



“Sector Transformation at the Human Scale”

REMARKS TO ONTARIO ENERGY NETWORK LUNCHEON

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CHECK AGAINST DELIVERY

Thank you, Peter for that very kind introduction. It is a pleasure working with you both as a board member and a long time industry colleague; one who has provided important leadership.

And thanks to Gord McBrien and the Ontario Energy Network for inviting me again to speak as part of this series.

I want to take a moment to congratulate John Loucks on his appointment as OEN President. I've known John for many years and know he'll make great contributions to the OEN.

And a further congratulations to Don McKinnon, President of the Power Workers Union who is retiring next month. I have also known Don for all of my adult life and work career, and wish him all the best.

I'm pleased to be joined today by some of the directors from the ESA Board including our Chair, Brian Bentz, Annette Bergeron, and of course Peter Gregg, as well members of ESA's executive team and senior staff.

I also see that Frank Denton, Assistant Deputy Minister of the Ministry of Government and Consumer Services, is here.

Welcome Frank, and thank you on behalf of ESA for your support to us.

The OEN is a great setting for discussing changes and challenges in the energy industry.

My brother is a serial entrepreneur and works in the high tech, communications space and recently he commented to me that "it seems like everything that's new in industry today is happening in the energy business. That's where all the new investment is going."

So I'm not going to be the first – nor the last – to speak at this podium about the extraordinary transformation happening in electricity.

But my focus today is not so much on the technical aspects of this change.

Instead I'm going to look at the challenges for the sector – including regulators like ESA – to engage effectively at what I refer to as the “human scale”.

In particular:

- the fact that the most significant technical changes are occurring at the human edge of the electricity system;
- the new skills that our people will need for this future world;
- and the game-changing ways public attitudes are evolving around us.

And I will touch on how ESA is underway on its own transformation.

In a nutshell, the world is changing and so must we.

Everyone here is well-steeped in the developments in distributed energy resources, and demand management and conservation technologies. We're seeing new grid, alternative generation, and storage technologies becoming the norm.

And the innovations are occurring across the spectrum.

There's Tesla's newly-opened mass battery storage array in California that will provide emergency power to 15,000 homes.

Or if we were constructing a hall like this one today, chances are we wouldn't even use traditional electrical wiring. Instead it would be new plug-and-play lighting fixtures that run on Power-over-Ethernet.

It seems like every week there's an announcement of a breakthrough technology from Samsung, Hitachi, GE or Mercedes-Benz.

And we're seeing new participants enter the arena.

Jason Sporage of Spark Power is here today. Jason and his team provide power solutions and refer their "pole-to-plug" approach. That's a span that used to be the purview of the regulated and quasi-public entities. But now there are companies like Spark Power; part of the new breed of energy visionaries.

And David Carter and his team from Aerial Tool Corporation are here too. His organization is transforming the way we think about doing work in and around electrical systems by using modern robotics. Completely transformational.

Change everywhere we look.

The next decade will be the tale of the tape to see how well Ontario manages the transition from the 'poles and wires' model to a dynamic, flexible, and distributed one.

There will be many criteria for success – cost, reliability, and responsiveness, to name a few.

But I would add to that list: the successful engagement of the public interest.

Until recently, electricity policy and progress largely happened ‘to’ the consumer. The wires flowed one way – and so did the conversation.

But now we’ve seen the start of a revolution.

FIT and time-of-use programs introduced the potential for consumer control of the energy they consume.

But that was only a start. In a micro-grid future, the consumer can have a much more active role.

A farmer can use biomass generation from his livestock for self-sufficiency.

A homeowner in Thunder Bay or Markham can become a Power House by installing solar panels and on-site storage, and joining a neighbourhood virtual power plant with the LDC running the integrated back-end.

A driver can manage their fuel costs and environmental impact by switching to an electric vehicle and recharging it from their home's electricity supply. Or conversely charge their home from their EV's battery.

I'm privileged to serve as the Chair of Plug'n Drive. Cara Clairman, President and CEO, is here today and can attest to the rapid pace of evolution in the electric vehicle space.

The IESO estimates there will be 2.4 million EVs on the road by 2035 drawing an incremental 8 Terawatt hours of energy.

In May, Plug'n Drive's new *EV Discovery Centre* will open here in Toronto. It will showcase how the EV world plays out at the human scale.

Another example of change at the human scale is the transformation of the home into a machine for better living.

The most modern home has integrated security, HVAC, entertainment and other systems with remote control and monitoring on smart phones.

You can purchase an LED light that is Bluetooth addressable, plays music, and produces disco lights – not sure who wants that but apparently some do.

All of this integration and automation runs on electricity and requires complex wiring configurations in the home.

Yet in many cases it will be installed on top of old legacy wiring.

One quarter of the housing stock in Ontario was built prior to 1976. That's when the first Building Code regulation took effect. What complications occur when you try to layer new progressive technologies on this vintage infrastructure?

We've spent decades in this industry talking about electricity policy and strategy at the system level.

But the game has shifted. Now much of the focus is on the customer-end of the system – behind the meter; with the individual user; and inside the home or business.

In other words, at the human scale.

For ESA, this is where we live.

For more than 100 years, ESA and its earlier incarnations have been solving problems in the murky area called “behind the meter.” I have often thought about this period as kind of like Adam Smith's ‘unseen hand’ helping guide the industry at the smaller end of the scale.

Safety exists at the point of contact between technology and people – and this is where ESA spends its time. This space between the electricity system and the average Ontarian and their daily life is a complex area to navigate.

As a regulator we develop and enforce safety requirements, and administer the province's electrical safety regulations.

But what we're really doing is helping people navigate their way to the business or lifestyle solution they want – whether it's a renovation to their home, an expansion to their factory, or an update to their store or restaurant.

At ESA we do a half a million electrical inspections every year – encountering all the messiness of legacy systems, and patchwork histories of repair and maintenance.

Our Customer Service Representatives handle more than 600,000 calls per year that are much more than booking inspections. They demystify, guide, and support electrical contractors, homeowners, LDC staff, lawyers and insurance companies.

And that's for the world as it is today. But the world is changing.

That's why ESA is embarking on a transformation of our own.

Since our creation in 1999 we've done many things to enhance our efficiency and effectiveness.

One key example is the Harm Reduction Strategy we adopted in 2010.

Using our own safety data plus that of the Ministry of Labour, the Coroner, the Office of the Fire Marshal, the Canadian Institute for Health Information and others, we identified the leading causes of electrical death, injury and fire in Ontario. Then we focused prevention efforts on them.

The good news is that fatalities and critical injuries are declining at a steady rate. In the last ten years, electrical fatalities alone have fallen 30 per cent thanks to collective effort of many, including organizations here today.

But events still occur and the consequences are devastating.

Here today is Dr. Mark Jeschke of the Ross Tilley Burn Centre at Sunnybrook Hospital. He can tell you about the lifelong consequences of electrical contacts and burns. I know many organizations here donate to the Burn Centre and I'm proud to announce that ESA has just renewed our five-year, quarter million dollar commitment.

ESA's harm reduction strategy is based on the principle of knowing your greatest risks and allocating effort proportionally for maximum impact and public benefit.

We're now applying the same deliberate, risk-based approach to our largest regulatory compliance function: oversight of new electrical wiring work.

We piloted programs last year and now we have a roadmap to take us to a future where we'll spend significantly more effort on higher risk work, and less on lower risk work, while not compromising safety.

Why are we doing this?

For one, we're seeing significant increases in electrical work, particularly in renovations.

Second, there is a persistent underground economy for electrical work and we need to direct more resources to tackle it.

But we are also making the transition because of the electricity sector changes I've been discussing today. They bring new products, systems and applications.

At ESA we're anticipating evolution to the work and installations we'll be overseeing, so we're evolving the way we ourselves work.

Our approach is to balance the discipline of data with the intelligence of people.

We generate more than 6 million pieces of data each year.

That's big data and it allows us to do deep analysis. In fact, we have a risk calculator tool that assesses hundreds of thousands of wiring work items in our system.

But we also have deep bench strength in human experience and insight.

Our Inspectors, technical advisors, engineers and other specialists tackle myriad challenges – from the most complex wiring systems in a generation plant, to why a new LED light bulb doesn't respond to an old dimmer switch. Because these details matter.

ESA's new risk-based oversight approach marries quantitative information with the qualitative insights of our experts.

It's an exciting and necessary evolution for ESA and you'll hear more about it in the months ahead.

One implication of this and other sector changes is the need to evolve the skills of employees.

In the ESA provincial office there's a massive photo of Ontario's electrical inspectors of 1929 – they're all men in

fedoras. I refer to them as “the men in black.” They would’ve come from very similar work backgrounds and had pretty homogenous skills.

That’s no longer true. ESA has been changing who we hire and how we train them.

We now have epidemiologists and systems experts on staff.

In our recruitment technical expertise is not the only criteria. We also expect communications and leadership, a focus on the customer experience, and out-of-the-box thinking.

For example, one of ESA’s newer Inspectors spent 20 years in electrical maintenance of large, complex robotic systems at a major automotive plant before she joined ESA. She is problem solver and she brings that attitude to her work with us.

This is change at the human scale.

A recent Bloomberg report predicted the occupations least likely to be taken over by computers are the ones that require creativity and social perception.

Are we doing enough in the electricity sector to enhance the creativity and social perception skills of our people?

The world is changing. Are our people ready?

The third dimension of change at the human scale is with the people that our organizations serve.

It's 2017.

How do Ontarians want to purchase goods and services?

Where do they find information?

What's important to them?

And who do they trust?

What is our sector's Uber, AirBnB, or Amazon?

These disruptors recognized that traditional providers were not aligned with the evolving needs and preferences of the consumer.

Psychographics, behavioural research, cultural anthropology and social values are becoming essential tools of business.

At ESA we're using social values and behavioural models to build better safety engagement strategies.

In a recent Harvard Business Review article Jeremy Heimans and Henry Timms presented a paradigm of “new power values” vs. “old power values”.

Old power values include: managerialism; authority; and the separation of public and private.

New power values are: opt-in decision-making; self-organization; open-source collaboration; and radical transparency.

The world around us is changing.

As we change the technological configurations of the electricity industry are we also preparing sufficiently for the social and attitudinal changes? Are we relying on assumptions that are becoming out-dated?

The world is changing. Are we ready?

Let me give you a very simple example regarding our dog. Trust me; this will make sense in a minute.

Our daughter decided to do an experiment with a box of milk bones. She wanted to find out which flavors of the 12 the dog liked best. So each night after its walk, she offered it a choice of two different kinds – one in each hand. After several weeks, she reached a conclusion. There was no pattern. No favorite at all. It was completely random which flavour the dog took.

Except that it wasn't. We later concluded that the dog always took the biscuit in your left hand. His preference wasn't based on flavour at all.

We had made a mistake. We imposed our bias on the dog. This little household experiment reminded me of the risks in assumptions.

That is the most simplistic of examples.

Our sector and its interactions with people are far more complex.

We're an industry that has traditionally thought in terms of systems, equipment, installations, and design. But to reach the full potential of this new future we also have to think about behaviours, relationships, attitudes, preferences, and values.

In other words, we have to engage at the human scale.

This should influence our technology and business decisions, our employee hiring and training, and our public engagement and communications.

When we have faced major sector change before we have established forums to tackle it collectively.

Look at The Smart Grid Forum launched back in 2008. It has broad representation and hosts robust discussion. In fact many of the system changes we're seeing live today were discussed first in concept at the Smart Grid Forum.

Now we're moving into the distributed, multi-micro-grid era.

Do we have the forum to discuss the new opportunities and challenges? Are we sitting together with other sectors like telecom, transportation, and construction?

Are we challenging the status quo for up-dates of codes and standards? Do we need to move faster and be more integrated with global trends?

It's time for us to consider new approaches, new configurations, and new discussions.

And in particular, we need to look at sector change at the human scale.

Do we understand it well enough, and have the skills and strategies to address it?

I, for one, think it's a very exciting challenge and I look forward to tackling it with you.

Thank you.

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