Review Paper on Feasibility Study of Solar Energy for Brt's Road

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Abstract: Bus Rapid Transit System (BRTs) is the Safe, Economical, Rapid, Convenient & New concept of Public transport in Indian scenario perhaps in India there are more than 150 series of BRTs was running successfully world wide the few examples are Bogota, Beijing, etc, Ahmadabad (India) is also a successful example of BRTs. Population wise India is the second largest country & fastest growing economy of the world. BRTs is the most economical eco-friendly solution of public transportation for growing cities of India. This thesis is to investigate if and how bus stops with electricity demand can be self-sufficient by the implementation of a photovoltaic (PV) system on roof of bus stop. A calculation of the costs will order to compare a solution with PV system to bus stop connected to the electricity grid.

keywords: BRT's, Urban Public Transportation, Solar Energy, PV system

I. INTRODUCTION

Bus Rapid Transit (BRT) or high capacity bus system (HCBS) is a high quality , ultra modern , customer oriented transit option that could deliver fast , comfortable and cost effective urban mobility , quite similar to metro rail. They are also an important link for promoting Low Carbon Transport in and increase in Non-Motorized transport usage. Therefore it is important to see the status of some of the BRT Projects, in terms of infrastructure they have created and issues they have faced during implementation, and running the systems Policies for BRT have been included in The National Urban Transport Policy. The aim of this thesis is to investigate if and how bus stops with electricity demand can be self-sufficient by the implementation of a photovoltaic (PV) system The aim of this is to investigate if and how bus stops with electricity demand can be self-sufficient by the implementation of a photovoltaic (PV) system .Solar energy is radiant light and heat from the sun harrnessed using a range of ever-evolving technologies such as solar heating, photovoltalics, solar thermal energy, solar architecture and artificial photosynthesis. It is an important source of renewable energy and its technologies are broadly characterised as either passive solar or active solar depending on the way they capture and distribute solar energy or convert it into solar power. Active solar techniques include the use of P.V, concentrated solar power and solar water heating to harness the energy. Passive solar techniques include orienting a building to sun ,selecting materials with favorable thermal mass or light dispersing properties and desighning spaces that naturally circulate air. The large magnitude of solar energy available makes it a highly appealing source of electricity.

II. LITERATURE REVIEW

Impacts of Bus Rapid Transit Lanes on Traffic and Commuter Mobility

Author-Vaishali M. Patankar; Rakesh Kumar; and Geetam Tiwari

Mobility and transportation are two of the leading indicators of economic growth of a society. Unfortunately, if left unchecked, these indicators show a declining trend with the passage of time i.e., traffic congestion because transportation systems are often designed to overcome the present crisis without considering the increasing nature of the population of a country (Sussman 2000). The situation of urban transport in a developing country like India is, no doubt, very special, because of the combination of rapid demographic and economic growth, enormous increase in travel demand, utterly deficient capacities of the existing transport systems, and turbulence in the land development process during the current era of transition (Tiwari 2003).The introduction of motorized transportation and especially the automobile has generated social disparities in accessibility. Under Indian conditions, it is becoming difficult for any improvement to be done to restore the equity. The accessibility is deeply biased toward favoring those with access to private automobiles. The objective of the research reported in this paper was to determine the impact of BRT dedicated lanes over existing mixed lanes on traffic and commuter mobility. By using different traffic qualities in a corridor, its impact was found to be positive on the mobility.

The total pavement approach width of the existing corridor is 11.00 m. This approach lane for BRT is divided into three different size lanes. An exclusive left-most lane is assigned for NMVs, an exclusive right-most lane is assigned for public transport and middle lanes are assigned for motorized vehicles MVs_. Total pavement approach width of the BRT will be 12.45 m. Therefore, BRT total pavement approach width will be more than the existing total lane width. The width of the NMV lane is taken as 2.5 m throughout the corridor. A 0.4 m wide physical concrete divider on either side separates the NMV lane. The width of the MV lane is taken as 6.75 m throughout the corridor. To improve the performance of the MV section near the intersections, the width of the MV lane is gradually increased from 6.75 to 9.75 m near the intersections for a length of 54.0 m. The width of the bus lane is taken as 3.2 m throughout the corridor except near intersections. Near an intersection, two bus lanes are provided and separated by a 0.4 m wide divider on either side until it reaches 54.0 m. A bus shelter of 3.7 m in width and 54 m in length is provided on each side of the segregated lane.

Study of Bus Rapid Transit system In Respect to Growing Cities of India

Author : Ajay Mishra, Saxena Anil Kumar, Purohit Pradeep

Sharma Anupama (2010), has studied that the BRTS being a flexible system can run on the street across the street, over the street or on canal banks. Although it serves communities best when built on surface, BRTS can be run on elevated structures or in tunnels if necessary.Stations and right of way are compact and efficient. With respect to total BRTS travel times, BRTS projects with more exclusive running ways generally experience the greatest travel time savings compared to the local bus route. Exclusive transit way projects abroad operate at an average speed of 35 kms per hour and Arterial BRT projects in mixed flow traffic or designated lanes at 20- 25 kms per hour.

Short Term Benefits of BRT

- Efficient, reliable and frequent public transport services.
- Affordable fares. A safe and secure public transport system.
- Accessible public transport for people with disabilities and mothers with children.
- A decrease in traffic congestion, energy consumption and vehicle emissions.
- An enhanced urban environment.
- Recapitalisation of the public transport fleet.

Medium Term Benefits of BRT

- Containing urban sprawl (spread of settlements) and promoting densification.
- Promoting social inclusion instead of isolation.
- Job creation.

Long Term Benefits of BRT

- Better economic development at and around the nodes as well as along the mobility spines.
- Land use change along the route as well as the nodes, which will result in densification.
- Sustainable and frequent peak and off-peak public transportation system.
- Improved journey times for all public transport users.
- Reduction in pollution.

As a means of establishing a rapid transit system from scratch, bus rapid transit is an incremental, affordable and versatile option to achieving that goal. For small to medium-sized cities, as well as along moderately-used corridors in larger cities, BRT may be all that is ever needed. In larger cities, however, as build-out proceeds and ridership grows, the inherent constraints and costs of a transit system based on buses alone along heavily-used corridors become apparent In those situations, conversion to light rail becomes an increasingly attractive prospect.

III. CASE STUDY

How to supply bus stops with electricity without connecting them to the electricity grid

Author-Karin Axelsson, Tove Ekblom, Anna Olsson

The sun is an energy source that all life on earth depends on. The irradiation from the sun can be used to produce electricity in two main ways, with solar cells or with thermal solar power plants. In solar cells, the energy from the sun is directly transformed to DC power. In the thermal solar power plants, the energy from the sun can be used to run a steam turbine or a sterling engine, which in turn runs a generator producing electricity. The solar cells can be located almost anywhere while the thermal solar plants need more direct solar radiation to work properly. According to the simulations it would be economically viable and technically possible to install a PV system to cover the electricity supply that the bus stop needs. a charge controller are needed. The economical investigations shows that installation of a grid connected bus stop would cost is greater depending on if cables have to be drawn longer than 200 m or not. The PV system would cost less as grid connection .The sensitivity analysis shows that the system is quite robust as long as the load is kept to a minimum. The parameter that affects the system the most is the solar radiation and shadow effect. If a larger bus stop with a larger load is built, the size of the solar panels would have to increase significantly.

IV. CONCLUSION

The objective of the research reported in this thesis is to investigate if and how bus stop with electricity demand can be self -sufficient by the implementation of a photovoltaic (PV) system on roof of bus stop. A calculation of the costs will order to compare a solution with PV system to bus stop connected to electricity grid. The parameter that affects the system most is the solar radiation. If a larger bus stop with a larger load is built, the size of solar panels would have to increase significantly

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