Community Energy Planning: Broadening the Business Case

Beyond the direct financial gains from improved energy efficiency and alternate energy sources
Purpose

- Benefits of CEP mostly focus on economics of direct energy savings, GHG and air pollutant reductions
- **What are other economic benefits?**
- **Strengthen the economic case for CEP by**
  - Identifying broader economic benefits that may be associated with CEPs through a review of CEP experience
  - Document through examples
- **Proviso:** benefits are project and context specific and are not universally relevant
Research Status

• Initial stage of research
• Initial themes and examples identified
  • Review of 12 CEPs identified by GTI researchers
  • Presentations at December 2014 QUEST conference
  • Selected literature
• Today: we want to hear from you!!
  – Test, refine and expand our themes
  – Source additional examples
• Questions?
Theme 1: Business Retention

• Concerns about competitiveness lead to business relocation in many cases
• Changing economics of energy inputs can influence firms’ outlooks positively or negatively
• Low-carbon energy, district energy, cogeneration, and new approaches to waste management can change the economics of production, and influence firms’ decisions to relocate, remain or close
Theme 1: Business Retention

• Example: Magna/Polycon car parts plant in Guelph
  – Guelph’s Community Energy Initiative spurred support for DE projects
  – Guelph Hydro helping to fund project at Polycon plant
  – City vital to supporting this initiative
Theme 2: Business Attraction

• Availability of clean/stable/affordable energy attracts business for whom this is a need
  – Additionally, this can increase clean energy infrastructure as capital stock turns over
  – Such changes can bring indirect clean innovation benefits that accompany the establishment of new businesses and related infrastructure
Theme 2: Business Attraction

• Example: **Data centre location/relocation**
  – Huge source of GHGs
  – **Energy price/reliability a primary concern,** however universities/businesses consider **emissions profile** of energy (by requirement or preference)
  – Possibility/existence of carbon pricing further strengthens the case
  – Location/proximity
    • Scenario analysis by IISD (2010) of relocating university data centers to communities with low emissions energy supply
    • UBC research assessing business case for data centre relocations recommends to build in areas with renewable energy supply
Theme 3: Market Differentiation

- Evolving *market preferences* for green goods and services
- Smart energy and emissions performance allows a development, neighbourhood, even a city to differentiate itself in the market
Theme 3: Market Differentiation

• Example: **Telus Garden Project in Vancouver**
  – New development is transforming entire city block into modern building with leading edge environmental performance and design
  – Added value to infrastructure improvements

• Firms locating development in communities with clean energy and low emissions characteristics, for CSR
Theme 4: Neighbourhood Revitalization

• Large cost efficiency benefits from implementing innovative community energy systems in tandem with revitalizing neighbourhoods

• Revitalized energy systems a core element of revitalized neighbourhoods
Theme 4: Neighbourhood Revitalization

Example: River District Energy Utility in BC

- River District: Former Industrial area in SE Vancouver
- Unique publicly-regulated, developer-owned District Energy Utility
- Increased autonomy, affordable energy
- The institution is key to breathing new life into the area
Theme 5: Energy Resilience

• Increasingly important:
  – For both remote and interconnected communities
    • Remote: always important, but new possibilities with clean energy have heightened this
    • Interconnected: increasing extreme weather events call for greater local energy options
  – Resilience needs of specialized customers everywhere (hospitals, high tech firms)
  – Shifting electric systems: disaggregation
Theme 5: Energy Resilience

- (Cooperation and synergy between communities) **NY State microgrids**
  - Design competition for connected microgrids that can operate autonomously if need be to keep hospitals, police stations etc. reliable and to facilitate distributed electricity

Image: http://nyssmartgrid.com/microgrid/
Theme 6: Housing Affordability

• District energy systems can be core element of CEP, often accompanying high density mixed-use development
• Housing developments benefit from energy savings and cost savings
Theme 6: Housing Affordability

• Example: **ENMAX District Energy affordable housing project in Edmonton**
  – Cogeneration facility run by ENMAX
  – Seniors residence
  – Collaboration of City of Edmonton, Metis Capital Housing Corporation, YMCA, and The Holmes Group
Theme 7: Employee Productivity

• Evidence that **energy efficient retrofits** increase the physical comfort of the work environment, leading to **improved employee productivity**
  – Notable study on increasing productivity with energy-efficient design highlighting 8 case studies, including:
    • Post office lighting retrofit → 6% boost in productivity
    • Prototype store with enhanced daylight with skylights on one side → higher sales
    • Engineering and design facility → cost savings accompanied by 15% boost in productivity, 15% drop in absenteeism

• **Community energy plans** promote such energy-efficient retrofits

Theme 8: Employee Productivity

• Example: Manitoba Hydro Place
  – Sustainable design aspects including passive energy technologies at their head office, healthier work environment benefits employees and energy performance (LEED platinum in 2012)
  – Co-benefit of improved employee productivity (mostly anecdotal) and lowered absenteeism (1.25-1.5 days/year/employee)
  – CEPs can promote such buildings
Theme 8: Employee attraction/retention

- Attraction/retention benefits come to companies with positive environmental and energy practices
  - In particular young employees that wish to be associated with clean companies
  - But it’s difficult to quantify such effects
Theme 8: Employee Attraction/retention

- Infrastructure Canada site (2011): Business case for CSR: "Since many workers feel that they are greener than their employers, environmental initiatives allow them to bring their values and their ideas to work [...] costs a business approximately $3,500.00 to replace one $8.00/hour employee."

- Example: NetImpact study on employee tradeoffs:

  - 35% ...to work for a company committed to CSR
  - 45% ...for a job that makes a social or environmental impact
  - 58% ...to work for an organization with values like my own

All Other Things Being Equal, I Would Take a 15% Paycut...
Other considerations

• Data
  – Recognizing **importance of data** for capturing economic benefits of CEP
  – Key to recognize when better/more data adds value vs when it does not.
  – Measurement:
    • **Metric** VBECS developed by the Rocky Mountain Institute
      – Often lacking from LCAs
      – Business case for retrofits
      – Guide: “How to calculate and present deep retrofit value a guide for owner-occupants”
Upcoming work/next steps

• Further case studies
  – Canadian
  – International

Thoughts? Please get in touch:

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References

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THEME 8
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