



Original research article

## Hot off the press! A comparative media analysis of energy storage framing in Canadian newspapers



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## ABSTRACT

Energy storage (ES) is a keystone technology for advancing low-carbon energy transitions, yet energy system change continues to be influenced by socio-political acceptance of emerging innovations such as storage. An initial Canadian contribution to the social-scientific study of ES, we conduct a comparative media analysis of news coverage on storage technologies in the provinces of Alberta and Ontario. Applying the Socio-Political Evaluation of Energy Deployment (SPEED) framework, we analyse representations of ES risks and benefits in 143 articles drawn from top-circulating Canadian newspapers between 2007–2017. We then evaluate frame and narrative trends describing ES in these provinces. In doing so, we identify: (1) a generally optimistic national perspective on ES, despite regional variance in risk and benefit framing; (2) greater attention paid to high-profile, smaller-scale ES technologies; (3) a prominence of sustainability and transition narratives around ES; and (4) a positive temporal shift in ES discourse, reflecting changing regional energy priorities and Canada's increasing commitment to clean energy development. Our findings provide insight on interprovincial differences in social perception on ES and identify possible drivers for these variations to help inform future ES research, deployment and policy strategies in Canada and other evolving national energy markets.

### 1. Introduction

Energy storage (ES) is expected to play a key role in the transition to a low-carbon energy society [1–5]. ES refers to a suite of technologies (e.g. batteries, flywheels, pumped hydro, etc.) which can be used for storing and recovering electricity within a power grid (for useful processes at a later time) [6–9]. By providing grid balancing and power reliability services, as well as increased flexibility for renewable energy integration, ES can help enable cleaner, more reliable, and cost-effective electricity systems [1,6–8]. As technology costs continue to decline (e.g., lithium-ion batteries) and ES use-cases expand across economic sectors, the global storage market is expected to grow to US\$90 billion a year by 2025 [10] with over 50 GW of grid-scale deployments expected by 2026 [11]. Yet, global ES deployment to date has been slow, inconsistent, and geographically variable [7,12].

While leading national markets have begun to implement policies to support ES development (e.g., China, United Kingdom), many jurisdictions still lack the incentive or capacity to invest in storage deployment (e.g., Chile, Kenya, Nigeria). Other regions, particularly those in North America (e.g., Ontario, New York), are advancing ES innovations but remain deadlocked in R&D and early market phases due to contextual economic and regulatory barriers [10,11]. Canada's

fragmented energy and socio-political landscape, for instance, creates unique challenges for ES deployment [13–15]. In provinces with active ES development (e.g., Alberta, Ontario), technical progress is outpacing socio-political preconditions (e.g., regulations, public awareness) for project deployment and commercialization [15–17]. This misalignment is problematic, as low-carbon energy technology deployment requires technical solutions to co-evolve consistently with market innovation, policy development, and social acceptance [18,19]. More broadly, energy transitions are complex socio-technical processes, which require careful consideration of often-overlooked social factors that influence technology and policy change, such as public perception and political will [20–26]. Yet, while there is no shortage of techno-economic feasibility studies on emerging low-carbon technologies [1,25], very little attention has been given to the social dimensions of ES in Canada and internationally [7].

National-level ES deployment will require a range of actors (e.g., generators, policy-makers, end-users, etc.) to enable major alterations to existing energy systems (e.g., technology use, public consultation processes) [22,23,27,28]. Accordingly, as more ES installations are deployed across Canada, social processes such as public interest, acceptance, and dispute will have a steering influence on the technology's uptake in society [7,29–31]. Mass media will play a key role in this

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process, as news discourse can radically influence decision-makers involved in the deployment of new energy technologies and policies [32–35]. Additionally, media coverage can demonstrate how key stakeholders are engaging with ES applications as well as how public discourse is shaping deployment and policy action across varying jurisdictions [25,34]. Examining provincial-level media discourse on ES in Canada can thus help gauge social acceptance of the technology, while creating opportunities for more suitable deployment strategies [7,25,34–39]. Given Canada's controversial history with renewable energy development and recent provincial clean energy policy and market changes, research on the social acceptance of ES is particularly timely [5,7,16].

In this paper, we apply Stephens et al.'s [25] Socio-Political Evaluation of Energy Deployment (SPEED) framework to the case of ES in order to explore how sub-national socio-political factors influence energy technology deployment in a transition context [25,34]. Using the SPEED framework to examine ES media coverage in the Canadian provinces of Alberta and Ontario, we aim: (1) to examine how issue framing can both reflect and inform social acceptance of ES; (2) to consider how regional socio-political factors may influence ES deployment in Canada and other countries with fragmented and multi-level energy governance; in order to (3) elucidate opportunities for strategic ES policy and deployment in Canada, while (4) providing empirical groundwork for the social-scientific study of ES [7]. By combining the SPEED approach with formative social acceptance frameworks [39–41], our exploratory study serves as an early response to recent calls for social analyses on ES [7], while contributing to a limited understanding of non-technical barriers to energy transitions [24,25,42,43].

## 2. Research case and design

### 2.1. The SPEED framework

The SPEED framework was designed as a comparative tool for examining how interacting socio-political factors influence technology deployment across varying geographic and institutional landscapes (typically at sub-national scales) [25]. When paired with media analysis methods, the SPEED framework can help uncover complex social processes (e.g., public risk perception) associated with energy system change, beyond the common technical and economic considerations that dominate policy decision-making [25,29,34,35,38]. Accordingly, we investigate provincially-varying levels of ES social acceptance in two of Canada's most populous provinces through the lens of six SPEED categories (i.e., technical, economic, political, legal and regulatory, environmental and cultural) (see Appendix A for the original SPEED framework [25,34]).

Combining the SPEED framework with a frequency and narrative media analysis, we set out to answer: (1) how ES is generally perceived in provincial media coverage (i.e., whether positively or negatively framed and whether there are differences in perceptions of individual technologies); (2) what narratives media discussions of ES are taking place within, and whether these narratives differ in reflection of different socio-political underpinnings; and (3) how, if at all, representations of ES have evolved in response to major developments in provincial energy planning. In doing so, we contribute a new case study to SPEED literature to help support regionally-appropriate ES development, while advancing a transdisciplinary framework for assessing energy system change, in Canada and internationally.

### 2.2. Case selection and research scope

We take a national focus on Canada recognizing its commitment to decarbonisation and expanding role in the global clean energy market [5], despite facing obstacles associated with a 'fragmented' national energy regime [44]. Canada's electricity generation, transmission and distribution falls primarily under provincial authority, which creates

unique policy and economic challenges for consistent national clean energy development [44]. Nevertheless, the country's budding ES industry is among the fastest growing in the world. In addition to its expanding ES project portfolio [12], Canada's operational battery storage capacity is expected to account for 81 per cent of the total electricity storage market by the end of 2018 [45].

The country's diverse energy landscape and regionally-variable progress in ES deployment offers opportunity for rich comparative analysis and insight for other national ES markets with complex energy structures (e.g., United Kingdom, United States) [5,45]. We chose to compare Alberta and Ontario as the provinces currently represent Canada's leading jurisdictions in ES development [15,46,47], and have both recently implemented provincial energy plans for advancing storage. Despite their known history for achieving energy system change at different paces [44,48–50], Alberta and Ontario are expected to be the first provinces to overcome economic barriers to grid-scale ES [15]. Still, both jurisdictions face considerable market, policy, and environmental constraints for large-scale storage deployment [46,47]. Regional energy politics, ideologies, and market development will be particularly important to consider in provincial ES deployment [50].

For instance, Ontario's 'hybrid' electricity sector (with its combined market and central planning features) and history of government intervention (e.g., from Progressive Conservative and Liberal governments) [49] continues to influence the uptake of provincial energy programs [49,50]. Likewise, Alberta's fossil fuel energy economy, conservative political legacy and deregulated, wholesale electricity market will have unique implications for ES potential [47,49,51]. Furthermore, progress in low-carbon energy development continues to vary between the two provinces [5,49]. Ontario's emission reduction strategy and 2014 coal-fired electricity generation phase-out have enabled significant low-carbon energy deployment in recent years. By contrast, Alberta continues to be Canada's 'fossil fuel powerhouse' with a longstanding investment in oil, and a coal phase-out not planned until 2030 [48,52,53]. The provinces' markedly different energy market structures and socio-political legacies suggest unique opportunities and barriers related to ES deployment (summarized in Table 1). Accordingly, the two provinces provide ideal cases for a SPEED analysis on how such dynamics may shape Canada's evolving ES industry.

Recognizing the early stage of ES in Canada (and thus the public's limited exposure to storage technologies to date), we examine ES innovations in aggregate, rather than focusing on specific technologies. Our newspaper sample examines ES both in concrete and conceptual contexts. For instance, we analyzed coverage on specific ES applications and experiences, as well as anticipated strategies and outcomes. While this is considered to be an acceptable approach for studying social dynamics of energy technologies [54], we recognize that various ES innovations possess diverse socio-technical characteristics and potentially distinct public acceptance profiles, salience, and associated narratives. Accordingly, as the ES market matures, and publics increasingly engage with different applications, future research on this topic will help capture and distinguish these nuances.

## 3. Methods

To conduct our SPEED media analysis, we assessed the content and framing of ES discussions in news media coverage from 2007 to 2017<sup>1</sup> in Ontario's and Alberta's top three most circulated (weekly) newspapers. In Ontario, these newspapers are *The Toronto Star*, *The Toronto Sun*, and *The Hamilton Spectator*. For Alberta, these newspapers are *The Calgary Herald*, *The Edmonton Journal*, and *The Calgary Sun*. All six newspapers report on regional and national topics related to business, politics, finance, leisure, and culture, with some

<sup>1</sup> Data collected for first six months of 2017 only

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