Additional Social welfare that could be gained with no network constraints: 3,7 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>36,3 M€</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-21,8 M€</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-10,8 M€</td>
</tr>
</tbody>
</table>

NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:
Sum of daily (Value with ATC=∞) - (Historical value)
The daily values being a Sum of hourly values.

In single hours the producer/consumer surplus can be positive or negative. The highlighted value presents the sum of all hours of the respective month.
January 2012

Evolution of social welfare that could be gained with no network constraints
February 2012

- Additional Social welfare that could be gained with no network constraints: 31,7 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>57,4 M€</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>45,3 M€</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-71,0 M€</td>
</tr>
</tbody>
</table>

NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such: 
Sum of daily (Value with ATC=∞) - (Historical value)
The daily values being a Sum of hourly values.

In single hours the producer/consumer surplus can be positive or negative. The highlighted value presents the sum of all hours of the respective month.
February 2012

Evolution of social welfare that could be gained with no network constraints
March 2012

Additional Social welfare that could be gained with no network constraints: 4,5 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>34,4 M€</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-15,3 M€</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-14,6 M€</td>
</tr>
</tbody>
</table>

NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:
Sum of daily (Value with ATC=∞) - (Historical value)
The daily values being a Sum of hourly values.

In single hours the producer/consumer surplus can be positive or negative. The highlighted value presents the sum of all hours of the respective month.
March 2012

Evolution of social welfare that could be gained with no network constraints
Additional Social welfare that could be gained with no network constraints: 2,5 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>17,2 M€</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-4,9 M€</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-9,8 M€</td>
</tr>
</tbody>
</table>

NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such: Sum of daily (Value with ATC=∞) - (Historical value) The daily values being a Sum of hourly values.

In single hours the producer/consumer surplus can be positive or negative. The highlighted value presents the sum of all hours of the respective month.
April 2012

Evolution of social welfare that could be gained with no network constraints
May 2012

- Additional Social welfare that could be gained with no network constraints: 5.2 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<table>
<thead>
<tr>
<th></th>
<th>Value (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>20.3</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>3.8</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-18.9</td>
</tr>
</tbody>
</table>

NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:
Sum of daily (Value with ATC=∞) - (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.
Evolution of social welfare that could be gained with no network constraints
June 2012

Additional Social welfare that could be gained with no network constraints: 3,8 M€

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

<table>
<thead>
<tr>
<th></th>
<th>Value (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>21,2</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-2,0</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-15,4</td>
</tr>
</tbody>
</table>

\textit{NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:}
\textit{Sum of daily (Value with ATC=∞) - (Historical value)}
\textit{The daily values being a Sum of hourly values.}

\textit{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.}
June 2012

Evolution of social welfare that could be gained with no network constraints
Additional Social welfare that could be gained with no network constraints: 1,9 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>11,5 M€</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-0,1 M€</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-9,5 M€</td>
</tr>
</tbody>
</table>

**NB**: Producer surplus, Consumer surplus and Congestion Rent are calculated as such: 
Sum of daily (Value with ATC=∞) - (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.
Evolution of social welfare that could be gained with no network constraints
Additional Social welfare that could be gained with no network constraints: 1,9 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<table>
<thead>
<tr>
<th></th>
<th>Value (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>10,3</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-1,1</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-7,3</td>
</tr>
</tbody>
</table>

**NB:** Producer surplus, Consumer surplus and Congestion Rent are calculated as such:
Sum of daily (Value with ATC=∞) - (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.
August 2012

Evolution of social welfare that could be gained with no network constraints
Additional Social welfare that could be gained with no network constraints: 3,2 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>19,7 M€</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-5,2 M€</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-11,3 M€</td>
</tr>
</tbody>
</table>

**NB:** Producer surplus, Consumer surplus and Congestion Rent are calculated as such:
Sum of daily (Value with ATC=∞) - (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.
Evolution of social welfare that could be gained with no network constraints
Additional Social welfare that could be gained with no network constraints: 10,6 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<table>
<thead>
<tr>
<th></th>
<th>Value (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>52,2</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-16,1</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-25,5</td>
</tr>
</tbody>
</table>

**NB:** Producer surplus, Consumer surplus and Congestion Rent are calculated as such:
Sum of daily (Value with ATC=∞) - (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.
Evolution of social welfare that could be gained with no network constraints
November 2012

- Additional Social welfare that could be gained with no network constraints: 8,3 M€

Social welfare = Producer surplus + Consumer surplus + Congestion rent

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>36,8 M€</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-6 M€</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-22,5 M€</td>
</tr>
</tbody>
</table>

NB: Producer surplus, Consumer surplus and Congestion Rent are calculated as such:
Sum of daily (Value with ATC=∞) - (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.
November 2012

Evolution of social welfare that could be gained with no network constraints
December 2012

- Additional Social welfare that could be gained with no network constraints: 21 M€

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

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producer surplus</td>
<td>110,8 M€</td>
</tr>
<tr>
<td>Consumer surplus</td>
<td>-43,2 M€</td>
</tr>
<tr>
<td>Congestion Rent</td>
<td>-46,6 M€</td>
</tr>
</tbody>
</table>

**NB:** Producer surplus, Consumer surplus and Congestion Rent are calculated as such: 
Sum of daily (Value with ATC=∞) - (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 2012

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=∞ at the borders D-NL, NL-B, B-F, D-F and comparing to real MC-results:
  - Producer surplus = Producer surplus (ATC=∞) - Producer surplus (real ATC)
  - Consumer surplus = Consumer surplus (ATC=∞) - Consumer surplus (real ATC)
  - Congestion rent = Congestion rent (ATC=∞) - congestion rent (real ATC)

- **NB:** The simulations are made with ITVC flows remaining identical.
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)
Producer surplus: € 20K (-40K)
Congestion revenue: € 0
Social welfare: € 86K (+16K)