

SUBJECT: RACT II Equals RACT III Review Memo
JELD-WEN, Inc.
Wysox Township, Bradford County
TVOP 08-00003
PFID 274625

TO: Muhammad Q. Zaman *MQZ*
Environmental Program Manager
Air Quality Program

THROUGH: Daniel C. Husted, PE *DCH*
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FROM: Joseph L. Pikel *JLP*
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Procedural History

As part of the Reasonably Available Control Technology (RACT) regulations codified at 25 Pa. Code §§ 129.111—129.115 (relating to additional RACT requirements for major sources of NO_x and VOCs for the 2015 ozone NAAQS) (RACT III), the Pennsylvania Department of Environmental Protection (Department) has established a method under § 129.114(i) (relating to alternative RACT proposal and petition for alternative compliance schedule) for an applicant to demonstrate that the alternative RACT compliance requirements incorporated under § 129.99 (relating to alternative RACT proposal and petition for alternative compliance schedule) (RACT II) for a source that commenced operation on or before October 24, 2016, and which remain in force in the applicable operating permit continue to be RACT under RACT III as long as no modifications or changes were made to the source after October 24, 2016. The date of October 24, 2016, is the date specified in § 129.99(i)(1) by which written RACT proposals to address the 1997 and 2008 8-hour ozone National Ambient Air Quality Standards (NAAQS) were due to the Department or the appropriate approved local air pollution control agency from the owner or operator of an air contamination source located at a major NO_x emitting facility or a major VOC emitting facility subject to § 129.96(a) or (b) (relating to applicability).

The procedures to demonstrate that RACT II is RACT III are specified in § 129.114(i)(1)(i), 129.114(i)(1)(ii) and 129.114(i)(2), that is, subsection (i), paragraphs (1) and (2). An applicant may submit an analysis, certified by the responsible official, that the RACT II permit requirements remain RACT for RACT III by following the procedures established under subsection (i), paragraphs (1) and (2).

Paragraph (1) establishes cost effectiveness thresholds of \$7,500 per ton of NO_x emissions reduced and \$12,000 per ton of VOC emissions reduced as “screening level values” to determine the amount of analysis and due diligence that the applicant shall perform if there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis. Paragraph (1) has two subparagraphs.

Subparagraph (i) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.
- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.

Subparagraph (ii) under paragraph (1) specifies that the applicant that evaluates and determines that there is no new pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis and that each technically feasible air cleaning device, air pollution control technology or technique evaluated for the alternative RACT requirement or RACT emission limitation approved by the Department (or appropriate approved local air pollution control agency) under § 129.99(e) had a cost effectiveness less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced shall include the following information in the analysis:

- A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.
- A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously evaluated under RACT II.
- A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique in the previous bullet

and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under RACT II.

- A statement that an evaluation of each economic feasibility analysis summarized in the previous bullet demonstrates that the cost effectiveness remains less than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.
- A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique.

Paragraph (2) establishes the procedures that the applicant that evaluates and determines that there is a new or upgraded pollutant specific air cleaning device, air pollution control technology or technique available at the time of submittal of the analysis shall follow.

- Perform a technical feasibility analysis and an economic feasibility analysis in accordance with § 129.92(b) (relating to RACT proposal requirements).
- Submit that analysis to the Department (or appropriate approved local air pollution control agency) for review and approval.

The applicant shall also provide additional information requested by the Department (or appropriate approved local air pollution control agency) that may be necessary for the evaluation of the analysis submitted under § 129.114(i).

Facility Details

JELD-WEN owns and operates a facility that manufactures molded hardboard panels for interior doors. Exterior trim products are also produced in widths ranging from 2 to 16 inches by 16 feet long and in nominal 4 feet by 8 feet panels. The facility operates under Title V Operating Permit (TVOP) 08-00003.

The facility is major for both NO_x and VOCs. None of the sources are subject to a RACT II as RACT III for NO_x emissions. The facility's RACT III Notification was received on December 22, 2022, in which a RACT II as RACT III evaluation and proposal was also included. The facility received a full compliance evaluation on March 1, 2023, with no violations noted.

The sources subject to a RACT II as RACT III analysis at this facility are 141P, 142P, 161P, 162P, 171P, 172P, 184P, 191P, 193P, 200P, 201P and 600P for VOC emissions only. No modification or changes were made to any affected sources after October 24, 2016. Of the three applicable regulatory sections of RACT III, namely, §129.114(i)(1)(i), §129.114(i)(1)(ii), and §129.114(i)(2), only §129.114(i)(1)(i)(a) was utilized.

The JELD-WEN, Inc. RACT II revised permit was approved by the US EPA and said approval was incorporated into the PA SIP and published accordingly on January 24, 2022. Please see the *Federal Register* 87 FR3443 for publication of the approval and incorporation into the PA SIP.

Sources subject to § 129.114(i) - RACT II determination assures compliance with RACT III requirements

Source ID	Source Name	RACT III provision
141P	Line 1 Refiners and 1st Stage Dryer	§129.114(i)(1)(i)
142P	Line II First Stage Dryers & Press Cavity Steam Condenser	§129.114(i)(1)(i)
161P	Line I Second Stage Dryers	§129.114(i)(1)(i)
162P	Line II Second Stage Dryers	§129.114(i)(1)(i)
171P	Line 1 Press	§129.114(i)(1)(i)
172P	Line 2 Press	§129.114(i)(1)(i)
184P	Die Form Press	§129.114(i)(1)(i)
191P	Line I Tempering	§129.114(i)(1)(i)
193P	Die Form Tempering	§129.114(i)(1)(i)
200P	Wood Yard	§129.114(i)(1)(i)
201P	Wood Waste Storage Pile	§129.114(i)(1)(i)
600P	Process Water Treatment Plant	§129.114(i)(1)(i)

The RACT II determination/requirements can be found in the attached RACT II review memo and at the following link:

[EPA Approved Pennsylvania Source-Specific Requirements | US EPA](#)

RACT III analysis performed by the Department under § 129.114(j)(1)

JELD-WEN has proposed that RACT II satisfies the requirements of RACT III since there have been no changes or modifications to the facility or the remaining affected sources.

JELD-WEN has reviewed entries into the RACT/Best Available Control Technology (BACT)/Lowest Achievable Emissions Rate (LAER) Clearinghouse (RBLC) to determine if any new technologies are available that can be applied to the sources identified in Table 1. This review of RBLC entries focused on the following source types:

- 20.200 – Industrial Wastewater Treatment (Source ID 600P)
- 30.310 – Plywood Dryers (Source IDs 141P, 142P, 161P, and 162P)
- 30.320 – Plywood Presses (Source IDs 171P, 172P, and 184P)
- 30.510 – Board Manufacturing Material Handling (Source IDs 191P, 193P, 200P, and 201P)
- 30.520 – Board Presses (Source IDs 171P, 172P, and 184P)

- 30.530 – Board Manufacturing Dryers (Source IDs 141P, 142P, 161P, and 162P)

Based on process knowledge and conversations with industry engineers and equipment vendors, JELD-WEN concluded that no fundamentally different air pollution control devices or technologies are being achieved in practice for the operations listed above since the previous alternative analyses completed under RACT II, 25 Pa. Code §129.99(d). After looking into the RBLC clearinghouse and conducting a search of other reference materials, the Department concurs with JELD-WEN that no new control technologies exist for these source types.

The technically feasible air pollution control technologies, previously identified under 25 Pa. Code §§129.92(b)(1)-(3), that were included in JELD-WEN's 25 Pa. Code §129.99(d) alternative RACT analysis are the following:

Source IDs 141P, 142P, 193P:

- An additional regenerative thermal oxidizer (RTO)
- Regenerative catalytic oxidizer (RCO)

An RTO is currently being used to abate VOC emissions from Source IDs 141P, 142P, and 193P.

Source IDs 161P, 162P, 171P, 172P, 184P, and 191P:

- RTO
- RCO
- Biofilters

Ducon Centrifugal Scrubbers are currently in use on Source IDs 161P and 162P. Koch Tray Towers and Venturi Scrubbers are currently in use on Source IDs 171P and 172P, while only Venturi Scrubbers are used on Source IDs 184P. Source ID 191P currently uses both Venturi Scrubbers and an RTO to control VOC emissions, therefore, Source ID 191P was evaluated for an additional RTO.

Source ID 200 listed an enclosed RTO, RCO, process incineration, and silo as technically feasible control technologies. The silo is an enclosure that would capture all the wood chips and VOCs emitted from the process. The alternative analysis for Source ID 201P listed a flare and to remove the fiber pile as technically feasible control technologies; JELD-WEN agreed to remove the fiber pile by August 31, 2025. The alternative analysis for Source ID 600 listed an enclosed RTO, RCO, biofilters, and an enclosure around the primary clarifiers as technically feasible control technologies.

The table below summarizes the result of the RACT methods evaluated.

Source ID	Source Name	Control Technology	VOC Emissions before Control (TPY)	VOC Emissions after Control (TPY)	Total Annual Cost of Control Eqpt	VOC (\$/Ton) Removal Cost
141P	Line 1 Refiners and 1st Stage Dryer	Add'l RTO				\$81,356
		RCO				\$166,366
142P	Line II First Stage Dryers & Press Cavity Steam Condenser	Add'l RTO				\$147,655
		RCO				\$293,191
161P	Line I Second Stage Dryers	RTO				\$39,691
		RCO				\$35,099
		Biofilter				\$30,279
162P	Line II Second Stage Dryers	RTO				\$37,331
		RCO				\$32,651
		Biofilter				\$23,428
171P	Line 1 Press	RTO				\$22,045
		RCO				\$43,606
		Biofilter				\$21,918
172P	Line 2 Press	RTO				\$46,227
		RCO				\$91,711
		Biofilter				\$44,721
184P	Die Form Press	RTO				\$21,330

		RCO				\$39,324
		Biofilter				\$44,851
191P	Line I Tempering	RTO				\$59,874
		RCO				\$53,304
		Biofilter				\$52,049
193P	Die Form Tempering	RTO				\$221,185
		RCO				\$196,819
200P	Wood Yard	Enclosure RTO				\$118,789
		Enclosure RTO				\$124,670
		Enclosure & Process Incineration				\$124,670
		Silo Enclosure				\$112,285
201P	Wood Waste Storage Pile	Flare & Remove Fiber Pile				\$169,485
600P	Process Water Treatment Plant	Enclosure RTO				\$12,959
		Enclosure RTO				\$13,907
		Enclosure Biofilter				\$13,907
		Enclosure at Primary Clarifier				\$12,432

RACT II as RACT III

JELD-WEN, Inc. has proposed that RACT II satisfies the requirements of RACT III since there have been no changes or modifications to the facility or affected sources. JELD-WEN satisfied the proposal by conducting an analysis of VOC emissions from Sources 141P, 142P, 161P, 162P, 171P, 172P, 184P, 191P, 193P, 200P, 201P and 600P. Each source was evaluated for technical feasibility of new or additional controls. JELD-WEN provided an updated RACT technical feasibility analysis of pollution control devices for the sources noted above and concluded that there are no new technically feasible control technologies at this time. For technically feasible

controls evaluated under RACT2 JELD-WEN included updated costs to demonstrate the economic infeasibility of existing, new or additional controls.

The Department concurs with JELD_WEN that the cost effectiveness of the technically feasible control strategies provided under 25 Pa. Code §129.99(d), remain equal to or greater than \$12,000 per ton of VOC emissions. When considering the increases to the cost of fuel and inflation as indicated by the Consumer Price Index (CPI), the overall control costs expressed in 2022 dollars are only expected to have increased, and the control technologies for which cost effectiveness was evaluated in JELD-WEN's 25 Pa. Code §129.99(d) RACT II submittal remain economically infeasible.

The Department has reviewed source information, control technologies or measures evaluated by JELD-WEN. The Department also performed an independent analysis which included, the Department's continuous review of permit applications since the applicability date of RACT II, internet searches, BACT/RACT/LAER Clearinghouse search, knowledge gained from the Department permitting staff participating in technical presentations by several vendors and manufacturers of pollution control technology, and a review of EPA and MARAMA's documents. Based on our review of these documents, along with training and the expertise of the reviewing staff, the Department concludes that there are no new or updated air pollution control technologies available for the sources found at JELD-WEN and determines that RACT II requirements for sources 141P, 142P, 161P, 162P, 171P, 172P, 184P, 191P, 193P, 200P, 201P and 600P at JELD-WEN listed in the table assure compliance with requirement for RACT III for the § 129.111 - § 129.115.

Public Discussion

No discussions occurred with the EPA, the company, or the public beyond the initial application, which materially impacted a decision to include one or more sources under the RACT II is RACT III umbrella.

Conclusion

The Department has analyzed the applicant's proposal for considering RACT II requirements as RACT III and also performed independent analysis. Based on the information provided by the applicant and independently verified by the Department, the Department determines that the RACT II requirements satisfy the RACT III requirements. The RACT III requirements are identical to the RACT II requirements and are as stringent as RACT II.

File: JELD-WEN, Permits, TVOP, 08-00003
Cc: Central Office, Air Quality Permits
US EPA Region III