Virginia, the Clean Power Plan, and Combined Heat and Power

Virginia’s 2030 goal requires a 32-percent reduction in the Commonwealth’s carbon emissions rate, with a goal of 934 pounds of carbon dioxide per megawatt-hour, which EPA describes as the middle of the range for states.

Figure 1. Virginia’s Clean Power Plan Targets

Source: E&E News Net, Power Plan Hub [http://www.eenews.net/interactive/clean_power_plan]
Figure 2 models how Virginia can surpass its emissions reduction goal under the CPP using only a simple suite of energy-efficiency policies.

**Figure 2. Energy Efficiency Helps Virginia Achieve CPP Targets**

<table>
<thead>
<tr>
<th>Energy Efficiency Measure</th>
<th>Model Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior programs</td>
<td>Reflect a residential feedback program savings of 2%, assuming 50% participation rate in the state.</td>
</tr>
<tr>
<td>ESCO programs</td>
<td>Energy service company (ESCO) programs reflect energy service contracts with municipal buildings, universities, schools, and hospitals. The size of the programs in each state are based on historic ESCO market growth trends of 8.3% annually.</td>
</tr>
<tr>
<td>Combined heat and power (high)</td>
<td>High combined heat and power scenario corresponds to an additional 500 MW of CHP.</td>
</tr>
<tr>
<td>Building energy codes (high)</td>
<td>Stringent building reflects adoption of the equivalent of 2015 IECC for homes and ASHRAE Standard 90.1- 2014 for commercial buildings by 2017, the 2018 IECC and ASHRAE Standard 90.1-2015 in 2020, and improved codes every three years through 2030.</td>
</tr>
<tr>
<td>Annual 1.5% energy savings target</td>
<td>A state-wide annual energy savings goal of 1.5% through 2030.</td>
</tr>
</tbody>
</table>

Source: ACEEE’s SUPR-2 calculator
According to the Department of Energy’s latest technical potential survey, Virginia has the eleventh highest CHP technical potential in the nation (4,308 MW). This represents more than twice the current capacity (1,729 MW). Figures 3 and 4 indicate the wide range of deployment opportunities in both the industrial and commercial sectors.

Figure 3. Virginia’s CHP Potential

![Bar chart showing current CHP deployment versus technical potential in Virginia]


Figure 4. CHP Technical Potential in Virginia by Sector

![Pie charts showing top industrial and commercial sectors with on-site CHP technical potential]

Combined heat and power can help Virginia meet its emissions reduction goals under either a rate- or mass-based plan (see Figure 5 below for a rate-based example). The blue bar depicts how much Virginia must reduce its emissions to meet its CPP target. The green bars illustrate what percentage of that goal can be meet by deploying relatively modest amounts of CHP, compared to the state’s overall technical potential of 4,308 MW.

Figure 5. CHP & the Clean Power Plan in Virginia under a Rate-Based Plan

Source: ACEEE’s SUPR-2 calculator