Session #3 - Guide to Ownership Models for Thermal Energy Networks

1. **Municipally-Owned Utility (MOU) TEN**

A municipally-owned utility model places ownership and operational responsibility with the local government. The municipality owns the entire energy property, including generation and distribution, and operates the system using internal staff or contracted services. Financing is typically achieved through municipal bonds and may be eligible for direct pay credits under the Inflation Reduction Act.

Municipalities may choose to integrate TENs into existing departments like water, public works, or energy. Governance is fully public, and customer billing is handled through municipal platforms. The system can operate as a regulated utility or seek PSC exemption under UTENJA.

Benefits: Public ownership aligns with local policy goals; direct pay eligibility; long-term rate stability.

Risks: Regulatory and operational burden; requires municipal capacity and technical expertise.

2. **Cooperative Owned TENs**

    a. **Multifamily Cooperative TEN**

This model involves a stand-alone cooperative entity that owns and operates a ground-source heat pump system serving one or more multifamily buildings. Common in parts of NYC, such as Queens and Brooklyn, these cooperatives are formed by resident-owners or building associations.

The cooperative may hire an O&M provider and finance system upgrades through loans or member contributions. Depending on how it's structured, the cooperative may be eligible for IRA credits if tax-exempt or partnered with a nonprofit.

Benefits: Resident control and equity ownership; scalable within building clusters; community resilience.

Risks: Limited capacity for expansion; may face PSC regulation if not clearly exempted.

b. Multi-Stakeholder Cooperative TEN

In this emerging model, a municipality acts as either a founding member or the initial customer of a cooperative thermal network that expands over time. The system may begin with a public facility as an anchor load, and grow to include private customers.

Ownership is shared among cooperative members. Governance is democratic, with one-member-one-vote or weighted systems. The cooperative may own both generation and distribution, contracting O&M services as needed.

Benefits: Blends public leadership with community buy-in; eligible for IRA credits; adaptable as systems grow.

Risks: Transition from municipal ownership to cooperative governance must be clearly planned; regulatory compliance depends on structure.

3. HOA/Condo Association-Owned TEN

This model is tailored to residential buildings with shared ownership, such as condominiums, cooperatives, or housing associations. The thermal energy system, including ground-source borefields, shared heat pumps, and internal distribution, is owned and operated by the building's governing body (e.g., HOA board or condo association).

Operations and maintenance are typically handled through third-party contracts, while capital and operational costs are recovered through common charges or special assessments. Since the entity is not reselling energy in the retail market, it may be exempt from PSC regulation, particularly if service is confined to a single property or ownership block.

This model is common in multifamily settings, particularly where residents already engage in collective decision-making and long-term asset management. Expansion beyond the initial site is generally limited, but the model offers an efficient way to decarbonize heating and cooling in dense urban environments.

Benefits: Community-level ownership; clear governance structure; may qualify for PSC exemption in limited-scope settings.

Risks: Limited scalability; governance and financing burdens fall on residents; regulatory status may be unclear if service scope expands.

4. **Captive Nonprofit TEN**

This model uses a single-purpose nonprofit entity to own and operate the thermal network. The nonprofit may be established by a municipality, anchor institution, or third-party developer, and maintains independent governance. Operations and maintenance (O&M) are typically contracted to professional firms.

The nonprofit structure enables the use of tax-exempt debt and potentially Section 48 tax credits via direct pay. This model can be particularly attractive for mission-aligned projects focused on energy equity and reinvestment.

Benefits: Independent governance; tax credit eligibility; off-balance sheet for municipalities.

Risks: Must maintain arms-length customer contracts; subject to PSC regulation unless exempted.

5. **Hybrid Municipal-Utility Model (via Local Development Corporation)**

In this hybrid model, a Local Development Corporation (LDC) or other nonprofit entity owns the generation components, while an IOU owns and operates the distribution infrastructure. The LDC contracts for construction and maintenance, and the utility manages customer interface and billing.

This structure allows municipalities to participate without direct system ownership or regulatory exposure. The model may enable tax credit eligibility on the generation side, while benefiting from the utility's infrastructure and cost recovery framework.

Benefits: Leverages strengths of both public and utility sectors; potential IRA credit eligibility; scalable.

Risks: Complex contracts and governance; ownership split may limit tax credit eligibility under IRS rules.

6. **Turnkey Developer-Led DBOOM/DBOOT**

In a Design-Build-Own-Operate-Maintain (DBOOM) or Design-Build-Own-Operate-Transfer (DBOOT) model, a developer delivers the system end-to-end. The private partner designs and constructs the TEN and operates it under a performance contract. In a DBOOT model, the infrastructure may eventually transfer to a municipality or nonprofit.

These models are effective for reducing development risks and accelerating deployment, especially where municipal capacity is limited. Financing may include private equity, loans, or public grants.

Benefits: Streamlined delivery; private sector risk-bearing; flexible contracting.

Risks: May be ineligible for IRA credits without nonprofit/public partnership; reduced local control.

7. **Utility-Owned Thermal Energy Network (UTEN)**

In the utility-owned model, an investor-owned utility (IOU) retains full ownership of the thermal network infrastructure, including generation assets (such as geothermal borefields), distribution piping, energy centers, and interconnection equipment. The utility is responsible for designing, constructing, operating, maintaining, and billing for the system.

This model is the basis of the Mount Vernon pilot project in New York, where the utility provides thermal energy up to a point of demarcation at each customer's heat exchange interface. All customer-side equipment is owned by the end-user. The utility finances the system through capital investment, with the potential for cost recovery through regulated rates. Potentially eligible for IRA Section 48 tax credits, this model enables a streamlined implementation by leveraging the utility's rights-of-way, operations capacity, and customer relationships.

Benefits: Simplifies implementation; leverages utility scale and experience; enables PSC oversight and learning.

Risks: Potentially eligible for IRA tax credits; centralized ownership may limit local governance and reinvestment.

8. **Master Limited Partnership (MLP) TEN**

In this model, a Master Limited Partnership (MLP) owns and operates thermal network infrastructure serving multiple properties or customers. Changes to the federal tax code in 2025 expanded the types of energy activities that may qualify for MLP treatment, potentially opening this structure to geothermal and thermal energy infrastructure for the first time. While the model remains largely untested for TENs, an MLP could raise private capital by

issuing ownership units to investors and use long-term thermal service revenues to finance, operate, and maintain shared infrastructure such as geothermal borefields, energy centers, and distribution piping. This structure may be most applicable to large private developments or district-scale systems with stable, long-term customer loads.

A modified, privately held partnership structure could instead limit ownership interests to participating property owners or thermal offtakers, aligning infrastructure ownership with the customers benefiting from the system. However, this would not constitute a traditional publicly traded MLP and would require separate analysis of partnership structure, federal tax treatment, securities requirements, and PSC regulation.

Benefits: Access to private capital; distributes infrastructure costs and risks among investors; potential alignment of ownership and customer interests.

Risks: Existing federal MLP tax rules may limit eligibility for geothermal/TEN activities; complex tax, securities, and governance requirements; subject to PSC regulation unless exempted.