

# Affordable Clean Energy (ACE) Rule – Wisconsin State Plan Implementation Checklist of Supplemental Permit Application Information

This document summarizes ACE rule requirements for setting standards of performance for individual electric generating units (EGUs). For the purposes of the ACE rule, an affected EGU is referred to as a “designated facility”. While not exhaustive, this checklist identifies supplemental information that should be included in permit applications to implement the ACE rule requirements.

**Black text** summarizes ACE rule requirements. **Blue text** contains notes and recommendations from Wisconsin Department of Natural Resources (DNR).

## Basic Information

---

### *Designated Facilities*

- Consistent with 40 CFR §60.25a(a), identify the designated facility(ies) that meet the applicability criteria in §60.5775a and §60.5735a(a)(1).

**Recommendation:** List the facility ID and the Emission Unit number using the facility’s most recently issued operation permit.

## Heat Rate Improvement (HRI) Measures – 40 CFR §60.5740a(a)(1) & (2)

---

- Provide an evaluation of the applicability of each of the following HRI measures to each designated facility:
  - Neural network/intelligent sootblowers
  - Boiler feed pumps
  - Air heater and duct leakage control
  - Variable frequency drives
  - Blade path upgrades for steam turbines
  - Redesign or replacement of economizer
  - Improved operating and maintenance practices

**Note:** EPA’s ACE rule preamble (section III.E.2.d “Detail on the HRI Technologies & Techniques”, 84 Fed. Reg. pp. 32538-32541) and referenced technical support documents contain additional details on each measure listed above.

- Regarding the applicability of each HRI measure to each designated facility, provide an evaluation of the following degree of emission limitation achievable through application of the HRI measures (table is from 40 CFR §60.5740a(a)(2)(i) and available at 84 Fed. Reg. p. 32580):

TABLE 1 TO PARAGRAPH (A)(2)(i)—MOST IMPACTFUL HRI MEASURES AND RANGE OF THEIR HRI POTENTIAL (%) BY EGU SIZE

HRI Measure	< 200 MW		200–500 MW		>500 MW	
	Min	Max	Min	Max	Min	Max
Neural Network/Intelligent Sootblowers ...	0.5	1.4	0.3	1.0	0.3	0.9
Boiler Feed Pumps .....	0.2	0.5	0.2	0.5	0.2	0.5
Air Heater & Duct Leakage Control .....	0.1	0.4	0.1	0.4	0.1	0.4
Variable Frequency Drives .....	0.2	0.9	0.2	1.0	0.2	1.0
Blade Path Upgrade (Steam Turbine) .....	0.9	2.7	1.0	2.9	1.0	2.9
Redesign/Replace Economizer .....	0.5	0.9	0.5	1.0	0.5	1.0
Improved Operating and Maintenance (O&M) Practices .....	Can range from 0 to > 2.0% depending on the unit's historical O&M practices.					

**Note:** The following operational and design information may be useful to identify prior to performing the evaluations required under 40 CFR §60.5740a(a)(2) and §60.5755a(a)(2):

- 1) Representative heat rate and carbon dioxide (CO<sub>2</sub>) emission rate for each designated facility, on a gross or net basis.
    - Utilize average annual emissions from any consecutive 24-month period in the last 5 years, or other representative period, as appropriate.
      - Information for different ranges of unit load operation, if utility plans to recommend separate standards based on different operating loads.
      - Future projected operational data, if relied upon to establish standards of performance.
    - Identify heat rate in British thermal units per kilowatt-hour (Btu/kWh) and CO<sub>2</sub> emission rate in pound per megawatt-hour (lb/MWh).
    - Base information on emissions, fuel consumption, and generation data as reported to the EPA and U.S. Department of Energy.
  - 2) Design information for each designated facility
    - Design firing rate capacity in million Btu per hour (mmBtu/hr)
    - Nameplate, summer and winter generation capacity (MW)
- In recommending a standard of performance, if considering remaining useful life and other factors for a designated facility as provided in 40 CFR §60.24a(e), provide an explanation of the application of the relevant factors in deriving a standard of performance.

**Notes:**

- 1) This explanation may be combined with evaluation(s) described in the “Recommended Final Standards” section below.
- 2) See ACE rule preamble section III.F.1.b. “Consideration of Remaining Useful Life and Other Factors” (84 Fed. Reg. pp. 32553-32555) for additional information regarding consideration of these factors. In addition, the preamble at section III.E.2.b. (84 Fed. Reg. p. 32537) mentions the potential to trigger New Source Review requirements and that this factor can be considered.
- 3) EPA in the ACE rule preamble at section III.F.1.b recognizes that some of the seven HRI measures may have already been implemented at the designated facility(ies) and expects that to be an important factor to be considered.
- 4) The following information for each HRI measure may be relevant to include in the evaluations:

- For each piece of equipment identified in the measures:
  - Installation date
  - Estimated current performance compared to manufacturer’s specifications
  - Date of last major overhaul
  - Date of next planned overhaul or anticipated replacement and expected costs
- For the assessment of feasibility and costs for each HRI measure, the following factors under 40 CFR §60.24a(e), if relevant:
  - Capital costs (total and annualized)
  - Increased annual O&M costs, both fixed and variable
  - Basis of cost estimates (vendor estimates, work performed on comparable unit, estimates from the ACE rule preamble, etc.)
  - Estimated HRI potential, in percent and Btu/KWh
  - Cost effectiveness, in \$ per ton of CO<sub>2</sub> reduced
  - Recommendation of whether the measure is feasible, with a detailed justification

**Facility Anticipated Future Operation Characteristics – 40 CFR §60.5740a(4)(i) – (iv)**

**Note:** DNR is not specifically requesting this information from utilities at this time. EPA received a request for reconsideration regarding this requirement, and DNR is awaiting a response to that reconsideration.

**Recommended Standards of Performance – 40 CFR §60.5755a**

- Provide a recommendation of an emission performance rate relating mass of CO<sub>2</sub> emitted per unit of energy, for each designated facility.

**Recommendations:**

- 1) Use an emission performance rate in terms of lb/MWh, on a gross or net basis.
- 2) Use not longer than a consecutive 12-month averaging period.

- In establishing an emission performance rate, consider the applicability of each of the HRI measures and associated degree of emission limitation achievable included in 40 CFR §60.5740a(a)(1) and (2) to the designated facility. Include a demonstration for how each HRI measure and associated degree of emission limitation achievable was considered in calculating each emission rate.
  - If source-specific factors included in §60.24a(e) are considered to apply a standard of performance to any designated facility, include a demonstration for how such factors were considered.

**Recommendations:**

- 1) Provide the expected heat rate in Btu/kWh, on a gross or net basis, after implementation of each HRI measure identified as feasible.
- 2) “Unreasonable cost” may be an important factor to consider in permit applications. DNR expects “\$/ton of CO<sub>2</sub> reduced” to be a useful metric for this factor.

**Monitoring, Recordkeeping and Reporting – 40 CFR §60.5755a(b) – (f), §60.5785a and §60.5790a**

40 CFR §60.5755a(b)-(f), §60.5785a and §60.5790a contain monitoring, recordkeeping and reporting requirements that apply to the ACE rule standards of performance for each designated facility.

**Note:** Sections NR 407.09(1)(c) and (4), Wis. Adm. Code, include compliance requirements applicable to Part 70 sources. Consideration should be given to these compliance demonstration requirements throughout the permit application process for each designated facility.