IL Thermal Network Workshop

Megan Gilman, Commissioner

Colorado Public Utilities Commission

The views expressed in this presentation are those of the presenter and do not necessarily reflect the views of the Colorado Public Utilities Commission or any other individual Commissioner.

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SB21-264 Clean Heat Standard

- Requires gas utilities to submit Clean Heat Plans and reduce emissions from distribution and end-use of gas.

  -4% by 2025 (from 2015)

  -22% by 2030 (from 2015)

- Additional clean heat targets to be set by PUC
- Establishes list of Clean Heat Resources.

SB22-118 Encourage Geothermal Energy Use

- Limits the fees that counties and local municipalities can place on geothermal systems and other permitting/access enablers
- Requires CEO to provide basic consumer education and guidance around geothermal energy
- creates community geothermal gardens, which are analogous to community solar gardens; except that a qualifying retail utility is permitted and not required to purchase electricity and renewable energy credits generated from one or more community geothermal gardens

HB23-1252 Thermal Energy

- Establishes grants for building-based ground-source heat pumps systems
- Codifies thermal energy as a clean heat resource that gas distribution utilities can use to meet the state's Clean Heat Standard
- Requires gas distribution utilities serving more than 500,000 customers to propose pilot thermal energy projects to the Commission by September 1, 2024
- Directs the PUC to initiate a proceeding on or before January 1, 2025 to determine if a rulemaking or legislative changes are needed to facilitate thermal energy development in the state.
- Establishes labor standards for thermal energy public projects that a state agency or state institution of higher education procures.
- .A regulated gas utility is authorized to apply for review and approval of the use of thermal energy networks in the gas utility's service area.

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Rulemaking 21R-0449G

21R-0449G Rulemaking to establish rules for clean heat plans and gas infrastructure plans.

- **Introduced Gas Infrastructure Plans - Intended to provide a more proactive look at investments in gas infrastructure as we undergo a transition to decarbonize the heating of our buildings.**

Gas Infrastructure Plans

First plan accepted May 2023

Gas infrastructure plans are required to include:

- Localized forecasting inclusive of local building codes, incentives, etc.
- Detailed information on projects above a certain dollar threshold
- Evaluation of non-pipeline alternatives for some projects – looking out 6 years at upcoming projects
- Filed on a 2 year cycle

First Gas Infrastructure Plan (GIP) – 23M-0234G
Filed by Public Service Company of Colorado in May 2023
Expected Conclusion – End of 2023

Clean Heat Plans

First plan accepted August 2023

Clean Heat Plans are required to include:

- Portfolios showing the use of clean heat resources towards clean heat targets and anticipated customer cost
- Localized forecasting inclusive of local building codes, incentives, etc.
- Filed on cycle no more than 4 years

First Clean Heat Plan (CHP) – 23A-0392EG
Filed by Public Service Company of Colorado in Aug 2023
Hearing in March 2024

Denver Steam System

Proceeding 22A-0382ST Steam Regulatory and Resource Plan

- Legacy district steam system in downtown Denver
- Commission found plan for operation of steam system over next decade could not be deemed complete without evaluation of alternatives
- Resulted in scopes of work for studies on two options 1) Potential for switch to heat pumps and 2) Potential for implementation of district geo-exchange (ambient temperature) loop

Case Study - Colorado Mesa University

Functional campus-wide ground-source heat pump loop

Case Study - Colorado Mesa University

- Began in 2008
- Closed ground-source heat pump loop with 5 loop fields consisting of 471 bore holes drilled 375-600 ft deep and 2.5 miles of central loop pipe
- Serves 1.2 million square feet across 16 facilities
- Seven 50 HP central loop pumps, 91 individual building pumps, 5 conventional cooling towers, 2 hydronic boilers, 21 water-to-water heat pumps, 962 water-to-air heat pumps and sophisticated control system
- Peak cooling load capability 3,113 tons and peak heating load capability 2,728 tons

Information accessed from Colorado Mesa University website or study commissioned by Xcel Energy and completed by Michael's Energy analyzing the performance of the system.

Case Study - Colorado Mesa University

Compared to conventional water-cooled chillers and natural gas boilers:

- 650 kW demand reduction
- 1.3 GWh energy savings
- 58,000 -70,000 Dth gas savings
- 10 million gallons of water savings
- $1.5M in annual energy savings

According to CMU, the cost predictability over time allows CMU to offer the second lowest tuition rate in Colorado

Table 1 CMU networked geothermal efficiency vs a standard system

	Networked Geo COP	Conventional COP
Spring	7.0	1.9
Summer	3.6	3.4
Fall	5.8	2.0
Winter	8.9	1.2
Overall	**5.7**	**1.9**

Information accessed from Colorado Mesa University website or study commissioned by Xcel Energy and completed by Michael's Energy analyzing the performance of the system.

Thank you

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