что сравниваемые методики (кроме предлагаемой) не учитывают дополнительные пути, которые используют т1 и т4, а расходы на содержание этих путей распределены между всеми клиентами.

Приведенный пример показывает, насколько важна корректная оценка затрат применительно к тем или иным клиентам. Аналогичные выводы касаются не только путевой составляющей, но и всех остальных составляющих тарифа.

АПРОБАЦИЯ МЕТОДИКИ

1. Предлагаемая методика в части распределения затрат ППЖТ между работами была использована при расчете тарифов на работы Тамбовского отделения ЗАО «Бекетовское ППЖТ» и рассчитанные тарифы утверждены губернатором Тамбовской области.

2. В полном объеме предлагаемая методика использована в 2013 году для экономического обоснования предельных тарифов на подачу-уборку вагонов на подъездных железнодорожных путях ОАО «Белгородское ППЖТ», результаты расчета согласованы.

3. В мае 2013 года основные положения методики были доложены на III Всероссийской конференции по проблемам государственной ценовой и тарифной политики в Российской Федерации.

4. В настоящее время проект Методических рекомендаций находится на утверждении в Минтрансе РФ.

5. Как показывает опыт ПромтрансНИИпроекта, предприятия обращаются за помощью в расчете тарифов при возникновении конфликтных ситуаций. Использование предлагаемой редакции Методических рекомендаций позволит свести к минимуму конфликты между ППЖТ, контрагентами и региональными регулирующими органами.

ЛИТЕРАТУРА

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4. Экономическое обоснование предельных тарифов на подачу-уборку вагонов на подъездных железнодорожных путях необщего пользования ОАО «Белгородское предприятие промышленного железнодорожного транспорта» / ЗАО «ПромтрансНИИпроект», научно-технический отчет. – М., 2013.

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DIFFERENTIATION OF TARIFFS FOR INDUSTRIAL RAILWAY ENTERPRISES

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ABSTRACT

Industrial railway enterprises (IRE) perform a large volume of work, the tariffs for which are accepted at the regional level. In this article the authors scrutinize the method of calculation of tariffs, providing their differentiation according to the actual cost of service to every customer. This approach encourages a reduction in transport costs and has been successfully tested in enterprises in Tambov and Belgorod regions.

ENGLISH SUMMARY

Background.

When forming economically justified tariffs for operations and services of IRE, many factors, reflecting the work methods, the actual state of facilities, external economic situation etc. should be taken into account.

Concurrently, tariffs should provide:

– Profitable work of IRE;

– Encouragement of the introduction of advanced technologies;

– Optimal combination of economic interests of producers and consumers (hereinafter-customers);

– Economic interest of customers in increasing the intensity of work and use of facilities;

– Competitive growth of customers.

Existing methods and guidelines for the establishment of tariffs [1], intended mainly for the correct determination of full costs of IRE and their distribution between operations. This approach provides a differentiation of tariffs by type of operations, but on the average for all customers.

Such an option is not conducive to the optimal combination of economic interests of IRE and customers, does not take into account the degree of customers' use of resources and equipment of IRE, which in turn, does not help to improve the competitiveness of consumers and does not create interest of IRE in increasing resource efficiency and reducing the cost of performed works.

Objective.

The objective of the authors is to demonstrate the methods for tariffs' calculation for IRE and their approbation on the example of the enterprises of Tambov and Belgorod regions.

Methods.

The authors use mainly mathematical methods in the research, presented in this article.

Results.

IRE is a complicated manufacturing complex, which includes several business units (departments or units), having at their disposal human resources and technical equipment and performing certain manufacturing operations qualitatively.

Typically, IRE comprises:

- *Track facilities;*
- *Locomotive economy;*
- *Loading and unloading unit;*
- *General economic unit.*

Main regulated operations performed by IRE include: placing and displacing of cars by a locomotive; shunting operations at the request of customers; delivery and cleaning of cars, belonging to locomotives' customers; loading and unloading works.

Each unit is involved in performing of one or several operations, and each operation is included in one or more units. Table 1 shows the types of operations and one of possible variants of their separation into units.

A set of units for each IRE is individual and depends on a list of works, their volumes, technology, and other factors.

IRE`s customers differ in accordance with many indicators. The main of them are: the amount of work, distance from IRE`s station, kind of freight, intensity of use of IRE`s objects by each customer, etc. Since a tariff size depends on all these factors, their integrated accounting allows differentiating tariffs for customers.

The authors offer their own scheme for the formation of regulated tariffs for operations of IRE (Pic. 1).

Forecasting the volume of work is performed by each client and is adjusted by IRE. Adjustment is carried out due to the fact that in case of regular overstatement of volumes by at least one client, the company bears financial losses. Original information in this case is contracts with customers and the actual work outcomes of previous years.

When adjusting the data on the upcoming volumes of work submitted by customers (Qij, where i-work index, j-customer index) may be used. They are analyzed and evaluated by experts of IRE according to the formula (1), where – Q_{ij}^{k} -corrected volume of work for the planning period; Q_{ij}^{f} – the amount of work actually performed for one or more years prior to the period under review; Q_{ij}^{ot} - data on the volume of work submitted by customers for one or more years prior to the period under review.

Cost calculation is done separately for each unit of IRE, and those that fall in the prime cost of IRE`s works are grouped according to their economic content into the following categories:

- *Labor costs (T_b);*
- *Material costs, including the cost of fuel and lubricants (M_b);*
- *Accrued payroll (N_b);*
- *Depreciation of fixed assets (A_b);*
- *Other costs (P_b).*

Here b – is index of the unit.

Full unit costs included in the prime cost of works of IRE (Z_b), defined by the formula (2).

As a primary method for determining components of unit`s costs for the tariff period, it is recommended to use normative- statistical method. Its essence lies in the fact that in the calculations appear normative and statistical information [1].

For formation of tariffs for IRE`s works, income unit ($PR_b$) must be added to full costs of each unit. $PR_b$ is calculated by the formula (3), where r – profitability index; $K_b$ –capital investments, required for medium and complete repair of unit`s equipment.

Unit`s costs for distribution between operations (ZR_b) are calculated by the formula (4). Procedures for the allocation of units' costs between works and customers are carried out in accordance with Table 1.

The main influences on differentiation of tariffs by operations and customers have maintenance and operation costs of a unit «Track facilities».

Since equipment, determining operation of the unit, is gridiron, all costs (ZR_p) attributed to this figure and the formula (5) is calculated as the cost of maintenance of 1 km of a track (c_p) is calculated by the formula (5), where L_p – total length of tracks of IRE. The authors in formulas (6) – (11) show the method of calculation the tariffs in respect to the maintenance of tracks.

Costs of a unit «Locomotive facilities» are distributed between operations «placing- displacing» and «shunting operations» and between customers proportional to locomotive- hour. As the cost of locomotive-hours for all operations is the same, it is included in the calculation of tariffs of all work of the same value.

Locomotive component in tariffs of j-th customer in performance of i work (c_{rij}) is calculated by the formula (12), where ch- total locomotive- hours in performance of all works, ch_{ij}- locomotive- hours of j^{th} customer in performance of i operation.

Costs of freight unit are costs for the operations of loading-unloading (ZR_{gr}).

Costs of a general economic unit (ZR_o) are proportionally distributed between operations in accordance with the formula (13), where for ZR_i formula (14) is used.

For tariffs, differentiated by customers or by works, formulas (15) and (16) are used respectively.

Pic. 3 shows the sequence of processing operations performed by IRE by placing and displacing of cars.

The diagram illustrates a case where arriving cars are processed at one station of IRE. This means that the groups of cars are broken up at the station with a selection of them on the fronts of loading and unloading. It should be taken into account that if cars arrive as separate groups, then one of them may include cars for different purposes, and therefore there is a need for classification work on the tracks of industrial station. The same situation is possible wherever cars arrive in routes.

Similar technology is applied in case of make way of cars; the difference is that the locomotive of a customer works rather than one of IRE.

Pic. 4 shows process steps of shunting operations of customers.

Methods for calculating the technical and economic indicators (locomotive-hours, gross turnover with varying degrees of disaggregation, costs, etc.) for the above technologies in detail are investigated in [1, 2]. Data on works' prognoses, technical and financial state of IRE, the regulatory reference materials [3], as well as existing at the time of calculation the price of materials and fuel are used as background information for the indicators' calculation.

The authors provide an example of calculation of differential tariff for track component.

One IRE owns 7.6 km (L_p) track, performs only operations of placing- displacing of cars for

six contractors with a total freight turnover of 150 thousand tons / year (Q_{ij}^k) (See Pic.1).

The purpose of the example is to show the impact of degree and intensity of usage of gridiron by counterparties on tariffs.

Background:

• the cost for maintenance of 1 km of a track (c_p) – 1.25 million rubles. / Km; it is calculated by formulas 2–5;

• characteristic of tracks, the volume of work by contractors and some computation data are given in Table 2.

The description of data is given in Table 2.

Data at the intersection of lines 1–9 and columns 6–7 (c_{ij}) mean: 0 – section i is not involved in the route of a j-counterparty; 1 – section i is involved in the route of a j- contractor.

Information in columns 2–5 and lines 1–10 is description of sections of a subset PM (track sections, which are parts of the route of placing- displacing of cars of at least one contractor).

In the line 14 contractors are shown, that in addition individually use tracks (subset PE).

All other tracks of IRE (subset PO) are used by all contractors proportional to the traffic. On the scheme of tracks of IRE subset PO comprises station tracks and the tracks of the depot. The total length of tracks of a subset PO is $L_o = L_p - L_o - \sum_j l_{ej}$ (L_o = 7600–3700 – (300+700) =2900 m).

First, the authors calculate track component of a tariff from the use of tracks of a subset PO (first track component).

They use formula (6) to determine costs for the maintenance of all tracks of a subset PO (ZPO = 1250000×2900/1000 = 3625000 rubles.). Traffic is used as an indicator of proportionality and with the formula (7) track component is calculated (c_{poj} = 3625000/150/1000 = 24,17 rubles./ton). For the calculation of track component from the use of tracks of a subset PE (c_{pej}) formula $c_{pej} = c_p \times le_j / \sum_j Q_j$. is applicable. See table 3 for outcomes of the calculation.

Then the costs for maintenance of tracks of a subset PM are distributed by customers as follows. With formula (8) costs for the maintenance of each section of a track of a subset PM are calculated. (See column 2 of a table 4). Then total freight turnover is determined for each section by the formula (10). (See column 9 of a table 4).

Then with formulas (9) and (10) costs of a client j, necessary for the maintenance of a section i. are calculated. See the main part of table 4.

With formula (11) track component of a tariff is determined as $c_{pmj.}$

General track components of tariffs (c_j), which are total of 3 parts of track component, are shown in line 13 of table 4.

As for the calculation data analysis, the authors claim that 2 methods are compared: the first one, which is used for calculation of universal tariffs, and the second, which is used for differentiation of tariffs proportional to one of the indicators. See table 5 and table 6.

Conclusions.

At the end of the article the authors turn to the approbation of the method.

1. The proposed method in part of distribution of costs of IRE among operations was applied in calculation of tariffs for operations of Tambov division of JSC «Beketovskoe IRE» and then these tariffs were approved by the governor of Tambov region.

2. The full proposed methodology was used in 2013 for the economic justification of maximum tariffs on placing-displacing of railway sidings of OJSC «Belgorod IRE», the calculation results are adjusted.

3. In May 2013 the main provisions of the methodology were presented at the III All-Russian Conference on the state price and tariff policy in the Russian Federation.

4. The project of Methodical recommendations is currently standing for approval in the Ministry of Transport of the Russian Federation.

5. Experience of PromtransNIIproekt shows, that businesses seek help in the calculation of tariffs in conflict situations. Using the proposed edition of Methodical recommendations will help to minimize conflicts between IRE, contractors and regional regulators.

Keywords: industrial railway, tariffs, calculation methods, principles of differentiation, costs, revenue, approbation.

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