Stakeholder Engagement Kickoff
Long-Term Gas Infrastructure Plan

July 18th, 2024

Today we will review AIC's work plan, anticipated Long-Term Gas Infrastructure Plan (Gas Infrastructure Plan) structure, and approach to stakeholder engagement

Meeting objectives

A. Review context behind the Gas Infrastructure Plan

B. Discuss stakeholder engagement strategy

C. Discuss an overview of the work plan

D. Explore AIC's approach to develop the Gas Infrastructure Plan

AIC is in the early stages of developing its first required Gas Infrastructure Plan with the Commission – AIC filed the work plan on July 1, 2024

Gas Infrastructure Plan and work plan context

Background

- Both the AG and PIO[1)] recommend the Commission require the Company to file detailed infrastructure plans
- The Commission agreed with certain reporting recommendations made by the AG and PIO (capital planning, budgeting, and project selection processes) in the most recent and future rate cases
- AIC must file a long-term infrastructure plan with the Commission every two years beginning July 1, 2025

Work plan requirements

- AIC must file a work plan for its Gas Infrastructure Plan on July 1, 2024
- The work plan must include:
  - The contents of the Gas Infrastructure Plan
  - The method for assessing potential resources
  - The timing and extent of public participation

1) AG – Attorney General, PIO – Public Interest Organizations

Source: Illinois Commerce Commission

ICC Future of Gas Proceeding

- Parallel but separate process from AIC Gas Infrastructure Plan
- **Phase 1:** April 1 – August 31, 2024
  - Identify relevant topics relating to the future of natural gas in Illinois
- **Phase 2:** September 1, 2024 – July 1, 2025
  - Examine issues identified during Phase 1
- AIC is engaged in the proceedings and may incorporate insights into the Gas Infrastructure Plan as they become available

Ameren Illinois' Goals for Engaging with Stakeholders and Public Participation

- *Collaboration*
  - Listen to stakeholders' positions and needs during development of Gas Infrastructure Plan
- *Dialogue*
  - Create space for sharing of insights, perspectives, and feedback and incorporate where applicable
- *Transparency*
  - Provide relevant information to facilitate engagement
- *Procedural Equity*
  - Make the process as accessible and inclusive as practicable for all stakeholders

We plan to engage stakeholders through ~8 public workshops, 1:1 meetings or group engagement(s), and public sessions with residential customers

Current plan for Gas Infrastructure Plan stakeholder engagement[1)]

Indicative – As of 7/18/2024, subject to change

Public "Workshops"

Virtual sessions[2)]

Align and share methods, approaches, and preliminary findings in publicly available sessions

Stakeholders:

1:1 or Group Engagement(s)

Various virtual sessions[3)]

Understand stakeholder needs and create platform for feedback in smaller and ongoing touchpoints

Stakeholders:

Public Sessions focused on Residential Customers

2-3 in-person

Understand residential customer needs and solicit feedback in local, community-based settings

Stakeholders:

Focus audience | Other potential attendees | Residential/commercial consumer | Industrial | Consumer/environmental advocacy

1) Subject to change based on additional learnings; 2) Select later sessions may be hybrid; 3) May be in-person based on ongoing/typical touchpoints

Workshop Logistics & Topics

- Dedicated Web Page: AmerenIllinois.com/GIP
  - *Link to filed Workplan*
  - *Meeting information and materials*
  - *Comment portal*
  - *Subscribe to AIC Distribution List*
- Possible Workshop Meeting Topics
  - *Introduction & work plan development*
  - *Natural Gas System Overview*
  - *Demand Forecast*
  - *Capital planning tools and approaches*
  - *NPAs / Innovation levers*
  - *Impact Analysis of Preferred Portfolio*
    - *economics, equity, and environment*

The work plan document includes 5 chapters to address the content for the Gas Infrastructure Plan and the plan for stakeholder engagement

Work plan outline

Work plan document structure

1. 1. Introduction
2. 2. Ameren's Objectives
3. 3. Content of the Gas Infrastructure Plan
   - 3.1 Primary Gas Infrastructure Plan Document
   - 3.2 Appendices
4. 4. Timing and Extent of Public Participation
   - 4.1 Goals of Stakeholder Engagement
   - 4.2 Planned Engagement Approach
   - 4.3 Timing and Process for Engagement
5. 5. Conclusion

Key questions

1. Are there specific aspects of the work plan you'd like to discuss?
2. Is there any preliminary feeback on the structure that you'd like to highlight or discuss?
3. Do you have any uncertainties top of mind at this time?

The work plan outlines the anticipated nine chapters that will be included in the Gas Infrastructure Plan document

Gas Infrastructure Plan structure outline

Gas Infrastructure Plan document structure

1. Executive summary
2. Planning environment
3. Gas Infrastructure Plan methodology
4. Stakeholder engagement
5. Existing system
6. Demand forecast and scenario analysis
7. Innovation and alternative solutions
8. Preferred portfolio
9. Conclusion and next steps

Chapter rationale

1. Introduce Gas Infrastructure Plan rationale, guiding principles, goals, and key findings
2. Explore AIC's external operating environment, including the current energy landscape and key trends & drivers of the natural gas system
3. Frame the overall methodology behind the Gas Infrastructure Plan's creation
4. Describe stakeholder engagement approach, including timing, process, format for engagement, and integration of feedback
5. Describe the current state of AIC's natural gas system
6. Explain AIC's approach to demand forecasting / scenario analysis and the key findings of the assessment (e.g., volumetric & peak load analysis across different parts of the system)
7. Evaluate alternatives to traditional capital investments by assessing the attractiveness and feasibility of emerging innovations
8. Create an optimized portfolio that prioritizes no-regrets investments related to current system needs and future system demand at a local level
9. Summarize key findings and outline next steps for implementation

AIC's Gas Infrastructure Plan intends to answer all aspects of the Commission's directives

The long-term gas infrastructure plan contains at a minimum the following:

1. List of **proposed system expenditures and investments**, including analysis of infrastructure needs and detailed information on all planned projects within the action plan;
2. Demonstration that each project or program plan **complies with all applicable Commission rules and jurisdiction requirements**, such as safety and reliability, among others;
3. **5-year action plan of investments** with a longer-term planning horizon analysis where applicable;
4. Estimated **total cost and annual incremental revenue requirement** of the proposed action plan;
5. Explanation for the pace of each project or program, including reasoning as to **why the project or program cannot be deferred** to future years;
6. **Comparative evaluations** of resource procurements and major capital investments;
7. Distribution mapping that identifies **areas of constraint and risk**, location of planned projects, pressure districts served by each project, and **locations of environmental justice communities**;
8. Description of **lowest societal cost gas distribution system investments necessary to meet customer demand** and comply with public policy objectives;
9. Demonstration that the program or project will **minimize rate impacts on customers**, particularly low income and equity investment eligible communities;
10. **Scenario and sensitivity analysis** to test robustness of utility's portfolio and investments under various parameters;
11. **Publicly filed workpaper** documenting all inputs and assumptions with limited use of confidentiality; and
12. **Summary of stakeholder participation and input** and an explanation of how the Company incorporated stakeholder engagement.

AIC will address the ICC requirements for the Gas Infrastructure across nine chapters

Chapter	Sub-chapter	ICC Requirement addressed
1 **Executive Summary**	• Introduction • Purpose of the Gas Infrastructure Plan • How to measure success • AIC's core values and commitments • Chapter summaries	
2 **Planning Environment**	• Regulatory context • Key trends and drivers	
3 **Gas Infrastructure Plan Methodology**	• Regulatory elements • Collaboration with external parties • Overall approach to the Gas Infrastructure Plan • Key tools used in analyses	11
4 **Stakeholder Engagement**	• Overview • Stakeholder groups • Timing & approach for stakeholder engagement • Post-filing activities	12
5 **Existing System**	• Systems overview • Historical and current load analysis • Existing supply-side resources • System and distribution mapping • Regulatory compliance	

The latter half of the report will contain analysis linked to demand, innovative technologies, and preferred portfolio selection

Chapter	Sub-chapter	ICC Requirement addressed
6 **Demand Forecast and Scenario Analysis**	• Rationale • Methodology • Five-year demand forecast • Long-term gas demand scenarios	1 10
7 **Innovation and Alternative Solutions**	• Goals of the Gas Infrastructure Plan • Current initiatives • Future innovation levers	6
8 **Preferred Portfolio**	• Rationale • Methodology for preferred portfolio construction • Proposed near-term system investments • Impact of near-term system investments • Compliance requirements • Risk assessment • Long-term investment outlook • Impact of long-term system investments	1 2 3 4 5 7 8 9
9 **Conclusion and Next Steps**	• Summary of preferred portfolio impact • Next steps	12

The meta-analysis integrated sources from a variety of stakeholders and practitioners to inform the development of the Gas Infrastructure Plan

Meta analysis methodology

Illustrative

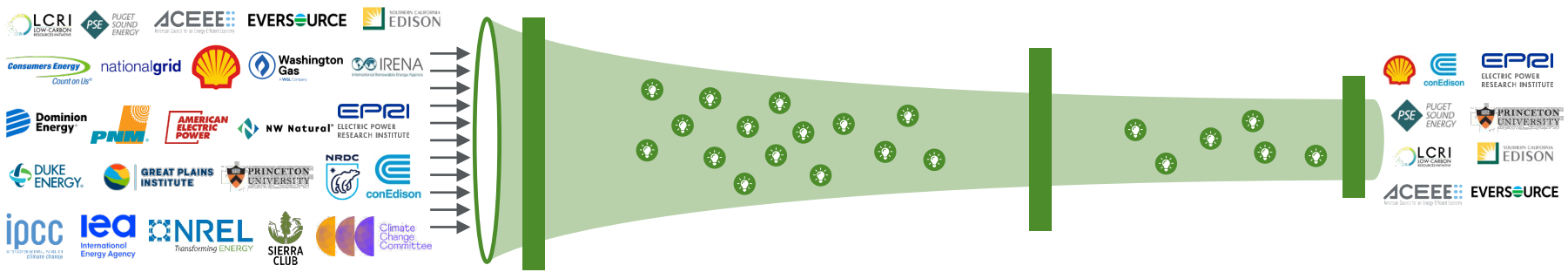
Establish baseline

Initial database

Study selection

Select studies for deeper consideration

Prioritize studies for detailed profiles



Initial filtering

Study prioritization

Selection criteria

- Electricity and gas decarbonization pathway studies and long-term plans
- Focus on recent U.S. studies with some examples from abroad

Selection criteria

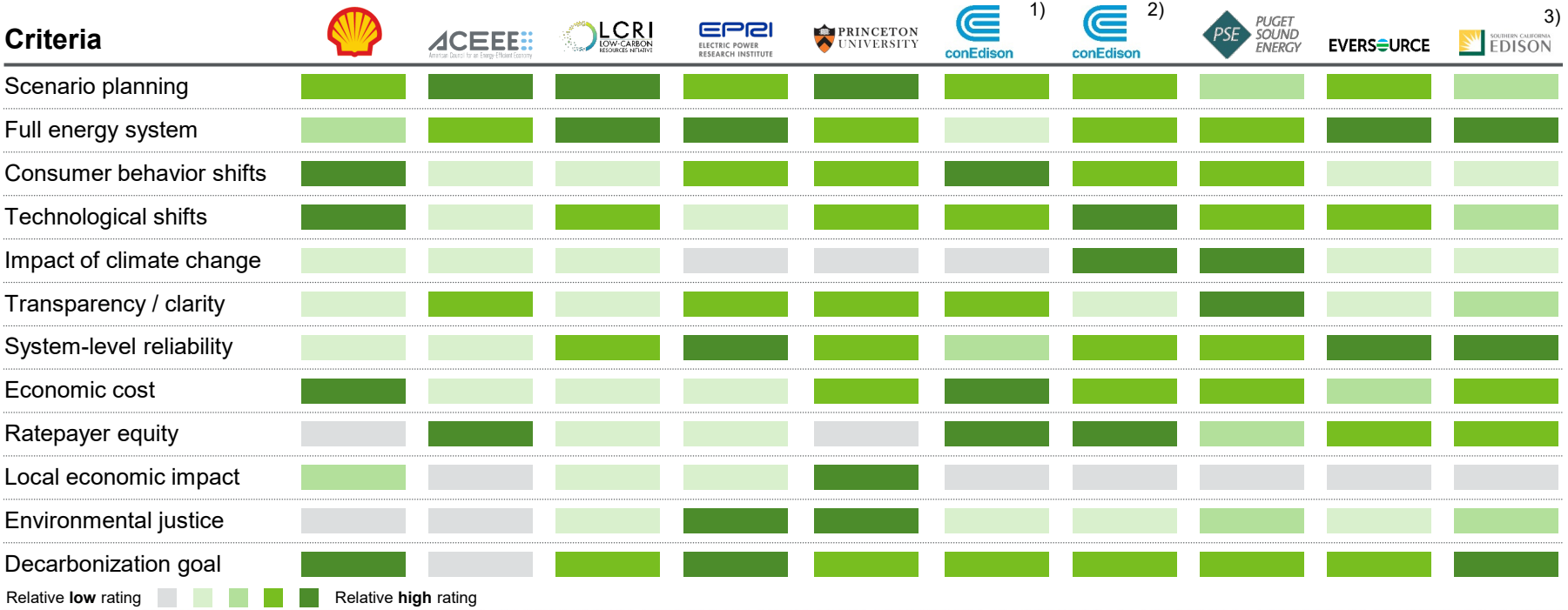
- Exclude those without decarbonization target or long-term energy mix
- Include mix of utility long-range plans and integrated plans, and non-utility studies

Selection criteria

- Selected to cover:
  - Broad range of perspectives, including relevant and leading-edge utilities.
  - Deep decarbonization of gas
  - Novel approaches, including consideration of non-cost factors

All selected studies have trade-offs between selection criteria, but the body of work informs how the Gas Infrastructure Plan may be developed

Overview of prioritized studies



1) Long term gas plan; 2) IRP; 3) 2045 pathway update

Source: Desk research, interviews with market participants

The proposed structure of the Gas Infrastructure Plan integrates takeaways from the meta analysis with the ICC directives

Key takeaways integrated into the Gas Infrastructure Plan structure

Gas Infrastructure Plan document structure

- Executive summary
- 1 5 Planning environment
- Gas Infrastructure Plan methodology
- 4 Stakeholder engagement
- 2 5 Existing system
- 1 2 3 5 Demand forecast and scenario analysis
- 6 Innovation and alternative solutions
- 1 2 5 6 Preferred portfolio
- Conclusion and next steps

Key areas influenced by meta-analysis

Key takeaways

1. Evaluate role of natural gas in the overall energy system
   - Plan will assess economic tradeoffs between gas and electric system across demand scenarios
2. Reflect local nuances in analytical approach
   - System needs and demand forecast will be assessed at local and semi-local levels, respectively
3. Account for shifts in various trends and drivers in scenario analysis
   - Scenarios will account for interplay between linked variables that materially impact demand forecast outcomes
4. Ensure frequent and equitable stakeholder engagement
   - Engagement model will leverage at least 7 direct touchpoints to solicit feedback and encourage understanding between parties
5. Consider climate justice, social justice, and ratepayer equity individually and quantitatively
   - Distribution mapping, scenario analysis and preferred portfolio outputs will quantify & closely examine equity impacts
6. Consider alternative solutions for traditional infrastructure investments holistically and realistically
   - Techno-economic assessment will determine attractiveness of feasibility of potential innovation levers (e.g., NPAs, alternative fuels)

AIC will assess gas demand and shifts across five major areas: Base load consumption, efficiency, load switching, electric utility demand, and new fuels

Overview of drivers for demand for natural gas (1/2)

D	=	RCI	-	E	-	LS	+	UD	-	FA
Demand $\{Natural\ gas\}_{year}$		**Base load gas consumption[1)]**		**End use efficiency**		**Load switching (electrification)[1)]**		**New utility demand**		**Fuel augmentation (Low carbon fuels)**
		Natural gas demand from key customers linked to economic growth, population growth, and changes in climate		Improvements in gas use from changes in built infrastructure envelopes and new process improvements or appliances		Switching from use of natural gas to electrified processes, including residential heat pumps or the electrification of industrial processes		Demand for gas from new utility generation facilities to support new load (e.g., data centers, economic developments)		Deployment of low carbon fuels such as RNG or hydrogen to improve decarbonization profile or to meet sustainability targets

1) Includes residential, commercial, and industrial

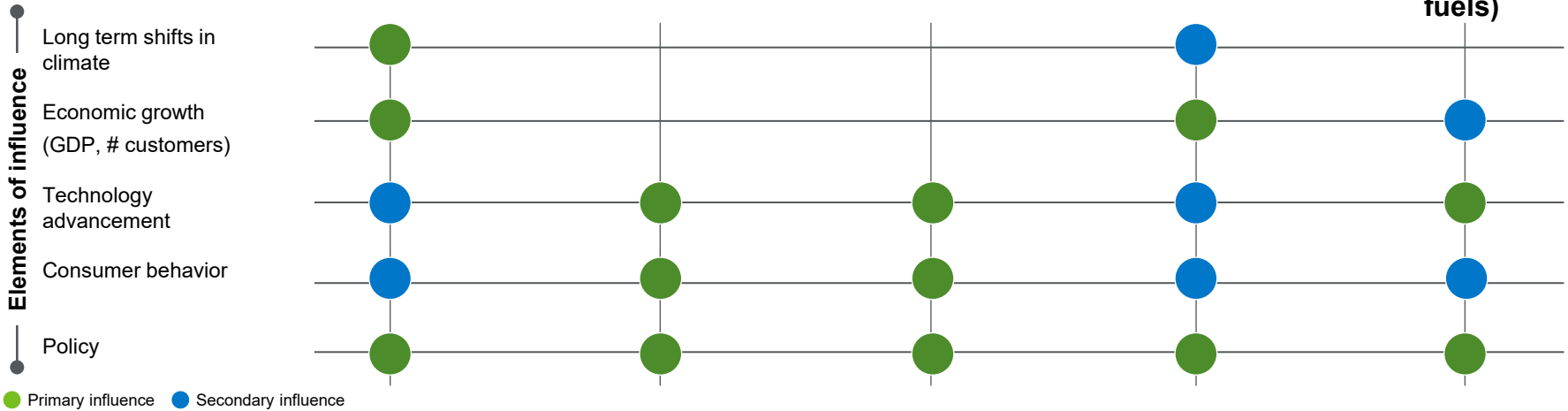
Each major area is influenced by elements with uncertain developments – These will be key considerations for scenarios as AIC assesses resources

Overview of drivers for demand for natural gas (2/2)

D = **RCI** - **E** - **LS** + **UD** - **FA**

D — Demand $\{Natural\ gas\}_{year}$

RCI	E	LS	UD	FA
Base load gas consumption[1]	**End use efficiency**	**Load switching (electrification)**[1]	**New utility demand**	**Fuel augmentation (Low carbon fuels)**



1) Includes residential, commercial, and industrial

Gas demand is likely to be influenced by relatively flat customer growth in IL, expected changes in climate, and developments in end use efficiency

Overview of natural gas trends and drivers – Demand (1/2)

Overall market driver	Specific drivers	Gas demand outlook	Impact magnitude (Low / Med / High)	Comments
1. Base load growth	Organic customer growth	→	Low	Key driver of demand, especially in Illinois, where net migration is relatively flat for residential and commercial despite uptick in industrial customers
	Re-industrialization	↗	Low	Direct natural gas demand may not be significant, but large energy users such as data centers or battery manufacturing facilities in the Midwest may necessitate additional firm generation (e.g., gas turbines) in MISO
	Changes in climate	→	Med	Winter demand for gas for heating may volumetrically decrease, but increased 'low probability' climate events could sustain need for the physical system infrastructure to provide peaking resilience
2. End use efficiency	Built infrastructure energy efficiency	↘	Med	Improvements of efficiency in building envelopes, especially for new builds and retrofits, will reduce the overall heating and cooling demand for gas in buildings; Critical to ensure built environment improvements ahead of electrification to hedge energy burden
	Gas end-use process efficiency	↘	Low	Technological developments and regulatory requirements in efficiency of end use processes for appliances such as furnaces and water boilers will create downward pressure on demand; However, expected high efficiency equipment penetration could be limited by local factors such as housing stock or consumer income levels

↗ Likely to increase NG demand → Neutral ↘ Likely to reduce NG demand

However, electrification may be balanced by new utility demand spurred to meet electric load – Despite volume changes, infrastructure will remain critical

Overview of natural gas trends and drivers – Demand (2/2)

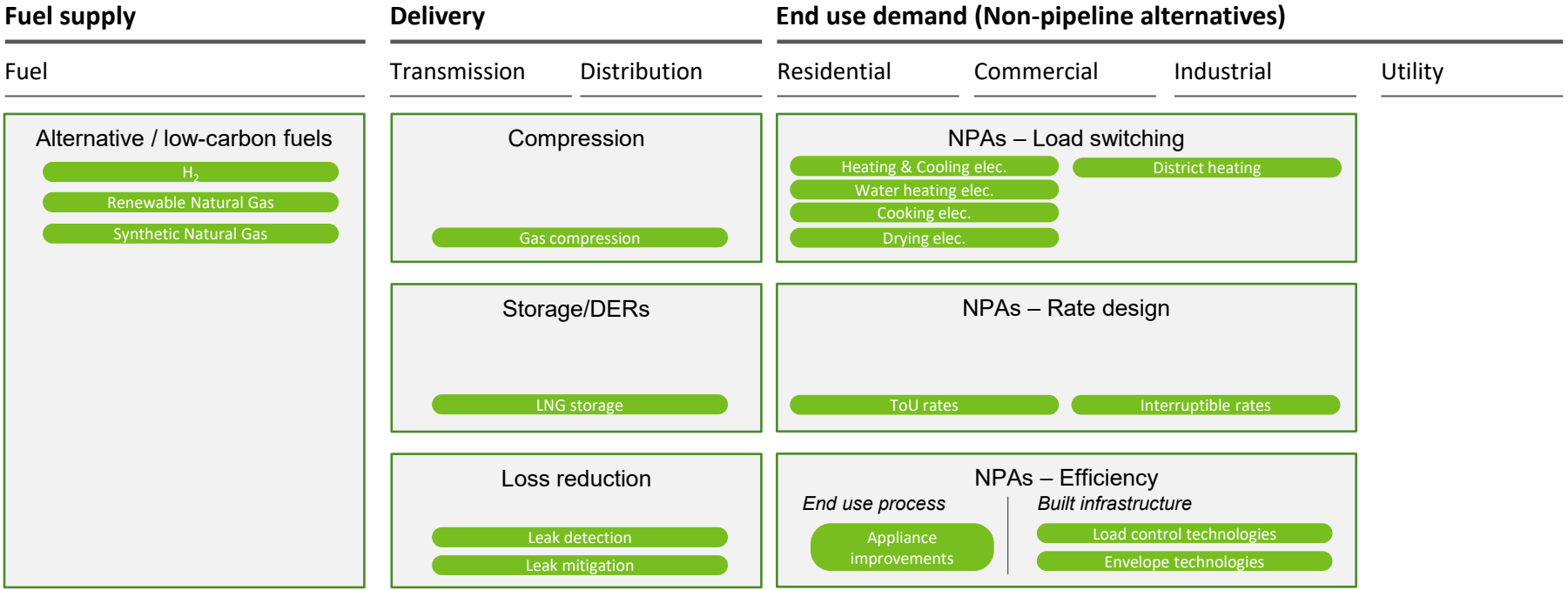
Overall market driver	Specific drivers	Gas demand outlook	Impact magnitude (Low / Med / High)	Comments
3. Load switching (Electrification)	Residential and commercial electrification	↘	Med	Residential sector comprised 15% of total US natural gas consumption in 2022; Electrification of home-dwelling appliances spurred by regulatory requirements and improving economics (partly linked to incentives)
	Industrial electrification	→	Low–Med	Industrial sector comprised >30% of total US natural gas consumption in 2022; Electrification difficult due to high level of heat and energy intensity
	Gas restrictions	↘	Low	Gas restrictions face hurdles; Low impact expected even if restrictions like those proposed in Chicago were to be passed
4. Utility demand	Electricity generation from gas turbines	↗	Low–Med	In short term, natural gas demand will rise to ensure grid reliability as coal and other fossil units retire, and long-term demand may be buoyed by CCUS regulation pathways for power plants; May be limited impact for AIC
5. Fuel augmentation	RNG	↘	Low–Med	Easiest alternative fuel to integrate (can be injected directly into pipelines) but limited overall feedstock supply to serve demand; Production costs are currently higher than natural gas, buoyed by subsidies that may not continue in late 2020s
	Hydrogen	↘	Low	Hydrogen blending is a potentially expensive path to decarbonization; Economics for utility cases and supply available are challenges; Technical limitations for pipelines may require additional infrastructure upgrades
	Syngas/e-methane	↘	Low	A potential 'drop-in' fuel that is expected to develop after 2030, although feedstock is expected to be limited; Use likely only possible if green H2 reaches high availability and very low cost per unit

↗ Likely to increase NG demand → Neutral ↘ Likely to reduce NG demand

AIC will assess technology levers in innovation areas that facilitate equity or clean energy across both current infrastructure and project alternatives

Methodology – Innovation lever assessment

Non-exhaustive



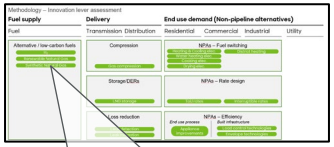
For each technology, we'll assess the attractiveness and feasibility of deployment to inform the development of the preferred portfolio and options

Methodology overview – Evaluation of innovation levers and technologies

Indicative

0. Define technology set

Identify key technologies



H_2

- Green hydrogen
- Blue hydrogen
- Grey hydrogen

Within each innovation lever we identify select underlying technologies

1. Select MCDA evaluation criteria

AIC will select and align criteria

Attractiveness

- Economic cost
- Clean energy potential
- System reliability & resiliency
- Ratepayer affordability
- Equity impact
- Economic development impact

Feasibility

- Technological readiness
- Speed of deployment
- Existing system compatibility
- Availability of supply
- Deployment complexity

2. Weight MCDA criteria

Criteria will be weighted

xx%
xx%
xx%
xx%
xx%
xx%

xx%
xx%
xx%
xx%
xx%

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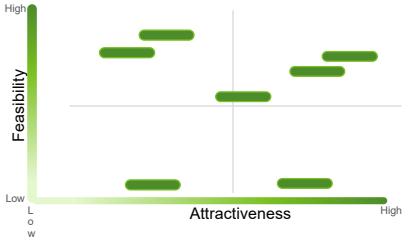
+

Stakeholders (as/if appropriate)

3. Assess underlying technologies

Levers and technologies will be holistically assessed for consideration in the Gas Infrastructure Plan



MCDA – Multi-Criteria Decision Analysis

We'll wrap today's session with some time for Q&A

Are there any questions or clarifications?

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