

# Dominion Energy®

# IRP Technical Conference

February 20, 2019

# IRP 2019 Schedule

- February 20, 2019 – Technical Conference
  - IRP Standards and Guidelines
  - Review of 2018 Order
  - Proposed 2019 IRP Outline
  - Renewable Natural Gas Update
  - Wexpro Well Freeze-offs
- March 20, 2019 – Technical Conference
  - Heating Season Review
  - Rural Expansion
  - Long Term Planning
  - Rate Case Preview
  - Heating Degrees Update

# IRP 2019 Schedule

- **April 25, 2019 – Technical Conference**
  - RFP Recommendations (Confidential)
  - Supply Reliability Results (Confidential)
- **May 23, 2019 – Technical Conference**
  - Wexpro Matters (Confidential)
  - Integrity Management Update
- **June 20, 2019 – Technical Conference**
  - Presentation of Integrated Resource Plan

# Agenda

- IRP Standards and Guidelines
- Review of 2018 Order
- Proposed 2019 IRP Outline
- Renewable Natural Gas Update
- Wexpro Well Freeze-offs

# IRP Standards and Guidelines (2009)

Guideline	Update
Review latest quarterly variance report	IRP Report, March 20, 2019 Tech Conference
Changes to customer growth models	IRP Report – Customer & Gas Demand Forecast Section
Changes to linear programming optimization (LPO) model (SENDOUT)	IRP Report – Final Model Results Section
Changes to DSM models	IRP Report – Energy Efficiency Section
Supply/demand forecasts, SENDOUT and DSM results	IRP Report – Customer & Gas Demand Section
Gas quality and gas storage issues	IRP Report – Gathering, Transportation, & Storage Section
Changes to Gas Network Analysis (GNA) models	IRP Report – System Capabilities and Constraints
GNA model results	IRP Report – System Capabilities and Constraints
Integrity management issues	IRP Report – Integrity Management Section
Other issues	Scheduled as needed

# Review of the 2018 Commission IRP Order

- Commission concluded the 2018 IRP as filed generally complies with the requirements of the 2009 Standards and Guidelines.
- Adopted DEU's commitments set forth in its reply comments.
  - We find DEU's commitment to provide complete information in future IRP documents, rather than incorporating information by reference, addresses the OCS's concern regarding the IRP as a standalone document.
  - We also find DEU's commitment to provide confidential information through the discovery process or by using the provisions of Utah Admin. Code R746-1-601 *et seq.* addresses the OCS's concerns regarding confidential IRP-related information.
- DEU shall convene a stakeholder meeting prior to the initiation of the 2019 IRP docket to discuss how it can address the OCS's concerns regarding the insufficiency of certain information in the IRP.
  - A summary of these discussions should be provided during a 2019 IRP pre-filing technical conference.

# Stakeholder Meeting Summary

Meeting held on December 17, 2018

## Distribution System Action Plan

- References will be made to connect projects in the action plan with the justification as provided in the system capabilities and constraints section.
- Any changes to budget amounts will be highlighted.
- Projects carrying over from previous years will not refer back to previous IRPs for summary purposes.
- References to historical IRPs may be made for reference to previous analysis (i.e. alternative evaluations).

## Long-Term Planning

- A subsection will be added to the system capabilities and constraints section provide a high-level summary of long-term planning concerns, issues etc.

# Proposed 2018 IRP Outline

- Executive Summary
- Introduction
- Customer and Gas Demand Forecast
- System Capabilities and Constraints
- Distribution System Action Plan (DNG Action Plan)
- Integrity Management
- Environmental Review
- Purchased Gas
- Cost-of-Service Gas
- Gathering, Transportation, and Storage
- Supply Reliability
- Sustainability
- Energy Efficiency
- Model Results
- Guidelines
- Appendix



# Renewable Natural Gas (RNG) Initiatives

# What do the following images have in common?



Pig Farm



Landfill



Wastewater Treatment



Food Waste

CH<sub>4</sub>

They are all sources of **ENERGY!**



# Utah Projects Underway



**Wasatch Resource Recovery: North Salt Lake  
Food Waste**



**Bayview Landfill: Elberta, Utah  
Municipal Solid Waste**

Production of approximately 2 million Dth per year beginning in 2019  
15.5 million gas gallon equivalents (GGE) of fuel  
In 2017 total Utah CNG sales were 7 million GGE

# Dominion Energy - RNG Initiatives

## RNG Transportation Tariff

- **Tariff Section 5.07 approved by the Utah Public Service Commission, effective January 1, 2019**
  - Allows RNG suppliers to transport RNG to their own refueling customers through DEU's pipes and NGV stations.
  - Removes barriers for RNG to be used in over-the-road applications – qualifying the RNG supplier for lucrative incentives under the federal Renewable Fuel Standard (RFS) program
  - Enables Utah fleets to use their own RNG supplier while maintaining access to DEU stations

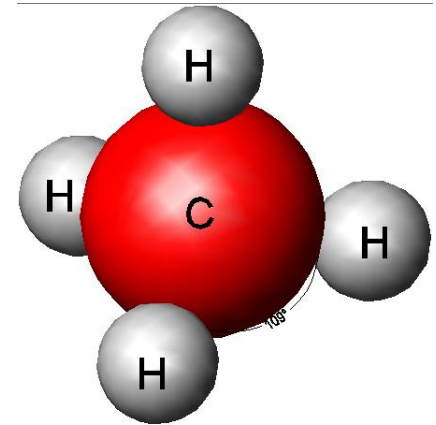
# Voluntary RNG Purchase Program

- **Voluntary RNG purchase program**
  - Similar to Rocky Mountain Power's Blue Sky Program, but for Renewable Natural Gas (RNG)
  - Customers able to pay a surcharge for RNG
  - November 2018 presented voluntary RNG concept to Stakeholders
  - Plan to seek Commission approval Q1, 2019

# Wexpro Production

# Potential Production Freeze-offs

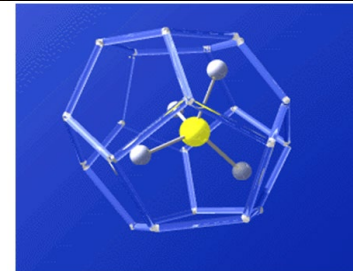
- Natural gas wells produce not only natural gas (methane), but also produce liquids
- Almost every well produces some liquids
  - Condensate
  - Produced Water
- With the mixture of natural gas, condensate, and water, hydrates can form



3-DIMENSIONAL VIEW OF METHANE MOLECULE

# Potential Production Freeze-offs

- What is a hydrate?
  - A hydrate is an ice like crystalline structure in which the water molecules form a cage-like structure around the gas molecules
  - Hydrates can form at temperatures well above 32°F
  - 1 SCF of hydrate contains approximately 1500 SCF of gas

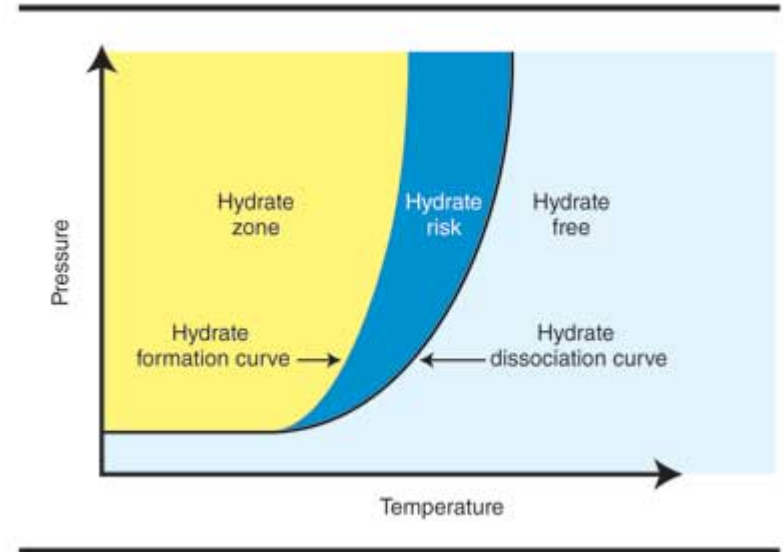


Source: U.S. Geological Survey



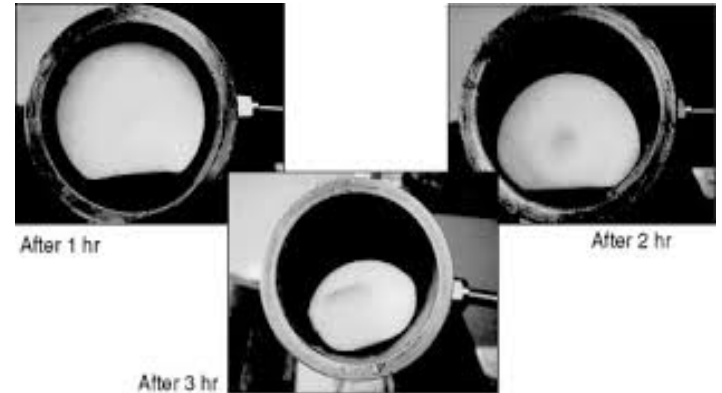
# Potential Production Freeze-offs

- How to eliminate hydrate formation?
  - Methanol injection to reduce hydrate formation temperature
  - Heat increase and carry over into the process stream
  - Pressure controls to reduce hydrate formation
  - Remove free water in the gas stream



# Hydrate Mitigation

- How to eliminate a hydrate?
  - The safest and most effective mitigation effort is to reduce pressure on both sides of the hydrate and allow it to dissolve over time
  - Methanol can be injected to help dissolve the hydrate



# Common Hydrate Locations

- Where are the common hydrate formation locations?
  - Well bore/tubing
  - Production lines (from wellhead to separator)
  - Separator dump lines (from separator to storage tanks)
  - Gathering system (from well(s) to central facility)

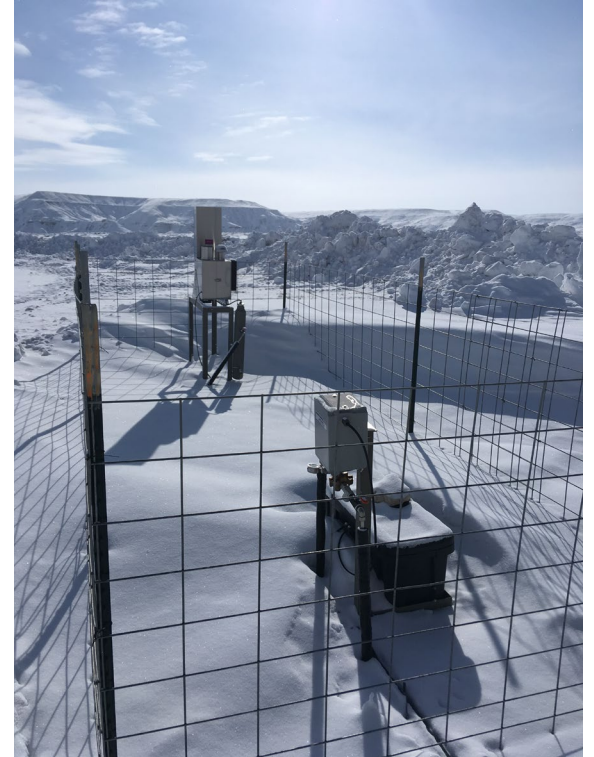
# Wellhead Hydrate Formation & Prevention

- When gas wells are producing, the gas and liquid mixture will cool in the tubing from the bottom of the wellbore to surface
- The temperature drop can lead to hydrate formation conditions in the wellbore
- To mitigate hydrate formation in known wellbores, methanol is injected downhole to reduce the formation temperature to keep the wellbore on production.



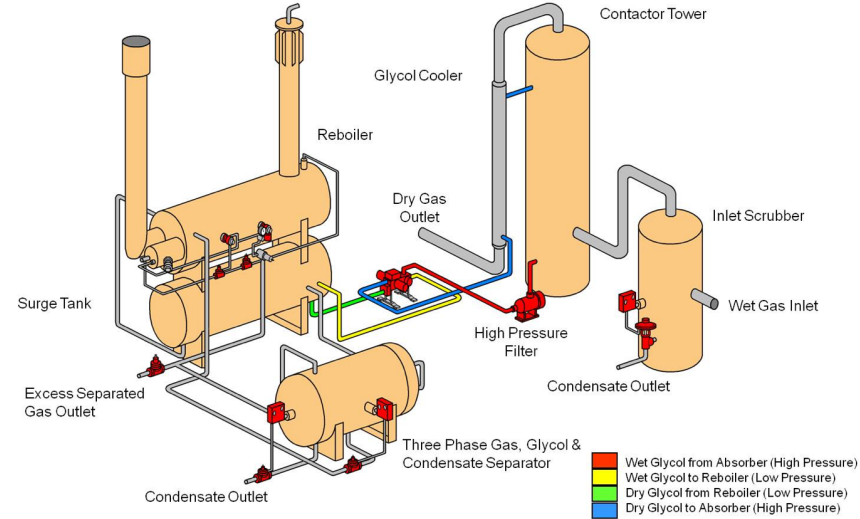
# Production Line and Dump Line Hydrate Formation & Prevention

- When gas wells are producing, the liquid flows to the surface in steady streams or slugs of liquid
- The slugs lead to intermittent liquid dumping and stagnant liquid in production or dump lines
- Stagnant liquid can cool leading to hydrate formation conditions
- To mitigate hydrate formation in production and dump lines, heat trace systems are installed to circulate warm glycol along the buried or surface lines to increase temperature to keep production flowing



# Gathering System Hydrate Formation & Prevention

- Gathering systems gather the gas to central facilities and have temperature drops and pressure drops in the systems that can lead to hydrate formation conditions
- There are a couple ways to mitigate hydrate formation in gathering systems:
  - Dehydration will remove the free water from the gas stream and will reduce the hydrate formation potential
  - Methanol injection points are installed on various points in the gathering systems to prevent hydrate formation by reducing the formation temperature



# Questions?