J AGS Technology Performance Criteria: I-70 Coalition Technical Committee Recommendations

The I-70 Coalition requested that its Technical Committee develop a list of performance criteria that could be useful in the effort to screen potential Advanced Guideway System technologies, both existing in and research and development phase technologies. These criteria are not meant to be a detailed, specific and definitive list, but merely a basic screening tool for general purposes of the Coalition and its partners.

CRITERIA

NOISE – This criterion has two separate factors to consider, both external (system) noise and internal (cabin noise) should be considered as important factors for consideration.

> External – should be less than existing highway noise levels.
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> Internal – ability to hold a conversation without raising one's voice (current research indicates this is approximately decibel levels of about 50 db).

ELEVATED – The intent is for the AGS to be capable of being elevated for more than just for short spans like bridges, in an effort to avoid environmental (especially wildlife) impacts and to minimize the footprint of the system. Pre-fab structures for cost containment and deployment, as well as those constructed in sections offsite using steel and/or concrete should be considered. Design must follow context sensitive solutions guidelines to accommodate local community desires and needs.

WEIGHT – This criterion refers to a minimum/maximum freight carrying capacity (consumer freight) and also anticipates average per passenger as well as freight only capacity. The discussion regarding freight capacity is included in slightly more detail below. The basic guideline is for the AGS to accommodate passengers, luggage (and recreational paraphernalia) as well as some measure of containerized or consumer freight.

TRAVEL TIME – This category also has two components to consider since the intent is for the AGS to accommodate both local and express traffic simultaneously. This implies a need for off-line stations since it would not be feasible to allow for both local and express traffic on a single line with on-line stations.

Express – as least as fast as unimpeded vehicle on highway between Denver and Vail (speeds likely approaching greater than 65 mph)

Local - as least as fast as unimpeded vehicle on highway (including station dwell time), equivalent of local transit now (Summit Stage, Eco-Transit, etc.) between local locations (i.e., Silverthorne to Copper Mountain). This implies that speed of AGS would need to exceed 65 mph if station dwell time is going to be incorporated in transit time.

GRADE – AGS must accommodate demand between Denver and Glenwood Springs without significant degradation of speed and efficiency. That may mean ability to climb grades of 7% or greater over long stretches (10 miles or more) without significant decrease in speed.

SAFETY – This is a critical factor which includes both passenger safety (which has implications for g-forces for acceleration and deceleration, lateral stability and smoothness of ride) as well as safety for traffic/pedestrian crossings and potential wildlife crossings. Elevation of AGS should accommodate grade separated crossings and alleviate wildlife crossing concerns.

WEATHER – AGS should be capable of operating in all weather conditions and accommodate severe weather events with minimal interruption or delays in service. This includes tolerances for extremes of heat, cold, wind, ice.

WIND – Technology and network must be able to withstand windshear in excess of extreme alpine wind storms such as those frequently experienced at Georgetown and throughout the corridor.

SCALABILITY – Expansion of alignments and carrying capacity (within hours) should be able to address both growth in demand over time as well as peak demand vs off-peak demand. This criterion will have vehicle design ramifications as well as storage requirements for the system.

PASSENGER COMFORT AND SAFETY – While not "scientific" and quantifiable, the following observations are important factors to consider in evaluation of any technology on the I-70 corridor:

Ability to have a cup of coffee on board without concern for spilling it.
Work on laptop
Ride comfort - ability to move around without being slammed against a wall
Acceleration
Restroom capable
Seating for all passengers
ADA compliant

BAGGAGE CAPACITY – For most riders, there will be a need to accommodate gear, luggage, outdoor gear, "stuff". Loading of such accoutrements must have minimal impact on station dwell and boarding times. In general, the intent is to be able to carry anything one could carry in or on a passenger vehicle.

LIGHT FREIGHT – commercial freight during off hours (Consumer Freight). This criterion is still being discussed, but the intent is to accommodate UPS/FedEx type of freight as well as restaurant and lodging types of commodities.

ENERGY EFFICIENCY – Technology should be capable of incorporating green technology for power sources such as wind and solar power. Ideally it should accommodate such power sources on-line.

GROWTH – ability to accommodate 50 years of growth in demand

ACCOMMODATE LOCAL AND EXPRESS TRAFFIC SIMULTANEOUSLY

TUNNELS – if needed, the technology should minimize the need for tunneling as an expensive alternative to other routes. However, there is recognition that in certain circumstances, tunneling may be a viable option and even desirable to mitigate other factors.

ADAPTIBILITY – the system should be able to incorporate or evolve to future technological developments without scrapping the entire system.

RELIABILITY – consistent, predictable travel times in all weather conditions is a mandatory feature of any AGS proposed for the I-70 Corridor.

FREQUENCY – head-way times capable of addressing peak period demands is a necessity for this system.

ALIGNMENT – the system should not be limited to the current CDOT I-70 highway R.O.W. if a more efficient, more direct, more reliable and potentially less expensive alignment is possible. The AGS alignment should optimize ridership potential and minimize environmental impacts to both the corridor's natural and built environments, including impact to corridor communities and the current highway operation. In addition, alignment location considerations should include minimizing the impact to the current I-70 highway operation during the construction of the AGS.

OPERATIONAL EFFICIENCIES AND LOW MAINTENANCE COSTS

EQUIPMENT DESIGN FLEXIBILITY – the system should be able to accommodate multiple needs for passengers, freight, passenger "stuff", possibly even cars (based on European models). It should allow for private entities (UPS) to build specific needs vehicles (proprietary) to meet very specialized cargo needs. This may include a need for different vehicle configurations to accommodate low demand travel times and locations as well as the high demand, peak travel times and destinations.

CONTEXT SENSITIVE SOLUTIONS – CSS principles will apply for environmental and community considerations in construction and operations in all locations, the development of transit stations of all designs and for all types of technologies.

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