

CGA Energy Nexus & Annual Technical Conference 2024

Fuelling the Future

Session – Station Design Standardization

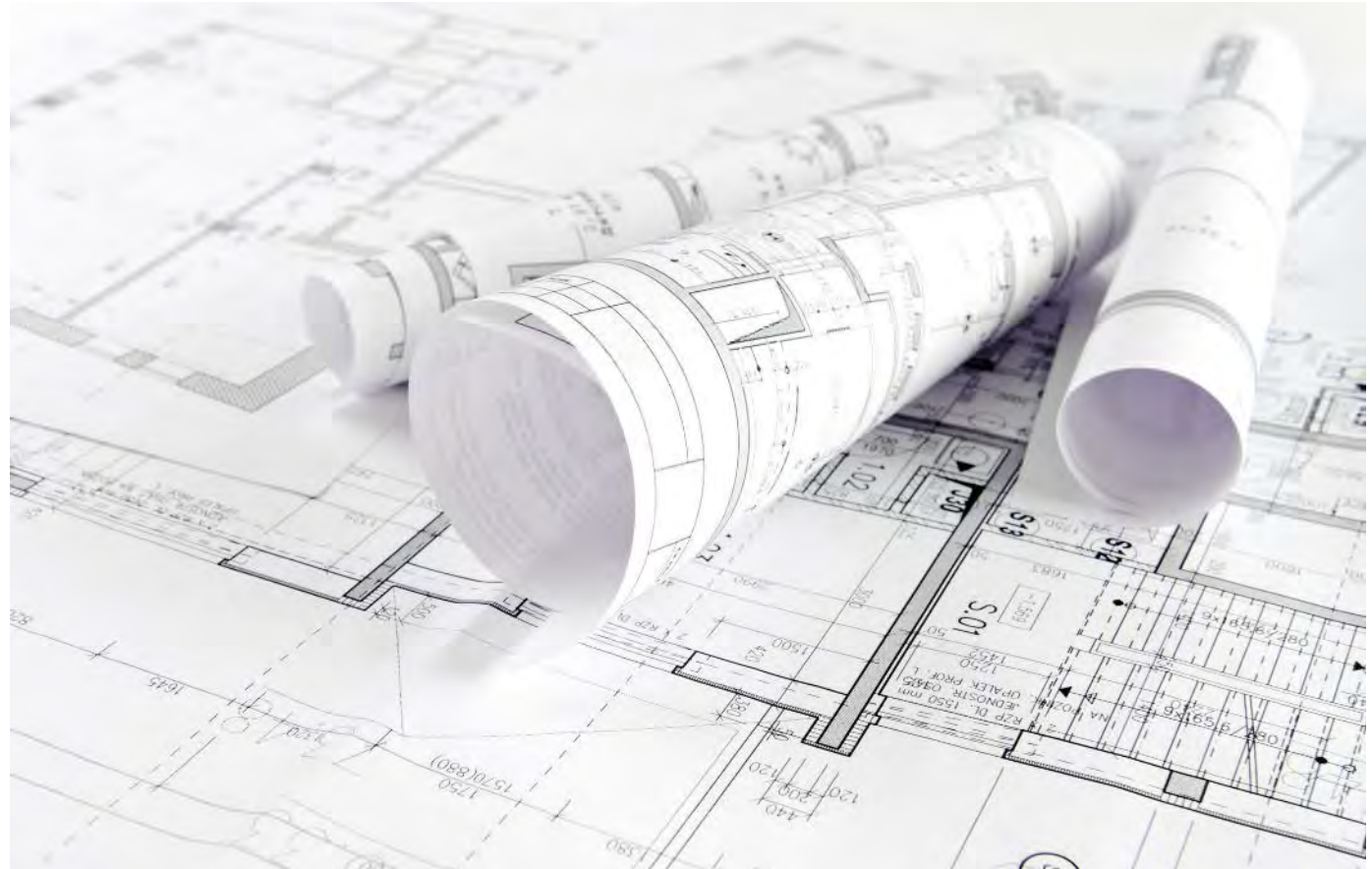
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Expected Outcomes of this Session

- Gain an appreciation for all stakeholders involved
- Considerations when standardizing
- Implications of standardizing



Agenda



Enbridge Gas
overview



Where to start



Stakeholder
Engagement



Design
Considerations



Summary /
Concluding
Thoughts

Enbridge Gas Inc.

North America's largest natural gas storage, transmission and distribution company

We deliver the energy that enhances people's quality of life.

- **Values:** Safety, Integrity, Respect, Inclusion, High Performance.
- **Ambition:** To be your first choice for resilient, sustainable energy solutions.
- **Experience:** 175 years of experience in safe and reliable service.
- **Distribution business:** 3.9M customers, heating >75% of Ontario homes.
- **Dawn Storage Hub:** Canada's largest integrated underground storage facility and one of the top gas trading hubs in North America.
- **Leading Ontario's transition to net-zero emissions:** Advancing conservation, renewable gases and clean technologies for heat, transportation and industrial processes.

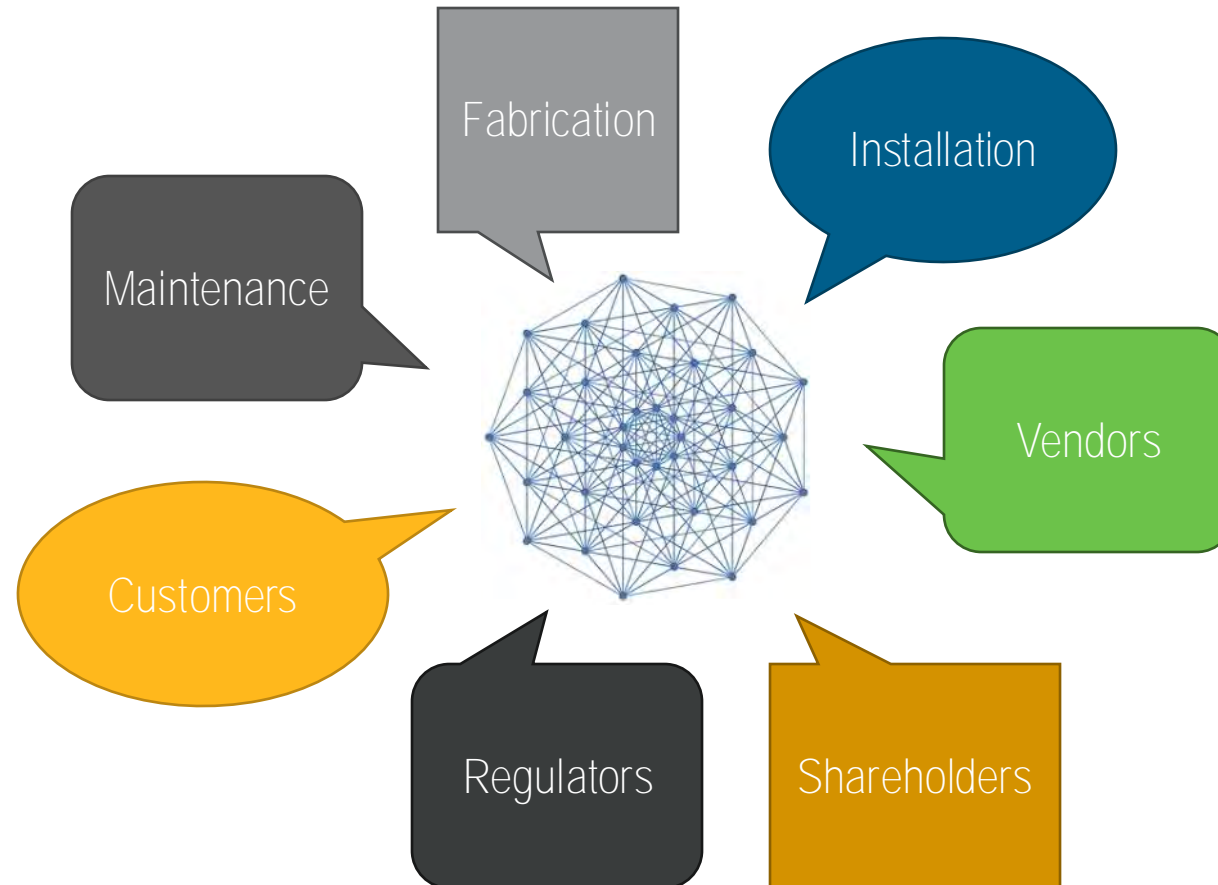


Where to start – Define Scope

- What types of stations are you aiming to standardize?
 - Customer stations
 - System stations
- Consider most common parameters within your system
 - Flow
 - Inlet Pressure
 - Outlet Pressure
 - Do you have a standardized set of minimum and maximum pressures?
 - > For example, a 20 psig minimum for MOPs from 35-100 psig.

Stakeholder Engagement

What roles/functions/people might influence your design?



Fabrication & Installation

- Who will fabricate and what are their capabilities?
- What type of connections are most suitable?
 - Flanged, threaded, welded
- Is fabrication occurring in a shop or at the installation location?



Maintenance



- What features are required for standard maintenance to be completed?
- Ergonomics
- What equipment is most susceptible to failure and may need to be replaced in the future?
- What equipment requires periodic replacement (meters, etc.)?
- If station parameters change over time (flow, pressures), do you intend to replace or modify?

External Stakeholders



Vendors – product offerings and availability



Customers – design aesthetics, size, cost



Regulators – Code Compliance, Safety, Emissions



Shareholders – Is it money well spent? O&M vs. Capital spend?



Design Considerations

Design - Filtration

- Is filtration required?
 - What level of filtration? (microns)
 - What type of contaminants? (solids, liquids)
 - What is the associated risk with not including filtration?
- What type of filtration is suitable?
 - Flow capacity
 - Contaminant holding capacity
- Maintenance requirements



Design - Metering

- Accuracy requirements
- Max and Min Flow requirements
- Pressure rating
- Maintenance requirements
- Recertification requirements



Design – Regulation & Overpressure Protection

- Flow requirements
- Pressure rating, min & max differential pressure
- Overpressure Protection Method
 - Relief Valve, Monitor, Overpressure Shut Off
- Accuracy Requirements
- Shut off Requirements
- Maintenance Requirements



Design – overall layout

- Isolation valves for equipment to be maintained
 - Permanent vs. temporary bypass?
 - Redundant equipment?
- Height and general access to equipment



Concluding Thoughts

- How to create the best possible standardized designs...
 - The best combination of stakeholder input available at the time of design creation
 - By welcome ongoing input for consideration as continuous improvement opportunities
 - > Business needs change with time
- Expected Outcomes
 - Gain an appreciation for all stakeholders involved
 - Considerations & implications of standardizing



Q&A
