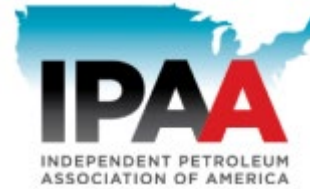


Operator Survey of Supply Chain Delays for Equipment Needed for EPA Proposed NSPS 0000b Methane Rule



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From June through September of 2023, the American Petroleum Institute (API), American Exploration and Production Council (AXPC), Interstate Natural Gas Association of America (INGAA), Independent Petroleum Association of America (IPAA), and GPA Midstream Association (the “Industry Trades”) conducted an operator survey of supply chain delays for components and equipment necessary to comply with the Environmental Protection Agency’s (EPA) proposed rule “Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review.” To comply with antitrust guidelines the survey was blinded, and data was gathered and compiled by a third party consultant, John Beath Environmental.

The EPA’s 0000b New Source Performance Standard (the “methane rule”) is a complex rule that will apply to many thousands of facilities in producing basins across the country. Because of the wide variety of conditions faced by these facilities, the challenges in acquiring equipment due to ongoing COVID-induced supply chain delays, and additional proposed rules which will apply to these sources such as EPA’s revisions to Subpart W of the Greenhouse Gas Reporting Program (GHGRP) that will also require equipment, **operators need a reasonable timeline based on a December 6, 2022 applicability date to come into compliance with the final methane rule.**

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Responses to the survey included information from 11 basins; a majority of responses included information from the Permian Basin. The responses suggest that operators have the greatest supply chain concerns with pneumatics, control devices, storage vessels, associated gas, and fugitive emissions components.

The survey found that current backorder times for components range from 6+ to 24+ months. Implementation of the proposed methane rule is expected to increase current backorder times by an additional 6+ months. A November 15, 2021 applicability date is expected to substantially exacerbate the challenges of equipment acquisition over a December 6, 2022 applicability date.

The survey results indicate that reasonable compliance timelines, based on a December 6, 2022 applicability date, would need to allow a minimum of 12 to 26 months for operators to come into compliance with the final methane rule, as appropriate given supply chain backlogs for each affected facility.

Current and Anticipated Supply Chain Delays

- Current backorder is generally up to 12 months across affected facilities with additional lead time needed for specialized equipment.
- Finalization of NSPS OOOOb is expected to add a minimum of 6 months of additional backorder time across affected facilities.

Affected Facility	Current Procurement Lead Time ("Backorder") is Delayed	Anticipated Backorder upon NSPS OOOOb Finalization Compared to Existing Lead Time
Pneumatic Controllers and Pumps	<ul style="list-style-type: none"> • Up to 12 months across equipment options. • Electrical transformers and instrument air skids are experiencing variable delays with 24+ months indicated. 	<ul style="list-style-type: none"> • Add 6 to 12 months
Control Device Provisions	<ul style="list-style-type: none"> • Up to 12 months for both control devices and other equipment (monitoring, etc.) 	<ul style="list-style-type: none"> • Add 6 to 12 months for control devices and • Add 6+ months for other equipment.
Storage Vessels	<ul style="list-style-type: none"> • Up to 12 months for steel tanks, vent header control valves • Up to 24 months for VRUs and • Up to 30 months for PVRVs & thief hatches. 	<ul style="list-style-type: none"> • Add 6+ months across equipment
Associated Gas	<ul style="list-style-type: none"> • Up to 18 months for VRUs, gas compressor skids 	<ul style="list-style-type: none"> • Add 6 to 12 months
Fugitive Emissions Components	<ul style="list-style-type: none"> • Up to 12 months across monitoring options. 	<ul style="list-style-type: none"> • Add up to 6 months
Other (miscellaneous equipment)	<ul style="list-style-type: none"> • Up to 18 months for VFDs 	<ul style="list-style-type: none"> • Add 6 to 12 months for VFDs

Recommended OOOOb Compliance Timelines by Affected Facility

Affected Facility / Category	EPA Proposed Compliance Timeline	Anticipated Supply Chain Delay Upon Finalization (Current lead time + additional anticipated lead time)	Industry Trades Recommended Compliance Timeline
Pneumatic Controllers & Pumps	60 days	18 - 36 months	26 months
Control Devices and Closed Vent Systems	60 days	18-24 months	20 months
Associated Gas	60 days	30 months	24 months
Fugitive Emissions Components	60 days	18 months	12 months
Storage Vessels	30 - 60 days	18 - 36 months	26 months

API's February 13 comment letter¹ included anecdotal reports of members' supply chain constraints. This survey quantitatively expands on the supply chain issues raised to demonstrate the need for reasonable compliance timelines.

These recommended compliance timelines account only for supply chain delays and do not contemplate the additional time needed to install equipment. The recommendations reflect the realities of the supply chain, balanced with the urgency of aggressive industry action to achieve compliance with OOOOb and reduce emissions.

While this survey evaluated supply chain delays relative to OOOOb compliance and did not contemplate compliance with OOOOc, given the scope of the proposed rules and available data, similar supply chain constraints are anticipated to continue beyond the OOOOc implementation timeframe.

¹<https://www.regulations.gov/comment/EPA-HQ-OAR-2021-0317-2428>

Equipment & Services Included by Affected Facility

- ❑ Survey responses included equipment and services for various compliance options for each affected facility (listed below).
- ❑ The survey included estimated equipment counts, supplier market, and supply chain delays.

<p><u>Pneumatic Controllers & Pumps</u></p> <ul style="list-style-type: none"> • Electrical Transformers • Solar Equipment • Generator Skids • Instrument Air Skids • Electrical Valves/Controllers • Replacement Pumps • Replacement Controllers • ECAT System • Nitrogen Gas 	<p><u>Control Devices & Closed Vent Systems</u></p> <ul style="list-style-type: none"> • Flares • Enclosed Combustion Devices • Flow Meters • Backpressure Valves • Calorimeters • Third-party Testing: Performance, Net Heating Value (NHV), Opacity • Automatic Pilot Light • Thermocouples • Piping for Closed Vent System 	<p><u>Storage Vessels</u></p> <ul style="list-style-type: none"> • Steel Tanks • Pressure-Vacuum Relief Valves (PVRVs) & Thief Hatches • Vent Header Control Valve • Vapor Recovery Units (VRUs)*
<p><u>Associated Gas</u></p> <ul style="list-style-type: none"> • VRUs* • Methane Pyrolysis Skids • Gas Compressor Skids • Gas to Liquids Skids • Liquefied Natural Gas Production Skids 	<p><u>Fugitive Emissions Components</u></p> <ul style="list-style-type: none"> • Optical Gas Imaging (OGI) Cameras • OGI Camera Technicians • Third-party OGI Monitoring • Third-party Alternative Screening Technology Monitoring • Continuous Monitoring Systems • Replacement Piping Components • Handheld Methane Detectors 	<p><u>Other (Miscellaneous Equipment)</u></p> <ul style="list-style-type: none"> • Variable Frequency Drives (VFDs) • Cabling (Electric/Communications) • Engineering Analysis (Associated Gas, Pneumatic Pumps, etc.) • Eductor Skid (for compressors)

*VRUs were considered separately for Storage Vessels and Associated Gas since size and design may differ.

Estimated Equipment Counts Needed for NSPS 0000b Compliance

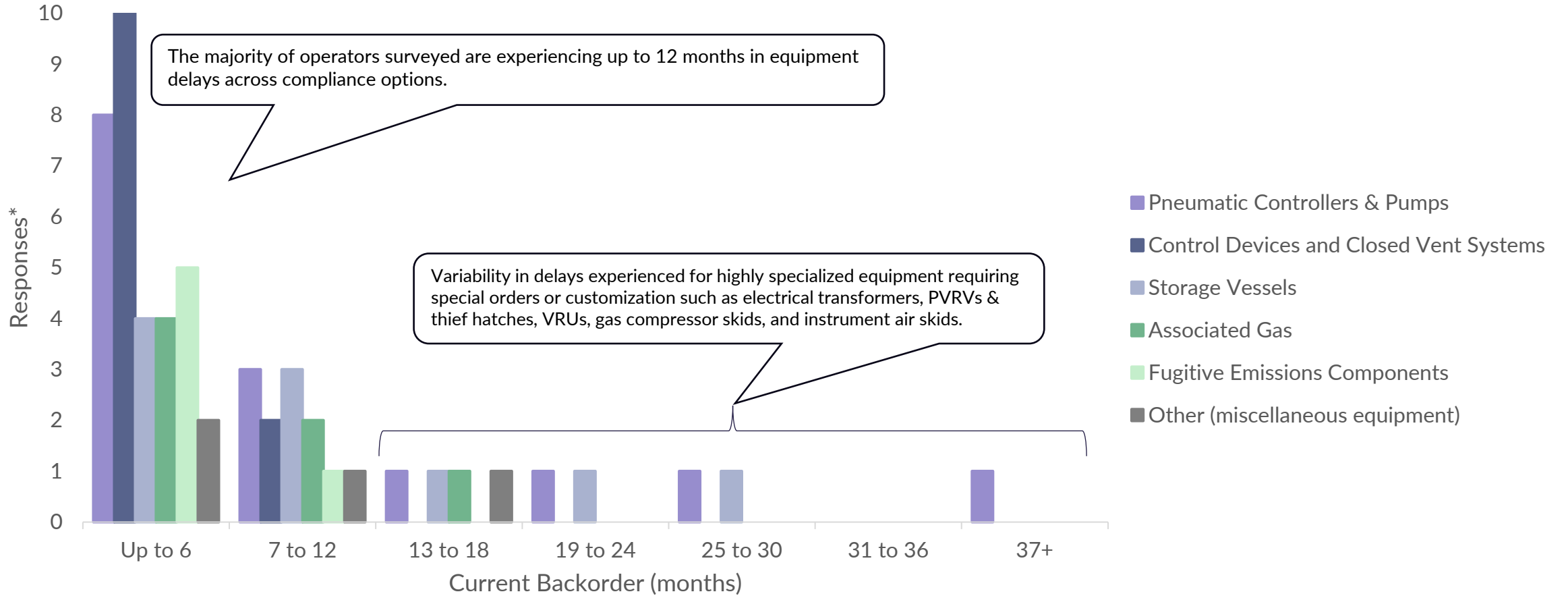
- **Pneumatic Controllers & Pumps**
 - Variety of responses highlight the need for multiple compliance options (i.e., no “one size fits all” solution).
 - 69% of responses indicated that instrument air skids would be needed.
 - Responses continue to indicate that a variety of power generation options will need to be used.
- **Control Devices & Closed Vent Systems**
 - 82% of responses indicated that flow meters would be needed.
 - 27% or more of responses indicated that third-party services (performance testing, NHV testing, or opacity monitoring) were being investigated for use.
- **Storage Vessels**
 - PVRVs & thief hatches were key equipment needed and were not considered in EPA’s cost analysis.
 - 29% of responses indicated that steel tanks would be needed, possibly as replacements for fiberglass tanks to facilitate a closed vent system. Replacement tanks were not considered in EPA’s cost analysis.
- **Associated Gas**
 - While operators support the concept of other types of beneficial use, responses indicated that operators were not planning to implement alternative technology options proposed by EPA (methane pyrolysis, gas to liquids, liquefied natural gas). The costs of alternative use options were not considered in EPA’s cost analysis.
- **Fugitive Emission Components**
 - Responses indicated that most operators were planning to implement their own OGI monitoring program (OGI cameras and technicians). A shortage of OGI technicians was also noted in the responses, and for gas processing operators, availability of qualified OGI camera technicians could be further limited based on the proposed certification and audit requirements in Appendix K. EPA’s cost analysis assumed that operators would use a third-party service.

Survey Results Compared to Previous API Comments

- Since the February 13, 2023 comment deadline, equipment backorder has generally remained the same or worsened.
- A reasonable compliance timeline of 12 to 26 months is needed based on a December 6, 2022 applicability date. Additional time would be needed if EPA maintains the November 15, 2021 applicability date.

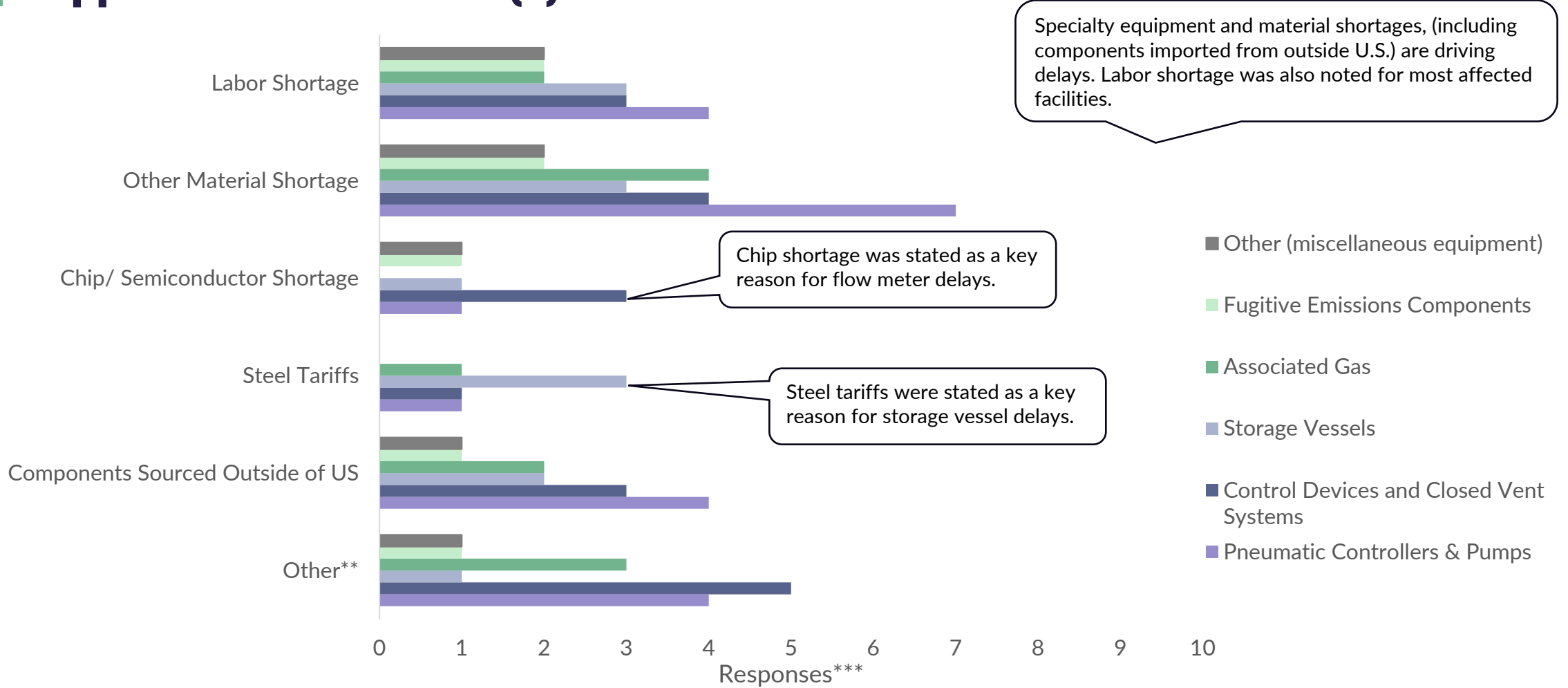
Supply Chain Item	Survey Results (August 2023)	Previous API Comments (February 2023)	Summary of Comparison
Control Device Backorder	Up to 6 months: 75% 7 to 12 months: 25%	3 to 4 months	Backorder has increased by up to 8 months.
Flow Meter Backorder	Up to 6 months: 83% 7 to 12 months: 17%	6 to 8 months	Backorder remains approximately 6 to 8 months.
Flow Meter Installation Timeline (Hot Tap)	Up to 2 weeks: 50% 3 to 4 weeks: 33% 12+ weeks: 17%	Up to 4 months	Survey results may not reflect hot tap installations.
Instrument Air Skids Backorder	Up to 6 months: 58% 7 to 12 months: 25% 19+ months: 17%	8 to 12 months	Backorder has increased by up to 7 months.
Solar Panels Backorder	Up to 6 months: 80% 7 to 12 months: 20%	18 to 24 months	Backorder has decreased by 6 to 12 months.

Current Procurement Lead Time



*Responses by affected facility based on maximum count for each backorder timeframe.

Supplier-Stated Reason(s) for Backorder*

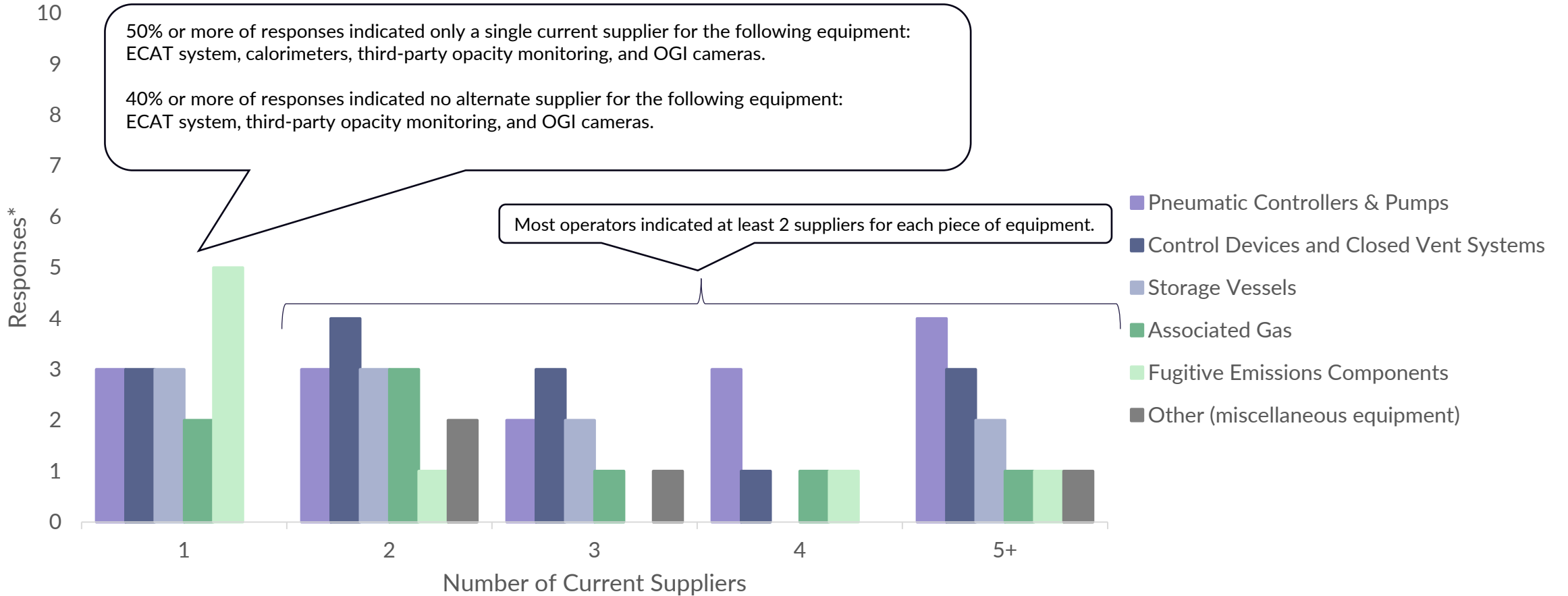


* Responses could indicate more than one reason for backorder delays

** Other reasons vary by control option but include: "Fabricator backlog"; "Standard lead time"; "Limited inventory as order is customized"; "Engineering design required for proper equipment function".

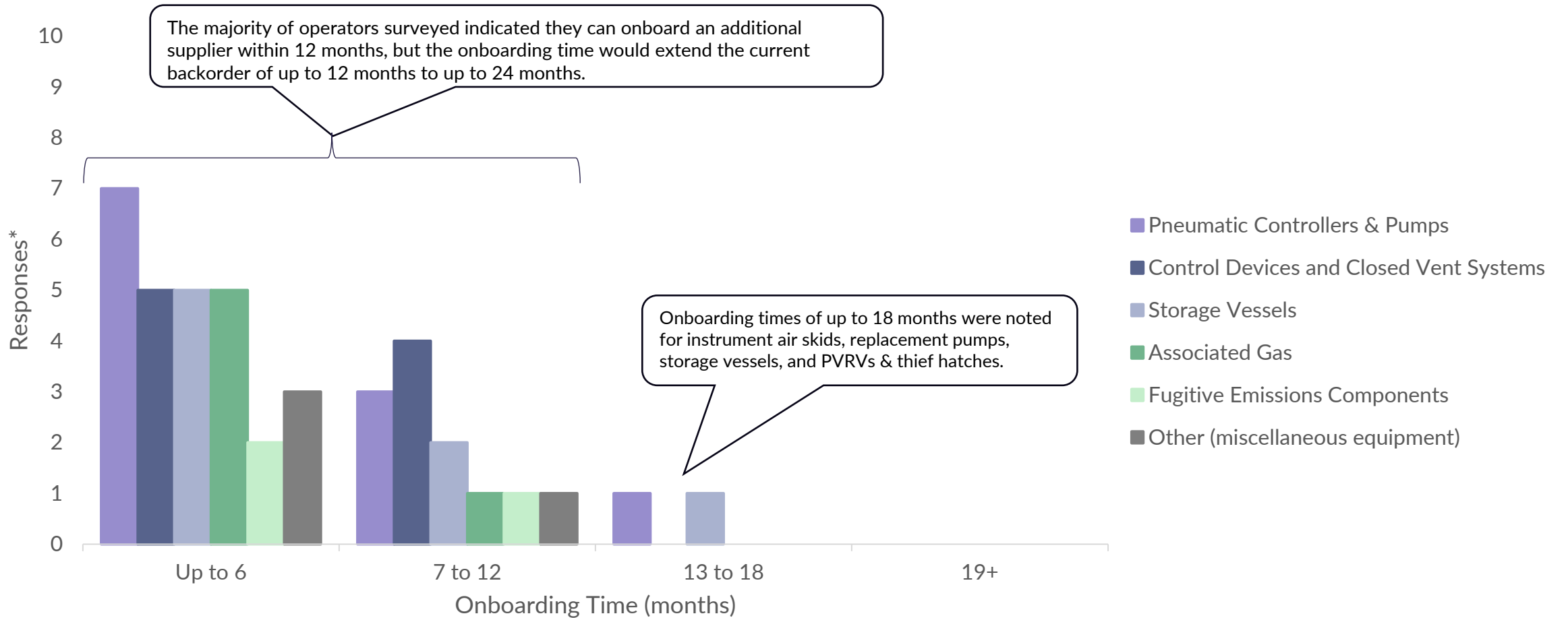
*** Responses based on maximum count for each reason.

Supplier Market



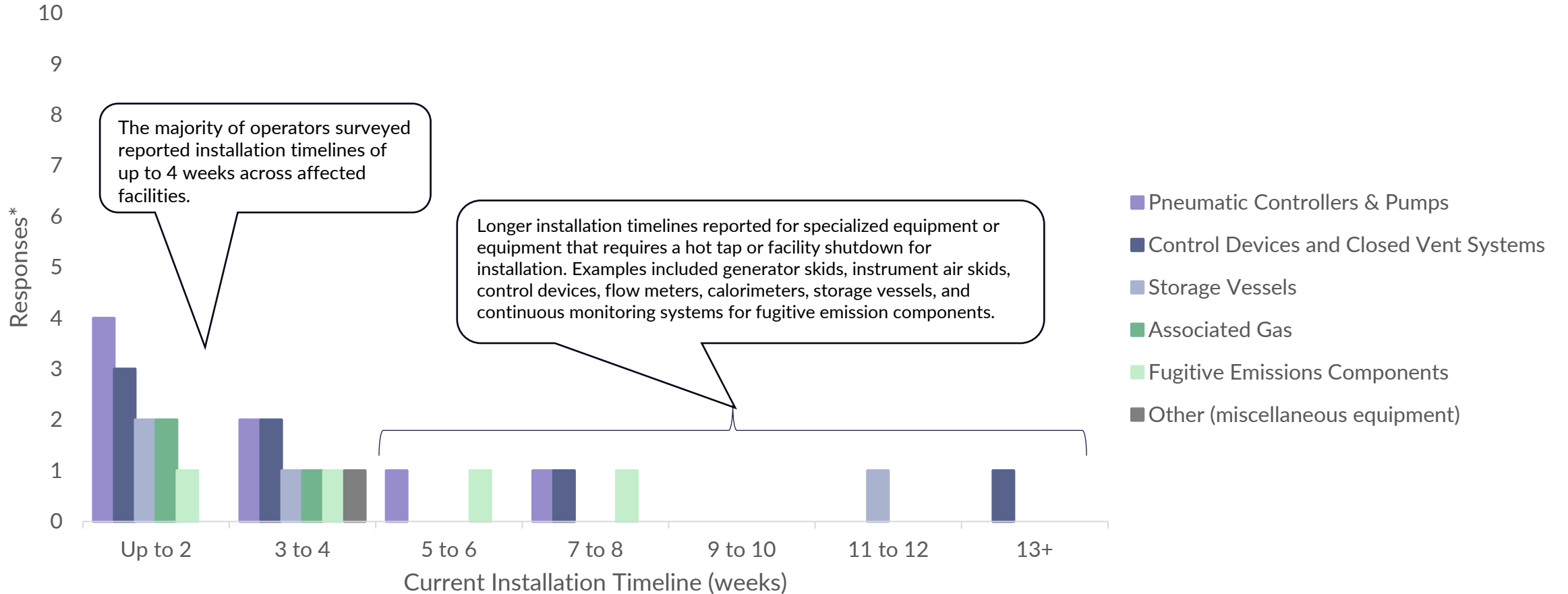
*Responses by affected facility based on maximum count for each number of current suppliers.

Onboarding Time for an Additional Supplier



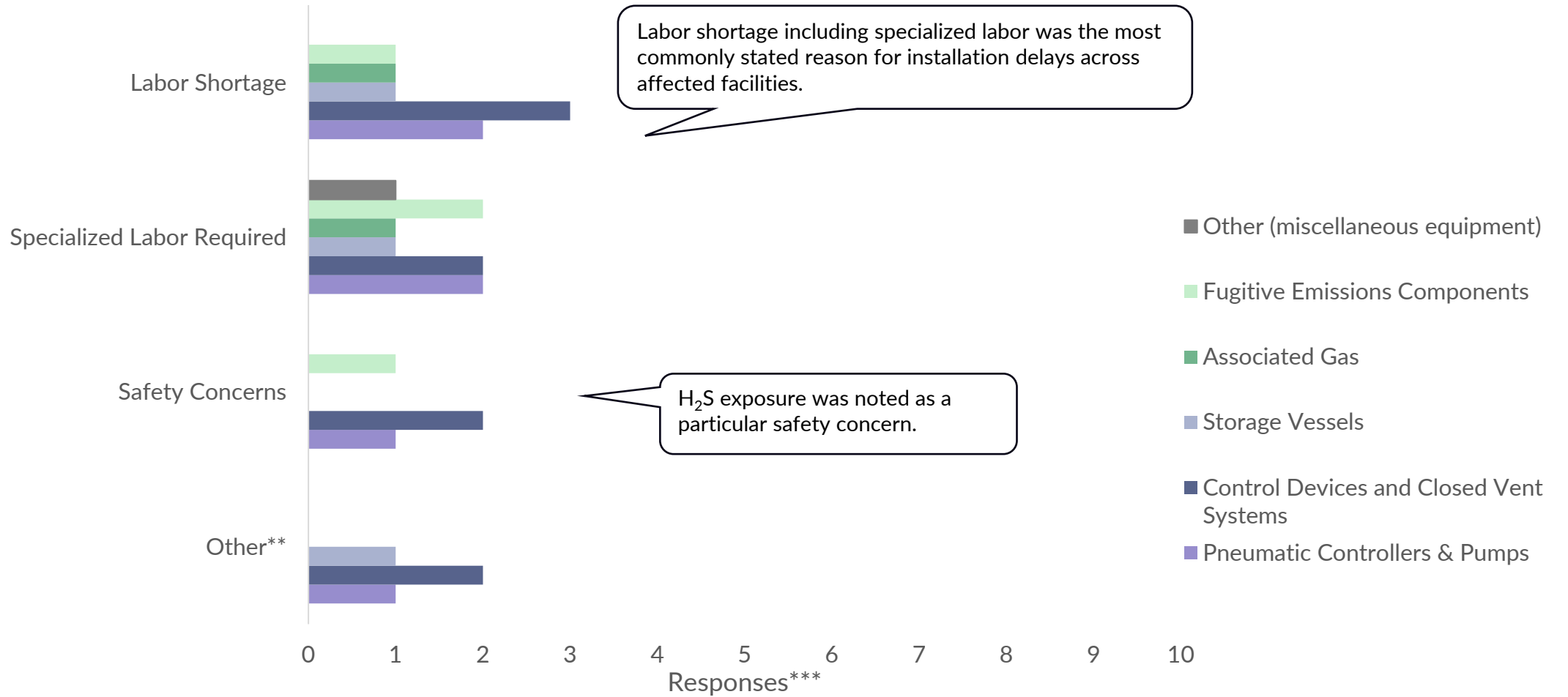
*Responses by affected facility based on maximum count for each onboarding timeframe.

Current Installation Timelines



*Responses by affected facility based on maximum count for each installation timeline.

Reason(s) for Installation Timelines



* Responses could indicate more than one reason for backorder delays

** Other reasons vary by control option but include: "Engineering evaluation needed"; "Normal construction timeline"; "Weather, road conditions".

*** Responses based on maximum count for each reason.