



AMTRAK CITIES SPRINTER: *Delivering New Benefits and Features*

Amtrak will use the new ACS-64 electric locomotives in the Northeast region.

DIVERSE BENEFITS

Reliability

The new equipment will be replacing locomotives that have **been in service between 25 and 35 years** with average mileage of more than 3.5 million miles. In total, the current fleet has traveled more than 200 million miles.

Energy Efficiency

The 70 new locomotives are equipped with regenerative braking, which allows energy to be fed into the power system for use by other trains. The manufacturer estimates that when fully deployed and operated as designed, the regenerative braking feature may result in the generation of **3 billion kilowatt hours of energy, and reduce greenhouse gas emissions in the coming decade.**

At an estimated 10 cents per kilowatt hour, the energy generated equals \$300 million in **electricity being returned to the power system** for use by other trains. This is compared to locomotives that do not have this state-of-the-art regenerative capability.

Mobility

The new Amtrak Cities Sprinter (ACS-64) locomotives will operate on **Northeast Regional trains at speeds up to 125 mph** on the Northeast Corridor (NEC) along the Washington—New York—Boston route and on **Keystone Service trains at speeds up to 110 mph** on the Keystone Corridor from Philadelphia to Harrisburg, Pa. In addition, all long-distance trains operating on the NEC will be powered by the new locomotives.

STATE-OF-THE-ART FEATURES

Power

The ACS-64 locomotive will have a peak of 8,600 horsepower (6.4 MW) with excellent acceleration capabilities to attain revenue service **speeds of 125 mph pulling up to 18 Amfleet coach cars**, while at the same time providing up to 1,000 kVA (1 MVA) of head-end power for auxiliary train equipment such as interior lights, electrical outlets and air conditioning and heating for passengers.

Regenerative Braking

The electro-dynamic brake system of the ACS-64 has the ability to put a maximum of 5 MW of electricity back into the catenary overhead power source during regenerative braking. The regenerative braking can feed up to 100 percent of the energy generated during braking **back to the power grid.**

Safety

The Amtrak-specific design meets the latest Federal Railroad Administration (FRA) safety requirements including **crash energy management components** like front-end strength and a crumple zone for collision with large objects, in addition to an enhanced safety cage, push back couplers and anti-climber functionality.

Maintenance

The ACS-64 locomotive has been designed for **improved safety and reliability.** Its enhanced design also allows for more efficient and cost-effective maintenance to ensure locomotives are returned to service as quickly as possible.

Smart Technology

The state-of-the-art microprocessor system installed in the locomotive allows for **self-diagnosis of technical issues.** The on-board computer system can notify the engineer and operator of any maintenance issues and can take self-corrective action to maintain operation of the locomotive and ensure safety. For example, the computer may identify a technical issue and can automatically notify the engineer, switch to a back-up or redundant system or decrease speed and operational performance if necessary.

Redundancy

The ACS-64 is based on Siemens' newest platform, the Vectron. For example, dual auxiliary inverters provide redundancy to ensure that **heating and cooling systems, lighting and door systems** remain in service should one inverter fail.

Economic Growth

Amtrak is modernizing its equipment fleet to meet growing demand and help America compete in the global marketplace. **The new locomotives will power the economic future of the Northeast region** when they enter revenue service on one of the busiest rail segments in the world.

Results

Compared to the legacy fleet Amtrak was operating in 2013, the new electric fleet has reduced incidents by nearly 20% and reduced delay by nearly 25%.

“Over 60 suppliers representing more than 50 cities and over 20 states.”

SUPPLIERS

The Amtrak locomotives are being assembled at the **Siemens Sacramento, Calif., rail manufacturing plant** powered by renewable energy, with parts built from its plants in Norwood, Ohio and Alpharetta, Ga., and provided by over 60 suppliers, representing more than 50 cities and 20 states. The locomotives are being built in excess of Amtrak’s Buy American standards which require 51% of components come from “local” or U.S. suppliers.

FLEET PLAN

The new locomotives are part of Amtrak’s comprehensive Fleet Strategy Plan to **modernize and add equipment** while providing improved performance and reliability for intercity passenger rail services throughout the Northeast.

TESTING, COMMISSIONING

The new electric locomotive underwent a comprehensive and rigorous testing program before entering Northeast service. Already the locomotive has been **tested at the U.S. Department of Transportation’s (DOT) Transportation Technology Center (TTC)** facility in Pueblo, Colorado. This includes testing maximum speed runs, acceleration and braking, and the overall performance capabilities of the locomotive.

Several locomotives have already run **comprehensive field tests** on the Northeast Corridor. These field tests will continue on the east coast— including the Keystone Corridor – as the production schedule ramps up for the locomotives. By early 2014, several locomotives are expected to be in some phase of the testing and commissioning process.

TRAINING PROGRAM

To ensure the locomotive engineers and mechanics are properly trained, Siemens and Amtrak have developed a multi-pronged approach that includes classroom and instructional time, software-based training and simulation, and hands-on training in the field at Amtrak’s Wilmington test track. With more than **2,000 course hours** slated as part of the program, Siemens and Amtrak began training on the electric locomotives in spring 2013. This will continue through 2014 and as Siemens completes delivery in 2016.

PRODUCTION SCHEDULE

With the first locomotive now entering into revenue service in early 2014, production of the remaining units will subsequently ramp up a scheduled delivery of approximately two locomotives per month through 2014, and moving to three units per month through 2016.

CONTRACT DETAILS

In October 2010, **Amtrak awarded a contract to Siemens** for production of 70 electric locomotives to support high-speed, commuter (push-pull) and long-distance service on the Northeast and Keystone Corridors. This \$466 million contract was financed with a FRA Railroad Rehabilitation & Improvement Financing (RRIF) loan that will be repaid with NEC revenue.