111 - EXISTING GAS COVERAGE
Existing Gas: Setting Applicability Based on Plant Capacity

Proposal: define coverage for existing gas standard based on total plant capacity,* rather than unit

Benefits:

- Better identifies those facilities that are good candidates for cost-effective CCS

- Avoids gaps in coverage that would otherwise exist under a unit-based standard

- By covering large plants, the emissions coverage increases significantly with negligible increases in the number of CCS projects

There are significant economies of scale at larger facilities, even if those facilities contain multiple individual units (especially regarding storage and transportation infrastructure)

For example, under the 300 MW unit-based standard, the 1,176 MW, 68% CF (2023) Deer Park Energy Center would not be covered (it contains five 180 MW combustion turbines and one 276 MW steam turbine). This facility is such a good candidate for CCS that it is already planning to install it in absence of the 111 rule.

As compared to EPA’s proposed unit-based standard, a plant-based standard as discussed here could, for example, increase emissions coverage by over 60% while leaving the total number of plants that would face a CCS-based standard unchanged

*For any units burning more than one fuel, count only natural gas-fired and related steam turbines
Coverage of EPA Proposal (Units $\geq 300$ MW, $\geq 50\%$ CF)

**Capacity and Plants Covered** [1], 2035

<table>
<thead>
<tr>
<th>Capacity (GW)</th>
<th>Plants (Count)</th>
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<tr>
<td>Combustion Turbine</td>
<td>Steam Turbine [3]</td>
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**Percent (%) Capacity, Plants, and Emissions Covered** [2], 2035

- Plants: 18%
- Capacity: 31%
- Emissions: 36%

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1. Based on S&P AURORA projections
2. Calculated as percentage of total NGCC fleet
3. While steam turbines are included in the capacity calculation for the purposes of compliance thresholds, they do not produce emissions and would not be included in calculations of capacity for the installation of CCS.
Plant-Level Coverage Ranges, by Capacity and Capacity Factor

1. Using 2035 projected capacity factor data from S&P AURORA
2. Total GW listed here include steam turbine portions of plants that would not need to install CCS. Approximately 40% of the total NGCC fleet by capacity is steam turbines.
3. % of total projected NGCC emissions. A small portion of the fleet does not have estimated 2035 emissions; emissions for these facilities are calculated using 2022 emissions rates and projected 2035 generation
Cost Comparison

- EPA utilized a 727 MW plant (two 235 MW gas turbines units and a 263 MW steam turbine) to estimate costs of CCS for a 300 MW “unit”

- A 600 MW NGCC plant has similar costs to a 727 MW plant

- Utilizing a plant-based standard in the 600 MW range will lead to stronger demonstration of reasonable cost
Key Takeaways

• With EPA’s proposal we see around 100 plants with at least one unit covered by the rule—that’s 100 projects, with associated infrastructure, procurement, permitting, construction.

• Yet with those 100 projects, where for example, only one unit at a plant of 6 units are covered, or single one-off units are covered, there are significant inefficiencies. At the same time, many large plants that would otherwise be good candidates for CCS would not be covered.

• A plant based standard means that the right set of plants are covered by the rule and the right projects and investments are being made: those where a CCS-based standard makes the most economic and logistical sense.

• At larger plants, CCS makes sense: CO2 emissions are higher and therefore there are more 45Q credits to be had; these plants generally have a larger footprint and space to install CCS; and there are economic efficiencies associated with ducting and utilizing the same equipment for multiple units.

• If EPA were to set a plant-based standard that covers 100 plants—the same number of projects projected to be covered under EPA’s proposed standard—this would increase emissions coverage by 60%