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November 4, 2022

Internal Revenue Service
CC:PA:LPD:PR (Notice 2022-51)
Room 5203
P.O. Box 7604
Ben Franklin Station
Washington, DC 20044.

Re: Comments on Department of Treasury and Internal Revenue Service, Notice 2022-51 – "Request for Comments on Prevailing Wage, Apprenticeship, Domestic Content, and Energy Communities Requirements Under the Act Commonly Known as the Inflation Reduction Act of 2022"

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) welcomes the opportunity to comment on the U.S. Department of Treasury (Treasury) and Internal Revenue Service (IRS)'s implementation of tax credits enacted under the Inflation Reduction Act (IRA).

AHRI has 320 member companies that manufacture quality, safe, efficient, and innovative residential, commercial, and industrial air conditioning, space heating, water heating, and commercial refrigeration equipment and components for sale in North America and in export markets around the world. AHRI is an internationally recognized advocate for the heating, ventilation, air conditioning, and refrigeration (HVACR) industry and certifies the performance of many of the products manufactured by its members. In North America, the annual economic activity resulting from the HVACR industry is approximately $256 billion. In the United States alone, AHRI's members, along with distributors, contractors, and technicians, employ more than 1.3 million people.

The IRA presents market-based incentives to encourage clean energy solutions to address climate change. Of the total $369 billion investment in clean energy, about $270 billion of that funding will be delivered through tax incentives administered by the Treasury.[1] With tax policy driving the clean energy transition, it is critical that these incentives are implemented in a clear and consistent manner to provide market participants the confidence they need to spur investments to reduce greenhouse gas emissions. It will not be possible to achieve President Biden's goals of "cutting climate pollution in half

[1] Department of the Treasury, "Briefing on Inflation Reduction Act Climate and Clean Energy Tax Incentive Implementation Process," October 6, 2022.

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by 2030 and reaching net-zero emissions by no later than 2050" without providing clear signals to industry encouraging achievable emissions reduction targets in the near and long-term.[2]

A variety of clean energy credits under the IRA are eligible for bonus credits so long as they fulfill domestic content requirements. A project would be eligible for a bonus plus up in the Investment Tax Credit (ITC) or the Production Tax Credit (PTC), as the case may be, if all steel, iron, or manufactured products that are part of the project are produced in the United States. For this purpose, manufactured products will be considered to be "produced in the United States" if at least 40 percent of the total cost of the product, including components, is "mined, produced, or manufactured in the United States."

AHRI is supportive of enhanced credits for projects that fulfill certain additional requirements to produce goods in the United States. In particular, AHRI supports the goal of the domestic content requirements to promote the re-shoring of the American manufacturing base. However, existing ambiguities in the IRA and the ability of thermal energy storage (TES) systems to claim these credits must be addressed.

AHRI has submitted comments regarding credit availability for thermal energy storage systems and their component parts with regards to Notice 2022-49 with regards to "Certain Energy Generation Incentives." AHRI is supportive of the IRA's enhancement of the Energy Investment Credit and its extension to thermal energy storage technology. To further the goals of the legislation, AHRI requests that Treasury and the IRS provide additional guidance to define the conditions under which thermal energy storage property can qualify for domestic content bonus credits under the Section 48 ITC.

The below comments address questions posed in ".03 Domestic Content Requirement," which are contained on pages 13-16 of the posted Notice.

IRA Domestic Content Requirements

I. .03(2)(a) Guidance Re: Component of a Qualified Facility

.03 Domestic Content Requirement

(2) Sections 45(b)(9)(B)(iii) and 45Y(g)(11)(B)(iii) provide that manufactured products that are components of a qualified facility upon completion of construction will be deemed to have been produced in the United States if not less than the adjusted percentage of the total costs of all of such manufactured products of such facility are attributable to manufactured products (including components) that are mined, produced, or manufactured in the United States.

(a) Does the term "component of a qualified facility" need further clarification? If so, what should be clarified and is any clarification needed for specific types of property, such as qualified interconnection property?

[2] White House, "FACT SHEET: How the Inflation Reduction Act Builds a Better Future for Young Americans," August 16, 2022, https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/16/fact-sheet-how-the-inflation-reduction-act-builds-a-better-future-for-young-americans/#:~:text=It%20will%3A,by%20no%20later%20than%202050.

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AHRI suggests that Treasury and IRS provide guidance that clarifies what "components" of a thermal energy storage facility must be produced domestically for a facility to be eligible for domestic content bonus credits.

AHRI is uniquely positioned to provide guidance on the interpretation of these provisions, given its extensive representation and engagement with the thermal energy storage sector. To guide Treasury's rulemaking process, AHRI provides the following diagrams and examples to demonstrate which components should be eligible for the Section 48 ITC. Additionally, AHRI has attached two industry standards for Treasury to consult as it drafts guidance: AHRI Standard 900 on "Standard for Performance Rating of Thermal Energy Storage Equipment Used for Cooling" and the American Society of Heating, Refrigerating and Air-Conditioning Engineers' "Systems Equipment Handbook – Chapter 51 – Thermal Storage."

Thermal energy storage technologies are fundamentally different from other forms of energy storage because their energy output is thermal (not electric) and this output is fed into the heating or cooling systems of the building, to reduce electric consumption. For this reason, it is critical that Treasury and IRS recognize the unique nature of thermal energy storage technologies and provide a consistent methodology to determine which components are part of "property comprising a [thermal energy storage] system" described in the statute. Prior to enactment of the IRA, 26 U.S. Code § 48(a)(5)(D) defined the term "qualified property" as "tangible personal property" or "other tangible property (not including a building or its structural components), but only if such property is used as an integral part of the qualified investment credit facility." Although the IRS has experience interpreting the phrase "integral part," they have not yet interpreted this phrase with regards to thermal energy storage properties.[3]

AHRI recommends that a clear methodology be provided to determine what constitutes an "integral part" of a thermal energy storage system. This clarification is necessary to guide taxpayers' business operations so that they have certainty over which pieces of expensive industrial equipment are eligible for credits provided by the government. We propose to include *any and all* equipment that is necessary for the operation of the TES system. The below diagrams provide additional explanation, but we believe that the credit should be available for at least chillers, heat exchangers, machines, controls, pumps, valves, piping, insulation, electrical power for the pumps and chillers, instrumentation, water, chemical treatment of the water similar to the rest of the district cooling or heating, wires, and connections necessary for creating, storing or transferring thermal energy *between (to or from)* the storage devices and the building's HVAC system.

Treasury should clarify that component technologies are eligible for the credit, even if they are not exclusively dedicated to functions within the thermal energy storage system. For example, a chiller will perform essential functions as part of a thermal storage property, but it may also be used for other purposes within the industrial facility. AHRI members believe that these chillers should still be eligible for tax credits, as they constitute an "integral part" of the storage facility that also serve additional functions at the site. A narrow interpretation of the term "integral part" would cut off manufacturers

[3] Internal Revenue Service, "Beginning of Construction for the Investment Tax Credit under Section 48," Notice 2018-59, https://www.irs.gov/pub/irs-drop/n-18-59.pdf

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from accessing funding necessary to their business operations while rewarding them for using machinery with only one purpose.

AHRI is providing as an appendix three examples with diagrams that further demonstrate the methodology behind AHRI's position that a chiller should qualify as a component technology eligible for the credit (see Appendix: Examples of Component Technologies).

Treasury and IRS should clarify that a taxpayer is eligible to claim credit for individual components to be used in thermal energy storage property, even if that property is not placed in service in the same year in which those components are acquired. For example:

- Replacement of components during the life of the system. TES systems generally last 20 years or more, but certain mechanical components may have to be replaced. The need for replacement will depend mainly on usage intensity, which correlates to the benefits to the power grid. Therefore, the tax credit should be available also for replacement of system components. Cost would include both equipment and installation work.
- System expansion for additional capacity. The facility may want to increase system capacity as its thermal loads increase or increase participation in load reduction programs of the power grid.

Additionally, it is common for commercial and industrial buildings to require redundancy in critical parts of the HVAC system. For example, depending on the use of the building (e.g., Hospital, manufacturer, data center), this could be N+1, N+2, 2N+1 for redundancy for components, such as chillers, boilers, cooling towers, and pumps. As another example, if a hospital has a failure of one of these critical HVAC components, the building – or portions of it – may have to be closed for repairs if there was no redundancy. If the component is part of the TES property, we recommend that the redundant component(s) be included in the calculation for TES property.

II. .03(2)(c) Guidance Re: Definition of Manufactured Product

.03 Domestic Content Requirement

(2) Sections 45(b)(9)(B)(iii) and 45Y(g)(11)(B)(iii) provide that manufactured products that are components of a qualified facility upon completion of construction will be deemed to have been produced in the United States if not less than the adjusted percentage of the total costs of all of such manufactured products of such facility are attributable to manufactured products (including components) that are mined, produced, or manufactured in the United States.

(c) Does the term "manufactured product" with regard to the various technologies eligible for the domestic content bonus credit need further clarification? If so, what should be clarified? Is guidance needed to clarify what constitutes an "end product" (as defined in 49 C.F.R. 661.3) for purposes of satisfying the domestic content requirements?

Treasury should clarify the meaning of a "manufactured product" in the context of "thermal energy storage." The legislation as drafted is silent as to what manufactured products comprise a thermal energy storage system, leaving companies uncertain as to which components must be manufactured domestically.

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AHRI has provided comments above that address how Treasury should define "components" of a thermal energy storage system that should be eligible for credits. In general, AHRI members believe that the following list of "components" and any similarly situated or related parts should be considered "manufactured products" for the purposes of determining domestic content requirements and associated credits.

Manufactured products for a TES system may include, but should not be limited to, one or more of the following:

- Energy storage units (thermal batteries)
- Charging chiller (for creating cold energy to be stored)
- Expansion tanks
- Heat-exchanger
- Circulation pumps
- Actuators, valves, and gauges
- Meters and sensors (flow, temperatures, pressure, thermal energy, electricity)
- Communications, controls, control panel, variable frequency drivers, electrical board, and related gear
- Piping, joints, connectors, insulation, fixation, and fittings
- Heat transfer circulating fluid (such as glycol)

III. .03(2)(d) Guidance Re: Adjust Threshold Rule for Manufactured Product

.03 Domestic Content Requirement

(d) Does the adjusted percentage threshold rule that applies to manufactured products needs further clarification?

AHRI believes that the adjusted percentage threshold rule that applies to manufactured products needs further clarification. AHRI proposes that Treasury and IRS clarify that "steel" and "iron" products are included in both the numerator and denominator when calculating the percent of domestic content of a project. Otherwise, for example, in a project where steel and iron products are a majority of the cost and other manufactured products account for only a small portion, but are mostly imported, the taxpayer will have no incentive to use domestic iron and steel products because among the other manufactured products (non-iron or steel) imports are more than 60%. Therefore, determining domestic content on the basis of ALL products (steel, iron, and manufactured), would better fulfill the legislative intent to use the bonus incentive to motivate taxpayers to use domestic content. In other words, if all steel and iron products used in the project are manufactured in the United States, and together with "other manufactured products," meet the 40% threshold, the project will qualify for the bonus incentive, even if the "other manufactured products" independently do not meet the 40% threshold.

IV. .03(4) Guidance Re: Domestic Content in Section 48 and Section 48E

.03 Domestic Content Requirement

(4) Sections 48 and 48E have domestic content bonus amount rules similar to other provisions of the Code. Section 48(a)(12) has domestic content requirement rules similar to § 45(b)(9)(B) and §

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48E(a)(3)(B) has domestic content rules similar to the rules of § 48(a)(12). What should the Treasury Department and the IRS consider in providing guidance regarding the similar domestic content requirements under § 48(a)(12) and § 48E(a)(3)(B)?

Please refer to the above comments provided in "I. .03(2)(a) Guidance Re: Component of a Qualified Facility" and "II. .03(2)(c) Guidance Re: Definition of Manufactured Product." AHRI members believe these same definitions should apply in the context of the Section 48 and Section 48E ITCs.

Treasury should provide clear guidance clarifying domestic content requirements for "thermal energy storage." This should include clarifications of how domestic content standards compare between "thermal energy storage" technologies and battery storage technologies. It is essential that various energy storage technologies have equal compliance obligations and a level playing field.

V. .03(5) Guidance Re: Labor Costs in Domestic Content Calculations

.03 Domestic Content Requirement

(5) Please provide comments on any other topics relating to the domestic content requirements that may require guidance.

For the purposes of complying with domestic content requirements, AHRI suggests that Treasury and IRS should clarify that expenditures on installation and labor may factor into the calculation of the total cost of a manufactured product. The IRA instructs Treasury and IRS to examine "the total costs of all such manufactured products," which AHRI believes should logically include both installation and labor costs, along with the material costs of manufacturing a product. For example, in the case of a company that manufactures an HVAC product with a total installed cost of $45,000 ($20,000 for the cost of the product and $25,000 in labor costs for installation), the taxpayer should be able to count the $25,000 in labor costs towards its eligibility for the bonus credit. Providing this clarity will align with the long-term vision of encouraging reductions in greenhouse gas emissions while simultaneously re-shoring American manufacturing.

VI. .05 Guidance Re: Increased Credit Amount for Qualified Facility with Maximum Net Output of Less than 1 Megawatt

.05 Increased Credit Amount for Qualified Facility With Maximum Net Output of Less than 1 Megawatt

Section 45(b)(6)(A) provides for an increased credit amount in the case of any qualified facility that satisfies the requirements of § 45(b)(6)(B). One way that a qualified facility can satisfy the requirements of § 45(b)(6)(B) is if it is a facility with a maximum net output of less than 1 megawatt (as measured in alternating current). Similarly, § 48(a)(9)(A) provides for an increased credit amount in the case of any energy project that satisfies the requirements of § 48(a)(9)(B), and one way that an energy project can satisfy the requirements of § 48(a)(9)(B) is if it is a project with a maximum net output of less than 1 megawatt of electrical (as measured in alternating current) or thermal energy. Sections 45Y(a)(2)(B) and 48E(a)(2)(A) also provide similar rules. Does the determination of when a facility or project will be considered to have a

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maximum net output of less than 1 megawatt need further clarification? If so, what should be clarified?

The electrical energy equivalent of a cold-thermal energy storage system depends on the efficiency of the HVAC system which it replaces while discharging. This efficiency factor is represented by a ratio of kW/Ton-refrigeration (or RT), the standard unit of cold energy output, which is the number of kilowatts required to generate one Ton-refrigeration. For cold energy storage systems, AHRI proposes that Treasury and IRS adopt the acceptable kW/Ton conversion factors used by California Public Utilities Commissions' Permanent Load Shift (PLS) Program for Thermal Energy Storage (TES), which was designed for compensating buildings installing cold-TES systems, according to their output.[4] This program also makes an important distinction between Chiller-based HVACR systems, based on two types of methods for rejecting heat from the building (i.e., condensation): One method is directly to the outside air (namely, air-condensation, or air-cooled, which is less energy-efficient but more water efficient), and the second method is by water evaporation (namely, water-condensation or water-cooled, which is more energy efficient but less water efficient). The kW/Ton conversion for these two system types is substantially different. According to above CPUC's PLS TES program, a conversion factor of 0.7 kW/ton was applied for water-condensation systems and 1.2 kW/Ton for air-condensation systems. Using these conversion factors, the 1-megawatt equivalent of cold-thermal energy is 1,428 Ton if the TES systems is connected to a water-condensation HVAC system, or 833 Ton if connected to an air-condensation method, as summarized in the table below.

Condensation Method of the building's HVAC System	Thermal Energy Output (Ton-refrigeration, RT)	Conversion Factor (kW/RT)	Electric Energy Equivalent
Water	1,428	0.7	1,000 kW
Air	833	1.2	1,000 kW

Using conversion factors which are based on the HVAC efficiency is fair to both taxpayers and IRS, because the 1-megawatt threshold will be calculated more accurately. Using a single conversion factor (based on some average) would unduly reward/incentivize inefficient systems (increase the RT value for the 1-megawatt exemption) and penalize the efficient ones (lower the RT value for the exemption).

Additionally, AHRI seeks clarification regarding the applicability of prevailing wage and apprenticeship requirements in the context of the bonus credit for thermal energy storage properties with a maximum net output of less than 1 megawatt of thermal energy. It is AHRI's understanding of the intent of the legislation in this regard that smaller projects would not have to meet the same prevailing wage and apprenticeship program requirements as larger projects.

[4] See PG&E, *Permanent Load Shift-Thermal Energy Storage (PLS-TES) Program* (June 2017), page 4 https://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/demandresponse/pls/pls_tes_program_manual.pdf).

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Conclusion

AHRI appreciates the opportunity to provide this feedback to Treasury and the IRS to advance the implementation of this legislation. Should you have any questions on these comments or if you wish to discuss further, please contact Samantha Slater at 703-293-4871 or sslater@ahrinet.org.

Sincerely,

Samantha M. Slater
Senior Vice President, Government Affairs

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Appendix

Examples of Component Technologies

In this first example (Figure 1), an existing central chilled water plant (for storing cold or hot energy) is modified to include a TES system. The existing system is on the left side of the diagram and not part of the project. Everything on the right side of the diagram is part of the TES system. This includes:

1) the ice-making chiller (for charging the system), and cooling tower (if needed),
2) the pump which specifically "removes heat from the storage medium for subsequent use",
3) the TES tanks/cells and concrete pad(s) (or support rig),
4) the control valve,
5) the glycol to water heat exchanger,
6) the glycol piping between all the previous components listed and insulation, and water piping for charging-chiller condensation (for water-cooled systems),
7) glycol management system and initial glycol liquid mixture (not pictured),
8) the cooling tower (not pictured) piped to the condenser of the dedicated ice-making chiller (item 1),
9) the condenser water pump (not pictured) for the dedicated ice-making chiller (item 1),
10) the condenser water piping and water treatment implementation (not pictured) for use with the dedicated ice-making chiller (item 1),
11) the chiller plant controls and sensors (not pictured),
12) TES control unit, and related actuators, valves, meters and communication (including meters on the water loop for monitoring energy loads and outputs), and
13) the sales taxes and labor to install & commission the previous components.

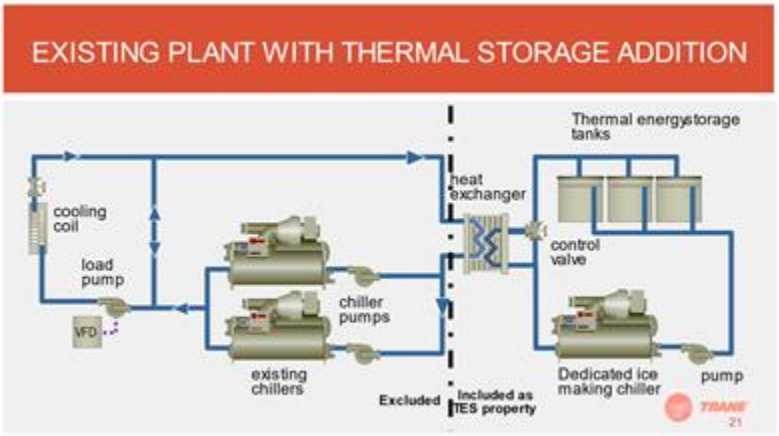

Figure 1

The second example (Figure 2) depicts a new construction building built with a TES system used for cooling. An air handling device with a cooling coil (indicated on the left side of Figure 2) which moves cold air into and out of conditioned spaces could also be considered part of a TES system, as it "removes heat from, or adds heat to, a storage medium for subsequent use." Depending on the way the

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system is sized, installed, and operated – this design would all be part of a TES system. However, these are also all components of the Heating, Ventilation and Air-Conditioning (HVAC) for the building.

The components integral to removing the heat (or in the case of hot water storage, adding heat) from the storage medium (the air-cooled chiller in this figure), along with the pump required to move energy, the TES tanks, control valves, the glycol piping between all the previous components, the glycol management system and chiller plant controls could be included as TES property; but that air handling devices that are primarily being installed as part of the building's HVAC system and should not be included as part of the TES property. Put more simply, referencing Figure 2, everything on the right side of the diagram is part of the TES property.

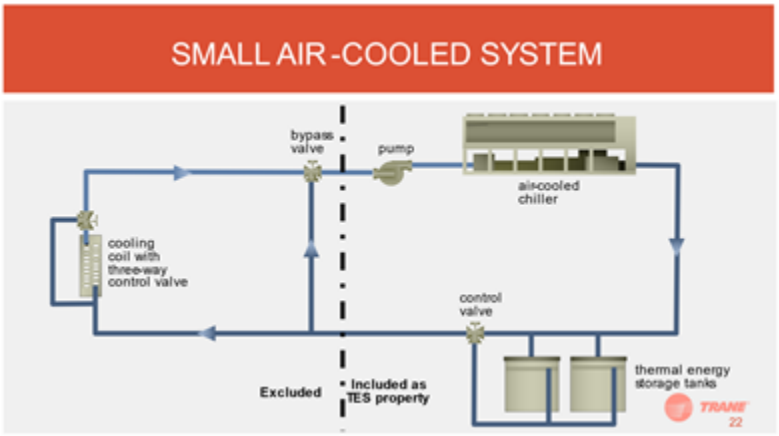

Figure 2

In the third example (Figure 3), a storage-source heat pump system is used for the electrification of heat for a building. The chiller-heater in the middle of the diagram is the heart of the system sized for the full building heating capacity. The chiller-heater will pull heat/energy from the TES tanks as a heat source during the peak heating period for a building (primarily morning warmup). Various heat sources – including indoor heat gains and air to water heat pumps (AWHP) will put heat/energy back into the TES tanks during the afternoon or other off-peak winter hours. Other heat sources could include wastewater heat exchange, exhaust air energy recovery, solar-thermal panels, a downsized geothermal loop, or a downsized backup boiler. If the same principles as explained in example 2 are used, then the heating and cooling coils along with their associated pumps would be excluded as TES property – but everything else in this diagram would be included as TES property:

1) the chiller-heater,
2) chiller-heater evaporator glycol pump,
3) thermal energy storage loop glycol pump,
4) thermal energy storage tanks,
5) air to water heat pump,
6) cooling tower,
7) cooling tower pump, piping, and water treatment implementation (not pictured),
8) glycol to water heat exchanger,
9) chiller-heater condenser glycol pump,
10) the glycol piping between all the previous components listed,

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11) glycol management systems and initial glycol liquid mixture (not pictured) for both the evaporator side and condenser side of the chiller-heater,
12) the chiller-heater plant controls, valves, buffer tanks, and sensors (not pictured), and
13) the sales taxes and labor to install and commission the previous components.

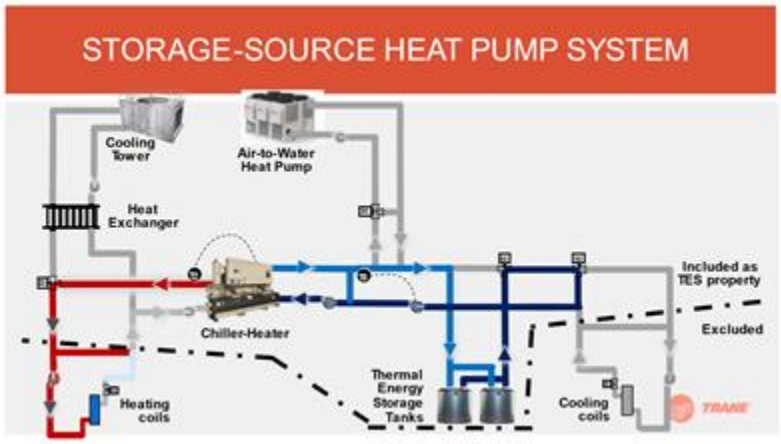

Figure 3