

# Renewable Energy Trends and Opportunities for Colleges and Universities

Timothy B. Anderson, Partner, Real Estate Practice Group  
Amy C. Foerster, Partner and Co-Chair, Higher Education Practice Group  
Marc D. Machlin, Partner and Co-Chair, Energy Industry Group

**Pepper Hamilton LLP**  
Attorneys at Law

Pepper Hamilton Higher Education “In Brief” Series

October 16, 2019

# Amy C. Foerster

Partner and Co-Chair, Higher Education  
Pepper Hamilton LLP

717.255.1108

[foerster@pepperlaw.com](mailto:foerster@pepperlaw.com)

- ▶ Provides litigation, counseling and investigative services to colleges, universities and schools across the country, leveraging her broad higher education experience to provide practical advice in the myriad complex matters facing institutions of higher education
- ▶ Has provided extensive advice to colleges, universities and K-12 schools in areas such as Title IX and the Clery Act, employee and student misconduct, fundraising and major gift agreements, federal and state regulatory compliance, governing board activities and shared governance
- ▶ Before joining Pepper, Ms. Foerster was general counsel and chief of staff at Bucknell University.



# Timothy B. Anderson

Partner, Real Estate  
Pepper Hamilton LLP

717.255.1190

[andersont@pepperlaw.com](mailto:andersont@pepperlaw.com)

- ▶ Represents a variety of clients in real estate conveyancing, leasing, financing, foreclosures and litigation. He also represents special-purpose governmental entities.
- ▶ A member of the American, Pennsylvania and Dauphin County Bar Associations.



# Marc D. Machlin

Partner and Co-Chair, Energy Industry Group  
Pepper Hamilton LLP

202.220.1439

[machlinm@pepperlaw.com](mailto:machlinm@pepperlaw.com)

- ▶ Practice has focused on regulatory, environmental and transportation matters
- ▶ A member of the firm's Sustainability, CleanTech and Climate Change Team
- ▶ Clients have included investor-owned utilities, independent power producers, energy trading firms, large utility customers, power marketing firms, developers of alternative energy projects, and railroads
- ▶ Has represented clients in connection with a variety of energy transactions and energy projects. These projects have included alternative energy projects that utilize solar energy, wind, cogeneration, and/or carbon sequestration.



# Audio

The screenshot displays the Cisco Webex Events interface. At the top, the title bar reads "Cisco Webex Events" with standard window controls. Below the title bar is a menu with "File", "Edit", "View", "Communicate", "Participant", "Event", and "Help". The main content area shows a video player with a red text overlay: "Audio should stream automatically on entry through your computer speakers". Below this, a banner for "Pepper Hamilton Webinar" is visible. At the bottom of the video player, there is a logo for "Pepper Hamilton LLP Attorneys at Law".

On the right side, a "Participants" panel is open, showing a list of participants under "Panelist 1" and "Attendee". The host, Brian Dolan, is listed as "Brian Dolan (Host)" and "Brian Dolan (me)".

An "Audio Broadcast" control window is overlaid on the bottom of the video player. It displays "24.7 Kbps" and has "Pause" and "Stop" buttons. Below this window is a row of icons for audio, video, chat, and other functions.

# Audio

The screenshot displays the Cisco Webex Events interface. At the top, the title bar reads "Cisco Webex Events" with standard window controls. Below the title bar is a menu bar with "File", "Edit", "View", "Communicate", "Participant", "Event", and "Help". The main content area shows a video feed of a webinar slide. The slide has a white background with a purple gradient bar at the bottom. The text on the slide reads: "If you cannot stream audio, click phone icon and a phone number will be sent to you" in red. Below this is a large purple gradient bar with the text "Pepper Hamilton Webinar" in white. At the bottom of the slide is the logo for "Pepper Hamilton LLP Attorneys at Law".

Overlaid on the bottom of the video feed is an "Audio Broadcast" control panel. It shows a status of "24.7 Kbps" and two buttons: "Pause" and "Stop". Below the control panel is a row of icons: a phone icon, a microphone icon, an upload icon, a user icon, a chat icon, a menu icon, and a red close icon.

On the right side of the interface is a "Participants" panel. It lists "Panelist 1" as "Brian Dol... (Host)" and "Attendee:" as "Brian Dolan (me)".

An arrow points from the red text on the slide to the phone icon in the bottom control bar.

# Q&A

Cisco Webex Events

File Edit View Communicate Participant Event Help

BD  
Brian Dolan (Host)

Viewing Pepper Hamilto... ▾

**Click here to send questions to us**

01: P

**Pepper Hamilton Webinar**

Audio Broadcast  
24.7 Kbps  
Pause Stop

**Pepper Hamilton LLP**  
Attorneys at Law

Participants

- Panelist: 1
  - BD Brian Dol... (Host)
- Attendee:
  - BD Brian Dolan (me)

Q&A

**The webinar will be starting at approx. 12:00pm ET.  
There is currently no audio until we start.**



**We are on mute and will be starting in a few minutes.**

# Today's Agenda

- ▶ The role of renewable energy and conservation in sustainability programs
- ▶ Energy conservation measures and third-party investment on campus
- ▶ The wide array of available renewable energy technologies
- ▶ Typical transaction structures
- ▶ The growth of solar energy despite recent obstacles
- ▶ Real estate issues in renewable energy projects on- and off-campus
- ▶ Facilitating or expediting renewable energy development

# Key Elements Of Sustainability Programs

- ▶ Promote recycling and reuse
  - Improve collection of paper, plastic, glass
  - Use food waste as compost or fertilizer, or as an energy resource; grow food on campus
  - Water bottle refill stations
- ▶ Water conservation and protection
  - Reduce water waste; repair leaky pipes; water distribution systems
  - Control use of water for landscaping
  - Control stormwater on campus; phase-out systems that release sewage (combined sewer overflows or CSOs) during heavy rains
- ▶ Promote bicycling and walking on campus

# Key Elements Of Sustainability Programs

- ▶ Reduce The Carbon Footprint
  - Energy efficiency and energy conservation measures
    - Lighting
    - Windows
    - Roofs
    - Boilers
    - Building design; LEED certification by U.S. Green Building Council
    - Tracking and monitoring of energy usage
    - EnergyStar appliances
    - Controls and thermostats
    - Insulation
  - Purchase Renewable Energy Credits (RECs) and Carbon Offsets
  - EV buses and charging stations

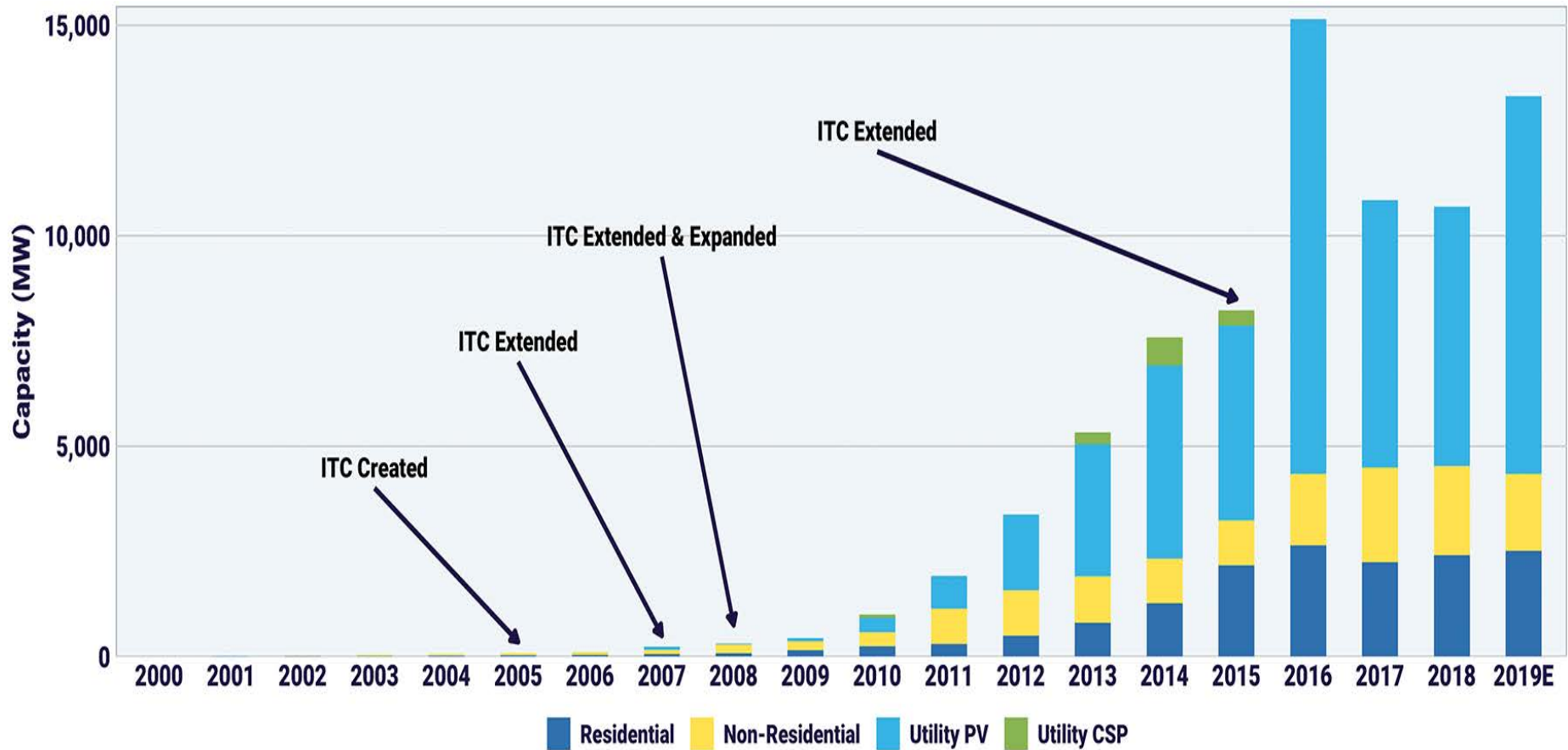
# Key Elements Of Sustainability Programs

- Increased use of renewable energy
  - Purchases of green power from competitive suppliers
  - On-campus projects
  - Off-campus projects
- Increased use of cogeneration
  - Cogeneration units may use renewable fuels or may run on natural gas
  - Even when natural gas is the fuel, carbon emissions are substantially reduced because cogeneration units are far more efficient than central station power; waste heat is captured
  - Cogeneration also allows the institution to lessen its dependence on the external power grid
  - When properly configured, cogeneration units will supply power, steam, and chilled water even during black-outs on the surrounding grid

# The Growth Of Solar Despite Emerging Obstacles

- ▶ Despite year-to-year fluctuations, solar is growing at a solid rate, stemming from a combination of projects in which the off-takers are utilities, corporations, non-profits (e.g., colleges and universities), and homeowners or housing providers
- ▶ Long-term growth is reflected in solar's increasing share of new U.S. generation capacity
- ▶ Community solar, a new concept, is emerging in a variety of different forms; community solar allows a multitude of off-takers to benefit from a single project; a college or university can be the anchor subscriber or off-taker

# Annual U.S. Solar Installations



Source: Solar Energy Industries Association / Wood Mackenzie Power & Renewables, *U.S. Solar Market Insight*, 2019

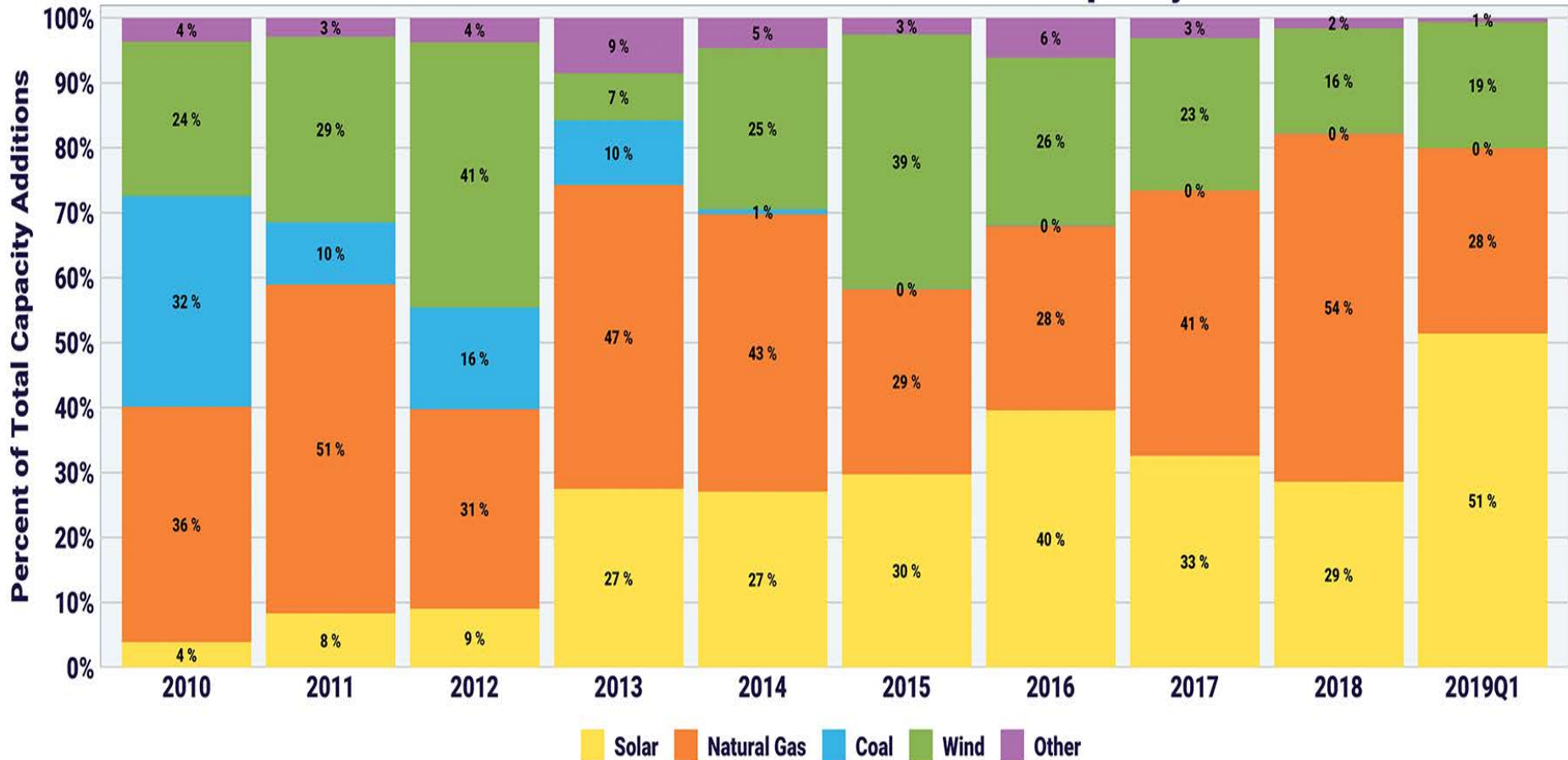
# The Growth Of Solar Despite Emerging Obstacles

- Over the past 10 years, solar PV's share of the new U.S. capacity has increased
  - 2010 4%
  - 2011 8%
  - 2012 9%
  - 2013 27%
  - 2014 27%
  - 2015 30%
  - 2016 40%
  - 2017 33%
  - 2018 29%
  - 2019 (first half) 36%

Source: Solar Energy Industries Association; *U.S. Solar Market Insight*; Executive Summary at 6 (September 2019)



# Annual Additions of New Electric Capacity



Source: Solar Energy Industries Association / Wood MacKenzie Power & Renewables, U.S. Solar Market Insight, FERC

# Roof-Top, Solar Trees, Parking Canopies, And Ground-Mounted Solar Arrays



# Headwinds, Negative Factors For Solar

- ▶ Phase-down of the Investment Tax Credit
  - For commercial projects (including projects used by colleges and universities), the ITC drops from 30% in 2019, to 26% in 2020, to 22% in 2021, and to 10% in 2022
  - The ITC is determined by when construction begins. Projects that start construction in 2019 will receive the full 30%; projects that start in 2020 will receive the full 20%. However, projects must be placed in service before 2024
  - Under IRS guidance issued in July 2018, there are two ways to determine the “commence construction” date
    - Starting physical work of a significant nature, or
    - Meeting the “5 percent safe harbor” test by incurring 5 percent or more of the total cost in the year that construction begins
  - With only two and a half months remaining in 2019, developers are in some cases rushing to buy panels, inverters, and other equipment



# Headwinds, Negative Factors For Solar

- This is temporarily affecting prices and availability of modules and inverters in certain areas
- ▶ Tariffs That May Affect Prices On Solar Modules, Inverters, And Other Equipment
  - A 30% tariff was imposed on modules from China in January 2018; in September, a 10% tariff was imposed on inverters; then the Administration announced that it would propose a second 25% tariff on both products; the exemption for bifacial modules was terminated as of October 2019
  - Fortunately, modules and inverters are now produced in many nations
  - Modules are produced not only in China, but also in Malaysia, Thailand, Vietnam, and elsewhere
  - Since China is not the sole source for modules or inverters, the effects of the tariffs have been diluted
  - More recently, the Administration has signaled that some of its tariffs may be lifted

# Solar Opportunities For Colleges And Universities

- ▶ Colleges and universities are developing hundreds, if not thousands, of solar projects each year
  - Small on-campus projects (roof-top, solar trees, parking canopies, ground-mounted arrays)
  - Large off-campus projects supported by virtual net metering
  - Other off-campus projects in which the college or university purchases the output from the solar array directly or indirectly
- ▶ Many of the top 10 colleges and universities (in terms of renewable electricity purchased from off-campus sources per student) are supporting large solar projects
  - An April 2019 Report issued by the Environment America Research and Policy Center (using data from the Association for the Advancement of Sustainability in Higher Education (AASHE)) identifies the top 10 schools for purchases of renewable energy from off-campus sources

# Solar Opportunities For Colleges And Universities

- The top school was George Washington University, which is working with American University and the GW Hospital and with an independent developer on the construction of three solar projects with a combined capacity of 53.5 MW
- These projects will produce enough electricity to meet about 53 percent of each school's electricity requirements

# The Preferred Transaction Structure For Colleges And Universities

- ▶ There is still a substantial benefit in having an independent private sector developer design, build, operate, and maintain the solar project
- ▶ Having a for-profit developer in the transaction often has advantages
  - The developer or future owner-operator can utilize the ITC
  - The developer can assume the risks associated with construction and can manage the construction process with input from the school
  - Under a power purchase agreement, the school is only obligated to pay for power that is actually produced
  - The power purchase agreement creates price certainty, which is helpful for budgeting purposes
  - Design and construction expertise

# The Preferred Transaction Structure For Colleges And Universities

- ▶ Lease and the PPA are the core agreements to be negotiated
- ▶ Separate Interconnection And Net Metering Agreements with the utility
- ▶ Parent Guaranty may be necessary
- ▶ Same or similar structure can be used with wind and cogeneration projects



# Wind Energy Growth

- ▶ Year-to-year fluctuations, but wind industry capacity continues to grow
- ▶ In 2018, roughly 16% of new U.S. capacity was derived from windpower installations; 14% in the first half of 2019 (esp. in Texas, Iowa, Michigan, Illinois, and Minnesota)
- ▶ Colleges and universities buy windpower RECs and the output from wind projects

# Windpower For Colleges And Universities

- ▶ Windpower is more difficult than solar PV to develop on campus
  - Birds and bats
  - Noise issues
  - Efficiencies of larger turbines, which take up more land
- ▶ But some have successfully developed wind projects, e.g., the University of Minnesota, Morris, produces about 60 percent of its electricity requirements with two commercial scale wind turbines
- ▶ Other universities purchase windpower RECs, e.g., Southwestern University in Texas purchases RECs from wind farms equivalent to 100 percent of its electricity consumption

# The Top Ten Schools for Renewable Energy Per Full-Time Equivalent Enrolled Student

Rank	School	State	Total Amount of Renewable Electricity per FTE Student (MMBtu)
1	Southwestern University	TX	40.8
2	Austin College	TX	40.7
3	Whitman College	WA	39.8
4	Haverford College	PA	38.1
5	University of Tennessee at Knoxville	TN	34.8
6	Bryn Mawr College	PA	34.6
7	Swarthmore College	PA	32.7
8	Dickinson College	PA	27.7
9	Knox College	IL	26.9
10	University at Buffalo	NY	26.6

Source: Frontier Group, *America's Top Colleges for Renewable Energy, Who's Leading the Transition to 100% Renewable Energy on Campus*, April 2019

# The Top Ten Schools for Renewable Electricity Generated on Campus Per Student

Rank	School	State	Amount of Renewable Electricity Generated on Campus per FTE Student (MMBtu)
1	University of Minnesota, Morris	MN	10.0
2	University of Missouri	MO	7.7
3	Carleton College	MN	6.9
4	Skidmore College	NY	3.3
5	Sterling College	VT	3.1
6	Antioch College	OH	1.4
7	Soka University of America	CA	1.1
8	Agnes Scott College	GA	1.1
9	Colorado College	CO	0.9
10	University of San Diego	CA	0.8

Source: Frontier Group, *America's Top Colleges for Renewable Energy, Who's Leading the Transition to 100% Renewable Energy on Campus*, April 2019.

# Cogeneration Transactions

- ▶ Cogeneration transactions and physical configuration are more complex
  - Energy Service Agreement must cover purchases of electric power, steam, chilled water
  - Piping links and dependence on existing steam pipes
- ▶ Turbines typically require a separate building and a stack
  - Air emissions permitting
  - Longer cycle to secure permits
- ▶ Cogeneration often can meet a higher percentage of the institution's energy requirements

# Energy Efficiency Transactions

- ▶ Third-party providers will provide the capital for energy efficiency improvements and guarantee energy savings
- ▶ The Energy Saving Contracts or ESCO Contracts are complex, requiring careful review and negotiation
- ▶ State law may impose restrictions, especially if state grant funds are used or the customer is a public institution
- ▶ Third-party providers often have expertise and technologies that are useful in curtailing energy waste
- ▶ Third-party providers may create incentives for ongoing operations and maintenance agreements on new equipment

# Real Estate Issues - Leases

- ▶ Lessee
- ▶ Premises
- ▶ Purpose and permitted use
- ▶ Phases
  - Feasibility and permitting
  - Construction
  - Commercial operation
  - Removal and reclamation
  - Term and termination rights
- ▶ Easements granted to the lessee
  - Non-obstruction
  - Access
  - Utility easements
  - Noise and fields
  - Interconnection easement

# Real Estate Issues - Leases

- ▶ University-reserved rights
  - Subsurface
  - Understory (e.g., grazing or parking)
  - Crossing
  - Inspection and instructional rights.
- ▶ Payments to University
- ▶ Lessee Ownership and Responsibilities
- ▶ Ordinary Lease Considerations
  - Indemnity and insurance
  - Construction liens
  - Hazardous materials
  - Warranty of title and quiet enjoyment
  - Assignment, change of control, lender protections
  - Default & Remedies



# Real Estate Issues - Zoning

- ▶ Use
- ▶ Dimensional Requirements and Performance Standards
- ▶ Zoning Relief
- ▶ Decision-Makers

# Real Estate Issues – Land Use Regulation

- ▶ Site Plan
- ▶ Construction requirements
- ▶ Stormwater requirements
- ▶ DOT requirements
- ▶ Special requirements
- ▶ Decision-Makers

# Facilitating Renewable Energy Development

- ▶ Identify off-campus locations for large solar or wind projects
  - Consider zoning implications
- ▶ Identify on-campus sites for cogeneration facilities
  - Evaluate fuel availability, fuel pricing early
- ▶ Pre-qualify third-party providers and avoid standard RFP procedures
  - Work closely with one or two providers that have a solid track record of completing projects
  - Ensure all are on the same page as to the primary goal – cost savings or promote sustainability

# Practical Suggestions On How To Facilitate Renewable Energy Development

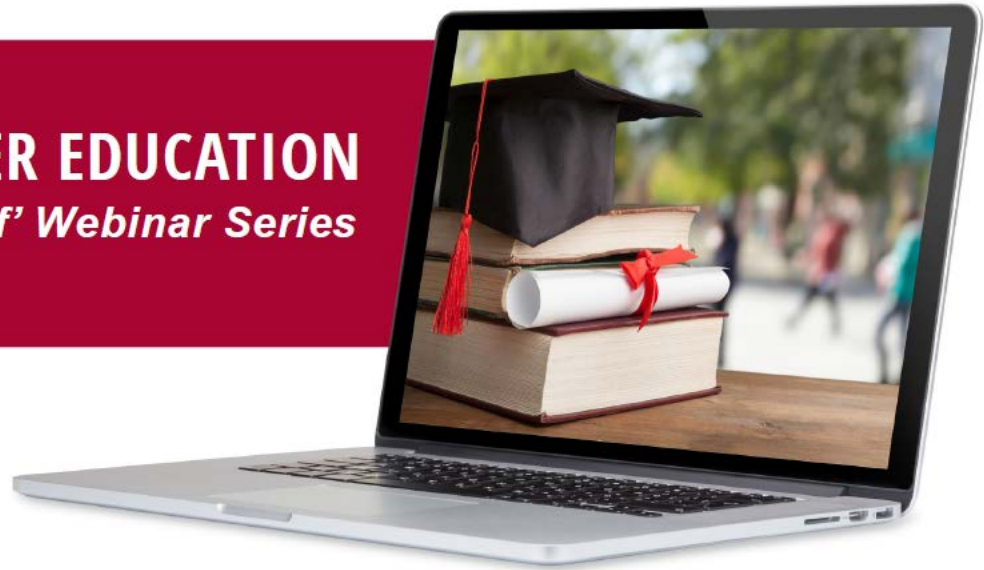
- ▶ Designate a lead administrator who can interface effectively and efficiently with the developer
- ▶ Confer with the local electric utility (and, if needed, gas distribution company) early in order to identify any significant interconnection or net metering issues
- ▶ Be willing to share financial information and energy usage data with potential partners and third-party providers
- ▶ If relevant to the developer, be sensitive to timing issues related to the phase-down of the ITC
- ▶ Review state REC programs, SREC programs and/or grant programs that may be available

# Questions & Answers

# Save the Dates!

- ▶ Nov. 5  
Intellectual Property  
Basics: What Every  
Higher Education  
Administrator Needs to  
Know

## HIGHER EDUCATION *'In Brief' Webinar Series*



Save the date! More detailed invitations to follow. All recordings from 'In Brief' webinars can be found on Pepper's Insight Center.

Email Brian Dolan at [dolanb@pepperlaw.com](mailto:dolanb@pepperlaw.com) to join the invite mailing list.

For more information, visit

[www.pepperlaw.com](http://www.pepperlaw.com)

Amy C. Foerster, Partner and Co-Chair, Higher Education Practice Group  
717.255.1108  
foerstera@pepperlaw.com

Timothy B. Anderson, Partner, Real Estate Practice Group  
717.255.1190  
andersont@pepperlaw.com

Marc D. Machlin, Partner and Co-Chair, Energy Industry Group  
202.220.1439  
machlinm@pepperlaw.com