

# ENERGY COMMUNIQUE

## EDITORIAL

### DEMAND SIDE MANAGEMENT & ENERGY SAVING TIPS

**D**ear Readers,

We are all happy faces these days and we don't have to look at the load-shedding schedule anymore. Thanks to the effort of the NEA's entire team for making this happen. But, can we be assured that we won't face the load-shedding in the future? We don't have an answer. So, what can NEA and we do together to ensure a load-shedding free Nepal forever and after?

Demand Side Management (DSM) is one of the option which has been implemented by the NEA to eradicate load-shedding. DSM is the process of modifying energy consumption using cost-effective conservation, efficiency, and load management programs to reduce the demand for, and cost of, energy services. In contrast to "supply-side" strategies, which increase

generation capacity by building new power plants whereas the purpose of DSM is to reduce energy use and to smooth out the daily peaks and valleys in electric energy demand to make the most efficient use of energy resources and to defer the need to develop new power plants.

To ensure stability on the local electricity grid, supply and demand must remain balance in real time. DSM typically works by inducing utility consumers to change their energy consumption habits and use energy-efficient appliances and equipment's in the end use application. DSM is a resource option that complements power supply as well as cost savings to the customers. Meanwhile, reductions of environmental pollutions are also indirectly achieved through DSM.



**Mr. Roshan Silwal**  
Managing Director  
*Comtronics Pvt. Ltd.*  
An EDC Member Organization

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As a DSM initiative, NEA at its end plans to reduce electricity losses to 10 percent by 2020 from existing 25 percent. It already has plans to implement different programs like automating the Distribution and Consumer Services (DCS), introducing smart meters and GIS-based monitoring of the energy supply and management. With this technical loss and non-technical losses can be reduced. Similarly, it also plans to add new substations, transformers where ever required to curb the issue.

Lately, Mr. Kulman Ghising (NEA) had to defend themselves on the government's decision to buy LED bulbs from India's Energy Efficiency Service Limited (EESL), which ran into controversy after news came out on the government paying a lot on the purchase of the LED lights. This initiation is a part of DSM, NEA is planning to procure the LED bulbs and sell them to its 3.5 million customers in a bid to replace CFL and incandescent bulbs that are widely being used by households. Such replacement, as claimed by the NEA, will save

around 200 MW of energy during the peak energy consumption hours. The procurement process has stopped, now 200 MW shortage might hit us hard during the peak season. Who are to be blamed, is it the NEA team OR procurement act OR the suppliers who are working for their vested interest? But, ultimately the entire nation must suffer.

As a citizen of a country everyone should think on how an individual can contribute on being Energy Efficient and save energy. We can easily narrow the gap between demand & supply and decrease the energy intensity in each sector by simple approach towards energy conservation and efficiency through energy efficient technology and housekeeping habits.

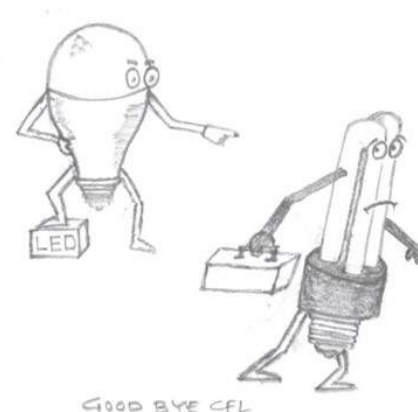
### Energy Saving Tips

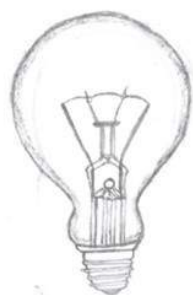
#### Lighting:

A lumen is the measurement of light output from a lamp, often called a tube or a bulb. All lamps are rated in lumens. For example, a 100-W incandescent lamp produces about 1750 lumens.

Another lighting term is efficacy, which is the ratio of light output from a lamp to the electric power it consumes and is measured in LPW (lumens per watt).

1. Use of electronic ballast in place of conventional choke saves energy up to 20%.
2. Use of LED lamps in place of GLS lamp can save energy up to 70%.
3. Clean the lamps and fixtures regularly. Illumination levels fall by 20-30% due to collection of dust.
4. Use of 16W LED Tube light instead of 40 W tube light saves electricity by 8 to 10%.



**Lights Comparison:**

Conventional		CFL		LED		Light Output
Watts	Energy Bills/ Months	Watts	Energy Bills/ Months	Watts	Energy Bills/ Months	Lumens
40	Rs 60	8 - 12	Rs 12-18	4 - 5	Rs 6-7	450
60	Rs 90	13 - 18	Rs 19-27	6 - 8	Rs 9-12	300-900
100	Rs 150	23 - 30	Rs 34-45	16 - 20	Rs 24-30	1600-1800
150	Rs 225	30 -35	Rs 45-52	25 - 28	Rs 37-42	2600-2800

Apart for just lightings, there are various other utilities sectors are there where energy savings are possible like

- Refrigeration and Air conditioning
- Pumps
- Cooling Towers
- Air Compressors
- Electrical Motors etc.

**Energy savings can be done by each sector in the following manner**

S.No	Sector	Stake Holders	Energy Savings Steps
1.	Industrial Sector	Owner Workers i.e., Officers etc. Bankers Lenders Consultants Customers	<ul style="list-style-type: none"> <li>• Top management policy</li> <li>• Energy management cell</li> <li>• Energy manager in the company</li> <li>• Energy audit done by accredited energy auditor</li> <li>• Use of standard machines &amp; tools</li> <li>• Using modern &amp; energy efficient technologies</li> <li>• Customer should be aware about of norms &amp; standards of the product</li> </ul>
2.	Agriculture Sector	Farmers, Bankers Lenders	<ul style="list-style-type: none"> <li>• Using Standard fuel-efficient pump sets</li> <li>• Through Public awareness</li> <li>• Proper installation of pump system</li> <li>• Strictly following the norms &amp; standards for each equipment</li> </ul>
4.	Domestic & Commercial Sector	Government, Consultant, Lenders Bank- ers, Public	<ul style="list-style-type: none"> <li>• Use of renewable energy like solar, wind etc.</li> <li>• No meter tempering</li> <li>• Correct power factor</li> <li>• Use of efficient technologies like LEDs etc.</li> <li>• Switching off the unnecessary lights</li> </ul>
5.	Municipal Sector	Government, Public, Consultants	<ul style="list-style-type: none"> <li>• Strict follow up of norms &amp; standards</li> <li>• Use of efficient technology</li> <li>• Through public awareness</li> </ul>

## EDC ACTIVITIES

### CPICU delegation visits EDC



**O**n 23rd April 2018, Mr. You Jing, Vice President of China Power International Cooperation Union (CPICU), Beijing and his delegation visits EDC. The meeting was fruitful in finding similarities between the organizations' objectives which unveiled possibility of cooperation.

### EDC signed MoU with International Centre for Hydropower (ICH), Norway



**T**o further enhance the cooperation EDC & ICH has signed an agreement to organise a five-day training program on Hydropower Financing scheduled to take place on November, 2018.

## EDC ACTIVITIES

### EDC welcomes a new member “Chirkhwa Hydropower Pvt. Ltd.”

**E**DC heartily welcomes Chirkhwa Hydropower to be a member of its council. Chirkhwa Hydropower Pvt. Ltd. has two projects which are in construction phase. Namely, Lower Chirkhwa Hydropower Project (4.06 MW) & Upper Chirkhwa Hydropower Project (4.7 MW).

### EDC advocacy in promoting the use of electric vehicles and electric cooking stoves starts to pay off

**E**DC is glad to report the end of petroleum imports has begun and is proud to have led this effort continuously for the last few years.

Recently, Finance Minister Dr. Yuba Raj Khatriwada said that 'only electric vehicles' will be allowed in the country by 2030. Achieving Sustainable Development Goals and pollution control are possible through introducing electric vehicles, the Minister had stressed. He also said that Fossil fuel worth of rupees 60 billion may be saved by using electricity for transportation that is half of cost of fossil fuel import in a year. Thus, EVs may help balance of payment to a significant extent. He said that an effective plan is under formulation. (To view the full article, please click [here](#))■

Similar statistics and need to replace mainstream vehicles with the EV to minimize import was previously stated by EDC chairman Mr. Acharya 3 years ago. (To view full interview of Mr. Acharya, please click [here](#))■



## EDC ACTIVITIES

### The tender notice for the month of April

**H**ARATI is an IT company, working in several technologies based products, services and provides online service portal ([tendernotice.com.np](http://tendernotice.com.np)). Following is a list of tender notice provided by HARATI for the month of April;

TenderNotice.com.np					
Tender, Bids and Notices related to Hydro and Energy segments in Nepal					
Date : April 2018					
S.No.	Notice Publisher	Description	Published Date	Notice Category	Product Service
1	Raghuganga Hydropower Limited, Beni, Myagdi	Construction of Landscaping Works	4/29/2018	Tender	Construction/ Building
2	Raghuganga Hydropower Limited, Beni, Myagdi	Supply and Delivery of Security Services	4/29/2018	Quotation	Security
3	Rasuwadaghi Hydropower Company Ltd., Kathmandu	Supply and Delivery of Car	4/26/2018	Tender	Automotive / Vehicles
4	Ministry of Energy, Water Resources and Irrigation, Alternative Energy Promotion Center (AEPIC), National Rural and Renewable Energy Programme (NRREP), Khumaltar Height, Lalitpur	Supply, Delivery, Installation, Testing and Commissioning of Electro-Mechanical Equipment of Chip Hydropower Project	4/23/2018	Tender	Electronics/ Electric Utilities
5	Nepal Electricity Authority, Trishuli Hydropower Station, Trishuli, Nuwakot	Supply and Delivery of Different Kinds of Valve, Runner Repair Works, Quarter Maintenance Works, Water Proofing Works and Land Protection Works	4/20/2018	Tender	Other Product/ Services
6	Ministry of Energy, Water Resources and Irrigation, Alternative Energy Promotion Center (AEPIC), National Rural and Renewable Energy Program (NRREP), Khumatar, Lalitpur	Supply, Delivery, Installation, Testing and Commissioning of Electro-Mechanical Equipment of Micro Hydropower Project	4/13/2018	Tender	Electronics/ Electric Utilities
7	Nepal Electricity Authority, Kathmandu	Consulting Services for Detailed Design of Tamor Storage Hydroelectric Project	4/12/2018	Expression Of Interest	Consulting
8	Tanahu Hydropower Limited, Thapathali, Kathmandu	Consulting Services for Detailed Engineering Design and Preparation of Bidding Documents of the Project	4/11/2018	Expression Of Interest	Consulting

## EDC ACTIVITIES

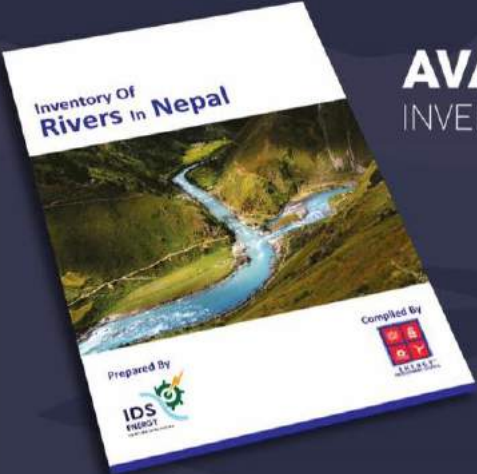
9	Nepal Electricity Authority, Engineering Service Directorate, Project Development Department, Tamakoshi V Hydro Electric Project, Thapathali, Kathmandu	Supply and Delivery of Double Cab Pickup	4/11/2018	Tender	Automotive / Vehicles
10	Nepal Electricity Authority, Generation Directorate, Chameliya Hydroelectric Project, Darchula	Construction of Road	4/8/2018	Tender	Construction/ Building

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### Book Sale Announcement



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"Inventory of Rivers in Nepal" - the first and only inventory of rivers of Nepal that exists so far within Nepal or outside is available for sale. The study finds there are over 11000 rivers and rivulets in Nepal.

## MEDIA COVERAGE

The Himalayan

### GRID-CONNECTED ALTERNATIVE ENERGY

# Grid-connected alternative energy

**PROVINCIAL GOVERNMENT SHOULD BE PROACTIVE AND TAKE ADVANTAGE OF ITS SOLAR AND WIND RESOURCES**

Kushal Gurung  
Kathmandu

It is welcoming news that the Ministry of Energy has finally launched an official policy for grid-connected alternative energy, thus paving way for the utility to buy electricity from solar, wind and bioenergy. However, this new policy has also come up with a new power purchase rate of Rs 7.30 per kwh, which is 24 per cent less than the benchmark tariff of Rs 9.61 per kwh that was earlier proposed by the government through its National Energy Crisis Alleviation Plan released in February 2016.

The Ministry has stated that they came to this new value-based on the cumulative tariff of a run of the river hydro-project after eight times of three per cent annual escalation. From the utility's perspective and the consumers' view, it is obviously better to have cheaper power purchase rate. However, the question is now — is it financially viable to develop solar, wind or bioenergy project at such a rate?

There is already an ongoing conflict between some solar developers and NEA, regarding the latter's refusal to sign power purchase

agreements for the request for proposal that was issued two years back. At that time, the benchmark tariff was at Rs 9.61/kwh, and most of the bidders proposed rate was even lower, up to Rs 8.34/kwh. NEA seemed to be overjoyed by the rate offered by the developers back then and was ready to sign the agreement with the winners. However, somehow the process got delayed and the agreement didn't move ahead. And now with the new rate issued by the Ministry of Energy, NEA is not in the mood to sign the contract, unless the developers agree to sell at the new rate of Rs 7.30/kwh.

Cost of solar PV has gone down sharply, and as per an IRENA report, it has slashed by 73 per cent since 2010. Likewise, the solar PV tariff is also going record low. In May 2017, a 500MW Solar PPA tender in India saw the winning bid as low as INR 2.44/kwh (Rs 3.90/kwh). Now, when a solar project in a neighbouring country could fetch such a low price, it is still not sure if the new rate of Rs 7.30/kwh is financially viable in Nepal, even when the rate is already twice more than that of India.

When it comes to solar PV projects, India has multiple advantages



### hydrohighlight

es compared to Nepal — economy of scale, access to finance, tax exemption, vast and cheap land, better road access and transmission line, among others. Furthermore, they are also providing big market opportunity (100,000MW by 2022) to attract foreign solar PV manufacturers to set up manufacturing plant in India, which also helps to drive down the cost. Whereas, Ne-

pal being a hilly terrain, land is a scarce resource. Furthermore our population is densely settled in the valley and plains, while our barren lands with high solar irradiance, such as Dolpa and Mustang, are in the remote mountainous area. We also have very poor transmission line network and road connectivity. Hence, our best chances are to promote rooftops and small 1-10MW

projects in 11kv or 33kv substations. As such, our cost of production is definitely going to be higher than in India. But at the same time, being a next door neighbour to



The author is CEO of Wind Power Nepal Pvt Ltd, an EDC member organisation

India, with some adjustment in policies and incentives, we could drive down our costs. Incentives such as attracting foreign solar PV companies to build PV manufacturing plant in Nepal, providing production tax credits for solar projects reducing import duties and taxes on solar accessories, not just the solar PV panels, could definitely help to cut the cost down. Moreover, it is time for the provincial government to be proactive and take advantage of its solar and wind resources, especially by Province No 4, 5 and 6 where they have barren land with good wind profile and solar irradiance. These provinces could set up industrial estates with captive wind and solar plant to power them, and thus attract industries with cheap electricity and land lease, which in turn could help to generate revenue and create jobs.

Overall, the new government policy for on-grid alternative energy project is a positive move and though the new proposed power purchase rate of Rs 7.30/kwh could be a bummer for time being, but with projection of average global solar PPA at \$3 cent per kwh by 2020, the future does look bright and sunny!



## NEPAL'S SCENARIO

### Nepal Electricity keen on setting up nationwide EV charging station network: Ghising



**K**ul Man Ghising is the Managing Director of Nepal Electricity Authority, the public utility in charge of distributing and regulating the power sector in the country. Ghising, who was appointed to the post in September 2016, has been credited for ending power cuts, which at one point of time reached up to 20 hours a day, by introducing managerial reforms and scientific load management in the public utility. In April 2017, Ghising announced that Nepal no longer needs to worry about power cuts. He says that Nepal should now focus on making the most

use of its installed capacity. Promoting EVs would be one of the best ways to do that, he adds. Abhaya Raj Joshi and Sudil Pokharel recently talked to Ghising about NEA's plans related to EVs.

Translated excerpts:

**Could you tell us about the NEA's policy on electric vehicles in Nepal?**

We have understood that we need to promote electric vehicles in the country. We recently bought two EVs for NEA and also have a charging station at our office. We will soon buy 8-10 more EVs for official use.

When it comes to EVs, I think that government policies to encourage people to buy electric cars need to be in place. But the other thing that is important is that we need to have a good network of charging stations. The network should be at a scale similar to the fossil fuel distribution network we have in the country right now. Charging stations are the petrol pumps of the future.

We think that the NEA is in the best position to set up a network of charging stations across the country and we are keen on developing the network. There are two reasons for that.

**Could you elaborate what are the reasons?**

If you go across the country, you will see that wherever there are roads, there are power lines and wherever there are power lines, there are NEA substations and offices. We have big pieces of land in almost all parts of the country,

including the Kathmandu Valley, where land has become expensive. For anyone else to set up a network of charging stations, they would have to buy or lease land and doing so is not going to be cheap.

That is why we have commissioned a study on how the property we have can be used to set up a network of stations. A typical charging station would have around 5-10 chargers and if it is run at full capacity, it will require around 1 MW of electricity to operate. That is why we also need to build a sub-station and install transformers near the station.

#### **The second reason?**

The second reason is related to our power business. If you look at our daily demand curve, you will see that it is not uniform. There are two hours in the morning and in the evening when demand peaks and during the rest of the day it goes down by 50 per cent. At night, the demand for power is the lowest –compared to the peak demand, it is only 40 percent. We are in such a situation right now that we need 50 per cent more power just during the peak hours. But during the

off hours, our capacity goes unutilized.

So to optimize our system and to make the load curve more uniform, we need something to spur demand during the off-peak hours. EVs could help us do that. If we could use the underutilized power to charge EVs, the system will become more efficient and the cost per unit of electricity will also go down.

**If you establish a network of charging stations, cars could come in to get charged at any time of the day, even in the peak hours. Won't that be a problem?**

I think that won't be a problem.

The number of EVs we currently have on our roads is pretty low, and if we start promoting them now, it would take at least three years for the trend to become big. In the next few months, Upper Tamakoshi Hydropower Project will come online and we will have 50 per cent more power than what we have right now. In the next three years, more than 1,200 MW of electricity is being added and we will soon have an installed capacity 2,500 MW.

In addition to that, we are building transmission lines with India, from where we can soon import, and export, around 1,500 MW. With all that said, we now need to focus on increasing the demand and keeping it uniform, rather than worrying about not being able to fulfil the demand. To address the peak hour problem, we have already started rolling out smart metres and we will soon implement power pricing based on the time of day.

**What about the dry season? Most of the hydro projects are based on run-off-river model and during the dry season, their generation is far below par.**

Once we have the transmission lines in place, we can import additional power from India. During the wet season here in Nepal, we will have excess electricity which we can export to India and during the dry season, we can import power from India. During the wet season in Nepal, the heat becomes almost unbearable in north India and the demand for power there rises steeply. That is how things could be managed.

(To view the full article, please visit the link below.)■

## Triyuga Municipality to set up 100 MW solar plants

### *10 MW of solar energy to be harnessed in the first phase*

**T**riyuga Municipality of Udayapur district has unveiled plan to install 100 MW solar photo voltaic plant.

The municipality will generate 10 MW of solar power in the first phase with assistance of a Chinese company. The project will be implemented in public-private-partnership model.

The company has already made two studies over the past three months to set up solar photo voltaic plant.

Mayor of Triyuga municipality Bel Dev Chaudhary said that the municipal executive office will sign a contract with the Chinese company with the target of starting the project in the current fiscal year.

Chaudhary had requested Chinese officials for help to develop the

municipal city during his recent visit to the northern neighbor. After the visit, Chinese technicians visited the municipality to study different potential sectors in the city. They identified energy, waste management and irrigation are the three key areas where the municipal office should focus its work.

Based on the suggestion of the technicians, the municipality decided to focus on solar power plant in the first phase. The municipality has identified area stretching from Bagaha in Ward 4 to the bridge near Chuhade in Ward 6 for building solar park.

According to Mayor Chaudhary, 1.5 hectares of land is required to harness 1 MW of solar energy.

The municipality plans to sign a formal agreement to commence work on the solar park with the

Chinese company on April 18.

Upon completion of 100 MW solar voltaic power plant, the municipality plans to sell energy to industries in the municipality as well as other local units.

Average demand of Udayapur district currently stands at 24 MW. Gaighat area is receiving 12 MW, half of which goes to Udayapur Cement Factory.

According to Ram Ayodhya Yadav, chief of NEA's Distribution Center in Udayapur, Gaighat is getting 12 MW, while Katari and Beltar-Thokshila area are receiving 3 MW each which makes total supply in the district to 18 MW.

Because of inadequate power supply, locals of Udayapur have been facing unannounced power cuts. ■



## GLOBAL PERSPECTIVE

### World's first electrified road for charging vehicles opens in Sweden

*“Stretch of road outside Stockholm transfers energy from two tracks of rail in the road, recharging the batteries of electric cars and trucks “*

The world's first electrified road that recharges the batteries of cars and trucks driving on it has been opened in Sweden.

About 2km (1.2 miles) of electric rail has been embedded in a public road near Stockholm, but the government's roads agency has already drafted a national map for future expansion.

Sweden's target of achieving independence from fossil fuel by 2030 requires a 70% reduction in the transport sector.

The technology behind the electrification of the road linking Stockholm Arlanda airport to a logistics site outside the capital city aims to solve the thorny problems of keeping electric vehicles charged, and the manufacture of their batteries affordable.

Energy is transferred from two tracks of rail in the road via a

ble arm attached to the bottom of a vehicle. The design is not dissimilar to that of a Scalextric track, although should the vehicle overtake, the arm is automatically disconnected.

The electrified road is divided into 50m sections, with an individual section powered only when a vehicle is above it. When a vehicle stops, the current is disconnected.

The system is able to calculate the vehicle's energy consumption, which enables electricity costs to be debited per vehicle and user.

The “dynamic charging” – as opposed to the use of roadside charging posts – means the vehicle's batteries can be smaller, along with their manufacturing costs.

A former diesel-fueled truck owned by the logistics firm, PostNord, is the first to use the road.

Hans Säll, chief executive of the eRoadArlanda consortium behind

the project, said both current vehicles and roadways could be adapted to take advantage of the technology.

In Sweden there are roughly half a million kilometers of roadway, of which 20,000km are highways, Säll said.

“If we electrify 20,000 km of highways that will definitely be enough,” he added. “The distance between two highways is never more than 45km and electric cars can already travel that distance without needing to be recharged.

Some believe it would be enough to electrify 5,000km.”

At a cost of €1m per kilometer, the cost of electrification is said to be 50 times lower than that required to construct an urban tram line.

Säll said: “There is no electricity on the surface. There are two tracks, just like an outlet in the wall. Five or six centimeters down is where the



electricity is. But if you flood the road with salt water then we have found that the electricity level at the surface is just one volt. You could walk on it barefoot.”

National grids are increasingly moving away from coal and oil and battery storage is seen as crucial to a plan about a future network. In 2016, a 2km stretch of motorway in Sweden was adapted with similar technology but through overhead power lines at lorry level, making it unusable for electric cars.■

The Swedish government, represented by a minister at the formal inauguration of the electrified road on Wednesday, is in talks with Berlin about a future network. In 2016, a 2km stretch of motorway in Sweden was adapted with similar technology but through overhead power lines at lorry level, making it unusable for electric cars.■

Source: [https://www.theguardian.com/environment/2018/apr/12/worlds-first-electrified-road-for-charging-vehicles-opens-in-sweden?CMP=fb\\_gu](https://www.theguardian.com/environment/2018/apr/12/worlds-first-electrified-road-for-charging-vehicles-opens-in-sweden?CMP=fb_gu)

## The first 200-kW wireless charging system for electric buses is deployed

We have been skeptical about the usefulness of current wireless charging systems for electric vehicles, but now a new interesting system with a record charge rate (almost double Tesla's current Supercharger) has been deployed for the first time and it is made specifically for electric buses.

We reported on Momentum Dynamics back in 2016.

Transit in Wenatchee, Washington

Momentum's CEO Andrew Daga commented on the announcement:

*"Across the globe, transit agencies are transitioning to electric buses as quickly as they can but driving range limitations are impeding faster adoption. These agencies have been waiting for a solution that will guarantee their new electric buses can drive any route while maintaining an adequate energy reserve under all conditions."*

specifics data, but they claim that "the system is more energy efficient than plug-in chargers of the same power rating."

Plug-in charging systems are generally at least 90% efficient, but they are just now starting to reach a capacity of 200 kW and we don't have much data about how they were able to maintain efficiency at the higher charge rate.

At the time, they claimed that they will bring to market a 200-kW wireless charging systems by the end of the year.

course, charging efficiency and charge rate have always been the main problems with wireless charging technologies.

It took them a little longer, but they announced this week that they now have an operational system deployed for a BYD K9S bus at Link

Momentum Dynamics clearly got the charge rate part figured out and when it comes to efficiency, they, unfortunately, didn't release any

The company insists that its wireless solution is best for electric buses:



*“For electric transit, wireless charging is the most effective method for on-route opportunity charging. Within five minutes, the wireless charging system automatically adds enough energy to the vehicle’s battery to complete another route during its routine transfer station stop. This allows the electric bus to drive unlimited route cycles. Buses with Momentum’s wireless charging system stop over the charging transmitter embedded in the road to charge automatically.”*

While this one in Washington state is the first, they say that more sys-

tems are planned in the US this year and in Europe next year.

### Electrek’s Take

Like I said in my article about Kia unveiled its own wireless charging system for the Soul EV electric car last week, I don’t think the convenience aspect of wireless charging is important enough to compensate for the disadvantages.

In the case, I admit that it certainly makes more sense for buses than

cars if the system is quick enough to charge during short stops.

With this said, there are still a few things that we would need to know, like the cost of embedding the wireless charging pad in the pavement and the long-term durability of that pad.

We will keep an eye on the deployment and revisit after it has been used for a while.■

Source: <https://electrek.co/2018/04/19/200-kw-wireless-charging-system-electric-buses/amp/>

## Solar energy at risk

**F**or decades, solar power has been a bit player in the energy industry, overshadowed by fossil fuel giants. But today, solar is booming. The United Nations just announced that solar attracted more investment in 2017 than any other power source, clean or dirty. Solar jobs are also on the rise around the world; in the U.S., the industry employs over 250,000 people, and India is close behind. As a result, the global solar industry is not just an increasingly important economic sector — it also enjoys growing political clout.

At first blush, solar’s political rise is excellent news. Fossil fuel companies have long exerted political sway over public policymaking around the world, so solar’s newfound political influence could balance the scales and spur governments to target a transition from dirty to clean energy. Such a transition at the global scale is essential to slash emissions of climate-warming greenhouse gases and avert catastrophic climate change.

Yet there are troubling early signs that the increasingly powerful solar energy industry and its coalition

of allies might not push for the policies needed for solar and other clean power sources to dominate future electricity systems. This week, I published a Brookings Institution report that investigates how the industry and its allies are flexing their political muscle around the world. I found that factions in the solar industry are focused on policies that narrowly benefit firms in the near term, such as subsidies for deploying solar or trade barriers to prop up domestic manufacturing.

And the industry's political allies, such as environmental groups, often lobby against other clean sources of energy. But if the solar industry hopes to ensure that solar keeps growing — not just next year but for decades to come — it will need to shake up its advocacy and alliances and start supporting systemic policies to create a flexible and diverse energy system.

Historically, solar advocates have focused their political efforts on securing subsidies, incentives and mandates that directly boost the deployment of solar power. This strategy has been wildly successful. In Germany, environmental groups, trade unions, solar manufacturers and the Green Party joined forces to pass landmark legislation near the turn of the 21<sup>st</sup> century that provided generous incentives for solar and helped the global industry scale up. Today, solar is the cheapest, fastest-growing source of electricity on the planet, and its current boom owes a great deal to the political advocacy of the solar industry and its allies.

The problem is that solar no longer

needs direct subsidies to keep rising. But such policies are what the industry is used to advocating for. In 2015, the U.S. solar industry lobbied furiously to extend the investment tax credit, which reduces the cost of solar installation. They were right to warn that a sudden end to the credit could upend the market, but they overreached in securing a long-term extension. Today solar is already cost-competitive in the U.S. without any subsidies, even though the tax credits won't start phasing out until 2020. Not only are these tax credits unnecessary, they can actually slow the cost declines of solar by distorting market price signals and requiring complicated financing structures.

Even more worrying is some solar firms' advocacy for trade barriers that would actually raise the cost of solar power and slow its deployment. In the U.S., two ailing solar manufacturers convinced the Trump administration to enact sweeping tariffs on imports of solar panels, which are mostly produced in China and Southeast Asia. The bulk of the U.S. solar in-

dustry — including both producers and installers — actually opposed these tariffs because they will slow solar deployment by roughly 10 percent over the next five years, but the two manufacturers prevailed. In India, the government is contemplating even higher tariffs on solar imports, goaded by the growing domestic solar manufacturing sector. That could decimate the second fastest-growing solar market in the world (China is first).

Even as the industry lobbies for direct subsidies and internally quarrels over trade barriers, solar's current boom is at risk of sputtering out in coming decades. As more solar power is deployed around the world, electricity grids will struggle to handle the influx of intermittent renewable energy. Indeed, the power output from solar panels can gyrate wildly when clouds pass overhead, and solar power gets wiped out at nighttime. Countries must develop ways to store solar power or otherwise productively use the power no matter when it is produced or how much it fluctuates.



Otherwise, the rise of solar could hit a ceiling when it becomes expensive and complicated to add any more.

The solar industry should marshal its growing political might to push governments to make their electric power systems far more flexible. This will require the industry to support policies that do not directly benefit solar firms in the immediate term, but the reward will improve solar's long-term prospects.

For example, the solar industry should encourage the deployment of batteries and other energy storage technologies to help the grid shift solar power production to times of the day when customers most demand electricity. The industry should also urge governments to invest in a smarter grid that enables customers to shift their demand to when renewable energy is available. Larger grids also make it easier to ship excess

solar energy to distant regions with greater demand, so the solar industry should advocate for building out long-distance transmission lines. Finally, the solar industry should support a diverse mix of power plants that can produce clean electricity when the sun isn't shining — from wind turbines to nuclear reactors to fossil-fueled plants that capture carbon emissions.

This political agenda might require the solar industry to break with some longtime political allies in the environmental movement, whose advocacy could actually stunt the flexible systems that solar needs to thrive in the long run. For example, some environmental groups have stridently opposed new long-distance transmission lines in the U.S. and abroad that could enable the integration of more intermittent renewable energy. And across Europe and the

U.S., some environmental groups have sought to shut down nuclear reactors. But in addition to representing the world's second-largest source of clean power, nuclear reactors can also ramp their power output up and down to compensate for intermittent solar power and enable more of it to be deployed.

By midcentury, solar could be the star of a clean power revolution, rising to become the world's largest source of electricity. But every star needs a supporting cast, and solar cannot power the planet alone. The global solar industry would do well to remember this and, rather than lobby for handouts, use its growing political clout to promote a flexible, diverse and clean power mix. ■



## ABB unveils its 350 kW electric vehicle charging tech, claims 200 km range in 8 minutes

**A**BB, a major Swedish-Swiss multinational technology company, is involved in several major electric vehicle charging networks. The company is now unveiling its own full 350 kW electric vehicle charging technology, which it claims can add 200 km of range in 8 minutes.

Range per minute is a weird metric to share since it's highly dependent on the specific electric vehicle, but it's certainly achievable with a 350 kW charging technology.

ABB launched the new system called the Terra HP at Hannover Messe this week with the BMW i8, which ironically can't take anything close to 350 kW.



Frank Muehlton, Head of ABB's Global Business for Electric Vehicle Charging, said about the launch:

*"We are committed to supporting the expansion of electric vehicle charging systems across the globe to drive cleaner environments. Creating innovative state-of-the-art and energy efficient solutions which are scalable to expand and flex with our customers' needs is at the heart of ABB's philosophy."*

The company claims that it is "the first 350 kW electric vehicle charging system", but Chargepoint already started deploying a 350 kW system and Porsche also started building its new high-power stations.

With this said, ABB has also been working with EVgo to deploy their own 150 to 350 kW system.

ABB says that Terra HP has the capacity to charge "both 400 V and 800 V cars at full power."

At the moment, there are no 800-volt electric cars on the market, but it is expected to change soon – starting with the Porsche Mission E next year.

ABB has been increasingly involved in electrification especially as a hardware supplier for charging networks. It has plans to deploy a network of fast-charging electric car stations in Iceland, but also through their factory automation division, like their cooperation with Northvolt to build their European battery gigafactory.

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#### ENERGY DEVELOPMENT COUNCIL

##### Main Office

Heritage Plaza II (Block C & D), Kamaladi,

Kathmandu, Nepal

P.O Box no. 516

Phone: +977-1-4169116/ 4169117/  
4169118

Fax: +977-1-4169118

Email: [info@edcnepal.org](mailto:info@edcnepal.org)

Website: <http://edcnepal.org/>

##### Contact Office

RM 316/3 F Chinese Overseas Scholars Venture Building,  
South District

Shenzhen Hi-tech Industry Park, Shenzhen, China



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