



## Hospitality Sector Meet-up

Wednesday, July 10<sup>th</sup>  
10:30 AM – 12:30 PM



# Welcome & Introductions



**Cindy Zhu**  
U.S. Department  
of Energy



**Blake Dressel**  
U.S. Department  
of Energy



**Izzy Ballet**  
RE Tech Advisors



**Virginia Brady**  
RE Tech Advisors

# Agenda

- 10:30 AM Welcome & Around the Room
- 10:45 AM Program Updates
- 11:00 AM Urban Land Institute: Hotel Sustainability Trends
- 11:20 AM The Green Hospitality Revolution
- 11:40 AM Open Discussion
- 12:15 PM Adjourn

# Around the Room

Please Share:

- *Your Name*
- *Your Organization*
- *Your Role*



- Is there an energy/water/waste project you are excited about? Is there a challenge that you're working through?
- What are you interested in learning about at BB Summit?

# Better Buildings Program Updates

- DOE Lead and Account Manager updates
- **Opportunities to get involved**
  1. Waste Reduction Pilot
    - Set public goal in partnership with DOE,
    - Network with peers to share waste reduction solutions and earn recognition
    - Receive guidance from DOE and other organizations on issues such as waste data tracking and waste management best practices
  2. Tech Teams

# Better Buildings Hospitality Partners



NEEMA HOSPITALITY



# 2019 Sector Priorities and Activities

1. Emerging technology verification and market adoption
  - [Technology Pilot Project Map](#)
2. Engaging franchise owners and providing effective tools and resources for prioritizing energy efficiency
  - AAHOA Webinars
  - Boston Green Tourism Workshop
3. Water efficiency
  - Sharing water efficiency best practices and resources

# New Solutions and Water Efficiency Resources

## New Solutions

- Las Vegas Sands [Green Ideas Challenge](#)
- [Working with Your Utility on energy Efficiency](#)

## Water Efficiency

### Data and Benchmarking

- Tower Companies Case Study: [Applying Energy Management Best Practices to Water Monitoring](#)
- Webinar: [Benchmarking Water: New Approaches and Opportunities for Buildings](#)

### Cooling Tower Water Treatment Technology

- GSA/NREL: Cooling Tower Water Treatment Technology [Findings](#)
- GSA/NREL: Demonstration and Evaluation of an Advanced Oxidation Technology for Cooling Tower Water Treatment [Full Report](#)

# Engage with the Technology Research Teams

## Plug and Process Loads Team

- Covers best practices and innovative technologies for controlling these loads in commercial buildings. PPLs are expected to increase with respect to the other building end use energy loads, and now is a great time to get involved.
- Lead: Kim Trenbath: [kim.trenbath@nrel.gov](mailto:kim.trenbath@nrel.gov)



## Smart Energy Analytics Campaign

- Look for Eliot Crowe to talk about the Energy Information System (EIS) or Fault Detection and Diagnostics (FDD) tools you have implemented in your buildings, and how you can get started with a monitoring-based commissioning process.
- Lead: Eliot Crowe\*\*: [ecrowe@lbl.gov](mailto:ecrowe@lbl.gov)

## Envelope Tech Research Team

- Air infiltration accounts for 20% of primary energy consumption in buildings. Learn more about advanced window, wall, and roof technologies to improve your building enclosure.
- Lead: Melissa Lapsa: [lapsamv@ornl.gov](mailto:lapsamv@ornl.gov)



Contact your Account Manager for Introductions!

# Engage with the Technology Research Teams

## Interior Lighting Campaign

- Facility owners and managers can receive guidance and recognition for lighting upgrade or new installation of high efficiency interior lighting solutions.
- Lead: [Michael Myer\\*\\*](#): [Michael.Myer@pnnl.gov](mailto:Michael.Myer@pnnl.gov)



## IoT Lighting Challenge

- Facility owners and managers can help define the performance characteristics of a competitively priced new-to-market light fixture that will be easily upgradable to provide for internet connectivity. Connect to learn more or participate in the IoT Lighting Challenge.
- Lead: [Michael Myer\\*\\*](#): [Michael.Myer@pnnl.gov](mailto:Michael.Myer@pnnl.gov)

## Space Conditioning Team

- Commercial HVAC accounts for about 40% of total commercial energy use in the US. Through the Space Conditioning Technology Research Team, partners work to deploy energy-saving space-conditioning strategies by partnering with industry, coordinating real world building demonstrations, and generating tools.
- Lead: [Miles Hayes\\*\\*](#): [Miles.Hayes@nrel.gov](mailto:Miles.Hayes@nrel.gov)



Contact your Account Manager for Introductions!

Join us!

Better Buildings Alliance *Renewables Integration* Team

## Buildings-to-Grid Working Group

### FOCUS AREAS:

- Strategic integration of renewables
- Energy storage
- Building load flexibility
- Grid coordination



EFFICIENT



CONNECTED



SMART



FLEXIBLE

- Bimonthly, 1-hour conference calls
- Kick-off meeting in early August
- Also looking for participants for two studies:
  - **Portfolio analysis:** understand potential for load flexibility (optimized demand management)
  - **Field study:** implementing building load flexibility solutions

**Interested? Email us!**

Rois Langner: [Rois.Langner@NREL.gov](mailto:Rois.Langner@NREL.gov)

Selam Haile: [Selam.Haile@NREL.gov](mailto:Selam.Haile@NREL.gov)

**Monika Henn**  
Urban Land Institute (ULI)

U.S. DEPARTMENT OF  
**ENERGY**



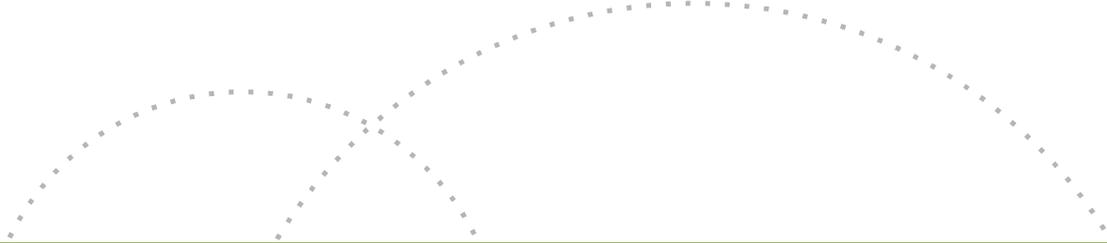
**Urban Land  
Institute**

# Hotel Sustainability

**MONIKA HENN**

MANAGER, ULI GREENPRINT CENTER FOR BUILDING PERFORMANCE

2019



## THE URBAN LAND INSTITUTE

A global nonprofit research and education organization with the mission "to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide"



# ULI GREENPRINT

# “Reducing Carbon, Building Value”

Founded in 2009

Worldwide alliance of leading real estate owners and financial institutions committed to improving the environmental performance of buildings

Member-driven initiative with the goal of reducing greenhouse gas emissions by 50% by 2030 (in line with IPCC)

Currently includes 25 companies representing 8,000 properties totaling 164 million square meters across 28 countries

# ULI GREENPRINT



Data &  
Benchmarking



Knowledge  
Sharing



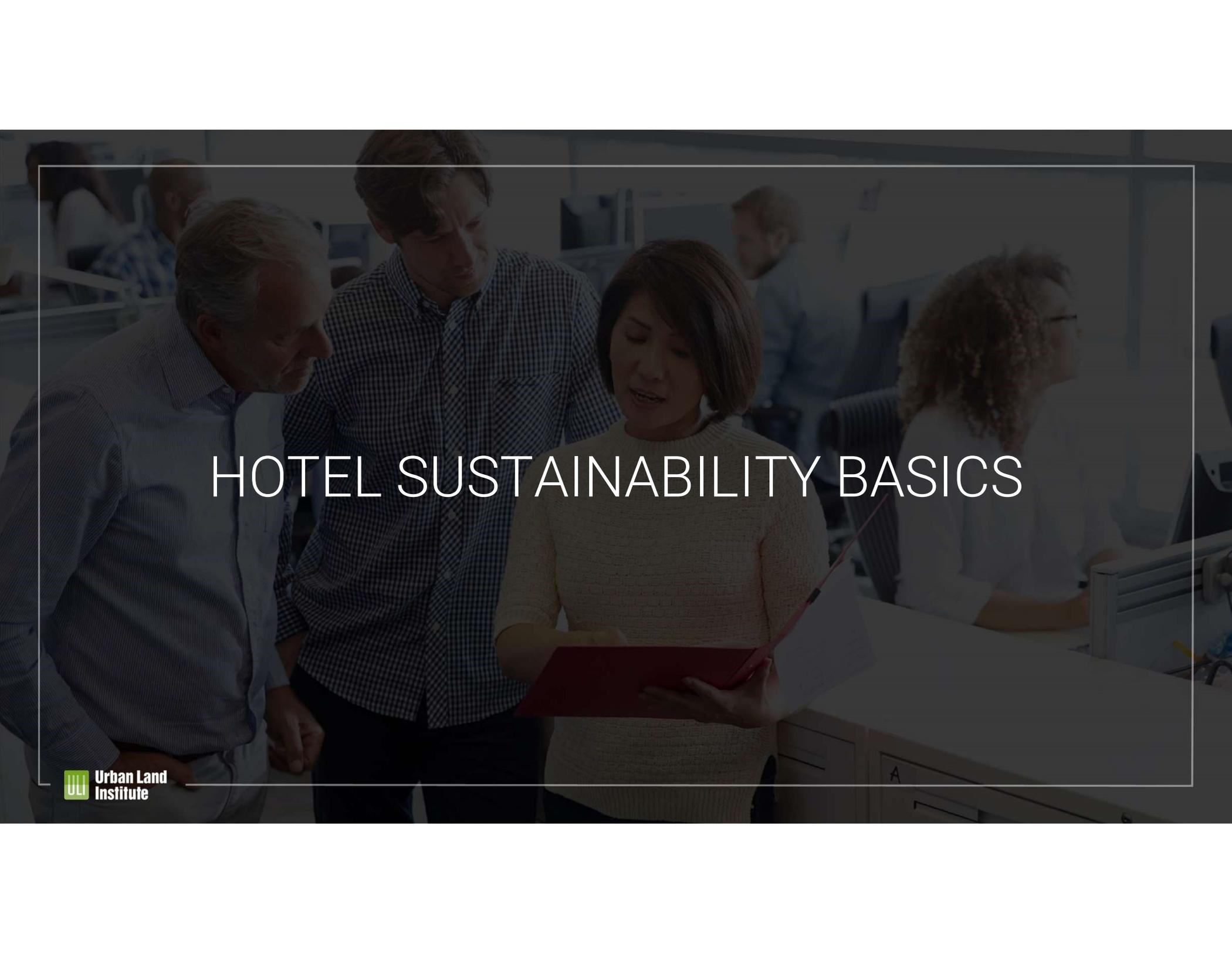
Tenant  
Engagement



City  
Networks



Strategic  
Partnerships

A group of four people (three men and one woman) are gathered around a desk in an office environment. They are looking at a tablet held by the woman in the center. The background shows other office workers and computer monitors. The image is dimmed and has a white border.

# HOTEL SUSTAINABILITY BASICS

# WHY DOES SUSTAINABILITY MATTER TO HOTELS AND WHAT ARE THE BARRIERS?

## Market Drivers:

- Help meet changing guest expectations
- Help comply with government regulations or win a contract (RFP, license, permit)
- Help meet internal sustainability goals
- Meet potential interest from investors
  - Improve NOI

## Barriers:

# BEST PRACTICES: ENERGY

## Host Hotels & Resorts

Key features: On-site decentralized and renewable energy

### Value add:

- Solar: 4 installations → saves \$610,000/yr
- Fuel Cell: 1 installation → saves \$270,000/yr
- Cogeneration: 3 installations → saves \$2.9M/yr
- Steam-to-gas: 3 installations → saves \$2.2M/yr



# BEST PRACTICES: ENVIRONMENT

Terranea Resort, Rancho Palos Verdes, CA California

## Key features:

- Local plants used in all landscaping
- Preservation of local mature trees during construction
- Reuse of on-site stone from development
- Creation of bioswales for natural irrigation and water treatment

## Value add:

- No citations from city and A+ water-quality rating
- Numerous hotel sustainability awards





# TRENDS

# TECHNOLOGY IN THE GUESTROOM

The Sinclair, Fort Worth, TX

**Key features:** Power-over-ethernet devices, low-wattage LED lightbulbs, digital electricity, blue-tooth mesh used as highly accurate occupancy sensor, and lithium ion battery for emergency backup power

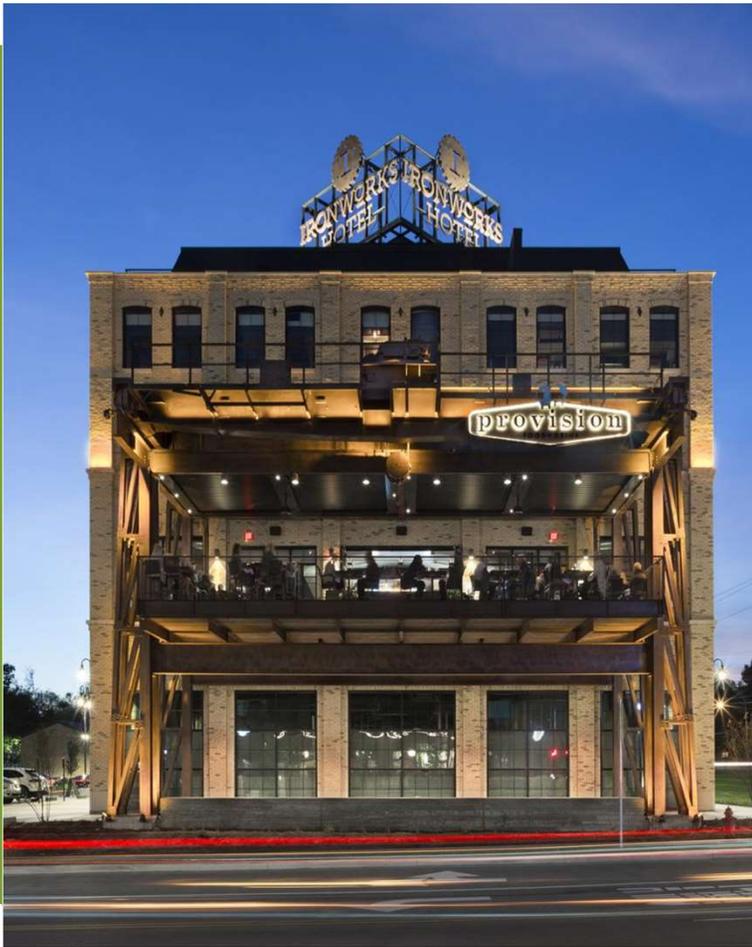
**Value add:** 50% energy reduction from traditional hotel, decreased labor costs, decreased material and infrastructure costs, faster construction time, no electrical permitting costs



# SUSTAINABLE MATERIAL SELECTION

Benefits of selecting sustainable materials:

- Improves guest health and wellness by reducing the off-gassing of volatile organic compounds (VOCs)
- Selection of local materials supports placemaking and connects hotel to the surrounding community
- Communicates commitment to sustainability to guests
- Reduces total embodied carbon



# HEALTH AND WELLNESS

Limelight Hotel Snowmass, Snowmass Base Village, Colorado

Key features: Ice rink, climbing wall, local foods, daylighting and nature views, multiple filtered water filling stations on-site, and low-emitting materials

Value add: Appeals to a wide range of guests interested in nature and healthy activities, while still optimizing for energy efficiency



# MODULAR CONSTRUCTION

Why is modular construction sustainable?

Off-site construction uses up to 69 percent less energy, reduces waste from construction up to 90 percent, and uses modules that are often recyclable, so the hotel is sustainable throughout its entire life cycle.





&A

**Monika Henn**

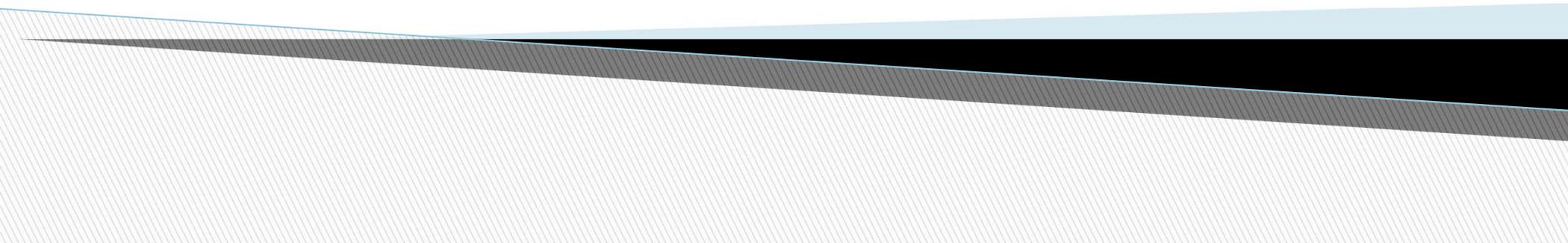
Monika.Henn@uli.org

[uli.org/greenprint](http://uli.org/greenprint)

**Dan Ruben**  
Boston Green Tourism

# **The Green Hospitality Revolution**

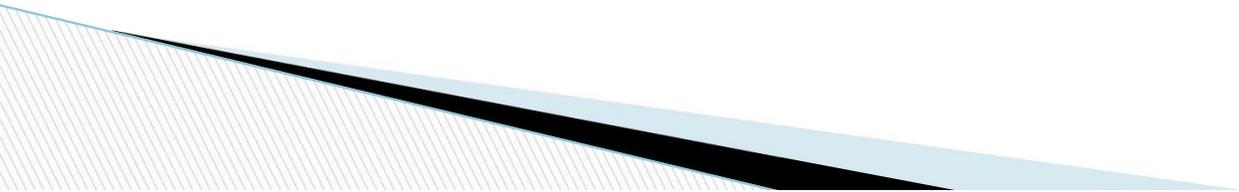
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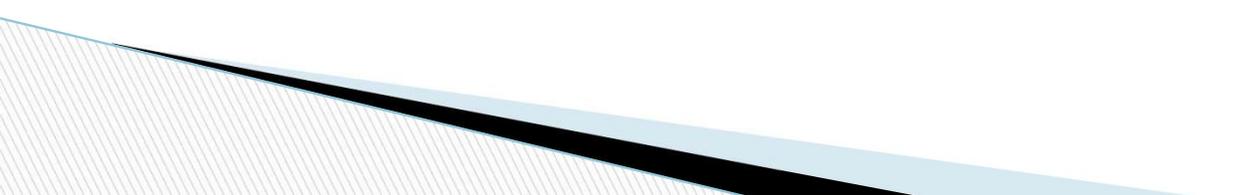
# Presenter

Dan Ruben

Boston Green Tourism



# Outline

- I. Recent Advances
  - II. Pressures / Incentives to Go Green will Intensify
  - III. Political Outlook
  - IV. Economic Outlook
  - V. Hotel Chain Goals
  
  - VI. Energy
  - VII. Water
  - VIII. Waste
  - IX. Transportation
  - X. Resilience
  
  - XI. Conclusion
- 

# Recent Advances, 1

Remarkable advances in green products, practices

## Energy

- ▶ LED lighting
- ▶ Smart building tech: sensors, controls, analytics
- ▶ Motors: ↑ ECM's and variable speed drives
- ▶ Heat recovery: CHP, energy recovery ventilation
- ▶ Ventilation controls
- ▶ More efficient equipment
- ▶ Renewable energy purchases and installations



# Recent Advances, 2

## Water

- ▶ Efficient fixtures ubiquitous
- ▶ Laundry equipment
- ▶ Dishwashers
- ▶ Smart irrigation systems
- ▶ Liquid pool covers



# Recent Advances, 3

## Waste

- ▶ Elegant recycling bins
- ▶ Amenity dispensers improve
- ▶ Clean the World
- ▶ Food waste ordinances spark new solutions
- ▶ Move away from single-use plastics
- ▶ Hotel donation programs improve
- ▶ China stops taking world's recyclables; markets tank



# Recent Advances, 4

## Indoor Air Quality / Toxins

- ▶ Green cleaning products
- ▶ Pest prevention → fewer, less toxic pesticides; > use of IPM (integrated pest management)
- ▶ Non-toxic bed bug treatments
- ▶ Mercury largely phased out
- ▶ Fragrances: ↑ recognition that they impact many guests



# Recent Advances, 5

## Transportation

- ▶ Electric vehicles
- ▶ EV charging station
- ▶ Car sharing
- ▶ Bike sharing



# Recent Advances, 6

## Food

- ▶ ↑ local food
- ▶ ↑ vegetarian and vegan food
- ▶ ↑ sustainable seafood



# Recent Advances, 7

## Resilience

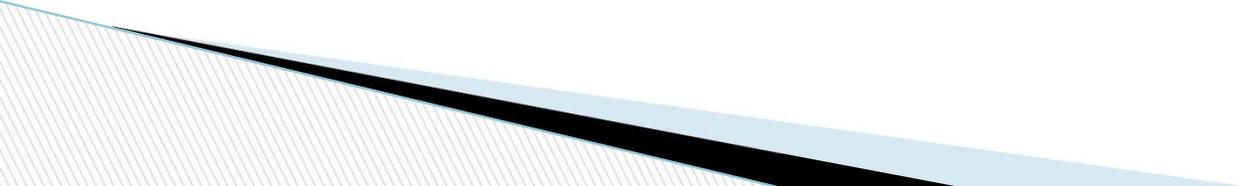
- ▶ Growing recognition of threat, due to sea level rise, stronger storms, wildfires
- ▶ Since 1950: 8 inch sea level rise in parts of U.S.
- ▶ Vulnerable hotels purchase deployable barriers, move vulnerable equipment to higher floors and reconsider their role in weather emergencies



coastal

# The Next Five Years

Pressures / Incentives to Go Green will Intensify

- ▶ Climate change
  - ▶ Politics
  - ▶ Customer demand
  - ▶ Hotel chain goals
  - ▶ Economics
  - ▶ Technology
  
  - ▶ Energy
  - ▶ Water
  - ▶ Waste
  - ▶ Transportation
  - ▶ Resilience
- 

# The Next Five Years: Climate, 1

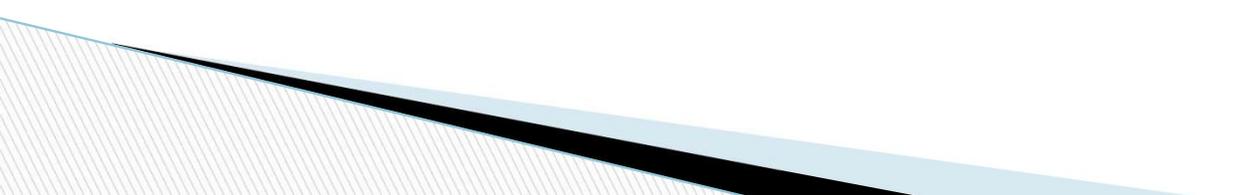


- ▶ Climate emissions ↑ in 2017, 2018; carbon targets not met
- ▶ UN IPCC report: ↓ emissions by 45% by 2030 to avoid irreversible damage
- ▶ Fourth U.S. National Climate Assessment: dire consequences if we don't immediately slash GHG's
- ▶ Scientists: disasters like Puerto Rico, CA, Houston, Midwest to continue, worsen
- ▶ Sea level rise continues, more flooding

# The Next Five Years: Climate, 2

U.N. Secretary General António Guterres:

"We are in trouble. We are in deep trouble with climate change. It is hard to overstate the urgency of our situation. Even as we witness devastating climate impacts causing havoc across the world, we are still not doing enough, nor moving fast enough, to prevent irreversible and catastrophic climate disruption."



# The Next Five Years: Politics, 1



- ▶ Green New Deal: national attention; many endorsers
- ▶ NYC: bldgs > 25,000 sq. ft. must ↓ emissions by 40% by 2030, 80% by 2050
- ▶ Millennials influence government and business to address climate change
- ▶ School student demonstrations
- ▶ Will federal government tackle climate change post 2020 election?

# The Next Five Years: Politics. 2

Commitments to buy 100% renewable energy



- ▶ States: California, Hawaii, New Mexico, Washington, Washington, D.C., Puerto Rico, Nevada
- ▶ Cities: Chicago, Minneapolis, Denver, St. Louis, Atlanta, Salt Lake City, Cleveland, Cincinnati, > 100 more
- ▶ Companies: Apple, BMW, Coca-Cola, Facebook, 100's more

# The Next Five Years: Hotel Chain Goals, 1

## **Hilton** (by 2030, baseline 2008)

- ▶ ↓ carbon emissions 61%
- ▶ ↓ water use 50%
- ▶ ↓ produced waste by 50%
- ▶ no soap to landfills
- ▶ no plastic straws
- ▶ sustainably-sourced meat, poultry, produce, seafood, cotton

## **Marriott** (by 2025, baseline 2016)

- ▶ ↓ carbon emissions 30%
  - ▶ ≥ 30% renewable energy use
  - ▶ ↓ water use 15%
  - ▶ ↓ waste 45%
  - ▶ ↓ food waste 50%
- 

# The Next Five Years: Hotel Chain Goals, 2

## **Hyatt** (by 2020, baseline 2006)

- ▶ ↓ 25% water—and 30% in water-stressed areas
- ▶ 40% recycling rate by 2020
- ▶ new construction / major renovation projects for wholly-owned full-service properties: LEED certification or equivalent

## **Wyndham** (baseline 2010)

- ▶ ↓ carbon 25% by 2025
  - ▶ Onsite solar: 10% of total electricity by 2035
  - ▶ RECs (renewable energy certificates): 30% of total electricity by 2035
  - ▶ ↓ water 25% by 2025
- 

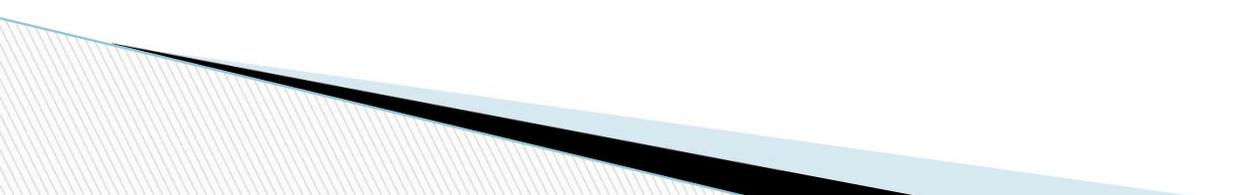
# The Next Five Years: Economics

- ▶ Electricity, natural gas, gasoline prices: my guess--slow upward drift
- ▶ Renewable energy prices: lower
- ▶ Battery prices: much lower
- ▶ Electric vehicle prices: lower, fewer incentives
  - EV prices drop below ICE cars 2023 – 2025
  - Buses, fleets adopted faster than cars



# The Next Five Years: Technology

## Advances

- ▶ Smart building technology
  - ▶ Electric vehicles, EV charging stations
- 

# The Next Five Years: Energy

- ▶ Smart buildings: better tech, ↑ adoption by hotels and restaurants
  - Bldg managers rely more on reports, alerts
  - ↑ use of fault detection technology
  - Automated system optimization to crack hotel market
- ▶ Batteries: used more to ↓ demand charges, source of backup power
- ▶ Pressure / incentives to switch from natural gas to electricity (heat pumps) for heating, hot water and cooking
- ▶ Ventilation
  - ↑ controls
  - Tech that cleans + recirculates air, rather than exhausting it
- ▶ ↑ renewable energy purchases

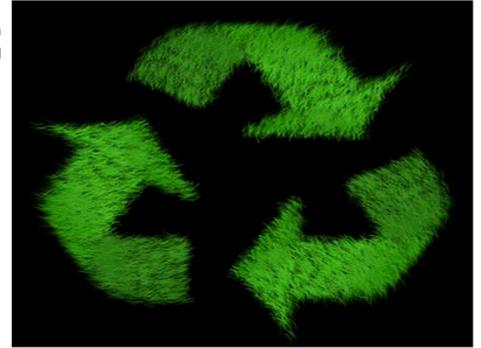


# The Next Five Years: Water

- ▶ Equipment and practices with biggest efficiency impact are already in place
- ▶ New purchases (laundry, dishwashers) will automatically ↓ water use



# The Next Five Years: Waste



- ▶ Waste disposal crisis continues: plastics, mixed paper, glass; slow progress
- ▶ Continued pressure to purify recycling loads
- ▶ ↑ solid waste ordinances
- ▶ Single-use plastics: ↑ pressure to reduce them; more plastic bag bans (thus far: CA, NY, HA, ME, VT)
- ▶ To-go food containers: 100% compostable or recyclable

# The Next Five Years: Transportation

- ▶ ↑ in electric vehicles
- ▶ Better EV charging
- ▶ Cars will share the road with bicycles and scooters more often
- ▶ Electric hotel vans: reasonably priced, high quality products will hit the market



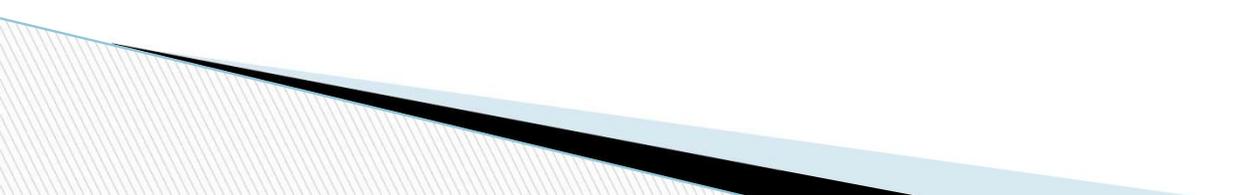
# The Next Five Years: Resilience

- ▶ Vulnerable hotels and restaurants invest heavily in flood protection
- ▶ ↑ regulations regarding property protection
- ▶ ↑ funding to protect coastal property



# Conclusion

**The green hotel and restaurant revolution will continue and will speed up, because of climate change, politics, economics, technology, hotel chain goals and customer demand.**

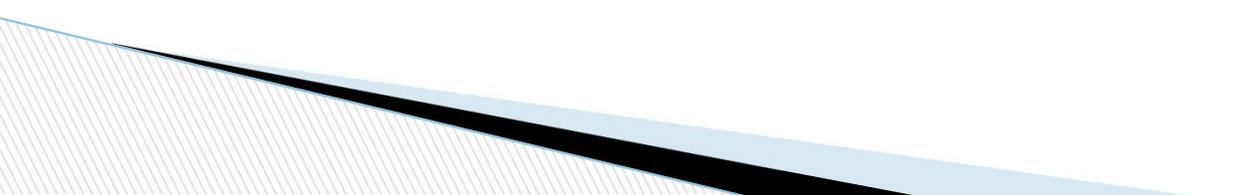


# Contact Information

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# Open Discussion

# Contact Us

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**Virginia Brady**

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# Thank You

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