

AI in the Energy Sector: Opportunities, Risks and the Evolving Role of Legal Advisors

Andrew Bowyer: Welcome to The Legal Innovation Forum. Today's discussion explores how artificial intelligence is reshaping the energy sector—from transforming operations and driving unprecedented demand for power to creating new legal, regulatory and commercial challenges. We'll also examine the evolving role of lawyers in helping organizations navigate this rapidly changing landscape.

Joining me are:

Marcia Hook, Head of the U.S. Energy Regulatory and Markets Practice at Clifford Chance.

Marcia Hook: I lead Clifford Chance's U.S. Energy Regulatory and Markets Practice, advising clients across the energy sector on matters involving the Federal Energy Regulatory Commission (FERC), the U.S. Department of Energy (DOE), commercial energy agreements, litigation and regulatory enforcement. My practice spans the full range of energy commodities, and I'm looking forward to today's discussion.

Lesley Lee, Director of Litigation and Employment Law at TC Energy.

Lesley Lee: I oversee litigation and employment law for TC Energy across Canada and the United States. I lead a team of lawyers based in Calgary and Houston that manages litigation matters across the business.

Bryant Bell, Lead Product Marketer for eDiscovery and AI at Exterro.

Bryant Bell: I've spent nearly 30 years working in governance, risk and compliance, cybersecurity, e-discovery and artificial intelligence, both within energy companies and for technology providers.

Andrew Bowyer: Melissa Stoesser-Young, Partner and National Lead of Energy and Major Projects at McMillan, will be joining us shortly.

Today's discussion focuses on four key themes:

- How AI is transforming energy operations.
- The legal, regulatory and commercial risks emerging from AI adoption.
- How legal departments and law firms are integrating AI into their practices.
- Balancing efficiency with ethical and professional responsibilities.

Let's begin by looking at how AI is changing the energy sector itself.

Andrew Bowyer: Marcia, where are you seeing the most significant adoption of AI across the energy industry, and what developments do you find most interesting?

AI Is Transforming Both Energy Operations and Energy Demand

Andrew Bowyer: Marcia, where are you seeing AI having the greatest impact across the energy sector?

Marcia Hook: We're seeing widespread adoption of AI across power markets, particularly in optimizing batteries, demand-side resources and other energy assets.

The energy industry has always been highly data-intensive, and AI allows companies to extract significantly more value from that data. Organizations are using AI to identify arbitrage opportunities, improve asset performance and optimize operational decision-making across the power sector.

What's particularly interesting is that AI isn't just changing how the energy industry operates—it's also fundamentally changing demand for electricity.

The race to provide reliable power for AI-driven data centres has become one of the defining issues facing the industry. Everyone is focused on achieving "speed to power" by bringing new generation online as quickly as possible.

At the same time, transmission constraints are preventing many data centres from connecting to the grid in established markets such as Virginia, which has historically been one of the leading data centre hubs.

As a result, we're seeing significant shifts in investment strategy, including increased interest in behind-the-meter generation, co-located generation and merchant generation. Gas-fired generation, which many believed had passed its peak, has become attractive again, while hyperscale technology companies are willing to pay significant premiums for reliable power.

AI is also transforming how utilities plan the grid. Historically, planning was based on relatively predictable variables such as population growth, weather patterns and industrial development.

Today, utilities must plan for data centre campuses requiring 500 megawatts, one gigawatt or more of electricity. Those forecasts are far less predictable because a single project entering—or leaving—the development pipeline can dramatically change projected demand.

AI is therefore reshaping the industry in two ways: it is improving operational efficiency while simultaneously driving unprecedented demand for electricity.

Accelerating Power Generation

Andrew Bowyer: The need for new generation has also become a significant political issue. Are you seeing broad alignment across the industry on how to address it?

Marcia Hook: Yes. Among the organizations I work with, there is broad agreement that we need to bring as much generation online as quickly as possible.

Current load forecasts—driven largely by AI and data centre demand—have created strong support for an "all-of-the-above" approach to generation. Whether through traditional generation or co-located facilities that can bridge the gap until full grid interconnection is available, the priority is expanding capacity as quickly as possible.

Innovation Is Increasing Regulatory Complexity

Andrew Bowyer: Where are you spending most of your time advising clients? Is the focus on new generation projects or on how companies are using AI internally?

Marcia Hook: It's a combination of both, but much of our work focuses on helping clients meet growing electricity demand.

Companies are finding creative ways to use AI to improve their operations, but the most significant legal work involves the new structures being developed to accelerate generation and achieve speed to power.

These projects create complex regulatory challenges. For example, co-located generation must be structured in a way that complies with both state and federal power sale regulations, and those requirements must be reflected throughout the commercial agreements and supply contracts.

It's interesting because we're often described as operating in a deregulatory environment, yet I feel I have more job security than ever. Innovation doesn't eliminate regulation. In a highly regulated industry like energy, every new business model still has to fit within existing legal frameworks. That makes this a particularly interesting time to practice in this area.

Future-Proofing Energy Projects

Andrew Bowyer: Regulatory environments continue to evolve. How do you help clients plan for that uncertainty?

Marcia Hook: Future-proofing contracts is one of our biggest priorities. Change-in-law provisions are always top of mind because regulatory requirements continue to evolve throughout the life of major energy projects.

Although we closely monitor federal developments, including changes affecting large-load interconnections, the most significant regulatory challenges often emerge at the state level.

Much of the recent activity isn't being driven by federal politics but by state-level responses to the rapid expansion of data centres.

That means we need to do two things. First, we have to continuously monitor regulatory developments, something AI is increasingly helping us do. Second, we need to draft contracts that are flexible enough to withstand changes in the regulatory landscape over time.

AI Adoption Across Canada's Energy Sector

Andrew Bowyer: Melissa, welcome. Could you briefly introduce yourself before we turn to the Canadian perspective?

Melissa Stoesser-Young: I'm a partner at McMillan in Calgary, where I lead the firm's national Energy and Major Projects Group. Before returning to private practice, I spent nearly 20 years in-house in a variety of legal roles across the energy sector, working throughout the value chain.

Andrew Bowyer: We've discussed how AI is driving demand for electricity while also transforming energy operations. From a Canadian perspective, what are your clients focused on today?

Melissa Stoesser-Young: Like the U.S., Canada is seeing a significant push for new power generation to support AI-driven data centres, particularly in Alberta.

At the same time, our clients are increasingly adopting AI within their own operations, especially in areas where safety and operational reliability are critical. We're seeing collaborative AI tools that allow organizations to share insights while maintaining the confidentiality of their own data—a key consideration in the energy sector, where safety always comes first.

Another major area of adoption is asset integrity. Pipeline operators are using AI-powered technologies to improve crack detection and identify potential issues before they become leaks.

These tools improve inspection accuracy while reducing the costs associated with excavation and physical verification.

We're also seeing AI applied to energy marketing and trading. Some of these technologies were originally developed for the automotive sector but have since been adapted for energy markets and are already being used in jurisdictions such as Australia.

From a legal perspective, however, many of the questions we receive relate to confidentiality and legal privilege. Clients want to understand how employees can use AI productively without creating unnecessary risks around privileged or confidential information.

Building a Disciplined AI Strategy

Andrew Bowyer: Lesley, from TC Energy's perspective, how is AI being integrated across the business, and what challenges are you seeing?

Lesley Lee: Like others in the industry, we're seeing significant growth in electricity demand driven by AI data centres and the need to expand natural gas generation to support that growth.

Internally, we're focused on the responsible adoption of AI across our business. We're evaluating a wide range of use cases, including pipeline integrity, operational processes, document management and the preparation of technical materials. We've also partnered with Amazon to explore AI applications that improve efficiency while supporting our day-to-day operations.

One of the biggest challenges is simply the pace of change. AI capabilities are evolving rapidly, and new tools continue to emerge. Rather than trying to adopt everything, our focus is on developing a disciplined strategy that delivers measurable business value.

From a legal perspective, the regulatory environment is still developing. As Marcia noted, we're often relying on first principles around regulatory compliance, confidentiality and contractual obligations because AI-specific regulation remains relatively limited.

That complexity is amplified by the fact that TC Energy operates across Canada, the United States and Mexico. Each jurisdiction has its own federal, state or provincial legal framework, making regulatory compliance a significant part of our legal strategy.

Balancing AI Adoption with Legal Risk

Andrew Bowyer: Bryant, Exterro has a unique vantage point across the energy sector. From your perspective, where are legal departments focusing their AI efforts, and what opportunities and challenges are emerging?

Bryant Bell: Because we primarily work with legal departments at energy companies, many of the conversations we have focus on the risks associated with AI adoption.

Organizations are already using AI to improve maintenance, optimize operations and better manage energy demand. The question general counsel continue to ask is simple: **Can we trust the data AI produces?**

AI can analyze operational technology, telemetry and maintenance data across pipelines, wells and other critical infrastructure, but organizations need confidence that those outputs are accurate. If AI generates incorrect information, it can expose companies to litigation, regulatory enforcement and broader operational risks.

As a result, legal departments are asking important governance questions: Where is AI being used? What decisions is it influencing? And where should human judgment remain part of the process?

Our recommendation is consistent. AI can significantly improve efficiency, provide deeper insights and accelerate decision-making, but it should never replace human oversight.

Whether AI is supporting field maintenance, operational efficiency or legal workflows, organizations need clear governance frameworks that define where AI can be trusted and where human review is required.

We're also seeing growing interest in using AI after an issue occurs. Legal teams want to use AI to quickly identify relevant data, investigate incidents and get to the root cause of a matter more efficiently.

Legal, Regulatory and Commercial Risks

Andrew Bowyer: That leads naturally to our next topic: risk. Marcia, from your perspective, what are the most significant legal, regulatory and commercial risks clients are asking you about?

Marcia Hook: The biggest question is how much organizations should rely on AI, and I see that challenge from both a legal and an operational perspective.

Within legal departments, AI offers enormous opportunities to improve efficiency. At the same time, we continue to see examples of lawyers relying on hallucinated cases, inaccurate citations or AI-generated legal analysis that hasn't been properly verified. Used without appropriate supervision, AI can expose organizations to professional, litigation and reputational risks.

The same issue exists on the operational side.

Energy companies manage critical infrastructure. They operate assets that deliver electricity to communities and maintain pipelines where failures can have significant public safety, environmental and regulatory consequences. If AI provides inaccurate information, organizations can't simply say, "The AI told us it was correct." Accountability ultimately remains with the company.

For me, the real differentiator won't be how quickly organizations adopt AI, but how intentionally they implement it.

Some companies are encouraging employees to use AI as broadly as possible because they fear falling behind. However, successful adoption requires governance, process and training from the outset.

Organizations need clear frameworks that define how AI should be used, when outputs must be verified and where human judgment is required. Those answers may differ between legal, engineering and operational teams, but every organization needs a governance model that allows AI to improve efficiency without creating unnecessary legal or operational risk.

Governance Must Scale with Enterprise Risk

Andrew Bowyer: Melissa, building on Marcia's comments, what are the biggest risks you're advising clients to focus on?

Melissa Stoesser-Young: I agree with everything Marcia said, particularly around governance and human oversight.

One way I think about AI is through the lens of enterprise risk management. AI has a role at every level of an organization, but as the likelihood and consequences of a decision become more significant, the need for human judgment also increases.

For lower-risk tasks, AI can create substantial efficiencies. But when decisions involve critical infrastructure, regulatory compliance or major operational risks, human oversight becomes essential.

AI Is Changing Traditional Risk Allocation

Melissa Stoesser-Young: One of the biggest legal shifts we're seeing involves how risk is allocated between customers, technology vendors and AI providers.

Energy companies have always relied on third-party service providers and technology vendors. Traditionally, contracts clearly allocate liability through indemnities and other contractual protections.

AI complicates that model.

In many cases, the vendor supplying the technology isn't actually the developer of the underlying AI model. Because of that, vendors are increasingly reluctant to accept liability for AI performance or failures.

As a result, much of that operational risk may ultimately remain with the customer or operator. At the same time, it's still unclear whether traditional insurance products adequately cover losses resulting from AI-related operational failures.

That doesn't mean organizations shouldn't adopt AI. It simply means they're operating in a legal environment where traditional approaches to allocating risk may no longer provide the same level of protection.

Intellectual Property Remains an Unresolved Issue

Melissa Stoesser-Young: Another emerging issue is intellectual property ownership.

Organizations are increasingly relying on proprietary operational data to power AI applications, whether that's reservoir modelling, predictive analytics or other specialized technologies.

Much of that value isn't protected through registered intellectual property. Instead, it exists as confidential information or trade secrets.

As organizations continue developing AI-enabled tools and sharing data across technology ecosystems, questions around ownership, protection and control of that intellectual property will become increasingly important.

Regulatory Compliance Still Requires Human Oversight

Andrew Bowyer: Melissa, how are you advising clients to navigate an evolving regulatory environment, particularly as AI guidance continues to develop across jurisdictions?

Melissa Stoesser-Young: From a legal perspective, Canada is still in the early stages of developing AI-specific regulation. As Marcia mentioned, organizations remain fully responsible for regulatory compliance regardless of whether AI is involved in the process.

At this point, Canadian energy regulations generally neither prohibit nor require the use of AI. However, we're beginning to see targeted developments. For example, the Ontario Energy Board now requires organizations to disclose the use of AI in certain regulatory filings.

At the federal level, proposed cybersecurity legislation for critical infrastructure—including pipelines and transmission systems—signals that regulators are placing greater emphasis on AI, cybersecurity and the resilience of critical infrastructure.

AI Can Improve Compliance—But Not Replace It

Andrew Bowyer: With regulatory requirements continuing to evolve across provinces and at the federal level, how should organizations approach compliance?

Melissa Stoesser-Young: As regulatory risk increases, so does the need for human oversight.

AI can improve the quality of information, accelerate data collection and help organizations analyze large volumes of regulatory data more efficiently. But AI cannot, on its own, satisfy regulatory obligations.

At this stage, AI isn't reducing the need for legal and compliance professionals. Instead, it's changing how they work. Human judgment remains essential for interpreting regulatory requirements and ensuring compliance.

AI Governance Begins with Policy and Training

Andrew Bowyer: Lesley, from an in-house perspective, what are the key legal and operational risks you're focused on?

Lesley Lee: Many of the priorities we've discussed begin with governance.

Organizations need clear AI policies that define appropriate use, require human oversight and establish practical guidance for employees. Just as important is ongoing training. AI is evolving rapidly, and employees need the knowledge and confidence to use these tools responsibly.

We're also focused on developing a strong contracting strategy. That includes ensuring our agreements with AI vendors appropriately address confidentiality, liability, intellectual property and other emerging risks.

The same considerations apply to our broader supplier network. We need to understand how our vendors are using AI when delivering services on our behalf and ensure those practices align with our own governance and confidentiality requirements.

Protecting Confidential Information Across the AI Ecosystem

Lesley Lee: Human oversight remains critical, but it's only one part of the governance challenge.

Organizations also need to ensure employees understand the risks of entering confidential or privileged information into publicly available AI tools. The same expectations apply to external vendors working with sensitive information.

Effective AI governance requires more than reviewing AI outputs—it also requires protecting confidential information throughout the organization's broader technology ecosystem.

AI Governance: Creating Guardrails Without Limiting Innovation

Andrew Bowyer: Bryant, from your perspective, what are the biggest governance risks organizations should be thinking about?

Bryant Bell: Governance is really the foundation of successful AI adoption. I often describe it using what I call the "**skate park analogy**."

Before skate parks existed, skateboarders rode wherever they could—streets, sidewalks and parking lots. Eventually, dedicated skate parks were built to give them a safe environment with clear boundaries.

AI adoption is similar.

Organizations don't just have approved AI tools. They also have employees using unauthorized or "shadow AI" tools, much like the "shadow IT" we've dealt with for years. People naturally gravitate toward whatever helps them work faster, and AI is exceptionally good at that.

The goal isn't to stop people from using AI—it's to create a controlled environment where they can use it safely. That means establishing governance, policies, training and clear rules around appropriate use.

Just as a skate park requires helmets, safety equipment and rules, organizations need governance frameworks that allow innovation while managing risk.

One principle remains constant: AI should support professional judgment, not replace it.

Generative AI can improve accuracy, surface information more quickly and help legal teams reach informed decisions faster. But it cannot replace the judgment and experience of legal professionals responsible for managing organizational risk.

We're also seeing AI change the litigation landscape itself. AI is helping organizations respond to investigations more efficiently, but it's also making it easier for external parties to generate complaints and initiate litigation.

As the volume and complexity of data continue to increase, legal teams need tools that help them locate relevant evidence while protecting privileged and personally identifiable information (PII). AI can dramatically improve those processes, but human judgment remains essential.

Governance Should Enable Innovation—Not Restrict It

Andrew Bowyer: That analogy raises an important point. Organizations are under pressure to innovate quickly while also managing increasing legal and operational risk.

How should leaders think about building governance frameworks that encourage innovation without sacrificing appropriate controls?

Build Governance Around What AI Does Well

Marcia Hook: The starting point is understanding what AI is good at—and what it isn't.

Today, AI excels at summarizing information, reviewing large document sets, synthesizing data and improving first drafts. It's extremely effective at processing large volumes of information and helping professionals work more efficiently.

Where AI continues to struggle is independent legal reasoning. It isn't good at developing complex legal analysis from first principles or exercising the judgment that experienced lawyers bring to difficult legal questions.

Those strengths and weaknesses should drive AI governance policies.

For example, in litigation, we've found AI to be extremely effective at reviewing large collections of documents, identifying relevant evidence and helping prepare deposition outlines, witness examinations and supporting factual material for pleadings.

The key safeguard is that AI always points back to the underlying source documents. Lawyers can verify every factual assertion against the evidence rather than relying on AI's conclusions alone.

We're seeing similar benefits in transactional work.

At Clifford Chance, we've used AI in controlled environments to review hundreds of contracts simultaneously for issues such as change-of-control provisions, assignment clauses and other due diligence questions. With additional training, AI can also identify contractual red flags across large portfolios of agreements.

Those are excellent applications because they're grounded in source material that lawyers can independently verify.

Where I would be much more cautious is asking AI to generate legal analysis from scratch.

Effective governance means designing workflows around AI's strengths while ensuring experienced lawyers remain responsible for legal reasoning, strategic advice and final decision-making.

AI Can Still Produce Unexpected Results

Bryant Bell: Marcia's point about not relying on AI to create legal work from scratch is an important one.

We worked with one customer whose generative AI system produced a draft that suddenly introduced **Harry Potter** into a legal document because the underlying training data contained separate references to the words "Harry" and "Potter."

The AI incorrectly connected those references and generated content that had nothing to do with the matter.

It's a humorous example, but it illustrates an important lesson: generative AI is not infallible.

That's why AI should assist legal professionals—not replace them. The value comes from accelerating analysis and surfacing information, while human expertise remains responsible for interpreting the results and making the final judgment.

Making AI Part of Legal Practice

Andrew Bowyer: Melissa, how is McMillan approaching AI adoption within the firm?

Melissa Stoesser-Young: We've taken a top-down approach to AI adoption. We're an early adopter of a legal AI platform, but we've always viewed this as a people project rather than a technology project.

Most of our lawyers now use legal AI every day.

I agree with Marcia's assessment of where AI performs well and where it struggles. In my experience, AI is particularly weak whenever a task requires legal judgment, evaluation or decision-making.

For example, I recently asked AI to review a liability clause in a gas supply agreement, draft an indemnity provision and combine the two. It became completely confused and produced a result that wasn't usable.

Without the experience to recognize those errors, a lawyer could easily deliver work that doesn't meet a client's needs.

That's why judgment remains essential.

We're also developing practice-specific toolkits, including prompts, workflows and playbooks tailored to different areas of law. Those resources help lawyers use AI more effectively while maintaining consistent quality.

Just as importantly, law firms remain responsible for training the next generation of lawyers. Junior lawyers still need to review their work with experienced practitioners, discuss why decisions were made and develop the judgment that AI cannot provide.

AI Literacy Is Becoming a Core Legal Skill

Andrew Bowyer: Lesley, how are you approaching AI adoption within your legal department?

Lesley Lee: Much of what I'd say has already been covered, but one point I'd emphasize is that learning to use AI effectively is becoming a professional skill in its own right.

Writing effective prompts, recognizing when AI is going off track and understanding where it adds value are all new competencies that lawyers at every stage of their careers are developing together.

Rather than seeing AI as a threat, we're encouraging our team to approach it with curiosity and an open mind.

For example, I recently used AI to prepare a presentation. Instead of spending time formatting slides, I was able to focus on the substance of the content and the quality of the analysis.

That's where AI delivers value. It doesn't replace legal work—it removes administrative effort so lawyers can spend more time thinking critically.

Clients Expect AI to Deliver Greater Value

Andrew Bowyer: Are you seeing changes in how outside counsel are using AI?

Lesley Lee: Adoption varies considerably across firms, but every firm is actively exploring how to incorporate AI into its practice.

From an in-house perspective, we're encouraging outside counsel to use AI in ways that improve efficiency and ultimately reduce legal costs for clients.

That transition won't happen overnight. Firms are still learning where AI creates value, and in the short term there may even be additional costs as they experiment with new workflows.

Our approach is to start with smaller pilot projects, evaluate the results and expand successful use cases over time rather than trying to transform everything at once.

Overall, though, I think the profession has reached the point where AI is becoming as fundamental as the transition from traditional law libraries to online legal research platforms. It's simply becoming part of how legal work will be performed.

AI Creates Better Lawyers—Not Fewer Lawyers

Andrew Bowyer: Marcia, what does AI mean for the future of legal practice?

Marcia Hook: I use AI extensively in both the billable and non-billable parts of my practice.

For example, I use it to prepare first drafts of fee estimates and other administrative work where I can easily verify the output. Within my legal practice, I use AI only for tasks that I know it performs well and where I can independently validate the results.

I also encourage every associate on my team to use AI responsibly. Teaching lawyers how to use AI effectively has become another part of professional development.

There's understandable concern that AI will reduce opportunities for junior lawyers, but I see the opposite.

AI removes much of the routine work that lawyers never particularly enjoyed doing in the first place. More importantly, it allows junior lawyers to develop practical skills more quickly.

If a lawyer begins at zero and eventually becomes an independent practitioner, I want AI to help shorten that journey. It allows us to create better resources, better training materials and more effective learning experiences, helping associates develop judgment faster while allowing senior lawyers to focus on higher-value work for clients.

I'm optimistic about the future because AI doesn't diminish the value lawyers provide—it increases our ability to deliver more sophisticated advice.

The Future of Legal Pricing

Bryant Bell: One of the most interesting developments we're seeing is how AI is changing legal pricing models.

Law firms are beginning to analyze historical matters using AI to identify work that follows consistent patterns. Instead of billing those matters exclusively by the hour, firms can increasingly predict the effort required and offer fixed-fee pricing for certain types of work.

AI gives firms much better visibility into the time, resources and complexity associated with recurring matters.

More complex files will always require customized approaches, but AI is making alternative fee arrangements increasingly practical for predictable legal work.

Closing Thoughts

Andrew Bowyer: AI is reshaping every aspect of the energy sector—from operations and infrastructure planning to legal practice, governance and risk management.

Thank you to Marcia Hook, Melissa Stoesser-Young, Lesley Lee and Bryant Bell for sharing their insights, and thank you to Exterro for supporting today's discussion.

As AI continues to evolve, the conversation will undoubtedly continue. We look forward to exploring these issues further in future Legal Innovation Forum programs.