

Delaware Regulations for Vapor Emission Controls at Gasoline Dispensing Facilities (GDFs)

**Review Committee Meeting #2
September 26, 2013**

Division of Air Quality



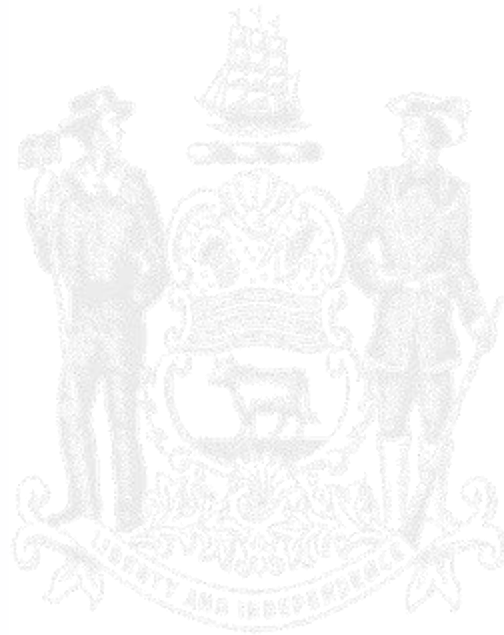
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Agenda

- 1. Recap of Committee Meeting #1*
- 2. Path Forward*
- 3. Proposed Regulatory Framework*
- 4. UST Performance Standards*
- 5. Definition of Reconstructed GDF*
- 6. Decommissioning Procedures*
- 7. Plan for Next Meeting*



1. Recap of Committee Meeting #1

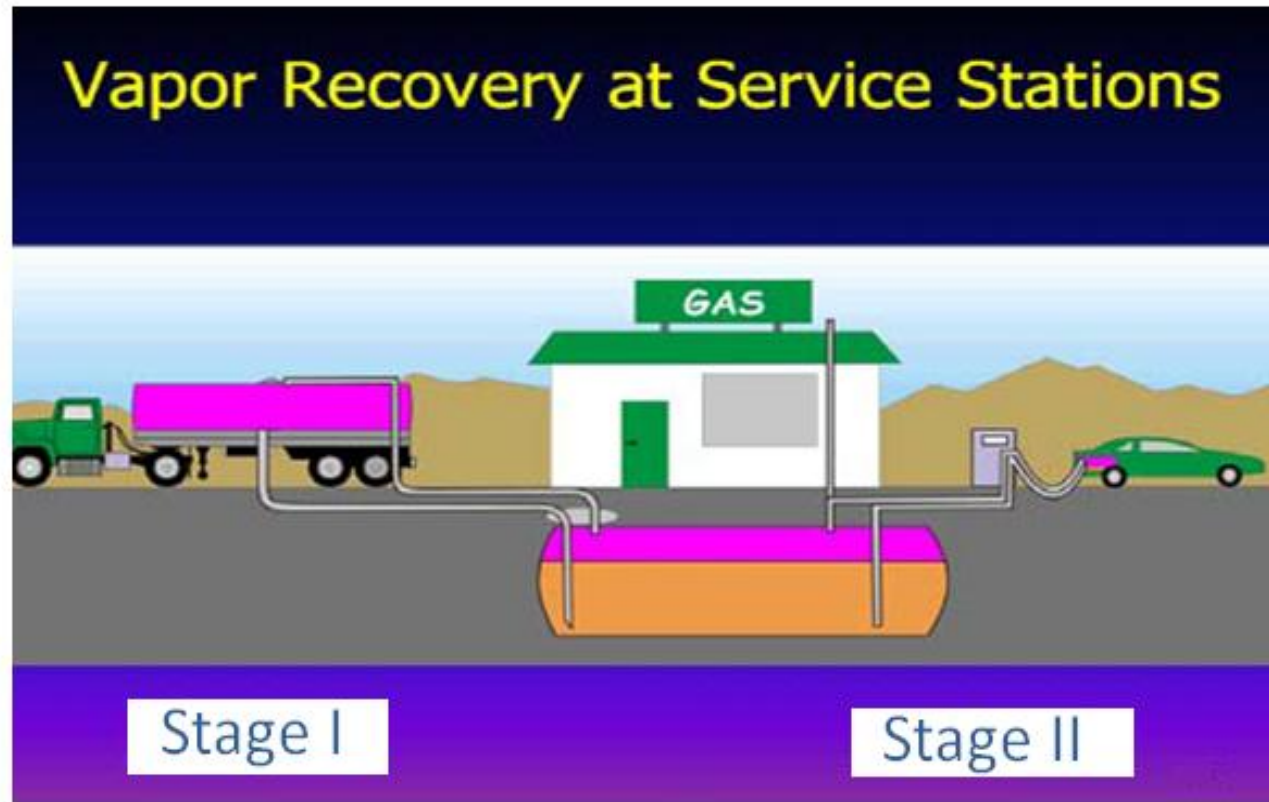


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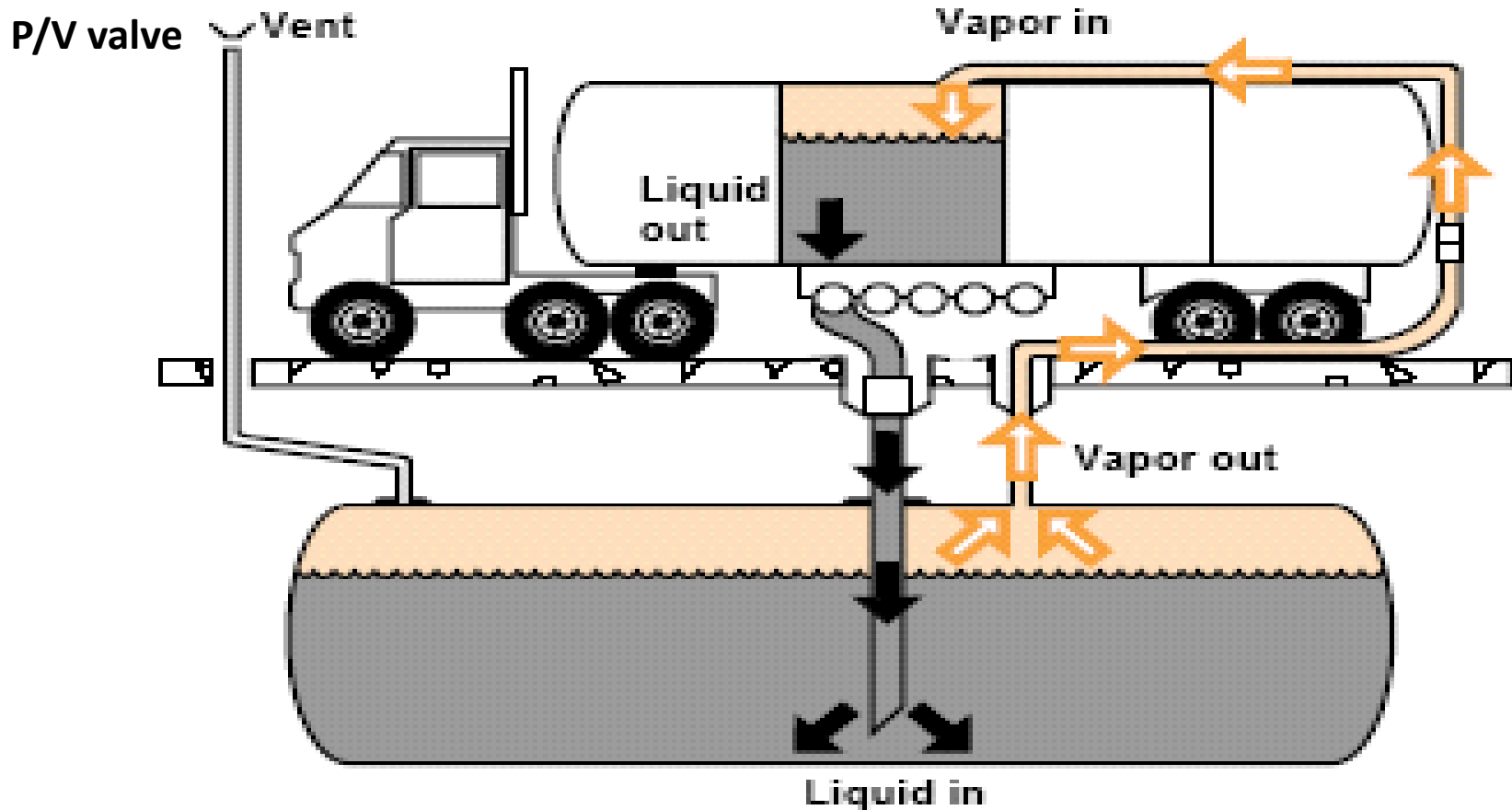
Vapor emissions at GDF

Gasoline vapor: Toxics and VOC

Truck

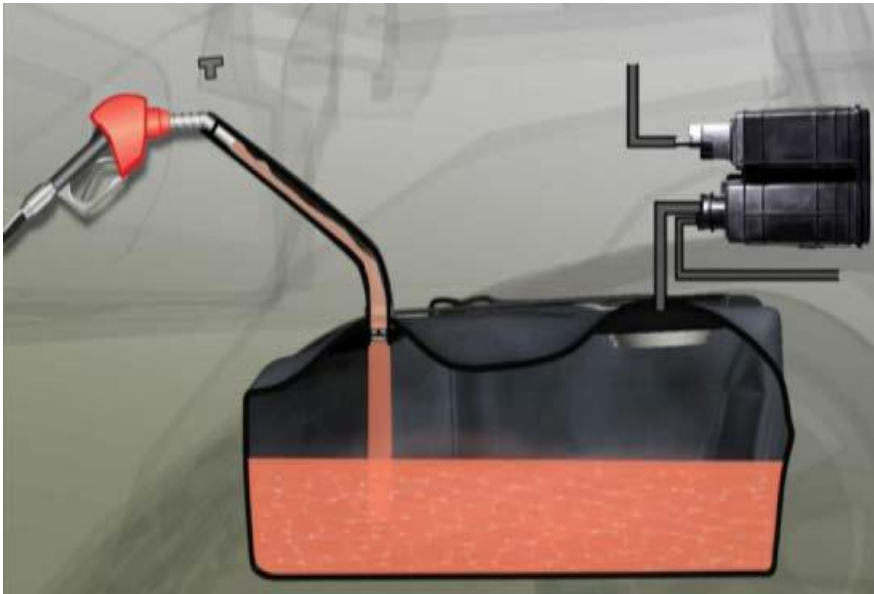


Stage I Gasoline Delivery and Tank Truck

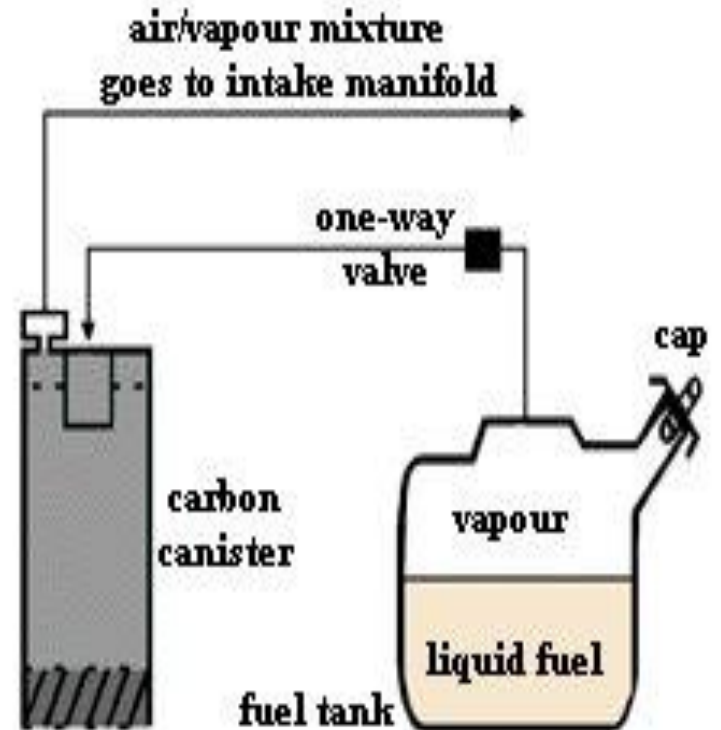


- Sec. 26 Stage I – Deliveries: As fuel enters the GDF's tank, saturated vapor is returned to the tanker via a separate vapor connection.
- Sec. 27 Tank Truck: Must be vapor-tight.

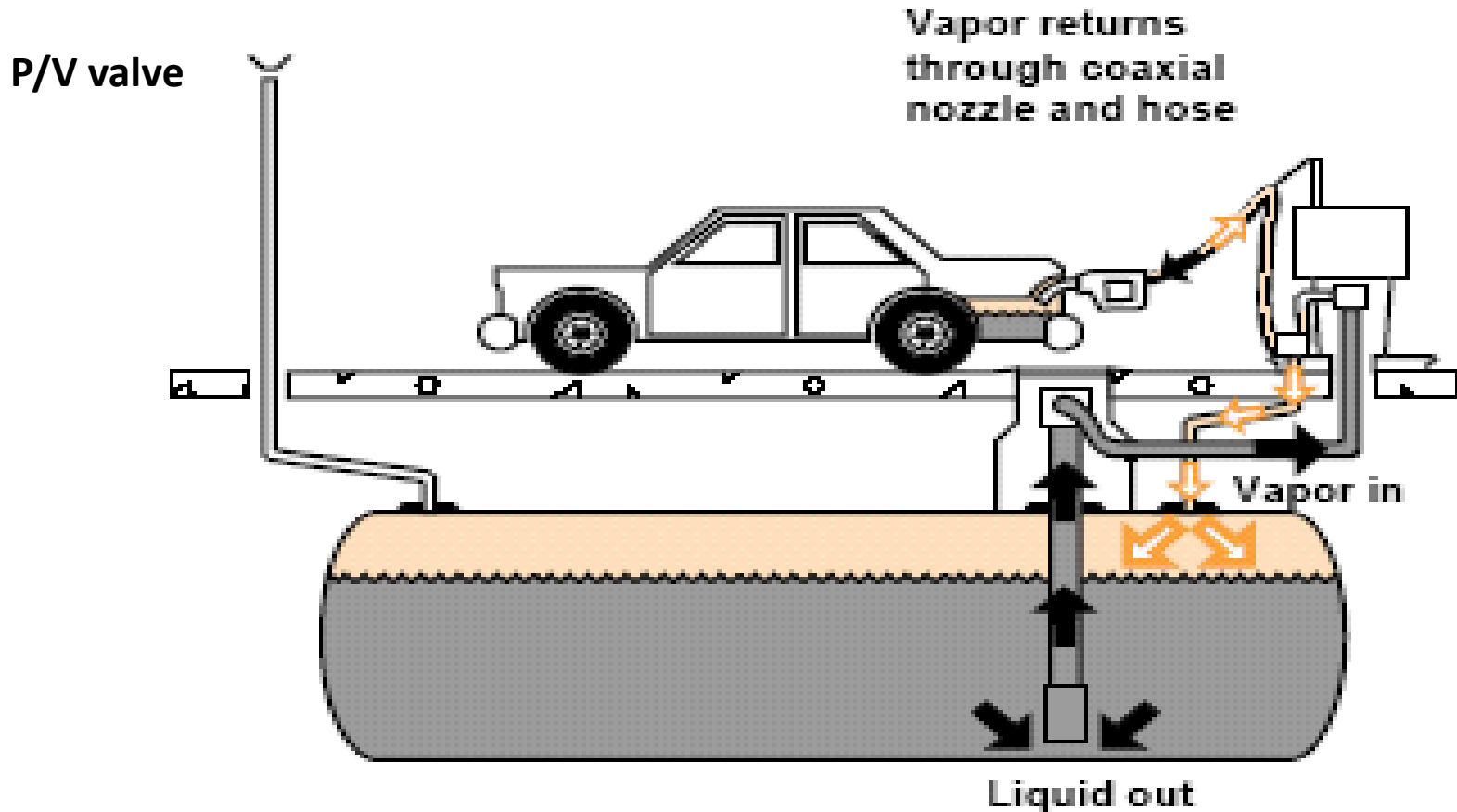
Onboard Refueling Vapor Recovery (ORVR)



Refueling



ORVR and Stage II: ORVR Problem



- Before ORVR: Saturated vapor goes into UST, and both vehicle side and tank side emissions are controlled.
- After ORVR: No saturated vapor, but fresh air, into UST. In particular, significant fresh air is drawn into UST by vacuum-assist Stage II.
- Fresh air → vapor growth in UST → new emission: Now vehicle side emissions controlled, but not tank side.

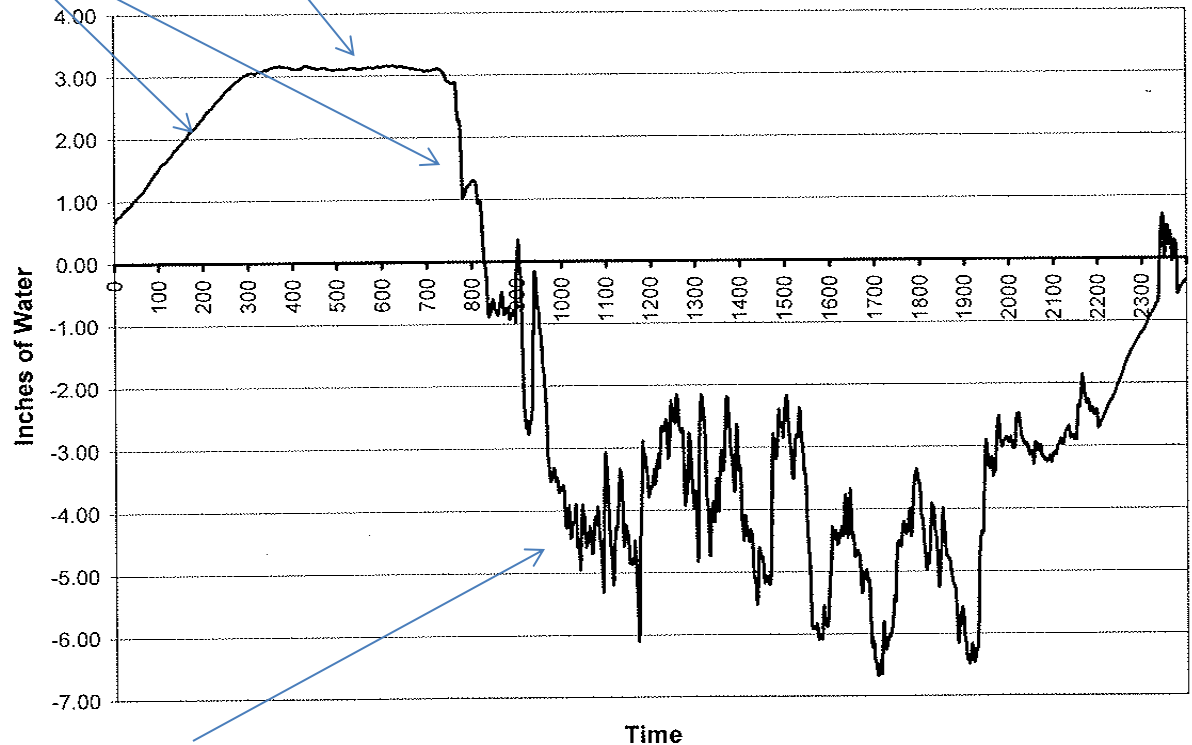
ORVR and Stage II: ORVR Problem

Tank overnight emission (off operation)

Potential Leaks

Emission at P/V valve

Manufacturer #1 Balance System
Typical Daily UST Pressure Profile
Saturday, November 12, 2005



Note that

- due to vapor growth from air ingested during the day,
- New emissions are induced at night

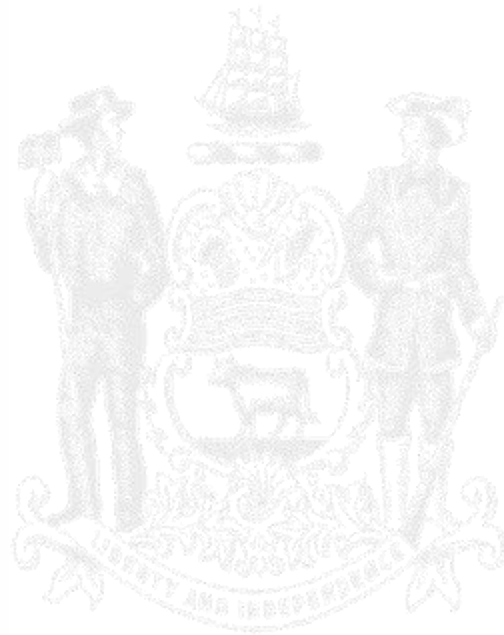
No emission

Goals of This Regulatory Revision

- **All GDFs to be well-controlled (i.e., both the vehicle side and the UST side).**
- **Provide flexibility to facilities in meeting control strategy.**
- **Do not increase overall costs compared to current Stage I and Stage II program.**



2. Path Forward



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Path Forward

□ Given that ...

At refueling side:

- Stage II is needed at majority of stations now

Stage II gets about 0.80 tpd benefit in 2013

- Stage II benefits decrease over time because of fleet turnover (*i.e.*, *ORVR equipped new cars replace non-ORVR equipped old cars*)

Stage II gets about 0.24 tpd in 2020



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Path Forward...

At UST side:

- ❑ UST emissions were controlled before ORVR was introduced because only saturated vapor was to the UST; installed P/V valve; annual pressure decay test.
- ❑ UST side emissions increase over time due to increasing ORVR and fresh air ingestion.
- ❑ At the end of 2018, the benefit of Stage II is less than its dis-benefit.

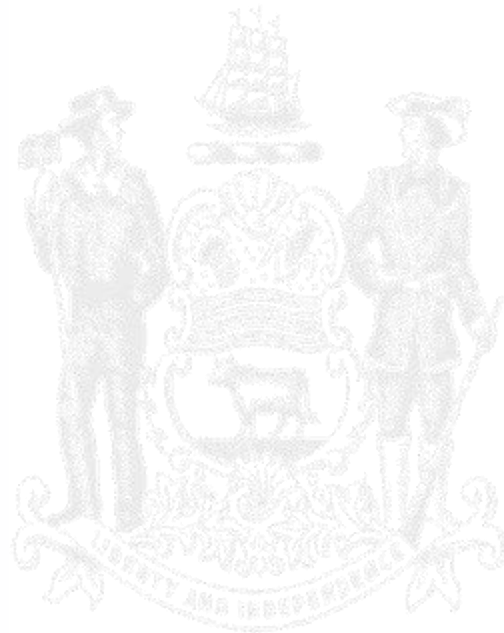


Path Forward...

- ❑ Requiring both “compatible” Stage II and UST controls is not consistent with our goal of not increasing costs over current levels;
- ❑ Our path forward is to revise the regulations to transition from vehicle side control to UST side control in a manner that ensures no loss in overall benefit.



3. *Proposed Regulatory Framework*



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Proposed Regulatory Framework

Any new GDF constructed **after 2013:**

Need no Stage II:

- Data indicates an average of 7 new stations in DE per year (i.e., 7 the first year, 14 the next year, 21 the next year, etc.).
- Net lost benefit of Stage II never exceeds 0.06 TPD up to 2018

Need to meet UST side performance standards (discussed later).



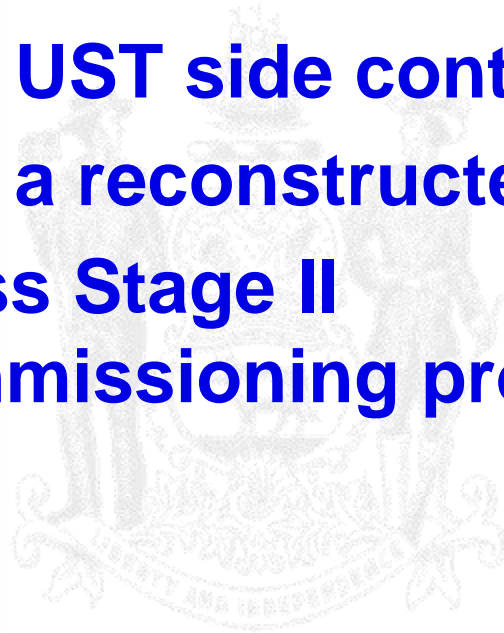
Proposed Regulatory Framework...

- **Existing GDFs with Stage II:**
 - May decommission Stage II and meet UST performance standards,
 - Beginning 2015 for reconstructed stations
 - Beginning 2018 for all stations
 - Must, by 12/31/2018,
 - install ORVR-compatible nozzles, OR
 - meet UST performance standards
 - Must, by 12/31/2019, meet UST performance standards.



Remainder of Today's Meeting

- ❑ **Discuss UST performance standards**
- ❑ **Define UST side controls**
- ❑ **Define a reconstructed GDF**
- ❑ **Discuss Stage II decommissioning procedures**



4. Discussion of

UST Performance Standards



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UST Performance Standards

■ **Concepts:**

- ❑ If the UST pressure is negative, there will be no emissions.
- ❑ If the UST pressure is below P/V valve crack point and there are no leaks, there will be no emissions.
- ❑ If the UST pressure is above P/V valve crack point, then there will be emissions.

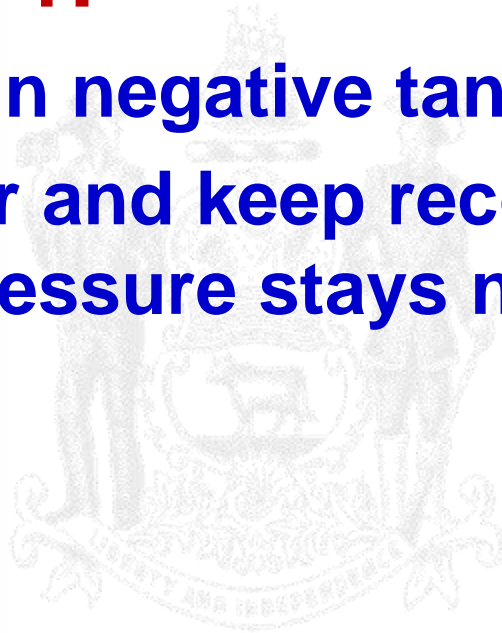


UST Performance Standards...

■ **Standard 1:**

- ❑ **Maintain negative tank pressure.**
- ❑ **Monitor and keep records to show tank pressure stays negative.**

Or,



UST Performance Standards...

■ **Standard 2:**

- ❑ **Maintain tank pressure less than P/V valve positive crack point; and**
- ❑ **Verify system tightness; and**
- ❑ **Monitor and keep records to show tank pressure stays less than P/V valve positive crack point.**

Or,

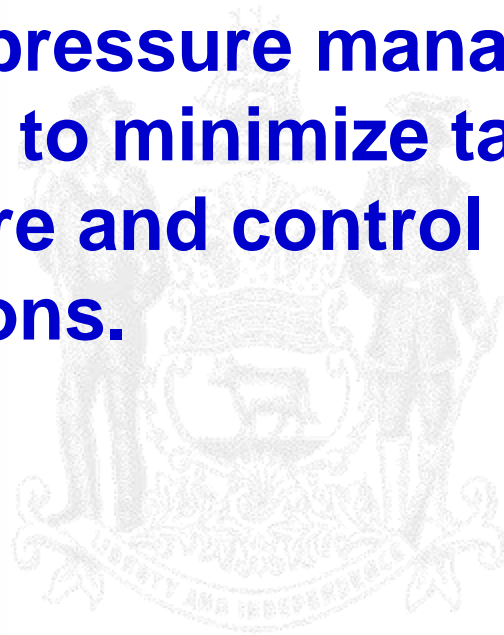


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UST Performance Standards...

■ **Standard 3:**

- **Install pressure management system to minimize tank pressure and control emissions.**



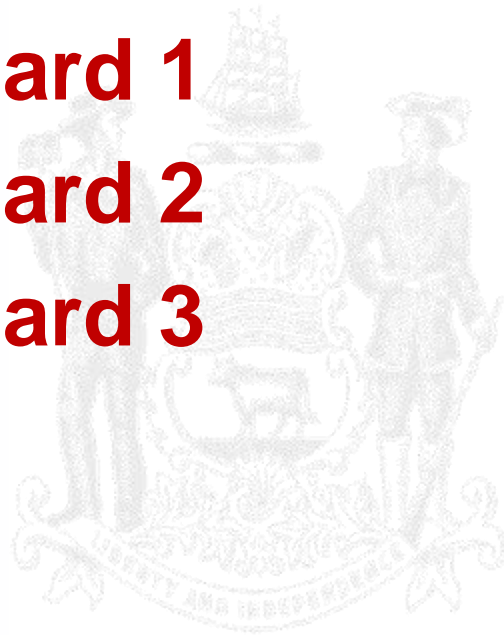
UST Performance Standards...

Committee discussion on

Standard 1

Standard 2

Standard 3



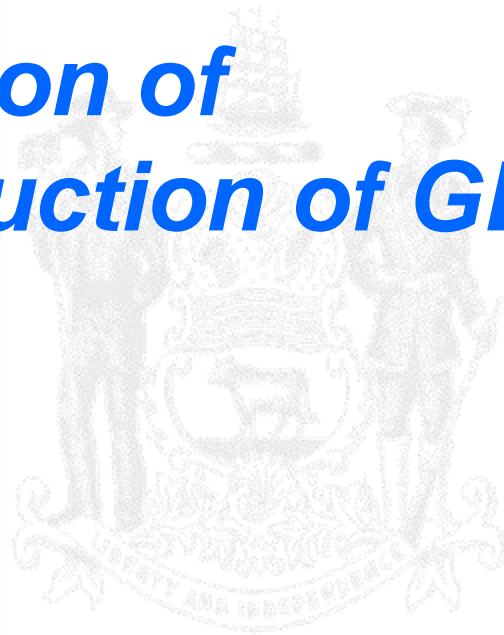
Performance-Based Approach

■ Standard 4:

- ❑ Control nozzle spillage to meet CARB standards,
- ❑ Applicable for GDFs that do not operate Stage II vapor recovery.



5. Definition of Reconstruction of GDF



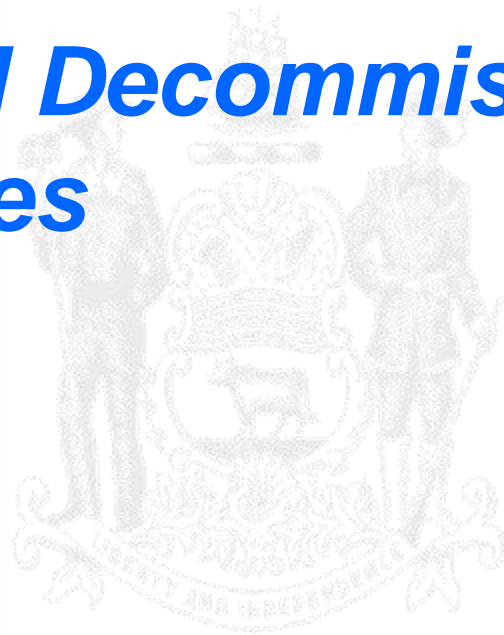
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Define Reconstruction of GDF

- **Why define: Stage II decommissioning at the time of reconstruction**
- **Inputs from committee members:**
 - Replacement of (all) gas dispensers;
 - Performing tank/piping work;
 - Replacing or upgrading the entire tank top;
 - Replacing >50% of piping;
 - Replacing UST system;
 - Installing sumps;



6. Stage II Decommissioning Procedures



Decommissioning Procedures

- **PEI's RP300: Recommended Practices for Installation and Testing of Vapor-Recovery Systems at Vehicle-Fueling Sites (2009 Edition)**

PEI/RP300-09:

<http://www.pei.org/PublicationsResources/RecommendedPracticesExams/RP300/tabid/101/Default.aspx>

- **From EPA Guidance (2012):**

“...(RP300-09) is especially instructive as it was developed by industry experts with a focus on regulatory compliance and safety.”

PEI/RP300-09 Section 14

14. Decommissioning Stage II Vapor-Recovery Piping

14.1 Introduction

14.2 Nature of the Procedure

14.3 Qualifications

14.4 Paperwork

14.5 Applicability

14.6 Decommissioning Procedure

PEI/RP300-09 Section 14.6

14.6 Decommissioning Procedure

- 14.6.1 Initiate Safety Procedures
- 14.6.2 Relieve Pressure in the Tank Ullage
- 14.6.3 Drain Liquid-Collection Points
- 14.6.4 Vacuum-Assist Systems with Vapor Pumps for Each Fueling Position
- 14.6.5 Vacuum Assist Systems with a Centrally Located Vapor Pump
- 14.6.6 Isolate the Below-Grade Vapor Piping at the Base of the Dispenser
- 14.6.7 Disconnect the Vapor Piping at the Tank Top
- 14.6.8 Seal the Dispenser Cabinet Vapor Piping
- 14.6.9 Replace Hanging Hardware
- 14.6.10 Replace the Pressure/Vacuum Vent Valve(s)
- 14.6.11 Remove Stage II Operating Instructions from Dispensers
- 14.6.12 Conduct Pressure Decay Test and Tie-Tank Test
- 14.6.13 Conduct a Final Visual Check
- 14.6.14 Complete the Checklist in Appendix C of this document

Decommissioning Procedures

- **Delaware may consider including relevant additions**
 - that other states have made to the PEI protocol, and
 - that will meet Delaware's needs.
- **Ex.: Other states' links**

Connecticut:

<http://legiscan.com/CT/text/HB06534>

Massachusetts:

<http://www.mass.gov/eea/docs/dep/air/community/s2edd13.pdf>

New York:

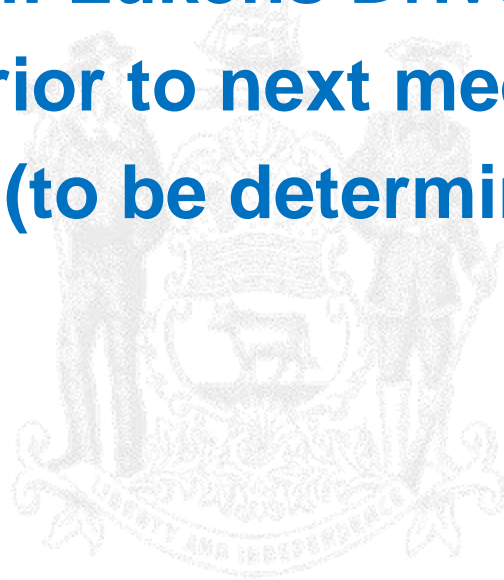
<http://www.dec.ny.gov/regulations/74990.html>

Vermont:

<http://www.anr.state.vt.us/air/compliance/docs/Stage%20II%20Decommissioning%20Procedure%20Revision%201.pdf>

7. Planning for Next Meeting

- 1. Date: October 24, 2013**
- 2. Location: Lukens Drive**
- 3. Tasks prior to next meeting**
- 4. Agenda (to be determined)**



Thanks

