Commercial Real Estate Meet Up

Monday, June 8th, 2020
1:00 PM – 2:30 PM ET
Agenda

1. Welcome & Program Updates
2. Partner Updates
3. Audi Banny, IMT: Building Energy Performance Standards
4. Emma Elgqvist, NREL: Techno-Economic Considerations for EV Deployment and DERs
5. Drew Torbin, Black Bear Energy: Renewable Energy in CRE
6. Q&A and Closing
Welcome & Introductions

Deb Cloutier  
RE Tech Advisors  
CRE Subject Matter Expert

Hannah Debelius  
DOE Fellow  
CRE Lead

Andrea Doukakis  
RE Tech Advisors  
CRE Account Manager

Michael Powers  
RE Tech Advisors  
CRE Account Manager
Please go to www.slido.com using your mobile device or web browser

Enter Event Code

#BBSummit

Select “CRE Meet-Up” from the dropdown
Follow along with Better Buildings, Better Plants

#BBSummit2020

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- @BetterBldgsDOE
- @BetterPlantsDOE

LinkedIn:
- www.linkedin.com/company/better-buildings/
- www.linkedin.com/showcase/better-plants/
Poll #1

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New Commercial Real Estate Partners

- American Family Insurance (BBA)
- Hudson Pacific Properties (BBA)
- Hawaiian Airlines (BBC)
- Highwoods Properties (BBC)
- Kilroy Realty (BBC)
Congratulations to our Goal Achievers!

Nuveen Real Estate
• 2.6% per year savings over 10 years
• Committed 25M square feet

USAA Real Estate Company
• 2.1% per year savings over 10 years
• Committed 12M square feet
Priority Updates

- **Priority #1**: Develop guidance/analysis from organizational energy + resilience efforts, and make connections and build regional ties for resilience partnerships spanning the public/private sector.

- **Priority #2**: Leverage Better Building partner successes to drive awareness and adoption of energy efficiency in businesses beginning their energy efficiency/sustainability journey.
  - Developing a [roadmap toolkit](#) that will provide organizations beginning their energy efficiency/sustainability journey with guidance using partner case studies and other industry resources.

- **Priority #3**: Promote new building technologies, validation opportunities, and results to support broader adoption.
Word Cloud Results!
Poll #2 – Quick Survey

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Waste Reduction Pilot

• The Pilot was launched to address the 2.7 billion tons of industrial solid waste and more than 260 million tons of municipal solid waste the U.S. generates annually.

• DOE is working with partners to help them develop or refine goals, identify benchmarks, determine performance metrics, track performance, and validate results.

• Over 30 partners from various Better Buildings sectors are participating
Partner Updates

- Climate and Resiliency Program
- New and Upcoming Resources
- Portfolio Improvements: Results
New and Upcoming Resources

Marta Schantz
Sr. Vice President, Greenprint Center for Building Performance

Embodied Carbon in Building Materials – [Link]
Class B/C Office Energy Efficiency – [Link]
Net Zero Tenant Case Study – [Link]
Portfolio Improvements: Results

Matthew Praske
Director of Energy and Sustainability
Poll #3

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Today’s Presenters

Audi Banny
Institute for Market Transformation (IMT)

Emma Elgqvist
National Renewable Energy Laboratory (NREL)

Drew Torbin
Black Bear Energy
Submit Speaker Questions

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Audi Banny
Institute for Market Transformation (IMT)

Submit Questions
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IMT’s Mission

IMT catalyzes widespread and sustained demand for high-performing buildings to drive toward a world in which buildings are efficiently and positively transforming our physical, social, and economic well-being.
Building Performance Standards

Adopted by 4 jurisdictions

Other jurisdictions nationwide viewing BPS as pathway to help meet Climate Action Goals

Establish mandates to improve energy and carbon performance levels over the life of buildings

This is happening now
The Future of Building Performance Standards

- CO₂ emission reductions
- Energy affordability & economic development
- Inclusiveness & equity
- Grid optimization & electrification
- Community resiliency
50 attendees:
Owners, tenants, consultants, trades, utility, city, green bank

Landlord-tenant challenges inhibiting compliance
Seven Hurdles to Significant Carbon Reduction

1. Typical lease negotiations pay little attention to large-scale carbon savings
2. Misperceptions hamper productive conversations
3. Contacts are not established and maintained for long-term collaboration
4. Conversations are not inclusive
5. Mid-lease energy efficiency improvements are highly uncommon
6. Good faith tenant efforts can negatively affect carbon reduction (workspace density)
7. Alternative financing mechanism are overlooked
## Adopted BPS

<table>
<thead>
<tr>
<th></th>
<th>Washington, DC</th>
<th>New York City</th>
<th>WA State</th>
<th>St. Louis, MO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minimum Threshold Performance</strong></td>
<td>Standards set no lower than median <strong>ENERGY STAR score</strong> (or equivalent) by building type</td>
<td><strong>CO₂e</strong> emissions limits on a sq. ft. basis by building type</td>
<td>TBD, based on <strong>site EUI</strong></td>
<td>Standards set no lower than 65th percentile <strong>site EUI</strong> by building type</td>
</tr>
<tr>
<td><strong>Compliance Cycle</strong></td>
<td>5 years</td>
<td>Must meet limits annually, limits get stricter every ~5 years</td>
<td>5 years</td>
<td>4 years</td>
</tr>
<tr>
<td><strong>Advisory Board</strong></td>
<td>Defined in ordinance, specific requirements for representation</td>
<td>Defined in ordinance, specific requirements for representation</td>
<td>No</td>
<td>Defined in ordinance, specific requirements for representation</td>
</tr>
</tbody>
</table>
1. Landlord drives carbon emissions awareness with tenants
   a. Audit: Know how building is performing
   b. Use the policy to inform tenants about the importance of energy efficiency and carbon reduction in your buildings
   c. Calculate buildings carbon intensity or EUI

2. Prioritize energy efficiency before lease is signed

3. Transform traditional leases into high-performing green leases

4. Establish ongoing communications with tenants
HIGH-PERFORMANCE BUILDING HUB

DOEE is working with IMT and partners to design a hub to support YOU through this transition by creating a platform for collaboration, innovation, capacity building, training, and technical assistance.

IN CONSIDERATION:

- Training in high-performance building design and construction techniques
- Support for high-efficiency projects
- Direct technical assistance
- Targeted research and resource development
- Market support and development
- Opportunities for knowledge exchange and collaboration

Go to [imt.org/hub](http://imt.org/hub) to stay informed!
### Leasing Lifecycle Next Steps: Integrating Efficiency to Enable High Performing Buildings

<table>
<thead>
<tr>
<th>Leasing Landscape</th>
<th>Evaluate Resource Gaps</th>
<th>Training and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Map commercial leasing tenant journey</td>
<td>1. Identify training and resources needs</td>
<td>1. Create curriculum of training, and resource development</td>
</tr>
<tr>
<td>2. Identify tenant role in achieving building performance goals</td>
<td>2. Assess current resource landscape</td>
<td>2. Create tools and resources</td>
</tr>
<tr>
<td>3. Identify needs for brokers, attorneys and lenders to incorporate efficiency in leasing transaction</td>
<td>3. Test needs assessment with stakeholder groups</td>
<td>3. Create map of current tenant energy efficiency incentive opportunities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Stakeholder playbook</td>
</tr>
</tbody>
</table>
Poll #4

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Signed Lease

1–2 lease cycles to adopt meaningful efficiency solutions by building owners and tenants
Thank you

Audi Banny
Institute for Market Transformation
Audi.banny@imt.org
Emma Elgqvist
National Renewable Energy Laboratory (NREL)

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Techno-Economic Considerations for EV Deployment and DERs

Emma Elgqvist, Researcher, NREL
Better Buildings CRE Sector Meet-up
Monday, June 8th from 1-2:30pm EST
Agenda

1. REopt Tool Overview
2. EV Load Modeling
3. REopt Analysis for EV Workplace Charging in MN Office Building
4. Related Research
Will DERs Work for Your Site?

Many factors affect whether distributed energy technologies can provide cost savings and resilience to your site, and they must be evaluated concurrently.
Formulated as a mixed integer linear program, REopt provides an integrated, cost-optimal energy solution.
How Does REopt Work?

**Demand Reduction**
Setting peak for the month

**Energy Arbitrage**
Buy cheap, use high

REopt considers the trade-off between ownership costs and savings across multiple value streams to recommend optimal size and dispatch.

Example of optimal dispatch of PV and BESS
For the static load it was assumed that the EVs would start charging at the arrival time, and continue charging (6.6 kW) at the maximum rated power of the charge until the energy requirement was met.

This chart shows the loads of the six chargers (each represented as its own color) over the course of a week in January. This evaluation of workplace charging assumed that charging only occurred on weekdays.

These charts show the static EV charging load (red) layered on top of the medium office load (in grey) for a week in January.
For the flexible (or smart/managed) charging loads, the daily arrival and departure time, and energy requirement were entered into REopt; the model determined at what level the EVs were charged (between 0 and 6.6 kW) throughout the day, such that the energy requirement was met by the departure time and lifecycle costs were minimized.
REopt Analysis for EV Workplace Charging in MN

For more information:
https://www.nrel.gov/docs/fy20osti/75269.pdf
In this analysis, NREL used the REopt model to evaluate the economics of workplace EV charging in Minneapolis, MN.

Utilized NREL’s EVI-Pro database to generate static and flexible EV load profiles.

Evaluates the savings from adding PV and storage to EV charging infrastructure and/or flexibility in EV charging times.

https://www.nrel.gov/docs/fy20osti/75269.pdf
Results show that under NM Xcel A14, PV and battery storage can be used to mitigate the cost of the electric load from charging the EVs by offsetting both energy and demand costs.
When the model is allowed to determine how the EVs should be charged (flexible EV load), the load is spread out throughout the day, lowering the peak demand.

As a result, the demand charges are lowered from $4,500 to $1,400 in year 1 (energy and fixed charges are not impacted).

Adding PV and/or storage (at current costs) to the flexible EV load only (no building load) does not appear cost effective, as the “peakiness” of the load has been mitigated, and a larger (longer duration), more expensive, battery would need to be installed for further reduce the demand and cost.
• When battery storage and PV capital costs are reduced by 50%, a 13 kW PV system appears cost effective, lowering both energy and demand charges.

• In this scenario, the PV system is serving the EV load during the day, and the EV load is being shifted to fit under the PV generation.

• In this scenario, battery storage does not appear cost effective; the EV load flexibility is serving the same purpose as stationary storage, as the charging can be modified to mitigate demand charges.
**DC Fast Charging Station Design**

**Description:** NREL explored solutions that can help make DC fast charging (DCFC) more affordable for EV drivers in the United States:

- Solar PV and/or energy storage (batteries)
- Co-locating DCFC with a commercial building

**Technologies:** DCFC, solar, battery storage

**Impact:** Found 11%–40% of sites can reduce lifetime electricity cost by installing technologies. Co-location often economically preferable but relative savings diminish as load increases.

**Partners:** DOE Vehicle Technologies Office

Integrating EV Fleets With DER and Grid

**Description:** NREL evaluated opportunities for synergistic integration and control of electrified transportation fleets with flexible buildings loads, RE, and stationary storage.

**Technologies:** Mobility, storage, buildings, solar, advanced system integration controls

**Impact:** Demonstrated optimal control of integrated RE, building loads, storage, and EV system in laboratory testing. Integrated system provided increased value to the site owner.

**Partners:** Eaton (funding partner), Holy Cross Energy, SDG&E, Duke Energy, UPS, EPRI

Thank you!

Emma Elgqvist
emma.Elgqvist@nrel.gov

www.nrel.gov
reopt.nrel.gov

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Drew Torbin
Black Bear Energy

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A BUYER’S REPRESENTATIVE FOR RENEWABLE ENERGY

AGNOSTIC / ALIGNED / ACCOMPLISHED

• We represent you
  We are not tied to a manufacturer, financing facility, construction group, utility or any other supplier.

• We align our interests with yours
  We build our fees into the cost of a project and therefore are paid only if a project is successfully closed.

• We are driven & experienced
  We are passionate about delivering renewable and clean-tech projects which create value and have a track record of doing just that for some of the largest real estate owners in the U.S.

• We are data driven
  Our project database and volume provide leverage when negotiating favorable pricing and contractual terms.

info@blackbearenergy.com
KEY METRICS

65+ CLIENTS

4B+ SQFT

10+ PROPERTY TYPES

3 FOCAL TECHNOLOGIES

1.5 RFP / WEEK

1 SITE RFP’d / DAY

info@blackbearenergy.com
Poll #5

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Poll #6

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## SOLAR MARKET ECONOMICS

<table>
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<tr>
<th>Market</th>
<th>Primary Deal Structure</th>
<th>Program Status</th>
<th>Annual Rent Estimate ($/sqft/year)</th>
<th>Annual Rent Estimate ($/mw/year)</th>
<th>Minimum SQFT</th>
<th>Carports Viable</th>
<th>Midterm Roof Replacement Viable</th>
<th>Notes</th>
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<tr>
<td>DC</td>
<td>Host / Onsite</td>
<td>Open</td>
<td>2.00 - 3.50</td>
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<td>.45 - .75</td>
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<td>Block 3/8 &amp; Requires storage</td>
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<td>TREC Transition Soon</td>
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<td>No</td>
<td>Program to Open Soon</td>
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</tbody>
</table>

Data as of 06.01.2020
CONTACT INFORMATION

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Speaker Q & A

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Additional Resources

- Commercial Real Estate Sector page - Link
- Standard Energy Efficiency Data (Seed) Platform - Link
- The Tower Companies Installs Rooftop Solar - Link
- Electric Vehicles 2019 Better Buildings Webinar - Link
- Foundations of Efficiency Programs - Link
- Shorenstein Properties: Improved Waste Diversion With Training & Audits – Link
- IMT: Tenant Engagement Recommendations for Low-Occupancy Buildings – Link
Other Sessions Featuring CRE Partners

• Early Best Practices from the Waste Reduction Pilot (Shorenstein)
  • Thursday June 11th
  • 11 AM – 12:30 PM

• The Secrets of Better Buildings Goal Achievers (Lendlease)
  • Thursday June 11th
  • 1 PM – 2:30 PM

• Closing Plenary – A Path Forward: Perspectives on Efficiency and Operations (The Tower Companies)
  • Thursday June 11th
  • 3 PM – 4:30 PM
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>Behind the Meter: Distributed Energy Resources: Best Practices for Integrating DERS into Commercial Buildings</td>
<td>July 8</td>
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<tr>
<td>Program Design with Everyone in Mind: Low-Income Solar Program Strategies</td>
<td>July 9</td>
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<tr>
<td>The Dynamic Duo: Unleash Public Sector Energy Savings with Financing and Technical Assistance</td>
<td>July 14</td>
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<tr>
<td>Next-Generation Building Performance Policies: Maximizing Energy Savings and Environmental Impacts</td>
<td>July 16</td>
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<tr>
<td>Strategies to Combine Energy + Health Upgrades in Multifamily Housing</td>
<td>July 21</td>
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<tr>
<td>Case in Point: Oregon's Recent Efforts to Reduce Plug Load Energy Consumption</td>
<td>July 22</td>
</tr>
<tr>
<td>Everyone Has a Data Center: How to Be an Energy Champion for Yours</td>
<td>July 28</td>
</tr>
<tr>
<td>Succeed with Submetering: How to Make the Business Case</td>
<td>August 4</td>
</tr>
</tbody>
</table>

Register Now
Additional Questions?

Please Contact Us

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Better Buildings Solution Center https://betterbuildingssolutioncenter.energy.gov/

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