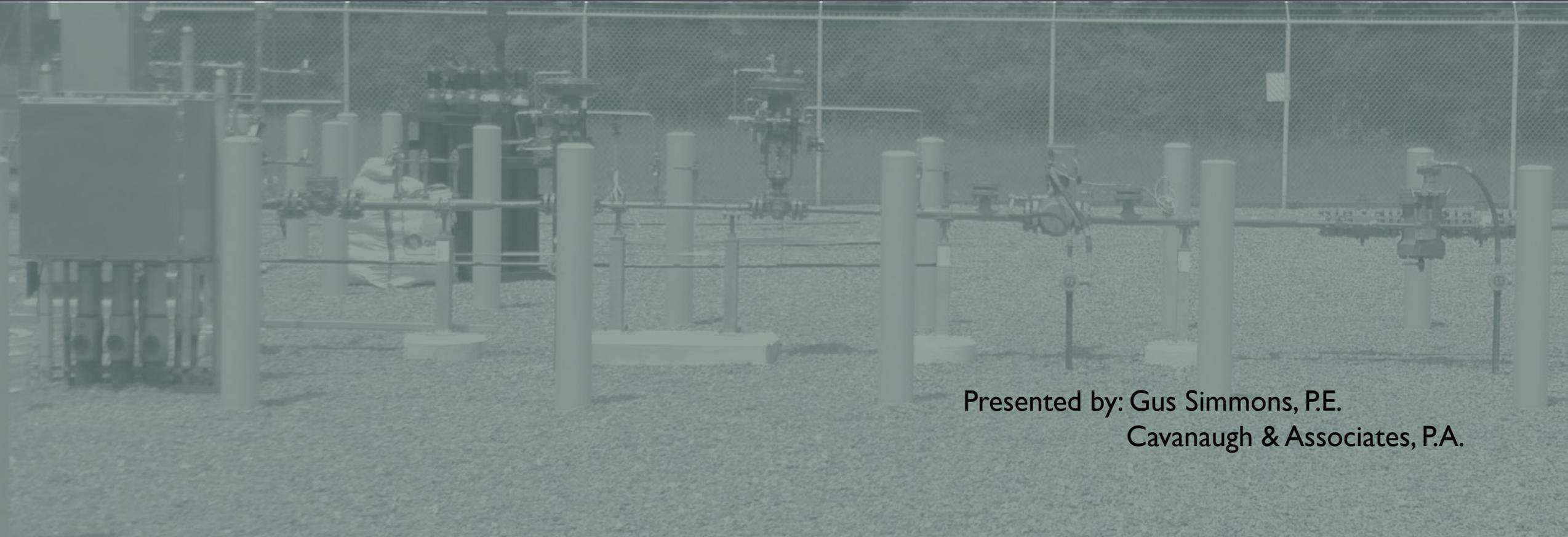


Lessons Learned from RNG Interconnections

GETTING YOUR GAS ON THE GRID



CAVANAUGH
Stewardship Through Innovation



Presented by: Gus Simmons, P.E.
Cavanaugh & Associates, P.A.

INTEGRATION OF RENEWABLE NATURAL GAS LESSONS LEARNED ON THE INTERCONNECTION PROCESS

Communication

Planning

Avoiding Gaps

- For those seeking interconnection, meeting with the interconnecting utility early in the process is essential
- The project development team, project owner, engineers/consultants must present data with high confidence
- For pioneering projects (new technology, differing feedstocks, new areas) there are essential questions that must be answered:

Questions for the Developer:

- ❖ Where else has this been done before?
- ❖ How does the process work?
- ❖ Is there variability in flow or quality?
- ❖ When is the interconnection needed?

Questions for the Utility:

- ❖ What is the tariff / gas quality specification?
- ❖ What approvals are needed; how to apply?
- ❖ What costs are to be expected for the interconnection?
- ❖ How long does the process take?

COMMON MISPLACED EXPECTATIONS

Developers:

- Tariffs and Gas Specifications are “standard”
- An interconnection can occur anywhere there is an existing pipe
 - Existing Capacity
- Established interconnection process
- Interconnection costs
- Speed and simplicity of the approval process

Utilities:

- RNG flows are continuous / do not vary
- RNG is inferior to conventional gas
- Stage of completion of the Developer
- Time impacts to the Developer
- Estimated costs vs. Actual Costs
- Speed and simplicity of the approval process

WAYS TO AVOID COMMON MISPLACED EXPECTATIONS

-  Meet early to discuss the project, and establish schedule for regular updates
-  Be as forthcoming and honest as possible on initial expectations → particularly with respect to time / schedule.
-  Document all parties initial expectations in the form of 'questions to be answered' and 'assumptions to be confirmed'
-  Seek out each others fears and concerns so that they can be addressed
- Establish an interconnection process if one does not already exist Describe costs, timeline, specifications, documents required, etc.
- ✓ Establish an RNG Tariff or Interconnection Standards (gas spec) if one does not already exist
-  Become informed! Learn from other, existing interconnections on how their processes could have been better.

INTERCONNECTION PROCESS CONSIDERATIONS

- What minimum information do you require from the Developer to evaluate a potential interconnection?
 - Proposed Location
 - Proposed RNG Flows (and expected variability, uptime, seasonality, etc.)
 - Projected RNG constituent characteristics
 - Schedule
- Process Flow Map / Diagram (of the interconnection process)
- Confidentiality Agreements
- Capacity Study / System Planning Assessment
- Interconnection Agreement – Terms and Conditions

INTERCONNECTION STANDARDS CONSIDERATIONS

- RNG Constituent Requirements / Parity with Conventional Gas
- Monitoring Requirements
- Testing Requirements
- Communications Protocol
 - Notices
 - Shared data
- Shut-in Process and Response
- Costs

CONTACT:

GUS SIMMONS, P.E.

WWW.CAVANAUGHSOLUTIONS.COM/BIOENERGY

1-877-557-8923