MARKET/BUSINESS MODELS

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End consumer business models

» A wide variety of business models for the end consumer are possible
  » Variable pricing
  » Capacity/activation fee
  » PV injection minimization
  » Energy services bundle offer
  » Rebate or subsidy scheme at purchase
  » Obligatory

» Smart appliances should accommodate as many as possible
» Limited public available information

Variable pricing

» Vattenfall/Sweden
  » Retail contracts with Nordic power exchange based hourly prices

» France Option Tempo
  » Blue, white and red days

» Eneco SlimLaden/Netherlands
  » Smart charging of Tesla’s based on energy market prices

Variable pricing – research project experience

» Linear:
  » 6 fixed time blocks per day with variable prices set per day
  » Variable pricing with automated control works well, but non-controlled (peak) loads represent financial risk
  » Too complex for manual demand response (response fatigue)

» PowerMatching city Hoogkerk
  » Automated control preferred over manual control
  » No response fatigue for manual control, as fixed price patterns render price consultation redundant
**Capacity/activation fee**

- Traditionally used for balancing reserves
- Typically used for industrial demand response based reserves
  - R3-DP and SDR products of Elia in Belgium
  - FCDM and STOR of National Grid in the UK.
- ... Load management program for airco’s in the US (FPL, BGE, ...)
- Research project experience: Linear
  - Capacity fee was well received by users: simple, no financial risk

<table>
<thead>
<tr>
<th>Flexibilit:</th>
<th>Week</th>
<th>2332 uur</th>
<th>€ 0.58</th>
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<td></td>
<td>Maand</td>
<td>13952 uur</td>
<td>1.49</td>
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<tr>
<td></td>
<td>Total</td>
<td>25444.3 uur</td>
<td>65.12</td>
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**Other examples**

- PV injection minimization
  - Feed in tariffs for PV production in Germany and Belgium
- Free thermostat or thermostat rebate in exchange for airco control
  (Austin Energy and CPS Energy in Texas, US)

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**Call for information**

- Important that no revenue model is excluded
- Limited public information

- What are your experiences on business and remuneration models for smart appliances?