

EPA – Polis Parking Workshop

*May, 2011
Stuttgart*



B:SM

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THE 1 MINUTE FRACTION TARIFF IN OUR URBAN CAR PARKS

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THE 1 MINUTE FRACTION TARIFF IN OUR URBAN CAR PARKS

1. Introduction

2. The effects of change

3. Conclusions

- a) *Income*
- b) *Expenses*
- c) *What do our costumers say?*
- d) *Calculating the economic impact*
- e) *Compensating the effect*



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1. Introduction

2. *The effects of the change*

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1. Introduction

- In Spain, pressure from Administration and consumer organisations has been very high since the late 1990's
- BSM is a public-owned company in Barcelona which manages more than 50 car parks in the city
- BSM decided, back in 1994, to apply the 15-minute fraction
- In January 2002, along with the Euro, BSM applied the 5-minutes fraction
- Charging by the minute is mandatory under the Spanish law since July 2006
- This measure implies the customer to pay just for the time he spends in the car park



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2.a) Income – Demand distribution

- We could expect that the curve of the demand changed its shape in those points where the tariff jumped to the next value (due to clients seek to avoid pay for a time that they won't stay)
- We could also expect that, once the jump no longer existed, the average staying (hours / car) would be higher



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2.a) Income – Demand distribution

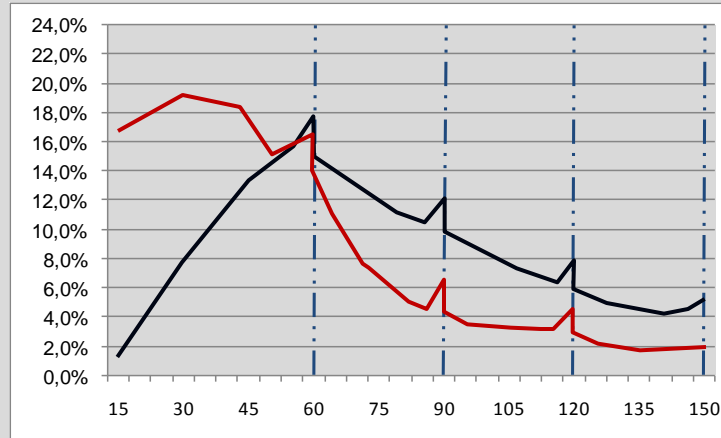


Figure 1. Histograms expected from 2 car parks, Feb 94 (60' minimum + fractions 30')

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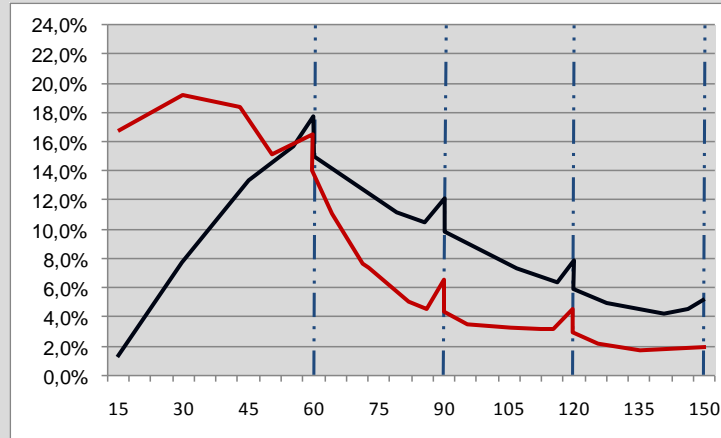


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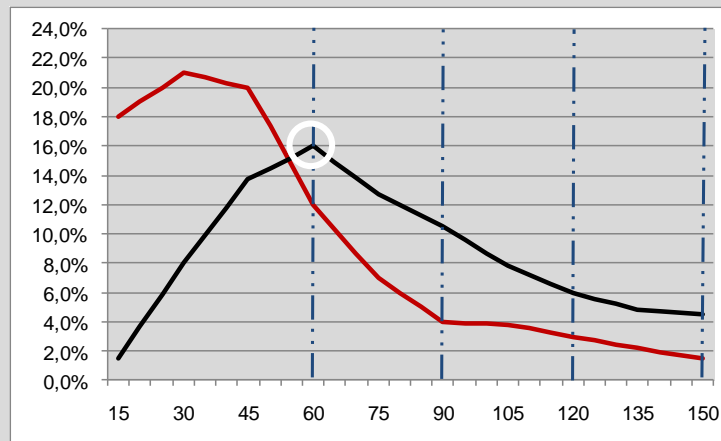


Figure 2. Real histograms from 2 car parks, Feb 94 (60' minimum + fractions 30')

- We only see some “peak” effect , but not always and not in both car parks

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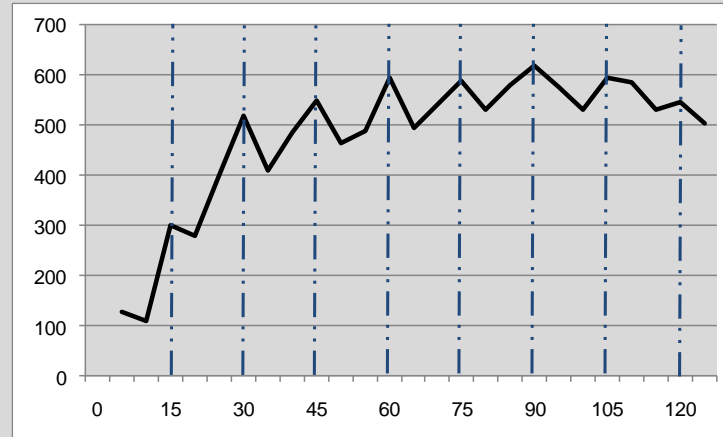


Figure 3. Parking time expected distribution of 24.000 cars in July 2001 (15' fraction) (all car parks)

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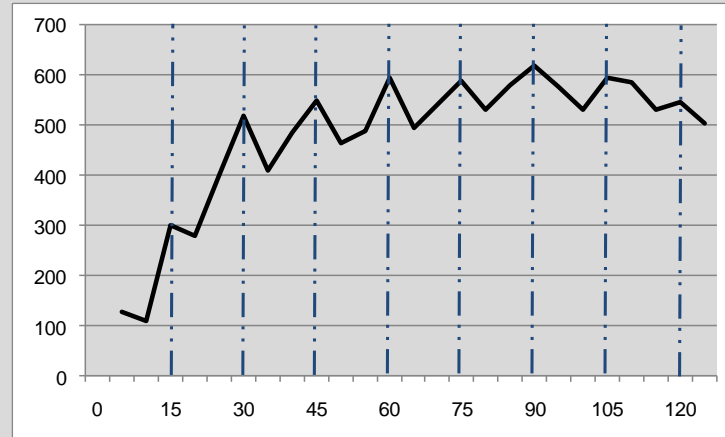


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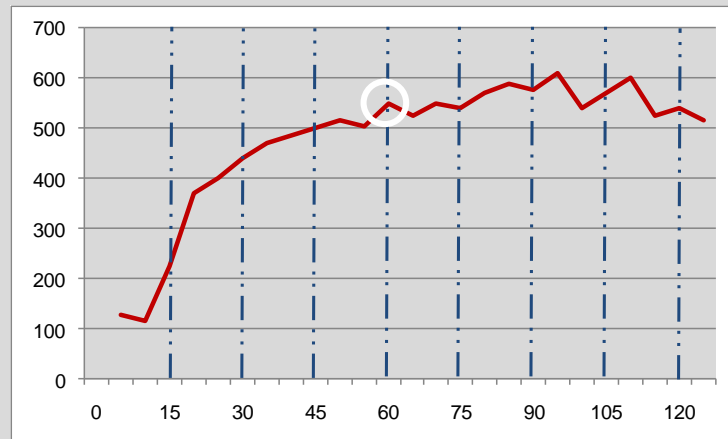


Figure 4. Parking time real distribution of 24.000 cars in Jul 2001 (15' fraction) (all car parks)

■ No constant "peak" is observed in the tariff shifts (each 15 min.)

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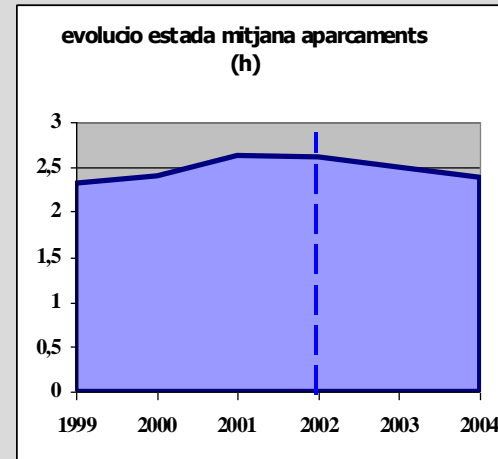


Figure 5. Average stay in BSM car park, 1999-2004

- We haven't seen a common trend in the average stay in our parking data
- We've concluded that the movements of the average stay are more related to other factors

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2.a) Income – Demand

- We could also expect (optimistically) to have certain increase in the number of costumers, who would choose us and our fair tariff system. Furthermore, we had done the change without increasing the tariff (apart of the annual review)
- This hasn't happened; it seems that many other aspects are stronger that the tariff structure



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2.a) Income – Private car mobility demand

- We understand that a bigger change has to be made if a bigger effect was to be induced to mobility:
 - A fixed amount every time you enter a car park (New York: 20 \$ the first 20')
 - A really powerful increase of tariffs (compared to congestion charge in London, up to 3 €/hour)
- Those stronger measures would obviously change the demand curve (**elasticity!**)



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2.b) Expenses

- The change does not affect the costs much, taking into account that most of the control systems are capable to support the new tariff structure
- Only some parking with manual cashiers will need a small investment in semi-automatic cashiers, to facilitate the calculation by the employees



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2.c) What do our costumers say

- Near to 70% of our short stay costumers knew that we were using the 15' fraction in 2001
- At the end of 2003, 60 % knew about our 5' system, and a 20% knew the name of the company
- We concluded that they valuate the measure, but users do not choose a car-park depending on its tariff scheme



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2.d) Calculating the economic impact

- We've seen that no change has been made in the value or the distribution of the demand, nor in the costs, (no big changes in tariffs existed, so no **elasticity**), when the tariff scheme is modified
- Then, the effect on the margin is estimated by only evaluating the difference in the income when applying the tariff structures to our demand's curve:

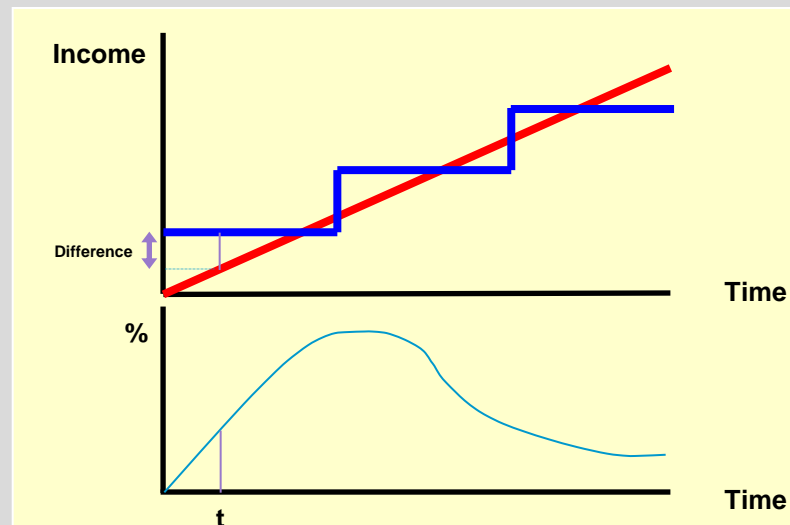


Figure 6. Comparison between two tariff schemes

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2.d) Calculating the economic impact

- At 1,7 €/h rate (and the distribution of users obtained in BSM car parks), the average save per customer is:

| Fractions | €/client | Loss of income | |
|-----------|----------|----------------|------------|
| | | Additional | Acumulated |
| 60' + 30' | 4,59 | - | - |
| 30' | 4,17 | 9,15% | 9,15% |
| 15' | 3,95 | 5,28% | 13,94% |
| 5' | 3,8 | 3,80% | 17,21% |

| Fractions | Loss of income | |
|-----------|----------------|------------|
| | Additional | Acumulated |
| 60' + 60' | - | - |
| 5' | 21,00% | 21,00% |
| 1' | 3,80% | 24,00% |

Figure 7. Average loss of income per client

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2.e) Compensating the effect

- We seek the balance through adjusting the tariff; some options are:
 - i. Rising the tariff rate: in our case, we need a 21% increase to compensate passing from 60' to 5' fraction

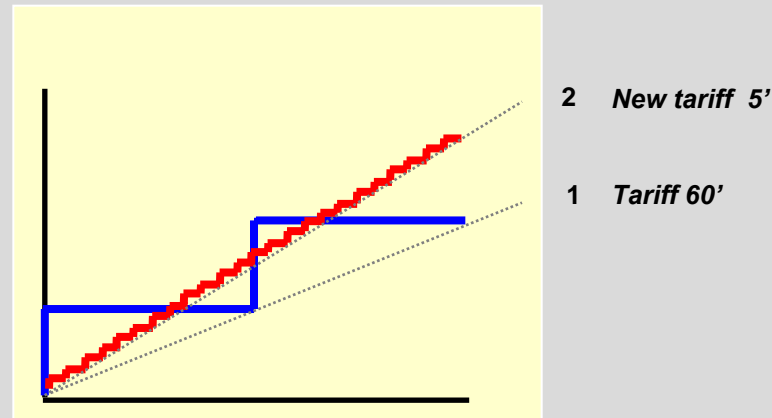


Figure 8. Tariff adjust: rise

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2.e) Compensating the effect

ii. Introducing a fixed amount: in our case 0,79 € per client would compensate the change from 60' to 5'

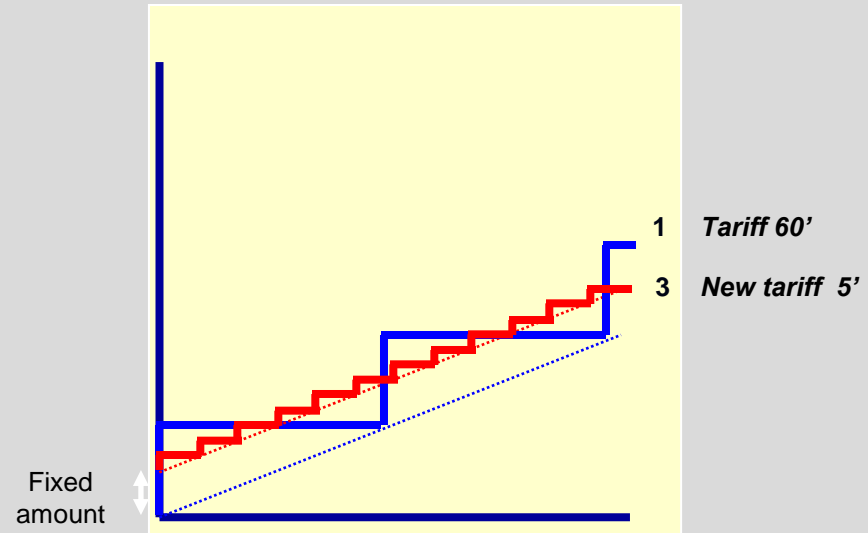


Figure 9. Tariff adjust: fixed amount

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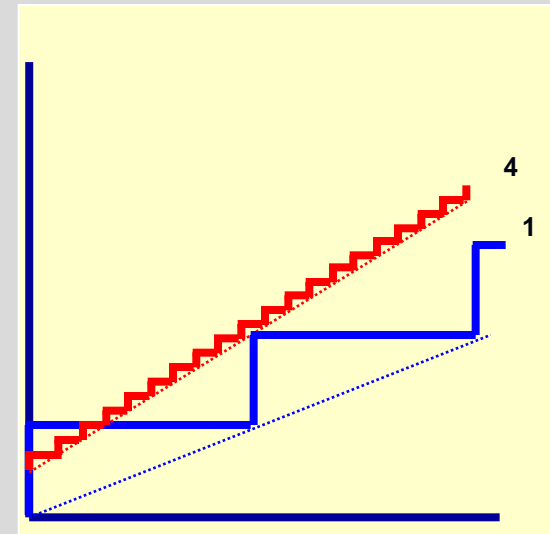
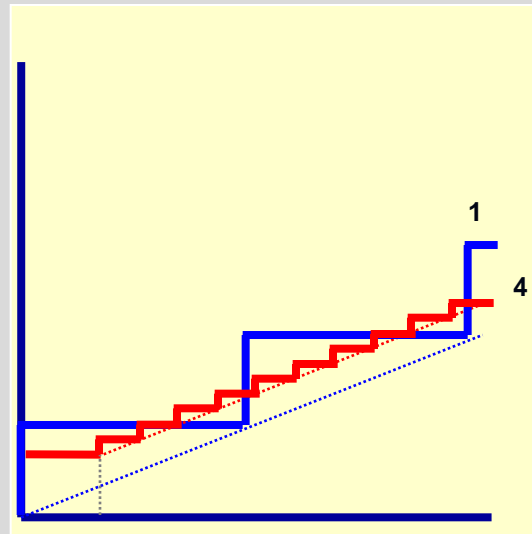
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2.e) Compensating the effect

iii. Combining both tariffs mentioned previously (2 different ways)



1 Tariff 60'

4 New tariff 5'

Figure 10. Tariff adjust: increase and minimum fixed amount combined

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2.e) Compensating the effect

- This tariff shift could be applied in two steps (years):

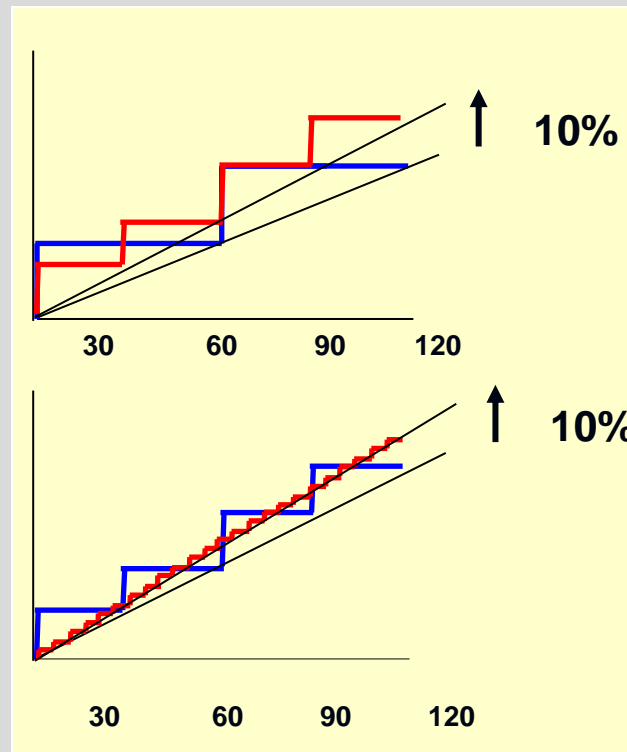


Figure 11. A method to apply the tariff

In the first, reduce the time fractions from 60' to 30' (rising tariff a 10%)

The second step consists in reduce the fractions from 30' to 5' (rising again about 10%)

It is worthy of consideration that the effect on the average customer is nil

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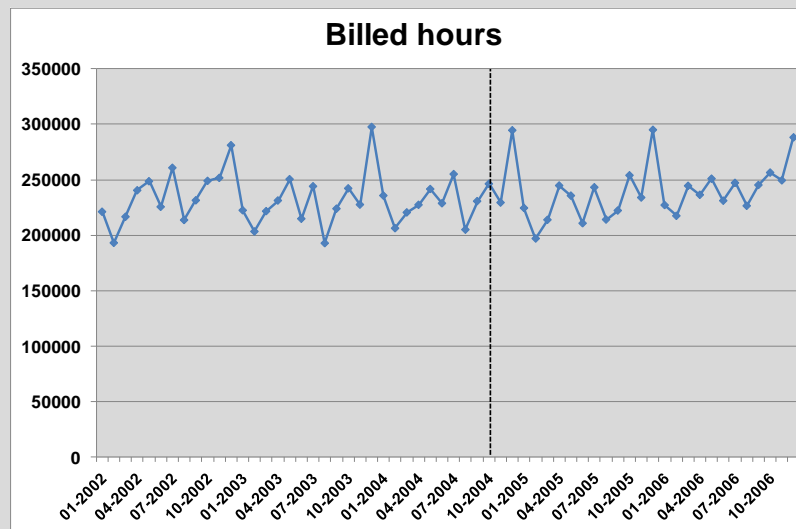
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2.e) Compensating the effect

- We might think this tariff rising could be seen for the car-park users only as a levy measure and it could reduce the number of clients
- In the case of BSM, between 2002 and 2006, the hour rate was increased near a 50% - especially on November, 2004; no extraordinary demand change was registered during this period



| Date | €/h | Rate growth | |
|-----------|-------------|-------------|----------|
| | | Additional | Accumul. |
| Feb, 2002 | 1,60 | - | - |
| Sep, 2002 | 1,65 | 3,12% | 3,12% |
| Mar, 2003 | 1,65 | 0,00% | 3,12% |
| Sep, 2003 | 1,70 | 3,03% | 6,25% |
| Nov, 2004 | 2,25 | 32,35% | 40,63% |
| Sep, 2005 | 2,30 | 2,22% | 43,75% |
| Mar, 2006 | 2,35 | 2,17% | 46,88% |
| Sep, 2006 | 2,40 | 2,13% | 50,00% |

Figure 12. Hour rate and billed hours at BSM car-parks, 2002-2006

* The billed hours are referred to 10 stabilized car-parks

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3. Conclusions – Operational & social considerations

- A fractioned tariff system is more fair and it's appreciated by the clients and the public
- It has no effect on the demand (private car mobility) nor the costs (BSM)
- Requires almost no investment
- Its economic impact is easy to evaluate, so it can be compensated – with tariffs – without affecting the average cost for the user or the income for the operator
- A high inelasticity of car-park demand is registered, so a big tariff increase must be applied if reducing cars is an objective



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3. Conclusions - Political & Contractual considerations

- The parking fee structure could be a matter of interest in the media and public opinion in some European countries
 - It's about the fairness of the tariff structure
 - The measure does not affect mobility

- The process of adapting the tariffs:
 - can be done quite easily, and
 - must be done without affecting the economics of the parking operators (concessionaires)



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Thank you for your attention !

www.bsmsa.cat

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