The Bus Information and Signalling System - BIAS

The Bus Information and Signalling System (BIAS) consists of 2 computer control systems. The first is an Urban Traffic Control (BIAS-UTC) Computer System that will provide public transport vehicles with progression through the City's traffic signals on the Quality Bus Corridors. The second system tracks those vehicles using a satellite based Global Positioning System (GPS) and provides the travelling public with up to the minute information on the arrival of buses at those bus stops along the routes.

A three-year contract has been awarded to 2 companies to design, install and commission these 2 control systems. The City's partners in this scheme are West Dunbartonshire Council and the bus operator First who hope to equip 460 of their 1,000 buses with the BIAS AVL equipment initially with further expansion later.

BIAS AVL and Real Time Information System

The new system will be housed in Glasgow City Council’s Traffic Control Centre in Elmbank Street with control terminals installed in each of First Glasgow’s Depots at Larkfield, Scotstoun and Parkhead. Each BIAS equipped bus will have an on board computer unit (OBU) which interfaces to the bus's ticket machine, vehicle odometer, and a Global Positioning System (GPS) receiver. The on board computer holds the daily schedule for the bus and compares its actual position on the road with that expected. The bus then transmits any deviation to the Central Computer system via the bus radio.

The central system monitors the bus fleet’s positions and transmits the actual expected arrival to Real Time Information signs installed at the Bus shelters along the Quality Bus Corridor. Where the bus is running late the bus will automatically request priority at traffic signals. This will allow the bus to traverse the traffic signal intersections with minimal delay. The BIAS UTC System will then optimise the traffic signal timings to ensure that the transition back to normal conditions is as smooth as possible. The BIAS UTC System uses a vehicle actuated traffic control system called SCOOT (Split, Cycle, Offset, Optimisation Techniques), which was initially developed in Glasgow and is now in use throughout the world.
BIAS UTC System

The Urban Traffic Control system will be installed within the Traffic Control Centre and interfaced with the BIAS AVL system. Traffic Control facilities will also be provided in the Council’s main Traffic Operations Office and West Dunbartonshire Council offices in Dumbarton.

An overseeing Integrated Management Facility will be provided as part of the UTC system to ensure that the system operators are given a comprehensive overview of the new BIAS Systems and Glasgow’s existing CITRAC (Centrally Integrated Traffic Control) traffic control facilities. This common Graphical User Interface (GUI) will present information to the operators and engineers using Graphical Information System (GIS) dual screen terminals. On these terminals the operator can view not only the road network conditions but also monitor the progression of the buses throughout the quality bus corridors.

Additional on-line facilities will also be provided to evaluate the overall performance of the systems and to report faulty equipment directly to the Council’s maintenance contractors.

Meeting the Quality Bus Corridor Objectives

The main objectives of the Quality Bus Corridor initiative are to support social and economic development and the environment. The BIAS facilities will assist by:

- Giving Priority to Public Transport;
- Reducing bus journey times;
- Making the bus service more reliable and;
- Providing better passenger information.

BIAS will be an integral part of the Council’s Quality Bus Corridor solution to the increasing traffic congestion within the city and its conurbation and will assist in the Council’s objectives of increasing the shift to greener modes of transport. The first installations will be operational early in 2004.