

## European Solar and Energy Storage Solutions

# Sweden ares advanced rail energy storage



## Overview

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What is advanced rail energy storage?

Advanced Rail Energy Storage (ARES) uses proven rail technology to harness the power of gravity, providing a utility-scale storage solution at a cost that beats batteries. ARES' highly efficient electric motors drive mass cars uphill, converting electric power to mechanical potential energy.

How does Ares energy storage work?

ARES energy storage technology employs a fleet of electric traction drive shuttle-trains, operating on a closed low-friction automated steel rail network to transport a field of heavy masses between two storage yards at different elevations.

What is Ares technology & how does it work?

ARES technologies use no fossil fuel or water, produce zero emissions or hazardous waste, and have a 40+ year service life with no degradation or thermal runaway. Energy can be stored in many forms such as chemical energy (batteries), thermal energy (heat), kinetic energy (flywheels) and potential mechanical energy (hydro).

How do Ares shuttle trains work?

During periods where excess energy is available on the grid (Reg-Down), ARES shuttle trains draw electricity from the grid which powers their drive motors to move the trains uphill against the force of gravity—efficiently converting electrical energy into gravitational potential energy.

What is a rail energy storage innovation?

One innovation that may work is ARES, which stands for Advanced Rail Energy Storage. This innovation was invented and developed by a company with the same name, ARES LLC. ARES is a large-scale energy storage device that uses a gravitational train system. This innovation consists of several sets of train on

the funicular railroad.

How long do ARES Systems last?

ARES systems are machines and have a 40-year service life with no degradation and no thermal runaway. ARES uses recycled steel rails, low-carbon and reclaimable mass cars, sophisticated motors and electronics, and freely available gravity, providing a fully sustainable renewable energy storage solution for utility-scale deployment.

## Sweden ares advanced rail energy storage

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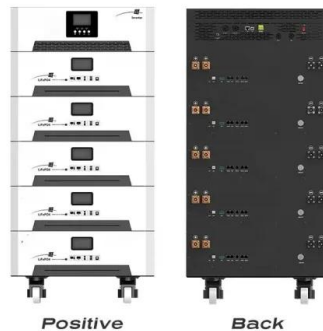


### Advanced Rail Energy and Storage : Analysis of Potential

The growing introduction of non-dispatchable intermittent energy sources to the electrical grid can cause some additional instability to arise. Energy storage systems can be used to close the gap between power generated and load demanded by either supplying power to the grid when other sources do not meet demand or consume power when demand is lower than supply. An ...

### ARES North America

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### ARES Advanced Rail Energy Storage

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## Advanced Rail Energy Storage: Green Energy Storage for

Advanced Rail Energy Storage (ARES) LLC, based in California, is a technology development firm dedicated to advancing the role of energy storage to improve the resilience, reliability, and environmental performance of the electrical grid. ARES has developed and been granted both domestic and international patents for an alternative method of



## Our Company

Founded in 2010, Advanced Rail Energy Storage (ARES) has developed, tested and patented rail-based, gravity-powered energy storage technologies that are more environmentally responsible, durable, and cost-effective than other utility-scale storage alternatives. ARES technologies use no fossil fuel or water, produce zero emissions or hazardous

## US firm ARES gets BLM approval for 50-MW rail ...

March 29 (SeeNews) - Advanced Rail Energy Storage LLC (ARES) said Monday it received a right-of-way lease from the US Bureau of Land Management (BLM) for its 50-MW commercial-scale gravity-based rail energy storage project in ...



## Advanced Rail Energy Storage

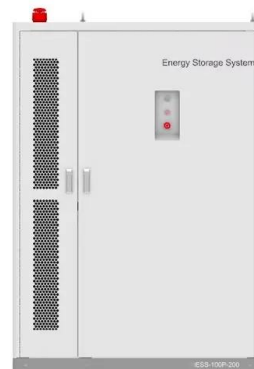
About ARES Advanced Rail Energy Storage, LLC (ARES) is a Washington State LLC and was founded in 2010. It is headquartered in Santa Barbara and has multiple offices in the Southern California area. In addition to these corporate offices, ARES has a research center in Tehachapi,

California and is developing a second facility in Moorpark, California.



## Advanced Rail Energy Storage System , Old and New Technology

Advanced Rail Energy Storage: The electrical grid sounds like an effective solution for cleaner energy supply to replace the old fossil fuel system that is dirty and toxic. However, this sustainable energy system also possesses a typical problem of supply instability.



## Forget Elon's Batteries--Fix the Grid With a Rock-Filled Train

The Advanced Rail Energy Storage is a 19th century solution for a 21st century problem. The ARES is pretty simple, as cutting-edge energy storage technology goes. A lot of rocks. A few

## The train goes up, the train goes down: a simple new way to store energy

Advanced rail energy storage (thus "ARES") can absorb that excess energy, using it to power electric trains that pull giant slabs of concrete up a gentle slope. In effect, the trains convert



## Advanced Rail Energy Storage: Green Energy Storage for

Advanced Rail Energy Storage (ARES) has developed a breakthrough gravity-based technology that will permit the global electric grid to move effectively, reliably, and cleanly assimilate renewable energy and provide significant stability to the grid.



## Advanced Rail Energy Storage: Green Energy Storage for Green Energy

Advanced Rail Energy Storage (ARES) has developed a breakthrough gravity-based technology that will permit the global electric grid to move effectively, reliably, and cleanly assimilate renewable energy and provide significant stability to the grid. ARES stores energy by raising the elevation of mass against the force of gravity, and recovers



## Advanced Rail Energy Storage: Green Energy Storage for

The ARES Nevada Project is a 50 MW gravity-based rail energy storage system which employs a fleet of seven heavy regenerative traction drive



shuttle trains, operating on a high-grade closed low-friction automated steel rail network, to shift mass between alternate elevations, converting electricity into potential energy and back into electric

## Advanced Rail Energy Storage: Green Energy Storage for Green Energy

Advanced Rail Energy Storage (ARES) has developed a breakthrough gravity-based technology that will permit the global electric grid to move effectively, reliably, and cleanly assimilate renewable energy and provide significant stability to the grid.



## Advanced Rail Energy Storage System , Old and New Technology

What is ARES (Advanced Rail Energy Storage) ARES is a large-scale energy storage device that uses a gravitational train system. This innovation consists of several sets of train on the funicular railroad. This system sits on a hill slope so it can utilize gravitational force to discharge the potential energy. Its cars are solid concrete

## Advanced Rail Energy Storage System , Old and New ...

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## News

The decade-long quest of two Seattle businessmen and the team of prominent investors they have attracted to create a unique new method for generating renewable energy is about to bear fruit in the form of rock-filled rail cars plying a Southern Nevada mountain. Advanced Rail Energy Storage North America (ARES) is the Kirkland-based company that ...

## GravityLine

The GravityLine™ storage system is made up of multiple 5MW tracks and can vary in size from 5 MW to 1 GW of power and an equivalent range of energy (MWh to GWh) depending upon weight and number of mass cars, slope and distance. ARES' GravityLine™ design boasts duration flexibility of between 15 mins and 24+ hours.



## Advanced Rail Energy Storage (ARES)

Advanced Rail Energy Storage (ARES) 505 Market St. Kirkland, WA 98033. 206.851.1653. russ@aresnorthamerica . ARES North America - The Power of Gravity 20 - August 11, 2021. To Thermal-Mechanical-Chemical . Energy Storage Workshop organizers



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