DOI: https://doi.org/10.30932/1992-3252-2020-18-108-117

Methodological Approaches to Providing State Support for Development of Public Urban Passenger Transport

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ABSTRACT

The article, based on the analysis of the existing methods for selection of constituent entities of the Russian Federation to be provided with federal support in modernization of the rolling stock of public urban passenger transport and introduction of intelligent transport systems within the framework of the national project «Safe and High-Quality Highways», highlights main approaches and principles used by the federal authorities as guidelines when making decision on the public state support of the activity planned by the regions in the field of urban transport development. The adequacy of these approaches is considered for cases when state support for public urban passenger transport should be provided on an emergency basis (in particular, under the conditions of a sharp decrease in passenger traffic and ticket revenue due to anti-epidemic measures), proposals are formulated to update these approaches.

Keywords: transport, public urban passenger transport, organization of transport service, budgetary investments, transport planning.

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Article received 18.04.2020, accepted 27.08.2020.

For the original Russian text of the article please see p. 108.

Background. The relevance of development and implementation at the federal level of a system of measures of state support to development of public urban passenger transport (PUPT) was discussed by the expert community in 2019 [1]. Measures to modernize PUPT rolling stock were included in the national project «Safe and High-Quality Highways» (NP «BKAD»); VEB.RF (development institution) has started preparing a comprehensive program for development of urban public transport, which involves modernization of transportation systems and of rolling stock fleets in the regions of Russia[1]. The Ministry of Transport of Russia is currently continuing to work out forms and conditions for supporting development of public urban transport [2].

Now, when introduction of anti-epidemic measures in Russia has caused a sharp drop in passenger traffic with PUPT in Russian cities (according to the Accounts Chamber of the Russian Federation, the drop rate was estimated at about 80 %), the task of providing state support to urban transport becomes even more urgent, and, apparently, requires a revision of existing methodological approaches to development of appropriate measures [3].

Federal support for development of urban transport in the regions: analysis of existing methods

The existing approaches and basic principles, which are used as guidelines by federal authorities when make decisions on providing state support to measures undertaken and implemented by the regions in the field of urban transport, can be identified with the example of the analysis of two existing methodological documents:

• The procedure for selecting the constituent entities of the Russian Federation for implementation of measures to modernize rolling stock of inland public passenger transport within the framework of the federal project «General system measures for development of road facilities» NP «BKAD» [4].

• Methodology for assessing and ranking local projects to implement the activity «Implementation of intelligent transport systems providing for automation of traffic management processes in urban agglomerations...» within the framework of the federal project «General system measures for development of road facilities» NP «BKAD» [5].

The methodological approach presented in these documents is based on considering the federal budget expenditures for development of PUPT as an investment. The state, as an investor, seeks, with the support of the measures being implemented in the regions, to ensure efficiency of budgetary investments and reduce investment risks.

Within the framework of this approach, applications of the constituent entities of the Russian Federation for obtaining federal support for modernization of rolling stock or implementation of local projects of intelligent transport systems (ITS) are analogous to business plans and investment proposals: for their preparation, it is required to provide an analysis of demand (transport and passenger flows), estimating costs and predicting benefits (such as saving time for road users and reducing toxic emissions). The specifics of the procedure for providing federal support also follow from this approach, which will be discussed below.

First, this is a *competitive procedure for providing support*, based on the ranking system for evaluating applications of the constituent entities of the Russian Federation, stipulating that satisfaction of these applications is also effected in descending order of rating.

Both above-mentioned methodologies for evaluating applications are based on the integral score, which is obtained by summing the «weighted» scores for individual indicators.

The procedure for selecting constituent entities of the Russian Federation for implementation of measures to modernize rolling stock provides for assessment and ranking of applications based on 24 separate indicators grouped in the following areas:

• Assessment of the level of development of the network of gas filling stations and multi-fuel filling stations with the possibility of refueling with natural gas.

• Assessment of length and increase in length of rail tracks and contact networks of urban ground electric transport.

• Assessment of transport and price accessibility of pupt, reliability and comfort of transport services.

[1] Newspaper «Kommersant» No. 166 dated 13.09.2019, p. 1. [Electronic resource]: https://www.kommersant.ru/doc/4089787. Last accessed 12.04.2020.

• Assessment of availability of transport planning documents of municipalities and urban agglomeration and of their compliance with the established requirements.

• Expert assessment of quality of applications, in terms of validity of the proposed measures to change pupt route network, and of the correctness of assessment of the socio-economic effect of implementation of the measures proposed.

The methodology for ranking applications for implementation of local ITS projects, in turn, involves assessment (based on 47 individual indicators) of:

• Functionality of ITS proposed to be developed.

• Availability of data for monitoring traffic parameters in the region.

• Direct values of traffic parameters of the road network (in this case, regions with a less favourable road situation get a higher estimated score, based on the fact that in this case the introduction of ITS will show greater efficiency).

• Availability of approved transport planning documents containing measures for introduction of ITS.

• Practices of administering organization of road traffic in the region (presence of authorized organizations and regulations for their interaction).

• Financial support of introduction of ITS from the regional budget.

Another important principle is *the use of federal support as an incentive for the regions to implement federal policy in the transport sector*. Assessment of a region's application for a federal support is influenced by the degree of compliance of the region with the requirements, recommendations and procedures established by the Ministry of Transport.

So, when considering applications for implementation of local ITS projects, the following positions are considered:

• Availability of a regional Traffic Management Centre and qualification level of its employees.

• Implementation of road traffic monitoring on the road network of the region in accordance with the current Road Traffic Monitoring Procedure [6].

When considering applications for modernization of rolling stock, the following positions are considered:

• Introduction of non-cash (electronic) fare payment.

• Introduction of «gross contracting» on the route network of PUPT in urban agglomeration.

• Ensuring operation of large and especially large class [per capacity] rolling stock.

• Application of regulated tariffs at PUPT route network.

• Compliance with the requirements of the social standard of transport services [7] in terms of compliance with capacity standards, ensuring regular transportation and accessibility of stopping points for pedestrians.

Also, when analysing applications for modernization of rolling stock and implementation of local ITS projects, availability of approved transport planning documents (Programs for Integrated Development of Transport Infrastructure and Integrated Schemes for Organizing Transport Services for the Population) in urban agglomerations is considered.

The next key principle is the *principle of «sustainable legacy»*, which primarily concerns infrastructure projects, but also applies to activities for modernization of rolling stock. The region must have the necessary budgetary funds to ensure further operation of the infrastructure created with the support of the federal budget and its maintenance as provided by applied standards. In the discussed methods, this principle was implemented in the following way:

• When assessing local ITS projects, the region's obligations to co-finance the project are considered.

• When assessing applications for modernization of PUPT rolling stock, the carriers assume financial obligations in the form of lease payments.

In addition, both methods provide for *assessment of the socio-economic effects of implementation of measures* that claim to receive federal support. The need for a predictive assessment of the socio-economic efficiency of measures provided for in the applications determines the significant labour intensity (and science intensity as well) of preparing applications. To substantiate the measures envisaged by the applications for adjusting PUPT route network or introducing ITS elements, large amounts of data are needed on the observed and prospective parameters of

transport demand and traffic, many of which (prospective values of the time index, occupancy of route vehicles, etc.) should be calculated using a multimodal mathematical model of the urban agglomeration transportation system. This circumstance even more ties the preparation of applications with implementation in the regions of the public policy in the field of transport planning, which precisely implies development of regional mathematical transport models and obtaining the necessary forecasts [8].

From the above peculiarities, it follows that the applications *must be evaluated with involvement of experts*, since the application is almost a full-fledged research work, it requires the involvement of scientists and designers in its consideration to assess the feasibility of the proposed measures and assess correctness of the calculations and forecasts presented. The analysis of regional applications for updating PUPT rolling stock will be considered by the Expert Commission under the Ministry of Transport of Russia [9]. A technical consultant should be involved in the analysis of applications for implementation of local ITS projects which should be a scientific or design organization that meets requirements for its employees should have scientific degrees and experience in implementing projects in the field of transport. A financial consultant should be involved as well, who also must meet a number of requirements [10].

It should be noted that one of the problems of implementing the listed principles when making decisions on provision of federal support to projects in the field of transport is the lack of an approved methodology for evaluating effectiveness of investment projects, which would fully consider the features of measures in the transport sector, in particular, socio-economic effects, connected with:

- Saving time for the users of the transportation system [passengers].
- Acceleration of cargo delivery.
- Increasing reliability of passenger and freight traffic.
- Changes (reduction) in emissions of pollutants from moving sources into the atmosphere.
- Indirect economic effects of increasing transport accessibility of territories (including increasing their investment attractiveness, ensuring access to services and jobs, etc.).

Approved at the end of 2019, the Methodology for assessing the socio-economic effects of construction (reconstruction) and operation of transport infrastructure facilities planned for implementation with the involvement of federal budget funds is a step forward in this regard, since it takes into account the effects of accelerating movement of goods and passengers mobility, as well as expanding the zones of transport accessibility of cities («agglomeration effect»), but at the same time it does not consider the effects associated with reliability of transportation, emissions of pollutants, urban planning and land use (changes in investment attractiveness of territories) [11].

Quite a separate problem, and perhaps the most urgent one, is inability of the discussed methodological principles to provide for emergency anti-crisis measures to support PUPT. When preparing proposals for emergency support measures, it is advisable to proceed from the fact that these measures will have to be financed from local, or, at best, from regional budgets, since development of new or amending the existing rules for provision of interbudgetary transfers and subsidies from the federal budget, and approval of these rules by a government decree, can take a significant amount of time.

Conclusions. As a result of consideration of the current methodological documents, which are guidelines for the federal authorities when making decisions on providing state support to activities in the field of urban transport implemented in the regions, some general principles were identified: a competitive procedure for providing support, the use of federal support as an incentive for the regions to implement federal policy in transport sector, the principle of «sustainable legacy», assessment of socio-economic effects of implementation of activities, and assessment of applications with involvement of the expert community.

In cases where PUPT support measures should be urgent (as in a situation of a sharp decrease in passenger traffic during the [2020 Covid] epidemic situation), the principles listed above should be revised, at least in part. Priority measures to support public urban passenger transport in the regions are to be implemented at the municipal level with the support of the authorities of the constituent entities of the

Russian Federation, and with minimal methodological support from the Ministry of Transport, since centralized development, approval and «forwarding» necessary instructions and methodological apparatus from the federal level to the municipal one, will not provide the required speed of decision making.

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