

Redefining the intercity rail experience



# Next generation rail, built for North America

With our latest, intercity trainset, Siemens Mobility is redefining what intercity rail can be. It's an unsurpassed passenger experience that's also raising the bar for efficiency with service-proven vehicles designed for tomorrow and in production today. In short, the Venture is a 21<sup>st</sup> century trainset that's being embraced by passengers, operators, and agencies alike.

Riders will enjoy new levels of comfort and convenience along with the latest amenities. The Venture features spacious interiors and flexibility for multiple configurations of economy, business, cafe and cab cars. Integrated crash energy management (CEM) provides next generation safety.

Reduce operating costs and enhance sustainability with the clean and green Siemens Charger diesel-electric locomotive. Light and powerful, it delivers maximum performance and reliability up to 125 mph. An intelligent control system and advanced diagnostics further improve fuel economy.

Extend the life and performance of your trainset with maintenance services from Siemens Mobility. A wide range of service options are available to best match your specific needs and resources. Our expert technicians, comprehensive supply network, and digital monitoring keep your fleet on the move.

#### Built, Tested, and Proven

While designed and built for tomorrow, the Venture trainsets are a proven product. Our vehicles are in use throughout North America and have been built on a tested and service-proven platform. Benefiting from decades of experience in North America, we've developed them to meet the unique needs of the market. All vehicles are designed and validated in accordance with FRA regulations, APTA standards and PRIIA 305 specifications for next generation equipment.

#### First in Safety

Providing the most protection for the riding public is our top priority. That's why Venture trainsets feature the safest rail car design on the market. All carbodies incorporate crash energy management (CEM) crumple zones to absorb energy at both ends of the car. Our design also includes a controlled collapse feature to enhance safety in the event of impact.



#### **Buy America Compliant**

If required, Siemens Mobility intercity trainsets can be 100% Buy America compliant, using components sourced from our vendors throughout the United States. Vehicles delivered in North America are constructed at our full-scale, solar-powered, rolling stock manufacturing facility located in Sacramento, California that employs over 2,000 workers.



# **Sophistication,** comfort, and convenience

Setting the new standard for intercity rail passenger trainsets.

#### **Rethink What Rail Can Be**

Siemens Mobility is ushering in a new era for rail in North America. Sophisticated design, modern amenities, and attention to comfort have come together for an experience that appeals to riders of all persuasions.

#### **Unmatched Passenger Comfort**

The Venture trainset delivers comfort without compromise. Combining innovation with an attention to detail, we have created an experience like no other.

- Modern suspension design, featuring air spring technology, delivers a more comfortable ride while providing maximum safety against derailment.
- An innovative roof-mounted HVAC system, with next generation air distribution, provides a consistently pleasant environment for passengers throughout the entire trainset.
- In-seat recline allows passengers to recline their seats without encroaching on the space of the passenger behind them.

#### **Standard-Setting Amenities**

With a host of new amenities, the Venture trainset offers a more engaging ride for all passengers. These features help create a ride that is more enticing to both new and return riders, and generate long-term fans and advocates.

- Enhanced Wi-Fi provides a reliable connection throughout the entire trainset, keeping today's passengers up-to-speed and up-to-date.
- Perfect alignment between seating and windows offers panoramic views with larger windows and integrated window shades.
- Spacious interiors feature a contemporary passenger information system, modern lighting, and flexible configuration for cafe and lounge areas.
- Luggage towers and/or bicycle racks
- Overhead luggage storage
- Freely configurable number of tables

#### **Built to Last**

Siemens Mobility has been active in the passenger car industry for more than 160 years. Our designs are in wide use around the world, including installations throughout the United States and Canada. We've put that experience to work to create cars that stand the test of time for both form and function.

- Innovative stainless steel carshell design provides a sleek look that is corrosion-resistant, minimizes noise, and insulates interiors from heat loss/gain.
- Carbodies are designed to thrive in all climates throughout North America, providing a comfortable indoor environment and protection against slip/fall hazards and snow accumulation.
- Continuous data monitoring of coach performance ensures early detection of faults, for proactive maintenance.

#### **More Accessible and Convenient**

Siemens Venture Cars (SV125) comply with current and anticipated accessibility requirements and feature design enhancements that improve convenience for younger and older riders.

• The SV125 exceeds current ADA requirements with wheelchair comfort in mind, including wider aisles, wheelchair storage, and fully accessible toilet rooms.

- Four, wide, sliding-plug side doors offer improved ease of entry for high and low leveling platform access that streamlines the boarding process and reduces dwell times.
- The semi-permanent coupled configuration creates a comfortable, safe, and fully-ADA compliant transition between coaches.

#### A Safer Design

The new, single-level SV125 used on our intercity trains are safer than existing vehicles. With fewer potential hazards and more safety features, our car design protects your passengers and your operations.

- Carbodies feature crash energy management (CEM) crumple zones on both ends, protecting passengers.
- Seat tracks fulfill current APTA requirements for strength and crashworthiness.
- Coupled gangways and grab handles on all aisle seats improve safe passage through and between cars.
- Sliding-plug doors reduce vestibule noise levels, while automatic gap fillers, or trap door design and retractable steps, ease boarding on high and low platforms.

Siemens Mobility offers the latest in high-tech communications and amenities, including multiple Wi-Fi antennas for each car, as well as power and USB ports at all seats.

#### **Flexible Configuration**

The Venture gives you more options to maximize your revenues. Interiors provide flexibility to suit multiple configurations, ranging from economy seating for up to 74 passengers to cafe cars with lounge seating that still maintain up to 44 revenue seats. You provide the seating that's best for your service while ensuring rider comfort and universal accessibility.

Configuration	Revenue Seats
Economy	Up to 74
Business	Up to 54
Cafe	Up to 44
Cab (Economy)	Up to 62



# Service proven and ahead of its time

Introducing the green and efficient Siemens Charger diesel-electric locomotive.

#### A Bold Design That Delivers

Siemens Mobility next generation intercity trains feature the Charger diesel-electric locomotive. Combining the latest locomotive technology with a design that is based on service-proven equipment, the Charger offers the most efficient and reliable way to power high-speed intercity rail service.

The Charger locomotive is ready to go. It has the approval of the FRA and the AAR, meets NGEC PRIIA 305-005 technical specifications, features a strong track record of performance worldwide, and is in production today.

#### **Efficiency and Performance**

Designed for both regular and clean diesel use, the Charger locomotive is green at heart without sacrificing power. It features the Cummins QSK95 engine, built specifically to meet EPA Tier IV+ compliance while operating at speeds up to 125 mph.

The Charger's design supports efficiency. It weighs just 271,000 pounds, can reach 4,400 HP, and features an intelligent control system that further improves fuel economy.

And, with low noise emissions and a design that uses more recyclable materials, it protects the environment in more ways than one.

#### Safe and Reliable

The Charger diesel-electric also powers confidence. It features a truck and drive system that's service proven, and offers 100% head end power (HEP) and auxiliary load redundancy. Meanwhile, its crash energy management (CEM)system enhances the safety of people, passengers, and assets, and minimizes collision repair.

#### A Smarter Way to Work

Featuring the latest innovations in design, digitalization, and locomotive technology, the Charger helps your team perform at their best. Developed with the input of locomotive engineers and technicians, it features a spacious and ergonomic cab design, and is built with maximum accessibility of key components, simplifying maintenance. Advanced monitoring and diagnostics – both onboard and remote – alerts operators and maintenance to faults so they can be addressed quickly and proactively.



The Siemens Charger locomotive features the QSK95 diesel engine, manufactured by Cummins Inc. in Seymour, Indiana. The clean combustion engine meets stringent Tier IV+ emissions regulations of the Environmental Protection Agency (EPA).

# More service options from a trusted partner

Create a smart, tailored service program for your trainset.



Siemens Mobility is a trusted service partner for major transit operators throughout North America, including long-term service agreements with Amtrak, Florida's Brightline, and VIA Rail in Canada.

#### **Tailored to Your Needs**

With Siemens Mobility, you have a partner that can support your mission of maintaining safe, reliable service while staying within budget. We provide a wide range of service options that help you balance your needs with existing resources.

- Full Service Support We cover it all. Siemens Mobility experts manage and maintain your equipment. You'll have a higher level of confidence with our premier service organization covering every aspect of your maintenance program.
- Charter Rail Maximize your existing resources with Siemens Mobility maintenance management and parts supply. Your existing staff can work smarter and more efficiently with support from Siemens Mobility on-site experts and supply chain.
- Technical Support & Spares A Technical Support & Spares Supply Agreement (TSSSA) from Siemens Mobility provides expertise and a predictable cost structure that addresses planned and unplanned maintenance without impacting labor agreements.

#### **Expertise You Trust**

Over 2,250 vehicles are under Siemens Mobility service contracts and operating with more than 98% reliability each and every day. From on-site technical services to materials management expertise, you benefit from working with the people who built your vehicle and have the resources to maintain them for less.

#### **Protecting Your Investment**

We bring predictability to your operations. Agreements are performance-based, with incentives and penalties to ensure your goals are met. For parts, you'll have obsolescence coverage throughout the life of your contract.

#### **Data-Driven Performance**

Every Siemens Mobility vehicle reports vehicle conditions, including mileage and faults, back to our Siemens Rail Remote Service Desk. This data-driven approach enhances service performance, ensuring that issues are known and resources ready when your vehicle comes in for maintenance. Siemens Mobility, Inc. One Penn Plaza 11th Floor, Suite 1100, New York, NY 10119, United States

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Amtrak sought to acquire the most sustainable and efficient trains on the market, including Siemens Mobility's dual powered and hybrid battery vehicles. These new Venture trainsets will replace Amtrak's 40-to-50 year old fleet, with state-of-the art equipment, extended capacity, and the ability to shorten trip time and is expected to add over 1.5 million Amtrak riders annually. Siemens Mobility will bring modern, sustainable vehicles to the market, enhancing the American transportation system and adding new value for rail passengers across the country.

#### Performance

The Venture trainsets are powered by the Siemens Charger locomotives and are equipped with a proven propulsion system powered by a fuel-efficient Cummins QSK95, 16-cylinder diesel engine providing 4,200 hp. In addition to diesel mode the trainsets can run in fully electric mode under overhead catenary (25kV / 12.5kV) and can transition seamlessly between both modes. On top of that, the trainsets include the first application of hybrid battery operations significantly reducing emissions and enabling full battery operation.

### **SIEMENS**

#### Accessibility

Each trainset provides level boarding access at high platforms, has at least 8 onboard wheel-chair lifts installed for low-platform access and provides at least 9 mobility aid spaces that provide ample space for wheelchair users as well as companion seating. Large and fully accessible washrooms allow for easy wheelchair maneuverability, clearer floor area, more hand grabs, a wider door opening and a poweroperated door.

Braille signage is provided on important features such as seat numbers, call-for-aid buttons and at-seat

#### Performance and Capacity

Maximum operational speed Electric mode Diesel mode Battery mode	125 mph / 201 km/h 110 mph / 177 km/h 60 mph / 96.5 km/h
Rated power maximum	5,700 hp / 4,250 kW
Head end power	1000 kW
Tractive effort (max.)	82,000 lbs. / 365 kN
Passenger capacity	Economy: 286 / 430 seats* Business: 49 seats Wheelchair lifts: 8 /12* Mobility aid spaces: 9 / 11

\*Depending on trainset configuration (6-car and 8-car).

attendant call buttons at Mobility Aid Spaces. Onboard announcements are also available in both audio and visual formats and additionally via a hearing loop in every car.

#### Safety

Fully electric sliding-plug doors with gap fillers offer improved ease of entry to high-level platfoms and an automated rotating step system for low-level platforms. Modern sealed gangways (passage between cars) are wider and have a smooth floor surface allowing for an easy transition from one car to another isolated from weather.

Passenger areas are equipped with CCTV that can be accessed by the Operations Control Center.

#### Intelligent Train

The fully integrated IT system provides the backbone for innovative applications such as vehicle diagnostics, maintenance, ride quality monitoring, passenger information system, CCTV, and internet on board.

#### Passenger Comfort:

- Modern suspension design, featuring air spring technology delivers the highest level of comfort.
- Automatic touchless interior doors, large and adjustable tray tables, wider and more comfortable and ergonomic seats with integrated power outlets, USB charging, tablet holder and integrated reading lights.
- A self-contained roof-mounted HVAC system with thermal and acoustic insulation maintains a pleasant environment.
- Enhanced Wi-Fi improves connectivity and supports high-speed reliable data connection.

**Passenger Car Dimensions** 

- In-seat recline allows seat adjustment without encroaching into the space behind.
- Latest state-of-the-art galleys optimize passenger service abilities.

#### **Environmental Considerations:**

- These bi-directional trainsets operate more efficiently, reducing emissions and operating costs.
- The engines meet EPA (Environmental Protection Agency) – Tier 4 emission standards which will allow for an 85%-95% reduction in particulate matter (PM) and Nitrogen Oxide (NOx) emissions and significantly contribute to improving air quality.
- The trains feature energy-saving LED lighting and dual pane windows.
- The locomotives use a microprocessor-controlled electrodynamic braking system which allows the braking energy of the traction motors to feed into the train's onboard electrical system, reducing overall fuel consumption.
- A state-of-the art water dispenser provides passengers with access to fresh water using their own water bottles.

#### **Optimized Maintenance:**

- Onboard trainset data can be continuously monitored and analyzed to enable early detection of faults, support preventative maintenance and reduced downtime.
- Predictive and condition-based maintenance can be paired with a computerized maintenance management information system (CMMIS) to extend the useful life of components and optimize the maintenance schedule to ultimately increase the fleet reliability and availability.

#### 

#### Length 85 ft 25908 mm Width 10 ft 6 in 3201 mm Height 14.6 ft 4436 mm Floor height above top of rail 51 in 1296 mm Side door width 34 in 864 mm Aisle width 24 in Coach class 610 mm **Business class** 33 in. 838 mm Distance between truck centers 59 ft 6 in 18136 mm Trainset Weight\* 1,126,529 lbs 510,985 kg

\*For a standard trainset configuration, which consists of five coaches, one cab car and one locomotive. The configuration is flexible and can be increased as needed.



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# **Brightline**

As the nation's first and only private, operational high-speed rail line, Brightline ordered five Siemens Mobility trainsets in 2014. These environmentally friendly trainsets, consisting of four coaches and two Charger locomotives (one at each end) help move passengers between Miami and West Palm Beach. In 2018, Brightline ordered five more trainsets (of the same configuration – plus an additional Charger locomotive) for Florida's planned extension from West Palm Beach to Orlando.

#### Performance

The Venture trainsets are powered by the Siemens Charger locomotives, each one equipped with a proven propulsion system powered by a fuel-efficient Cummins QSK95, 16-cylinder diesel engine providing 4,000 hp. The Cummins engine feeds an alternator, and the IGBT traction converters provide single axle control for operation of up to 201 kph/125 mph while meeting the latest EPA (Environmental Protection Agency) Tier 4 emission standards.

### **SIEMENS**

#### Accessibility

Each trainset has four cars, each equipped with a wheel chair parking location (plus an additional wheelchair storage location) and wheelchair accessible aisles, providing ample space for wheelchair users. Large and fully accessible washrooms, near each ADA parking location, allow for easy wheelchair maneuverability.

Call-for-aid buttons are located in all vestibule areas. Onboard announcements are also available in both audio and visual formats.

#### **Performance and Capacity**

Maximum operational speed	125 mph / 201 km/h
Rated power maximum	4,000 hp @ 1,800 rpm
Head end power	600 kW
Tractive effort (max.)	65,000 lbs. / 290 kN
Fuel tank volume	2,200 gallons
Passenger capacity	Economy: 190 seats Business: 49 seats Wheelchair parking spaces: 4

#### Safety

Sliding-plug side doors, equipped with either fully automated gap fillers or trap doors and retractable low-level entry steps, offer improved ease of entry and exit for high- and low-level platform access. Modern sealed weatherproof gangways (passage between cars) are wider and have a smooth floor surface allowing for an easy, wheelchair-friendly transition from one car to another.

Passenger areas are equipped with CCTV that can be accessed by the Operations Control Center.

#### Intelligent Train

The fully integrated IT system provides the backbone for innovative applications such as vehicle diagnostics, Maintenance, Passenger information system, CCTV, and internet on board

#### Passenger Comfort:

- Modern suspension design, featuring air spring technology delivers the highest level of comfort.
- Wider aisles, automatic touchless interior doors, large and adjustable tray tables, comfortable and ergonomic seats with integrated power outlets, USB charging and overhead reading lights.
- A self-contained roof-mounted HVAC system with thermal and acoustic insulation maintains a pleasant environment.
- Enhanced Wi-Fi improves connectivity and supports high-speed reliable data connection.
- In-seat recline allows seat adjustment without encroaching into the space of the passenger seated behind.

#### **Environmental Considerations:**

- These bi-directional trainsets operate with a very high efficiency, reducing emissions and operating costs.
- The engines meet EPA (Environmental Protection Agency) – Tier 4 emission standards which allows for an 85%–95% reduction in particulate matter (PM) and Nitrogen Oxide (NOx) emissions and significantly contribute to improving air quality.
- The trains feature energy-saving LED lighting and dual pane windows provide enhanced insulation.
- The locomotives use a microprocessor-controlled electrodynamic braking system which allows the braking energy of the traction motors to feed into the train's onboard electrical system, reducing overall fuel consumption.

#### **Optimized Maintenance:**

- Continuous trainset data monitoring and data analytics ensures early detection of faults, supports preventative maintenance and helps reduce downtime. Vehicle Equipment Measurement Systems (VEMS) records data related to the wheels (wear, condition, and profile of the wheels) and the braking system.
- Predictive and condition-based maintenance paired with a newly introduced computerized maintenance management system (CMMS) extends the useful life of components and optimizes the maintenance schedule, ultimately increasing the fleet reliability and availability.



#### **Passenger Car Dimensions**

Length	85 ft	25908 mm
Width	10 ft 6 in	3201 mm
Height	14 ft	4268 mm
Floor height above top of rail	51 in	1296 mm
Side door width	34 in	864 mm
Aisle width	32 in to 34 in (depending on type)	813 mm to 864 mm
Distance between truck centers	59 ft 6 in	18136 mm
Trainset Weight*	914,504 lbs (414.8 T)	414,812 kg

\*For a standard trainset configuration, which consists of four coaches and two locomotives. The configuration is flexible and the number of coaches can be decreased and increased as needed.



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## **Ontario Northland**

The Ontario government is bringing rail service back by reinstating The Northlander connecting Northern Ontario with Toronto. The Siemens Mobility Venture trainset will do just that and provide a safe and reliable transportation option for Northern Ontario communities, especially in the winter months.

#### Performance

The Venture trainsets are powered by the Siemens Charger locomotives and are equipped with a proven propulsion system powered by a fuel-efficient Cummins QSK95, 16-cylinder diesel engine providing 4,200 hp. The Cummins engine feeds an alternator, and the IGBT traction converters provide single axle control for operation of up to 201 kph/125 mph\* while meeting the latest EPA (Environmental Protection Agency) Tier 4 emission standards.

#### Accessibility

Each trainset has two cars with onboard wheel-chair lifts available in economy and business class, as well as four mobility aid spaces per trainset that provide ample space for wheelchair users. Large and fully accessible

# washrooms allow for easy wheelchair maneuverability, clearer floor area, more hand grabs, a wider door opening and a power-operated door.

Braille signage is provided on important features such as seat numbers, call-for-aid buttons and at-seat attendant call buttons at Mobility Aid Spaces. Onboard announcements are also available in both audio and visual formats.

#### Safety

Sliding-plug side doors with trap doors and retractable low-level entry steps offer improved ease of entry and

#### **Performance and Capacity**

Maximum operational speed	201 km/h / 125 mph*
Rated power maximum	4,200 hp @ 1,800 rpm
Head end power	600 kW
Tractive effort (max.)	290 kN / 65,000 lbs.
Fuel tank volume	2,200 gallons
Passenger capacity	Economy: 122 seats Business: 41 seats Wheelchair lifts: 4 Mobility aid spaces: 4

\*Current maximum speed allowed for passenger trains in Canada, which is determined by the Class of Track on which these trains operate, is 160 km/h (100 mph).

### **SIEMENS**

exit for high- and low-level platform access. Modern sealed gangways (passage between cars) are wider and have a smooth floor surface allowing for an easy transition from one car to another isolated from weather.

Passenger areas are equipped with CCTV that can be accessed by the Operations Control Center.

#### **Intelligent Train**

The fully integrated IT system provides the backbone for innovative applications such as vehicle diagnostics, Maintenance, Passenger information system, CCTV, and internet on board

#### **Passenger Comfort:**

- Modern suspension design, featuring air spring technology delivers the highest level of comfort.
- Wider aisles, automatic touchless interior doors, large and adjustable tray tables, comfortable and ergonomic seats with integrated power outlets, USB charging and overhead reading lights.
- A self-contained roof-mounted HVAC system with thermal and acoustic insulation maintains a pleasant environment.
- Enhanced Wi-Fi improves connectivity and supports high-speed reliable data connection.
- In-seat recline allows seat adjustment without encroaching into the space behind.
- Latest state-of-the-art galleys optimize passenger service abilities.

#### **Environmental Considerations:**

- These bi-directional trainsets operate more efficiently, reducing emissions and operating costs.
- The engines will meet EPA (Environmental Protection Agency) Tier 4 emission standards which will allow for an 85%-95% reduction in particulate matter (PM) and Nitrogen Oxide (NOx) emissions and significantly contribute to improving air quality.
- The trains feature energy-saving LED lighting and dual pane windows.
- The locomotives use a microprocessor-controlled electrodynamic braking system which allows the braking energy of the traction motors to feed into the train's onboard electrical system, reducing overall fuel consumption.
- Water dispensers provide passengers with access to fresh water using their own water bottles.

#### **Optimized Maintenance (optional features):**

- Onboard trainset data can be continuously monitored and analyzed to enable early detection of faults, support preventative maintenance and reduced downtime.
- Predictive and condition-based maintenance can be paired with a computerized maintenance management information system (CMMIS) to extend the useful life of components and optimize the maintenance schedule to ultimately increase the fleet reliability and availability.



#### **Passenger Car Dimensions**

Length	25908 mm	85 ft
Width	3201 mm	10 ft 6 in
Height	4268 mm	14 ft
Floor height above top of rail	1296 mm	51 in
Side door width	864 mm	34 in
Aisle width	696 mm	27.4 in
Distance between truck centers	18136 mm	59 ft 6 in
Trainset Weight*	299,419 kg	660,106 lbs (299.4 T)

\*For a standard trainset configuration, which consists of two coaches, one cab car and one locomotive. The configuration is flexible and can be increased as needed.



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VIA Rail's current Corridor fleet will be replaced by Siemens Venture trainsets and will operate in the Quebec City - Windsor corridor, VIA Rail's busiest route, which represents 96% of its ridership in 2019.

#### Performance

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#### Accessibility

SIEMENS

Each trainset has three cars with onboard wheel-chair lifts available in economy and business class, as well as five mobility aid spaces per trainset that provide ample space for wheelchair users. Large and fully accessible washrooms allow for easy wheelchair maneuverability, clearer floor area, more hand grabs, a wider door opening and a power-operated door. Braille signage is provided on important features such as seat numbers, call-for-aid buttons and at-seat attendant call buttons at Mobility Aid Spaces. Onboard announcements are also available in both audio and visual formats.

#### Safety

Sliding-plug side doors with trap doors and retractable low-level entry steps offer improved ease of entry and exit for high- and low-level platform access.

#### **Performance and Capacity**

Maximum operational speed	201 km/h / 125 mph*
Rated power maximum	4,200 hp @ 1,800 rpm
Head end power	600 kW
Tractive effort (max.)	290 kN / 65,000 lbs.
Fuel tank volume	2,200 gallons
Passenger capacity	Economy: 194 seats Business: 87 seats Wheelchair lifts: 6 Mobility aid spaces: 5

\*Current maximum speed allowed for passenger trains in Canada, which is determined by the Class of Track on which these trains operate, is 160 km/h (100 mph). Modern sealed gangways (passage between cars) are wider and have a smooth floor surface allowing for an easy transition from one car to another isolated from weather.

Passenger areas are equipped with CCTV that can be accessed by the Operations Control Center.

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- A self-contained roof-mounted HVAC system with thermal and acoustic insulation maintains a pleasant environment.
- Enhanced Wi-Fi improves connectivity and supports high-speed reliable data connection.
- In-seat recline allows seat adjustment without encroaching into the space behind.
- Latest state-of-the-art galleys optimize passenger service abilities.

#### **Environmental Considerations:**

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- The engines will meet EPA (Environmental Protection Agency) Tier 4 emission standards which will allow for an 85%-95% reduction in particulate matter (PM) and Nitrogen Oxide (NOx) emissions and significantly contribute to improving air quality.
- The trains feature energy-saving LED lighting and dual pane windows.
- The locomotives use a microprocessor-controlled electrodynamic braking system which allows the braking energy of the traction motors to feed into the train's onboard electrical system, reducing overall fuel consumption.
- Water dispensers provide passengers with access to fresh water using their own water bottles.

#### **Optimized Maintenance:**

- Continuous trainset data monitoring and data analytics ensures early detection of faults, preventative maintenance and reduced downtime.
  Vehicle Equipment Monitoring System (VEMS) data related to the wheels (wear, condition, and profile of the wheels) and the braking system.
- Predictive and condition-based maintenance paired with a newly introduced computerized maintenance management information system (CMMIS) extends the useful life of components and optimizes the maintenance schedule, ultimately increasing the fleet reliability and availability.



#### **Passenger Car Dimensions**

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Distance between truck centers	18136 mm	59 ft 6 in
Trainset Weight*	414,812 kg	914,504 lbs (414.8 T)

\*For a standard trainset configuration, which consists of four coaches, one cab car and one locomotive. The configuration is flexible and can be decreased and increased as needed.



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