

# How the Advanced Signal System Project Works

## Communications Based Overlay Signal System (CBOSS) Positive Train Control (PTC)

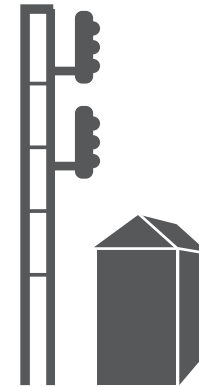
### Communication Network

GPS and track based transponders verify train location. 220 MHz radio system transmits data between the train, control center, and Wayside Signal System.



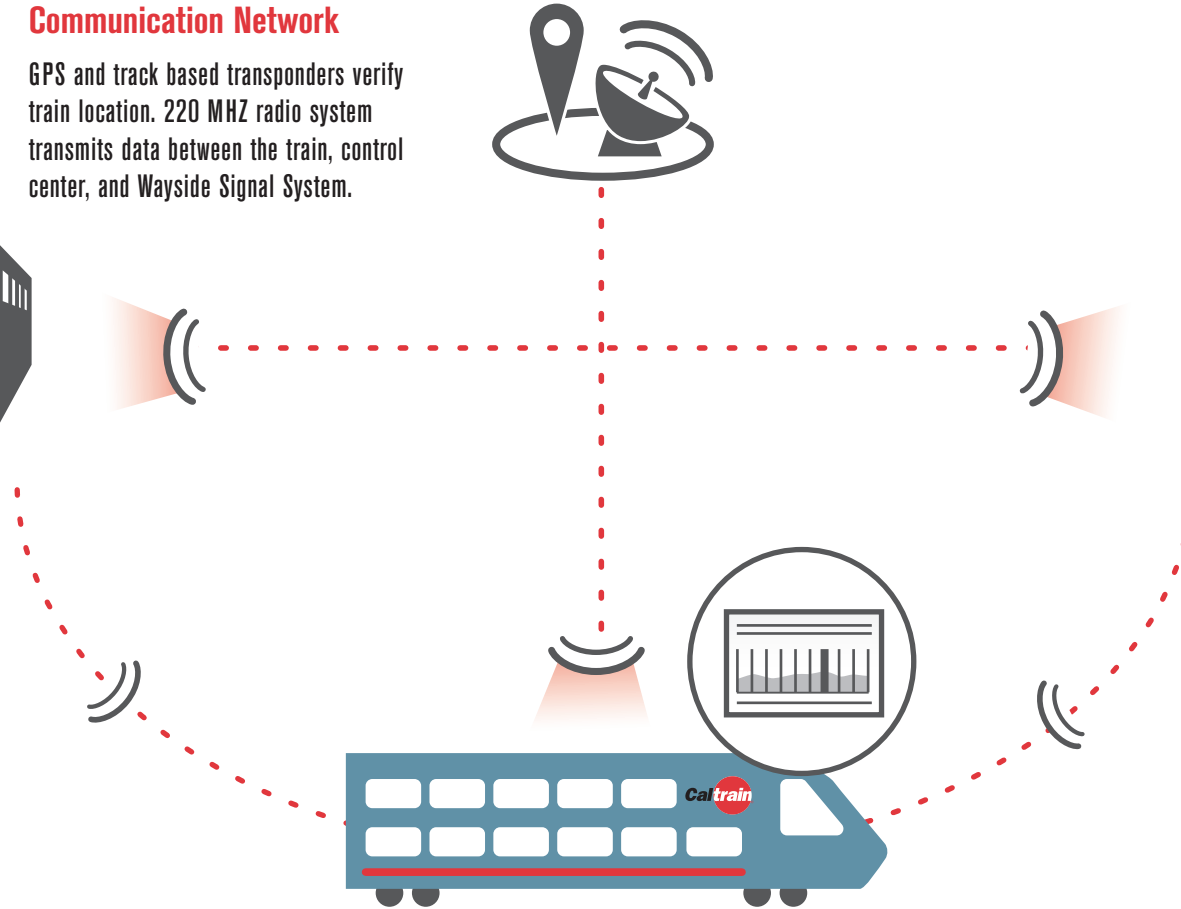
### Backup Central Control Facility (BCCF)

The BCCF System stores and transmits information to trains, such as speed restrictions and work zone locations.



### Wayside Signal System

The train communicates with the control center and Wayside Signal Systems to maintain constant information about train movement and location, and stop the train in the event of human error.



### Onboard System

The Onboard System receives and transmits information about train movements and potential railway impediments; the system controls train movement in the event of human error.

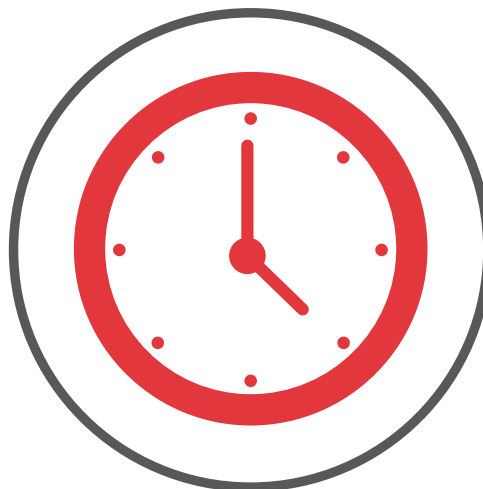
# Benefits of the Advanced Signal System Project

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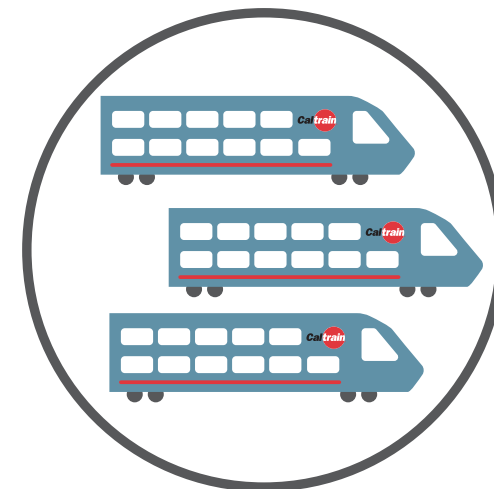
### Improved Safety

- Eliminate risk of train-to-train collisions
- Reduce risk of over speed derailments
- Provide additional safety for railroad workers



### Increased Reliability & Operating Performance

- Provide better schedule management
- Enforce scheduled station stops
- Improve grade crossing performance from reduced gate downtime



### Capacity Benefits

- Minimize spacing between trains
- Provide faster and/or more frequent service when combined with new electric trains