

# Cheniere Energy, Inc.

## 2023 Pipeline Safety Research and Development Forum

October 2023



# Safe Harbor Statements

## Forward-Looking Statements

This presentation contains certain statements that are, or may be deemed to be, “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements, other than statements of historical or present facts or conditions, included or incorporated by reference herein are “forward-looking statements.” Included among “forward-looking statements” are, among other things:

- statements regarding the ability of Cheniere Energy Partners, L.P. to pay or increase distributions to its unitholders or Cheniere Energy, Inc. to pay or increase dividends to its shareholders or participate in share or unit buybacks;
- statements regarding Cheniere Energy, Inc.’s or Cheniere Energy Partners, L.P.’s expected receipt of cash distributions from their respective subsidiaries;
- statements that Cheniere Energy Partners, L.P. expects to commence or complete construction of its proposed liquefied natural gas (“LNG”) terminals, liquefaction facilities, pipeline facilities or other projects, or any expansions or portions thereof, by certain dates or at all;
- statements that Cheniere Energy, Inc. expects to commence or complete construction of its proposed LNG terminals, liquefaction facilities, pipeline facilities or other projects, or any expansions or portions thereof, by certain dates or at all;
- statements regarding future levels of domestic and international natural gas production, supply or consumption or future levels of LNG imports into or exports from North America and other countries worldwide, or purchases of natural gas, regardless of the source of such information, or the transportation or other infrastructure, or demand for and prices related to natural gas, LNG or other hydrocarbon products;
- statements regarding any financing transactions or arrangements, or ability to enter into such transactions;
- statements relating to Cheniere’s capital deployment, including intent, ability, extent, and timing of capital expenditures, debt repayment, dividends, and share repurchases;
- Statements regarding our future sources of liquidity and cash requirements;
- statements relating to the construction of our proposed liquefaction facilities and natural gas liquefaction trains (“Trains”) and the construction of our pipelines, including statements concerning the engagement of any engineering, procurement and construction (“EPC”) contractor or other contractor and the anticipated terms and provisions of any agreement with any EPC or other contractor, and anticipated costs related thereto;
- statements regarding any agreement to be entered into or performed substantially in the future, including any revenues anticipated to be received and the anticipated timing thereof, and statements regarding the amounts of total LNG regasification, natural gas, liquefaction or storage capacities that are, or may become, subject to contracts;
- statements regarding counterparties to our commercial contracts, construction contracts and other contracts;
- statements regarding our planned development and construction of additional Trains or pipelines, including the financing of such Trains or pipelines;

- statements that our Trains, when completed, will have certain characteristics, including amounts of liquefaction capacities;
- statements regarding our business strategy, our strengths, our business and operation plans or any other plans, forecasts, projections or objectives, including anticipated revenues, capital expenditures, maintenance and operating costs, free cash flow, run rate SG&A estimates, cash flows, EBITDA, Consolidated Adjusted EBITDA, distributable cash flow, distributable cash flow per share and unit, deconsolidated debt outstanding, and deconsolidated contracted EBITDA, any or all of which are subject to change;
- statements regarding projections of revenues, expenses, earnings or losses, working capital or other financial items;
- statements regarding legislative, governmental, regulatory, administrative or other public body actions, approvals, requirements, permits, applications, filings, investigations, proceedings or decisions;
- statements regarding our anticipated LNG and natural gas marketing activities; and
- any other statements that relate to non-historical or future information.

These forward-looking statements are often identified by the use of terms and phrases such as “achieve,” “anticipate,” “believe,” “contemplate,” “continue,” “could,” “develop,” “estimate,” “example,” “expect,” “forecast,” “goals,” “guidance,” “intend,” “may,” “opportunities,” “plan,” “potential,” “predict,” “project,” “propose,” “pursue,” “should,” “subject to,” “strategy,” “target,” “will,” and similar terms and phrases, or by use of future tense. Although we believe that the expectations reflected in these forward-looking statements are reasonable, they do involve assumptions, risks and uncertainties, and these expectations may prove to be incorrect. You should not place undue reliance on these forward-looking statements, which speak only as of the date of this presentation. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of a variety of factors, including those discussed in “Risk Factors” in the Cheniere Energy, Inc. and Cheniere Energy Partners, L.P. Annual Reports on Form 10-K filed with the SEC on February 24, 2022, which are incorporated by reference into this presentation. All forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by these “Risk Factors.” These forward-looking statements are made as of the date of this presentation, and other than as required by law, we undertake no obligation to update or revise any forward-looking statement or provide reasons why actual results may differ, whether as a result of new information, future events or otherwise.

## Reconciliation to U.S. GAAP Financial Information

The following presentation includes certain “non-GAAP financial measures” as defined in Regulation G under the Securities Exchange Act of 1934, as amended. Schedules are included in the appendix hereto that reconcile the non-GAAP financial measures included in the following presentation to the most directly comparable financial measures calculated and presented in accordance with U.S. GAAP.

# LDAR/GHG Regulations

## Leak Detection for Liquefied Natural Gas (LNG) Facilities



October 31, 2023

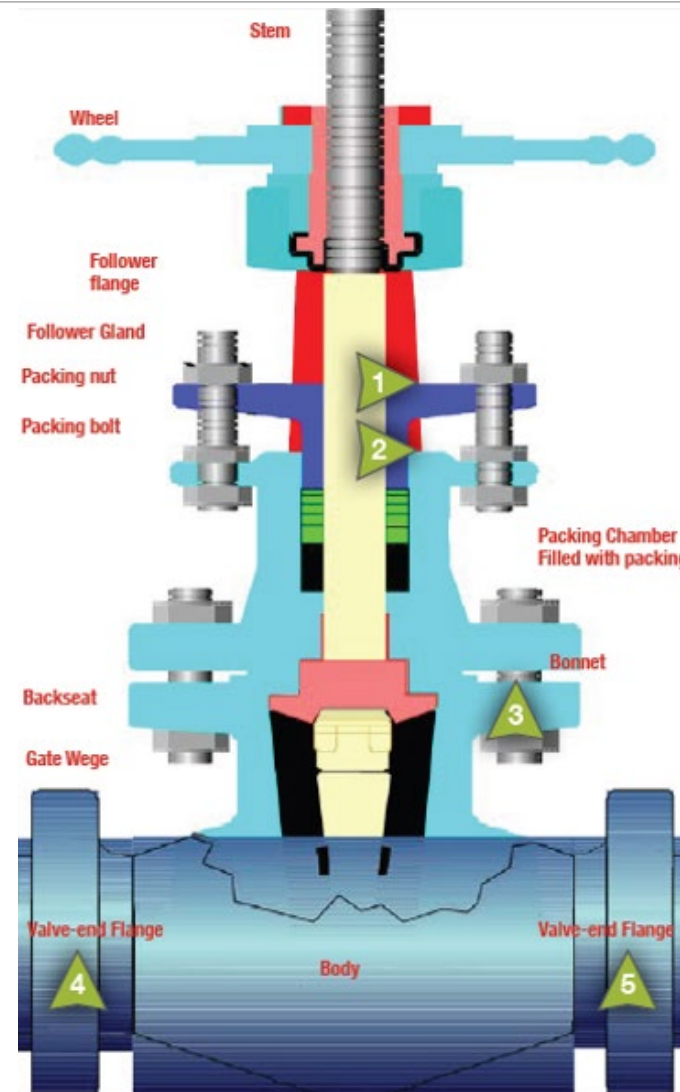


# LDAR/GHG Regulations

Texas LDAR Program (Texas Commission on Environmental Quality, TCEQ)

28VHP and 28M (Deviations are reported semi-annually per Title V Program)

- 28VHP
  - Applies to components (i.e. valves, flanges, plugs, pump seals) in Volatile Organic Compounds (VOC) service (>10% Hydrocarbon, HC)
    - VOC = non-methane, non-ethane
  - Exceptions:
    - those with vapor pressure less than 0.044 psia at 68°F or
    - those with an operating pressure at least 0.725 psi below ambient pressure.
- 28M
  - Applies to components (i.e. valves, flanges, plugs, pump seals) in Methane service (>10% HC)
  - Exceptions:
    - those with vapor pressure less than 0.044 psia at 68°F or
    - those with an operating pressure is at least 0.725 psi below ambient pressure.



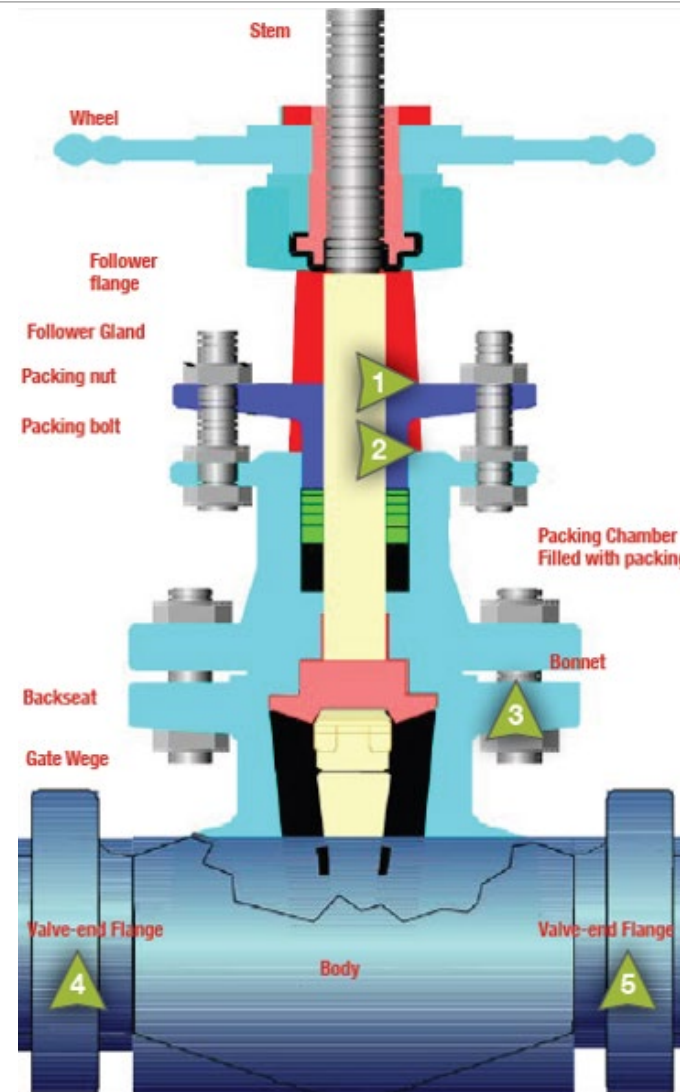
- 1 Monitor seam around stem above flange.
- 2 Monitor seam around gland above packing chamber.
- 3 Monitor this seam.
- 4 Valve-end Flange: This side is .1  
– Monitor only when doing connectors.
- 5 Valve-end Flange This side is .2  
– Monitor only when doing connectors.

# LDAR/GHG Regulations

EPA Greenhouse Gas Rule (includes both Texas and Louisiana, reported annually)

## 40 CFR 98 Subpart W

- Includes sources of GHG emissions including LDAR components in GHG Service
- Complete Surveys (including connectors) of components in Methane service.
- Optical Gas Imaging (e.g. FLIR) allowed as alternative monitoring method.
- Inaccessible components are not exempt from monitoring



- 1 Monitor seam around stem above flange.
- 2 Monitor seam around gland above packing chamber.
- 3 Monitor this seam.
- 4 Valve-end Flange: This side is .1  
- Monitor only when doing connectors.
- 5 Valve-end Flange This side is .2  
- Monitor only when doing connectors.

# LDAR/GHG Regulations

## 28VHP (VOC) and 28M (Methane) Requirements

- Gas analyzer conforms to requirements listed in Method 21 of EPA 40 CFR part 60, Appendix A.
  - Gas analyzer shall be calibrated with methane.
  - Leak threshold for VOC is 500 ppm
  - Pumps/compressor/agitator seals in VOC Service have a threshold of 2000 ppm
  - Leak threshold for Methane is 10,000 ppm.
- Repair attempts required within 5 and 15 days after discovery of leak
- Delay-of-repair: If repair cannot be made within 15 days, repair may be delayed until the next scheduled shutdown.
- Monitoring occurs Quarterly
- Difficult-to-Monitor (DTM) components that cannot be monitored without elevating the monitoring personnel more than two meters above a support surface are required to be monitored once a year.
- Method 21 requires probe be placed at the surface of the interface where leakage would occur.
- If a leak is detected and repaired within the required timeframe, it is not reported as a Title V deviation.



# LDAR/GHG Regulations

---

## Texas/Louisiana

### 40 CFR 98 Subpart W (GHG Regulations)

- Threshold
  - If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
- Monitoring Frequency
  - At least one complete survey annually.
- Monitoring Options
  - Method 21
  - Optical Gas Imaging
  - Acoustic leak detection device
- No Repair Requirements

# Cheniere LDAR Program

## Corpus Christi Liquefaction



October 2023





# Cheniere Corpus Christi Liquefaction LDAR Program

Subject to 28VHP and 28M Texas programs and GHG Subpart W monitoring requirements:

- Embedded third party contractors monitor components.
  - Full-time 4 person team conducts the monitoring
  - Leak repair is coordinated and performed by Cheniere O&M personnel.
    - Some repairs may require third-party contractor support.
  - LDAR program is administered and managed by O&M Cheniere personnel
    - Approximately 9,360 hours a year are required to manage an LDAR program,
- Conduct complete survey at least annually per Subpart W.
- Follow Method 21 for monitoring on 25,000+ components
- Use a Phx-21 intrinsically safe portable analyzer for monitoring.
- Use LeakDAS and CMMS database for tracking monitoring results including leaks.



# Existing Programs vs PHMSA Proposed Methane Rule

---

- Existing EPA/State Requirements:

- Focus on mechanical connections as likely leak sources (valves, flanges, plugs, pump seals)
- Allow qualitative methods (OGI, etc) as a monitoring option.
- Minimum leak detection threshold is 500 ppm VOC & 10,000 ppm for methane
- Quarterly except Difficult to Monitor components are Annual
- Semi-Annual Reporting
- RQ exceedance reporting

- PHMSA Section 114 ANPRM Requirements:

- Does not define components in methane service or recognize focus on mechanical connections.
- Requires a quantitative measurement, qualitative methods not addressed
- Minimum leak detection threshold of 5ppm @5ft
- Quarterly surveys required
- No provisions for difficult to monitor or inaccessible components
- 30 day large volume release reporting

# PHMSA PIPES Act NPRM

---

**Research Opportunity**- Undertake a *General Knowledge/Standards* Research and Development project to review existing & proposed regulations from other agencies, both federal and state, (e.g. EPA, LDEQ, TCEQ, & other states as relevant) to identify methane leak detection requirements. Review programs and practices in use by existing LNG facilities to meet existing methane leak detection requirements. This knowledge and research would provide PHMSA the opportunity to harmonize future PHMSA regulations with existing regulation, process, and practices where practicable to eliminate regulatory overlap and duplicative or conflicting requirements.

---

# Thank you

Questions?