Annual new-build constraints in the IRP
Inputs into South Africa’s Integrated Resource Plan 2016

CSIR Energy Centre

Pretoria, 1 December 2016
IRP 2016: Annual new-build limits for solar PV and wind are constant in absolute terms but decrease relative to the size of the power system

Relative new-build limit = New-build limit / system peak load

<table>
<thead>
<tr>
<th>Year</th>
<th>System Peak Load in MW</th>
<th>New-build limit Solar PV in MW/yr</th>
<th>Relative new-build limit Solar PV</th>
<th>New-build limit Wind in MW/yr</th>
<th>Relative new-build limit Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>44 916</td>
<td>1 000</td>
<td>2.2%</td>
<td>1 600</td>
<td>3.6%</td>
</tr>
<tr>
<td>2025</td>
<td>51 015</td>
<td>1 000</td>
<td>2.0%</td>
<td>1 600</td>
<td>3.1%</td>
</tr>
<tr>
<td>2030</td>
<td>57 274</td>
<td>1 000</td>
<td>1.7%</td>
<td>1 600</td>
<td>2.8%</td>
</tr>
<tr>
<td>2035</td>
<td>64 169</td>
<td>1 000</td>
<td>1.6%</td>
<td>1 600</td>
<td>2.5%</td>
</tr>
<tr>
<td>2040</td>
<td>70 777</td>
<td>1 000</td>
<td>1.4%</td>
<td>1 600</td>
<td>2.3%</td>
</tr>
<tr>
<td>2045</td>
<td>78 263</td>
<td>1 000</td>
<td>1.3%</td>
<td>1 600</td>
<td>2.0%</td>
</tr>
<tr>
<td>2050</td>
<td>85 804</td>
<td>1 000</td>
<td>1.2%</td>
<td>1 600</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Sources: IRP 2016 Draft; CSIR analysis
Today: Both leading and follower countries install much more new solar PV capacity per year than what South Africa’s limit is in 2030.

Annual new solar PV capacity relative to system peak load

Sources: SolarPowerEurope; CIGRE; websites of System Operators; IRP 2016 Draft; CSIR analysis
Today: Solar PV penetration in leading countries 2.5 times RSA’s plan for 2050 – follower countries already today almost at RSA’s 2050 level

Sources: SolarPowerEurope; CIGRE; websites of System Operators; IRP 2016 Draft; CSIR analysis
Today: Both leading and follower countries install much more new wind capacity per year than what South Africa’s limit is in 2050

Annual new wind capacity relative to system peak load

RSA new-build limits in 2030 and 2050

South Africa
Germany
Spain
Ireland
China
India
Brazil


RSA’s IRP relative new-build limit decreases over time

Sources: GWEC; CIGRE; websites of System Operators; IRP 2016 Draft; CSIR analysis
Today: Wind penetration in leading countries almost twice RSA’s plan for 2050 – follower countries already today at 60% of RSA’s 2050 level

Sources: GWEC; CIGRE; websites of System Operators; IRP 2016 Draft; CSIR analysis
Thank you