


[Home](#)
[CEO Hotline](#)
[Viewpoint](#)
[Classified Ads](#)
[Archives](#)
[Metro.net \(web\)](#)

Resources

[Safety](#)
[Pressroom \(web\)](#)
[Ask the CEO](#)
[CEO Forum](#)
[Employee Recognition](#)
[Employee Activities](#)
[Metro Projects](#)
[Facts at a Glance \(web\)](#)
[Archives](#)
[Events Calendar](#)
[Research Center/Library](#)
[Metro Classifieds](#)
[Bazaar](#)

Metro Info

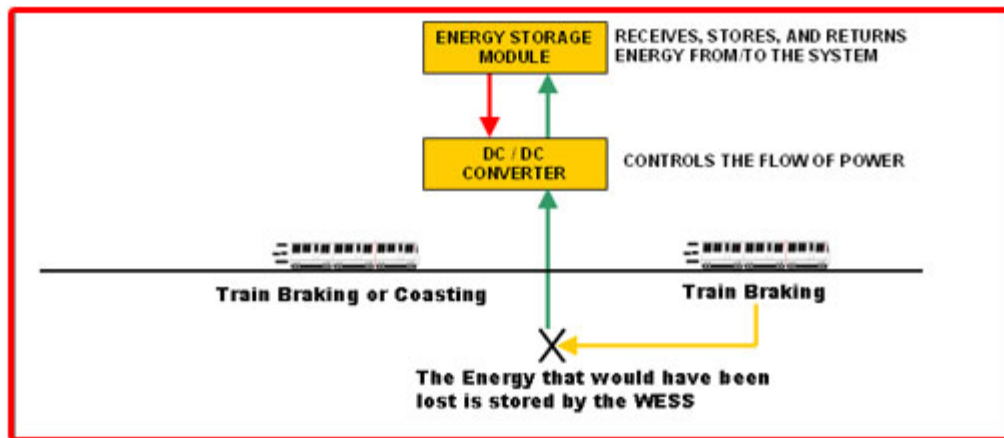
[30/10 Initiative](#)
[Policies](#)
[Training](#)
[Help Desk](#)
[Intranet Policy](#)

Need e-Help?

Call the Help Desk
at 2-4357

[Contact myMetro.net](#)

WESS operation puts the brake on energy waste



WESS flywheel technology is expected to capture regenerative braking energy when trains slow or stop and then transfer the energy back to the same train, or another train, when it starts or accelerates.

Metro Systems engineering team gets \$4.5 million grant for wayside station system that receives, stores and returns energy

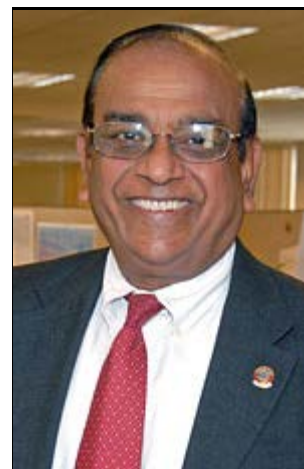
- Feds Provide Funding for Red Line Energy Savings Project

(Oct. 13, 3009) Metro has received \$4.5 million in federal stimulus funds to install a Wayside Energy Storage Substation (WESS) at the Westlake/MacArthur Park Metro Red Line station, officials announced.

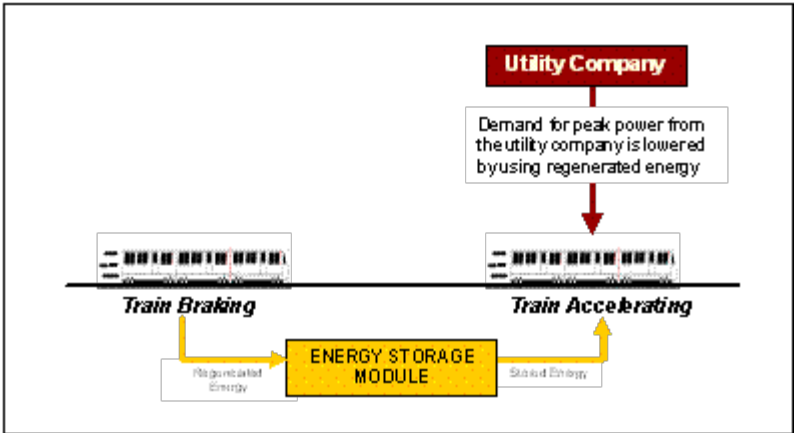
Metro was one of 43 transit agencies that will benefit from the \$100 million U.S. Department of Transportation (USDOT) grant awarded to pursue cutting-edge environmental technologies expected to help reduce global warming, lessen America's dependence on oil and create green jobs.

The funding was awarded thanks to the combined efforts of Metro's Construction Division Systems Engineering, Environmental Compliance and Services, and Planning and Government Relations departments.

The funding will pay for Metro's WESS flywheel technology which is expected to capture regenerative braking energy when trains slow or stop and then transfer the energy back to the same train, or another train, when it starts or accelerates, said Ram Krishna, P.E., Director of Project Engineering Systems for Metro.



Ram Krishna, P.E., Director of Project Engineering Systems for Metro.



The stored energy reduces the total power demand from the utility, which is critical during peak usage periods such as summer afternoons.

How the System Works

The WESS system is able to capture the energy regenerated by trains as they use their motors to brake. In effect, the motors are run in reverse to slow down and stop the train therefore producing free power using the trains’ inertia.

Once the energy is captured, the storage system would discharge the energy during the next peak power demand, which often is the same train when it leaves the passenger station a few minutes later.

This stored energy helps power the train during peak usage as it leaves the station, so that the standard utility power serves as a secondary power source. It also reduces the total power demand from the utility, which is critical during peak usage periods such as summer afternoons. Finally, it reduces CO₂ emissions of the transit system.



Conventional TPSS: TPSS systems receive AC high voltage power from utilities and convert it to DC power for operation of trains.



Battery WESS: The WESS system does not use high voltage AC power from the utilities. Instead, it “recycles” the DC power within the system.

New Energy Storage Technologies

Krishna was instrumental in bringing together the technology included in the winning proposal along with coordinating staff from Metro, VYCON, an L.A.-based energy storage systems company, and technical experts from Turner Engineering Corporation.

Other stakeholders in the project include the California Energy Commission, the Los Angeles City Department of Water and Power, Southern California Edison, Chevron Energy Solutions and Eaton Electrical Systems and Systems.

Krishna is a strong advocate of designing traction power systems that incorporate new energy storage technologies that can store this free energy

and put it to good use, and has assisted the American Public Transportation Association (APTA) in exploiting the advantages of energy storage.

Energy storage technologies applied to rail systems, said Krishna, "will improve the environment, save power costs, support utility company's peak power demands, and lower capital costs in new construction."

Most transit traction power systems in the U.S., he added, "are missing an opportunity to save valuable energy."

For example, he said, every time a train brakes and stops, it generates energy that often goes unused due to the lack of an energy storage device in the system. The result is wasted energy, typically converted into heat and dissipated into the air.

"Can we afford to throw away free energy? I say 'no'," he said.

--from staff reports

| [Home](#) | [Phone Directory](#) | [Forms Online](#) | [FIS Online](#)