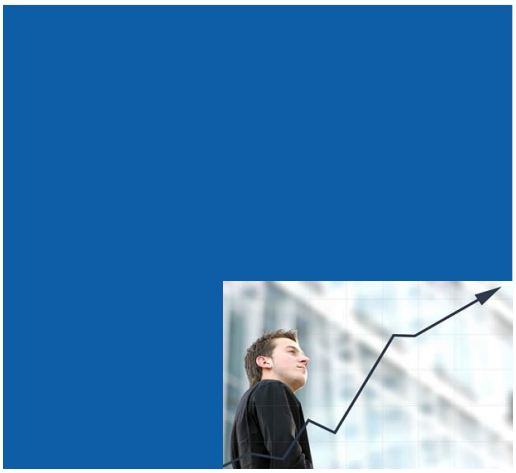

Hertfordshire County Council
Case Study

Planning for Growth in Bus Demand in Hertfordshire

"Hertfordshire County Council has found this information to be invaluable. I found the SIMUL8 team fast to respond, courteous to deal with and they kept to budget and time scale."

Dave Ramsey
Principal Transport Planner
Hertfordshire Highways

Hertfordshire

Key Benefits

- Cost savings in the region of $2.6m (£1.3m) - a reduction of 33% expected budget

- Increased passenger safety

- Eased congestion in and around the proposed bus station

- Reduced internal bus travel times, improving the timeliness of buses

- Able to satisfy anticipated 20% increase in passenger demand

Hertfordshire County Council in the UK, in conjunction with leading professional support services provider, Mouchel Parkman, selected SIMUL8 to develop a simulation model to determine the capacity of the existing Stevenage Bus Station and whether it could cope with a predicted rise in future demand for public transport in the area.

SIMUL8 was used to analyze the performance of the existing bus station and support the planning and design of a new bus station, resulting in cost savings of approximately $2.6m (£1.3m) for the Council, while simultaneously easing congestion and increasing safety and performance.

Background

Hertfordshire County Council is responsible for providing safe and convenient local transport services within the Hertfordshire region. The County Council budgets for around $6m (£3m) per year to provide over 200 bus services on behalf of the local community.

Due to continued development in and around the Stevenage area, projected demand for public transport was anticipated to grow by up to 20% over a five year period.

SIMUL8 Corporation was selected to investigate if the existing infrastructure was capable of providing a similar level of service with this projected increase in demand. Key to this investigation was testing the adequacy of a proposed new bus station budgeted to cost up to $8m (£4m).

As part of a town center redevelopment, there was a requirement to relocate Stevenage Bus Station due to increasing congestion. A new bus station design was therefore considered in a number of new locations.

The SIMUL8 solution

SIMUL8 Corporation was responsible for developing a simulation model that supported analysis of performance in the current bus station, in order to provide a benchmark for comparison against the proposed bus station design. In addition to this, any new station design could be tested to include scope for predicted future volumes of traffic.

SIMUL8 Corporation worked with Hertfordshire County Council to validate each model, using industry standards of their physical attributes, supplemented with observed timings and passenger quantities within the current station.

The SIMUL8 model built for the Council demonstrated the physical characteristics of the station. For example, the cause and effect of delays and congestion could be explored and the impact of changes assessed.

Furthermore, SIMUL8 allowed detailed testing of the system under conditions that reflect the predicted demand increase. This de-risked the entire project by understanding future performance and risks, before implementing any of the proposed changes.

Modeling the existing Bus Station

As a result of modeling the existing Stevenage bus station, SIMUL8 showed that its cyclic design led to unnecessarily high travel times, resulting in increased congestion within the station.

The impact of this and the results of other key measures of performance, such as the high utilization of stands and layover bays, provided conclusive evidence that the existing station would not be capable of meeting the predicted increase in demand.

Supporting the design of the proposed Bus Station

The proposed bus station design had a number of key differences to the existing station which were modeled to test its capabilities.

Firstly, its layout was linear, as opposed to the current cyclic design. This meant that buses only visited one stand throughout their time within the station, dramatically decreasing internal journeys and travel time.

This design also included a minimum reverse requirement to ensure buses were able to safely leave their stand without protruding into the entry road of oncoming vehicles.

The Benefits

SIMUL8 was used to support the decision to build a new bus station, at a cost reduction of approximately $2.6m (£1.3m) - a reduction of 33% of expected budget, while simultaneously easing congestion and increasing safety and performance.

By testing potential design solutions, SIMUL8 proved that:

– The linear design of the proposed station provided opportunity for increased performance compared to the existing station

– The model of the proposed station demonstrated that the anticipated 20% increase in passenger demand could be satisfied

– Timeliness of buses departing from the proposed station would be improved

– Internal bus travel times would be reduced significantly, easing congestion within the station

– Safety of the proposed design was tested, with SIMUL8 proving that two parallel entry roads would be required, rather than one in the original design

– Entry and Exit traffic signaling sequences were tested to ensure tailbacks onto the adjoining carriageway were avoided in the modified design.

Find Out More

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