Demand Response as a System Resource in Poland

Forum for Energy Analysis
Warsaw – March 8, 2016

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Why Demand Response in PL?

• Reliability
  — Reducing load during times of system stress to avoid forced curtailments.
  — Diversifying the portfolio of resources that provide system services to lower overall system risk.

• Cost-effectiveness
  — Lowering costs of system services.
  — Deterring network investments.
Challenge – Hot Days in Summer

Selected working day, July 2015

Load > 20 GW for 9 hours.
DR in PL – Current Status

• The energy law mentions DR in the context of development plans of DSOs (art. 16.7.4).

• Consumers have access to:
  — Balancing Market (no offers)
  — Emergency DR program (rarely called by TSO).
  — Day-Ahead (one trader works with aggregator).

• No access to the Operating Reserve, the Strategic Reserve, and ancillary services.
Emergency DR Programme - Description

– 200 MW already contracted (Peak 25GW).
– Another 90-150 MW to be allocated soon.
– A last-resort measure, special reserve, not in day-to-day use. Activated very seldom.
– Targeted to large consumers and aggregators.
– No availability payment, utilization payment is at the level of 250-300 Euro/MWh.
– Penalties apply in case of underperformance.
Emergency DR Programme - Critique

– Too narrow stream of revenue to facilitate DR capacity & technology growth.
– Burdened with administrative costs.
– Unfair distribution of risks and responsibilities between aggregators and TSO (data, baseline, verification, accuracy of reduction).
– Not on equal footing with supply – strategic reserve receives a retainer (> 20 zł/MW/h).
Table 1. Share of theoretical potential for DR at system peak load

<table>
<thead>
<tr>
<th></th>
<th>Total DR (GW)</th>
<th>Peak (GW)</th>
<th>Total DR / Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>11,6</td>
<td>102</td>
<td>11%</td>
</tr>
<tr>
<td>Poland</td>
<td>3,6</td>
<td>25</td>
<td>14%</td>
</tr>
<tr>
<td>UK</td>
<td>8,0</td>
<td>56</td>
<td>14%</td>
</tr>
</tbody>
</table>

Source: Own calculations based on Gils (2014).
## Expert Assessment of DR Potential in Poland

Table 3. DR potential in Poland – indicative assessment

<table>
<thead>
<tr>
<th></th>
<th>DR Potential (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>1700-1800</td>
</tr>
<tr>
<td>Commercial buildings</td>
<td>200-300</td>
</tr>
<tr>
<td>Households</td>
<td>2000</td>
</tr>
<tr>
<td>Total</td>
<td>4000</td>
</tr>
</tbody>
</table>

Source: Personal communication with Mr. R. Majewski, Enspirion (2016).
## DR Aggregators in Poland

<table>
<thead>
<tr>
<th>Aggregator</th>
<th>Segment</th>
<th>Phase of business development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enspirion</td>
<td>Manufac.</td>
<td>Contracted 500 MW</td>
</tr>
<tr>
<td>Virtual Power Plants</td>
<td>Buildings</td>
<td>Technology in place, scales up the business,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Data Lab</td>
<td>Households</td>
<td>Participates in pilots, develops a technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enernoc</td>
<td>Various</td>
<td>Market research &amp; policy dialogue</td>
</tr>
</tbody>
</table>

Source: Own research, personal communication with Mr. Majewski, Mr. Misiejuk, Mr. Nowaczewski, Mr. Rzepnicki (2016).
What Might be the Costs in Poland?

– If Poland follows international best practice (France, UK, Switzerland, US), DR costs may be low:
  • Availability: < 20 zł/MW/h (5 Euro/MW/h).
  • Utilisation: spot price.

– It implies that DR would be highly competitive in comparison current Operating Reserve (38 zł/MW/h or a spot price)
False Narrative – Problem in PL

– “DR is useful only as an emergency resource.”
– “System benefits from accurate reductions.”
– “Retainer conditions development of DR.”
– “Once in place, DR develops smoothly.”
– “DR implies additional costs to end-users.”
Draft Recommendations

– Make a strategic choice regarding DR.
– Be consistent in decision-making in long run.
– Equal footing & volumes instead of a retainer.
– Open ancillary & system services to DR.
– Restructure DR emergency programme.
– Diversify a portfolio of energy resources.
– Consider DR to mitigate summer stresses.
– Use DR to optimise grid investments.
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- Allocate system benefits fairly among all consumers

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