapuram Junction

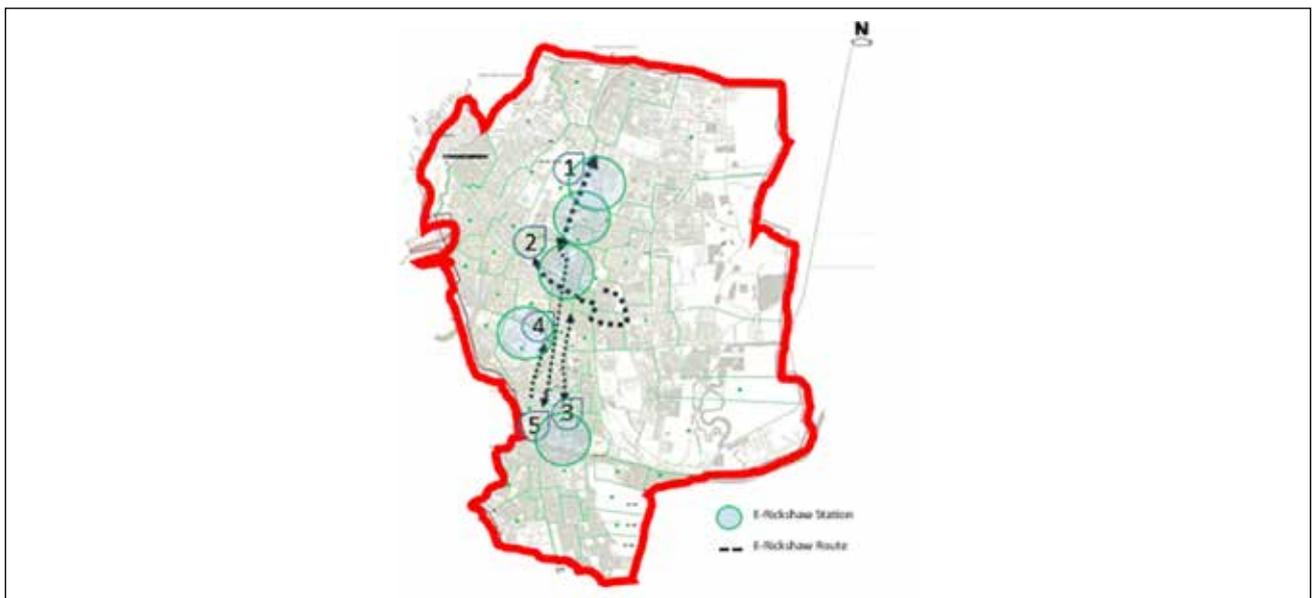


Figure 8.: Kakinada E-Rickshaw Stations and Routes

## E-Rickshaw Procurement

At the initial stage of project, a few manufacturers were approached for supply of E-Rickshaws through bids. However, after the detailed discussions it was understood that the E-Rickshaw manufacturers do not meet the quality standards as desired by the Kakinada Municipal Corporation. **The procurement of E-Rickshaw was thus taken up through supplier finalisation, based on their product features and certifications.** The supplier was needed to meet the following conditions for participating in the procurement program.

1. Cost of the E-Rickshaw (in the range of Rs 1-1.5 Lakh)
2. Certified by Automotive Research Association of India (ARAI) with minimum warranty of 6 months on the spare parts and batteries
3. Battery to be self-manufactured or procured from reputed companies such as Amaron, Exide etc.
4. All the spare parts and batteries to be of Indian make. The specifications of e-rickshaw should meet the standard of Motor Vehicle Act's Amendment Act 2015

Kinetic Green Energy and Hero Electric were among the ARAI certified e-rickshaw manufacturers in the market. Based on the discussions with the Kinetic and Hero Electric, Kinetic Green Energy expressed interest to supply E-rickshaws for Kakinada.

## E-Rickshaw Trial Run Program

The first step prior to procurement was to conduct a trial run to understand the performance of the vehicle in the city's traffic. E-rickshaw manufacturers were encouraged to display their products for three days, during which vehicle trials were also conducted, under the supervision of Municipal Commissioner, corporation officials and ICLEI South Asia officials. The process of trial run saw several iterations along the specific routes in order to understand the vehicular speed, speed under the gradation and manoeuvrability of the vehicle in traffic.

Kinetic Green Energy had shown interest in participating in the trial run program. The trial run was held from 17th -19th December 2016 (Refer Annexure-1).

### Selection of Trial Run Routes

The routes were decided considering streets of different gradients. The routes were finalised considering the city profile, traffic, trip patterns. The selection of routes were decided by considering two way traffic and rail over bridges with gradation up to 5 degrees which are considered as one of the lengthiest with high gradation in the city.

The designated routes for trial run are given below.

1. Route 1: Cinema Road (Municipal Corporation) to Dairy Farm Junction – 1.5 km
2. Route 2: Cinema Road from Municipal Corporation to YSR flyover – 1.5 km
3. Route 3: Municipal Corporation towards Bhanugudi Junction via Bhaskar Nagar (YSR Municipality Fly over-Bhanugudi Flyover) -3.4 km
4. Route 4: Municipal Corporation- Rajaji Street via Dairy farm Road-1.4 km



**Figure 9.: Trial run of Kinetic E-Rickshaw supervised by the Commissioner and staff**



**Figure 10.: City Officials Participating in the E-Rickshaw Trial Run Program**

## Test Run Results

### Discharge of the battery:

It took eight hours to charge the batteries to their full capacity. The speed of the vehicle at low battery (20%) was about 12 kmph.

### Speed of the vehicle:

Kinetic Safar E-rickshaw ran at a speed of 25 kmph on the terrain of gradation 3 degree. At 5 degree, the vehicle demonstrated speeds of 15 kmph with maximum weight of 350 kg (4+1 passengers).

It was observed the vehicle with a speed of 25 kmph and with full weight of 350 kg can give a mileage of 80 km with fully charged batteries. The E-Rickshaw charging stations are available within a radius of 5 km.

The trial run was executed successfully and the city officials were satisfied with the performance of the E-rickshaw and finalised a fleet of 100 e-rickshaw passenger vehicles for the procurement. The trial run details are provided in detail in Annexure1A.

## Challenges

E-rickshaw project has proposed a bench mark on the technical specifications. Though there are a variety of e-rickshaws available in the market, there is no study done which specifies which e-rickshaw model would be appropriate for different kind of terrains of city. Although all the models available in the market meet the specifications as per the Motor Vehicle Act 2015 (the Amendment Act 2015), most of them do not opt for high-quality lead acid batteries. Most of the manufacturers use batteries of low quality standard which get discharged fast and are not able to achieve the mileage as per the amendment act.

Many Indian cities have adopted e-rickshaws as the last mile connectivity and feeder services but there have been no efforts made by the state authorities to provide complete infrastructural support to this service. In almost all Indian cities, the E-rickshaw runs parallel to auto rickshaws and other public transport services as there is no route rationalisation carried out to run this service in an organised way. The above aspects were challenges for ICLEI-SA to convince the city towards developing a good practice model that will overcome all these issues.

## Learnings

Kakinada Municipal Corporation, with support from ICLEI South Asia, had shortlisted manufacturers for procuring E-rickshaws in the city. The trial run and the E-rickshaw procurement program gave an appropriate idea about the product quality. The initiation of setting up the charging station in the city has helped to develop a case study, identify the roles and responsibility of the stakeholders. The background research and case examples from various cities helped in developing a sound understanding of the performance of the E-rickshaws considering parameters like mileage, pickup and performance.

## Way Forward

Kakinada Municipal Corporation is in the process of announcing a tender for procuring E-rickshaws. It is recommended that the city should develop and ratify a policy/regulation on operation of E-rickshaws in the city. The city should promote the use of E-rickshaws as a feeder service and for shorter trips.

### Action plan for E Rickshaw

An action plan for implementation of e-rickshaws was developed and submitted to the Kakinada Municipal Corporation by ICLEI South Asia, which details the institutional/governance structure, formation of e-rickshaw associating, fare chart, financial plan that link with the incentive scheme. Since the electric vehicle requires electricity as the main source of fuel, the action plan emphasises the importance of supporting the initial setup of temporary charging stations and finance for setting up of permanent charging stations in the city. The action plan provides details of the available national level schemes that can be used to provide social benefits to the drivers. The operational guidelines for e-rickshaw in the city are provided in Refer Annexure-5.

Kakinada Municipal Corporation has developed some additional means of revenue generation for the drivers of e-rickshaws, such as advertisement revenue, micro franchise schemes such as mobile recharging and increasing the ridership through mobile based applications. Other potential means of promotion of usage (such as School e-rickshaw fleet) are being encouraged and should be studied thoroughly. The municipal corporation must involve the local self-help groups for ensuring the payment of loans from the e-rickshaw drivers on time.

## Annexure 1: Technical specification of Kinetic E Rickshaws

S. No	Description	Specification	Remarks/ Reference Standards/Test Standards
1.	Type of Electric Rickshaw	Passenger	Four-Seater x E-Rickshaw
2.	Reverse Gear	Yes	
3.	Maximum Speed	25 kmph	As per Motor Vehicle Amendment Act 2015
4.	Curb Weight (weight of Electric Rickshaw including Battery)	375 kg	Tentative
5.	Loading Capacity 6 (Weight of Four Passengers, The driver and the luggage of 40 kg)	380 kg	(375+380=755 kg)
6.	Laden Weight (curb weight + weight of four passengers, the driver and luggage of 250kg 40 kg)	755 kg	For a tentative curb weight of 250 kg
7.	Speed Range	25 kmph	For a full charge of battery, to be tested with full load at, maximum AIS- 040
8.	Motor Output Power	850 Watt	At full load (48V, 850Watt or above but not more than 2000W)
9.	Motor Type	BLDC (brushless DC motor)	AC /DC
10.	Motor Controller	48 V	PCB based Controller
11.	Battery Voltage	12 V	
12.	Battery Capacity	105 Ah	
13.	Battery Type	Lead Acid	Amaron
14.	Battery Charger	48 V 15 Ah	SMPS Charger
15.	Grade Ability	Upto 7 degrees	
16.	Brakes	130 mm dia	Drum Breaks Rear & Front
17.	Duration for Fully charging Batteries	8 hrs	
18.	Duration for achieving 80 % charge of Batteries	4.5 hrs	
19.	Mileage of the vehicle with 100 % charged battery	80 km	
20.	Mileage of the vehicle with 80% charged battery	60 km	
21.	Overall Efficiency of the Electric Rickshaw	80%	

## Annexure 1A: Trial Run Results

S. No	Description	Quantity	Remarks
	Duration of charging to achieve 100%	8 hrs	15 amp heavy duty charger is required
	Discharge of the battery	10% per hour	If the vehicle runs continuously for 8 hours.
	Duration of fully charged battery 100% / Mileage	8 hrs/80 Km	
	Duration of fully charged battery 80% / Mileage	6hrs/60 Km	
	Duration of fully charged battery 50% / Mileage	4 hrs/50 Km	
	Duration of fully charged battery 30% / Mileage	1.5 hrs/25 Km	Battery discharge 25% after which the vehicle moves slowly at a speed of 12 kmph
	Weight	350 kg	E-rickshaw can travel at a speed of 25 Kmph on flat terrain
	Max Speed at Gradation of 3 degrees / weight of the passengers	15 kmph/350kg	
	Max Speed at Gradation of 5 degrees / weight of the passengers	12 kmph/350kg	

## Annexure 2: FAME Scheme

FAME or Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India is a scheme mandated by the Ministry of Heavy Industries, Government of India. This scheme provides subsidy for promoting electric vehicles in India. According to the scheme, a hybrid vehicle is one which exceeds a speed of 25 kmph. However, as per the Motor Vehicle Act (The Amendment Act 2015), e-rickshaw should not exceed speed of 25 kmph. Hence the national scheme does not applicable for the E-Rickshaw project.

The approach to the project was initiated by undertaking background research of the city, understanding the current issues and studying the scenario of auto rickshaws and their issues. After the research on the latest schemes of the Ministry of Urban Development, Government of India, and detailed study of other successful e-rickshaw case studies, it was understood that there is an absence of an appropriate scheme that directly provides benefit to e-rickshaw drivers. ICLEI South Asia, along with officials of Kakinada Municipal Corporation, developed a unique business model which provides subsidy to E-Rickshaw drivers. An operational model for individual operators on fixed routes has also been finalised by Kakinada Municipal Corporation. Kakinada Municipal Corporation also finalised the charging-cum-parking stations in the city. Kakinada Municipal Corporation will develop the charging infrastructure at these places through financial support from Corporate Social Responsibility funds.

## Annexure 3: Stakeholders Involvement in Operating E-Rickshaws in Kakinada

S. No	Stakeholder Member	Responsibility
	Kakinada Municipal Corporation	<ul style="list-style-type: none"> <li>Finalising the e-rickshaw supplier</li> <li>Evaluation of the e-rickshaw vehicle technically and check the compatibility with the existing conditions of the city</li> <li>Finalizing the scheme for e-rickshaw beneficiary</li> <li>Provision of subsidies for e-rickshaw driver</li> <li>Providing a policy on regulation of e-rickshaw in the city</li> </ul>
	ICLEI South Asia	<ul style="list-style-type: none"> <li>Provision of technical support to Kakinada Municipal Corporation (KMC)</li> <li>Finalising the routes, charging station locations and parking stations in the city</li> <li>Preparation of E-Rickshaw Action plan</li> </ul>
	Mission for Eliminating Poverty in Municipal Areas (MEPMA) wing-KMC	<ul style="list-style-type: none"> <li>Enrolling the beneficiary</li> <li>Coordinating with the self-help group (SHG) for training</li> </ul>
	E-Rickshaw Supplier-Dealer/Manufacturer	<ul style="list-style-type: none"> <li>Supplying of e-rickshaw</li> <li>Providing training to the SHG for maintenance and servicing e-rickshaw fleet in the city</li> <li>Setting up of charging stations in the city</li> <li>Establishing service centres and supply spare parts in the city</li> </ul>
	Banks-Issuing loan to the Beneficiary	<ul style="list-style-type: none"> <li>Issuing of loans at low interest rate</li> </ul>
	Beneficiary/E-Rickshaw operator	<ul style="list-style-type: none"> <li>Purchase e-rickshaw from the supplier for lying the e-rickshaw in the city as per the regulations given by Kakinada Municipal Corporation</li> </ul>
	Self Help Groups (SHG)	<ul style="list-style-type: none"> <li>Responsible for identifying the potential members for receiving training by the supplier</li> <li>Provision of manpower to service centres</li> </ul>

## Annexure-4: Policy Guidelines for Licensing/ Registration/ Fitness/ Grant of Permit of E-Rickshaw/ Syllabus for Imparting Instructions in Driving E-Rickshaw

1. The Ministry of Road Transport and Highways vide notification G.S.R.709(E) dated 08.09.2014 has notified E-rickshaw and E-cart as separate categories of transport vehicles. As per the notification G.S.R.709(E), dated 08.10.2014, of the Ministry of Road Transport and Highways and Section 2A of the Motor Vehicle (Amendment) Act, 2015, read with notification dated 20.03.2015 “ E- rickshaw means a special purpose battery powered vehicle of power not exceeding 4000 watts, having three wheels for carrying goods or passengers, as the case may be for hire or reward, manufactured, constructed or adapted to carry not more than 04 passengers, excluding the driver, and not more than 40 kilograms luggage in total, equipped and maintained in accordance with specification as may be prescribed in this behalf and the maximum speed of the vehicle is not more than 25kmph.”
2. E-rickshaw has been created as a separate category under the Motor Vehicles (Amendment) Act, 2015 and being promoted for replacing manual laboured rickshaw, creating respectful livelihood opportunities for poor manual rickshaw pullers and facilitate movement of cleaner-fuelled, affordable vehicles which can provide last mile connectivity. This will also help in providing women and differently abled persons with opportunities for engaging in meaningful employment.
3. The E-rickshaws or E-carts are a new vehicle category, not be grouped with three-wheeled auto rickshaw or any other similar vehicle, as the purpose of these vehicles is to provide last mile connectivity. The eligible persons to operate this vehicle require training in road traffic rules, signs and driving such vehicles.
4. In pursuance of the notifications GSR 709(E) dated 08.10.2014, GSR 27(E) dated 13.01.2015, S.O. 2590 (E) dated 08.10.2014, and the Motor Vehicles (Amendment) Ordinance, 2015 No.3 of 2015) dated 20.03.2015, the Government of Andhra Pradesh has decided to introduce operation of E-rickshaws in Kakinada. These non-polluting E- vehicles are proposed to be operated within the city limits. It has also been decided to give permission to only those vehicles which are owned by the drivers of such vehicles themselves under Chapter V of the Motor Vehicles Act 1988.

Consequent to the above and based on guidelines issued to similar E-rickshaws in the National Capital Territory of Delhi, Rajasthan and Tripura, the Transport Department of Andhra Pradesh has made the following procedural guidelines for granting licence to drive E-rickshaw, grant of badge, certificate of fitness, registration of E-rickshaws and grant of permit. It has been decided that the applicant shall apply to the licensing authority/registering authority in whose jurisdiction he/she resides along with requisite documents.

### (A) GRANT OF LEARNER’S LICENSE TO DRIVE E-RICKSHAW ON SPECIFIED AREAS OR ROUTES

- i. Application-cum-declaration as to physical fitness in Form-1
- ii. Medical Certificate in Form-1A
- iii. Application for grant of Learner’s Licence in Form-2
- iv. Proof of residence
- v. Proof of age
- vi. Applicant must have completed 20 years of age
- vii. Appropriate fee as specified in Rule-32 of C.M.V.R 1989
- viii. Sub- section (1) of Section 7 .i.e. “No person shall be granted a learner’s licence to drive a transport vehicle

unless he has held a driving licence to drive a light motor vehicle for at least one year" is not applicable to E-rickshaw (as per amendment to Motor Vehicle. Act 1988, dt.20.03.2015)

**NOTE:** No Learner's license shall be issued to any applicant unless he passes to the satisfaction of the Licensing Authority such test as may be prescribed by the Central Government.

### **(B) GRANT OF PERMANENT DRIVING LICENCE TO DRIVE E-RICKSHAW**

After 30 days of issuance of learner's license and before its expiry, the applicant may apply to the Licensing Authority in whose jurisdiction he/she resides and shall be accompanied by following documents/forms duly filled in:

- i. Application for grant of license to drive an E-rickshaw in Form AAn effective Learner's License (Original).
- ii. Appropriate fee as specified in Rule-32 of C.M.V.R 1989
- iii. A certificate with unique serial number issued by the registered E-rickshaw or E-cart association, or a manufacturer producing E-rickshaw or E-cart, to the effect that the applicant has undergone a training at least for a period of ten days as GSR27(E) dated 13.01.2015

#### **NOTE:**

1. The applicant appearing for the driving test, must come with an E-rickshaw which has the letter "L" painted on a plate/card in red on a white background both in the front and back.
2. On successful passing of test of competence prescribed in Rule 15 of C.MVR.1989, a driving license to drive an E-rickshaw on a specified area/route will be given to the applicant.
3. Syllabus for imparting instructions for driving instructions for driving, of E-rickshaw to be enclosed in the guide.

### **(C) AUTHORISATION TO DRIVE TRANSPORT VEHICLES(BADGES)**

The applicant shall apply to the licensing authority in which he/she resides and shall be accompanied by following documents/forms duly filled in:

- i. Application for issue of Badge in Form- ATVA
- ii. Proof of residence
- iii. An effective Learner's License copy
- iv. Antecedent's verification Certificate of applicant. (issued by Police Department)
- v. Appropriate fee as specified in Central Motor Vehicle Rules.
- vi. The applicant need not wait for one year to drive an E- rickshaw. (transport vehicle)

**NOTE:** The badge shall be issued only after antecedents and character verification by the Police department, Kakinada Region and on production of an effective driving license to drive E-rickshaw.

### **(D) DOCUMENTS REQUIRED FOR REGISTRATION OF AN E-RICKSHAW:**

#### **(I) For new E-rickshaw**

The applicant shall apply to the licensing authority in which he/she resides and shall be accompanied by following documents/forms duly filled in.

- i. Application for registration in Form-20
- ii. Sale Certificate in Form-21 (from manufacturer/dealer)
- iii. Certificate of Roadworthiness in Form-22 (from manufacturer)
- iv. Manufacturer's Invoice
- v. Dealer's Invoice
- vi. Proof of Residence
- vii. Certificate of Insurance/Cover note
- viii. Certificate of Fitness

- ix. Antecedent’s verification of vehicle owner from Police Department, Kakinada Region
- x. Effective Driving License to drive an E-rickshaw
- xi. Effective Public Service Vehicle (PSV) Badge authorizing to drive an E-rickshaw
- xii. Appropriate fee as specified in Rule-81
- xiii. One time Road Tax(if applicable)
- xiv. Parking Fee (if applicable)

**(II) CERTIFICATE OF FITNESS**

The certificate of fitness to E-rickshaws shall be issued in Form-38 as prescribed in Central Motor Vehicles Rule, 1989. The inspecting authority shall physically verify the vehicle with the details as specified in technical specifications endorsed by the testing agency that it truly represents the vehicle model approved by the designated testing agency and complies with relevant provisions of Central Motor Vehicle Rule, 1989.

**(III) DOCUMENTS REQUIRED FOR ISSUANCE OF PERMIT TO E-rickshaw**

The applicant shall apply to the licensing authority in which he/she resides and shall be accompanied by following documents/forms duly filled in,

- i. Application for grant of Permit in Form-P.C.A.(with photograph)
- ii. Effective Registration Certificate
- iii. Effective Driving License to drive an E-rickshaw
- iv. Effective PSV Badge to drive an E-rickshaw
- v. Details of Bank Account
- vi. PAN/Voter I-Card
- vii. Proof of residence
- viii. Appropriate fee as specified in Central/ Andhra Pradesh Motor Vehicles Rules 1989
- ix. An undertaking from the applicant to the effect that he/she is not in possession of Public Service Vehicle with a permit

**(E) TRADE CERTIFICATE**

An E-Rickshaw, in the possession of a dealer or manufacturer, shall be exempted from the necessity of registration subject to the condition that he obtains a trade certificate, from the registering authority having jurisdiction in the area in which the dealer or manufacturer has his place of business located in accordance with the provisions.

**(F) SYLLABUS FOR IMPARTING INSTRUCTIONS ON DRIVING OF E-RICKSHAW**

As per the GSR 27(E) dated 13.01.2015 each trainee is required to undergo at least 10 days training for driving e-rickshaw. The actual driving hours for trainees in driving e-rickshaw shall not be less than five hours in pursuance of the above, the following subject matter shall be covered during such training-

<b>A. Driving Theory</b>	
1. Know your vehicle	<ul style="list-style-type: none"> <li>● Simple introduction to traction battery, traction motor power</li> <li>● Controller and their working.</li> </ul>
2. Vehicle control	<ul style="list-style-type: none"> <li>● Foot Brake</li> <li>● Handle Bar, Hand brake, parking brake, Horn, Light, Ignition switch, starter, dipper and indicators.</li> <li>● Rear-View mirror (Right and left side)</li> <li>● Side Indicators</li> </ul>
i. Foot controls	
ii. Hand Controls	
iii. Other Controls	<ul style="list-style-type: none"> <li>● Rear-View mirror (Right and left side)</li> <li>● Side Indicators</li> </ul>
3. Pre-driving Check	<ul style="list-style-type: none"> <li>● Before sitting on driver's seat and after sitting on driver's seat.</li> </ul>

4. Beginning to drive	<ul style="list-style-type: none"> <li>● Precautions just before moving.</li> <li>● While moving, Stopping and Braking,</li> <li>● Accelerator(gradual/sudden)</li> <li>● Traffic sense, road sense, judgement</li> <li>● Parking and positioning according to road users,</li> <li>● Reversing.</li> </ul>
5. Driving on the road	<ul style="list-style-type: none"> <li>● Anticipation, judgment, and road positioning according to other road users.</li> </ul>
6. Driving on the road	<ul style="list-style-type: none"> <li>● Mirror Signal and Manoeuvres (MSM) and Position Speed and look (PSL). Zone of vision.</li> </ul>
7. Manoeuvres	<ul style="list-style-type: none"> <li>● Merging and diverging manoeuvres-turning manoeuvres to left, right, and U-turn, overtaking stationary vehicle, moving vehicle in left side and right side.</li> </ul>
8. Reversing	<ul style="list-style-type: none"> <li>● Locating reverse gear in sitting position, speed control.</li> </ul>
9. Parking	<ul style="list-style-type: none"> <li>● Parallel, angular, perpendicular parking facing uphill, parking facing downhill, common errors.</li> </ul>
10. Driver's responsibility on the road	<ul style="list-style-type: none"> <li>● Driving behaviour, consideration for other road-users, courtesy and competitiveness, over -confidence, impatience and defensive driving.</li> </ul>
11. Qualities of a good driver	<ul style="list-style-type: none"> <li>● Patience, responsibility, self-confidence, anticipation, concentration, courtesy, defensive driving, knowledge of road rules/regulations. Knowledge of vehicle controls, maintenance, and simple mechanism.</li> </ul>
12. Priority for certain Vehicles	<ul style="list-style-type: none"> <li>● Emergency vehicles, Fire engines and Ambulance</li> </ul>
13. Defensive driving techniques	<ul style="list-style-type: none"> <li>● Judgement</li> <li>● Anticipation</li> <li>● Escape route</li> </ul>
14. Night driving	<ul style="list-style-type: none"> <li>● Location of head light switch</li> <li>● Procedures</li> <li>● Obligation to light the lamps,</li> <li>● Restriction on lighting the lamps</li> </ul>
15. Emergency manoeuvres	<ul style="list-style-type: none"> <li>● Prevention is better than cure in case of skidding, horn stuck</li> <li>● Fire, wheels coming out</li> <li>● Brake failure</li> <li>● Burst of front tyre</li> <li>● Sudden obstruction in front of the vehicle.</li> <li>● Brake failure during down the slope</li> </ul>
<b>B. Traffic Education</b>	
1. Driving regulations	<ul style="list-style-type: none"> <li>● Road use regulation made under section 118 of the Motor Vehicles Act, 1988</li> </ul>
2. Hand Signals	<ul style="list-style-type: none"> <li>● Stop, right turn, Left turn, Overtaking, slow down</li> </ul>
3. Traffic signals	<ul style="list-style-type: none"> <li>● Schedules of motor Vehicles Act, 1998</li> </ul>
4. Introduction to automatic light signals	<ul style="list-style-type: none"> <li>● Understanding the order of yellow, green &amp; red light and what these lights convey</li> <li>● Blinking of yellow light</li> <li>● Blinking of red light</li> </ul>
5. Introduction to road markings	<ul style="list-style-type: none"> <li>● White line continuous and broken</li> <li>● Yellow line</li> <li>● Lane marking</li> <li>● Zebra -Crossing</li> <li>● Stop Line</li> <li>● Parking Marking Sense of road singles</li> </ul>

6. Speed regulation on city roads	<ul style="list-style-type: none"> <li>● On congested road</li> <li>● At traffic junctions (manned &amp; unmanned)</li> <li>● At Stop Line</li> </ul>
7. Parking at objectionable places	<ul style="list-style-type: none"> <li>● Do not park vehicle <ul style="list-style-type: none"> <li>- At or near a road crossing, a bend, top of a hill or a humpbacked bridge</li> <li>- On a foot- path</li> <li>- Near a traffic light or pedestrian crossing</li> <li>- In a main road or one carrying fast traffic</li> <li>- Opposite another parked vehicle or as obstruction to another vehicle</li> <li>- Alongside another parked vehicle</li> <li>- On roads or at places or road where there is a continuous white line with or without a broken line</li> <li>- Near a bus stop, school or hospital entrance or blocking a traffic</li> <li>- Sign or entrance to a premise or a fire hydrant</li> <li>- On the wrong side of the road</li> <li>- Where parking is prohibited</li> <li>- Away from the edge of the footpath</li> </ul> </li> </ul>
8. Some important provisions of the motor vehicles act, 1988	<ul style="list-style-type: none"> <li>● Sections 112, 113, 121, 122, 123, 125, 126, 131, 134, 185, 186, 194 and 207 of the Motor Vehicles Act, 1988</li> </ul>
9. Know about vehicles registration plate	<ul style="list-style-type: none"> <li>● State code, Authority code and number</li> </ul>
10. Test of competence to drive E-Rickshaw	<ul style="list-style-type: none"> <li>● Sub-rule (3) of rule 15 of central Motor Vehicles Rules 1989</li> </ul>
11. Traffic Island	<ul style="list-style-type: none"> <li>● Types of roundabouts</li> <li>● Channelisers, median</li> </ul>
12. Road Junctions	<ul style="list-style-type: none"> <li>● Principles and types</li> <li>● T Junction</li> <li>● Y Junctions</li> <li>● Controlled Junctions</li> <li>● Uncontrolled junctions</li> </ul>
13. Lane Selection and lane discipline	<ul style="list-style-type: none"> <li>● Drive in a proper lane and change only after giving proper signal</li> </ul>
14. Accidents	<ul style="list-style-type: none"> <li>● Types of accidents</li> <li>● Causes of accidents</li> <li>● Preventives methods</li> <li>● Drivers duties and responsibilities on the occurrence of accidents</li> </ul>
15. Important provisions in motor vehicle Act, 1988 (59 of 1989), Central Motor Vehicles Rules,1989 and the state Motor Vehicles Rules	<ul style="list-style-type: none"> <li>● Certain definition</li> <li>● Driving license and its renewal</li> <li>● Certificates/ documents to be carried in a vehicle and production of such document on demand by checking office</li> <li>● Traffic offence and penalties stipulated under the Act and Rules</li> </ul>

<b>C. Vehicle Mechanism and Repairs</b>	
1. Layout of vehicle	<ul style="list-style-type: none"> <li>● Brakes, parking brakes, location of traction battery, traction motor, power controller and charger</li> </ul>
2. Suspension system	<ul style="list-style-type: none"> <li>● Purpose</li> <li>● Springs</li> <li>● Leaf spring, shackle and shackle Pin</li> <li>● Shock absorber and its bushes</li> </ul>
3. Brakes system	<ul style="list-style-type: none"> <li>● Purpose</li> <li>● Brake maintenance and adjustment</li> </ul>
4. Electrical System	<ul style="list-style-type: none"> <li>● Traction Battery and its condition, electrolyte level, charging of battery.</li> <li>● Proper locking of battery terminals and cleaning thereof.</li> <li>● Head lights, rear lights, brake lights, reverse lights, indicators, horn</li> <li>● Lights-Knowledge to read the charging rate in the Ampere meter.</li> </ul>
5. Tyres	<ul style="list-style-type: none"> <li>● Maintenance</li> <li>● Effects of under inflation/over inflation</li> <li>● Effect of defective tyres</li> </ul>
6. Instruments cluster, dash board meters.	<ul style="list-style-type: none"> <li>● Their purposes and functions.</li> </ul>
7. Maintenance and cleaning of vehicle	<ul style="list-style-type: none"> <li>● Greasing and oiling as per recommendation of manufacturer</li> <li>● Seats</li> <li>● Body pain, protection of sharp corners/edges</li> <li>● Proper looming and insulation of electric wires</li> </ul>
<b>D. Public relations for drivers and gender sensitization</b>	
Some basic aspect about ethical and courteous behavior with other road users. Assist the senior citizen and differently abled persons. Due respect the women, not to pass lewd remarks and unexpected gesture.	
<b>E. Fire-Hazards</b>	
Fire-fighting and prevention methods on vehicle	
<b>F. Vehicle maintenance</b>	
1. Factors affecting the vehicle parts due to bad and negligent driving	
2. General day-to-day maintenance and periodical inspection	
3. Battery maintenance.	
4. Brake maintenance.	
5. Observation of dash-board meters.	
6. Greasing and lubrication.	
7. Maintenance of lights, indicators.	

## Annexure-5: E-Rickshaw Action Plan for Kakinada City

### 1. Permits for E-Rickshaw

As per the Gazette Notification issued by The Ministry of Road Transport and Highways on 31st August 2016, E-rickshaws and E-carts are free from permit requirements. According to the notification, the provisions of the sub-section (1) of section 66 of the Motor Vehicles Act, 1988 will not apply to e-carts and e-rickshaws (as defined in section 2A of the said Act,) that are used for carrying goods or passengers with personal luggage. This means that vehicles registered as e – rickshaws or e-carts will not require any permits.

State Governments/Local Authorities can however impose restrictions under appropriate traffic laws on plying of these vehicles in specific areas or specific roads.

### 2. Form Institutional/Governance Structure, including Formation E-Rickshaw Association

Form the institutional structure/body under the aegis of municipal corporation with the representatives from Regional Transport office (RTO) Traffic police, users and E-rickshaw representative s for the association which takes decision on the matters such as tariff revision, safety standards welfare of driver's permits etc. the functions of such authority will be:

- Policy guidelines
- Guidelines for permits
- Route rationalisation
- Fare Fixation
- Setting up institutions/E-rickshaw association
- Specify the standards guidelines in future
- Monitor the performance
- Training and education to drivers

### 3. Develop Operational Guidelines

E-Rickshaws shall operate only with the permits provided by Municipal Corporation. Flexibility of service will be allowed in consultation with traffic police and Regional Transport Authorities. They shall operate within 5 km radius of trips. An Operation Plan for E-Rickshaw should be developed based on geography, traffic and transport characteristics etc.

### 4. Develop Financial Plan/ Link with Incentive Scheme

Provisions for financing E-Rickshaws shall be eased through appropriate processes. Minimal interest rates with ease of formalities shall be enabled for supporting E-Rickshaw drivers and owners. The Scheme by Government of India<sup>1</sup> has stipulated an interest rate of 4 percent which is a welcome step. Kakinada being a smart city, is comes under the FAME India Scheme (Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India). The scheme further provides subsidy and incentives to E-Vehicles Ease of access to finance shall enable drivers to become owners and shrug away moneylenders. Customised finance schemes for E-Rickshaws shall be introduced with the support and guarantee of the government aimed at promoting electric vehicles. This could be financed by banking institutions.

### 5. Establish and Develop Infrastructure Requirement for Operations

Infrastructure provision is one of the basic preconditions for the effectiveness of E-rickshaw in the city. Listed below are basic infrastructure facilities required:

- Availability of charging points
- Parking stands facilities

11. The details of scheme need to be further elaborated.

- Halt and go stands
- Parking areas for night

Based on number of permits to be issued, calculate the requirement of infrastructure and detailed out phase wise plan for provision of same. The infrastructure required can be built under funds available through Smart city mission and AMRUT.

#### 6. Identify Temporary Infrastructure Alternative such as Parking Sites/Charging Stations etc.

One of the main issues with e-rickshaw is absence of dedicated charging facilities. In absence of such facilities, drivers continue to use domestic subsidised electricity for commercial purpose. Such practice cannot be sustainable for long term. However due to absence of such facilities, provision can be made in the registration which includes conditions which makes them to pay the difference of rates between domestic and commercial user charges to appropriate authority. Also, classify the temporary locations for parking facilities.

#### 8. Link E-rickshaw drivers with social benefits:

Insurance schemes customized for e-rickshaw drivers, family and passengers. This could be promulgated at the behest of the local self-government through various existing national schemes. Listed below are some of the schemes:

- Pradhan Mantri Surakha BimaYojna
- Pradhan Mantri Jan DhanYojna