Speakers

Moderator
David DeVos
PGIM

Brad Dockser
Green Generation

Kevin Bates
SHARP Development

Michael Chang
Host Hotels
Embedding Sustainability in Real Estate Transactions

- Report published by ULI, supported by View, Inc. [www.uli.org/sustainabletransactions](http://www.uli.org/sustainabletransactions)

- 30+ real estate leader interviews

- 11 strategic opportunities along the steps of a real estate transaction
  - Step 1: Acquisition due diligence
  - Step 2: Financing the deal
  - Step 3: Hold period
  - Step 4: Preparing for disposition
Acquisition Due Diligence

- Look at actual energy expenses, not estimates
- Expand the due diligence/property condition assessment to include key sustainability factors
  - Check the building’s green certification (and certification potential)
  - Conduct building commissioning (or review reports)
  - Identify cost recovery opportunities in current leases
  - Analyze extreme weather models and long-term climate risks
  - Understand a building’s “health status”
Financing the Deal

- Include big ticket items in project financing
- Leverage sustainability specific financing tools
Hold Period

- Upgrade building systems in the right order and as soon as possible

- Attract tenants at a premium by featuring sustainability and health in leasing activities

- Leverage leases to align costs and benefits for landlord and tenant

- Guide the tenant fit-out process to maximize building performance
Preparing for Disposition

- Market your building to buyers who will pay a premium for sustainability

- Find a qualified appraiser and use valuation guidance for sustainable buildings

- Make any remaining big investments a year before disposition in order to capture value in sales price
ULI Webinar:
Incorporating Sustainability into the Investment Cycle

JULY 30, 2019

Washington, DC
London, England
Tokyo, Japan
Shanghai, China
Key Areas for Sustainability

Physical asset

- Building envelope
  - Insulation
  - Windows
- Lighting
  - System performance
  - Controls
- HVAC
  - Load calculations
  - Maximum load performance
  - Partial load performance
- Controls
  - Correlate with physical occupancy

Scheduling / training

- Lease requirements
- Occupant needs
- Engineer training
When negotiating the purchase of a hotel in a US major city, the prospective buyer elected to have an energy audit completed during its due diligence period, which included a detailed review of current energy costs and potential energy savings with recommended retrofits and upgrades.

The audit was conducted in conjunction the property condition assessment and was completed during the buyer’s due diligence period to quantify the potential energy conservation and end-of-useful-life measures, as well as increase the budgeted costs.

If taken together, the proposed improvements would increase the value of each hotel room by more than $15K and overall net value of the hotel by more than $9 million.

<table>
<thead>
<tr>
<th>Project Summary</th>
<th>Gross Investment</th>
<th>Simple Payback</th>
<th>Utility Rebates</th>
<th>Net Investment</th>
<th>Annual Savings</th>
<th>Net Payback</th>
<th>% Cost Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Recommended Solutions</td>
<td>$ 5,729,250</td>
<td>9.72</td>
<td>$ 465,895</td>
<td>$ 5,263,354</td>
<td>$ 589,419</td>
<td>8.93</td>
<td>33.7%</td>
</tr>
<tr>
<td>Recommended Phase I Solutions</td>
<td>$ 677,665</td>
<td>5.14</td>
<td>$ 88,641</td>
<td>$ 599,023</td>
<td>$ 131,729</td>
<td>4.47</td>
<td>6.8%</td>
</tr>
<tr>
<td>Lighting: Non Guest Room Areas</td>
<td>$ 664,108</td>
<td>6.25</td>
<td>$ 88,641</td>
<td>$ 575,467</td>
<td>$ 106,203</td>
<td>5.42</td>
<td>5.5%</td>
</tr>
<tr>
<td>Low Flow Fixtures &amp; Faucets</td>
<td>$ 13,557</td>
<td>0.53</td>
<td>-</td>
<td>$ 13,557</td>
<td>$ 25,525</td>
<td>0.53</td>
<td>1.3%</td>
</tr>
<tr>
<td>Recommended Phase II Solutions</td>
<td>$ 970,397</td>
<td>9.29</td>
<td>$ 43,884</td>
<td>$ 926,513</td>
<td>$ 104,453</td>
<td>8.87</td>
<td>8.1%</td>
</tr>
<tr>
<td>In-room Controls</td>
<td>$ 520,465</td>
<td>7.98</td>
<td>$ 5,291</td>
<td>$ 515,174</td>
<td>$ 65,226</td>
<td>7.90</td>
<td>3.2%</td>
</tr>
<tr>
<td>Lighting: Guest Rooms</td>
<td>$ 315,515</td>
<td>11.73</td>
<td>$ 36,000</td>
<td>$ 279,515</td>
<td>$ 26,894</td>
<td>10.39</td>
<td>1.4%</td>
</tr>
<tr>
<td>VFDs Fans and Pumps</td>
<td>$ 87,704</td>
<td>11.26</td>
<td>$ 2,593</td>
<td>$ 85,112</td>
<td>$ 7,790</td>
<td>10.93</td>
<td>3.2%</td>
</tr>
<tr>
<td>Heat Pipe</td>
<td>$ 46,713</td>
<td>10.28</td>
<td>-</td>
<td>$ 46,713</td>
<td>$ 4,542</td>
<td>10.28</td>
<td>0.2%</td>
</tr>
<tr>
<td>On-Site Power Generation</td>
<td>$ 2,996,201</td>
<td>10.16</td>
<td>$ 333,370</td>
<td>$ 2,662,831</td>
<td>$ 294,873</td>
<td>9.03</td>
<td>15.2%</td>
</tr>
<tr>
<td>CHP</td>
<td>$ 2,996,201</td>
<td>10.16</td>
<td>$ 333,370</td>
<td>$ 2,662,831</td>
<td>$ 294,873</td>
<td>9.03</td>
<td>15.2%</td>
</tr>
<tr>
<td>Enhanced End of Useful Life Replacements</td>
<td>$ 1,084,988</td>
<td>18.59</td>
<td>-</td>
<td>$ 1,084,988</td>
<td>$ 58,365</td>
<td>18.59</td>
<td>3.7%</td>
</tr>
<tr>
<td>BMS</td>
<td>$ 657,000</td>
<td>15.77</td>
<td>-</td>
<td>$ 657,000</td>
<td>$ 41,672</td>
<td>15.77</td>
<td>2.9%</td>
</tr>
<tr>
<td>VAV Boxes</td>
<td>$ 236,340</td>
<td>21.27</td>
<td>-</td>
<td>$ 236,340</td>
<td>$ 11,113</td>
<td>21.27</td>
<td>0.6%</td>
</tr>
<tr>
<td>Cooling Tower Replacements</td>
<td>$ 191,648</td>
<td>34.35</td>
<td>-</td>
<td>$ 191,648</td>
<td>$ 5,580</td>
<td>34.35</td>
<td>0.3%</td>
</tr>
</tbody>
</table>
Financing the Deal

- Critical to determine the energy/CapEx opportunity at acquisition
- While integrating the energy plan into the asset’s business plan, one must make certain capital is available to execute
- Cost of capital is critical, but not the only issue
- Address the form of lease to align scope costs and benefits
- Options include, but are not limited to:
  - Allocated reserve in first mortgage
  - Lease (operating or capital)
  - Utility rebates and incentives
  - On-bill financing
  - PACE
  - Green banks
  - Government-sponsored energy efficiency loan programs
  - Energy as a service
  - Green mortgage (Fannie Mae, Freddie Mac, Lloyd’s Bank)
  - Green lease language
This four-story mixed-use office and flex space building started from a relatively efficient baseline, but still presented high-ROI opportunities.

Solution touched every major aspect of building energy performance including HVAC, lighting, envelope, and controls.

Our team worked with ownership and the tenant to mitigate site issues and create stakeholder buy-in.

Prescriptive and custom rebates were applied for and secured funding more than 1/3 of the total project cost.

The remainder of the project was funded through capital reserves from the existing mortgage.

### Project Summary

<table>
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<th>% Cost Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td>$201,924</td>
<td>5.64</td>
<td>$90,377</td>
<td>$111,547</td>
<td>$35,808</td>
<td>3.12</td>
<td>6.4%</td>
</tr>
<tr>
<td>Predictive Energy Optimization System</td>
<td>$33,338</td>
<td>0.97</td>
<td>-</td>
<td>$33,338</td>
<td>$34,205</td>
<td>0.97</td>
<td>6.1%</td>
</tr>
<tr>
<td>Solar Film</td>
<td>$22,214</td>
<td>2.82</td>
<td>$7,151</td>
<td>$15,062</td>
<td>$7,870</td>
<td>1.91</td>
<td>1.4%</td>
</tr>
<tr>
<td>Data Visualization</td>
<td>$21,656</td>
<td>2.38</td>
<td>-</td>
<td>$21,656</td>
<td>$9,081</td>
<td>2.38</td>
<td>1.6%</td>
</tr>
<tr>
<td>Annex: De-Stratification Fans</td>
<td>$14,180</td>
<td>3.15</td>
<td>$7,875</td>
<td>$6,305</td>
<td>$4,498</td>
<td>1.40</td>
<td>0.8%</td>
</tr>
<tr>
<td>Efficiency-Enhancing RTU controller</td>
<td>$8,865</td>
<td>1.75</td>
<td>$3,709</td>
<td>$5,156</td>
<td>$5,065</td>
<td>1.02</td>
<td>0.9%</td>
</tr>
<tr>
<td>Vending Misers</td>
<td>$752</td>
<td>0.00</td>
<td>$295</td>
<td>$457</td>
<td>$631</td>
<td>0.72</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
Preparing for Disposition, Office Building, Asia

- Built the early 70s, this 11-story commercial office building located in a premier submarket was being sold by its owner as a value-add investment opportunity.
- Ownership’s primary value add focus was decreasing the 30% vacancy rate; however, during the hold period significant opportunities were identified to add value through the reduction in energy consumption.
- An ASHRAE Level II audit and CHP analysis was conducted to quantify the potential energy conservation measures.
- Recommended solutions identified prior to disposition would reduce the building’s dependency on the district level cooling; introduce fuel switching in the central plant to decrease the risk associated with gas market; replace equipment that was nearing the end of its useful life; and create more than $30M in potential asset value while derisking the acquisition to the buyer.

<table>
<thead>
<tr>
<th>Project Summary</th>
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<th>Annual Savings</th>
<th>Net Payback</th>
<th>% Cost Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended Phase I</td>
<td>$ 6,281,779</td>
<td>6.01</td>
<td>$ -</td>
<td>$ 6,281,779</td>
<td>$ 1,045,401</td>
<td>6.01</td>
<td>48.5%</td>
</tr>
<tr>
<td>Combined Heat and Power (CHP)</td>
<td>$ 2,856,600</td>
<td>6.09</td>
<td>$ -</td>
<td>$ 2,856,600</td>
<td>$ 468,696</td>
<td>6.09</td>
<td>21.7%</td>
</tr>
<tr>
<td>Magnetic Chiller +Economizer</td>
<td>$ 1,963,540</td>
<td>5.18</td>
<td>$ -</td>
<td>$ 1,963,540</td>
<td>$ 378,836</td>
<td>5.18</td>
<td>17.6%</td>
</tr>
<tr>
<td>Lighting</td>
<td>$ 883,416</td>
<td>6.42</td>
<td>$ -</td>
<td>$ 883,416</td>
<td>$ 137,571</td>
<td>6.42</td>
<td>6.4%</td>
</tr>
<tr>
<td>Redesign Pumping +VFD Pumps</td>
<td>$ 495,076</td>
<td>12.27</td>
<td>$ -</td>
<td>$ 495,076</td>
<td>$ 40,356</td>
<td>12.27</td>
<td>1.9%</td>
</tr>
<tr>
<td>Cooling Tower VFD Fans</td>
<td>$ 83,147</td>
<td>4.17</td>
<td>$ -</td>
<td>$ 83,147</td>
<td>$ 19,942</td>
<td>4.17</td>
<td>0.9%</td>
</tr>
</tbody>
</table>
Key Financial Drivers for Sustainability

- **Hard ROI**
  - Reduced energy-related operating costs
  - Reduced repairs and maintenance
  - Reduced insurance costs

- **Soft ROI**
  - Labor optimization
  - Higher occupancy
  - Increased tenant retention
  - Higher rents
  - Healthier building
  - Reduced downtime
  - Increased access to capital markets
  - Increased floor area
For more information, please contact

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+81 03 6325 9074

www.greengen.com
Financing ZNE Retrofits

Occupied Manufacturing Building – 47951 Westinghouse Dr., Fremont, Ca.
Renovating a Speculative Office Building

Costs in Excess of Building to minimum code:

- Convert to a High Performance Envelope
- Daylight Naturally
- Ventilate Naturally
- Building Management System
- Health & Wellness Improvements
### Actual Economic Results

**Additional Value Appraisers and Lenders are Likely to Accept**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>The additional cost to renovate to ZNE</td>
<td>($49.84/SF)</td>
</tr>
<tr>
<td>Actual operating expense savings</td>
<td>$.45/SF/mo.</td>
</tr>
<tr>
<td>Value of OpEx savings at a 6.5% cap. rate</td>
<td>$83.08/SF</td>
</tr>
<tr>
<td>Additional Cost to Additional Value</td>
<td>60%</td>
</tr>
<tr>
<td>DCR of Additional Rent to Cost</td>
<td>1.55 to 1</td>
</tr>
<tr>
<td>Value of above market rent achieved ($0.20/SF/mo.)</td>
<td>$36.92/SF</td>
</tr>
<tr>
<td>Additional rent received due to early lease-up</td>
<td>$22.81/SF</td>
</tr>
<tr>
<td>(3 mos. vs. avg. market time of 18 mos.)</td>
<td></td>
</tr>
<tr>
<td>Additional leasable SF due to 6” of exterior insulation (building grew 326 SF)</td>
<td>$7.32/SF</td>
</tr>
<tr>
<td>Value of Tax Incentives after 1 year</td>
<td>$9.82/SF</td>
</tr>
<tr>
<td>Potential Value of lower reserve requirements (HVAC replacement, TI reserves, etc.)</td>
<td>$29.85/SF</td>
</tr>
</tbody>
</table>

**TOTAL ADDITIONAL VALUE**

$69.80/SF
RENOVATING AN OCCUPIED BUILDING TO ZNE

82,408 SF Manufacturing Building Renovated while running 2 shifts, 16 hrs./day.

Additional Costs:

1) Reduce EUI
   -LED Lights
   -Optimized HVAC Tune-Up
   -Insulation
   -Window Film
   -Reflective Insulated Roof

2) Generation
   -Rooftop Solar
   -Parking lot Canopies
   -1.02 million kW System
   -Generates 1.6 MM kWh/yr.
Economic Results

Actual Cost:
- Total Investment Cost: $3,332,988
- Less tax incentives ($1,366,535)
- Net Cost after Year 1 $1,966,453
- Annual Utility Savings $421,000
- Increased Tenant Rent $400,000
- Increased Building Value $6,153,846

Lender Underwriting:
- Initial L-T-V of New Cost 54%
- Initial DCR of New Cost 1.71 to 1
- L-T-V after 1 year 32%
- DCR after 1 year 2.90 to 1

Benefits to Lender:
- Stronger Collateral
- Stronger Tenant
- Lower holding costs if get bldg. back
- More Resilient Building
- Socially Responsible Loan

Benefits to the Environment:
- Offsets burning of over 95M Gallons of Gasoline over a 20 yr period.
Incorporating Sustainability into the Investment Cycle
Preparing for Disposition

July 30, 2019
Global Brands

Marriott International

Hyatt Corporation

Hilton

AccorHotels

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CR Strategy and Themes

We’re committed to enhancing the value and profitability of our owned hotels through sustainable business practices. Our strategic framework follows three themes to inform the integration of sustainability into the business and guide engagement with our CR stakeholders.

1. Evaluate opportunities and climate change risks, invest in proven sustainability practices and enhance asset value while improving environmental performance.

2. Set environmental targets, monitor the performance of our responsible investments and measure our progress toward improving the environmental footprint of our properties.

3. Strengthen our local communities through financial support, community engagement and volunteer service.

MARRIOTT MARQUIS
SAN DIEGO MARINA
Marriott Hall achieved LEED Silver Certification in 2017.
# 2018 CR Performance and Recognition

## Responsible Investment

<table>
<thead>
<tr>
<th>Amount</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$170M</td>
<td>Engineering Projects with Sustainability Attributes 2015-18</td>
</tr>
<tr>
<td>$40M</td>
<td>Energy &amp; Water Saving ROI Projects 2015-18</td>
</tr>
<tr>
<td>$30M</td>
<td>Aggregate Annual Savings from Combined Investments 2015-18</td>
</tr>
</tbody>
</table>

## 2020 Environmental Targets Met Early

<table>
<thead>
<tr>
<th>Category</th>
<th>Goal</th>
<th>Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG</td>
<td>28%</td>
<td>✓</td>
</tr>
<tr>
<td>Energy</td>
<td>15%</td>
<td>✓</td>
</tr>
<tr>
<td>Water</td>
<td>25%</td>
<td>✓</td>
</tr>
<tr>
<td>Waste</td>
<td>50%</td>
<td>✓</td>
</tr>
</tbody>
</table>

## Corporate Citizenship

<table>
<thead>
<tr>
<th>Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>100+ Service Events</td>
</tr>
<tr>
<td>135 Charities supported</td>
</tr>
<tr>
<td>1600+ Hours volunteered by employees 2016-18</td>
</tr>
</tbody>
</table>

## Other Achievements

- First resort in Hawaii to achieve LEED Silver EBOM status.
- 100+ Service Events
- 135 Charities supported
- 1600+ Hours volunteered by employees 2016-18
Responsible Investments

Evaluate opportunities and climate change risks, invest in proven sustainability practices and enhance asset value while improving environmental performance.

Energy & Water Saving ROIs

- Guest Room Energy Management Systems
- LED Lighting Upgrades
- Steam to Gas Conversions
- Variable Frequency Drives
- Fuel Cells
- Solar PV and Thermal Systems
- Low Flow Plumbing Fixtures
- Co-generation Systems
- Building Management Systems
- Cloud-based Building Analytics

End-of-Life Engineering Projects with Sustainability Attributes

- DDC Building Controls
- High-Efficiency Boilers & Chillers
- Window & Door System Replacements
- Elevator & Escalator Modernization
- Reflective Roofs / Added Insulation
## Energy ROI Projects

### Renewable Energy
- **Total Project Cost:** $6.3M
- **Incentives:** $4.8M
- **Net Investment:** $1.5M
- **Annual Cost Savings:** $610K

### Cogeneration
- **Total Project Cost:** $4M
- **Incentives:** -
- **Net Investment:** $4M
- **Annual Cost Savings:** $1M

### Fuel Cell
- **Total Project Cost:** $5.4M
- **Incentives:** $1.3M
- **Net Investment:** $0 (no upfront cost)
- **Annual Cost Savings:** $270K
Sustainable Projects Completed in Advance of Disposition

The Westin New York Grand Central

- **LED Lighting ROI**
  - Total Cost: $316K
  - Incentives: $278K
  - Net Investment: $38K
  - Annual Savings: $184K
  - Value Enhancement: $6M
  (3% cap rate)

Investment Grade Energy Master Plan

- Identified Investments: $3-3.5M
  - Cogen
  - BMS Upgrade
  - Additional LED Lighting

- Est. Annual Savings: $400K
- Value Enhancement: $13M
 (3% cap rate)

Portfolio Aggregate

- **$16M in Responsible Investments 3 years prior to disposition over the past four years**

  - LED Lighting
  - Laundry Water Recycling
  - Low Flow Fixtures
  - HVAC efficiency upgrades
  - Building Controls
  - Efficient Motors & Drives
  - Smart Irrigation
  - Elevator and Escalator Modernization

- **Energy and Water Saving ROIs (subset of above)**

  - Total Cost: $3.6M
  - Incentives: $800K
  - Net Investment: $2.8M
  - Annual Savings: $1.0M
  - Value Enhancement: $20M
  (5% cap rate)
Thank you

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Energy & Sustainability
Development, Design & Construction
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Q & A

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