ENERGY AND CITY BUILDING: THE FUTURE OF DISTRICT ENERGY IN CANADA’S NATIONAL CAPITAL REGION

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Planners bring a unique perspective and toolset that is an invaluable resource in complex DE projects.

1. Our Project
2. What We Learned
3. Case Study Highlights
4. Land Use Analysis Highlights
5. Summary
PROJECT PURPOSE

• Evaluate existing planning policy and government context in the NCR and identify key stakeholders

• Create a list of “lessons learned” from successful and unsuccessful DES expansion in comparable places to the NCR

• Identify potential locations for expansion of DES in the NCR by analyzing supportive land-use policy conditions and potential users

• Recommend next steps for ESAP on how to achieve expansion of DES in the NCR
The existing DES network is indicated with black lines and polygons.
GOVERNMENT CONTEXT – KEY PLAYERS

- Complex, with multiple key players
  - Government of Canada
  - NCC
  - Two provinces: Ontario and Québec
  - Two cities: Ottawa and Gatineau
- Each level of government has its own “greening” initiatives
WHAT WE OBSERVED

• ESAP functions in a particularly interesting place and system with many jurisdictional layers, all in need of collaboration
• Lack of engagement with stakeholders can bring missed opportunities
• Green policies can support or hinder DES projects
• Location of infrastructure can help build or restrict an expanding customer base
We learned through our project that the planning profession offers unique skills and tools that can be invaluable for developing a DES.

1. Planners are collaborators with extensive intergovernmental and public engagement experience.

2. Planners bring innovative tools and development incentives.

3. Planners navigate and implement creative policy to meet their objectives.
CASE STUDIES—St. Paul, MN

• Take advantage of your planners! (and their plans)
• St. Paul worked with transit agencies, city planners, and the energy sector to implement DES while expanding their light rail network.

Source: St. Paul Pioneer Press
CASE STUDIES—Guelph, ON

- Looking at plans and mapping is not enough.
  - Guelph failed to consider whether highest-energy users would want to connect.
- Make a plan, too.
  - Plan for your network with easements, and act on them.

Source: Guelph Community Energy Plan
CASE STUDIES—Paris, France

• Use planning tools!

• Density bonusing encourages connection without mandating.

• “Urban Development Zones” mandate connection, but expansion is paid for by the City

Source: Paris 2012 Climate Plan
CASE STUDIES—Sydney, Australia

• Decentralized Energy Master Plan
  • Why not energy plan and urban plan at the same time? Marries planning and energy planning together

• Planning is how Sydney:
  • Meets GHG reduction goals;
  • Diversifies energy provision with private and public heating and cooling systems; and
  • Levels their energy demand curve

Source: Sydney Decentralized Energy Master Plan
• Someone needs to foster cooperation and a united vision between stakeholders.
• In complex contexts, there needs to be a big vision.
  • The Danish federal government laid a strong framework for regional district energy development in the 1970s that did this.
### FACTORS FOR TARGETING DES CLIENTS:

<table>
<thead>
<tr>
<th>OWNERS HIP</th>
<th>PHASING</th>
<th>LOCATION</th>
<th>ENERGY USAGE</th>
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| - Federal buildings first  
- Early adopters and industry pioneers  
- Private connections | - 1st priority = new buildings  
- 2nd priority = lifecycle heating/cooling replacements for existing buildings | - Target buildings adjacent to existing DES first  
- Expand to clusters of high energy users  
- Fill in grid over time | - Target high energy anchor users first  
- Target a mix of uses to create more continuous energy demand profile |
RESULTS

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1. Tunney’s Pasture
2. Scott Street
3. RendezVous
4. Downtown
5. Centretown Spur
6. Byward Market

Initial Priority Expansion Area

New LTHW District Energy Pipes
- CW
- Dual
- Gatineau Expansion
- HW
- Tunney's Alternate Expansion
- Existing Users
- Expansion Focus Areas
LESSONS LEARNED

1. Ensuring the commitment of customers is a vital support to land use feasibility studies
2. DES expansion and operation are most efficient in dense areas with mixed land uses
3. Anchor users are important for long-term DES feasibility
4. The power of valuable planning tools can be harnessed through strong partnerships with local authorities
5. Systematic and flexible expansion is most cost effective and efficient
6. Collaboration between multiple levels of government is key to ensure cohesive and supportive land use policies are implemented
7. Should integrate energy with infrastructure and land use planning
There is opportunity for planners to contribute more to ensuring the success of District Energy Systems.

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2. Planners bring innovative tools and development incentives.
3. Planners navigate and implement creative policy to meet their objectives.
THANK YOU

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