WORKSHOP PROCEEDINGS

Workshop on Corporate and Industrial Engagement in Energy Efficiency

Organized by ACEEE

EVENT DATE:
August 12, 2019 | Portland, OR
Event Description

ACEEE, in partnership with the Energy Future Exchange (EFEX) program, organized a pre-conference workshop to highlight the role that businesses can play in advancing energy efficiency in their own operations and more broadly.

The workshop took place at the same hotel as the ACEEE 2019 Summer Study on Energy Efficiency in Industry. The workshop was a half-day event that brought together industrial efficiency experts, sustainability managers, domestic and international policymakers, and researchers. Attendees learned about best practices and had the opportunity to connect and exchange ideas with a wide variety of stakeholders.

The event consisted of two panels:

**Corporate perspectives on industrial decarbonization.** This panel provided an overview of how global companies are thinking about the role they play in reducing the carbon footprint of the industrial sector. We heard from panelists about the targets, strategies, and programs that these companies are using to reduce carbon emissions from their facilities and operations.

**National efforts for promoting industrial efficiency.** National-level policies play a vital role in crosscutting and sector-specific energy efficiency efforts. This panel highlighted successful policies and best practices from the US and Europe that apply to the industrial sector and provide key takeaways from leading countries.
# Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda Item</th>
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<tbody>
<tr>
<td>1:00 – 1:15</td>
<td>Welcome Remarks</td>
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<td>1:15 – 3:00</td>
<td><strong>Corporate Perspectives on Industrial Decarbonization</strong></td>
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<td><strong>Moderator:</strong> Ed Rightor, American Council for an Energy-Efficient Economy</td>
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<td><strong>Panelists:</strong> David Jackson, Lockheed Martin</td>
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<td>Sarah King, Skanska</td>
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<td>3:00 – 3:15</td>
<td>Break</td>
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<td>3:15 – 5:00</td>
<td><strong>National Efforts for Promoting Industrial Efficiency</strong></td>
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<td><strong>Moderator:</strong> Joe Cresko, U.S. Department of Energy</td>
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<td></td>
<td><strong>Panelists:</strong> Jess Burges, Econoler</td>
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<td>Clemens Rohde, Fraunhofer ISI</td>
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<td>Mark Johnson, Clemson University</td>
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<td>5:00</td>
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# Participant List

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<tr>
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<th>First Name</th>
<th>Last Name</th>
<th>Company</th>
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<tr>
<td>1</td>
<td>Pamela</td>
<td>Barrow</td>
<td>Food Northwest</td>
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<td>2</td>
<td>Nick</td>
<td>Bennette</td>
<td>Counterbalance Capital</td>
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<td>3</td>
<td>Kadra</td>
<td>Branker</td>
<td>CLEAResult Canada</td>
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<td>4</td>
<td>Catherine</td>
<td>Cooremans</td>
<td>University of Lausanne</td>
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<td>5</td>
<td>Shouka</td>
<td>Darvishi</td>
<td>Cascade Energy</td>
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<td>6</td>
<td>Ann</td>
<td>Gan</td>
<td>Singapore Economic Development Board</td>
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<td>7</td>
<td>Paul</td>
<td>Harris</td>
<td>Willdan Energy Group</td>
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<td>8</td>
<td>Jonathan</td>
<td>Jutsen</td>
<td>Australian Alliance for Energy Productivity</td>
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<td>9</td>
<td>Sarah</td>
<td>King</td>
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<td>Andrew</td>
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<td>Eli</td>
<td>Levine</td>
<td>US Department of Energy</td>
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<td>13</td>
<td>Amory</td>
<td>Lovins</td>
<td>Rocky Mountain Institute</td>
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<td>14</td>
<td>Eric</td>
<td>Mazzi</td>
<td>Mazzi Consulting</td>
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<td>Ian</td>
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<td>16</td>
<td>Greg</td>
<td>Miller</td>
<td>UC Davis</td>
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<td>Josh</td>
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<td>18</td>
<td>Guille</td>
<td>Pelaez</td>
<td>Governor’s Office of Energy Development, Utah</td>
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<td>19</td>
<td>Christopher</td>
<td>Peoples</td>
<td>PP&amp;A</td>
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<td>20</td>
<td>Marcin</td>
<td>Polak</td>
<td>Con Edison</td>
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<td>21</td>
<td>Kelson</td>
<td>Redding</td>
<td>Energy 350</td>
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<tr>
<td>22</td>
<td>Ed</td>
<td>Rightor</td>
<td>ACEEE</td>
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<td>23</td>
<td>Clemens</td>
<td>Rohde</td>
<td>Fraunhofer Institute</td>
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<tr>
<td>24</td>
<td>Shruti</td>
<td>Vaidyanathan</td>
<td>ACEEE</td>
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<tr>
<td>25</td>
<td>Fiona</td>
<td>Zuzarte</td>
<td>Natural Resources Canada</td>
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Annex and slides

See attachments below for meeting presentations.
Federal and Provincial Policies to Advance Industrial Energy Efficiency in Canada

EFEX Workshop
ACEEE Summer Study on Energy Efficiency in Industry
August, 2019

Jess Burgess, Econoler

ECONOLER

Energy efficiency firm based in Quebec
35 years experience
4,000 projects in Canada and Internationally

Core Expertise
› Planning & Strategy
› Financing
› Evaluation
**Pricing Mechanism by Province**

- **Price on carbon**
  - British Columbia
  - Prince Edward Island
  - Northwest Territories
  - Newfoundland and Labrador (in discussion)

- **Cap-and-Trade**
  - Nova Scotia
  - Quebec

- **Federal Backstop**
  - Alberta (partial, 2020)
  - Manitoba
  - New Brunswick (in discussion)
  - Ontario
  - Saskatchewan

Source: Government of Canada, Pollution Pricing Technical Briefing
**Federal Carbon Pricing System**

- Implemented April 1, 2019
- 2019 price: $20/ton
  - Increases $10/year to $50/ton in 2022
- Carbon levy on fuels
- Output based pricing system
  - Applies to industrial emitters 50k tons/year
  - Emitters 10k tons/year optional participation
- Provinces have option to implement their own system or the federal backstop

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**FEDERAL IEE ACTIVITIES AND PROGRAMS**

**Legacy Programs**

Network: CIPEC Leaders

Tools & Information
- CIPEC Leaders network
- Energy audit
- Energy benchmarking
- Employee engagement

Funding Support
- EMIS
- ISO 50001

**New Federal Energy Manager Program**

- Launched July, 2019
- Co-funding for energy manager salary or energy management projects
- Available in provinces relying on federal backstop
ALBERTA:
ENERGY INTENSIVE TRADE EXPOSED INDUSTRIES

Allocations
› Output based
› Sector specific
› Intensity metric
› Begin at 80% of sector intensity benchmark
› Decline over time
› High-risk sectors – cement, iron & steel, lime and nitrogen – receive 90%


QUÉBEC:
CAP-AND-TRADE

Cap-and-Trade proceeds fund Québec 2013-2020 Climate Change Action Plan

Funds available to cover 75% of total costs up to $80,000* for

› Development of an energy baseline
› Energy use assessment
› Energy performance monitoring and reporting
› Professional and technical service fees
› Professional training
› Salaries of internal employees for work related to the implementation of energy management projects
› Purchase of instrumentation, software and metering equipment
THANK YOU

Jess Burgess
Econoler
jburgess@econoler.com
Lockheed Martin. Your Mission is Ours.

LM Energy provides services and tools to help utilities manage comprehensive energy portfolios

We have a long, rich history in Energy starting with our first patent in 1933. We implement Industrial Energy Efficiency programs across the country.

Did you know?
• Lockheed Martin has been in Energy Efficiency for almost 30 years!
• We hold over 90 Energy patents

Our Approach

Sustainability illustrates how Lockheed Martin pursues innovation with purpose

As responsible citizens, we:
• Develop our products and services in ways that protect the environment, strengthen communities and propel responsible growth
• Increase business resiliency and accelerate carbon reduction through improved energy and water management, materials conservation and increased renewable energy use.
What Sustainability Means to Lockheed Martin

- Our strategy is focused around five core sustainability issues and objectives
- Resource efficiency means increasing business resiliency and accelerating carbon reduction through improved energy and water management, materials conservation, and increased renewable energy use.

Energy and Carbon Management

OBJECTIVE:
Managing energy use and GHG emissions associate with company operations, including efforts to use renewable energy and promote energy and water efficiency.

Reduce energy use by 25 percent, scope 1 and 2 carbon emissions by 35 percent and water use by 30 percent.

Progress: Since 2010, we have reduced energy use by 22 percent, carbon emissions by 36 percent and water use by 22 percent. Reductions in energy use slowed in 2018 due to an increase in production activity.

Increase square footage of facilities with green building certifications.

Progress: We operated 20 Leadership in Energy and Environmental Design (LEED), 1 Building Research Establishment Environmental Assessment Methodology (BREEAM) and 9 Energy Star-certified buildings totaling 3.4 million square feet of green buildings, an increase of 42 percent over our adjusted 2017 total.
Energy and Carbon Management

Increase annual renewable energy consumption. Progress: We consumed 307,378 megawatt hours (MWh) of clean energy, comprising 294,933 MWh of renewable energy certificates (RECs) and 12,445 MWh of on-site energy generation. In 2017, we consumed 303,746 MWh of renewable energy.

Help energy customers reduce carbon emissions by at least twice the carbon impact of our business operations. Progress: Lockheed Martin Energy enabled carbon emissions savings of 1,262,322 metric tonnes of carbon dioxide equivalent (MTCO₂e) for our customers, compared to our operational emissions, net of RECs of 819,548 MTCO₂e.

Operations Goals and Progress
Highlights

- 53 energy efficient and carbon reduction projects including HVAC, lighting, BMS, renewables, and RCx resulting in 29M kWh with $2.2M in recurring annual cost avoidance.
- Avoided $29.3M in annual energy and water costs compared to 2010.
- Deployed our integrated energy resource management tool, SEEview™, to centrally monitor and manage building energy operations across 50 sites, nationwide

Highlights (continued)

- Since 2008 we installed 13 on-site renewable energy systems including 12 solar and one biomass for a total of 9.3MW of capacity.
- Latest results outperform a science-based threshold to stabilize atmospheric CO2 emissions. Using Center of Sustainable Organization’s Context-Based Carbon Metric methodology,
  - We produce less than our calculated threshold of emissions based on our contribution to GPD.
  - Exceeded US DOE Better Plants Program goal of 25% energy intensity reduction at our top 20 US manufacturing facilities.
Awards and Recognition

Alliance to Save Energy 2016 - Lockheed Martin was honored with the *Stars of Energy Efficiency* award for our commitment to comprehensive environmental stewardship and sustainability with aggressive 2020 Go Green goals and accomplishments to date.

The U.S. Environmental Protection Agency (EPA)’s *2017 Climate Leadership Award* in the category of Organizational Leadership.

In 2017, Corporate Responsibility Magazine named Lockheed Martin a top 10 company in its annual *100 Best Corporate Citizens* list. Fifth consecutive year on the list. Lockheed Martin has been the only industrial/manufacturing company represented in the top 10. This ranking that does not rely on self-reporting.

EPA’s *2017 Green Power Leadership Award* for Direct Project Engagement.

2019 Award: *EPA ENERGY STAR® Partner of the Year Award*.

Environmental Leader’s 2017 *Top Product of the Year* for our Advanced Gasification Bioenergy System at our facility in Owego, NY.

Certifications

We continuously assess our facilities and buildings to ensure we continue to improve their performance.

- **6 ENERGY STAR® buildings**
- **1 Certified BREEAM building**
- **19 LEED Certified buildings**
We also put the first solar + storage on Mars.

Just sayin’…
130+ year old global real estate development & construction company

Founded & headquartered in Stockholm, Sweden

$19.2 billion of equity invested in development projects globally in last 10 years

38,000 employees globally in 2018

Building Construction
Civil Construction
Commercial Development
Residential Development
Skanska Global Presence & CDUS Markets

Owner/Developer Commitment to Sustainability

100% of our projects achieve LEED certification

1.8 million sf of LEED Gold office & multifamily projects delivered in US (2009-2019)

Our stakeholders & sustainability drivers

- Tenants
- Investors
- Cities

- Improve Operational Energy Efficiency of Buildings
- Reduce Embodied Carbon of Building Materials
- Influence / Shape Tenant Behavior and Electricity Consumption
Illustration of the 30 year cumulative operational & embodied carbon for a typical commercial building using a global average of utility carbon data. This sample building shown is completed and begins operation in 2020.

Opportunities

- Lots of data and visualization tools
- Greater focus on building EUI
- Net-zero energy trend in major cities

Challenges

- Need the right data
- Design vs Operation
- Many stakeholders (e.g. owner, property management, tenants)
Embodied Carbon Calculator for Construction (EC3)

- Visualizes embodied carbon of building materials
- User inputs material quantity estimates
- Tool provides conservative and achievable estimates based on EPD data
- Tool developed by Skanska and University of Washington, with other partners
- Currently in pilot phase (Microsoft & Skanska Commercial Development)
- Public launch at Greenbuild 2019 - will be free & open source

More info at: https://buildingtransparency.org/
Thank you!

Q&A