Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF ENERGY

10 CFR Part 430

[EERE 2017–BT–STD–0019]

RIN 1904–AF65

Energy Conservation Program: Energy Conservation Standards for Consumer Water Heaters

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notification of data availability and request for comment.

SUMMARY: On July 28, 2023, the U.S. Department of Energy (''DOE'') published a notice of proposed rulemaking (''NOPR''), in which DOE proposed amended energy conservation standards for consumer water heaters (''July 2023 NOPR''). In this notification of data availability (''NODA''), DOE is updating portions of its analysis for gas instantaneous water heaters. DOE requests comments, data, and information regarding the updated analysis.

DATES: DOE will accept comments, data, and information regarding this NODA no later than August 22, 2024.

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *www.regulations.gov* under docket number EERE–2017–BT–STD–0019. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE–2017–BT–STD–0019, by any of the following methods:

(1) *Email: ConsumerWaterHeaters 2017STD0019@ee.doe.gov.* Include the docket number EERE–2017–BT–STD–0019 in the subject line of the message.

(2) *Postal Mail:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE–5B, 1000 Independence Avenue SW, Washington, DC 20585–0121. If possible, please submit all items on a compact disc (CD), in which case it is not necessary to include printed copies.

No telefacsimiles (''faxes'') will be accepted. For detailed instructions on submitting comments and additional information on this process, see section IV of this document.

Docket: The docket for this activity, which includes **Federal Register** notices, comments, and other supporting documents/materials, is available for review at *www.regulations.gov.* All documents in the docket are listed in the *www.regulations.gov* index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

The docket web page can be found at *www.regulations.gov/docket/EERE-2017-BT-STD-0019.* The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section IV of this document for information on how to submit comments through *www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT:

Ms. Julia Hegarty, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–5B, 1000 Independence Avenue SW, Washington, DC, 20585–0121. Email: *ApplianceStandardsQuestions@ee.doe.gov.*

Mr. Uchechukwu ''Emeka'' Eze, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC, 20585–0121. Telephone: (202) 586–4798. Email: *uchechukwu.eze@hq.doe.gov.*

For further information on how to submit a comment or review other public comments and the docket, contact the Appliance and Equipment Standards Program staff at (202) 287–1445 or by email: *ApplianceStandardsQuestions@ee.doe.gov.*

SUPPLEMENTARY INFORMATION:

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I. Introduction

EPCA authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. Title III, Part B of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles. These products include consumer water heaters, the subject of this document. (42 U.S.C. 6292(a)(4))

Generally, DOE defines a ''water heater,'' consistent with EPCA's definition at 42 U.S.C. 6291(27) and codified at 10 CFR 430.2, as a product which utilizes oil, gas, or electricity to heat potable water for use outside the heater upon demand. ''Gas-fired instantaneous water heater,'' defined at 10 CFR 430.2, means a water heater that uses gas as the main energy source, has a nameplate input rating less than 200,000 Btu per hour, and contains no more than one gallon of water per 4,000 Btu per hour of input.

On July 28, 2023, DOE published in the **Federal Register** a notice of proposed rulemaking (''July 2023 NOPR'') and technical support document (''NOPR TSD'') with a 60-day comment period that proposed new and amended standards for consumer water heaters. 88 FR 49058 (Jul. 28, 2023). On September 13, 2023, DOE presented the

proposed standards and accompanying analysis at a public meeting.

On May 6, 2024, DOE published in the **Federal Register** a final rule that amended the energy conservation standards for certain consumer water heaters. 89 FR 37778 (May 6, 2024). In that final rule, DOE finalized standards for all consumer water heaters with the exception of gas-fired instantaneous water heaters (''GIWHs'') as defined in 10 CFR 430.2. For gas-fired instantaneous water heaters, DOE indicated that it was not finalizing standards in the May 2024 final rule, as it continued to consider comments submitted in response to earlier rulemaking stages before finalizing a decision on amended standards. *Id.* at 89 FR 37794.

In this document, DOE is providing a full set of analytical results specific to gas-fired instantaneous water heaters that include updates as compared to the analysis conducted for the July 2023 NOPR. DOE is not summarizing or responding to any gas-fired instantaneous water heater-specific comments in this document; DOE is continuing to consider all of the gas-fired instantaneous water heater-specific stakeholder comments received in response to the July 2023 NOPR and September 2023 Public Webinar and will address these comments in a future action. Based on consideration of all of the public comments received, including any additional comments received in response to this NODA, DOE may adopt energy efficiency levels (''ELs'') that are either higher or lower than the proposed standards.

II. Discussion

In the following sections, DOE details its updated analysis for gas-fired instantaneous water heaters and is showing the analysis and results relevant to these products. A full description of the methodology used to conduct the analysis is available in the July 2023 NOPR TSD.[1] DOE is using the same methods as the NOPR. DOE seeks comment on any issues raised by this NODA, including those specifically identified below. Updates to the analysis for this NODA are then discussed in the subsections below.

A. Engineering Analysis

The purpose of the engineering analysis is to establish the relationship between the efficiency and cost of gas-fired instantaneous water heaters. There are two elements to consider in the engineering analysis; the selection of efficiency levels to analyze (*i.e.,* the ''efficiency analysis'') and the determination of product cost at each efficiency level (*i.e.,* the ''cost analysis''). DOE estimates the baseline cost, as well as the incremental cost for the product at efficiency levels above the baseline. The output of the engineering analysis is a set of cost-efficiency ''curves'' that are used in downstream analyses (*i.e.,* the life-cycle cost and payback period (''LCC'' and ''PBP'') analyses, the manufacturer impact analysis (''MIA''), and the national impact analysis (''NIA'')).

In this NODA, DOE has analyzed the same efficiency levels for gas-fired instantaneous water heaters as were considered in the July 2023 NOPR, which are shown in table II.1, expressed in terms of uniform energy factor (UEF). 88 FR 49058, 49093. These levels span the range from the ''baseline'' levels, which reflect the current energy conservation standard levels, to the maximum technologically feasible (''max-tech'') levels. As discussed in the July 2023 NOPR, a coalition of seven public- and private-sector organizations collectively referred to as the ''Joint Stakeholders'' submitted recommendations for the amended standard levels for various classes of consumer water heaters, including gas-fired instantaneous water heaters. 89 FR 37778, 37790. Efficiency level 2 corresponds to the levels recommended by the Joint Stakeholders in the Joint Stakeholder Recommendation (''JSR'').

TABLE II.1—GAS-FIRED INSTANTANEOUS: V_{eff} <2 GAL, RATED INPUT >50,000 Btu/h

Efficiency level	UEF			
	Very small *	Low *	Medium	High
0 (Baseline—Current Federal Energy Conservation Standard)	0.80	0.81	0.81	0.81
1	†0.86	†0.87	0.87	0.89
2 (JSR)	†0.89	†0.91	0.91	0.93
3	†0.90	†0.92	0.92	0.95
4 (Max-Tech)	†0.91	†0.93	0.93	0.96

* Only one brand has commercially-available products in the very small draw pattern and low draw pattern at the time of this analysis.
† DOE applied the differences in efficiency levels from the medium draw pattern to define the Efficiency Levels 1 through 4 for the very small draw pattern and the low draw pattern.

In this NODA, DOE maintains the design options as they were discussed in the July 2023 NOPR (*see* 88 FR 49058, 49095), with the exception described below regarding the need for fully modulating burners to achieve EL 3 and EL 4. In the July 2023 NOPR, DOE tentatively described both EL 3 and EL 4 as efficiency levels that would typically require fully modulating burners to achieve. In that analysis, DOE had analyzed an additional efficiency level that was not considered at previous rulemaking stages, EL 3, which was close to the max-tech level, EL 4, and used generally similar design options. 88 FR 49058, 49092–49094 (July 28, 2023). However, based on further review of the designs of gas-fired instantaneous water heating products currently on the market, DOE has found that products that meet EL 3 but not EL 4 use step modulation rather than fully modulating burners.[2] Additionally, based on a review of product literature, in the current market, most manufacturers use fully modulating burners in designs that achieve EL 4. However, a review of publicly available product information suggests that although some manufacturers may employ fully modulating burners at the max-tech efficiency today, EL 4 would still be technologically feasible to achieve with heat exchanger improvements alone, without needing to implement a fully modulating burner. This result is consistent with the conclusion in the NOPR. Because the

[1] Available at: *www.regulations.gov/document/EERE-2017-BT-STD-0019-0058* (Last accessed July 3, 2024).

[2] The EL 3 GIWHs use step modulation. An upgrade to step modulation is not necessary to achieve EL 3. Rather, the design upgrade to achieve EL 3 is a larger condensing heat exchanger.

pathway relying on heat exchanger improvements could be more cost-effective for manufacturers to mass-produce designs at a scale necessary to meet national demand, DOE expects that such designs may be more common if standards were to be set at EL 4 than in the current market. Therefore, DOE analyzes EL 4 to be achievable using either step modulating or fully modulating burners and the manufacturer production cost (''MPC'') estimated in this NODA reflects an average of these design pathways. Table II.2 shows the design options at each efficiency level considered for this NODA.

TABLE II.2—DESIGN OPTIONS FOR GAS-FIRED INSTANTANEOUS: V_{eff} <2 GAL, RATED INPUT >50,000 Btu/h

EL	Design options
0	Step modulating burner; Non-condensing tube-and-fin heat exchanger.
1	Step modulating burner; Condensing tube heat exchanger.
2	Step modulating burner; Larger condensing heat exchanger.
3	Step modulating burner; Larger, flat plate condensing heat exchanger.
4	Step modulating or fully modulating burner; Larger condensing heat exchanger.

The results of the engineering analysis are reported as cost-efficiency data in the form of MPCs and shipping costs calculated for each efficiency level. DOE determined these MPCs using the same methodology as the July 2023 NOPR, by developing bills of materials (''BOMs'') based on a combination of physical and catalog teardowns and using information in the BOMs along with component and material price data to estimate MPCs. DOE updated the inputs to the BOMs (*e.g.,* material prices, component prices) to estimate the MPCs for this NODA using the most recent data available. For shipping costs, DOE similarly maintained the methodology from the July 2023 NOPR (*see* 88 FR 49058, 49095–49096) but updated the cost per trailer using the most recent data available. Because many gas-fired instantaneous water heaters sold in the United States are manufactured overseas, these shipping costs include the cost of shipping products from overseas to the United States, and then from the coast to the middle of the country. Table II.3 summarizes the results of the engineering analysis conducted for this NODA and DOE specifically seeks comment on the engineering analysis results presented in the NODA for gas instantaneous water heaters.

TABLE II.3—ENGINEERING ANALYSIS RESULTS FOR GAS-FIRED INSTANTANEOUS: V_{eff} <2 GAL, RATED INPUT >50,000 Btu/h

EL	UEF				MPC (2022$)	MSP (2022$)	Shipping (2022$)
	Very small	Low	Medium 120,000 Btu/h	High 199,000 Btu/h			
0	N/A	N/A	0.81	0.81	Med: 302.00 High: 318.90	Med: 437.90 High: 462.41	Med: 4.40. High: 7.42.
1	N/A	N/A	0.87	0.89	Med: 429.63 High: 448.39	Med: 622.96 High: 650.16	Med: 6.87. High: 9.23.
2	N/A	N/A	0.91	0.93	Med: 433.41 High: 453.23	Med: 628.45 High: 657.19	Med: 9.90. High: 11.13.
3	N/A	N/A	0.92	0.95	Med: 439.02 High: 460.25	Med: 636.58 High: 667.36	Med: 9.90. High: 11.13.
4	N/A	N/A	0.93	0.96	Med: 457.04 High: 479.29	Med: 662.70 High: 694.97	Med: 9.90. High: 11.13.

To account for manufacturers' non-production costs and profit margin, DOE applies a multiplier (the manufacturer markup) to the MPC as was done for the NOPR. The resulting manufacturer selling price (''MSP'') is the price at which the manufacturer distributes a unit into commerce. For this NODA, DOE maintained the methodology and resulting manufacturer markups from the July 2023 NOPR. 88 FR 49058, 49100.

For further discussion of the engineering analysis, see chapter 5 of the NOPR TSD.

B. Markups Analysis

The markups analysis develops appropriate markups (*e.g.,* retailer markups, distributor markups, contractor markups) in the distribution chain and sales taxes to convert the MSP estimates derived in the engineering analysis to consumer prices, which are then used in the LCC and PBP analysis. At each step in the distribution channel, companies mark up the price of the product to cover business costs and profit margin. DOE used the same distribution channels and markup values as in the July 2023 NOPR.

In addition to the markups, DOE obtained State and local taxes from data provided by the Sales Tax Clearinghouse.[3] These data represent weighted average taxes that include county and city rates. DOE derived shipment-weighted average tax values for each State considered in the analysis. These sales tax values have been updated from those in the July 2023 NOPR, based on the most recent available data at the time of conducting the analysis but the methods remain the same as the NOPR. Consistent with NOPR, taxes are not included the national assessment of benefits and costs, only with respect to LCC and PBP.

For further discussion of the markups analysis, see chapter 6 of the NOPR TSD.

C. Energy Use Analysis

The purpose of the energy use analysis is to determine the annual energy consumption of gas-fired instantaneous water heaters at different efficiencies in representative U.S. single-family homes, mobile homes, multi-family residences, and commercial buildings, and to assess the energy savings potential of increased gas-fired instantaneous water heater efficiency. The energy use analysis estimates the range of energy use of gas-fired instantaneous water heaters in the field (*i.e.,* as they are actually used by

[3] Sales Tax Clearinghouse Inc., *State Sales Tax Rates Along with Combined Average City and County Rates* (November 10, 2023). Available at *www.thestc.com/STrates.stm* (last accessed December 1, 2023).

consumers). The energy use analysis provides the basis for other analyses DOE performed, particularly assessments of the energy savings and the savings in consumer operating costs that could result from adoption of amended or new standards.

DOE estimated the annual energy consumption of gas-fired instantaneous water heaters at specific energy efficiency levels across a range of climate zones, building characteristics, and water heating applications.

To determine the field energy use of gas-fired instantaneous water heaters used in homes, in the July 2023 NOPR, DOE established a sample of households using gas-fired instantaneous water heaters from EIA's 2015 Residential Energy Consumption Survey (''RECS 2015''), which was the most recent such survey that was then fully available.[4] The RECS data provide information on the vintage of the home, as well as water heating energy use in each household. These data reflect how water heaters are actually used by consumers. DOE used the household samples not only to determine water heater annual energy consumption, but also as the basis for conducting the LCC and PBP analyses. DOE projected household weights and household characteristics in 2030, the first full year of compliance with any amended or new energy conservation standards for gas-fired instantaneous water heaters. To characterize future new homes, DOE used a subset of homes in RECS that were built after 2000.

For this NODA, DOE incorporated RECS 2020 as the basis of the building sample development and updated the analyses accordingly.[5] Incorporating RECS 2020 improves the representativeness of the residential building sample as RECS 2020 brings a threefold increase in sample size compared to RECS 2015.[6] A larger sample size generally results in smaller standard errors, especially for estimates of smaller subpopulations. In this NODA, DOE maintains the same methodology in residential sample development as the July 2023 NOPR, using the updated RECS.

To determine the field energy use of gas-fired instantaneous water heaters used in commercial buildings, DOE established a sample of buildings using gas-fired instantaneous water heaters from EIA's 2018 Commercial Building Energy Consumption Survey (''CBECS 2018''), which remains the most recent such survey that is currently fully available.[7] DOE has maintained its sample development methodology used in July 2023 NOPR for gas-fired instantaneous water heaters used in commercial applications.

For further discussion of the energy use analysis, see chapter 7 of the NOPR TSD.

D. Life-Cycle Cost and Payback Period Analysis

DOE conducted LCC and PBP analyses to evaluate the economic impacts on individual consumers of potential energy conservation standards for gas-fired instantaneous water heaters. The effect of new or amended energy conservation standards on individual consumers usually involves a reduction in operating cost and an increase in purchase cost. DOE used the following two metrics to measure consumer impacts:

- The LCC is the total consumer expense of an appliance or product over the life of that product, consisting of total installed cost (manufacturer selling price, distribution chain markups, sales tax, and installation costs) plus operating costs (expenses for energy use, maintenance, and repair). Future operating costs are based on the energy use analysis and projected energy prices. To compute the operating costs, DOE discounts future operating costs to the time of purchase and sums them over the lifetime of the product.
- The PBP is the estimated amount of time (in years) it takes consumers to recover these increased purchase cost (including installation) of a more-efficient product through lower operating costs. DOE calculates the PBP by dividing the change in purchase cost at higher efficiency levels by the change in annual operating cost for the year that amended or new standards are assumed to take effect.

For any given efficiency level, DOE measures the change in LCC relative to the LCC in the no-new-standards case, which reflects the estimated efficiency distribution of gas-fired instantaneous water heaters in the absence of a standard at the analyzed EL. In contrast, the PBP for a given efficiency level is measured relative to the baseline product.

For each considered efficiency level, DOE calculated the LCC and PBP for a nationally representative set of housing units and commercial buildings. As stated previously, DOE developed household samples from the RECS 2020 and CBECS 2018 for this NODA. Equipment cost changes are updates to the engineering. Operating cost changes are the result of sample and energy price updates. The LCC results shown below in section III show both separately. For each sample household and commercial building, DOE determined the energy consumption for the gas-fired instantaneous water heaters and the appropriate energy price. By developing a representative sample of households and commercial buildings, the analysis captured the variability in energy consumption and energy prices associated with the use of gas-fired instantaneous water heaters.

Inputs to the calculation of total installed cost include the cost of the product—which includes MPCs, manufacturer markups, retailer and distributor markups, shipping costs, and sales taxes—and installation costs. Inputs to the calculation of operating expenses include annual energy consumption, energy prices and price projections, repair and maintenance costs, product lifetimes, and discount rates. DOE created distributions of values for product lifetime, discount rates, and sales taxes, with probabilities attached to each value, to account for their uncertainty and variability. This methodology is the same as presented in the NOPR and described in more detail in the NOPR TSD.

The computer model DOE uses to calculate the LCC relies on a Monte Carlo simulation to incorporate uncertainty and variability into the analysis. The Monte Carlo simulations randomly sample input values from the probability distributions and gas-fired instantaneous water heater user samples. For this rulemaking, the Monte Carlo approach is implemented in MS Excel together with the Crystal Ball™ add-on.[8] The model calculated the LCC for products at each efficiency level for 10,000 water heater installations in housing and commercial building units per simulation run. The analytical

[4] Energy Information Administration (''EIA''), 2015 Residential Energy Consumption Survey (''RECS''). Available at *www.eia.gov/consumption/residential/* (last accessed December 1, 2023).

[5] Energy Information Administration (''EIA''), 2020 Residential Energy Consumption Survey (''RECS''). Available at *www.eia.gov/consumption/residential/* (last accessed December 1, 2023).

[6] According to published data and EIA website, RECS 2020 is based upon responses collected from in total 18,496 households which is three times greater than 5,686 respondents in RECS 2015.

[7] U.S. Department of Energy: Energy Information Administration, Commercial Buildings Energy Consumption Survey (2018). Available at: *www.eia.gov/consumption/commercial/data/2018/index.php?view=microdata* (last accessed Dec. 1, 2023). In CBECS 2018, there are about 800 records that indicate usage of a GIWH out of about 6500 total records.

[8] Crystal Ball™ is commercially-available software tool to facilitate the creation of these types of models by generating probability distributions and summarizing results within Excel, available at *www.oracle.com/technetwork/middleware/crystalball/overview/index.html* (last accessed December 1, 2023).

results include a distribution of 10,000 data points showing the range of LCC savings for a given efficiency level relative to the no-new-standards case efficiency distribution. In performing an iteration of the Monte Carlo simulation for a given consumer, product efficiency is chosen based on its probability. At the high end of the range, if the chosen product efficiency is greater than or equal to the efficiency of the standard level under consideration, the LCC calculation reveals that the hypothetical consumer represented by that data point is not impacted by the standard level because that consumer is already purchasing a more-efficient product. At the low end of the range, if the chosen product efficiency is less than the efficiency of the standard level under consideration, the LCC calculation reveals that the hypothetical consumer represented by that data point is impacted by the standard level. By accounting for consumers who already purchase more-efficient products, DOE avoids overstating the potential benefits from increasing product efficiency. DOE believes the efficiency assignment methodology better reflects purchasing behavior in the market today than alternative approaches that focus solely on trading off upfront and operating costs.

DOE calculated the LCC and PBP for consumers of gas-fired instantaneous water heaters as if each were to purchase a new product in the first year of required compliance with new or amended standards. New and amended standards apply to gas-fired instantaneous water heaters manufactured 5 years after the date on which any new or amended standard is published. (42 U.S.C. 6295(m)(4)(A)(ii)) Therefore, DOE used 2030 as the first full year of compliance with any amended standards for gas-fired instantaneous water heaters. As in the NOPR, DOE determined for this NODA that it is highly unlikely that consumers will switch water heating products in response to a potential amended standard for gas-fired instantaneous water heaters. DOE received public comment regarding this determination in response to the NOPR, and seeks any additional data regarding expected consumer behavior and/or the costs of replacing non-condensing GIWH under the potential amended standard.

Table II.4 summarizes the approach and data DOE used to derive inputs to the LCC and PBP calculations. Updates to the source or method as compared to the July 2023 NOPR are discussed in the following sections, which are limited to installation costs and the efficiency distribution.

For further discussion of the life-cycle cost and payback period analyses, see chapter 8 of the NOPR TSD.

TABLE II.4—SUMMARY OF INPUTS AND METHODS FOR THE LCC AND PBP ANALYSIS *

Inputs	Source/method
Product Cost	Derived by multiplying MPCs by manufacturer and retailer markups and sales tax, as appropriate. Used historical data to derive a price scaling index to project product costs.
Installation Costs	Installation cost determined with data from RSMeans and other sources.
Efficiency Distribution	Derived based on available shipments data by efficiency and data from certification databases.
Annual Energy Use	Determined based on hot water use calculated from the water heating energy use reported in the RECS 2020 and CBECS 2018.
Energy Prices	Natural Gas: Based on EIA's Natural Gas Navigator data for 2022. Electricity: Based on EIA's Form 861 data for 2022. Propane and Fuel Oil: Based on EIA's State Energy Data System ("SEDS") for 2021. Variability: Regional energy prices determined for 50 states and District of Columbia for residential and commercial applications. Marginal prices used for natural gas and electricity prices.
Energy Price Trends	Based on the Annual Energy Outlook 2023 (*AEO2023*) price projections.
Repair and Maintenance Costs	Based on RSMeans data and other sources. Assumed variation in cost by efficiency.
Product Lifetime	Based on shipments data, multi-year RECS, American Housing Survey, American Home Comfort Survey data.
Discount Rates	Residential: approach involves identifying all possible debt or asset classes that might be used to purchase the considered appliances, or might be affected indirectly. Primary data source was the Federal Reserve Board's Survey of Consumer Finances. Commercial: Calculated as the weighted average cost of capital. Primary data source was Damodaran Online.
Compliance Date	2030.

* References for the data sources mentioned in this table are provided in the sections following the table or in the July 2023 NOPR if there are no updates.

1. Installation Cost

The installation cost is the cost to the consumer of installing the gas-fired instantaneous water heater, in addition to the cost of the water heater itself. The cost of installation covers all labor, overhead, and material costs associated with the replacement of an existing water heater or the installation of a water heater in a new home, as well as delivery of the new water heater, removal of the existing water heater, and any applicable permit fees.

DOE's analysis of installation costs estimated specific installation costs for each sample household based on building characteristics given in RECS 2020 and CBECS 2018. For this NODA, as in the NOPR, DOE used 2023 RSMeans data for the installation cost estimates, including labor costs.[9] [10] [11] [12] DOE's analysis of installation costs accounted for regional differences in labor costs by aggregating city-level labor rates from RSMeans into 50 U.S. States and the District of Columbia to match RECS 2020 data and CBECS 2018 data.

For this NODA, DOE made further improvements to the methodology used in the July 2023 NOPR to better account for the venting costs for gas-fired instantaneous water heaters. First, DOE incorporated the usage of a concentric pipe (a pipe used for both air intake and venting) for some installations in the analysis, which was not included in the NOPR analysis. Specifically, DOE estimated that 90 percent of the non-condensing and 50 percent of the condensing gas-fired instantaneous water heaters would use concentric pipes for the benefit of only having to make one wall penetration. Because a single concentric pipe is cheaper to install than two separate pipes (one for air intake and one for venting), this installation scenario reduces overall installation costs, particularly for non-condensing gas-fired instantaneous water heaters. Additionally, because metal venting for non-condensing water heaters is more expensive per foot than plastic venting for condensing water heaters, updates to the analysis that decrease the length of total venting required for some installations will lower the LCC savings when replacing a non-condensing gas-fired instantaneous water heater with a condensing gas-fired instantaneous water heater for these installations.

Second, DOE adjusted its methodology of estimating the minimum length of the vent run for this NODA. In the July 2023 NOPR, DOE calculated the minimum vent length based on housing configuration and installation location and estimated that the shortest route to vent a gas instantaneous water heater is 3 ft. DOE conducted further research of product literature and concluded that for many installations a shorter vent run could be achieved, primarily by venting through a side wall. Therefore, for this NODA, DOE recalibrated its methodology and estimated that the minimum vent length can be as low as 1 ft for a certain subset of installations.

Lastly, in the July 2023 NOPR, DOE did not account for the outdoor installation of gas-fired tankless water heaters. For this NODA, DOE utilized the location information from RECS 2020 and assumed that half of the residential households that report their water heaters being installed in an ''outdoor closet, crawlspace, or outdoor'' would actually install the tankless water heater on the outside of a wall without venting. Therefore, DOE estimates that among the entire sample, about 12 percent of gas instantaneous water heaters are installed outdoors, and DOE does not apply the venting costs for those households. As with lowering the minimum vent length above, this update to the analysis reduces LCC savings when replacing a non-condensing gas-fired instantaneous water heater with a condensing gas-fired instantaneous water heater for these installations.

The revisions to the installation cost and venting cost analysis discussed above are specific to the gas-fired instantaneous water heater market. After accounting for concentric pipes, shorter vent lengths, and outdoor installations, the average total installed costs for gas-fired instantaneous water heaters (at all ELs) are lower than in the July 2023 NOPR. However, the average total installed cost reduction as part of the NODA analysis for non-condensing gas-fired instantaneous water heaters is greater than for condensing gas-fired instantaneous water heaters. Therefore, DOE estimates higher average incremental costs when replacing a non-condensing gas-fired water heater with a condensing gas-fired water heater.

DOE seeks public comment on the replacement cost analysis.

2. Energy Efficiency Distribution in the No-New-Standards Case

To accurately estimate the share of consumers that would be affected by a potential energy conservation standard at a particular efficiency level, DOE's LCC analysis considered the projected distribution (market shares) of product efficiencies under the no-new-standards case (*i.e.,* the case without amended or new energy conservation standards). This approach reflects the fact that some consumers may purchase products with efficiencies greater than the baseline levels.

To estimate the energy efficiency distribution of gas-fired instantaneous water heaters for 2030, DOE used available shipments data by efficiency including in previous AHRI submitted historical shipment data,[13] ENERGY STAR unit shipments data,[14] and data from a BRG Building Solutions report (a third-party market research report).[15] To cover gaps in the available shipments data, DOE used DOE's public CCD model certification database [16] and AHRI certification directory, which catalog a number of technical parameters for certified models.[17] As compared to the July 2023 NOPR, the NODA analysis uses updated versions of the BRG Building Solutions report, DOE's CCD model database, and AHRI certification directory. The updated energy efficiency distribution of gas-fired instantaneous water heaters for 2030 is nearly identical to the July 2023 NOPR.

The estimated market shares for the no-new-standards case for gas-fired instantaneous water heaters are shown in Table II.5.

[9] RSMeans Company Inc., *RSMeans Mechanical Cost Data.* Kingston, MA (2023) (available at: *www.rsmeans.com/products/books/2023-cost-data-books*) (last accessed December 1, 2023).

[10] RSMeans Company Inc., *RSMeans Residential Repair & Remodeling Cost Data. Kingston,* MA (2023) (available at: *www.rsmeans.com/products/books/2023-cost-data-books*) (last accessed December 1, 2023).

[11] RSMeans Company Inc., *RSMeans Plumbing Cost Data.* Kingston, MA (2023) (available at: *www.rsmeans.com/products/books/2023-cost-data-books*) (last accessed December 1, 2023).

[12] RSMeans Company Inc., *RSMeans Electrical Cost Data.* Kingston, MA (2023) (available at: *www.rsmeans.com/products/books/2023-cost-data-books*) (last accessed December 1, 2023).

[13] AHRI. Confidential Instantaneous Gas-fired Water Heater Shipments Data from 2004–2007 to LBNL. March 3, 2008.

[14] ENERGY STAR. Unit Shipments data 2010–2022. multiple reports (available at: *www.energystar.gov/partner_resources/products_partner_resources/brand_owner_resources/unit_shipment_data*) (last accessed May 1, 2023).

[15] BRG Building Solutions. The North American Heating & Cooling Product Markets (2023 Edition). 2023.

[16] U.S. Department of Energy's Compliance Certification Database is available at *regulations.doe.gov/certification-data* (last accessed Dec. 1, 2023).

[17] Air Conditioning Heating and Refrigeration Institute. Consumer's Directory of Certified Efficiency Ratings for Heating and Water Heating Equipment. May 16, 2023 (available at *www.ahridirectory.org*) (last accessed December 1, 2023).

TABLE II.5—NO-NEW-STANDARDS CASE ENERGY EFFICIENCY DISTRIBUTIONS IN 2030 FOR GAS-FIRED INSTANTANEOUS WATER HEATERS

Efficiency level	Draw pattern *			
	Medium		High	
	UEF **	Market share (%)	UEF **	Market share (%)
0	0.81	30	0.81	30
1	0.87	8	0.89	8
2	0.91	48	0.93	47
3	0.92	6	0.95	7
4	0.93	8	0.96	8

* Very small and low draw patterns do not exist for gas-fired instantaneous water heaters.
** UEF at the representative rated capacity.

The LCC Monte Carlo simulations draw from the efficiency distributions and assign an efficiency to the water heater purchased by each sample household in the no-new-standards case according to these distributions.

As in the July 2023 NOPR, DOE used AHCS data [18] to adjust its water heater efficiency distributions as follows: (1) the market share of higher efficiency equipment for households under 1,500 sq. ft. was decreased by 5 percentage points; and (2) the market share of condensing equipment for households above 2,500 sq. ft. was increased by 5 percentage points.

E. Shipments Analysis

DOE uses projections of annual product shipments to calculate the national impacts of potential amended or new energy conservation standards on energy use, net present value (''NPV''), and future manufacturer cash flows.[19] The shipments model takes an accounting approach, tracking market shares of each product class and the vintage of units in the stock. Stock accounting uses product shipments as inputs to estimate the age distribution of in-service product stocks for all years. The age distribution of in-service product stocks is a key input to calculations of both the national energy savings (''NES'') and NPV, because operating costs for any year depend on the age distribution of the stock.

DOE developed shipment projections based on historical data and an analysis of key market drivers for each product. DOE estimated gas-fired instantaneous water heater shipments by projecting shipments in three market segments: (1) replacement of existing gas-fired instantaneous water heaters; (2) new housing; and (3) new owners in buildings that did not previously have a gas-fired instantaneous water heater or existing water heater owners that are adding an additional gas-fired instantaneous water heater.[20] DOE followed the same methodology as in the July 2023 NOPR, with the exception of using an updated BRG Building Solutions report.[21]

For further discussion of the shipments analysis, see chapter 9 of the NOPR TSD.

F. National Impact Analysis

The NIA assesses the NES and the NPV from a national perspective of total consumer costs and savings that would be expected to result from new or amended standards at specific efficiency levels.[22] (''Consumer'' in this context refers to consumers of the product being regulated.) DOE calculates the NES and NPV for the potential standard levels considered based on projections of annual product shipments, along with the annual energy consumption and total installed cost data from the energy use and LCC analyses. For the present analysis, DOE projected the energy savings, operating cost savings, product costs, and NPV of consumer benefits over the lifetime of gas-fired instantaneous water heaters sold from 2030 through 2059.

DOE evaluates the impacts of new or amended standards by comparing a case without such standards with standards-case projections. The no-new-standards case characterizes energy use and consumer costs for gas-fired instantaneous water heaters in the absence of new or amended energy conservation standards. For this projection, DOE considers historical trends in efficiency and various forces that are likely to affect the mix of efficiencies over time. DOE compares the no-new-standards case with projections characterizing the market if DOE adopted new or amended standards at specific energy efficiency levels. For the standards cases, DOE considers how a given standard would likely affect the market shares of products with efficiencies greater than the standard.

Table II.6 summarizes the inputs and methods DOE used for the NIA analysis for the NODA. Compared to the NOPR, the NIA for the NODA includes slightly updated shipments, slightly updated efficiency distribution, updated annual energy consumption per unit (due to the update to RECS 2020), and updated total installed costs per unit, all as discussed in the preceding sections. The annual energy cost per unit also changes due to the annual energy consumption update, though the energy prices remain the same.

For further discussion of the national impact analysis, see chapter 10 of the NOPR TSD.

[18] Decision Analysts, 2022 American Home Comfort Studies (available at: *www.decisionanalyst.com/Syndicated/HomeComfort/*) (last accessed January 5, 2024). See the NOPR TSD section 8.4 for more discussion.

[19] DOE uses data on manufacturer shipments as a proxy for national sales, as aggregate data on sales are lacking. In general, one would expect a close correspondence between shipments and sales.

[20] The new owners primarily consist of households that add or switch to a different water heater option during a major remodel. Because DOE calculates new owners as the residual between its shipments model compared to historical shipments, new owners also include shipments that switch away from water heater product class to another.

[21] BRG Building Solutions. The North American Heating & Cooling Product Markets (2023 Edition). 2023.

[22] The NIA accounts for impacts in the United States and U.S. territories.

TABLE II.6—SUMMARY OF INPUTS AND METHODS FOR THE NATIONAL IMPACT ANALYSIS

Inputs	Method
Shipments	Annual shipments from shipments model.
Compliance Date of Standard	2030.
Efficiency Trends	No-new-standards case: Based on historical data. Standard cases: Roll-up in the compliance year and then DOE estimated growth in shipment-weighted efficiency in all the standards cases.
Annual Energy Consumption per Unit	Annual weighted-average values are a function of energy use at each EL.
Total Installed Cost per Unit	Annual weighted-average values are a function of cost at each EL. Incorporates projection of future product prices based on historical data.
Annual Energy Cost per Unit	Annual weighted-average values as a function of the annual energy consumption per unit and energy prices.
Repair and Maintenance Cost per Unit	Annual values do not change with efficiency level.
Energy Price Trends	*AEO2023* projections (to 2050) and extrapolation thereafter.
Energy Site-to-Primary and FFC Conversion	A time-series conversion factor based on *AEO2023*.
Discount Rate	Three and seven percent.[1]
Present Year	2023.

[1] For assessment of climate effects, DOE uses 2% and 3%.

G. Consumer Subgroup Analysis

In analyzing the potential impact of new or amended energy conservation standards on consumers, DOE evaluates the impact on identifiable subgroups of consumers that may be disproportionately affected by a new or amended national standard. The purpose of a subgroup analysis is to determine the extent of any such disproportional impacts. DOE evaluates impacts on particular subgroups of consumers by analyzing the LCC impacts and PBP for those particular consumers from alternative standard levels. DOE analyzed the impacts of the considered standard levels on three subgroups: (1) low-income households, (2) senior-only households, and (3) small businesses. The analysis used subsets of the RECS 2020 sample composed of households and CBECS 2018 sample composed of commercial buildings that meet the criteria for the three subgroups. DOE used the LCC and PBP spreadsheet model to estimate the impacts of the considered efficiency levels on these subgroups. DOE followed the same methodology as in the July 2023 NOPR, with the exception of updating from RECS 2015 to RECS 2020, as discussed previously.

For further discussion of the consumer subgroup analysis, see chapter 11 of the NOPR TSD.

H. Manufacturer Impact Analysis

DOE uses the Government Regulatory Impact Model (''GRIM'') to quantify the changes in cash flow due to new or amended standards that result in a higher or lower industry value. The GRIM uses a standard, annual, discounted cash-flow analysis that incorporates manufacturer costs, manufacturer markups, shipments, and industry financial information as inputs. The GRIM models changes in costs, distribution of shipments, investments, and manufacturer margins that could result from an amended energy conservation standard. The GRIM spreadsheet uses the inputs to arrive at a series of annual cash flows, beginning in 2023 (the base year of the analysis) and continuing 30 years after the analyzed 2030 compliance year. DOE calculated industry net present value (''INPV'') by summing the stream of annual discounted cash flows during the analysis period. Consistent with the July 2023 NOPR, DOE used a real discount rate of 9.3 percent for the gas-fired instantaneous water heater industry. Key inputs to the GRIM (*i.e.,* MPCs, shipments projections, conversion costs, and manufacturer markup scenarios) are discussed in the following sections.

For further discussion of the manufacturer impact analysis, see chapter 12 of the NOPR TSD.

1. Manufacturer Production Costs

The changes in the MPCs of covered products can affect the revenues, gross margins, and cash flow of the industry. *See* section II.A of this document for details on the NODA engineering analysis.

2. Shipments Projections

The GRIM estimates manufacturer revenues based on total unit shipment projections and the distribution of those shipments by efficiency level. Consistent with the July 2023 NOPR, the GRIM uses the NIA's annual shipment projections derived from the shipments analysis. 88 FR 49058, 49120. *See* section II.E of this document for details on the NODA shipments analysis.

3. Product and Capital Conversion Costs

For this NODA, DOE revised its July 2023 NOPR conversion cost estimates for gas-fired instantaneous water heaters for efficiency levels that would likely necessitate condensing technology (*i.e.,* EL 1–EL 4) to reflect the potential investments associated with repurposing a newly built domestic manufacturing facility that is currently optimized for production of non-condensing gas-fired instantaneous water heaters. DOE otherwise maintained its conversion cost estimates from the July 2023 NOPR. 88 FR 49058, 49127–49128. *See* table II.7 for the estimated industry conversion costs at each analyzed efficiency level.

TABLE II.7—CONVERSION COSTS FOR GAS-FIRED INSTANTANEOUS WATER HEATERS

Efficiency level	Capital conversion costs (millions 2022$)	Product conversion costs (millions 2022$)
Baseline	$0.0	$0.0
EL 1	13.5	2.5
EL 2	16.3	3.6
EL 3	53.8	4.7
EL 4	53.8	4.7

4. Manufacturer Markup Scenarios

This NODA uses the same manufacturer markup scenarios as the July 2023 NOPR. 88 FR 49058, 49128.

I. Utility Impact Analysis, Emissions Analysis, and Monetizing Emissions Impacts

For this NODA pertaining to gas-instantaneous water heaters, DOE conducted the utility impact and emissions analyses using the same methodology as in the July 2023 NOPR. With the exception of the social cost of greenhouse gas (SC–GHG) estimates discussed below, DOE also used the same data sources that it used in the July 2023 NOPR.

To monetize the benefits of reducing GHG emissions, the July 2023 NOPR used the interim SC–GHG estimates presented in the ''Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates Under Executive Order 13990'' published in February 2021 by the Interagency Working Group on the SC–GHG (IWG). As a member of the IWG involved in the development of the February 2021 SC–GHG TSD, DOE agreed that the interim SC–GHG estimates represented the most appropriate estimate of the SC–GHG until revised estimates were developed reflecting the latest, peer-reviewed science. See 87 FR 78382, 78406–78408 for discussion of the development and details of the IWG SC–GHG estimates. The IWG has continued working on updating the interim estimates, but has not published final estimates.

Accordingly, in the regulatory analysis of its December 2023 final rule, ''Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review'' (89 FR 16820, March 8, 2024), the Environmental Protection Agency (EPA) estimated climate benefits using a new, updated set of SC–GHG estimates (2023 SC–GHG estimates). EPA documented the methodology underlying the new estimates in the regulatory impact analysis (''RIA'') for the December 2023 final rule and in greater detail in a technical report entitled ''Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances'' that was presented as supplementary material to the RIA.[23] The 2023 SC–GHG estimates ''incorporate recent research addressing recommendations of the Natural Academies of Science, Engineering, and Medicine (National Academies), responses to public comments on an earlier sensitivity analysis using draft SC–GHG estimates included in EPA's December 2022 proposal [87 FR 74702, December 6, 2022] in the oil and natural gas sector standards of performance rulemaking, and comments from a 2023 external peer review of the accompanying technical report.'' [24]

On December 22, 2023, the IWG issued a memorandum directing that ''agencies should use their professional judgment to determine which estimates of the SC–GHG reflect the best available evidence, are most appropriate for particular analytical contexts, and best facilitate sound decision-making'' consistent with Office of Management and Budget (OMB) Circular No. A–4 and applicable law.[25]

DOE has been extensively involved in the IWG process and related work on the SC–GHGs for over a decade. This involvement includes DOE's role as the federal technical monitor for the seminal 2017 report on the SC–GHG issued by the National Academies, which provided extensive recommendations on how to strengthen and update the SC–GHG estimates.[26] DOE has also participated in the IWG's work since 2021. DOE technical experts involved in this work reviewed the 2023 SC–GHG methodology and report in light of the National Academies' recommendations and DOE's understanding of the state of the science.

Based on this review, DOE has preliminarily determined that the updated 2023 SC–GHG estimates, including the approach to discounting, represent a significant improvement in estimating the SC–GHG through incorporating the most recent advancements in the scientific literature and by addressing recommendations on prior methodologies. In particular, the 2023 SC–GHG estimates implement the key recommendations of the National Academies, and they incorporate the extensive scientific findings and methodological advances that have occurred since the last IWG updates in 2013, 2015, and 2016.

The 2023 SC–GHG estimates have also been peer-reviewed. As indicated by their statements, the peer reviewers strongly supported the new methodology, calling it ''a huge advance,'' ''a real step change,'' and ''an important improvement'' in estimating the SC–GHG, and noting that it addressed the National Academies' and others' recommendations and ''generally represents well the emerging consensus in the literature.''

The most significant improvements in the 2023 SC–GHG estimates carry out recommendations made by the National Academies. In its report, the National Academies' principal recommendation was to develop and use ''a new framework that would strengthen the scientific basis, provide greater transparency, and improve characterization of the uncertainties of the estimates.'' [27] The IWG's estimates

[23] *https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf* (last accessed July 3, 2024)

[24] *https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf* (last accessed July 3, 2024)

[25] *https://www.whitehouse.gov/wp-content/uploads/2023/12/IWG-Memo-12.22.23.pdf* (last accessed July 3, 2024).

[26] Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide √ The National Academies Press (available at: *https://nap.nationalacademies.org/catalog/24651/valuing-climate-damages-updating-estimation-of-the-social-cost-of*) (last accessed July 3, 2024).

[27] Report Recommends New Framework for Estimating the Social Cost of Carbon | National Academies *(available at: https://www.nationalacademies.org/news/2017/01/report-*

since 2010 have relied on averaging the values produced by three integrated assessment models, each of which generates a set of SC–GHG estimates based on the inputs and assumptions built into that particular model.[28] The National Academies recommended an entirely new approach that would ''unbundle'' this process and instead use a framework in which each step of the SC–GHG calculation is developed as one of four separate but integrated ''modules'': the socioeconomic module, the climate module, the damages module, and the discounting module. The report provided detailed recommendations on developing and using these modules, including how to address discounting, socioeconomic projections, climate modeling, and uncertainty.

DOE preliminarily concludes that the 2023 SC–GHG estimates are consistent with the National Academies' (2017) recommendations and represent major scientific advancements over the IWG's approach. In addition, DOE supports the incorporation of more recent scientific findings and data throughout the development of each of the 2023 SC–GHG modules and the underlying components of those modules.

Thus, in accordance with the IWG memo, and having reviewed the 2023 SC–GHG methodologies and updates, DOE has preliminarily determined that the updated 2023 SC–GHG estimates reflect the best available scientific and analytical evidence and methodologies, are accordingly the most appropriate for DOE analyses, and best facilitate sound decision-making by substantially improving the transparency of the estimates and representations of uncertainty inherent in such estimates. DOE welcomes comment on this preliminary determination.[29] In a final rulemaking, DOE will determine what role, if any, these estimates will play in any final decision adopting amended energy conservation standards for gas-instantaneous water heaters.

For this NODA, DOE used these updated 2023 SC–GHG values to monetize the climate benefits of the emissions reductions associated at each EL for gas-fired instantaneous water heaters. Using the 2023 SC–GHG estimates provide a better informed range of potential climate benefits associated with amended standards. The EPA technical report presents SC–GHG values for emissions years through 2080; therefore, DOE did not monetize the climate benefits of GHG emissions reductions occurring after 2080. DOE expects additional climate impacts to accrue from GHG emissions changes post 2080, but due to a lack of readily available SC–GHG estimates for emissions years beyond 2080 and the relatively small emission effects expected from those years, DOE has not monetized these additional impacts in this analysis. The overall climate benefits are generally greater when using the higher, updated 2023 SC–GHG estimates, compared to the climate benefits using the older IWG SC–GHG estimates, which were used in the July 2023 NOPR. To facilitate a comparison, DOE also performed a sensitivity analysis using the IWG's 2021 interim SC–GHG estimates. The results are shown in section III.4 below. The net benefits of the rule are positive, however, under either SC–GHG calculation methodology.

For this NODA, DOE monetized NO_X and SO_2 using the same methodology and data sources as described in chapter 14 of the NOPR TSD.

III. Analytical Results

1. Life-Cycle Cost and Payback Period

DOE analyzed the economic impacts on gas-fired instantaneous water heater consumers by looking at the effects that potential new and amended standards at each EL would have on the LCC and PBP.[30] DOE also examined the impacts of potential standards on selected consumer subgroups. These analyses are discussed in the following sections.

In general, higher-efficiency products affect consumers in two ways: (1) purchase price increases and (2) annual operating costs decrease. Inputs used for calculating the LCC and PBP include total installed costs (*i.e.,* product price plus installation costs), and operating costs (*i.e.,* annual energy use, energy prices, energy price trends, repair costs, and maintenance costs). The LCC calculation also uses product lifetime and a discount rate.

Tables III.1 and III.2 show the LCC and PBP results. In the first table, the simple payback is measured relative to the baseline product. In the second table, the impacts are measured relative to the efficiency distribution in the no-new-standards case in the compliance year (see section II.D.2 of this document). Because some consumers purchase products with higher efficiency in the no-new-standards case, the average savings are less than the difference between the average LCC of the baseline product and the average LCC at each EL. The savings refer only to consumers who are affected by a standard at a given EL. Those who already purchase a product with efficiency at or above a given EL are not affected. Consumers for whom the LCC increases at a given EL experience a net cost.

TABLE III.1—AVERAGE LCC AND PBP RESULTS FOR GAS-FIRED INSTANTANEOUS WATER HEATERS (V_{eff} <2 GAL, RATED INPUT >50,000 Btu/h)

Efficiency level	Average costs (2022$)				Simple payback (years)	Average Lifetime (years)
	Installed cost	First year's operating cost	Lifetime operating cost	LCC		
0	2,019	291	4,363	6,382	.....	20.0
1	2,213	274	4,153	6,365	12.1	20.0
2	2,226	266	4,029	6,255	8.5	20.0
3	2,241	263	3,975	6,216	7.9	20.0
4	2,282	260	3,931	6,213	8.5	20.0

Note: The results for each EL are calculated assuming that all consumers use products at that efficiency level. The PBP is measured relative to the baseline product.

recommends-new-framework-for-estimating-the-social-cost-of-carbon) (last accessed July 3, 2023).

[28] *See https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf,* 6 (last accessed July 3, 2023).

[29] *See* EPA's SC–GHG website for all of the technical files related to the updated estimates, including the final SC–GHG report (provided as supplementary material to the Dec 2023 Oil and Gas rule final RIA); all replication instructions and computer code for the estimates; all files related to the public comment and peer review process; and a workbook to assist analysts in applying the estimates: *https://www.epa.gov/environmental-economics/scghg.*

[30] DOE has made an updated LCC spreadsheet model available in the docket with these results relating specifically to gas instantaneous water heaters.

TABLE III.2—AVERAGE LCC SAVINGS RELATIVE TO THE NO-NEW-STANDARDS CASE FOR GAS-FIRED INSTANTANEOUS WATER HEATERS(V_{eff} <2 GAL, RATED INPUT >50,000 Btu/h)

Efficiency level	Life-cycle cost savings	
	Average LCC savings * (2022$)	Percent of consumers that experience net cost
1	2	17.1
2	109	14.8
3	86	24.7
4	83	38.9

* The savings represent the average LCC for affected consumers.

a. Consumer Subgroup Analysis

In the consumer subgroup analysis, DOE estimated the impact of the considered ELs on low-income households, senior-only households, and small businesses.

Table III.3 compares the average LCC savings and PBP at each efficiency level for the consumer subgroups with similar metrics for the entire consumer sample. In most cases, the average LCC savings and PBP for low-income households and senior-only households at the considered efficiency levels are not substantially different from the average for all households.

TABLE III.3—COMPARISON OF LCC SAVINGS AND PBP FOR CONSUMER SUBGROUPS AND ALL HOUSEHOLDS; GAS-FIRED INSTANTANEOUS WATER HEATERS (V_{eff} <2 gal, RATED INPUT >50,000 Btu/h)

EL	Low-income households	Senior-only households	Small businesses	All households
Average LCC Savings (2022$)				
1	64	(36)	(118)	2
2	183	77	(24)	109
3	123	72	18	86
4	128	63	9	83
Simple Payback Period (years)				
1	10.1	12.9	10.3	12.1
2	7.1	9.1	7.2	8.5
3	6.6	8.5	6.7	7.9
4	6.9	9.2	7.0	8.5
Consumers with Net Cost (%)				
1	8.4	19.8	23.1	17.1
2	7.4	16.8	25.0	14.8
3	12.8	27.2	44.6	24.7
4	22.9	41.7	55.9	38.9
Consumers with Net Benefit (%)				
1	16.9	9.1	8.9	12.9
2	25.3	21.3	16.3	23.0
3	65.2	56.7	42.7	60.2
4	63.8	49.5	38.8	52.9

Note: Numbers in parentheses indicate a negative number.

b. Rebuttable Presumption Payback

EPCA establishes a rebuttable presumption that an energy conservation standard is economically justified if the increased purchase cost for a product that meets the standard is less than three times the value of the first-year energy savings resulting from the standard. (42 U.S.C. 6295(o)(2)(B)(iii)) In calculating a rebuttable presumption payback period for each of the analyzed ELs, DOE used discrete values, and, as required by EPCA, based the energy use calculation on the DOE test procedures for gas-fired instantaneous water heaters. In contrast, the PBPs presented in section III.1 of this document were calculated using distributions that reflect the range of energy use in the field.

Table III.4 presents the rebuttable-presumption payback periods for the analyzed ELs.

TABLE III.4—COMPARISON OF REBUTTABLE-PRESUMPTION PAYBACK PERIODS

EL	1	2	3	4
	(years)			
Gas-fired Instantaneous Water Heaters	10.2	7.4	7.0	7.5

2. Economic Impacts on Manufacturers

a. Industry Cash Flow Analysis Results

Table III.5 presents the GRIM results for the updated gas-fired instantaneous water heater analysis discussed in this NODA. The methodology and assumptions used in the MIA did not change from the July 2023 NOPR except for the analytical changes described in prior sections (*e.g.,* revised conversion cost estimates). Details of the MIA inputs and methodology are available in chapter 12 of the TSD for the July 2023 NOPR.[31]

TABLE III.5—MANUFACTURER IMPACT ANALYSIS FOR GAS-FIRED INSTANTANEOUS WATER HEATERS

	Units	No-new-standards case	Efficiency level			
			1	2	3	4
INPV	2022$ millions	1,122.2	1,101.9 to 1,157.7	1,092.2 to 1,158.1	1,067.3 to 1,143.1	1,061.6 to 1,167.2
Change in INPV*	2022$ millions		(20.3) to 35.5	(30.0) to 35.9	(54.9) to 20.9	(60.5) to 45.0
	%		(1.8) to 3.2	(2.7) to 3.2	(4.9) to 1.9	(5.4) to 4.0
Free Cash Flow (2029)	2022$ millions	88.7	81.8	80.2	62.9	62.9
Change in Free Cash Flow* (2029)	2022$ millions		(6.9)	(8.5)	(25.8)	(25.8)
	%		(7.8)	(9.6)	(29.1)	(29.1)
Product Conversion Costs	2022$ millions		2.5	3.6	4.7	4.7
Capital Conversion Costs	2022$ millions		13.5	16.3	53.8	53.8
Total Investment Required	2022$ millions		16.0	19.9	58.5	58.5

*Numbers in parentheses indicate a negative number.

b. Direct Impacts on Employment

For this NODA, DOE revised its direct employment analysis to account for a recently built domestic production facility dedicated to manufacturing gas-fired instantaneous water heaters. DOE estimates that approximately 20 percent of gas-fired instantaneous water heaters are currently produced in the United States. DOE derived this value by using its shipments analysis and public market share feedback from stakeholder comments to the July 2023 NOPR.[32]

Based on public information and DOE's shipments analysis, DOE projects that there would be approximately 128 domestic production workers of gas-instantaneous water heaters in 2030 (the analyzed compliance year) in the no-new-standards case. To establish a conservative lower bound, DOE assumes all domestic manufacturers would shift production to foreign countries at efficiency levels that would likely necessitate condensing technology. Therefore, to avoid underestimating the potential domestic direct employment impacts, DOE models a lower-bound reduction in domestic direct employment of 128 production workers at EL 1 through EL 4 in 2030.

The upper bound domestic direct employment estimate corresponds to a potential increase in the number of domestic workers that would result from amended energy conservation standards if manufacturers continue to produce the same scope of covered products within the United States after compliance takes effect (*i.e.,* 20 percent of gas-instantaneous water heater shipments continue to be manufactured domestically). Results of DOE's engineering and product teardown analyses indicate that the labor content required to produce a condensing gas-fired instantaneous water heater is approximately 59 percent more than the labor content required to produce a non-condensing gas-fired instantaneous water heater. As such, DOE models an upper-bound increase in domestic direct employment of 59 percent (an increase of approximately 75 production workers) at EL 1 through EL 4 in 2030. DOE tentatively expects that domestic non-production employment would not be significantly impacted at EL 1 through EL 4.

DOE seeks comment on this revision to the Direct Impacts on Employment Analysis, including data pertaining to the potential implications of the upper and lower bounds of this analysis on product shipping costs and other markups that contribute to the total installed costs for gas-fired instantaneous water heaters.

3. National Impact Analysis

This section presents DOE's estimates of the national energy savings and the NPV of consumer benefits that would result from each of the ELs considered as potential amended standards.

a. National Energy Savings

To estimate the energy savings attributable to potential amended standards for gas-fired instantaneous water heaters, DOE compared their energy consumption under the no-new-standards case to their anticipated energy consumption under each EL. The savings are measured over the entire lifetime of products purchased in the 30-year period that begins in the year of anticipated compliance with amended standards (2030–2059). Table III.6 presents DOE's projections of the national energy savings for each EL considered for gas-fired instantaneous water heaters. The savings were calculated using the approach described in section II.F of this document.

[31] *https://www.regulations.gov/document/EERE-2017-BT-STD-0019-0058* (last accessed July 3, 2024).

[32] In 2023 (the reference year), DOE estimates that approximately 0.41 million out of the 1.22 million gas-fired instantaneous water heater unit shipments are non-condensing. Public information submitted in response to the July 2023 NOPR indicates that the domestic market share of non-condensing gas-fired instantaneous water heaters is 60 percent.

TABLE III.6—CUMULATIVE NATIONAL ENERGY SAVINGS FOR GAS-FIRED INSTANTANEOUS WATER HEATERS; 30 YEARS OF SHIPMENTS

[2030–2059]

	Efficiency level			
	1	2	3	4
	(quads)			
Primary Energy				
Gas-fired Instantaneous Water Heaters	0.32	0.52	0.76	0.97
FFC Energy				
Gas-fired Instantaneous Water Heaters	0.35	0.58	0.85	1.07

b. Net Present Value of Consumer Costs and Benefits

DOE estimated the cumulative NPV of the total costs and savings for consumers that would result from the ELs considered for gas-fired instantaneous water heaters. In accordance with OMB's 2003 guidelines on regulatory analysis,[33] OMB finalized revisions to Circular A–4 in November 2023, but this rule was proposed prior to the effective date for proposals under the updated guidance. Hence, the 2003 Circular A–4 will be a basis for the analyses in this NODA. DOE calculated NPV using both a 7-percent and a 3-percent real discount rate. Table III.7 shows the consumer NPV results with impacts counted over the lifetime of products purchased during the period 2030–2059.

TABLE III.7—CUMULATIVE NET PRESENT VALUE OF CONSUMER BENEFITS FOR GAS-FIRED INSTANTANEOUS WATER HEATERS; 30 YEARS OF SHIPMENTS

[2030–2059]

Discount rate	Efficiency level			
	1	2	3	4
	(billion 2022$)			
3 percent discount rate				
Gas-fired Instantaneous Water Heaters	1.15	2.82	4.52	5.27
7 percent discount rate				
Gas-fired Instantaneous Water Heaters	0.21	0.78	1.30	1.41

c. Indirect Impacts on Employment

DOE conducted the employment impact analysis using the same methodology as in the July 2023 NOPR. DOE estimates that amended energy conservation standards for gas-fired instantaneous water heaters will reduce energy expenditures for consumers of those products, with the resulting net savings being redirected to other forms of economic activity. These expected shifts in spending and economic activity could affect the demand for labor. DOE used an input/output model of the U.S. economy to estimate indirect employment impacts of the ELs that DOE considered. There are uncertainties involved in projecting employment impacts, especially changes in the later years of the analysis. Therefore, DOE generated results for near-term timeframes (2030–2035), where these uncertainties are reduced. Results at each EL are presented in Table III.8.

TABLE III.8—SHORT-TERM CHANGE IN EMPLOYMENT

[1,000s of jobs]

Efficiency level	2030	2035
EL 1	0.0 to 0.5	0.1 to 0.6
EL 2	0.0 to 0.6	0.2 to 0.8
EL 3	0.0 to 0.7	0.3 to 1.0
EL 4	0.0 to 1.1	0.4 to 1.5

[33] U.S. Office of Management and Budget. *Circular A–4: Regulatory Analysis.* September 17, 2003. *https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/circulars/A4/a-4.pdf* (last accessed July 3, 2024).

The results suggest that the considered efficiency levels are likely to have a negligible impact on the net demand for labor in the economy. The net change in jobs is so small that it would be imperceptible in national labor statistics and might be offset by other, unanticipated effects on employment.

4. Need of the Nation To Conserve Energy

Enhanced energy efficiency, where economically justified, improves the Nation's energy security, strengthens the economy, and reduces the environmental impacts (costs) of energy production. Table III.9 presents the estimated impacts on electricity-generating capacity, relative to the no-new-standards case, for the ELs that DOE considered in this NODA.

TABLE III.9—GAS-FIRED INSTANTANEOUS WATER HEATERS: SUMMARY OF ELECTRIC UTILITY IMPACT RESULTS

	EL			
	1	2	3	4
Installed Capacity Reduction (MW)				
2030	(0.81)	(0.75)	(0.70)	5.00
2035	(4.98)	(4.61)	(4.25)	32.1
2040	(8.57)	(7.92)	(7.26)	58.6
2045	(11.6)	(10.7)	(9.76)	84.8
2050	(13.9)	(12.7)	(11.5)	109
Electricity Generation Reduction (GWh)				
2030	(2.07)	(1.92)	(1.78)	12.6
2035	(12.1)	(11.2)	(10.4)	77.9
2040	(21.0)	(19.4)	(17.8)	142
2045	(27.9)	(25.7)	(23.5)	202
2050	(32.5)	(30.0)	(27.2)	255

Note: Parentheses denote an increase in electric capacity or generation.

Energy conservation resulting from potential energy conservation standards for gas-fired instantaneous water heaters is expected to yield environmental benefits in the form of reduced emissions of certain air pollutants and greenhouse gases. Table III.10 provides DOE's estimate of cumulative emissions reductions expected to result from the ELs considered in this NODA over a 30-year period of product shipments. National impacts, which include physical emissions, are estimated over 30 years of shipments extending to 2118.

TABLE III.10—CUMULATIVE EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059

	Efficiency level			
	1	2	3	4
Electric Power Sector and Site Emissions				
CO_2 (*million metric tons*)	17	28	40	48
CH_4 (*thousand tons*)	0.3	0.6	0.8	1.1
N_2O (*thousand tons*)	0.03	0.06	0.08	0.11
SO_2 (*thousand tons*)	0.04	0.10	0.17	0.75
NO_X (*thousand tons*)	15	25	35	41
Hg (*tons*)	(0.0004)	(0.0004)	(0.0003)	0.0035
Upstream Emissions				
CO_2 (*million metric tons*)	2	4	6	7
CH_4 (*thousand tons*)	244	397	575	670
N_2O (*thousand tons*)	0.00	0.01	0.01	0.01
SO_2 (*thousand tons*)	0.01	0.02	0.03	0.04
NO_X (*thousand tons*)	38	62	89	104
Hg (*tons*)	(0.0000)	(0.0000)	(0.0000)	0.0000
Total FFC Emissions				
CO_2 (*million metric tons*)	19	32	46	54
CH_4 (*thousand tons*)	244	398	576	671
N_2O (*thousand tons*)	0.04	0.06	0.09	0.12
SO_2 (*thousand tons*)	0.05	0.12	0.20	0.79
NO_X (*thousand tons*)	53	86	125	145
Hg (*tons*)	(0.0004)	(0.0004)	(0.0003)	0.0035

Note: Totals may not equal sums due to rounding. Negative values refer to an increase in emissions.

As described in section II.I, DOE used the updated 2023 SC–GHG values for estimating the climate benefits of reduced greenhouse gas emissions. Table III.11 presents the value of CO_2 emissions reduction at each EL, table III.12 presents the value of the CH_4 emissions reduction at each EL, and table III.13 presents the value of the N_2O emissions reduction at each EL, using the 2023 SC–GHG values. The table provides results at each of the three discount rates used in the 2023 SC–GHG estimates. Table III.10 includes emissions reductions over 30 years of shipments extending to 2118 while tables III.11 through III.13 estimate the climate benefits through 2080.

TABLE III.11—PRESENT VALUE OF CO_2 EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059 USING 2023 SC–GHG VALUES

EL	Near-term Ramsey discount rate		
	2.5%	2.0%	1.5%
	(billion 2022$)		
1	2.0	3.6	6.4
2	3.3	5.8	10.5
3	4.8	8.3	15.1
4	5.6	9.8	17.8

TABLE III.12—PRESENT VALUE OF METHANE EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059 USING 2023 SC–GHG VALUES

EL	Near-term Ramsey discount rate		
	2.5%	2.0%	1.5%
	(billion 2022$)		
1	0.4	0.6	0.8
2	0.7	0.9	1.3
3	1.0	1.3	1.9
4	1.1	1.6	2.3

TABLE III.13—PRESENT VALUE OF NITROUS OXIDE EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059 USING 2023 SC–GHG VALUES

EL	Near-term Ramsey discount rate		
	2.5%	2.0%	1.5%
	(billion 2022$)		
1	0.0012	0.0019	0.0033
2	0.0019	0.0032	0.0054
3	0.0028	0.0046	0.0079
4	0.0037	0.0061	0.0105

As part of the analysis for this rule, DOE conducted a sensitivity analysis using the interim 2021 IWG SC–GHG values to estimate the monetized climate benefits expected to result from the reduced emissions of GHGs that DOE estimated for each of the considered ELs for gas-fired instantaneous water heaters. Section II.I of this document discusses the estimated SC–GHG values that DOE used for this sensitivity analysis. Table III.14 presents the value of CO_2 emissions reduction at each EL using the range of interim IWG SC–CO_2 values. Table III.15 presents the value of the CH_4 emissions reduction at each EL, and table III.16 presents the value of the N_2O emissions reduction at each EL. The table provides results at each of the four values used in the 2021 IWG SC–GHG estimates.

TABLE III.14—PRESENT VALUE OF CO_2 EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059 USING 2021 IWG VALUES

EL	SC–CO_2 case			
	Discount rate and statistics			
	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile
	(billion 2022$)			
1	0.2	0.7	1.1	2.1
2	0.3	1.1	1.8	3.4
3	0.4	1.6	2.6	4.9
4	0.4	1.9	3.0	5.8

TABLE III.15—PRESENT VALUE OF METHANE EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059 USING 2021 IWG VALUES

EL	SC–CH_4 case			
	Discount rate and statistics			
	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile
	(billion 2022$)			
1	0.1	0.3	0.4	0.8
2	0.1	0.5	0.7	1.2
3	0.2	0.7	1.0	1.8
4	0.2	0.8	1.1	2.1

TABLE III.16—PRESENT VALUE OF NITROUS OXIDE EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059 USING 2021 IWG VALUES

EL	SC–N_2O case			
	Discount rate and statistics			
	5%	3%	2.5%	3%
	Average	Average	Average	95th percentile
	(billion 2022$)			
1	0.0001	0.0005	0.0008	0.0013
2	0.0002	0.0008	0.0013	0.0022
3	0.0003	0.0012	0.0018	0.0031
4	0.0004	0.0016	0.0025	0.0042

DOE also estimated the monetary value of the economic benefits associated with NO_X and SO_2 emissions reductions anticipated to result from the considered ELs for gas-fired instantaneous water heaters. The dollar-per-ton values that DOE used are the same as used in the July 2023 NOPR and discussed in the NOPR TSD. Table III.17 presents the present value for NO_X emissions reduction for each EL calculated using 7-percent and 3-percent discount rates, and table III.18 presents similar results for SO_2 emissions reductions. Emissions reductions for NO_X and SO_2 are monetized over the entire analytical period in the NIA (*i.e.,* the full lifetime of products shipped over 30 years, to 2118). The results in these tables reflect application of EPA's low dollar-per-ton values, which DOE used to be conservative.

TABLE III.17—PRESENT VALUE OF NO_X EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059

EL	7% Discount rate	3% Discount rate
	(million 2022$)	
1	517	1,602
2	833	2,597

TABLE III.17—PRESENT VALUE OF NO_X EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059—Continued

EL	7% Discount rate	3% Discount rate
	(million 2022$)	
3	1,177	3,719
4	1,373	4,353

TABLE III.18—PRESENT VALUE OF SO_2 EMISSIONS REDUCTION FOR GAS-FIRED INSTANTANEOUS WATER HEATERS SHIPPED IN 2030–2059

EL	7% Discount rate	3% Discount rate
	(million 2022$)	
1	0.04	0.2
2	0.9	2.8
3	1.8	5.7
4	12	38

Not all the public health and environmental benefits from the reduction of greenhouse gases,[34] NO_X, and SO_2 are captured in the values above, and additional unquantified benefits from the reductions of those pollutants as well as from the reduction of direct PM and other co-pollutants may be significant. DOE has not included monetary benefits of the reduction of Hg emissions because the amount of reduction is very small.

5. Summary of Economic Impacts

Table III.19 presents the NPV values that result from adding the estimates of the economic benefits resulting from reduced GHG and NO_X and SO_2 emissions to the NPV of consumer benefits calculated for each EL considered in this NODA. The consumer benefits are domestic U.S. monetary savings that occur as a result of purchasing the covered products, and are measured for the lifetime of products shipped during the period 2030–2059. The climate benefits associated with reduced GHG emissions resulting from a standard at the analyzed EL are global benefits, and are also calculated based on the lifetime of gas-fired instantaneous water heaters shipped during the period 2030–2059.

TABLE III.19—CONSUMER NPV COMBINED WITH PRESENT VALUE OF CLIMATE BENEFITS AND HEALTH BENEFITS

Category of climate benefits *	EL 1	EL 2	EL 3	EL 4
Using 3% Discount Rate for Consumer NPV and Health Benefits (billion 2022$)				
2.0% Near-term Ramsey DR	6.9	12.1	17.9	21.0
Using 7% Discount Rate for Consumer NPV and Health Benefits (billion 2022$)				
2.0% Near-term Ramsey DR	4.9	8.3	12.1	14.1

* Climate benefits are only calculated for emissions reductions through 2080. Monetized climate effects are presented under a 2 percent near-term Ramsey discount rate, consistent with the 2023 SC–GHG estimates. The 2003 version of OMB's Circular A–4 (*https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/circulars/A4/a-4.pdf*) had generally recommended 3 percent and 7 percent as default discount rates for costs and benefits, and as part of the IWG on the SC–GHG, OMB also recognized that climate effects should be discounted only at appropriate consumption-based discount rates. In November 2023, OMB finalized an update to Circular A–4, in which it recommended the general application of a 2.0 percent discount rate to costs and benefits (subject to regular updates), as well as the consideration of the shadow price of capital when costs or benefits are likely to accrue to capital. Because the SC–GHG estimates reflect net climate change damages in terms of reduced consumption (or monetary consumption equivalents), the use of the social rate of return on capital (7 percent and 3 percent under OMB's 2003 Circular A–4) to discount damages estimated in terms of reduced consumption would inappropriately underestimate the impacts of climate change for the purposes of estimating the SC–GHG.

IV. Public Participation

DOE requests comment on the updated analysis for gas-fired instantaneous water heaters presented in the NODA. As noted in the July 2023 NOPR, DOE may adopt energy efficiency levels that are either higher or lower than the proposed standards.

DOE will accept comments, data, and information regarding this NODA no later than the date provided in the **DATES** section at the beginning of this document. Interested parties Approval of the Office of the Secretary may submit comments, data, and other information using any of the methods described in the **ADDRESSES** section at the beginning of this document.

Submitting comments via www.regulations.gov. The *www.regulations.gov* web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment itself or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Otherwise, persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

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Submitting comments via email, hand delivery/courier, or postal mail. Comments and documents submitted via email, hand delivery/courier, or

[34] *https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf* (last accessed July 3, 2024).

postal mail also will be posted to *www.regulations.gov.* If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information in a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via postal mail or hand delivery/courier, please provide all items on a CD, if feasible, in which case it is not necessary to submit printed copies. No telefacsimiles (''faxes'') will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, that are written in English, and that are free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email two well-marked copies: one copy of the document marked ''confidential'' including all the information believed to be confidential, and one copy of the document marked ''non-confidential'' with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

V. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this notification of data availability and request for comment.

Signing Authority

This document of the Department of Energy was signed on July 18, 2024, by Jeffrey Marootian Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on July 18, 2024.

Treena V. Garrett,

Federal Register Liaison Officer, U.S. Department of Energy.

[FR Doc. 2024–16177 Filed 7–19–24; 4:15 pm]

BILLING CODE 6450–01–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2024–1892; Project Identifier MCAI–2024–00198–T]

RIN 2120–AA64

Airworthiness Directives; Airbus SAS Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to supersede Airworthiness Directive (AD) 2023–07–13, which applies to certain Airbus SAS Model A350–941 and –1041 airplanes. AD 2023–07–13 requires repetitive detailed inspections of the lower attachment studs on the AFT galley complex and, depending on findings, replacement of the lower attachment studs. Since the FAA issued AD 2023–07–13, it has been determined that additional airplanes are affected, and that all affected parts must be replaced with serviceable parts. This proposed AD would continue to require the actions in AD 2023–07–13, add airplanes to the applicability, and require the replacement of all affected parts, as specified in European Union Aviation Safety Agency (EASA) AD, which is proposed for incorporation by reference (IBR). The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by September 6, 2024.

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to *regulations.gov.* Follow the instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- *Hand Delivery:* Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

AD Docket: You may examine the AD docket at *regulations.gov* under Docket No. FAA–2024–1892; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The street address for Docket Operations is listed above.

Material Incorporated by Reference:

- For EASA material identified in this proposed AD, contact EASA, Konrad-Adenauer-Ufer 3, 50668 Cologne, Germany; telephone +49 221 8999 000; email *ADs@easa.europa.eu;* website *easa.europa.eu.* You may find this material on the EASA website *ad.easa.europa.eu.* It is also available at *regulations.gov* under Docket No. FAA–2024–1892.
- You may view this material at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th Street, Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.

FOR FURTHER INFORMATION CONTACT: Dat Le, Aviation Safety Engineer, FAA, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516–228–7300; email *dat.v.le@faa.gov.*

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or