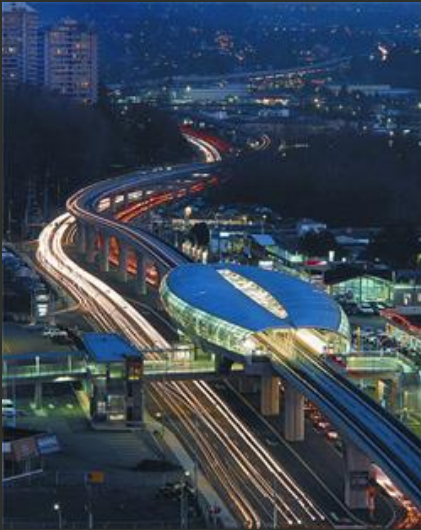


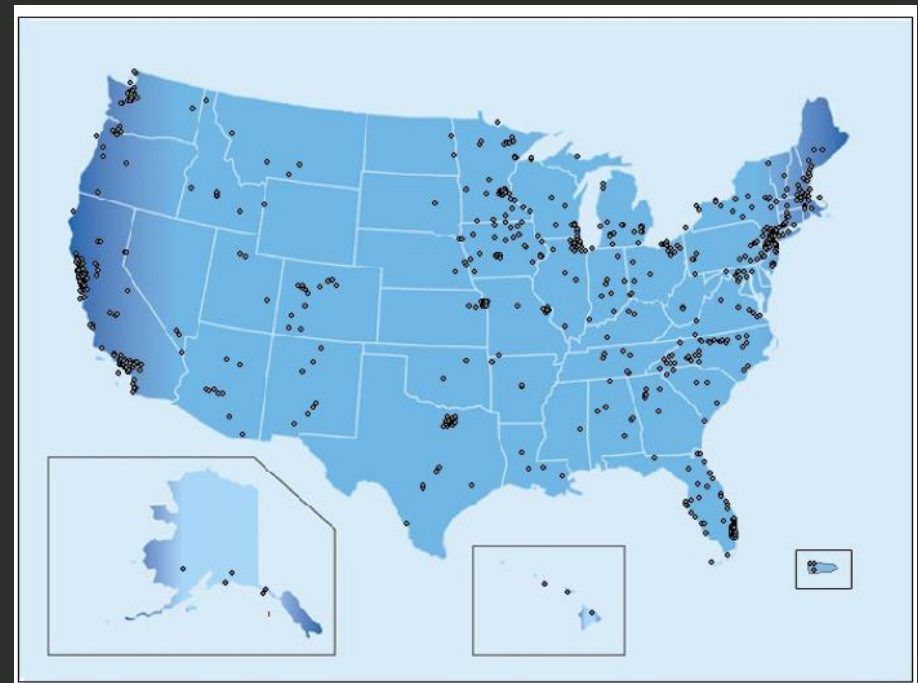
Municipalities and Climate Change: How do we measure action over time?



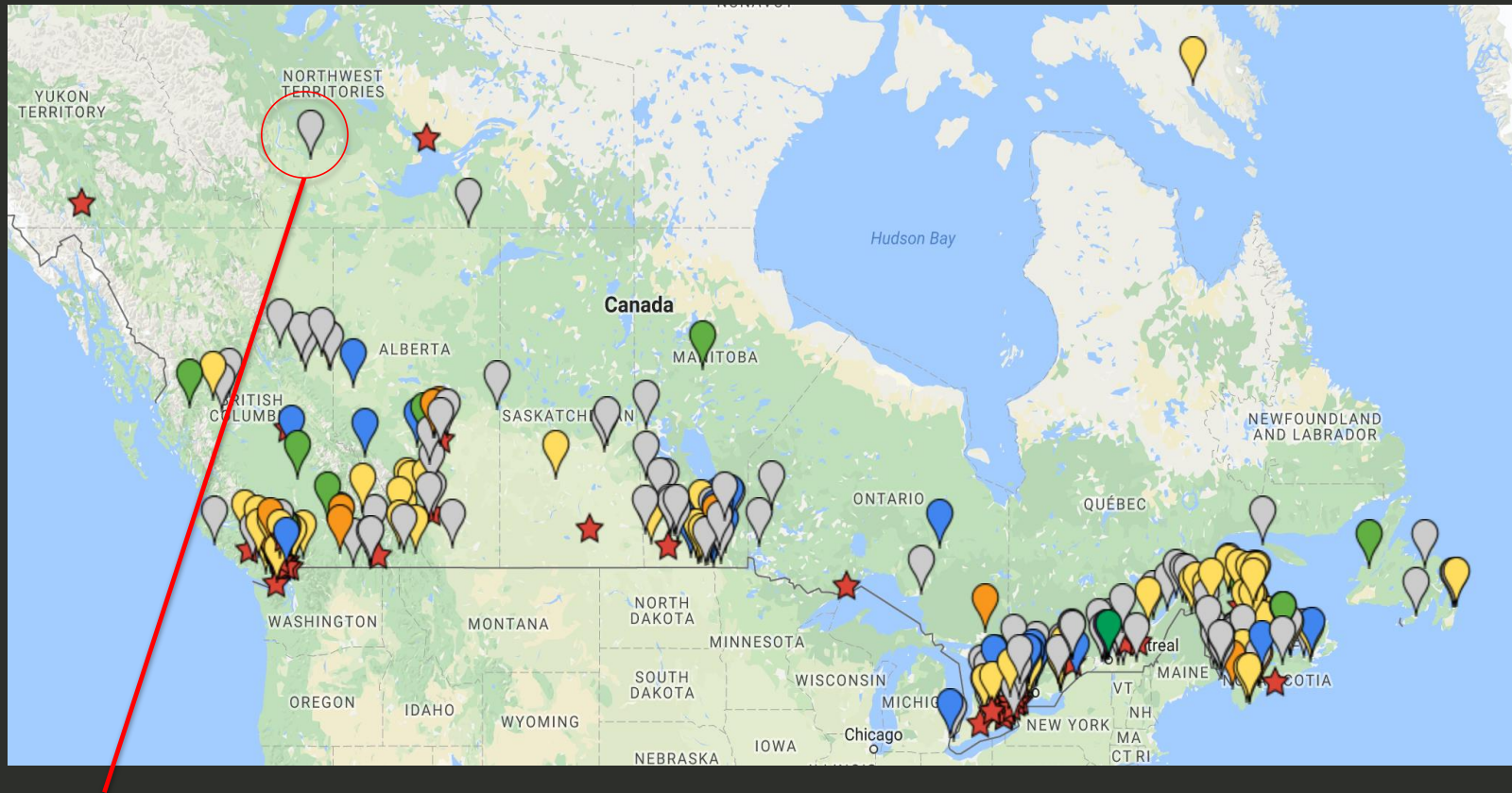
Global municipal context

- Canadian municipal action on climate change since 1988
- 65% of Canadians live in a municipality that has formally committed to address climate change and reduce GHG emissions
 - (FCM) Partners for Climate Protection (PCP) program
- Direct or indirect influence over 50% of national GHG emissions (see Municipalities Table, 1999; Robinson 2000; FCM)

- Mayors representing 50 states, representing over 90 million citizens – Mayors Climate Protection Agreement



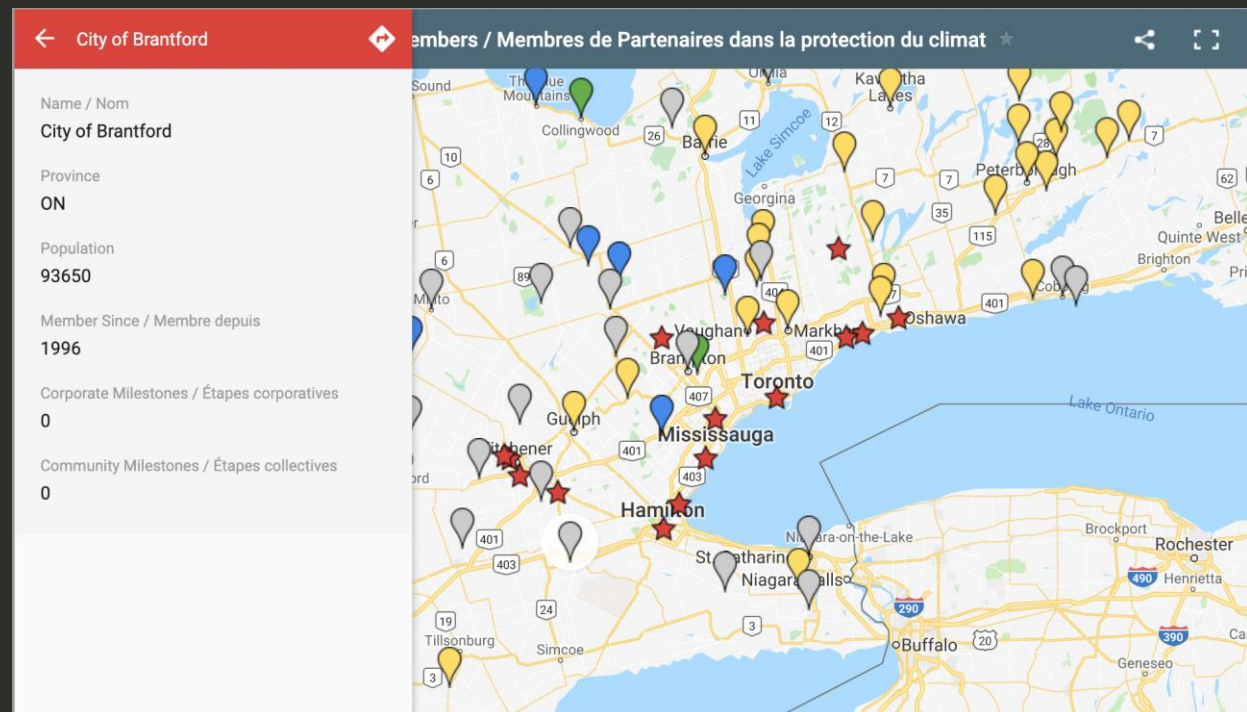
Central question: How do we evaluate action on climate change?



Fort Simpson: Member since 1997, zero corporate or community milestones completed

Canadian municipal context

- Membership in PCP program grown slowly, but steadily
- Most of Canada's 50 largest municipalities members of PCP
 - Members small and large and span country
- How representative of action is the PCP?



National municipal action over time

- 1999 survey (Pamela Robinson; see Robinson and Gore 2005; Gore and Robinson 2009; Gore, Robinson and Stren, 2012)
- 392 municipalities surveyed – 60% response rate (236)
- How many acting?
- Factors shaping action?
- Barriers?
- 81 municipalities taking at least one type of action to reduce GHG emissions
 - 155 'no-action'
 - Size of municipality significant
 - Province of origin not significant
 - Barriers: budget; staff time; low training/knowledge; not a priority; not a local gov't issue

Framework: overarching questions

6

New national survey in 2011:

- *why* have Canadian municipalities acted?
- *how* might their actions be *characterized*?
- *what* actions 'count' and *whose* actions count?
- Is network membership representative of action?

New Approach

- **Inventory +**
- What explains municipal decision to take action on climate change? (Gore 2010)
- April 2011: Municipal staff in 692 municipalities (all with popl'n 5,000 more)
 - ~5500 invitations to participate
 - Response rate over 30%
 - Staff
- Web-based
- Closed and open ended questions
 - Identify reasons for joining or not joining; then rank reasons (domestic and international)
- Correlations

Responses

| Province | Total Response Municipalities (aggregate) | Total Response Municipalities (%) |
|----------|---|--------------------------------------|
| AB | 22 | 12.4 |
| BC | 38 | 21.3 |
| MB | 6 | 3.4 |
| NB | 6 | 3.4 |
| NL | 4 | 2.2 |
| NS | 6 | 3.4 |
| NU | 1 | 0.6 |
| ON | 69 | 38.8 |
| PE | 1 | 0.6 |
| QC | 21 | 11.8 |
| SK | 3 | 1.7 |
| YT | 1 | 0.6 |
| Total | 178 | 100.0 |

Mitigation: No Action

Mitigation: Action

Adaptation: No Action

Adaptation: Action

General Findings

- Correlations between action and what?
 - ▣ Municipal income
 - ▣ Density
- Drivers of action
 - ▣ Council leaders, council and bureaucrats – not civil society
 - ▣ Networks don't drive action
- Knowledge sharing and tangible benefits drive networking






How should we assess action? Is network membership a good indicator?

- Emission reductions?
- Adaptation plan?
- Commitment?
- Academia versus practice?
- Early and active participation in mitigation action tracked by milestones (ICLEI/FCM)
 - Not all action captured by milestones
 - Mitigation: membership \neq results
 - Findings: (Robinson & Gore 2015)

Milestone Framework

The PCP five-milestone process is a performance-based model for reducing greenhouse gas emissions. The model is flexible, in that milestones can be completed in many different ways. The PCP program can work with you to integrate reporting on your existing initiatives into the five-milestone framework.

The milestones are:

| | |
|---|--|
|  | <p>Milestone 1 <u>Creating a greenhouse gas emissions inventory and forecast</u></p> |
|  | <p>Milestone 2 <u>Setting an emissions reductions target</u></p> |
|  | <p>Milestone 3 <u>Developing a local action plan</u></p> |
|  | <p>Milestone 4 <u>Implementing the local action plan or a set of activities</u></p> |
|  | <p>Milestone 5 <u>Monitoring progress and reporting results</u></p> |

Findings: Mitigation (2011)

- 92 mitigation–action municipalities (MAMs)
- Accurate reflection of action?
 - Half of MAMs not PCP members
 - More “in progress” than completed
 - While only 16.3% report emissions measured:
 - more specific action completed than measured (e.g. 32.6% have completed building energy retrofits)
 - 56.5% report other action not included in PCP milestones
 - Taking actions that do not fit under the PCP milestone program

Findings: Adaptation (2011)

- 67 adaptation-action municipalities (AAMs) –
- Accurate reflection of action?
 - Early stages of completion
 - More “in progress” than completed
 - 4.5% AAMs report implementation yet 38.8% have taken specific actions
 - Taking adaptation actions but are not reported or counted as adaptation them as such

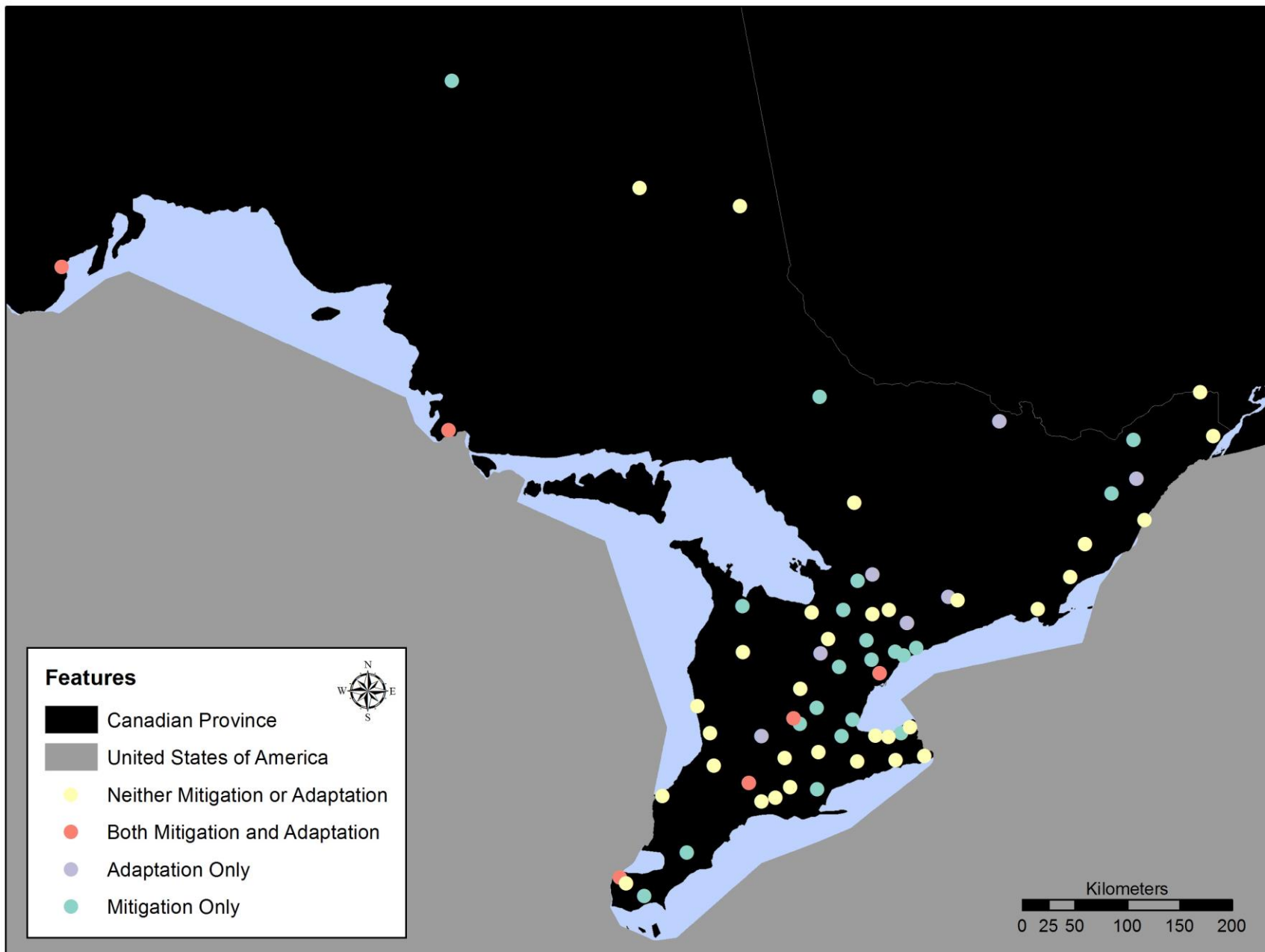
Adaptation Action & Infrastructure

Table 5. Adaptation-action municipality specific action.

| <i>Action</i> | <i>Considered (%)</i> | <i>In progress (%)</i> | <i>Completed (%)</i> | <i>Not sure (%)</i> | <i>No action taken* (%)</i> |
|--|-----------------------|------------------------|----------------------|---------------------|-----------------------------|
| Implemented a stormwater management plan | 10.0 | 39.2 | 30.8 | 9.2 | 10.8 |
| Invested money to improve stormwater management infrastructure | 10.1 | 47.1 | 21.8 | 7.6 | 13.4 |
| Protected against sea level rise | 7.8 | 11.2 | 3.4 | 8.6 | 69.0 |
| Prepared for extreme heat events | 5.9 | 23.7 | 14.4 | 11.9 | 44.1 |
| Prepared for poorer air quality | 10.3 | 17.9 | 6.8 | 17.1 | 47.9 |
| Increased drought preparedness | 10.3 | 20.7 | 11.2 | 14.7 | 43.1 |
| Diversified supply of water | 5.1 | 27.1 | 23.7 | 14.4 | 29.7 |
| Implemented water conservation measures | 8.4 | 39.5 | 37.0 | 5.9 | 9.2 |
| Protected or expanded the urban tree canopy | 5.9 | 50.8 | 16.1 | 6.8 | 20.3 |

* Municipalities were provided with a 'not applicable' option for this question.

| Province | Total Response Municipalities | Mitigation Action | Mitigation No Action | Adaptation Action | Adaptation No Action | Mitigation + Adaptation Action | Mitigation + Adaptation No Action |
|----------|-------------------------------|-----------------------|--------------------------|-----------------------|--------------------------|------------------------------------|---------------------------------------|
| AB | 22 | 10 | 12 | 5 | 17 | 5 | 12 |
| BC | 38 | 35 | 3 | 22 | 16 | 21 | 2 |
| MB | 6 | 3 | 3 | 3 | 3 | 3 | 3 |
| NB | 6 | 4 | 2 | 3 | 3 | 2 | 1 |
| NL | 4 | 1 | 3 | 0 | 4 | 0 | 3 |
| NS | 6 | 4 | 2 | 1 | 5 | 1 | 2 |
| NU | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| ON | 69 | 32 | 37 | 14 | 55 | 10 | 33 |
| PE | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| QC | 21 | 8 | 13 | 3 | 18 | 2 | 12 |
| SK | 3 | 2 | 1 | 2 | 1 | 2 | 1 |
| YT | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| Total | 178 | 102 | 76 | 56 | 122 | 49 | 69 |
| | | | | | | | |
| Province | Total Response Municipalities | Mitigation Action (%) | Mitigation No Action (%) | Adaptation Action (%) | Adaptation No Action (%) | Mitigation + Adaptation Action (%) | Mitigation + Adaptation No Action (%) |
| AB | 12.4 | 45.5 | 54.5 | 22.7 | 77.3 | 22.7 | 54.5 |
| BC | 21.3 | 92.1 | 7.9 | 57.9 | 42.1 | 55.3 | 5.3 |
| MB | 3.4 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| NB | 3.4 | 66.7 | 33.3 | 50.0 | 50.0 | 33.3 | 16.7 |
| NL | 2.2 | 25.0 | 75.0 | 0.0 | 100.0 | 0.0 | 75.0 |
| NS | 3.4 | 66.7 | 33.3 | 16.7 | 83.3 | 16.7 | 33.3 |
| NU | 0.6 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 | 0.0 |
| ON | 38.8 | 46.4 | 53.6 | 20.3 | 79.7 | 14.5 | 47.8 |
| PE | 0.6 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 | 0.0 |
| QC | 11.8 | 38.1 | 61.9 | 14.3 | 85.7 | 9.5 | 57.1 |
| SK | 1.7 | 66.7 | 33.3 | 66.7 | 33.3 | 66.7 | 33.3 |
| YT | 0.6 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 | 0.0 |
| Total | 100.0 | 57.3 | 42.7 | 31.5 | 68.5 | 27.5 | 38.8 |



Implications for municipal climate action

- More action than is known – do we discount the small incremental actions and do they lead to other innovations?
- Milestones data important but has limits—other data needed
 - ***Milestones*** and focus on ***completion*** privileges some types of climate action over others and overlooks work that might be taking place or support that is needed to move ahead
- Understand climate action in Canada as a function or horizontal and vertical relationships

