



Social Welfare Report

02-11 / 2014*

** This report contains welfare indicators for the NWE area as of the NWE go-live in February. The report for January, containing CWE welfare indicators only, has been published separately.*



- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

11,3 M€

$$\text{Social welfare} = \text{Producer surplus} + \text{Consumer surplus} + \text{Congestion rent}$$

Producer surplus	62,5 M€
Consumer surplus	-31,1 M€
Congestion Rent	-20,1 M€

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

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

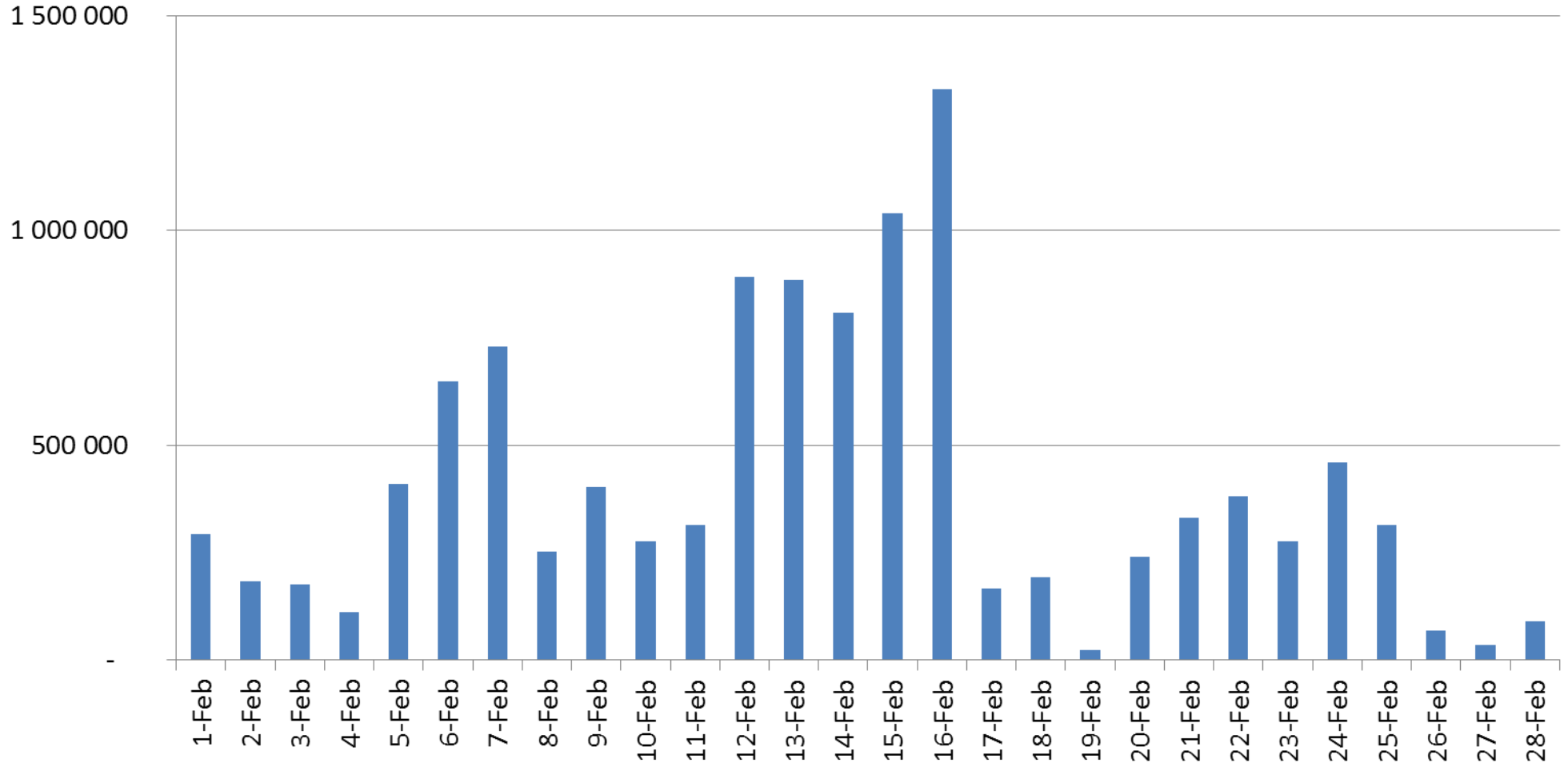
The daily values being a Sum of hourly values.

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.

February 2014



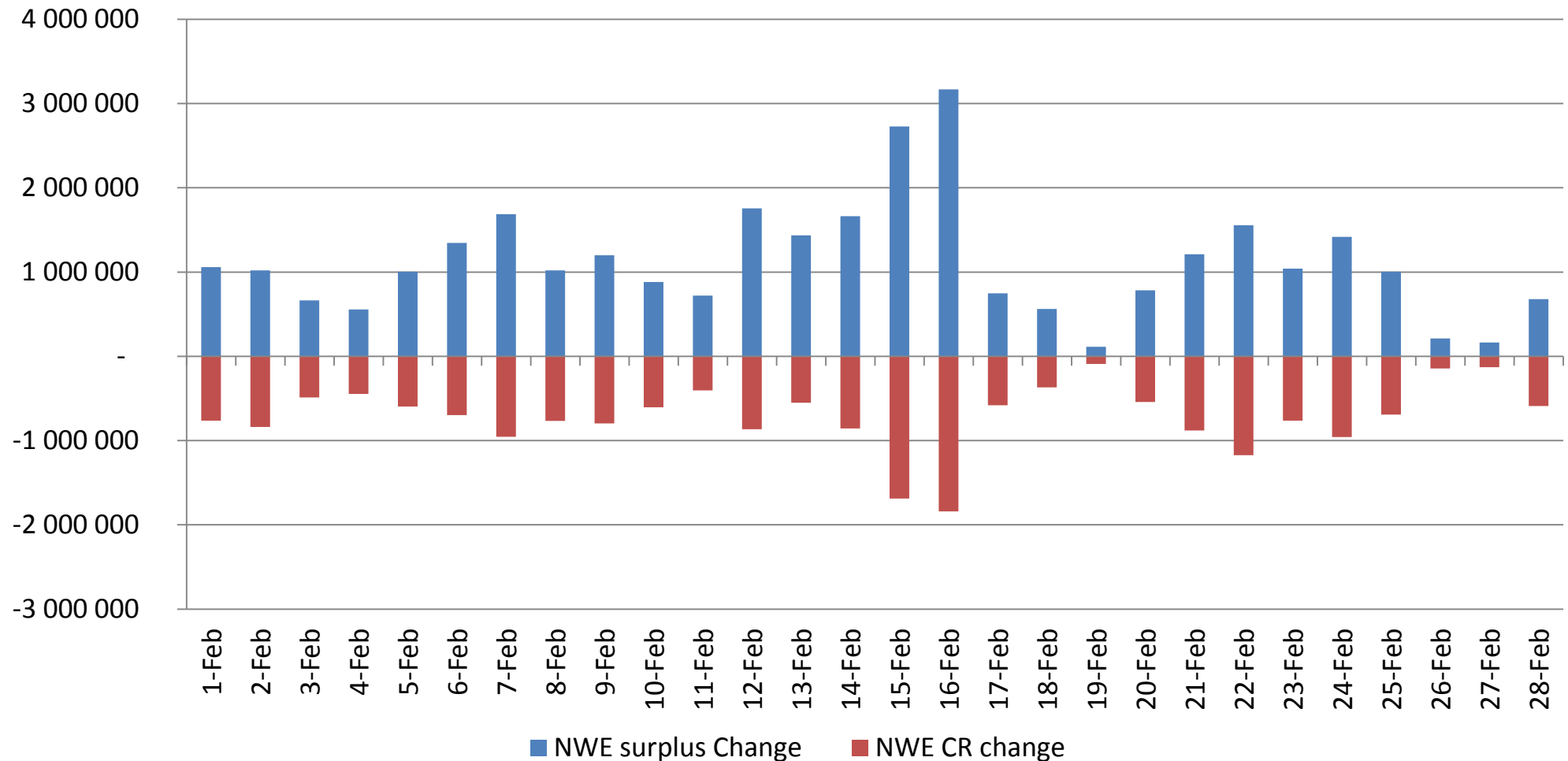
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



February 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

13,4 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

Producer surplus	62,8 M€
Consumer surplus	-25,1 M€
<i>Congestion Rent</i>	-24,3 M€

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

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

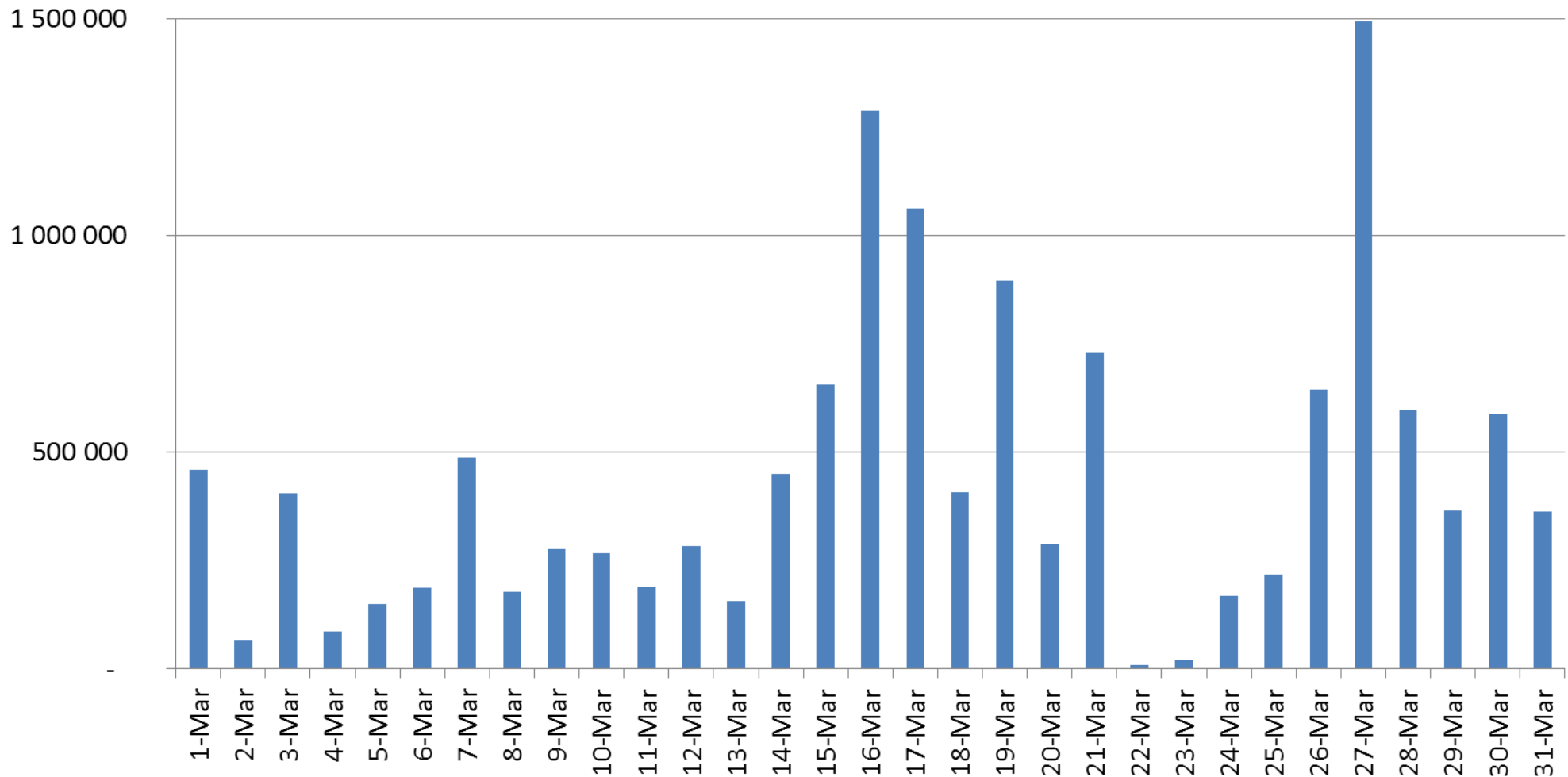
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March 2014



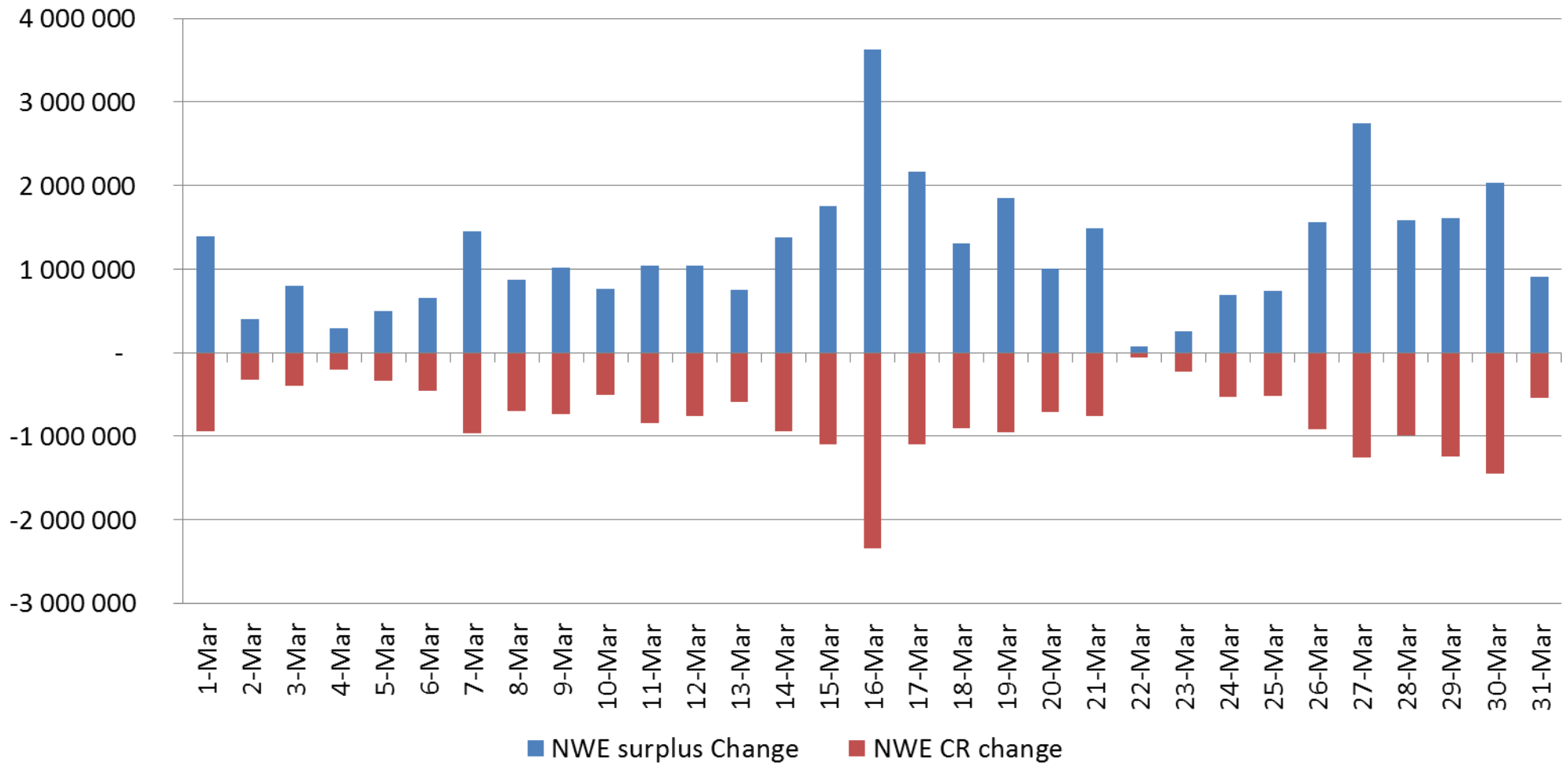
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



March 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

12,1 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

Producer surplus	49,1 M€
Consumer surplus	-14,2 M€
<i>Congestion Rent</i>	-22,9 M€

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

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

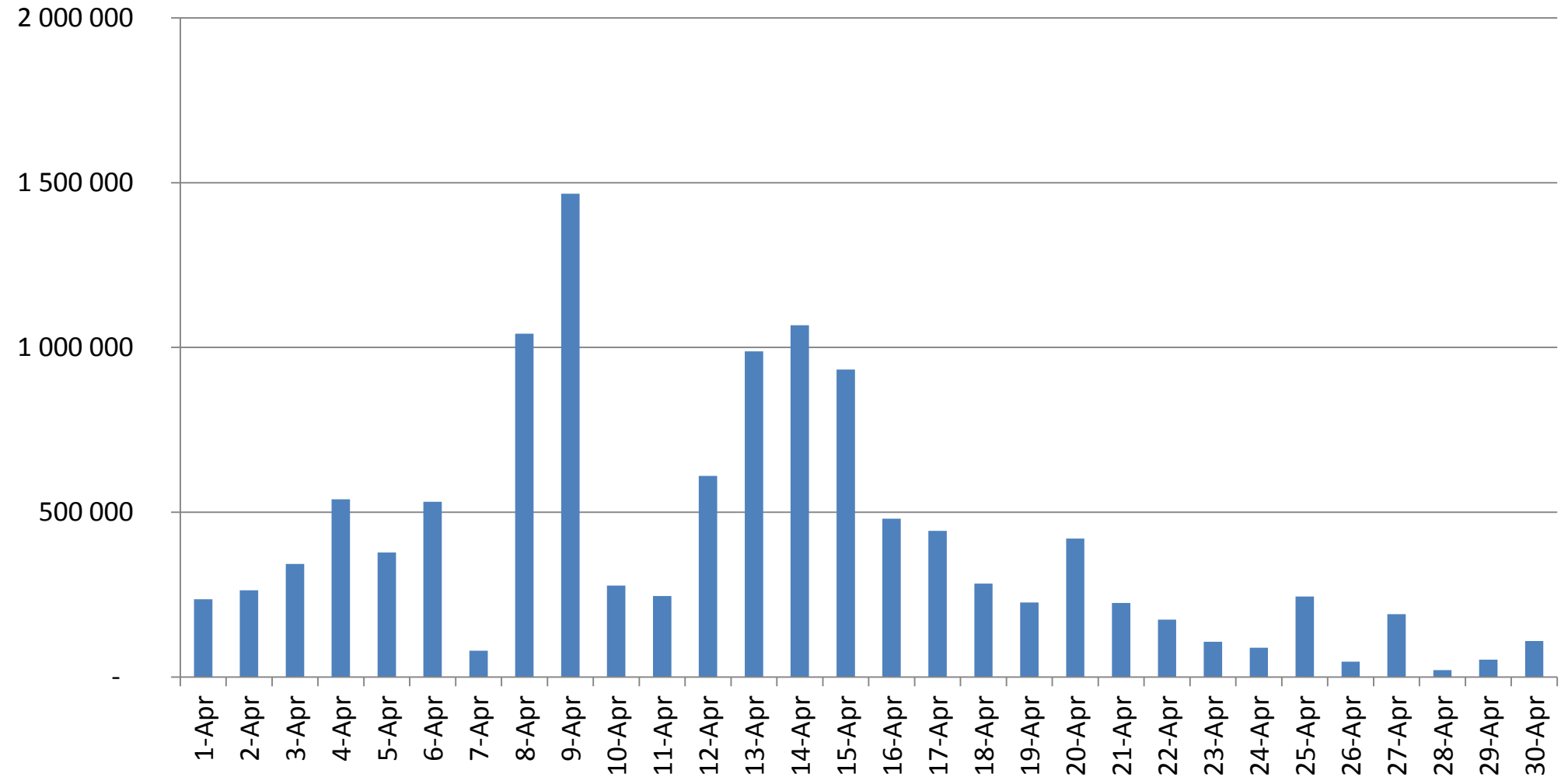
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April 2014



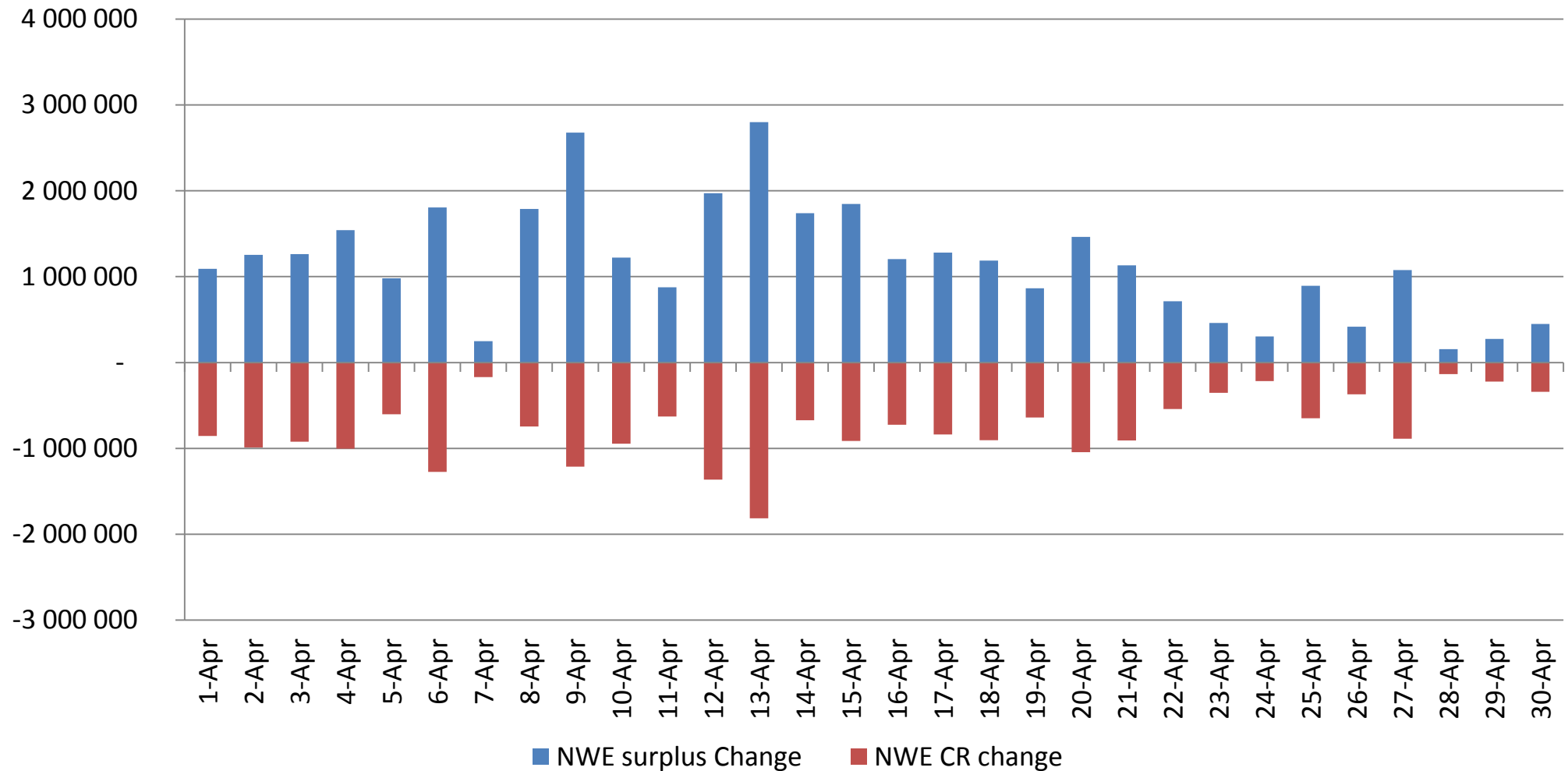
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



April 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

9,1 M€

$$\text{Social welfare} = \text{Producer surplus} + \text{Consumer surplus} + \text{Congestion rent}$$

Producer surplus	43,6 M€
Consumer surplus	-7,5 M€
Congestion Rent	-26,9 M€

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

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

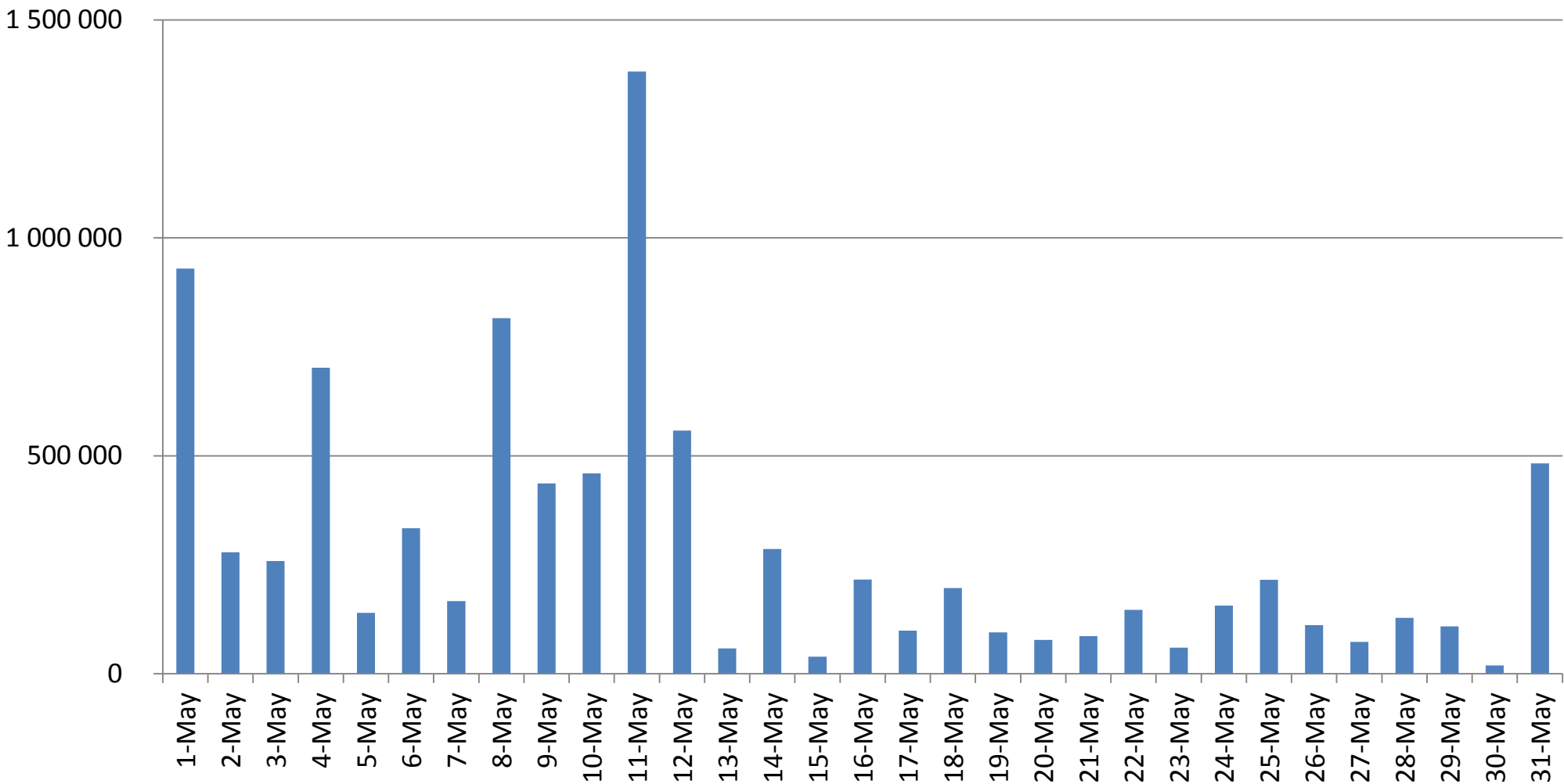
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May 2014

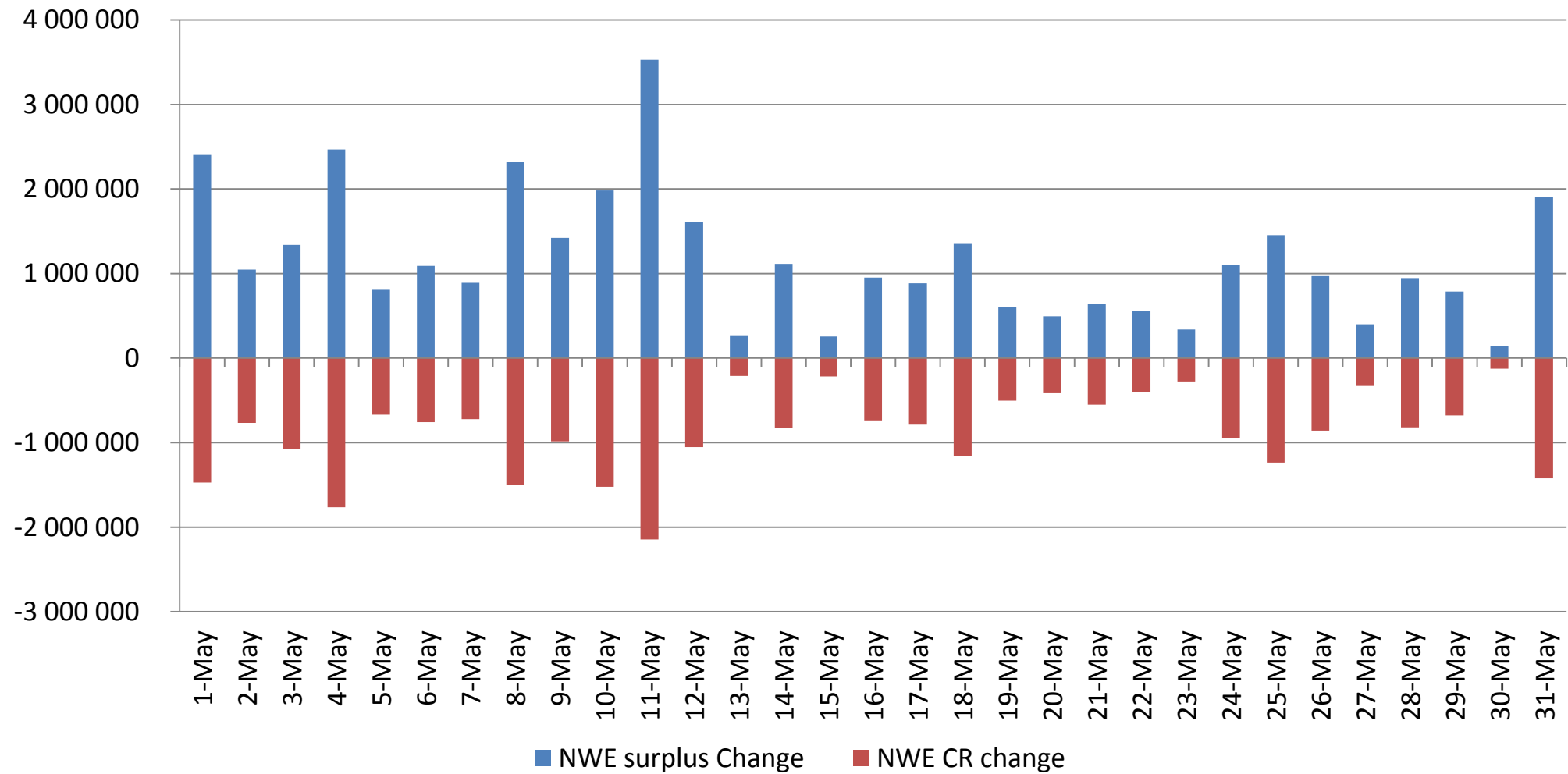


Evolution of social welfare in NWE area that could be gained with no network constraints in CWE





Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

5,3 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

Producer surplus	20,1 M€
Consumer surplus	3,4 M€
Congestion Rent	-18,2 M€

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

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

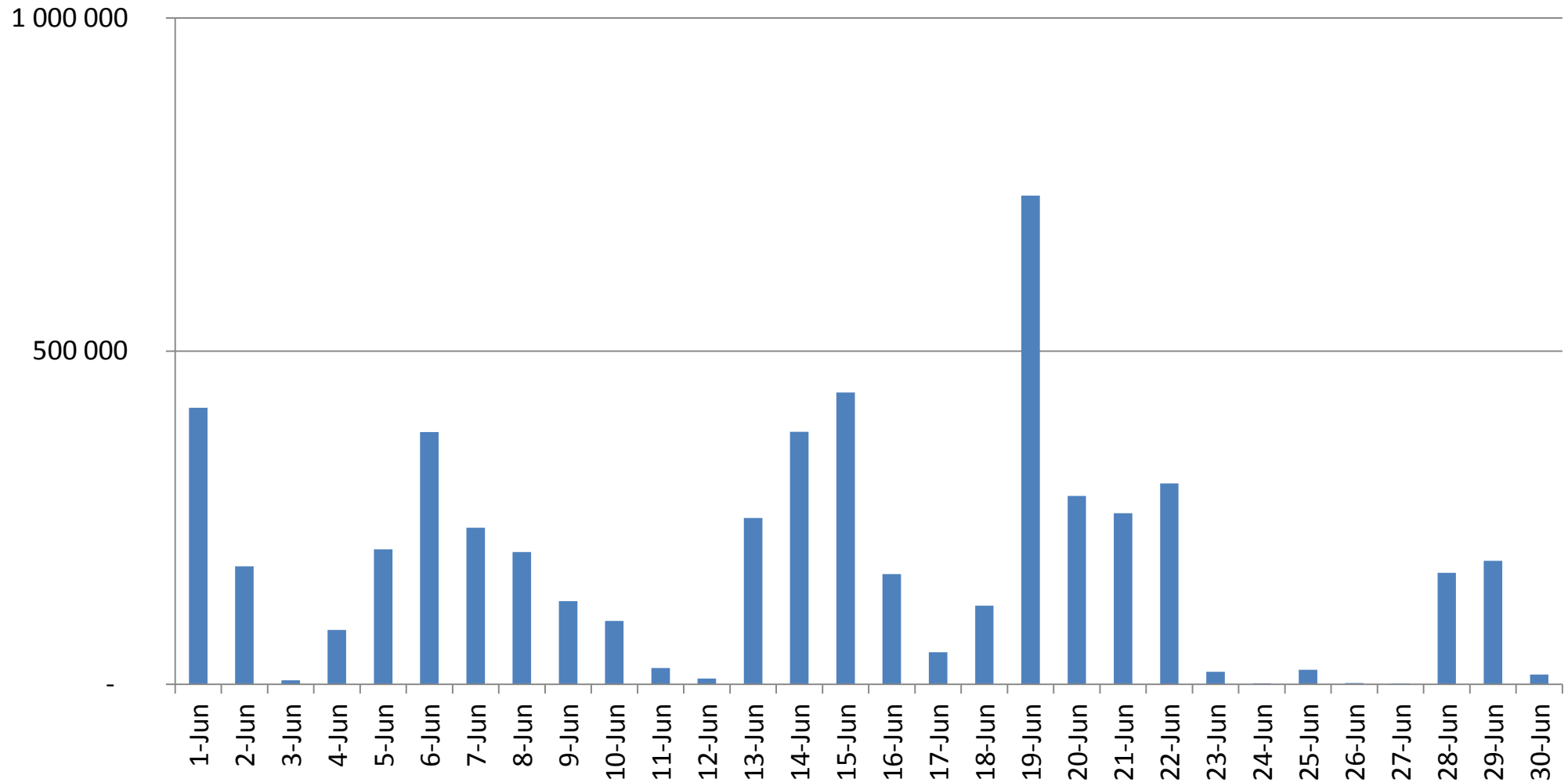
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June 2014



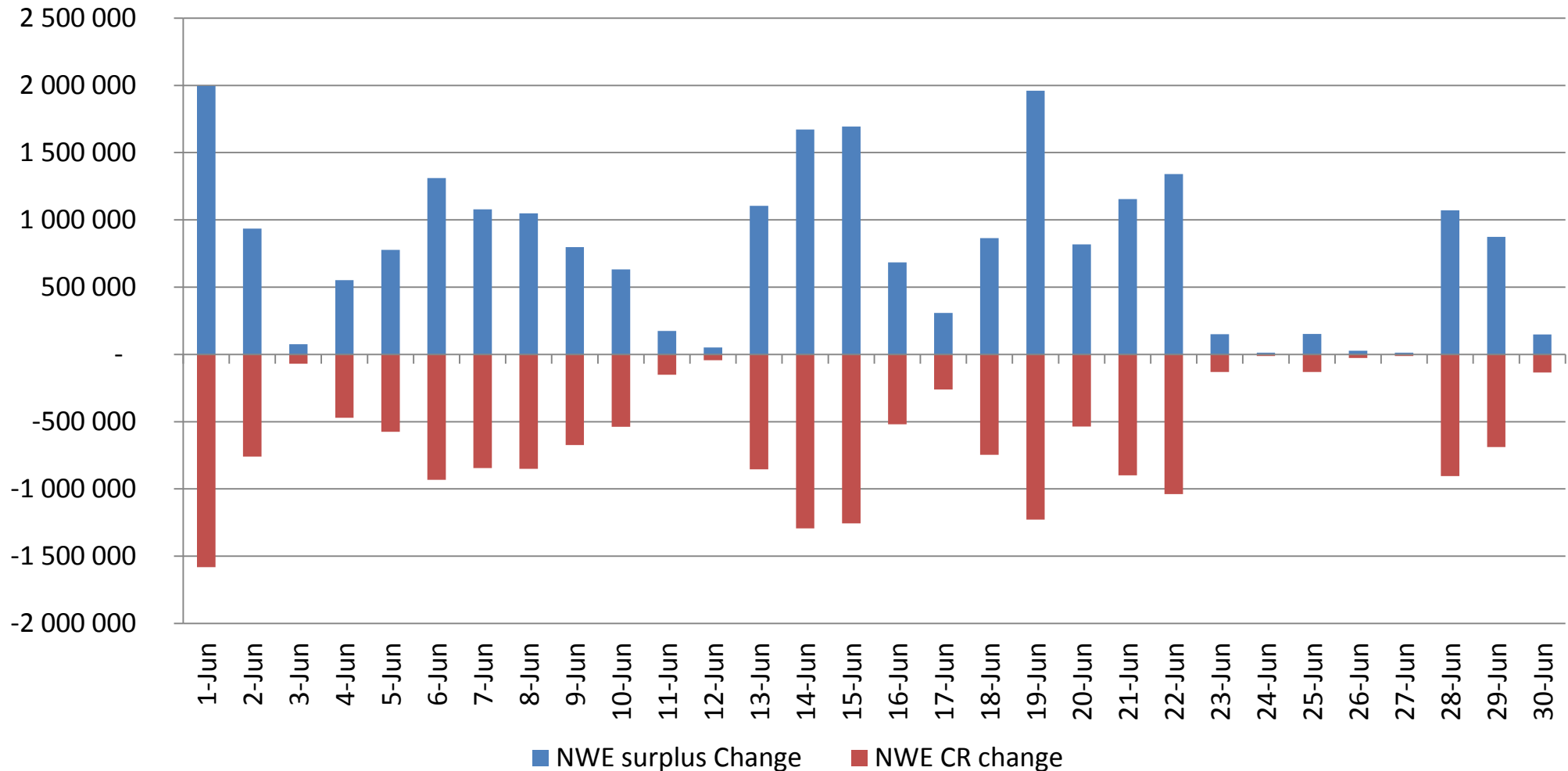
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



June 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

10,6 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

Producer surplus	9,8 M€
Consumer surplus	26,3 M€
Congestion Rent	-25,5 M€

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

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

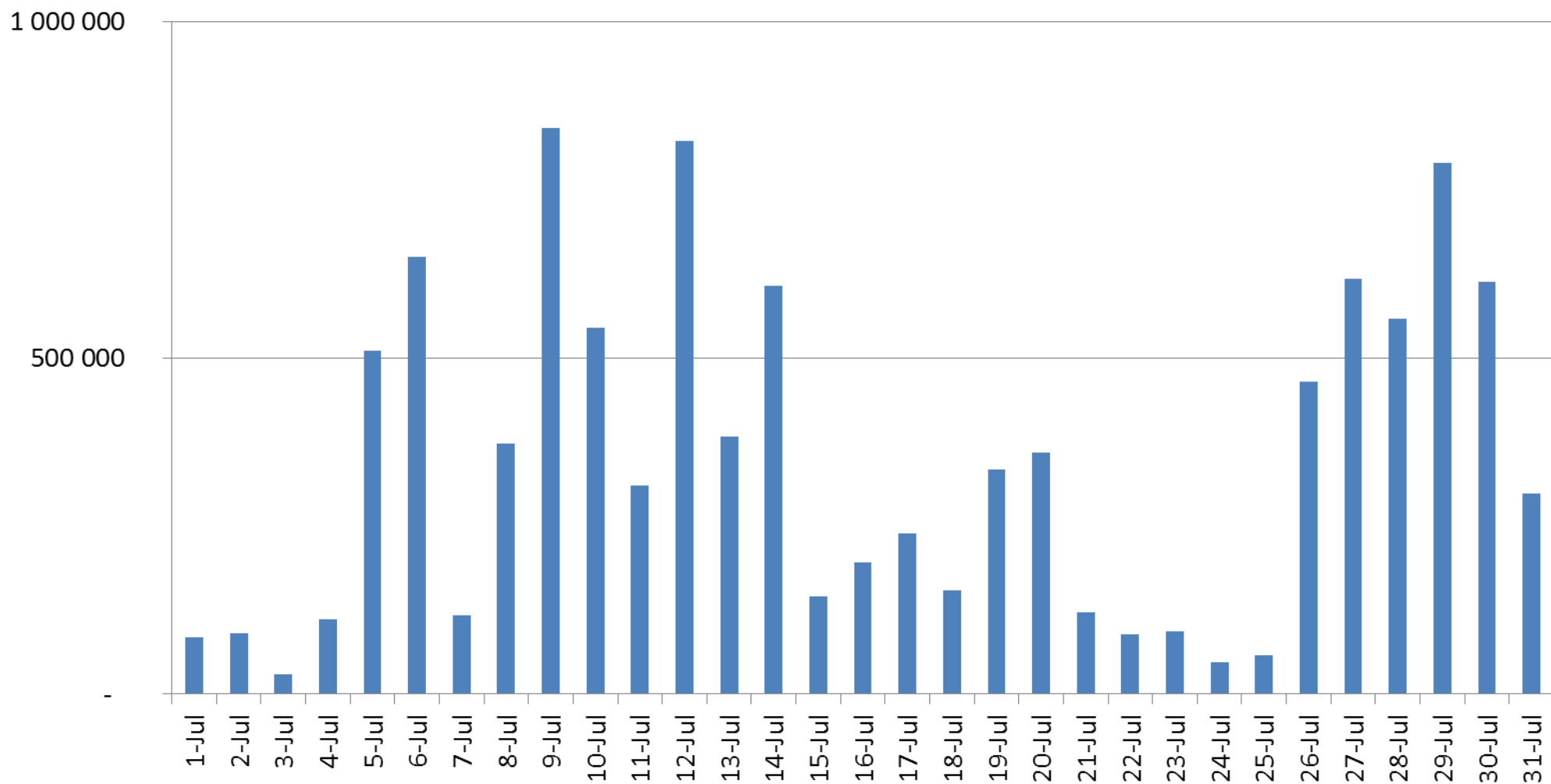
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July 2014



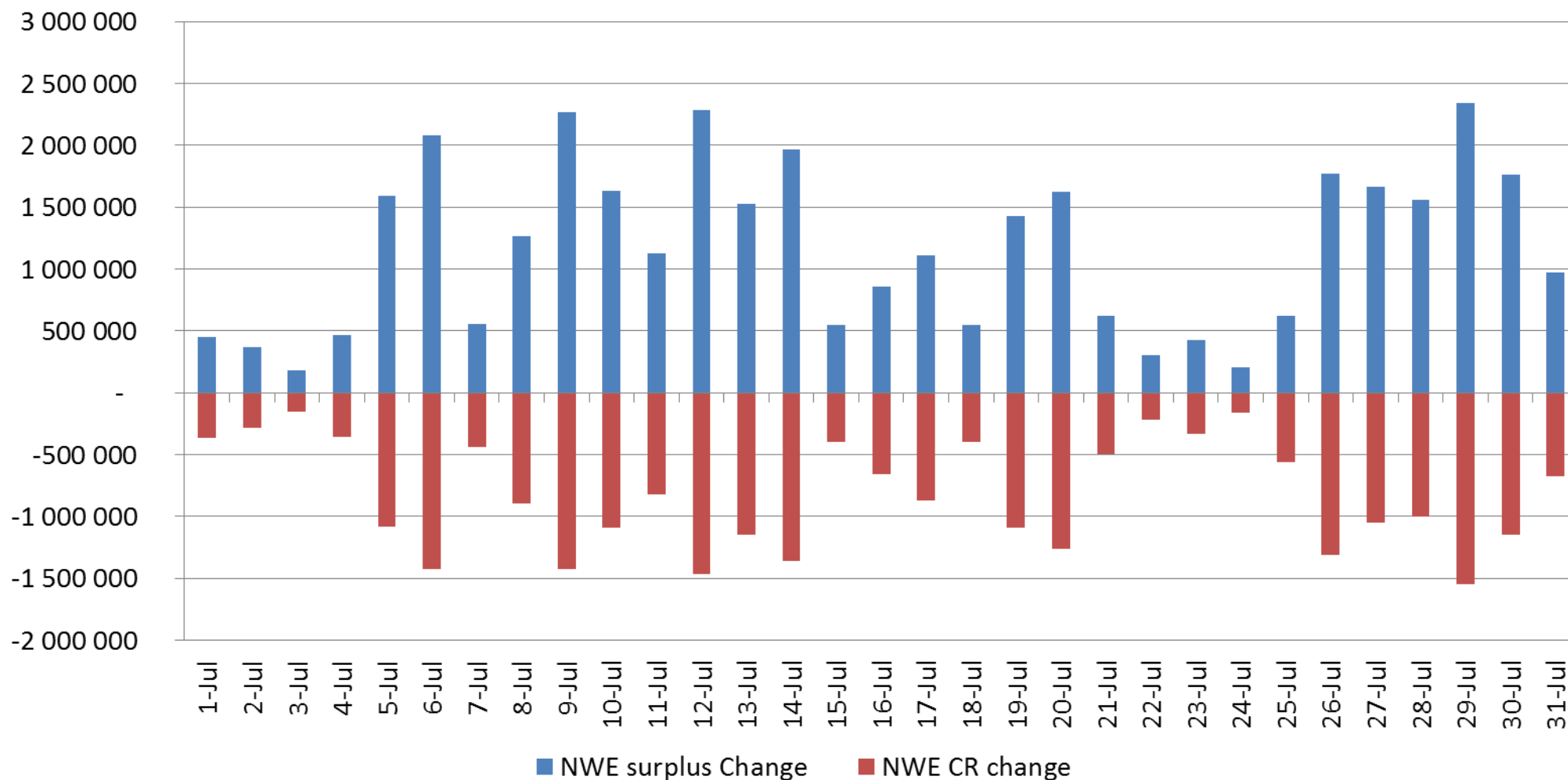
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



July 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

21,6 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

Producer surplus	55,1 M€
Consumer surplus	7,6 M€
Congestion Rent	- 41,1 M€

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

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

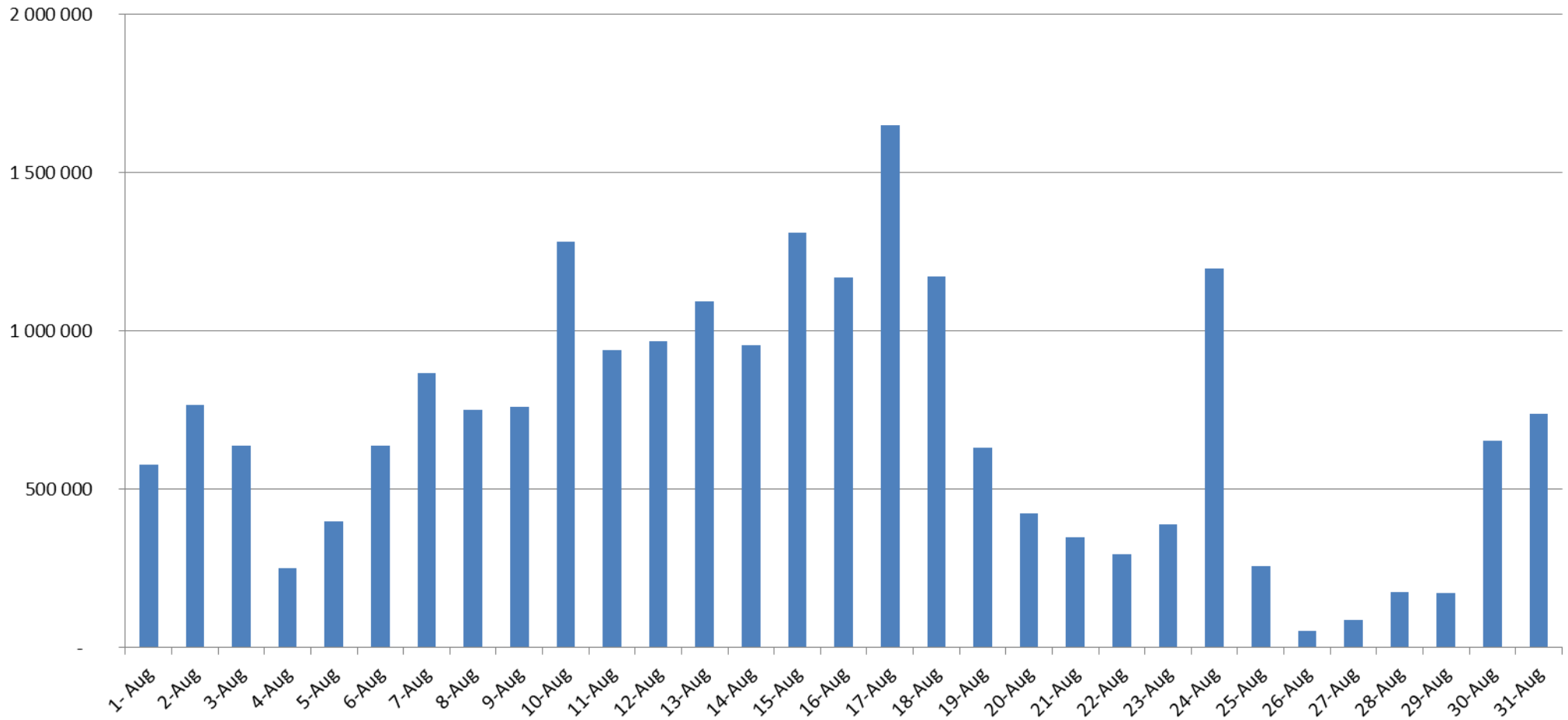
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August 2014



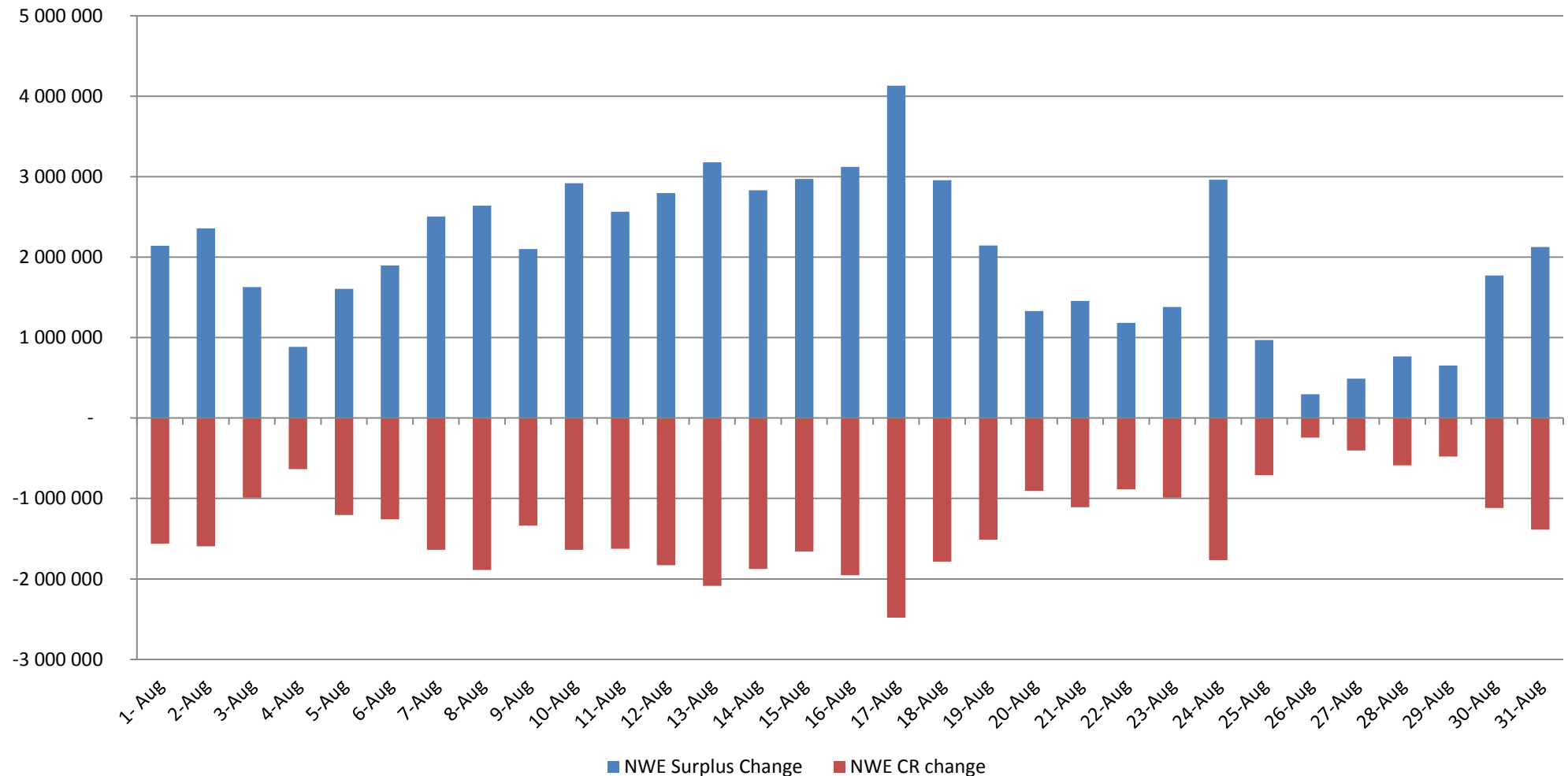
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



August 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

14,9 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

Producer surplus	60,4 M€
Consumer surplus	- 17,0 M€
Congestion Rent	- 28,5 M€

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

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

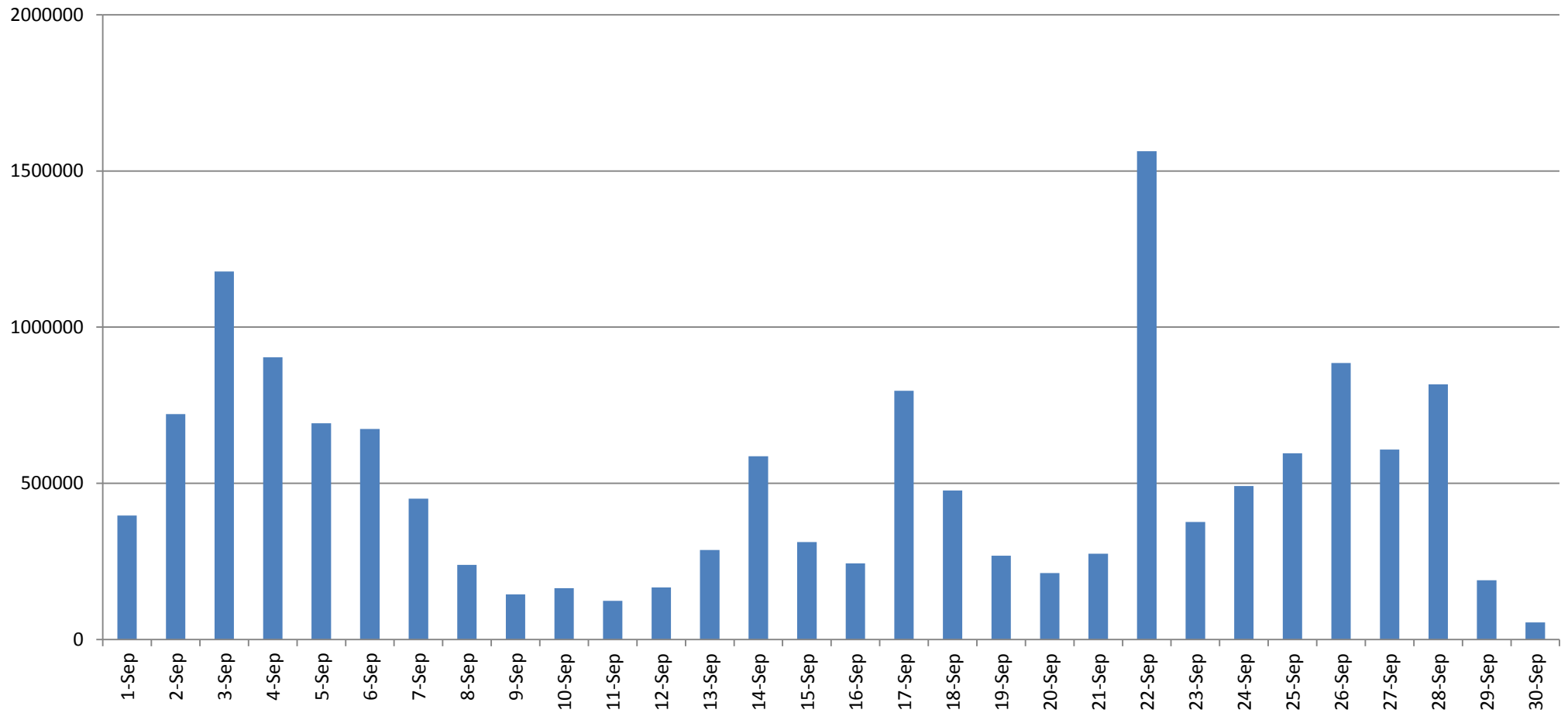
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September 2014



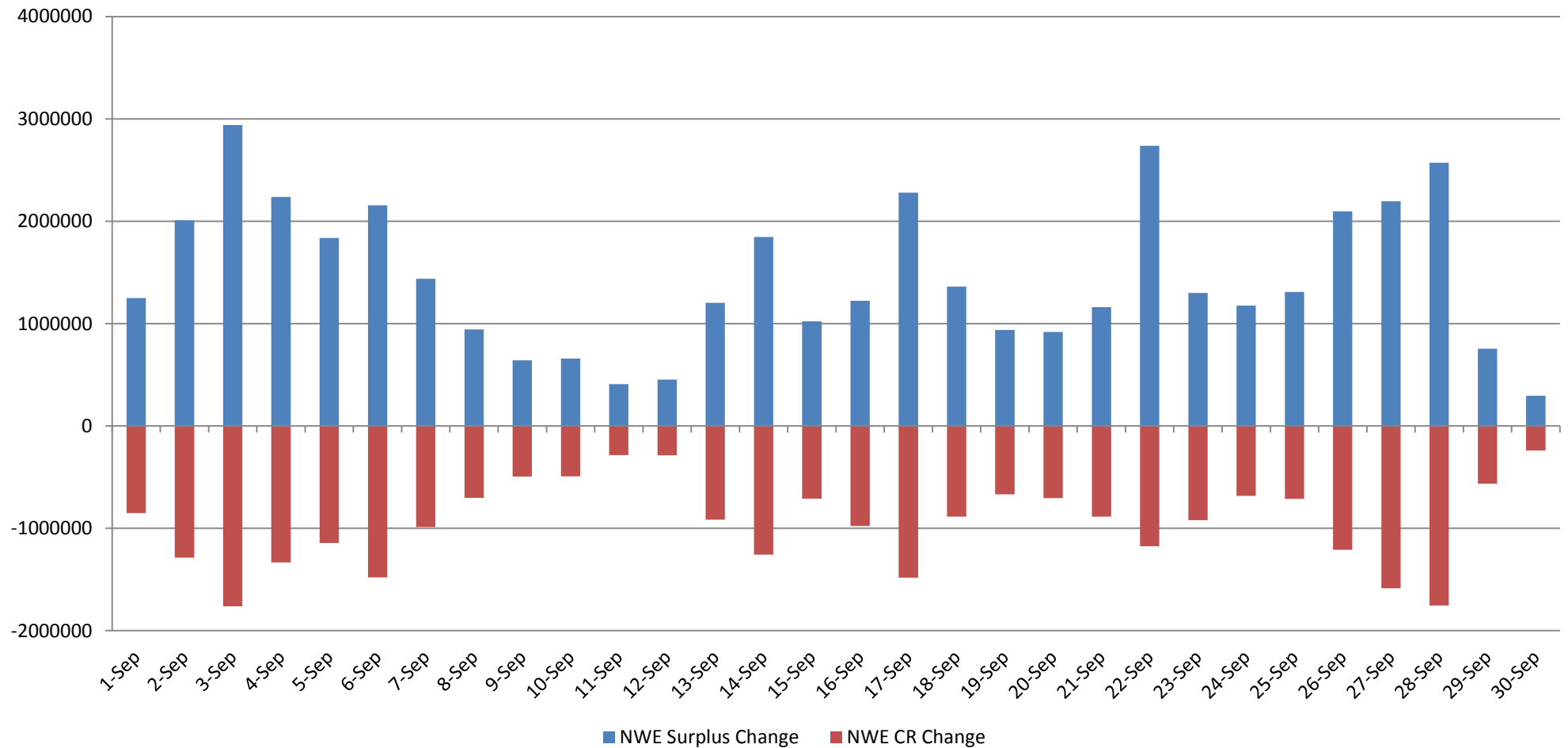
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



September 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

16,4 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

Producer surplus	68,5 M€
Consumer surplus	- 26,2 M€
Congestion Rent	- 25,9 M€

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

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

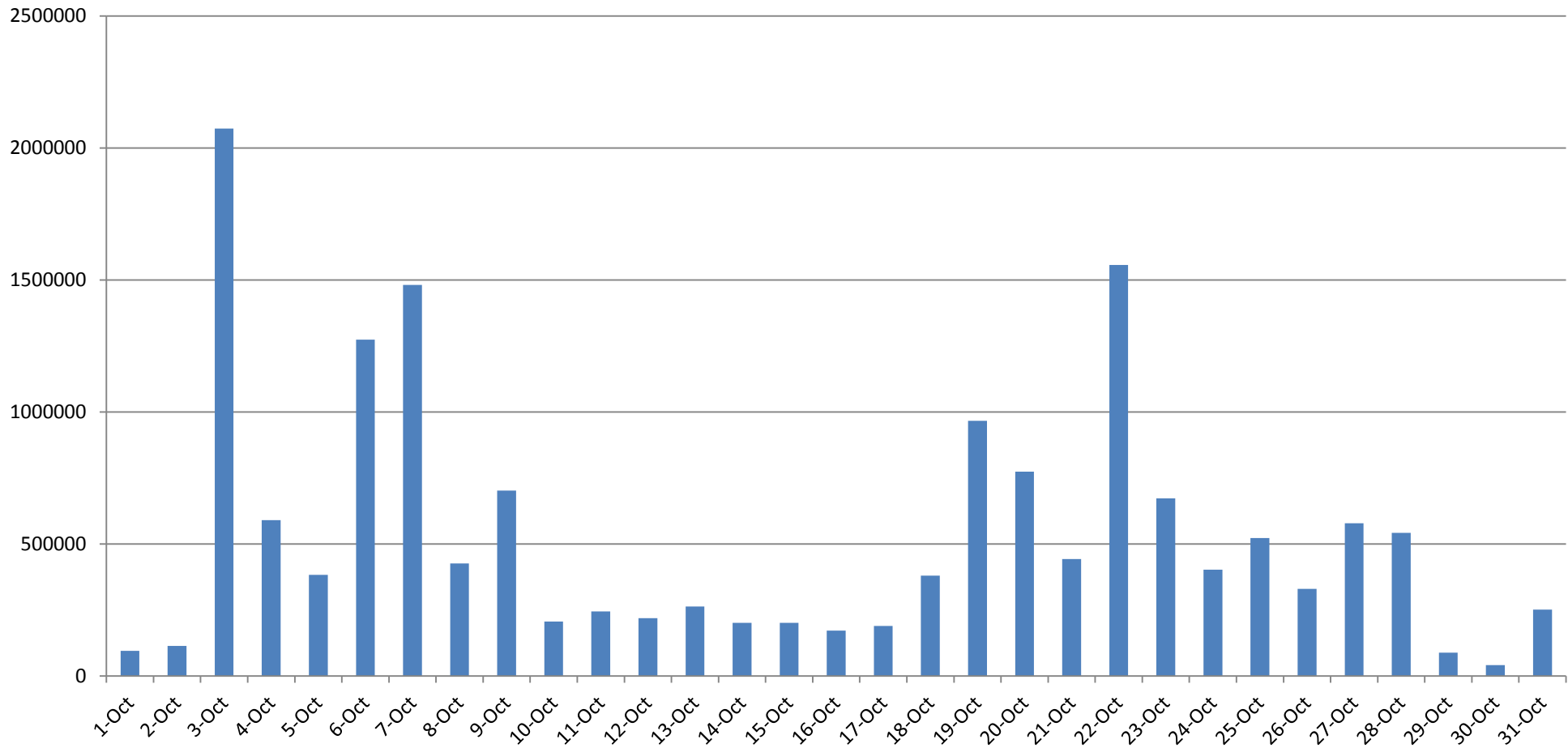
The daily values being a Sum of hourly values.

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October 2014



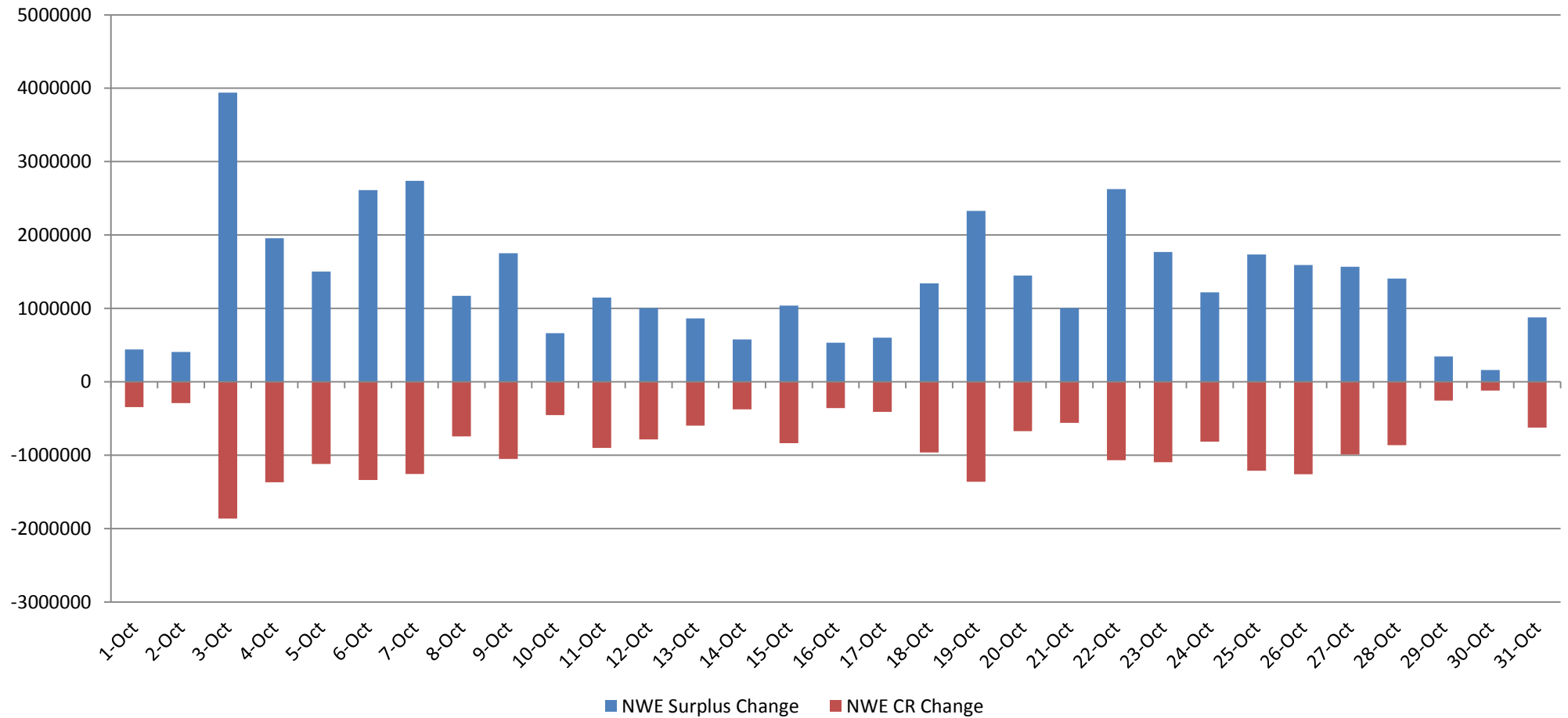
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



October 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





- ▶ Additional Social welfare in the NWE area that could be gained with no network constraints in CWE:

11,4 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

Producer surplus	29,9 M€
Consumer surplus	4,3 M€
Congestion Rent	-22,8 M€

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

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

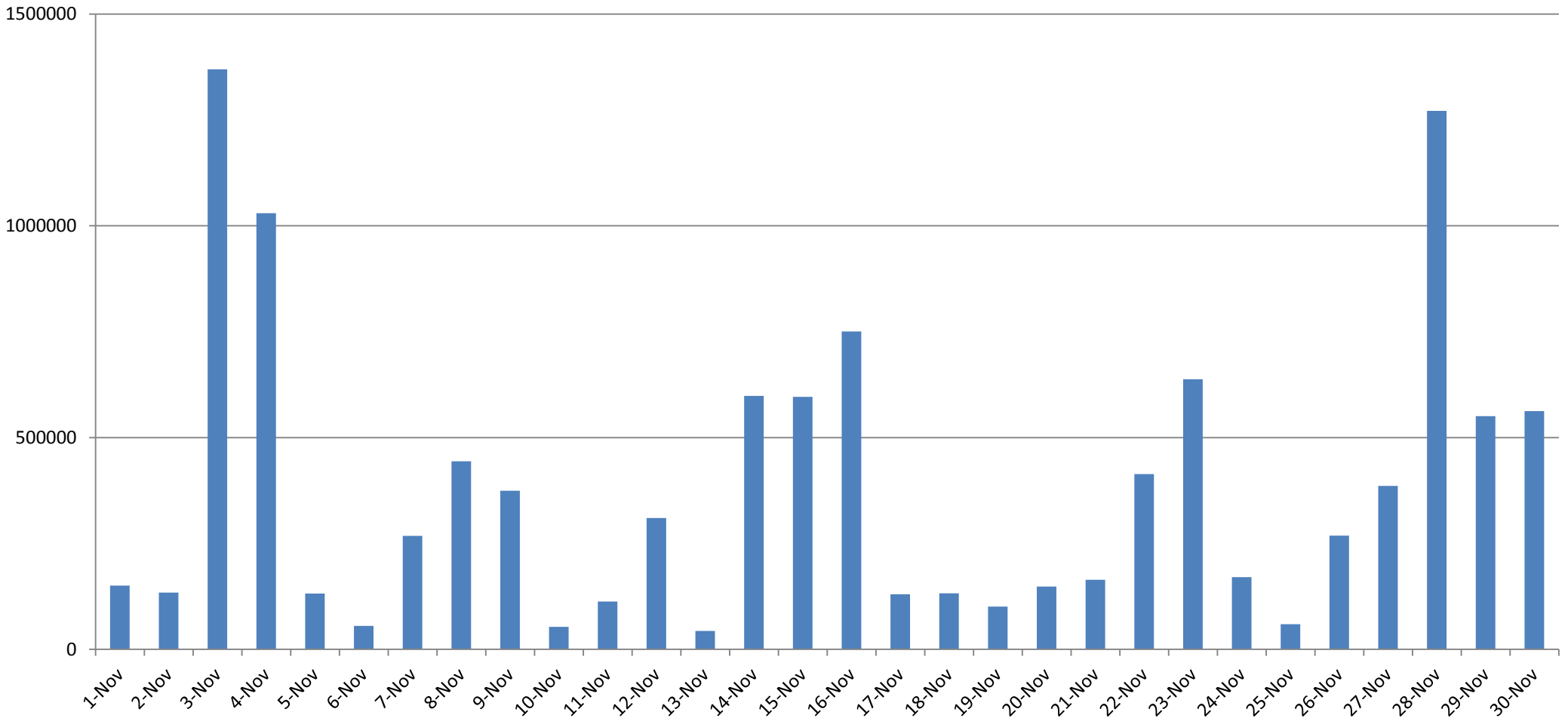
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November 2014



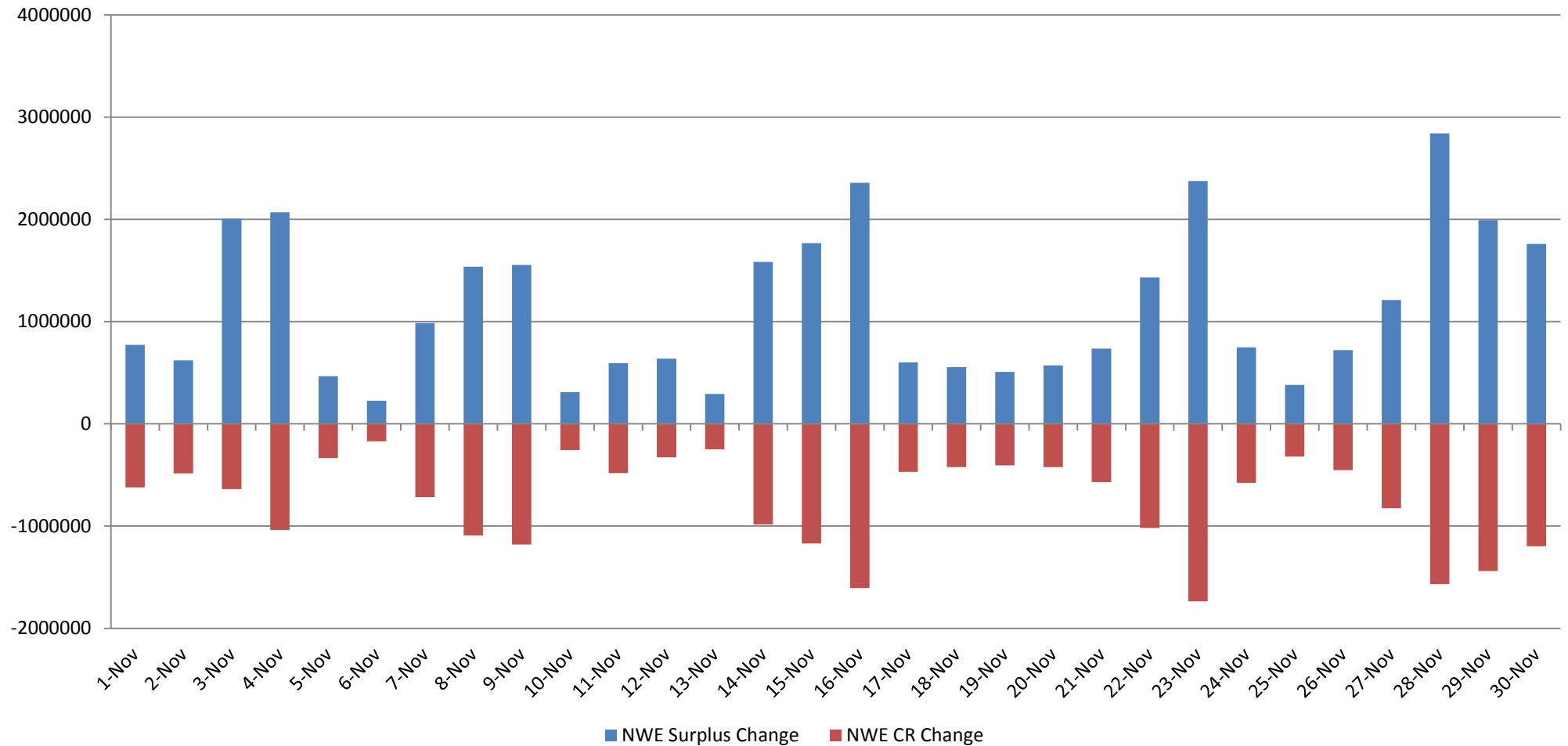
Evolution of social welfare in NWE area that could be gained with no network constraints in CWE



November 2014



Split of social welfare gain in surplus and congestion rent in the NWE area





► 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 in the NWE area 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)

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



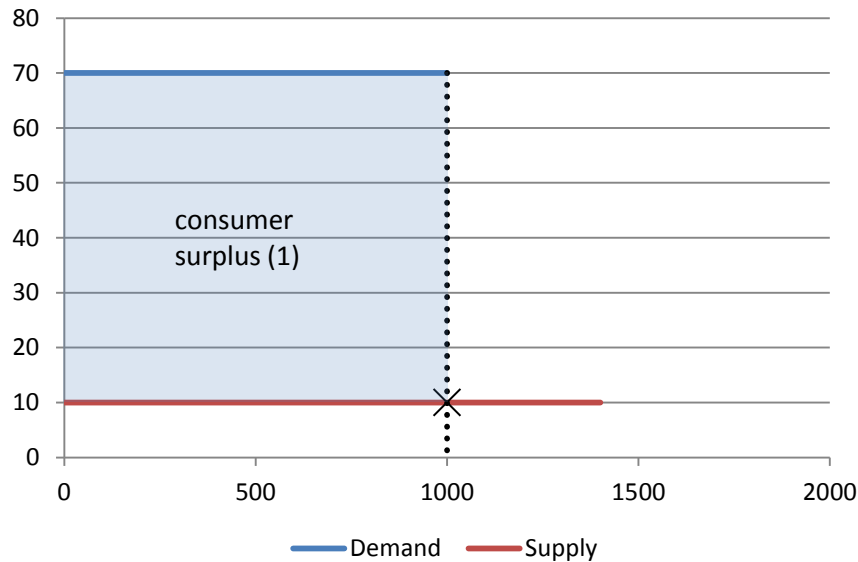
- ▶ The purpose of the welfare reporting is the demonstration of the benefits of CWE ATC Market Coupling and future CWE FB MC.
- ▶ The monthly publishing of this figure was commonly agreed between the CWE Regulators and the CWE Project. It is one part of the welfare reporting.



- ▶ 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)

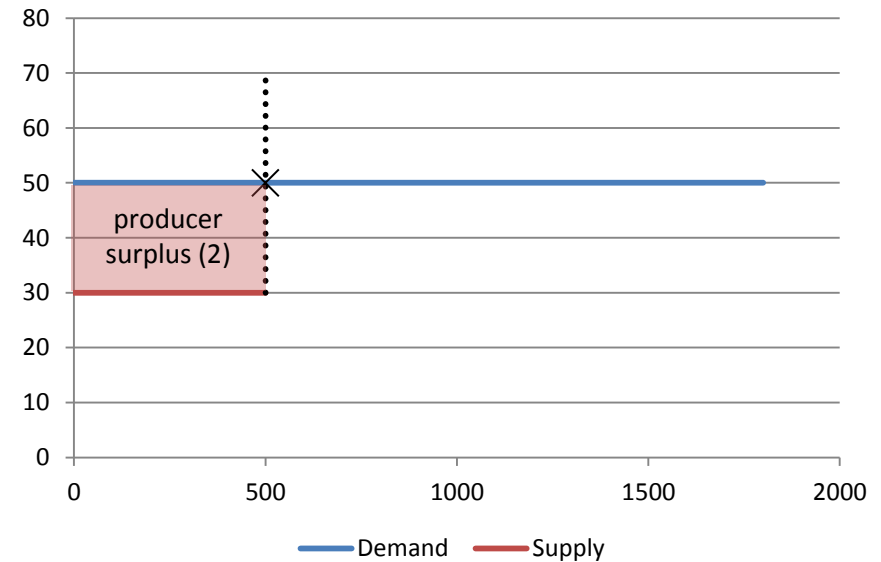


Area 1

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

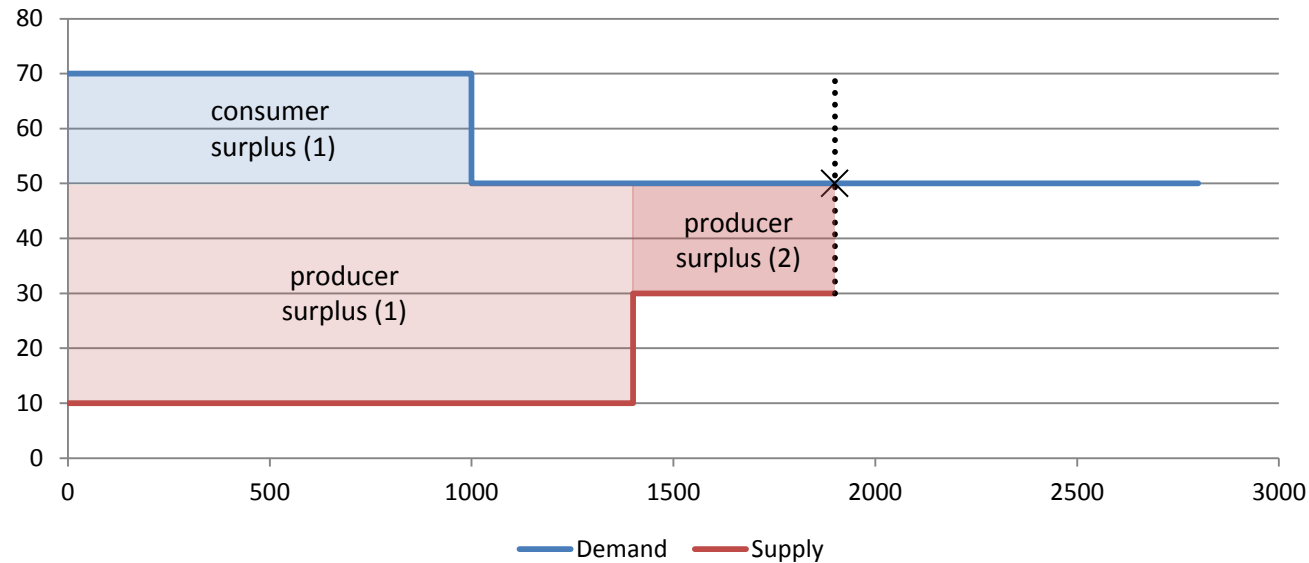
Producer surplus: € 10K

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)

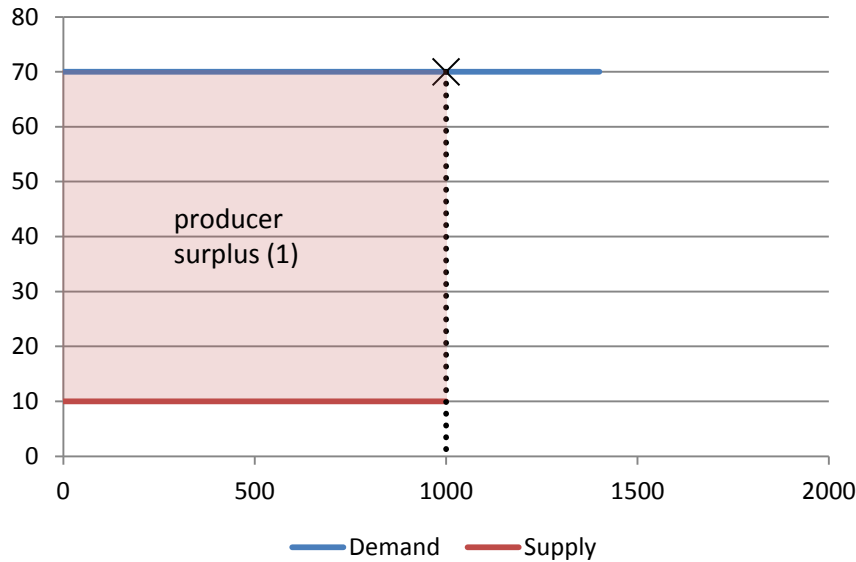
Producer surplus: € 66K (+56K)

Congestion revenue: € 0

Social welfare: € 86K (+16K)

Decrease in producer surplus example 1/2

Two isolated markets (zero capacity)

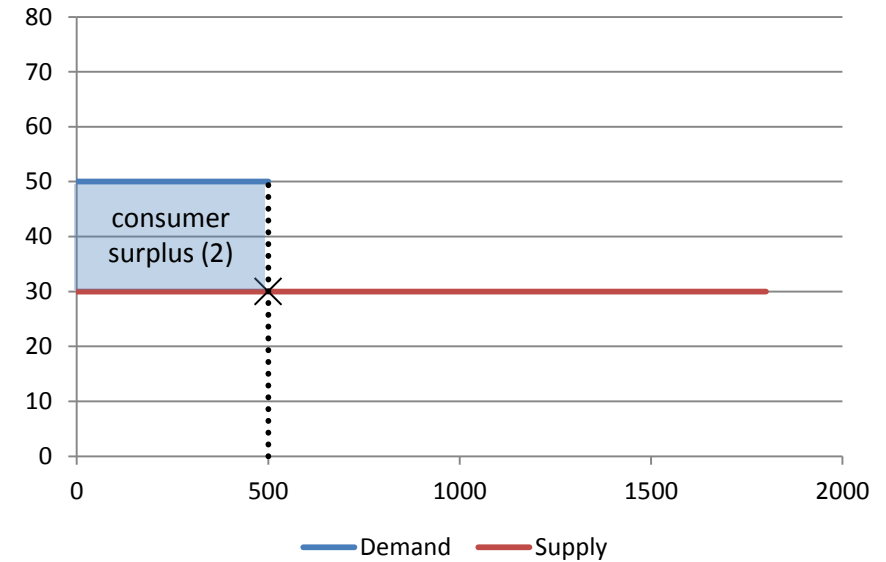


Area 1

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

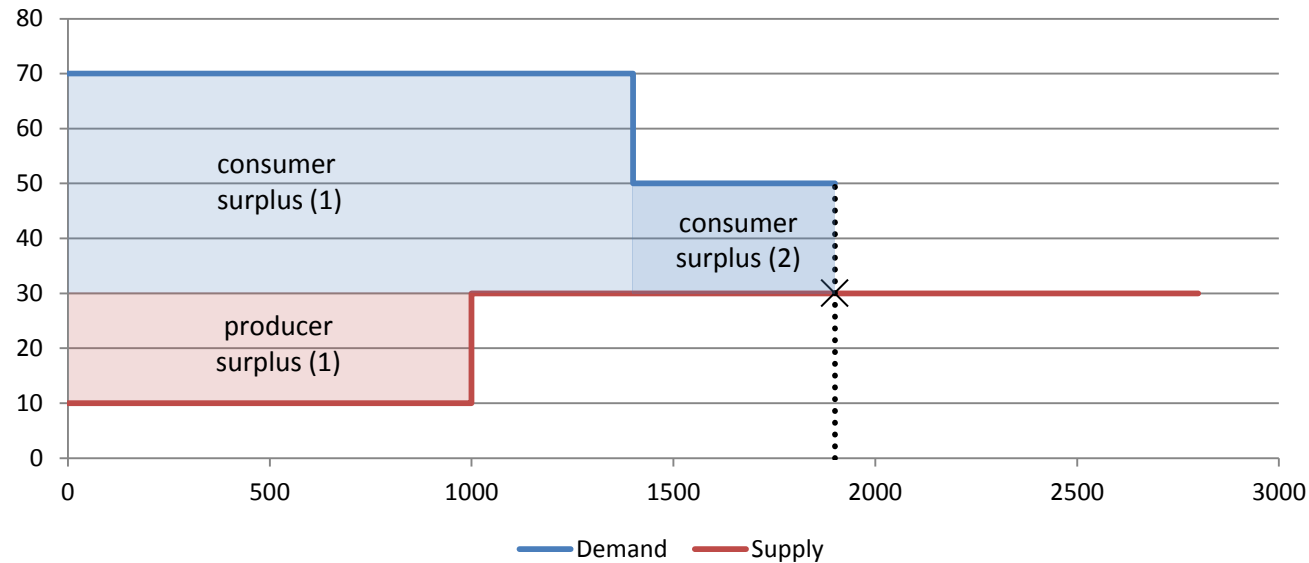
Producer surplus: € 60K

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)