



# Social Welfare Report

## 01-12 / 2013

# January 2013



- ▶ Additional Social welfare that could be gained with no network constraints:

**14,7 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	60 M€
Consumer surplus	-13,6 M€
Congestion Rent	-31,7 M€

*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:*

*Sum of daily ( Value with  $ATC=\infty$ ) - (Historical value)*

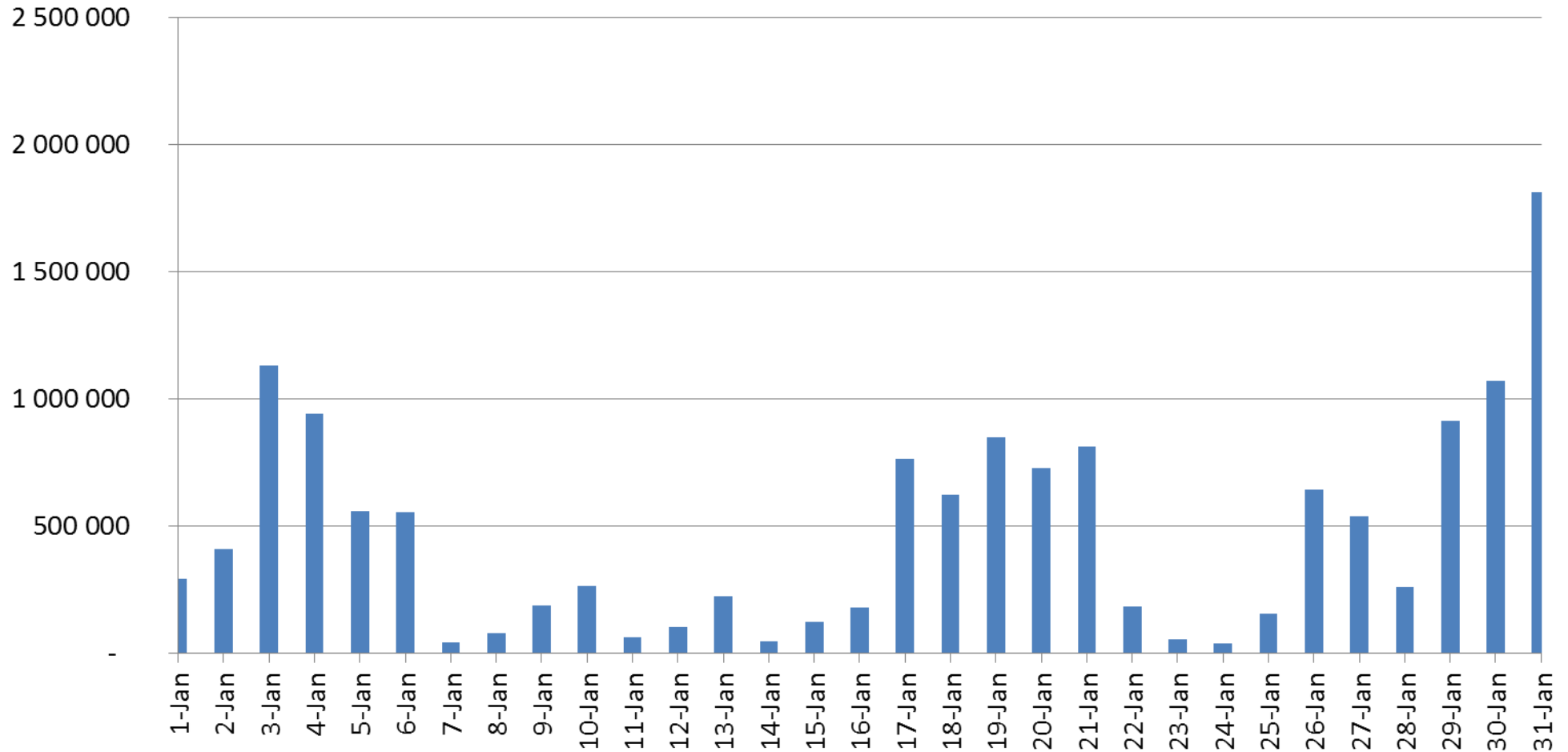
*The daily values being a Sum of hourly values.*

*In single hours the producer/consumer gain can be positive or negative. The highlighted value presents the sum of all hours of the respective month.*

# January 2013



Evolution of social welfare that could be gained with no network constraints



# February 2013



- ▶ Additional Social welfare that could be gained with no network constraints:

**14,7 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	76 M€
Consumer surplus	-30,3 M€
Congestion Rent	-31 M€

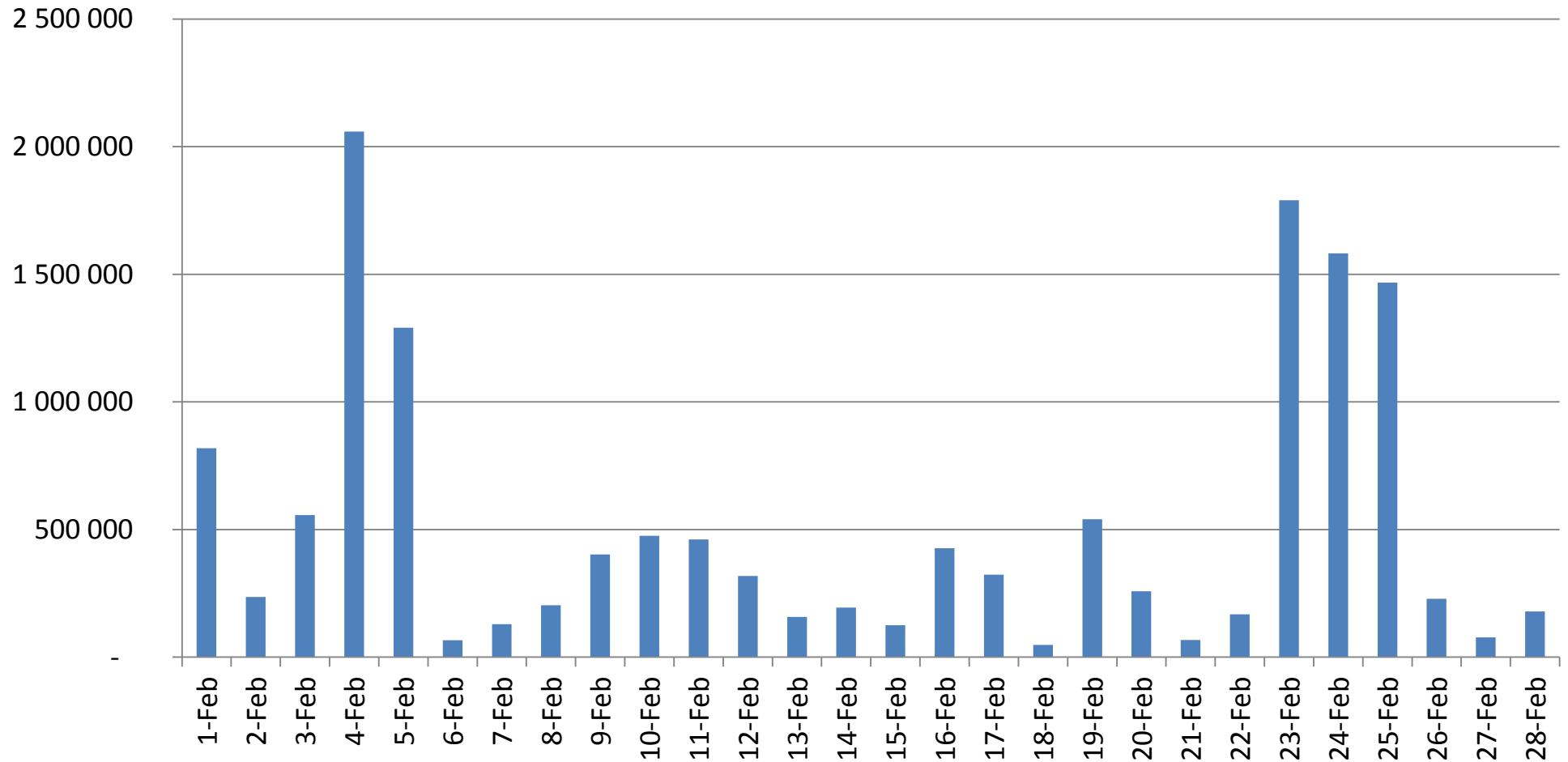
*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:  
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# February 2013



Evolution of social welfare that could be gained with no network constraints





- ▶ Additional Social welfare that could be gained with no network constraints:

**38,8 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	199,7 M€
Consumer surplus	-97,5 M€
Congestion Rent	-63,9 M€

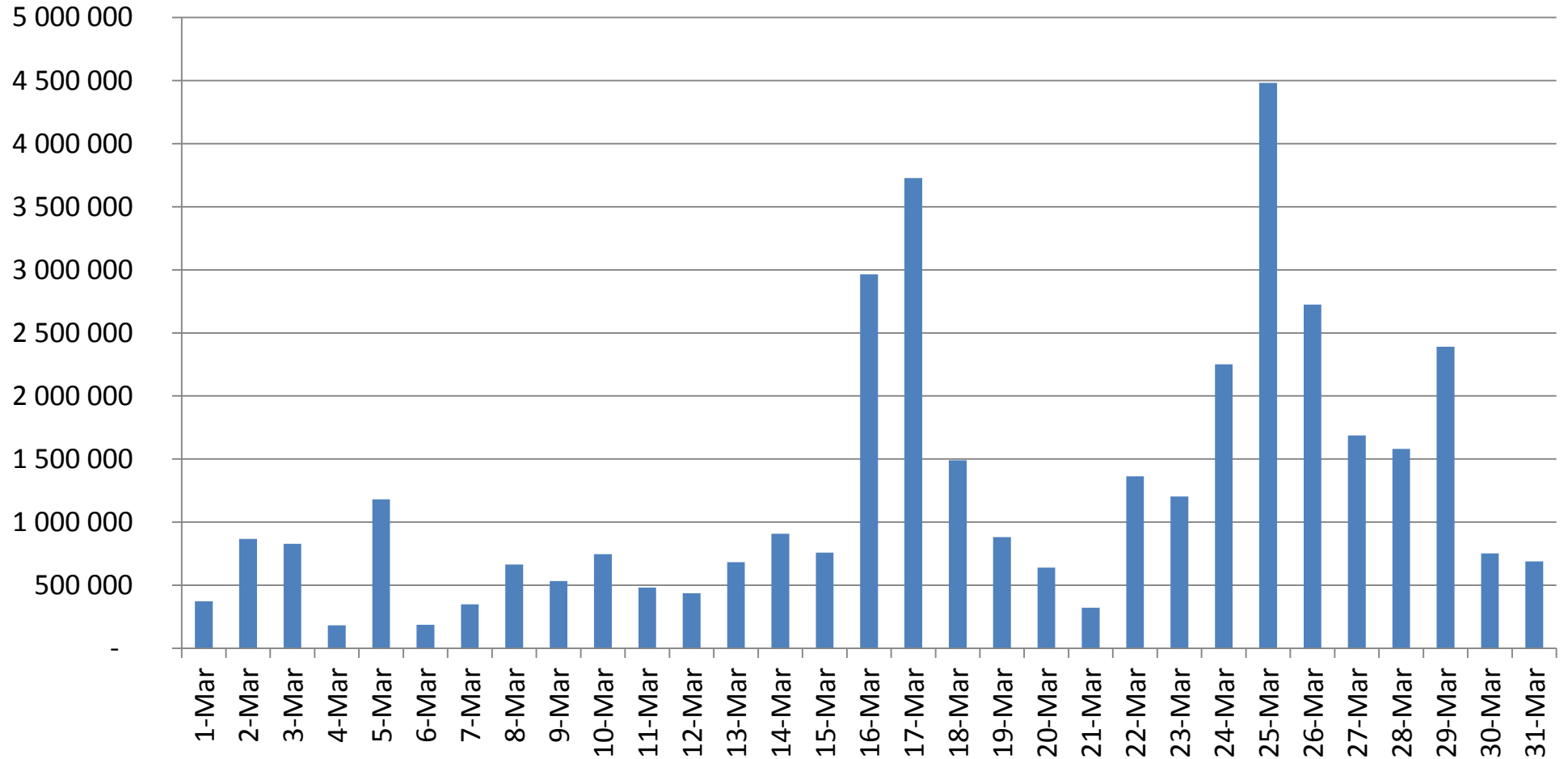
*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:  
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# March 2013



Evolution of social welfare that could be gained with no network constraints





- ▶ Additional Social welfare that could be gained with no network constraints:

**27,6 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	109,0 M€
Consumer surplus	-27,7 M€
Congestion Rent	-53,7 M€

*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:*

*Sum of daily ( Value with  $ATC=\infty$ ) - (Historical value)*

*The daily values being a Sum of hourly values.*

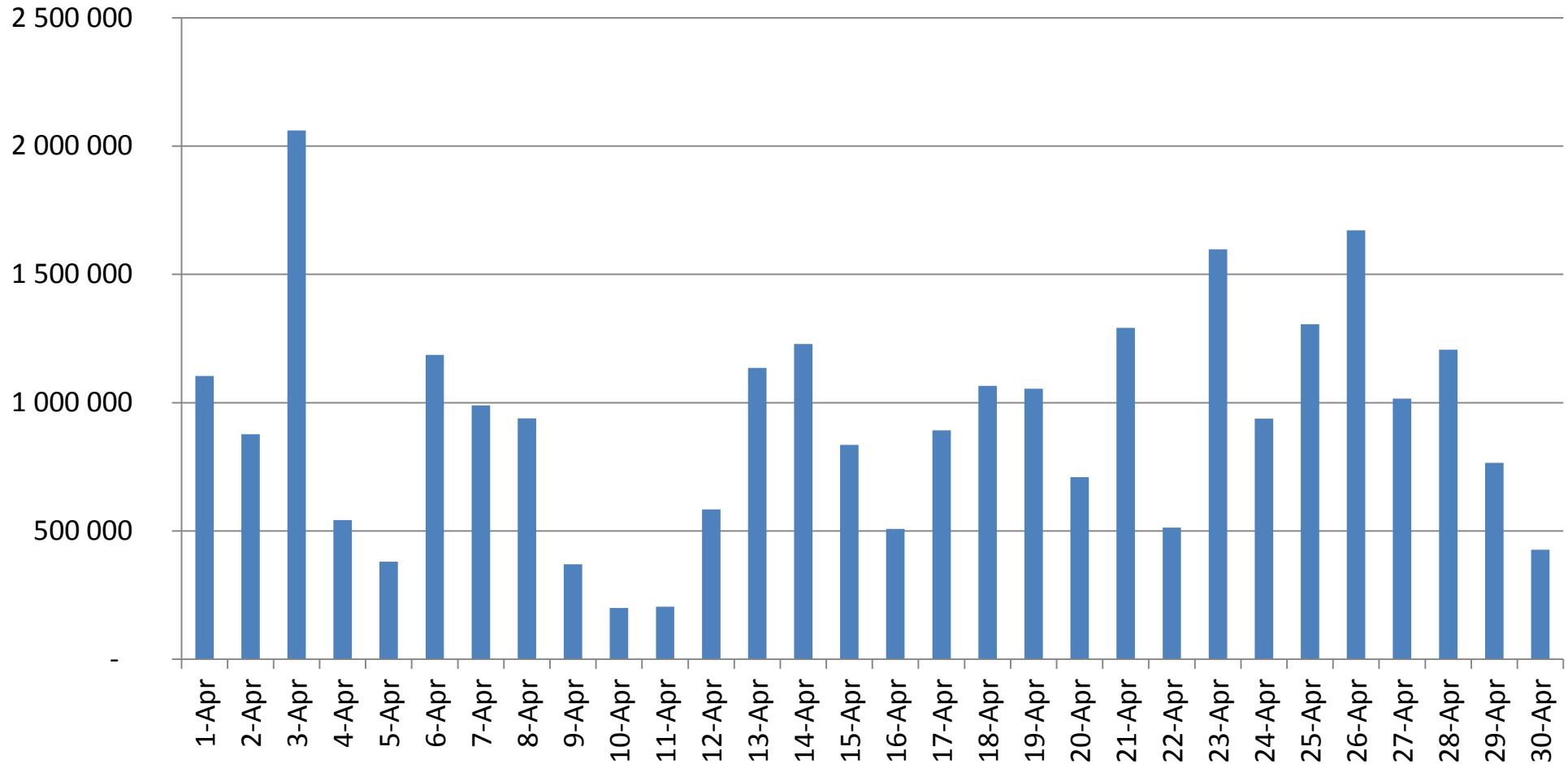
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# April 2013



Evolution of social welfare that could be gained with no network constraints





- ▶ Additional Social welfare that could be gained with no network constraints:

**28,0 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	77,0 M€
Consumer surplus	7,3 M€
Congestion Rent	-56,3 M€

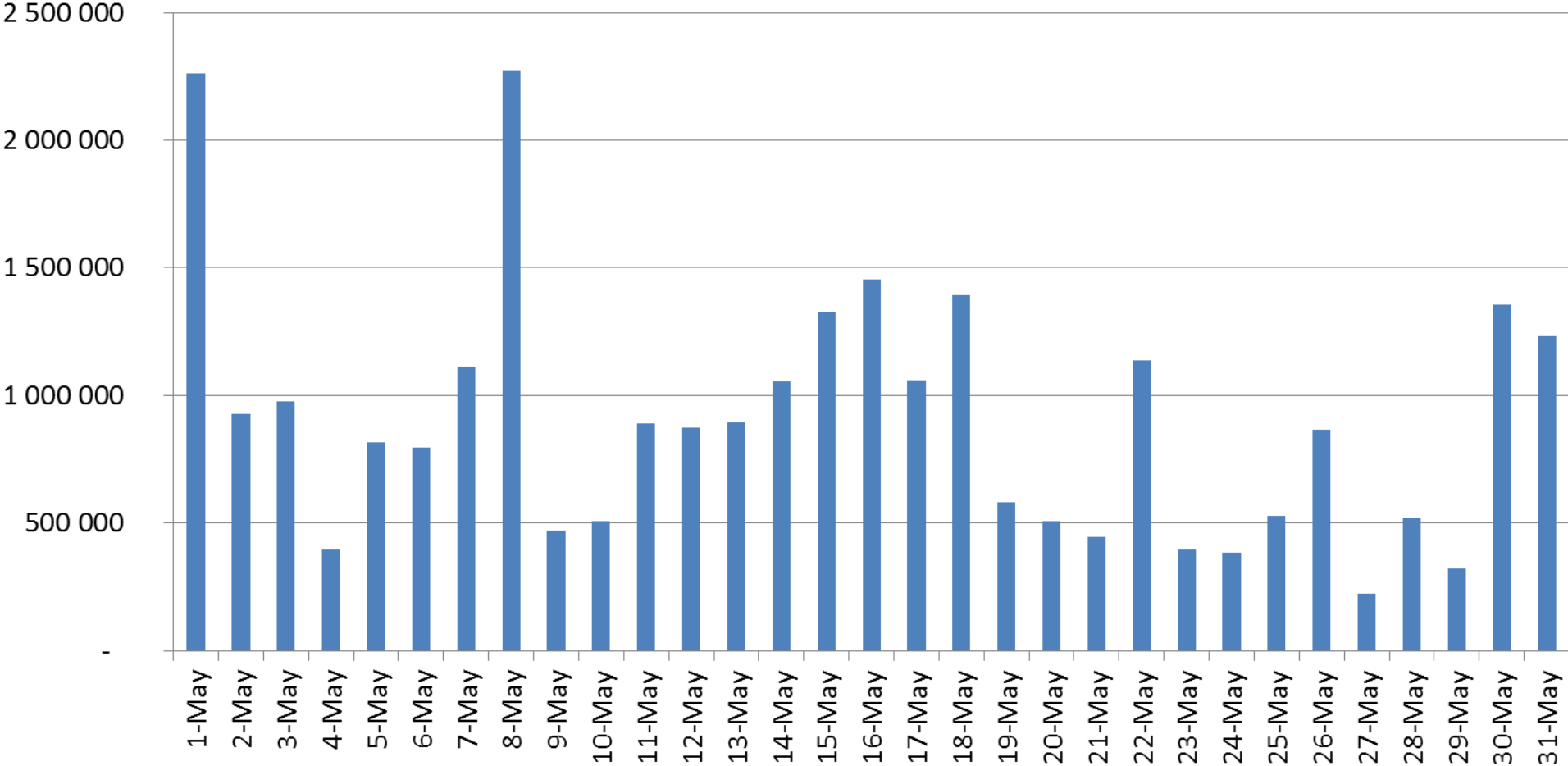
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Sum of daily ( Value with  $ATC=\infty$ ) - (Historical value)  
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# May 2013



Evolution of social welfare that could be gained with no network constraints





- ▶ Additional Social welfare that could be gained with no network constraints:

**26,9 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	49,7 M€
Consumer surplus	38,2 M€
Congestion Rent	-61,0 M€

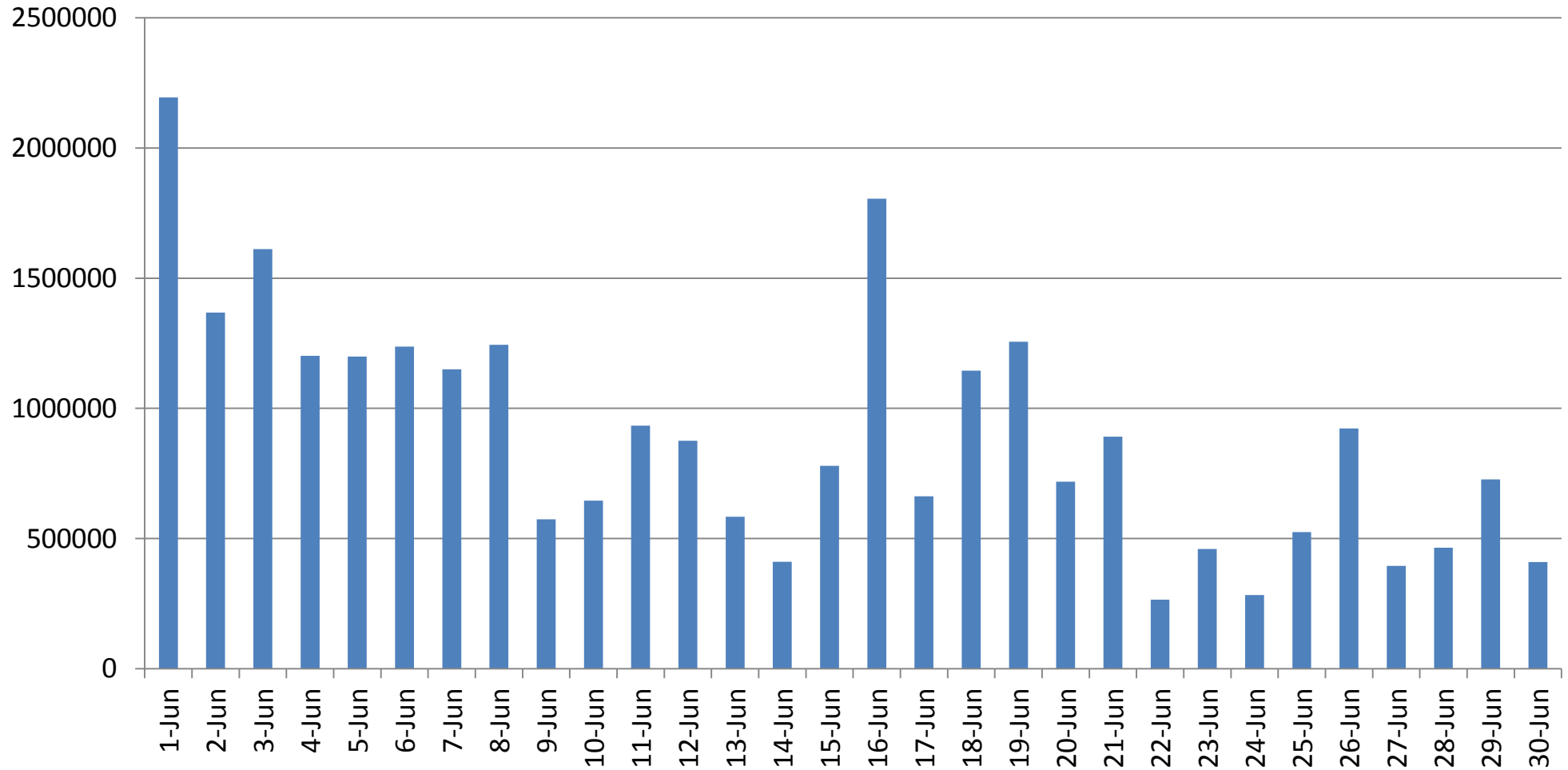
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# June 2013



Evolution of social welfare that could be gained with no network constraints





- ▶ Additional Social welfare that could be gained with no network constraints:

**10,7 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	34,6 M€
Consumer surplus	9,0 M€
Congestion Rent	-33,0 M€

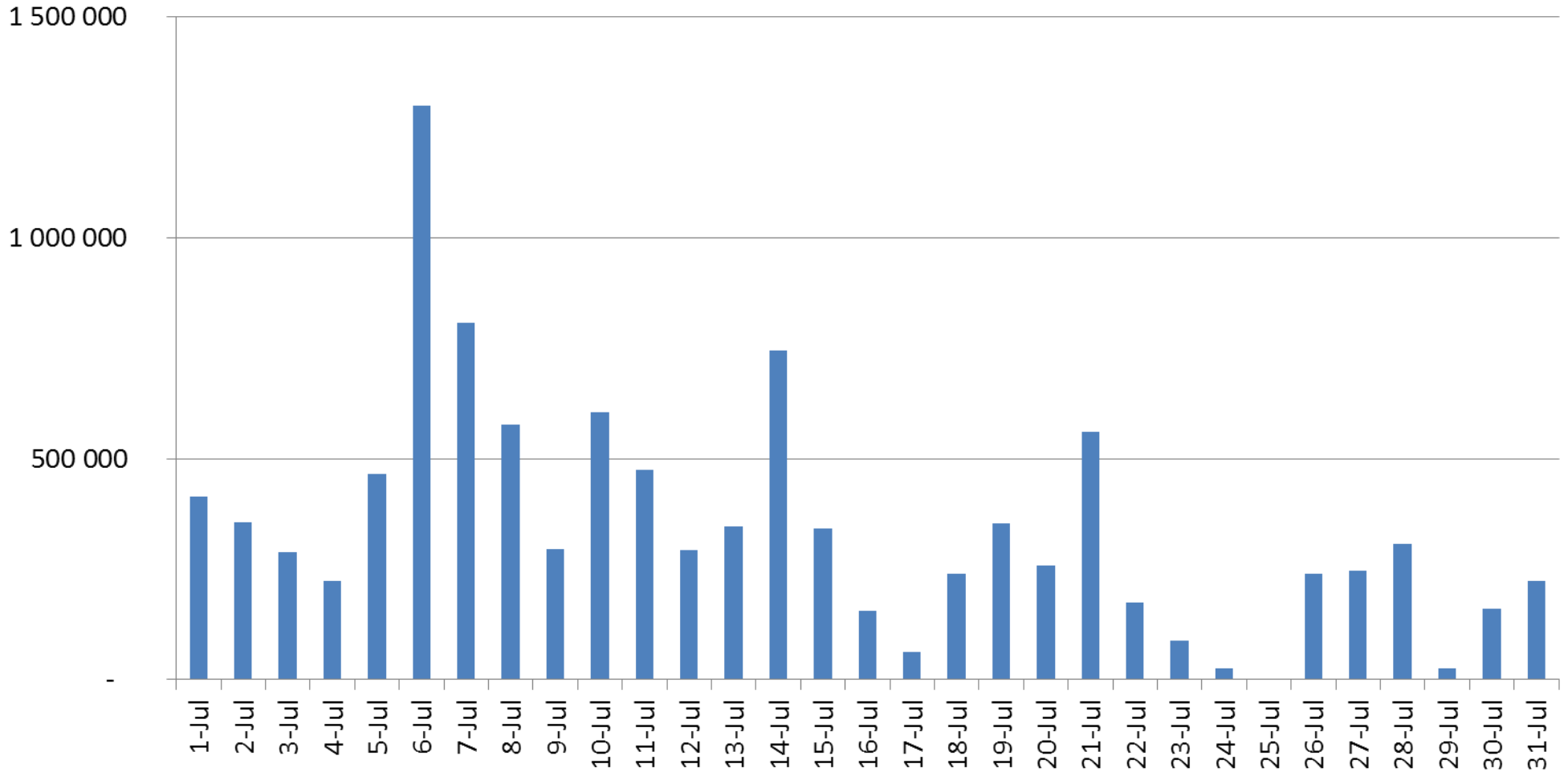
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# July 2013



Evolution of social welfare that could be gained with no network constraints



# August 2013



- ▶ Additional Social welfare that could be gained with no network constraints:

**9,6 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	27,0 M€
Consumer surplus	14,6 M€
Congestion Rent	-31,9 M€

*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:  
Sum of daily ( Value with  $ATC=\infty$ ) - (Historical value)  
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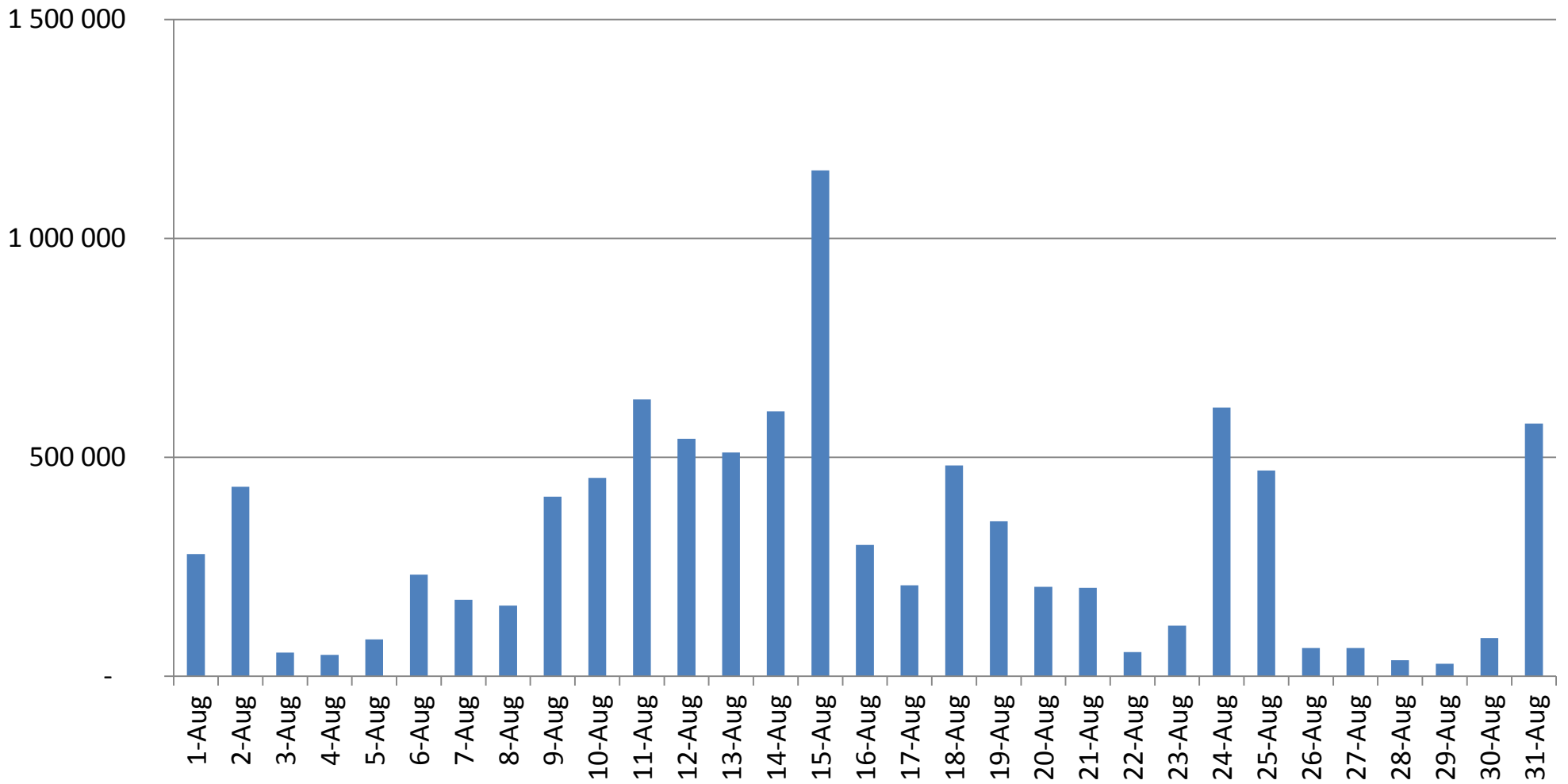
*In single hours the producer/consumer gain can be positive or negative. The highlighted value presents the sum of all hours of the respective month.*



# August 2013



Evolution of social welfare that could be gained with no network constraints



# September 2013



- ▶ Additional Social welfare that could be gained with no network constraints:

**7,5 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	38,7 M€
Consumer surplus	-8,7 M€
Congestion Rent	-22,6 M€

*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:*

*Sum of daily ( Value with  $ATC=\infty$ ) - (Historical value)*

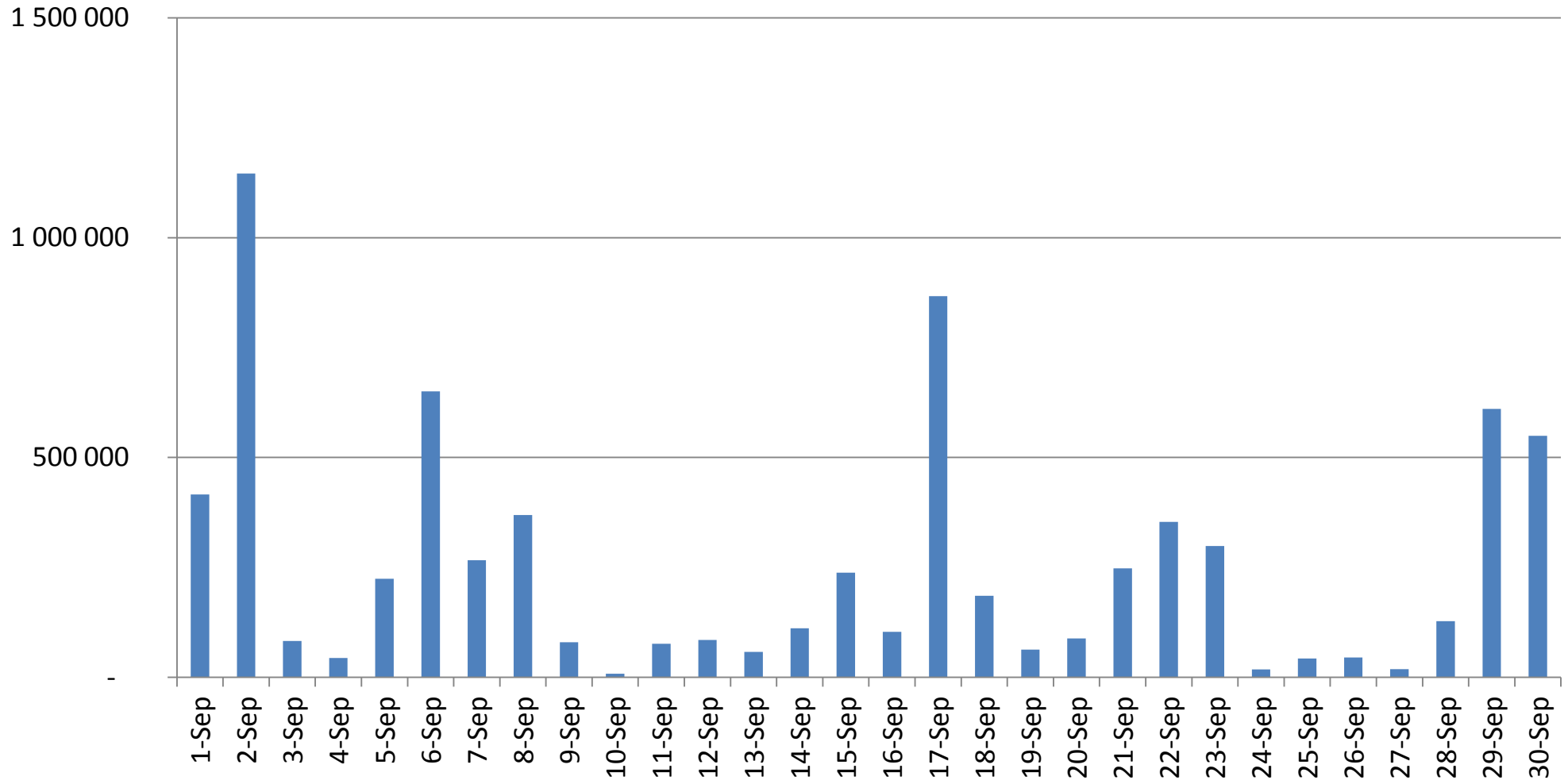
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# September 2013



Evolution of social welfare that could be gained with no network constraints





- ▶ Additional Social welfare that could be gained with no network constraints:

**18,2 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	84,9 M€
Consumer surplus	-35,9 M€
Congestion Rent	-30,8 M€

*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:*

*Sum of daily ( Value with  $ATC=\infty$ ) - (Historical value)*

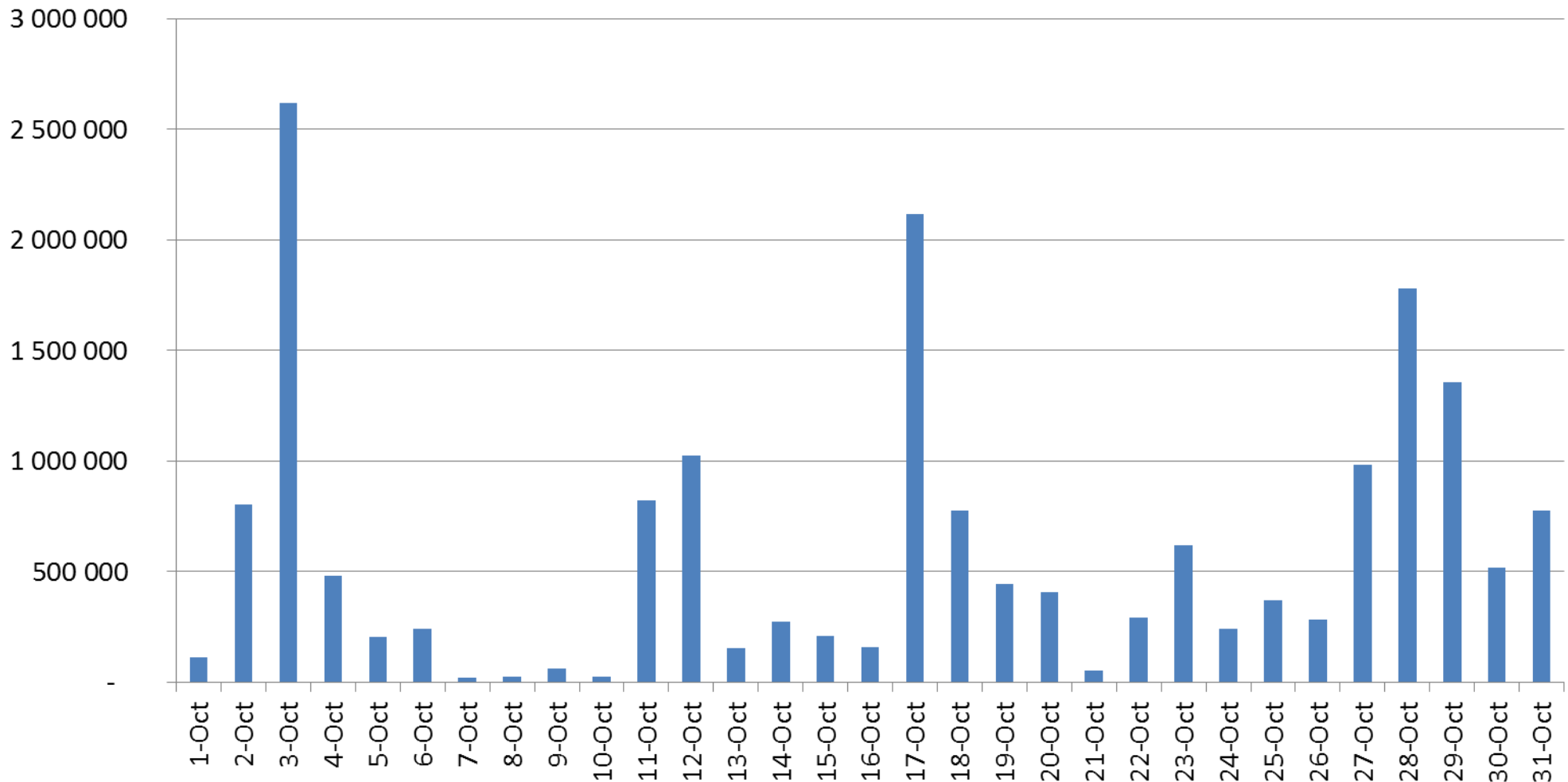
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# October 2013



Evolution of social welfare that could be gained with no network constraints





- ▶ Additional Social welfare that could be gained with no network constraints:

**22,1 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	97,9 M€
Consumer surplus	-34,9 M€
Congestion Rent	-41,0 M€

*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:*

*Sum of daily ( Value with  $ATC=\infty$ ) - (Historical value)*

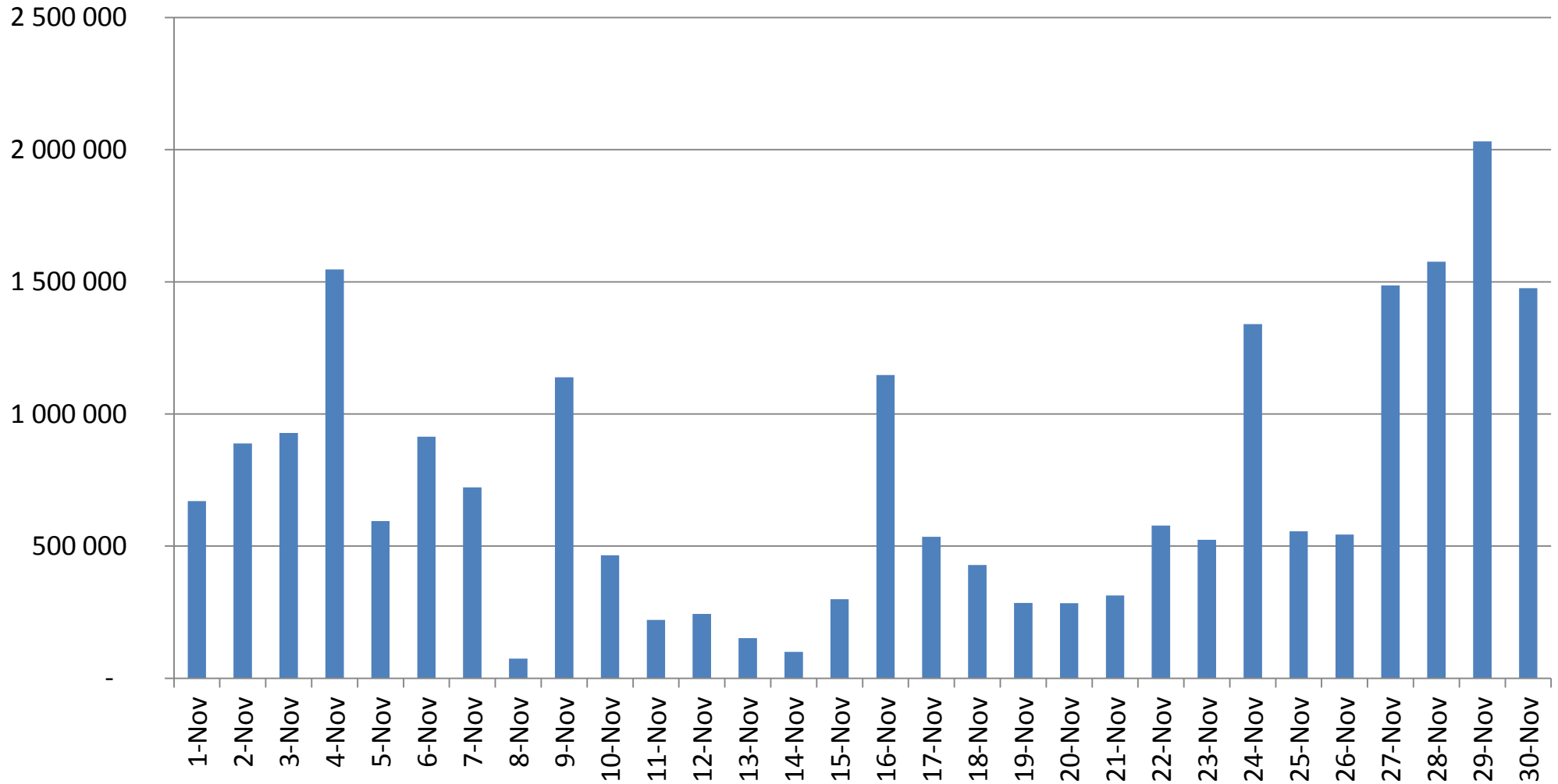
*The daily values being a Sum of hourly values.*

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# November 2013



Evolution of social welfare that could be gained with no network constraints



# December 2013



- ▶ Additional Social welfare that could be gained with no network constraints:

**35,7 M€**

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**Social welfare = Producer surplus + Consumer surplus + Congestion rent**

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Producer surplus	157,8 M€
Consumer surplus	-76,2 M€
Congestion Rent	-45,9 M€

*NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:*

*Sum of daily ( Value with  $ATC=\infty$ ) - (Historical value)*

*The daily values being a Sum of hourly values.*

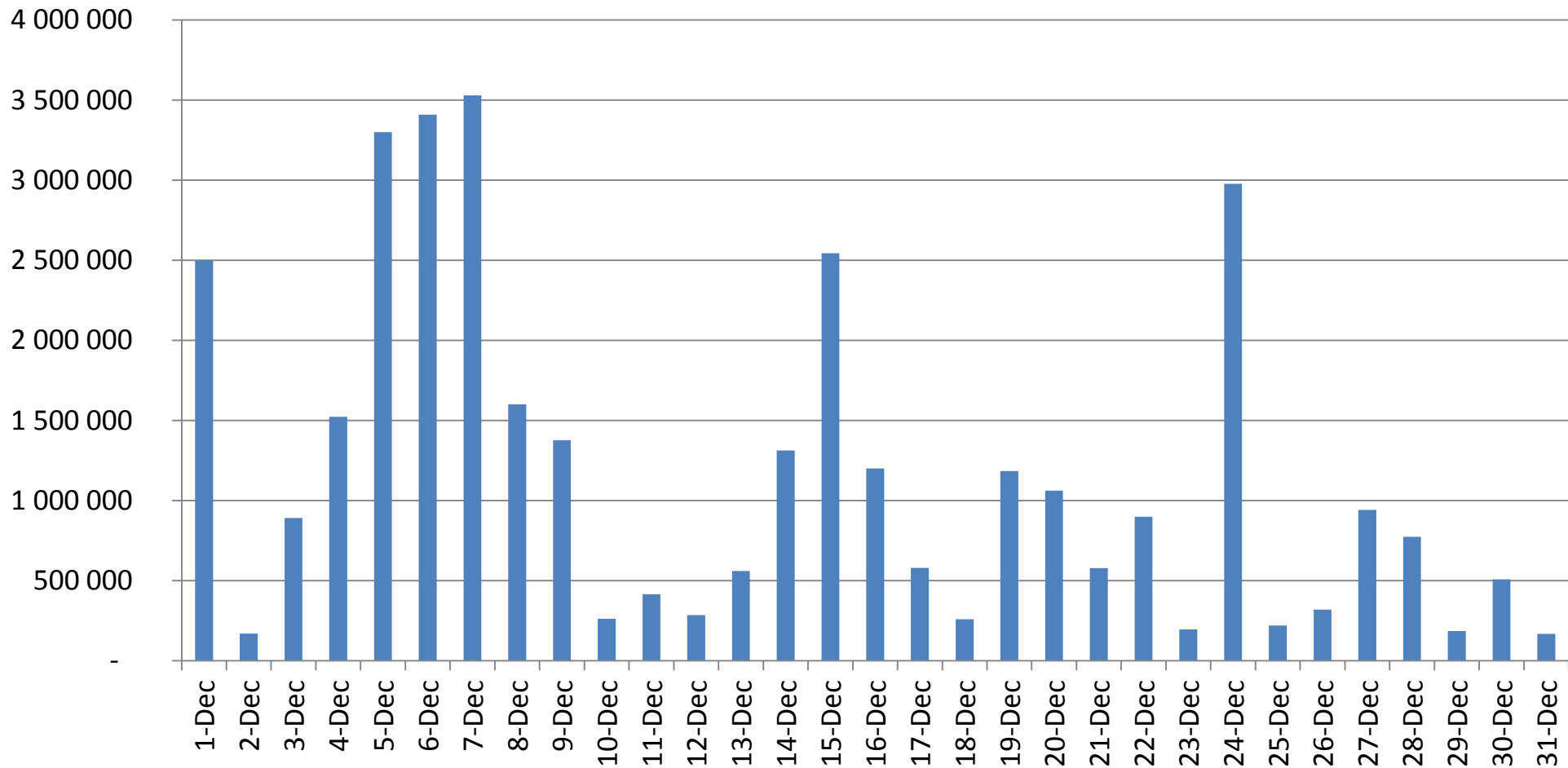
*In single hours the producer/consumer gain can be positive or negative. The highlighted value presents the sum of all hours of the respective month.*



# December 2013



Evolution of social welfare that could be gained with no network constraints





## ► Definitions / explanations

# Additional Social welfare that could be gained with no network constraints (*Definition/explanation*)



- ▶ The figure shows the additional social welfare that could be gained with no network constraints inside CWE (borders D-NL, NL-B, B-F, D-F) .
- ▶ This key figure is calculated by hourly simulating/ coupling the CWE-region with  $ATC = \infty$  at the borders D-NL, NL-B, B-F, D-F and comparing to real MC-results:
  - Producer surplus= Producer surplus ( $ATC = \infty$ )- Producer surplus(real ATC)
  - Consumer surplus=Consumer surplus ( $ATC = \infty$ )- Consumer surplus(real ATC)
  - Congestion rent= Congestion rent ( $ATC = \infty$ )- congestion rent(real ATC)
- ▶ NB: The simulations are made with ITVC flows remaining identical.

## Additional Social welfare that could be gained with no network constraints (*Definition/explanation*)



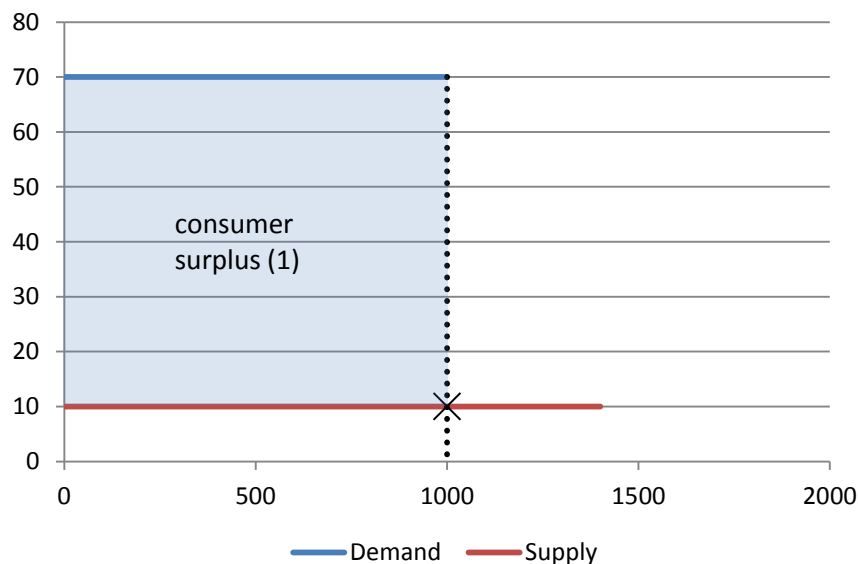
- ▶ The purpose of the welfare reporting is the demonstration of the benefits of CWE ATC Market Coupling and future CWE FB MC.
- ▶ The monthly publishing of this figure was commonly agreed between the CWE Regulators and the CWE Project. It is one part of the welfare reporting.



- ▶ Examples: *“In single hours the producer/consumer gain can be positive or negative”*

# Decrease in consumer surplus example 1/2

## Two isolated markets (zero capacity)

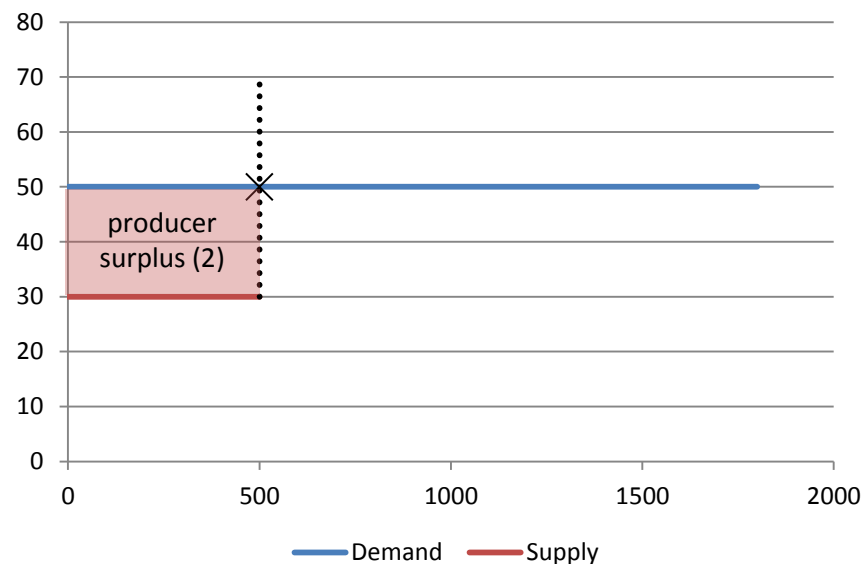


### Area 1

MCV: 1000 MW, MCP: € 10

Consumer surplus: € 60K

Producer surplus: € 0



### Area 2

MCV: 500 MW, MCP: € 50

Consumer surplus: € 0

Producer surplus: € 10K

### Totals

Consumer surplus: € 60K

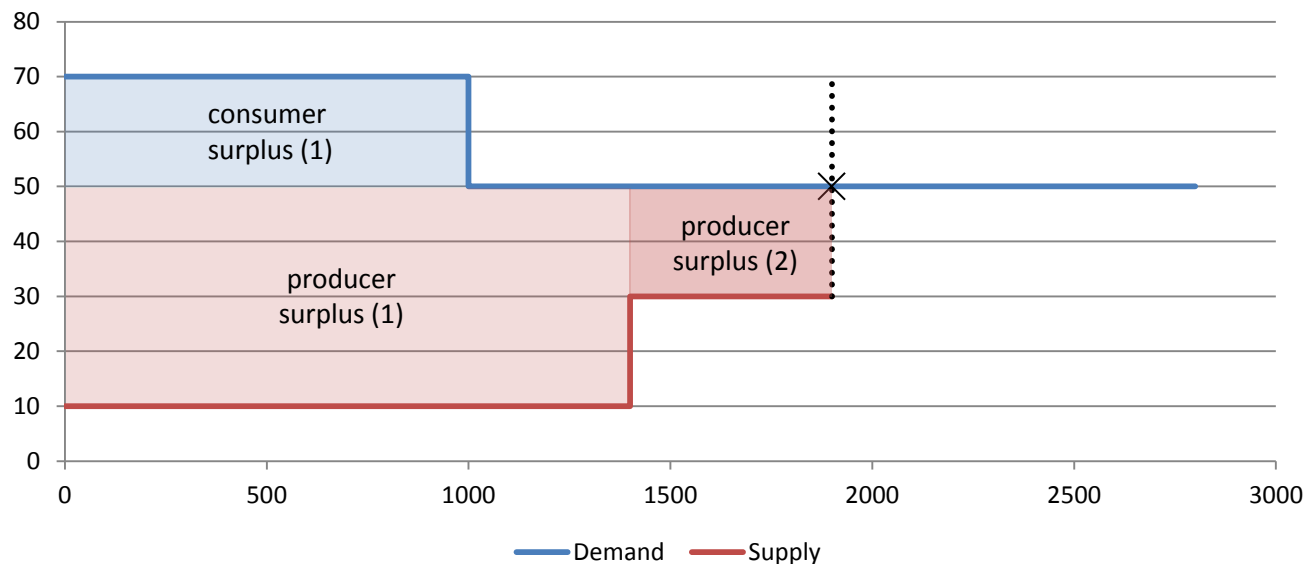
Producer surplus: € 10K

Congestion revenue: € 0

Social welfare: € 70K

# Decrease in consumer surplus example 2/2

## Two coupled markets (infinite capacity)



### Area 1

MCV: 1400 MW, MCP: € 50

Consumer surplus: € 20K

Producer surplus: € 56K

### Area 2

MCV: 500 MW, MCP: € 50

Consumer surplus: € 0

Producer surplus: € 10K

### Totals

Consumer surplus: € 20K (-40K)

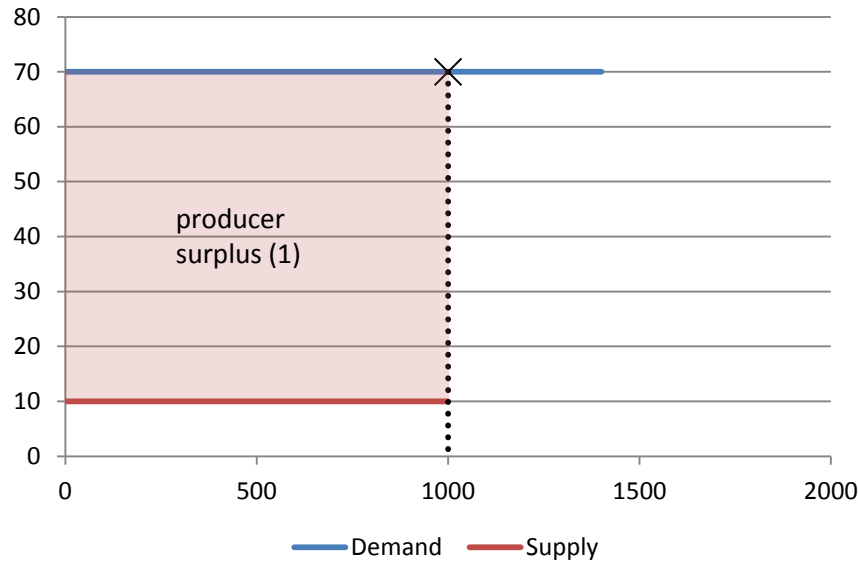
Producer surplus: € 66K (+56K)

Congestion revenue: € 0

Social welfare: € 86K (+16K)

# Decrease in producer surplus example 1/2

## Two isolated markets (zero capacity)

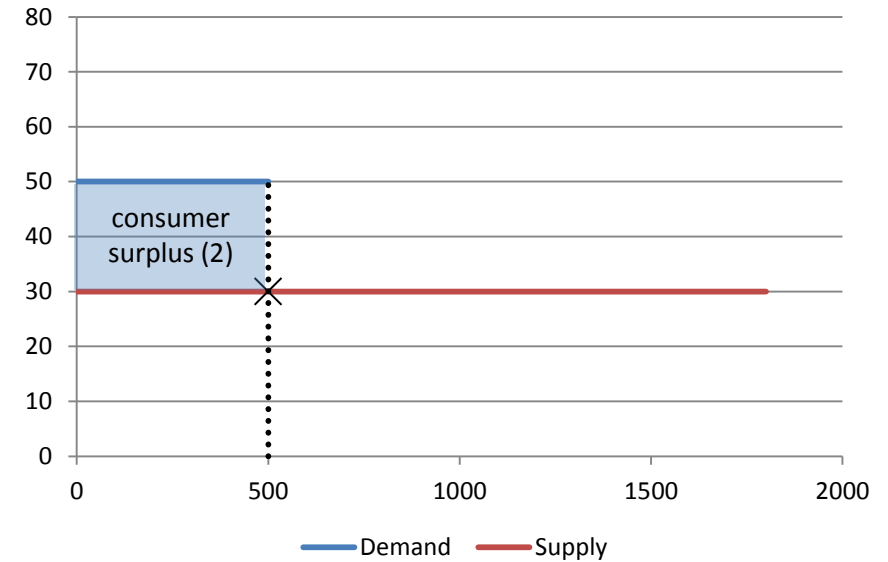


### Area 1

MCV: 1000 MW, MCP: € 70

Consumer surplus: € 0

Producer surplus: € 60K



### Area 2

MCV: 500 MW, MCP: € 30

Consumer surplus: € 10K

Producer surplus: € 0

### Totals

Consumer surplus: € 10K

Producer surplus: € 60K

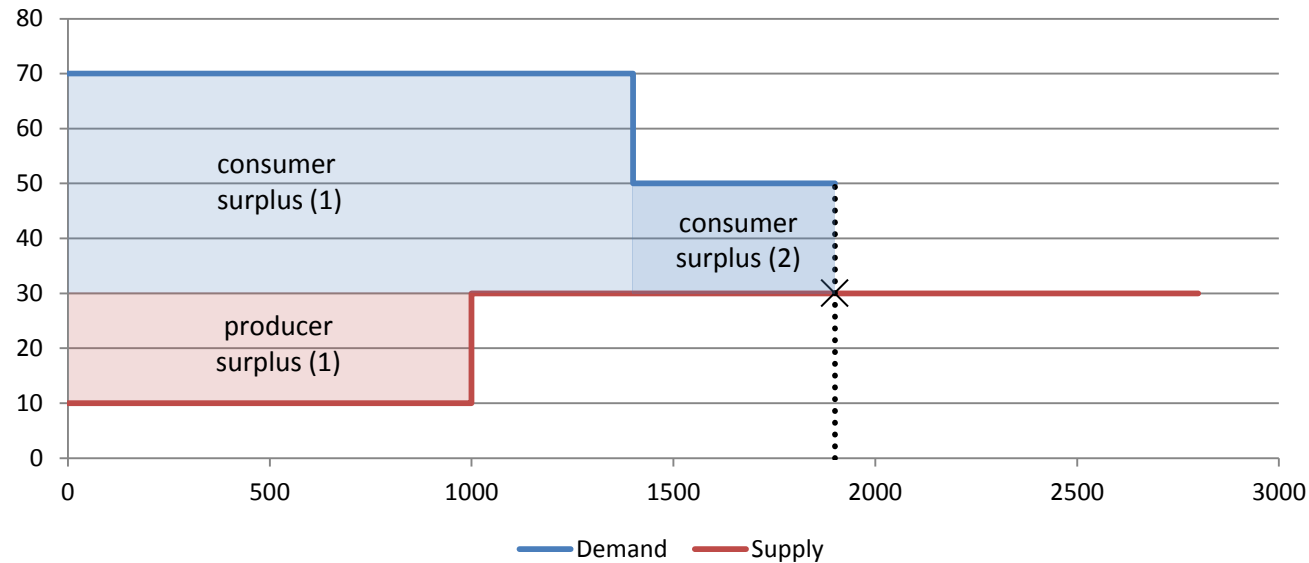
Congestion revenue: € 0

Social welfare: € 70K



# Decrease in producer surplus example 2/2

## Two coupled markets (infinite capacity)



### Area 1

MCV: 1400 MW, MCP: € 30

Consumer surplus: € 56K

Producer surplus: € 20K

### Area 2

MCV: 500 MW, MCP: € 30

Consumer surplus: € 10K

Producer surplus: € 0

### Totals

Consumer surplus: € 66K (+56K)    Congestion revenue: € 0

Producer surplus: € 20K (-40K)    Social welfare: € 86K (+16K)