

The zones analysis of the residential consumption in Elektrovojvodina for period 2001-2005

B. Radović
Z. Majstorović
PD Elektrovojvodina doo Novi Sad

ABSTRACT

The power sales Tariff System using in Republic of Serbia since April 15, 2001. is substantially different regarding to the prior Tariff system. In this paper, it's taken into consideration and analysis of the residential consumption category, in details. This category include two different category pursuant to the preceding Tariff System: households and other consumption at 0,4 kV second tariff degree. It's analysed the consumption according to the consumer zones, particularly for group of households and group of other consumption, in period 2001.-2005. It's also analysed the number of customers according to the zones in the same period. In particular, the upper season periods and the lower season periods are analysed, although these season periods are used in the time when the preceding Tariff System had been applied (before 2001).

Moreover, some of the general effect appraisals regarding to the new Tariff System, aslo presented in this paper.

The aim of this analysis is to give the appraisal of (not) adequacy for merger preceding two categories, in base, with different purposes of the consumption in one consumption category and present of appraisals and proposals in regard of existing Tariff System.

Based on this analysis, Tariff System should be inquire for the overall consume of EPS and pursuant that perform certain changes on existing Tariff System or create new Tariff System adapted to conditions of its appliance.

1. INTRODUCTION

The power sales tariff system using in Republic of Serbia since April 15, 2001. is significantly different from the former one. Most significant differences are:

- category of consumption changing ,
- changing of time for upper and lower tariff,
- applying of zone counting instead of seasonal principle for residential consumption,

- new way for counting power rate that giving up since 01.07.2002,
- significant increasing upper/lower price rate from 2:1 to 4:1

Paper elaborate global estimations of introducing new tariff system, and residential consumption estimation in details. Residential consumption is dividing in two categories like in former tariff system: households and other consumption at 0, 4 kV second tariff degree. Since 01.07.2002. Residential consumption is dividing into next categories: households, public and joint consumption. In this way it is applies the same monthly limit zone for all consumption groups. Exception is for over 1600 kWh public and joint consumption in blue zone. Paper analyzes in details consumption by consumption zones separately for households and others in Elektrovojvodina for period 2001-2005. Number of consumers by zones is analyzing for the same period to. For periods higher and lower consumptions zones are made analysis separately for former tariff period. This analysis has intention to contribute in estimation of possibilities jointing different consumption categories into one categories, and presentation of estimation and suggestions for tariff system.

2. EQUIVALENT TIME OF MAXIMUM ANNUAL POWER FOR ELEKTROVOJVODINA IN PERIOD 1996-2005

Introducing new tariff system in April 2001. with incrementing electricity price have main goal to reduce high consumption for heating, establishes price relations between all energy sources, decrease seasonal irregularity in consumption, perform better load duration curve and by this way contribute to better exploitation existing capacities.

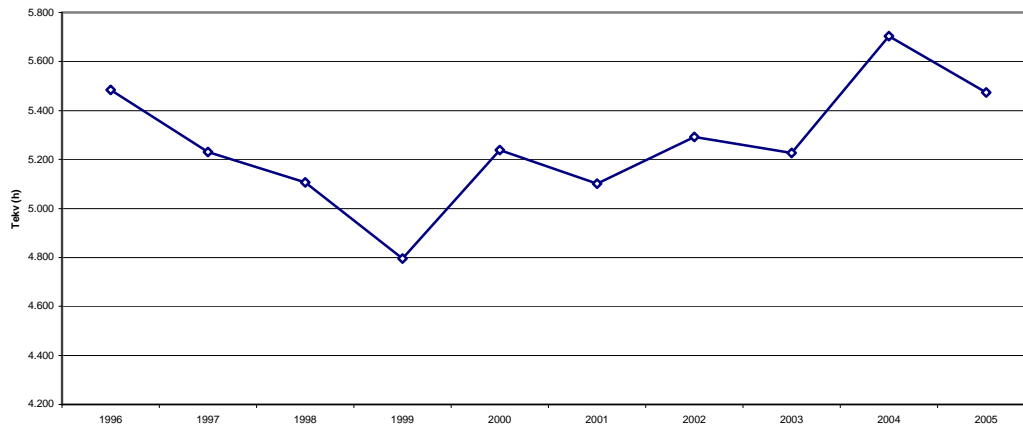
For complete reviewing uncontinuositi of consumption Of Elektrovojvodina, here were analyzed hourly changes of year power in period 1996-2005. In this case, consume of Elektrovojvodina is energy taking over TS 110/x kV. It should be emphasize that 1999 data are nor relevant for analysis, causing NATO aggression.

In the table 1. is presented equivalent duration time of maximum year power, and it is shown in picture 1.

Table 1. Equivalent duration time of maximum year power of Elektrovojvodina

| Year | W (MWh) | P (MW) | Tekv (h) | m (r.j.) |
|------|-----------|--------|----------|----------|
| 1996 | 7.821.181 | 1.426 | 5.485 | 0,624 |
| 1997 | 8.222.051 | 1.572 | 5.230 | 0,597 |
| 1998 | 8.323.253 | 1.630 | 5.106 | 0,583 |
| 1999 | 7.438.612 | 1.551 | 4.796 | 0,547 |
| 2000 | 7.846.424 | 1.498 | 5.238 | 0,596 |
| 2001 | 8.288.741 | 1.625 | 5.101 | 0,582 |
| 2002 | 8.147.870 | 1.540 | 5.291 | 0,604 |
| 2003 | 8.214.639 | 1.572 | 5.226 | 0,597 |
| 2004 | 8.252.580 | 1.447 | 5.703 | 0,649 |
| 2005 | 8.516.791 | 1.556 | 5.474 | 0,625 |

Picture 1. Equivalent duration time of maximum year power



It is evident that new tariff system introducing in 2001 make clear growth of duration time of maximum year power. Biggest value was 5703 h in 2004 that correspond to power factor of 0,65. It is significant that duration time of maximum year power in 2005 is equal like in 1996.

3. ESTIMATION OF HEATING ENERGY IN PERIOD 2000-2005

Estimation of heating energy in higher period in Elektrovojvodina was made. Higher and lower period takes months that was in former period making seasons. Depending consumption of temperature was establishing in literature /5/ and by methodology of Elektrovojvodinafor making energy balance, using regression analysis. Average temperature conditions (reference temperature) by months were established by average temperature in Novi Sad during 18 years in period 1986-2003. Average temperature conditions and accomplish average temperature are shown in table 2.

Table 2. Monthly average temperature and average value for 18 years

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Average for 18 years |
|-----------|------|------|------|------|------|------|----------------------|
| january | | 3,1 | 0,2 | -1,9 | -1,1 | 0,1 | 0,9 |
| february | | 4,1 | 6,6 | -4,5 | 2,3 | -3,4 | 2,1 |
| march | | 10 | 8,6 | 5,6 | 6,4 | 4,3 | 6,2 |
| april | 14,7 | 10,9 | 10,8 | 11,3 | 12,0 | | 11,3 |
| may | 18,5 | 17,6 | 19,1 | 20,6 | 15,1 | | 17,2 |
| june | 22,0 | 17,8 | 21,9 | 24,2 | 19,3 | | 20,3 |
| july | 22,4 | 21,7 | 23,6 | 22,3 | 22,0 | | 21,9 |
| august | 24,2 | 22,3 | 21,6 | 24,3 | 21,4 | | 21,4 |
| september | 17,0 | 15,1 | 16,4 | 16,4 | 15,9 | | 16,8 |
| october | 13,9 | 14,1 | 12,2 | 9,7 | 13,5 | | 11,8 |
| november | 10,3 | 3,6 | 9,5 | 7,6 | 6,5 | | 6,2 |
| december | 3,6 | -3,3 | 0,5 | 2,0 | 2,5 | | 0,9 |

Table 3. Effects of bringing energy on average temperature

| Season | Average monthly consumption (MWh) | | Temperature influence | |
|--------------|-----------------------------------|--------------------|-----------------------|----------|
| | Realization | Reduction by temp. | (%/°C) | (MWh/°C) |
| 00/01 (kor.) | 772.248 | 817.342 | 2,79 | 22.804 |
| 01/02 | 776.959 | 776.416 | 2,28 | 17.702 |
| 02/03 | 782.644 | 768.596 | 1,73 | 13.304 |
| 03/04 | 766.239 | 765.348 | 1,97 | 14.904 |
| 04/05 | 778.595 | 768.656 | 1,71 | 13.092 |

Note: (kor.) – Reduction taking into account

In the table 3 is shown temperature influence in consumption by results from /5/. Accordingly, heating consumption was set in the higher season and reached consumption in lower season (additionally reducing April consumption to average conditions). Results are shown in table 4, and table 5.

Table 4. Established and reduced monthly consumption in period April 2000-march 2005

| | Realized consumption (MWh) | | | | | | Reduced consumption by average temp. conditions (MWh) | | | | | |
|-----------|----------------------------|---------|---------|---------|---------|---------|---|---------|---------|---------|---------|---------|
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| january | | 884.860 | 892.564 | 870.973 | 854.588 | 831.905 | | 928.272 | 873.147 | 838.769 | 836.657 | 837.929 |
| february | | 784.480 | 717.473 | 832.549 | 786.245 | 821.256 | | 833.932 | 778.980 | 758.714 | 781.270 | 756.803 |
| march | | 779.380 | 751.223 | 794.084 | 784.852 | 824.046 | | 835.910 | 790.073 | 783.304 | 776.660 | 787.541 |
| april | 622.046 | 688.980 | 676.814 | 671.804 | 661.215 | | 699.580 | 691.586 | 675.439 | 678.777 | 664.634 | |
| may | 546.085 | 558.130 | 572.547 | 564.734 | 595.311 | | 546.085 | 558.130 | 572.547 | 564.734 | 595.311 | |
| june | 516.204 | 537.213 | 546.643 | 550.648 | 549.561 | | 516.204 | 537.213 | 546.643 | 550.648 | 549.561 | |
| july | 518.570 | 533.891 | 547.196 | 544.693 | 558.252 | | 518.570 | 533.891 | 547.196 | 544.693 | 558.252 | |
| august | 530.285 | 544.575 | 547.750 | 553.662 | 571.999 | | 530.285 | 544.575 | 547.750 | 553.662 | 571.999 | |
| september | 547.810 | 577.021 | 586.562 | 554.721 | 592.363 | | 547.810 | 577.021 | 586.562 | 554.721 | 592.363 | |
| october | 573.214 | 646.648 | 696.500 | 701.354 | 683.935 | | 621.102 | 670.136 | 703.488 | 696.245 | 696.264 | |
| november | 639.851 | 802.699 | 733.740 | 733.351 | 762.982 | | 733.347 | 762.287 | 757.132 | 746.971 | 761.361 | |
| december | 817.544 | 950.864 | 878.859 | 842.067 | 851.277 | | 879.115 | 884.848 | 859.986 | 854.998 | 859.125 | |

Table 5. Percent of consumption in higher season for heating

| | | | | | |
|-----------------------|-----------|-----------|-----------|-----------|-----------|
| VS | 2000/2001 | 2001/2002 | 2002/2003 | 2003/2004 | 2004/2005 |
| W_{VS} (MWh) | 4.831.678 | 4.759.471 | 4.701.393 | 4.692.801 | 4.699.023 |
| NS | 2000 | 2001 | 2002 | 2003 | 2004 |
| W_{NS} (MWh) | 3.358.534 | 3.442.416 | 3.476.137 | 3.447.235 | 3.532.120 |
| $W_{VS}-W_{NS}$ (MWh) | 1.473.144 | 1.317.055 | 1.225.256 | 1.245.566 | 1.166.903 |

It is obvious that heating consumption was reduced from 1.473.144. MWh in higher season 2001/2000 to 1.166.903 MWh, that makes 21% reducing.

4. ANALISYS OF ENERGY CONSUMPTION BY ZONES FOR RESIDENTIAL CONSUMPTION IN PERIOD 2001-2005

Most significant characteristic of new tariff system is that seasonal attitude was replaced with counting by consumption zones during year for residential consumption. There was introduced progressive tariff for active energy with relation 1: 1, 5: 4, for green, blue and red zones, that during time changes relative relation of red zone. This was clearly imposed main goal to reduce heating consumption. Until 01.07.2004. there were next limits by zones:

- green zone up to 600 kWh,
- blue zone 601-1600 kWh,
- red zone over 1601 kWh

In the July 2004. upper limit for green zone was reduced to 300 kWh, and after august limit was 350 kWh.

Analysis for seasons separately for households and the others (former 0, 4 kV categories II degree) was made. Causing decreasing green zone limit from 600 to 350 kWh in period of lower season in 2004 bounded was observed green and blue zone, and parameters is shown in tables 6. and 7. relative augmentation of high season consumption related to low season consumption in all observed years is significantly bigger in the other consumption related to households. Augmentation related to other consumption is 57% to 41%, and for households is 32% to 27%. This can bring conclusion that other consumption take more heating energy than households. Taking into consideration augmentation in higher season for all zones leads to next characteristic. For the other consumption higher percentage of augmentation is for blue zone (67% to 105%), but for red zone biggest augmentation is 282% to 529%. This can lead to conclusion that seasonal augmentation of consumption for zones more equalized than for other consumption.

Table 6. Consumption by zones for households in kWh

| Households consumption by zones of consumption in kWh | | | | | | |
|---|---------------------|-------|--------------------------|-------|--------------------|--------|
| 2001/2002 | NS | | VS | | Difference (VS-NS) | % |
| | 01.04.- 30.09.2001. | | 01.10.2001.- 31.03.2002. | | | |
| | 1 | % | 2 | % | 3 (2-1) | 4(3/1) |
| green zone | 1.493.966.671 | 88,89 | 1.679.103.388 | 75,67 | 185.136.717 | 12,39 |
| blue zone | 166.727.785 | 9,92 | 463.603.485 | 20,89 | 296.875.700 | 178,06 |
| red zone | 19.945.107 | 1,19 | 76.326.852 | 3,44 | 56.381.745 | 282,68 |
| Total | 1.680.639.563 | 100 | 2.219.033.725 | 100 | 538.394.162 | 32,04 |
| 2002/2003 | NS | | VS | | Difference (VS-NS) | % |
| | 01.04.- 30.09.2002. | | 01.10.2002.- 31.03.2003. | | | |
| | 1 | % | 2 | % | 3 (2-1) | 4(3/1) |
| green zone | 1.511.636.335 | 90,04 | 1.691.609.742 | 76,06 | 179.973.407 | 11,91 |
| blue zone | 156.576.068 | 9,33 | 465.261.648 | 20,92 | 308.685.580 | 197,15 |
| red zone | 10.703.072 | 0,64 | 67.300.913 | 3,03 | 56.597.841 | 528,80 |
| Total | 1.678.915.475 | 100 | 2.224.172.303 | 100 | 545.256.828 | 32,48 |
| 2003/2004 | NS | | VS | | Difference (VS-NS) | % |
| | 01.04.- 30.09.2003. | | 01.10.2003.- 31.03.2004. | | | |
| | 1 | % | 2 | % | 3 (2-1) | 4(3/1) |
| green zone | 1.523.751.387 | 91,35 | 1.698.471.381 | 78,13 | 174.719.994 | 11,47 |
| blue zone | 137.574.286 | 8,25 | 439.340.236 | 20,21 | 301.765.950 | 219,35 |
| red zone | 6.739.327 | 0,40 | 36.151.342 | 1,66 | 29.412.015 | 436,42 |
| Total | 1.668.065.000 | 100 | 2.173.962.959 | 100 | 505.897.959 | 30,33 |
| 2004/2005 | NS | | VS | | Difference (VS-NS) | % |
| | 01.04.- 30.09.2004. | | 01.10.2004.- 31.03.2005. | | | |
| | 1 | % | 2 | % | 3 (2-1) | 4(3/1) |
| green + blue zone | 1.708.842.601 | 99,61 | 2.149.863.264 | 98,31 | 441.020.663 | 25,81 |
| red zone | 6.615.054 | 0,39 | 36.851.418 | 1,69 | 30.236.364 | 457,08 |
| Total | 1.715.457.655 | 100 | 2.186.714.682 | 100 | 471.257.027 | 27,47 |

Table 7. Consumption for others in 0,4 kV II by zones in kWh

| Other consumption at 0,4 kV II degree by zones of consumption in kWh | | | | | | |
|--|---------------------------|-------|--------------------------------|-------|-----------------------|--------|
| 2001/2002 | NS 01.04.- 30.09.2001. | | VS 01.10.2004.- 31.03.2005. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 98.571.865 | 42,00 | 125.301.214 | 35,35 | 26.729.349 | 27,12 |
| blue zone | 53.827.590 | 22,94 | 92.293.372 | 26,04 | 38.465.782 | 71,46 |
| red zone | 82.279.664 | 35,06 | 136.826.280 | 38,61 | 54.546.616 | 66,29 |
| Total | 234.679.119 | 100 | 354.420.866 | 100 | 119.741.747 | 51,02 |
| 2002/2003 | NS 01.04.- 30.09.2004. | | VS 01.10.2004.- 31.03.2005. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 105.374.802 | 47,15 | 142.155.340 | 40,41 | 36.780.538 | 34,90 |
| blue zone | 59.554.050 | 26,65 | 122.338.087 | 34,78 | 62.784.037 | 105,42 |
| red zone | 58.551.789 | 26,20 | 87.285.270 | 24,81 | 28.733.481 | 49,07 |
| Total | 223.480.641 | 100 | 351.778.697 | 100 | 128.298.056 | 57,41 |
| 2003/2004 | NS 01.04.- 30.09.2004. | | VS 01.10.2004.- 31.03.2005. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 111.842.184 | 50,34 | 134.027.399 | 43,06 | 22.185.215 | 19,84 |
| blue zone | 69.113.733 | 31,11 | 115.378.478 | 37,07 | 46.264.745 | 66,94 |
| red zone | 41.238.016 | 18,56 | 61.834.356 | 19,87 | 20.596.340 | 49,95 |
| Total | 222.193.933 | 100 | 311.240.233 | 100 | 89.046.300 | 40,08 |
| 2004/2005 | NS 01.04.- 30.09.2004. | | VS 01.10.2004.- 31.03.2005. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green + blue zone | 181.113.474 | 85,74 | 253.563.343 | 81,80 | 72.449.869 | 40,00 |
| red zone | 30.130.605 | 14,26 | 56.428.158 | 18,20 | 26.297.553 | 87,28 |
| Total | 211.244.079 | 100 | 309.991.501 | 100 | 98.747.422 | 46,75 |

Households have rather uneven seasonal augmentation by zones. Green zone have over 10%, blue over 200% and red 400%-500%.

This facts confirm partition of zones in total consumption that is presented for households and others to. For consumption in blue and together are involved in lower season with over 50%, but with 10% for households.

Participation of red zone for low season have a clear trend of decreasing from 35% to 14%. This trend is not significant in households to, and it is decreasing from 1,2% to 0,39%. In high season red zone for others have decreasing trend to like 30% to 18%, but for households it is 3,4% to 1,7%. This confirm global conclusion that tariff system contribute to decrease of heating consumption.

This characteristics leads to needs for testing the same zone limits for households and others, as same as applying zone in low season. More leveled augmentation by zones in high season for others than for households same as significant augmentation in green zone for others in high season (over 30%), make base for nowadays examination of introducing seasonal tariff instead zones during all year, as efficient measure for decreasing seasonal disturbances in consumption. Small contribution of red zone for households, and high contribution green zone with limit of 600 kWh, as same as its high contribution after decrease limit to 350 kWh, and retaining high relative relation of zone price suggest that next augmentations of electricity prices will have small effects in decreasing energy heating. This suggest justifications of seasonal tariffing to.

Both of two submit reasons leads to conclusion that zone attitude in low season are not adequate solution, additionally with problems like metering and counting (monthly households counting , needs for constant metering, calculation by zones according number of days, unmet ring problem and non possible metering in rest houses etc.)

5. ANALYSIS OF CONSUMER NUMBERS BY ZONES IN PERIOD 2001-2005

In this part is analyzed number of consumers by zones and high and low season. Consumers are divided in zones by month consumption, that means that for example, consumers with over 1600 kWh are only in red zone, not in blue and red in spite calculation take this consumers in blue and green zone. Considering in this case lead to dealing consumers into zones with auditioning by month in same seasons. This has consequence that number of consumers doesn't give real number of its and that number are not the same in low and high season. One consumer could be member of all zones in the same time if it in different months of the same season belongs to different zones.

Numbers of consumers are given in tables 8 and 9.

It is remarkable that number of consumers in others in red zone and low tariff is below 10% of total number. These consumers contribute in households 0,52% to 0,27%. Number of consumers in blue zone for both group in low season is significant and in range of 15% to 20%. Relative augmentation of consumer's numbers in blue and green high zone related to low season is more unique in others than in households and for blue zone it is 43% to 55%, and for red zone 79% to 45% for others. Households have augmentation of number of consumers in high season 163% to 208%, and in red zone 381% to 552%. This confirms facts about uneven that were shown in energy analysis by zones.

Relatively small number of consumers in red zone especially households (that are most numerous group) in the great deal reduce effects highly progressive tariff for active energy. It is obvious that point on decreasing heating energy with red zone should have move to down zone. Keeping red zone with former price shown that slow changing tariff system leads to that decreasing.

Table 8. Number of households consumers in consumption zones

| The number of households consumers in consumption zones | | | | | | |
|---|---------------------------|-------|--------------------------------|-------|-----------------------|--------|
| 2001/2002 | NS 01.04.- 30.09.2001. | | VS 01.10.2001.- 31.03.2002. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 3.751.000 | 82,39 | 3.111.415 | 69,55 | -639.585 | -17,05 |
| blue zone | 777.670 | 17,08 | 1.247.733 | 27,89 | 470.063 | 60,45 |
| red zone | 23.832 | 0,52 | 114.653 | 2,56 | 90.821 | 381,09 |
| Total | 4.552.502 | 100 | 4.473.801 | 100 | 663.825 | 14,58 |
| 2002/2003 | NS 01.04.- 30.09.2002. | | VS 01.10.2002.- 31.03.2003. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 3.817.325 | 83,57 | 3.174.861 | 70,81 | -642.464 | -16,83 |
| blue zone | 731.167 | 16,01 | 1.209.411 | 26,97 | 478.244 | 65,41 |
| red zone | 19.516 | 0,43 | 99.205 | 2,21 | 79.689 | 408,33 |
| Total | 4.568.008 | 100 | 4.483.477 | 100 | 663.825 | 12,29 |
| 2003/2004 | NS 01.04.- 30.09.2003. | | VS 01.10.2003.- 31.03.2004. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 3.893.399 | 84,99 | 3.252.726 | 71,62 | -640.673 | -16,46 |
| blue zone | 675.108 | 14,74 | 1.214.936 | 26,75 | 539.828 | 79,96 |
| red zone | 12.494 | 0,27 | 74.198 | 1,63 | 61.704 | 493,87 |
| Total | 4.581.001 | 100 | 4.541.860 | 100 | 663.825 | 12,29 |
| 2004/2005 | NS 01.04.- 30.09.2004. | | VS 01.10.2004.- 31.03.2005. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green + blue zone | 4.616.408 | 99,73 | 4.502.761 | 98,21 | -113.647 | -2,46 |
| red zone | 12.614 | 0,27 | 82.245 | 1,79 | 69.631 | 552,01 |
| Total | 4.629.022 | 100 | 4.585.006 | 100 | 663.825 | 12,29 |

Table 9. Number of other consumers 0, 4 kV II degree in consumption zones

| Number of consumers 0,4 kV II degree u zonama consumption | | | | | | |
|---|---------------------------|-------|--------------------------------|-------|-----------------------|--------|
| 2001/2002 | NS 01.04.- 30.09.2001. | | VS 01.10.2001.- 31.03.2002. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 253.836 | 73,07 | 179.871 | 55,53 | -73.965 | -29,14 |
| blue zone | 61.539 | 17,72 | 86.442 | 26,69 | 24.903 | 40,47 |
| red zone | 31.994 | 9,21 | 57.581 | 17,78 | 25.587 | 79,97 |
| Total | 347.369 | 100 | 323.894 | 100 | -23.475 | 15,49 |
| 2002/2003 | NS 01.04.- 30.09.2002. | | VS 01.10.2002.- 31.03.2003. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 270.073 | 73,33 | 216.021 | 58,22 | -54.052 | -20,01 |
| blue zone | 69.016 | 18,74 | 107.065 | 28,85 | 38.049 | 55,13 |
| red zone | 29.228 | 7,94 | 47.968 | 12,93 | 18.740 | 64,12 |
| Total | 368.317 | 100 | 371.054 | 100 | 2.737 | 15,49 |
| 2003/2004 | NS 01.04.- 30.09.2003. | | VS 01.10.2003.- 31.03.2004. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green zone | 288.398 | 73,27 | 232.549 | 60,56 | -55.849 | -19,37 |
| blue zone | 78.241 | 19,88 | 112.116 | 29,20 | 33.875 | 43,30 |
| red zone | 26.986 | 6,86 | 39.355 | 10,25 | 12.369 | 45,83 |
| Total | 393.625 | 100 | 384.020 | 100 | -9.605 | 15,49 |
| 2004/2005 | NS 01.04.- 30.09.2004. | | VS 01.10.2004.- 31.03.2005. | | Difference (VS-NS) | % |
| | 1 | % | 2 | % | | |
| green + blue zone | 379.795 | 94,31 | 352.222 | 90,28 | -27.573 | -7,26 |
| red zone | 22.905 | 5,69 | 37.918 | 9,72 | 15.013 | 65,54 |
| Total | 402.700 | 100 | 390.140 | 100 | -12.560 | 15,49 |

Leading by needs for further augmentations price level in the next period, it make need to find convenient attitude to tariff system in blue and green zone.

6. CONCLUSION

This paper analysis show that tariff system applied until April 2001. with price level augmentation, lead to next main goals:

- decreasing of heating energy and,
- make load duration curve bather.

In the same time results of analysis in Elektrovojdovina consumption show that there is base for explore and improve some of tariff system solutions. Most significant are the next propositions in area of residential consumption:

1. Existing categories "residential consumption" should have split into categories "households" and other consumption II degree". In the essence this are two different categories, with different purpose of consumption and relevant difference of existing zone contribution and augmentation season consumption by zones.
2. Significant contribution of seasonal uneven other consumption than residential, that show to price of energy in this categories should have to be higher than in households.
3. It should have examined existing of very progressive tariff in households and other consumption for period low season.

4. Analysis for other consumption suggest that best tariff attitude is seasonal instead zone attitude. This leads from facts that in high season in all zones consumption growth significantly. There is still need for wide zone analysis and with special attention to period: December, January, and February.
5. Tariff system for households will be still standing complicate. Facts that numbers of customers with small consumption augmentation in high zone contribute uneven consumption more than significantly smaller number of consumers in red zone, contributes to seasonal attitude instead of zone tariff attitude. In some cases, seasonal attitude should have can keep only one block of consumption that represent means for taking relations of electricity with other energy sources.
6. For the rest of consumption categories would not be exists of seasonal tariffing, if analysis confirm that there is no enough significant uneven consumption.

Results in this paper should have contributed better and all-inclusive analysis of tariff system. Given estimations about tariff system should have examine in all consumption area and according this make relevant changes in tariff system in the light of existing way of using.

7. LITERATURE

1. Tarifni sistem za prodaju el. energije, Službeni glasnik RS, br. 24/2001, br. 58/2001, br. 61/2001, br.18/2002, br.37/2002, br.65/2003, br.73/2004, br.98/2004, br 56/2005, br 25/2006
2. Elektrotehnički institut "Nikola Tesla", 1977, Studija.: "Principi tarifnog sistema EPS-a" , Beograd.
3. Slobodan Ružić, Aleksandar Vučković i dr., 2002, "Uticaj tarifnog sistema na racionalizaciju potrošnje u EES EPS-u tokom zimske sezone 2001/2002", Zbornik referata sa III savetovanja JUKO CIRED ref.5.19, V. Banja
4. Slobodan Maksimović, Miladin Tanasković, 2002, "Energetski efekti novog tarifnog sistema za prodaju el. energije", Zbornik referata sa III savetovanja JUKO CIRED, ref. 5.21, V. Banja
5. Obrenko Čolić, Vladimir Vojinović, 2002, "Svođenje potrošnje električne energije na prosečne temperature uslove", Zbornik referata sa III savetovanja JUKO CIRED, ref-6.4, V. Banja
6. Branislav Radović, Igor Grijak, 2000, "Procena el. energije utrošene za zagrevanje prostorija domaćinstvo u periodu 1990-1999." Zbornik referata sa II savetovanja JUKO CIRED, ref-5.15, H. Novi