THE HAWTHORN CLUB

FOR EXECUTIVE WOMEN IN ENERGY

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Global Summit 2018

To open the 2018 Global Summit The Hawthorn Club lit up the New York City Skyline. On April 10, The Empire State Building was glowing green, blue and white in honor of executive women in energy.

Club Members took a fantastic sustainability tour of the Empire State Building, which is New York City's largest commercial purchaser of 100% renewable energy.

THE THEME OF THIS YEAR'S SUMMIT WAS:

Transformations across the Energy Sector: How women are driving innovation and disrupting in a century-old industry

The day had an impressive line-up of speakers, with over 70 of the world's leading female energy executives from ten countries participating. We heard about the latest trends and issues impacting the energy industry and talked about the transformation of the sector.

NEXT YEAR'S SUMMIT WILL BE HELD ON MARCH 27, 2019

SUMMIT OPENING KEYNOTE by Elisabeth Brinton

Executive General Manager of New Energy, AGL Energy and Hawthorn Club Global Advisory Board Chair

5 KEY INSIGHTS:

1. We need to articulate the 'truth' in order to develop relevant policy and generate great outcomes.
2. The refrigeration industry radically changed in the early-to-mid 19th century in the order of magnitude that the energy industry is now changing, and it therefore provides a great learning example. The advances in refrigeration underpinned transformative advances across the global economy, including in the transport, logistics, food and health sectors.
3. Radical industry 'transitions' are always done in parallel. They disrupt established industries, and this can be difficult; but they can also provide revolutionary changes across multiple industry sectors.
4. New Energy requires new thinking and new math. Digitally enabled, flexible, distributed clean energy assets perform differently by design. In order to scale deployment the underlying financial models that determine value and Internal Rate of Return must be modeled differently from traditional utility assets.
5. It is important to remember that consumers are not the rational decision-making machines that classical economics assumes they are. Energy companies need to understand the beautiful, interesting and often irrational(!) drivers that motivate people to act.

POLICY LEADERSHIP IN THE US IN A POST-PARIS AGREEMENT CLIMATE - How states are leading the charge

A key theme of this discussion covered leadership at the state level, focusing on California and Vermont as examples of how local-level policies are driving innovation and providing opportunities for the industry to help advance the clean economy.

Pictured - Moderator: Nancy Pfund, Founder and Managing Partner, DBL Partners interviewing Mary Nichols, Chair, California Air Resources Board and Mary Powell, CEO Green Mountain Power

"The old paradigm isn't working; we need to find champions to do things in a new way."
- Mary Nichols, Chair, California Air Resources Board

"All we hear now is storage, storage, storage. Ten years ago it was solar, solar, solar. Before that wind, wind, wind. In ten years time there will be new technology and new solutions we don't even know about yet."
- Mary Powell, CEO Green Mountain Power

5 KEY INSIGHTS:

1. ***"We need to understand our customers from a value-based perspective."*** There are many customers who are prepared to pay more for 'green energy'.
2. ***"Policy matters."*** Mary Nichols gave an example of two million disadvantaged children in California being provided with free and healthy lunches as a result of a State Government policy initiative. This would not have happened if it were not for the policy. Policy innovation attracts investors.
3. ***"There has to be something in this for everyone."*** People don't want to pay more than they have to. Selling the benefits of energy initiatives is therefore important, even if this is a societal benefit - it makes the 'medicine easier to sallow'.
4. ***"The old paradigm isn't working; we need to find champions to do things in a new way."*** Regionalisation of the grid (e.g. in California and surrounding States) is critical to making the energy transition work. California currently pays States to take excess solar electricity, but those States don't want to join the California grid as no one wants to yield power.
5. ***"There is a dynamic tension between private good and public good."*** What is good for shareholders isn't necessarily good for society. However, working for an organisation whose mission it is to improve lives is empowering.

CUTTING THROUGH THE HYPE - How to make news in the energy sector

A key theme discussed by the panel was the importance of capturing people's interest. It is hard to do so if an issue doesn't affect them in their day-to-day lives. Given the impacts of climate change are long term, it is particularly difficult to translate this into short term impacts on day-to-day lives.

Pictured - Moderator: Nancy Pfund, Founder and Managing Partner, DBL Partners with leading energy and climate journalists: Amy Harder, Energy Reporter, Axios; Kendra Pierre-Louis, Climate Reporter, New York Times; Julia Pyper, Senior Editor, Greentech Media; Emily Chasan, Sustainable Finance, Bloomberg News

"If you can't say the words, you definitely can't solve the problem."
- Amy Harder, Energy Reporter, Axios

5 KEY INSIGHTS:

1. ***"If you can't say the words, you definitely can't solve the problem."*** Amy Harder was referring to the difficultly of addressing climate change under the Trump Administration. Although interestingly, some politians are happy to 'work on the solutions' even if they don't believe in the problem!
2. Despite the Trump Administration not believing in climate change, investors still focus on the economics of a project. If the economics work, then they are still interested.
3. ***"You don't realise the impact of something until it affects you. You have to make it relevant for the individual."*** This is particularly true of climate change; if people cannot see how it affects them, it makes it difficult for them to care. Reporters therefore look to hook into stories that people do care about. For instance, as the globe gets warmer, there are fewer places to hold the Winter Olympics. People really care about meat and cow emissions too – who knew!
4. It is hard to get people to change their behaviour, but it is useful to point out things in a way that the reader might not have seen before. For example, the Trump Administration does not believe in climate change, yet it passed the 45Q Bill that will facilitate the implementation of carbon capture and storage, a technology to lower emissions from fossil fuels.
5. Bloomberg has great data on sustainability, but it can be really hard to use sustainability data given the long-lag times and the differences in reporting between juristictions. Some companies, such as Facebook, grab headlines with pledges, but it can be hard to track the material impact on emissions reductions. It appears that companies that go beyond the 'green-wash' and focus on actual material sustainability do better economically in the long-run.

INVESTING IN AN UNCERTAIN ENERGY FUTURE - How to play the cycle

The panelists discussed uncertainties and other global risks that may affect energy's future, as peak energy demand is expected by 2030. However, even in the best case scenario, renewables are expected to be 30% of energy by 2030, which means fossil fuels will still be 70%.

Pictured - Moderator: Alix Steel, Co-anchor of Bloomberg Daybreak Americas with Panelists: Leslie Biddle, Partner, Serengeti Asset Management; Kate Vidgen, Global Head of Oil & Gas Principal, Macquarie Capital; Cynthia Dubin, Board Director Babcock & Wilcox; Thina Margrethe Saltvedt, Senior Advisor, Nordea; Louise Moretto, Director of Sustainable Investments, Deutsche Asset Management

"Financers can't afford to sit still, because others will quickly catch up. They have to be thinking about what's coming 5-10 years down the track."
- Kate Vidgen, Global Head of Oil & Gas Principal, Macquarie Capital

5 KEY INSIGHTS:

1. Peak energy demand is expected by 2030. However, even in the best-case scenario, renewables are expected to be 30% of energy by 2030, which means fossil fuels will be 70%. Gas is expected to grow in Asia, and coal in India. Decarbonisation of fossil fuels is still essential if we are going to solve the problem.
2. China has five times the amount of solar energy than the USA; three times the amount of wind energy than the USA; and much greater decarbonisation investment than the USA. The Chinese Government is largely driving this through investment and policy. Addressing the serious health issues from pollution is a major driver for China. How can the US (and other countries) make up ground? Through technology and innovation, strong legal systems and intellectual property rights that protect that innovation, underpinned by a strong entrepreneurial bent.
3. Returns on renewable investments in countries like UK, Australia, and USA are in the single digits, compared to returns on LNG for instance, which can have returns of more than double. This is a real challenge, as single digit returns do not meet the hurdle for many investors. However, there is a shift in the type of investors interested in renewables; they are starting to attract the large pension funds that are happy to settle for lower returns offset by certainty over the longer-term.
4. ***"There's so much opportunity for cross-use of technology."*** For instance floating oilrig infrastructure could also be used as floating wind-farms or fish farms.
5. China will push chemical compositions for batteries where they have 'got the foot on the resources'; even if these chemical compositions are not necessarily the most efficient or effective.

LESSONS IN LEADERSHIP

Bloomberg Daybreak co-anchor, Alix Steel, interviewed Peter T. Grauer, Chairman at Bloomberg, on his views regarding the importance of women in leadership roles.

Pictured - Alix Steel, co-anchor of Bloomberg Daybreak Americas with Peter T. Grauer, Chairman at Bloomberg

"The quality of discussion around the Board table is much better with more women around the table."

- Peter T. Grauer, Chairman at Bloomberg

5 KEY INSIGHTS:

1. ***"The quality of discussion around the Board table is much better with more woman around the table."*** It's Peter Grauer's experience that the value of decision-making and therefore company performance goes up. Not only that, the quality of dialogue is better when there is more than one woman at the Board table.
2. ***"Many men don't really understand the value of diversity."*** There can be lip service paid to the value of gender diversity (and diversity more broadly), but some men can quickly move to an attitude that 'there's no woman that meets the requirements of the job so we will have to hire a man'. The question is - how can we get past that attitude? Mentoring is an important part of the solution, and so is making it a requirement to have at least one diversity candidate for top jobs.
3. ***"There's a global war for talent. Women represent at least half of that talent pool."*** Given this, it doesn't make sense to Peter Grauer that you wouldn't seek to develop your female leaders. When corporations hire their young talent, they often hire 50% women, but this percentage drops sharply at the other end of the pipeline.
4. ***"Many female candidates for promotion don't feel they are really prepared, but they are often ten times more prepared than their male counterparts that put themselves forward."***
5. ***"Role modelling is so important."*** If the next generation of female leaders can see senior female colleagues at the top of their organisation, then it helps them see themselves there in the future.

2018 CHANGE AGENT AWARD WINNER:

MARY NICHOLS

pictured with Nancy Pfund

As head of the California Air Resources Board (CARB), Mary Nichols has been a fierce champion of cutting-edge technology that is changing the state of California, the nation, and the world. “If, as Supreme Court Justice Louis Brandeis claimed, states are the laboratories of democracy, then Mary Nichols is the Thomas Edison of environmentalism.” (Lisa Jackson, US EPA) Mary has always been a leader, and it is hard to think of any other state regulator who is described as a “rock star.”

Mary has been an agent of change her whole life, starting with her high school days in New York where she worked to improve living standards for farm-workers. After graduating from Cornell University and Yale Law School, Mary practised environmental law in Los Angeles, bringing cases on behalf of environmental and public health organizations to enforce state and federal clean air legislation.

Mary is currently in her third term at CARB. She served twice under then governor Jerry Brown, who held office from 1975 to 1982, and she came back to CARB in 2007. “Climate change is the biggest issue our generation has ever faced. And she is the person leading the way to find the best solution,” said Carol Browner, a former environmental advisor to President Obama.

SHAPING THE ELECTRICITY FUTURE - How the role of the utility is changing as the grid evolves

We are seeing the evolution of the customer from consumer to 'prosumer.' A key topic the panel discussed was around tech-savvy customers, and how they will increasingly compare utility companies to other on-line service provides like Amazon, not other utilities. This provides both a challenge and an opportunity.

Pictured - Moderator: Amy Grace, Head of Americas, Bloomberg New Energy Finance, with Panelists: Caroline Winn, Chief Operating Officer San Diego Gas & Electric; Clare Duffy, Smart Customer Access and Distribution Planning Manager, ESB Network; Gin Kinney, Vice President, Strategy & Marketing NRG Energy; Frances A. Resheske Senior Vice President, Corporate Affairs, Con Edison; Kristina Lund, Chief Financial Officer, Mexico, Central America and the Caribbean, AES

"The women on this panel, and in this room, are living the energy revolution, I'm just following it."

- Amy Grace, Head of Americas, Bloomberg New Energy Finance

5 KEY INSIGHTS:

1. ***"Let's see what works, and fail fast."*** i.e. let's try new technologies - whether this be in micro-grids, electric vehicles, storage, or energy efficiency products, and if they don't work, move on. This mindset is a challenge for traditional utilities that don't like the idea of investing in something that fails.
2. ***"We need to prepare for a much more active customer,"*** says Clare Duffy. However, we should not assume that all customers want to be educated on 'energy efficiency'. People have a lot of competing priorities, and taking the time to read information from the utility to develop their energy awareness may not be one of them. That said, customers with large energy bills - like industry, or data banks - are more likely to take up a utility's offer of being an 'energy advisor'.
3. Caroline Winn of SDG&E said that they are investing in data analytics, to provide insights on energy use that is useful not only for them, but so they can be passed on to the customer to make more informed decisions. For instance, a clever combination of technology and billing could help incentivise customers to charge their electric vehicles when the sun is shining and the rates are down.
4. Tech-savvy customers will increasingly compare utility companies to other on-line service providers like Amazon, not other utilities. This provides both a challenge and an opportunity. ESB from Ireland sees itself as transforming to a technology company. They are doing this through partnering with organisations that have the expertise they need - including start-ups - rather than necessarily developing this expertise in-house. They also invest in emerging technology as a way to get early exposure.
5. Important policy questions include; do we need to keep plants on-line for reliability purposes? What is societal good? Will this require subsidies? Is this affordable? The subsidy might be worth it if the grid needs the reliability. But 'affordability' will be defined differently depending on who you are.

SCENARIOS FOR ENERGY TRANSITION - Pathways to meeting the goals of the Paris agreement

In this fireside chat with Dame Fiona Woolf, we heard about two important climate change 'scenario planning' analyses. Ewa Merchel from Shell, explained their latest Sky Scenario – what needs to happen to reach the Paris Agreement climate goals. The International Energy Agency's World Energy Outlook compares a 'baseline scenario' that takes account of broad policy commitments; a 'no change in policy' scenario; and a '450 scenario' that is a pathway needed to achieve a limit of 450 parts per million of CO_2.

Pictured - Moderator: Dame Fiona Woolf, Partner, CMS with Ewa Merchel, Energy Transitions Programme Manager and Strategic Project Manager, Shell; Rebecca Gaghen, Head, Communication and Information, IEA.

"Shell has been developing energy scenarios for almost 50 years. They are useful tools for anyone in the company to challenge the CEO by asking 'what if…'"
- Ewa Merchel, Energy Transitions Programme Manager and Strategic Project Manager, Shell

5 KEY INSIGHTS:

1. Shell has been developing their energy scenarios for almost 50 years. Climate change has been included in these scenarios for almost 20. They are useful tools for anyone in an organisation – whether it's Shell or another organisation – to challenge senior leaders on 'what if' scenarios. This can help 'compel' senior leaders to move away from the traditional paradigm of looking at everything from a cost/profit lens.
2. Shell helps a range of stakeholders - including national, state and city governments, as well as other industries - to help think through scenarios for their sectors. Scenario planning has become an important tool. It was, however, a challenge to do scenario planning for Ohio when 'climate change' couldn't be mentioned.
3. ***"If you include all sectors (transport, heavy industry, as well as power) then we only have 1% of renewables."*** With this statistic in mind, Shell's Sky Scenario (independently assessed by Massachusetts Institute of Technology) starts from the perspective of 'what do we have to do to reach the Paris Agreement climate goals?'
4. The International Energy Agency (IEA) is an intergovernmental agency that advises member nations on the development of affordable, secure and sustainable energy policy. The IEA also use scenarios as a key basis for their analysis. "Energy policy has a lot of implications beyond boarders. There's a lot of shared interests," says Rebecca Gaghen (IEA). That said, she notes that there is not a one-size-fits all policy, whether this is at the state, national or regional level.
5. Based on IEA's most likely scenario, by 2040 the world is still going to use 81% of fossil fuels, albeit with a greater shift towards gas than coal. "I would love it if there were simple solutions," Rebecca said of this sobering statistic, "but they're just not there."

RENEWABLE ENERGY BY 2025?

While renewables currently make up about 20% of total energy consumption, growing numbers of companies are committing to 100% renewables objectives as a central part of their climate mitigation pathways. This panel discussed how corporations and businesses are driving the transition to a greater renewable energy future. A key theme that emerged was the need to not get stuck in paradigms from the past, but think about what's needed for the future, and what can be done differently and better.

Pictured - Moderator: Lila Preston, Partner, Generation Investment Management with Panelists: Neha Palmer, Head of Energy Strategy and Global Infrastructure, Google; Carine Dumit, Policy & Business Development, Tesla; Anne Hoskins, Chief Policy Officer, Sunrun

"Once we've reached our carbon neutral goal, it doesn't stop there. Because of annual growth, it's a bit like walking backwards up an escalator; you have to run very fast just to keep in the same spot."

- Neha Palmer, Head of Energy Strategy and Global Infrastructure, Google

5 KEY INSIGHTS:

1. California estimated it was going to cost $2 trillion to 'firm' the transmission of the grid. Anne Hoskins' response was, ***"Hold on a minute! Let's step back and see what we can do smarter. Do we really need the same grid that was set up 100 years ago?"*** It is important not to get stuck in paradigms from the past, but think about what is needed for the future.
2. Anne has found herself defending solar for many years. ***"We're not going to be defensive anymore, we're switching to the offensive."*** There are a lot of benefits of solar, the challenge is to communicate them.
3. Solar appeals to many people - whatever party they vote for. For many people, the reliability of energy supply (via solar with storage), and having power through blackouts, drives interest. Once customers experience the benefits, they become your best advocates.
4. Teslar is most well known for its electric vehicles. However, it's storage devices work across utilities, residential and industry sectors. This enables Teslar to see how storage is being used innovatively across all sectors.
5. In 2017 Google used more then 7 terawatt hours of electricity across the company; the bulk of that energy was used to power their datacentres. Google is constantly looking for opportunities across all parts of its business to reach its carbon neutral corporate goal. Neha Palmer (Google) noted that once she's reached Google's carbon neutral goal, ***"It doesn't stop there. Because of annual growth, it's a bit like walking backwards up an escalator; you have to run very fast just to keep in the same spot."***

CLOSING REMARKS DELIVERED BY DAME FIONA WOOLF

"If we wait for someone to get us out of this, we'll be waiting a long time. We're all in this together."

- Dame Fiona Woolf, Partner CMS McKenna

FORMAL EMPIRE STATE BUILDLING LIGHTING CEREMONY

Pictured - Nancy Pfund, Founder and Managing Partner, DBL Partners, Mary Nichols, Mary Nichols, Chair, California Air Resources Board, Lisa Jackson, Vice President of Environment, Policy and Social Initiatives, Apple, Meade Harris, CEO The Hawthorn Club & Elisabeth Brinton, Manager of New Energy, AGL Energy.