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JUDICIOUS MANAGEMENT TRANSFERENCE SYSTEM IN ELECTRIC VECHICLES USING RENEWABLE ENERGY

Pavithra.G,Premshanthi.B,Sandhiya.M, Sathya.P
UG Scholar, Electronics and Communication Engineering,
Bharathiyar Institute of Engineering for Women , Salem Mail ID:pavibanu@gmail.com,premsecond14@gmail.com,yuvaksandy@gmail.com,sathyaece55@gmail.com
Mrs.P.Sowmiya M.Tech., Assistant Professor, Electronics and Communication Engineering,
Bharathiyar Institute of Engineering for Women , Salem
Mail ID:sugi1811@gmail.com

ABSTRACT

In the decade years, important hard work have to developing intellectual and sustainable transportation to reduce to ignore pollution problems and fuel scarcity. However the variable and changeable supply of renewable resources poses a important set back to their addition. At the same time we are viewing a strong drive towards the large scale planning of electric vehicles which can ideally balance renewable power source by acting as storage for maintaining strength in of large amounts of renewable power. In this paper we use system data for identifying the degree to which wind and solar power supply transmit with battery electric vehicle loads. We have proposed different types of energy sources (hydrogen, biodiesel and electric and hybrid technology) as alternative to vestige fuel to achieve a more esuriently and sustainable atmosphere. We present survey on sustainable transportation system that aim to reduce pollution and greenhouse gas emission by using renewable energy. we adopt the point of view of a profit developing electric vehicle service provider seeks an best collection of energy supply agreement for filling electric vehicle energy demand, we find that wind generation is a cost good option, whereas solar power supply does not show to be an cheaply practical option.

Keywords: Wind and Solar Energy, Electric Vehicles, Battery and sustainable transportation system.

I.INTRODUCTION

After 30 years of rapid technological development and due to current economic, political and environmental circumstances, renewable Energy sources. Wind and solar power are composed to become a normal energy source

capable sizes of power to rule systems. California, in particular, is if creative ground for renewable energy growth. California already hosts 2493 MW of wind power, the second greatest connected ability in the US, and in 2006. 11% of the state energy consumption was supplied by wind energy.

Renewable power growth in California will continue as renewable energy is liking strong civil support. Assembly Bill 32 has goal of cutting back glasshouse gas emissions to 1990 levels by 2020 and the Renewable Portfolio Standard (RPS) commands 20% integration of renewable energy in California by 2010. In addition, the electricity market enables the exchange of renewable power. The Market Reform and Technology Advancement (MRTU) which was launched in 2007 is a reform of the California electric power market which enables loads to bid into the bazaar in order to ease the effects of renewable power changeability.

A random and variable changeability is becoming a serious confounding to their large scale mixing. The irregular and flexible supply of renewable power may result in opposite actions that range from ramping other generators, load following, primary and secondary control actions, to the upset of hour

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Greenhouse gasses, cause wear and tear to technology and require important savings in system backup. Practical and academic studies have placed an approximation on the costs resulting from wind changeability at a range of 0 to 7 $/MWh . In addition, renewable power is often badly connected with system supply and request patterns, and may be unwanted even when it is richly available.

The large scale disposition of electric vehicles in transportation networks offers system operators access to an amazing storage resource which can strongly moderate the above-mentioned working conflicts. EVs represent an really flexible class of electric loads and it is ordinary to consider the potential of charging vehicles according to the supply of non-dispatchable renewable energy sources in order to increase our self-reliance on renewable energy generation without give in grid stability.

Apart from contribution profits to grid operators in terms of load response, the operation of EV batteries as storage barriers for renewable energy results in a direct exchange of petroleum by renewable power for working the transportation sector. In 2007 the U.S. transportation sector. accounted for 29% of national annual energy consumption, and it was almost fully fueled by oil It is therefore evident that EVs present a unique chance for fast-tracking our move towards cleaner energy causes.

From an theoretical viewpoint, the challenge of dynamically using electric vehicles and other flexible means for the purpose of justifying renewable power changeability offers productive ground for the application of various optimization systems. The deployment of load resources can be careful overview easy.

II. EXISTING TECHNOLOGIES

It is significant to analysis the current knowledge, specially energy-storage devices (batteries) for the growth of an electric vehicle. Significant in vehicle energy storing will allow for better estimate and displaying of the system load under vehicle-charging situations.

A. Battery

The main battery range is: type, size (energy thickness), weight, charge, life rotation, efficiency, availability, dependability. There are a variety of batteries being researched. Examples include: metal-air battery, sodium sulfur (NAS) battery, flow battery, Li-ion battery, lead-acid battery-operated .At this period, the lithium-ion batteries appear to be the best rechargeable batteries for vehicle operation. Light weight and controlling when compared to other battery materials, and capable of rapid renewing in 10 minor less. Furthermore, due to their unique construction, the titanate batteries do not have strength and coating issues and life span that is nearly 10 times greater than other Li-ion battery. With the right charger, these batteries are capable of recharging in around 10 min to 95% of full size.

B. Charging Techniques

1) Power Alteration: An ac-dc conversion unit that is wild charging would be compulsory to meet the loads of fast charging cars. Some present ac-dc rectifiers clean power at 99% power factor and less than 3% total harmonic distortion. These rectifiers would be based on control electronics capable of changing high power ac to high power dc recent marketplace rectifiers, around six feet wide by six tops all and three ends deep, would come to be like the fuel force sat petrol stations today .

2) Li-Ion Charging Qualities: The charging characteristics of a lithium-ion titanate battery used for reproductions will follow the constant current–constant voltage charging (CC–CV) technique common to lithium-ion batteries as shown in Fig. 1.

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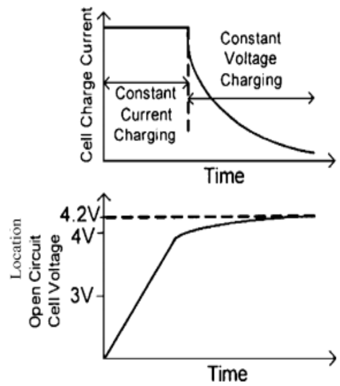

Fig. 1. Typical Li-ion charging characteristics [15].

III. METHODOLOGY

In our examination we consider the task of a service provider which has the objective of providing electricity to EVs in a cost active and dependable way. In individual, the service source chooses when EV batteries are electric, and tries to delay indicting during hours of low system request while ensuring that charging is not suspended long enough

The diagrams in figure 1 are based on annual data which has been be around over each hour of the day. We have covered wind and solar power supply on EV demand and we have regulated the displays with detail to their best value in order to highpoint their relative patterns. Note that EV energy depletion refers to the energy spent by the vehicles, not the energy which is complete to the vehicles by the facility provider. Although EVs put away energy according he blue curve, the time at which they are electric can be familiar in order to better relate with solar and airstream power supply. Therefore, although renewable supply peaks when EV consumption is low, sunrise charges can be on hold to accord with solar control supply and morning charges can be similarly up in the air to coincide with wind power supply. It should be noted that the actual day-to-day and intra-hour variation of the supply sources varies strongly from the average performance shown in figures 1-3.

that vehicles run out of energy en-route. This worker could either be the local value or an autonomous load management being. Due to supervisory constrictions we assume that the EV service worker is compulsory to equalizer the releases of EV energy supply, either by directly transporting solar or wind power, or by purchasing the applicable quantity of renewable energy recognitions (RECs) to neutralize nonrenewable energy supply to EVs. Also, we that the EV package worker can select from a mixture of wind, solar, and fossil fuel conventions with the objective of minimizing its operational costs.

From the point of understanding of the examination earner, wind and solar power supply offer the advantage of causal to the promise for substantial request with renewable energy sources. On the other hand, these resources are variable.

A. RENEWABLE ENERGY SUPPLY RELATIVE TO EV ENERGY DEMAND

The diagrams in figures 2 and 3 are based on the same data as figure 1, but have been broken down by period in order to climax the controls of seasonality on renewable drive availability.We We detect that both wind speed and solar strength follow the same ordinary pattern throughout the day for all seasons, however the changeability varies meaningfully between seasons. Wind power is most flexible during the summer, whereas it is most regular during the winter. Likewise, solar power varies most during the summer, and its summer peak is three times greater than its winter greatest. Figure 3 also checks that wind power supply is greatest.

The reproduction results of giving various mixtures of wind and solar power size to

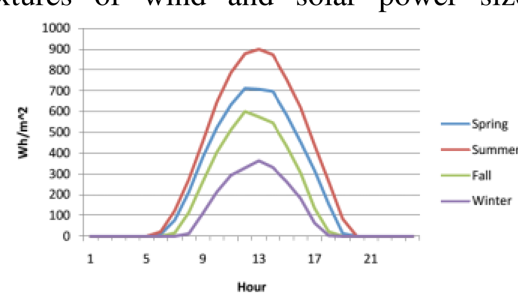

Figure 2: Average daily solar power intensity by season.

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100,000 vehicles where we have used the charging algorithm. The table shows the part of EV energy demand which can be covered by renewable energy by using the simple charging plan. We can make certain clarification.

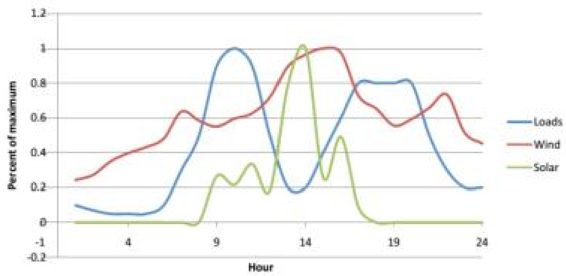

Figure 1: Annual average of daily solar power supply, wind power supply and EV energy consumption.

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B. Baseline development

In this section we focus on sensing the best supply mix for provided that electricity to 100,000 EVs at smallest cost. As we called in the procedure section, we assume the following prices for the baseline development: $45/MWh for fossil fuel contracts, $60/MWh for wind power group contracts, $170/MWh for solar power generation contracts, and $20/MWh for RECs. Giving to our model, whenever extra renewable power is existing to the EV service supplier we assume that it is unwanted. This statement is justified by the fact that system operators cannot easily quarter supply which becomes existing upon short notice, therefore the owner of the supply contracts will be unable to supply the excess renewable power to the marketplace if EVs cannot absorb it. This statement can be relaxed in our model, but the results existing here assume that all excess energy is discarded.

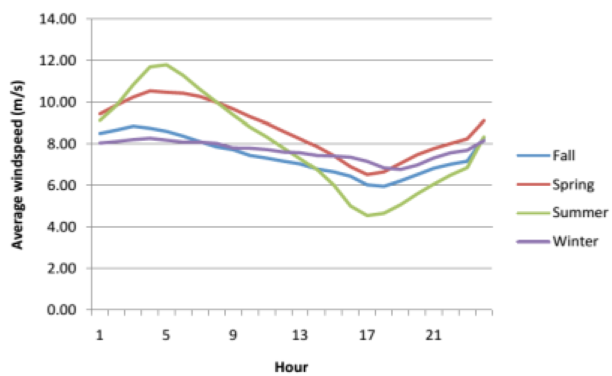

Figure 3: Average daily wind speed by season.

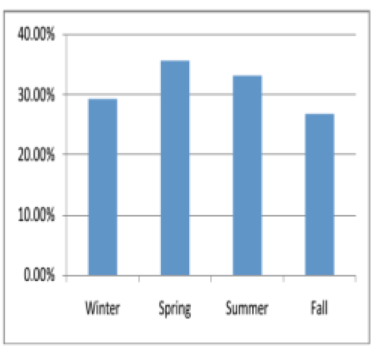

Figure 4: Percent of load satisfied by renewable energy sources by season for baseline scenario.

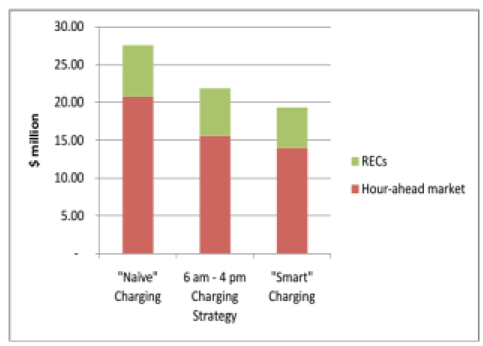

Figure 5: REC and hour-ahead purchasing costs from increasingly refined charging strategies.

C. "Smart" charging

We have declared that in the baseline situation all vehicles are fully exciting at 6 a.m. and 4 p.m. This is a inflexible limit since the one-way exchange of most car driver does not overdo the full capacity of the EV battery. If the EV service worker is able to adjust charging plans to separate powerful, it should be possible to relax the declared policy by giving each driver sufficient energy to ensure that the EV does not chance meeting an energy scarcity en-route though without charging batteries at full capacity through the two limits. This would result in increased give for the EV service provider, greater operation of renewable power supply and complete introduction to the hour ahead market. The result of put on the relaxed limitation is shown in Figure 5, where we present hour- ahead market purchases and charges for three different charging schemes. The first is a raw approach whereby customers are charged directly as they connect their vehicles to the grid. The second is

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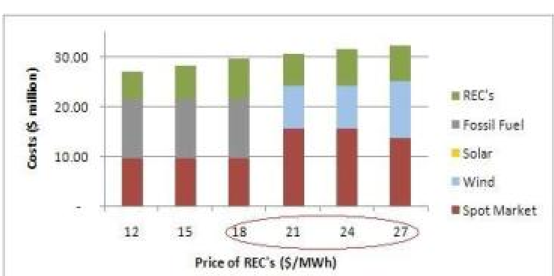
the starting point 6 a.m. – 4 p.m. charging strategy, and the third is a comfortable charging plan whereby cars are charged at 75% of their full capacity at 6 a.m. and 4 p.m. As opposite to the first and second case, which results in an optimal collection which includes 60 MW of wind power, the third charging rates results in an ideal collection which includes another 20 MW of wind power. We observe that advanced charging methods lead to cost savings of $5 million for the second case and$8 million for the third case, as related to cost of the green strategy. It should also be noted that the third strategy does not result in supplying less energy to EVs, but instead results in providing this energy at hours which are more favorable for the service.

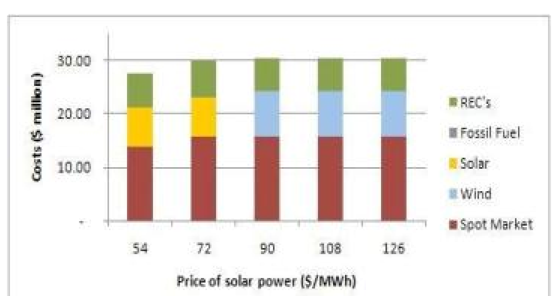
IV.RESULT

The ideal means of transference indicting problem called in presents stimulating optimal control badly behaved and the simple blaming rule which we have used can be pointedly improved. In particular, various sub optimum self-motivated software design techniques can be effectively applied as declared.

The analysis existing above accepts the point of view of the vehicle service source; however it is also motivating to statement the economic encouragements of renewable energy producers. By supplying power to deferrable loads renewable generators are able to enhance their capacity credit since their generation can be reliably absorbed by flowing the depletion patterns of flexible loads. However, renewable generators would reduce their energy incomes by selling their power to flexible customers at a reduced rate in order to incent their flexible behavior. distributing power at the hour ahead market with a compact capacity credit powerfully depends on the extent to which renewable supply is connected with the market price of electricity. The greater the connection between market prices and renewable power supply the weaker the encouragement of renewable generators to enter an special contract with a flexible load class.

The use of a unit obligation model can be used for assessing the impact of renewable energy and EV integration on the hour ahead market of electricity and the impact of transmission limitations on system operations. Within a unit commitment model it will be possible to incorporate loads as a resource which mirrors the behavior of generation resources and examine the impact on system operation costs and reserve requirements.





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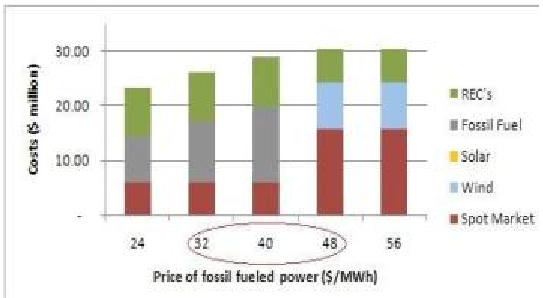

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V. CONCLUSION

We have used solar and wind power supply models for the state of California and a simple heavy pattern model for calculating the range to which renewable control can be used for increasing electric vehicles. Solar and wind power supply seem to have contrasting patterns, with wind power bring about in greater EV energy supply per connected MW.

power application, For example, using 120 MW to charge 100,000 vehicles covers 60% of the EV energy request while resulting in 90% application of wind power. 31.5% of vehicle energy demand, with the resulting shortages obtained in the hour fast market. Solar authority becomes an economical option only below $72/MWh, which is meaningfully below the cost of most present solar knowledge. In contrast, wind power is carefully inexpensive with vestige fuel producers at a reasonable range of wind power, fossil fuel power and REC prices. Careful indicting approaches can increase the amount.

VI.REFERENCE

[1] Energy Information Administration. Annual Energy Review, Report No. DOE/EIA¬ 0384(2007).

[2] A. Papavasiliou, S. S. Oren Coupling Wind Generators with Deferrable Loads, IEEE Energy 2030, Atlanta, Georgia, 17-18 November 2008.

[3] D. P. Bertsekas, Dynamic Programming and Optimal Control. Athena Scientific, Bellmont, MA, 1995.

[4] B. J. Kirby, "Demand Response for Power System Reliability: FAQ", Oak Ridge NationalLaboratory, TN, Tech. Rep. ORNL/TM-2006/565, Dec. 2006.

[5] C. Loutan, and D. Hawkins, "Integration of Renewable Resources", California Independent System Operator, CA, Nov. 2007.

[6] C. W. Potter, D. Lew, J. McCaa, S. Cheng, S. Eichelberger, and E. Grimit, "Creating the Dataset for the Western Wind and Solar Integration Study (U.S.A.)", in Proc.2008 7th International Workshop on Large Scale Integration of Wind Power and on Transmission Networks for Offshore Wind Farms, pp. 288-295.

[7] F. van Hulle, "Large Scale Integration of Wind Energy in the European Power Supply: Analysis, Recommendations and Issues", European Wind Energy Association, Brussels,2005.

[8] DeBare, Ilana PG&E plans big investment in solar power, San Francisco Chronicle. August 15, 2008.

[9] W. B. Powell, Approximate Dynamic Programming: Solving the Curses of Dimensionality.Wiley Interscience, Hoboken, New Jersey, 2007.

[10] B. Van Roy, Learning and Value Function Approximation. PhD Thesis, MIT Department of Electrical Engineering and Computer Science, June 1998.

[11] S. M. Ross, Introduction to Stochastic Dynamic Programming. Academic Press, Orlando, FL, 1995.

[12] A. J. Wood, B. F. Wollenberg, Power Generation, Operation and Control, 2nd Edition.may 2010.