



## CASE STUDY

# CITY OF BOULDER

## The City of Boulder's State-of-the-Art Traffic Management System

Boulder, CO – In 2011, the City of Boulder's Public Works Department (Transportation Division) wanted to improve the monitoring and control of its traffic management system to ensure a smooth flow of traffic into, around and out of the city. Located less than 30 miles from Colorado's largest city and state capital, Denver, and considered a destination spot by many for its beauty, college town atmosphere, economic prosperity and tourist attractions, the traffic volumes into and out of Boulder exceed 250,000 vehicles per day. The need to enable a smart cities application, like traffic management, was critical to helping Boulder continue to flourish.

### FreeWave Usage and Applications

The City of Boulder used FreeWave's FGR2-PE wireless Machine-to-Machine (M2M) communication solution to replace the use of phone lines in its traffic control systems. Throughout Boulder, 145 of FreeWave's M2M communication devices have been programmed and installed to monitor its traffic signal system and ensure a continuous and efficient flow of traffic day and night, despite fluctuations in tourism, weather and student population at the university.

The FGR2-PE communication device offer industrial serial and Ethernet wireless connectivity using license-free spread spectrum technology for remote

monitoring. Using those Ethernet ports, the City of Boulder's network can be used to directly access data from the traffic signal. The flexibility of FreeWave's M2M solutions also enables communication back to 16 gateways throughout the city without the need for additional radios at each gateway location.

City officials also looked for the most cost-effective solution for its M2M communication needs. The FGR2-PE contains two serial ports and two switched Ethernet ports, providing the ability to transition from serial to Ethernet data communication without having to replace wireless communication hardware down the road. It also offers the option to operate both serial and Ethernet communication independently and simultaneously on the same platform. This cost-effective flexibility of the FGR2-PE solution also reduces the need for additional hardware, making it ideal for Boulder's long-term applications.

### Outcomes

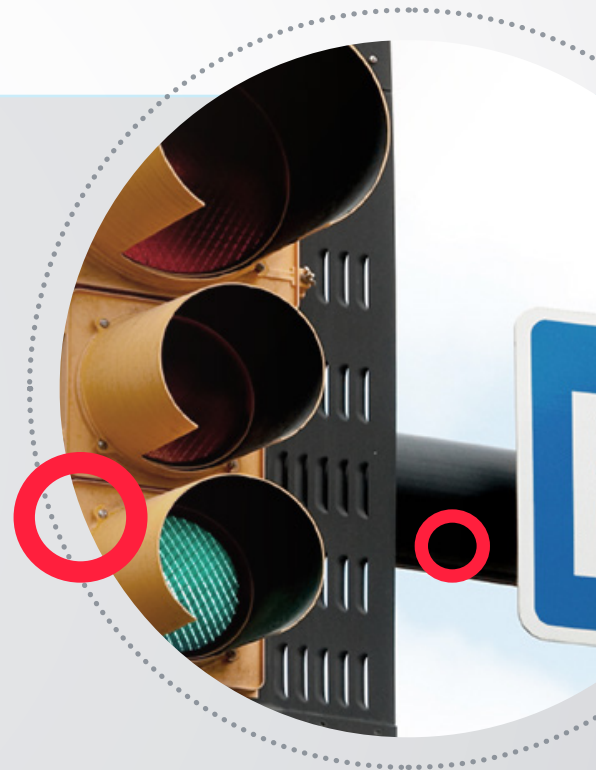
Altogether, the easy deployment of FreeWave's M2M communication solutions to enable this smart cities application has decreased the City of Boulder's equipment in its Traffic Operations Center by 95 percent. Additionally, the city has achieved significant savings by eliminating 17 very expensive T1 phone lines that were replaced with FreeWave's wireless M2M solutions.

While the biggest cost savings came from the eliminated phone lines, Jeff Bunker, a signal technician who led the installation of the radios at the City of Boulder's Public Works Transportation Division, has seen several additional benefits since implementing FreeWave FGR2-PE communication devices.

According to Bunker, the FGR2-PE offers a significant amount of ease-of-use and faster notification when there are issues with Boulder traffic signals because it sends notifications any time there is a traffic issue via email on a real-time basis.

## HIGHLIGHTS

- > Significant cost reductions due to the elimination of T1 phone lines achieved through the usage of FreeWave's wireless M2M communication solutions.
- > Greater efficiency and control of the City of Boulder's traffic management system.
- > Exceptional technical support from FreeWave to maximize effectiveness of the wireless M2M network.
- > FreeWave's wireless M2M communications solutions were proven to work reliably in even the harshest of weather conditions, especially winters in Boulder, CO.
- > Greater flexibility in implementing the traffic management M2M network through the use of Ethernet and Serial data communications in one platform (FGR2-PE).



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