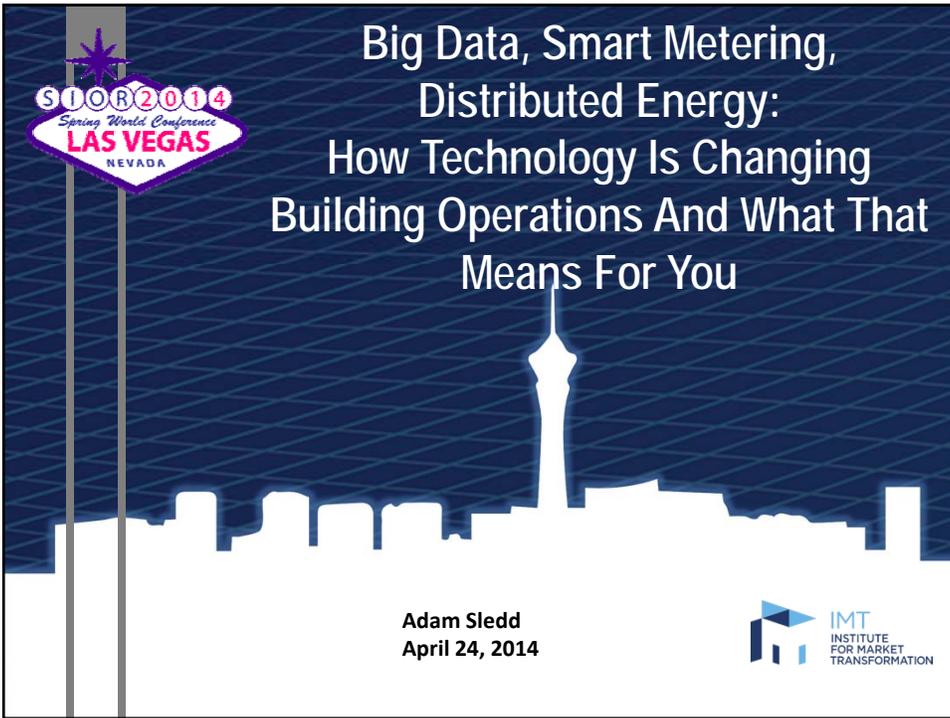


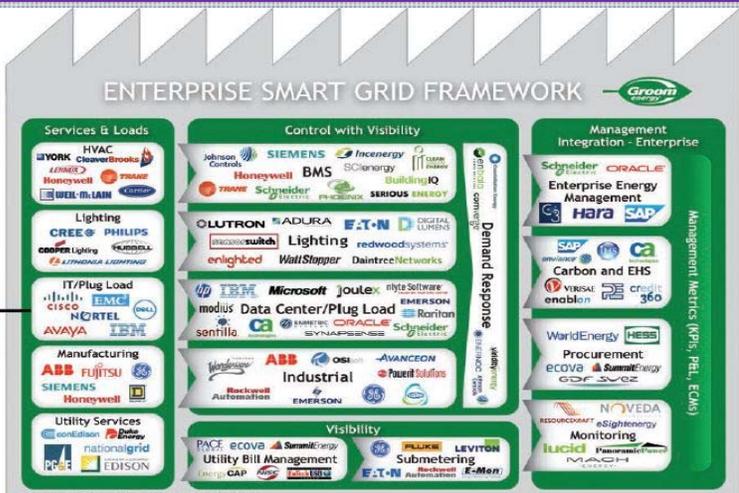


# Big Data, Smart Metering, Distributed Energy: How Technology Is Changing Building Operations And What That Means For You

Adam Sledd  
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## The Basic Overview



**ENTERPRISE SMART GRID FRAMEWORK**

- Services & Loads:** HVAC (York, Carrier, Lennox, Honeywell, Trane, Carrier), Lighting (Cree, Philips, Cooper, Hubbell, AEP), IT/Plug Load (Cisco, BMC, Nortel, Avaya, IBM), Manufacturing (ABB, Fujitsu, Siemens, Honeywell), Utility Services (ComEd, Data, National Grid, Edison).
- Control with Visibility:** Johnson Controls, Siemens, Incenergy, BMS, Schneider, Trane, Honeywell, Sclenergy, Building IQ, Trane, Schneider, Emerson, Serious Energy.
- Management Integration - Enterprise:** Schneider, Oracle, Enterprise Energy Management, Hara, SAP, SAP, Carbon and EHS, WorldEnergy, HEBB, Procurement, EcoVadis, SmartEnergy, GFS, NOVEDA, ResourceDant, eSightEnergy, Monitoring, IUCS, Panametric.
- Other Categories:** Demand Response, Visibility (Pace, Ecova, SmartEnergy, Utility Bill Management, ENVI, CAP, F.T.N, Leviton, Submetering, E-Mer).

Groom Energy's Brilliant Graphic of the Building-Related IT Space





The image contains two photographs. The top photograph shows two compact fluorescent light (CFL) bulbs, one of which is partially unscrewed from its base. The bottom photograph shows a white, wall-mounted urinal in a tiled bathroom. A faint background image of a city skyline is visible behind the text.

**1. Buildings can more efficiently consume energy and water**



A faint, grayscale background image of a city skyline with several skyscrapers, including one with a distinctive tower, is visible behind the text.



The logo for the City of Las Vegas, featuring a stylized palm tree and the text "City of Las Vegas" and "LAS VEGAS, NEVADA".



The image contains two photographs. The top photograph shows a large, industrial-grade HVAC unit in a warehouse or industrial setting. The bottom photograph shows a large array of solar panels installed on a rooftop. A faint background image of a city skyline is visible behind the text.

**2. Commercial buildings can produce cost-effective energy onsite**



A faint, grayscale background image of a city skyline with several skyscrapers, including one with a distinctive tower, is visible behind the text.



The logo for the City of Las Vegas, featuring a stylized palm tree and the text "City of Las Vegas" and "LAS VEGAS, NEVADA".



3. Advanced metering systems and data analysis change our understanding of energy use.

## Why Does This Matter To SIORs?

- New local regulations, including building code changes
- New lease language to reflect corporate energy management and social responsibility goals
- New appraisal and underwriting approaches



# Why Does This Matter To Your Clients?

Trends in Consumer Prices (CPI) for Utilities

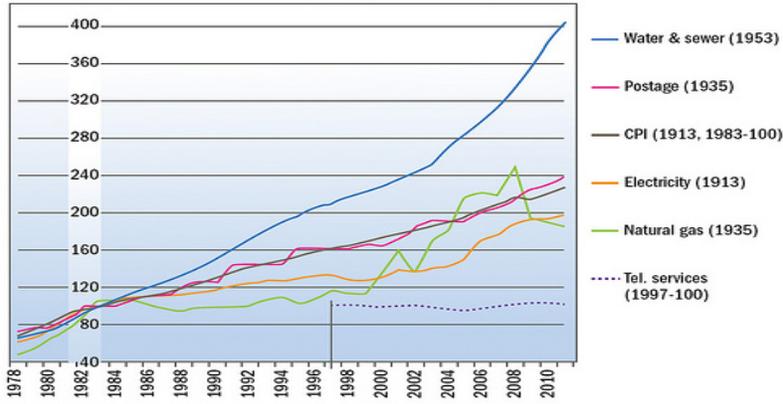


Exhibit 2. Trends in the Consumer Price Index for utilities (general, 1979-2011). The index is set to 100 for 1982-1984 except for telephone services, where the index is set to 100 for 1997.



## Current model-- Industrial

### Industrial Property For Lease

Total Space Available:	3,504 SF	Building Size:	24,011 SF
Rental Rate:	\$10.20 /SF/Year	Lot Size:	672,072 SF
Property Type:	Industrial	Listing ID:	18603731
Property Sub-type:	Flex Space	Last Updated:	33 days ago

[Find Out More...](#)



## What If A Prospect Wants To Lease The Whole Building?

### NONRESIDENTIAL BUILDING ENERGY USE DISCLOSURE PROGRAM



A building owner or operator is required to benchmark and disclose a building's energy use IF THE ANSWER IS "YES" TO THE FOLLOWING:

#### 1. TRIGGERING TRANSACTIONS

Is your ENTIRE nonresidential building offered for sale, lease, finance or refinancing?

#### 2. BUILDING SIZES

Does your building meet the size and compliance schedule?

**10,000 sq ft** (or larger) **January 1, 2014** or **5,000 sq ft** (or larger) **July 1, 2014**

#### 3. OCCUPANCY TYPES

Is your building classified as one of the following occupancy types?



DID YOU ANSWER "YES" TO ALL 3 QUESTIONS?



[http://www.energy.ca.gov/ab1103/rulemaking/documents/AB1103\\_Infographic.pdf](http://www.energy.ca.gov/ab1103/rulemaking/documents/AB1103_Infographic.pdf)

## What if the building is in D.C. or New York?

### Mandated Disclosure as a Sales Tool



Where?	What is disclosed?	Who gets it?
Austin	ENERGY STAR score of nonresidential buildings > 10k sq. ft.	Prospective buyers and Austin Energy (utility)
Boston	Whole-building energy and water use data for commercial buildings > 35k sq. ft. or 35 units	Public (start date to be determined)
California	Portfolio Manager data and score for nonresidential buildings	Prospective parties of whole-building transaction (July 2013)
District of Columbia	Building energy data and ENERGY STAR scores	Public (available 2014)
Minneapolis	Public and private commercial building energy and water usage	Public (starting in 2015)
New York City	Public and private building energy and water performance metrics	Public (available now)
Philadelphia	Energy and water performance metrics for nonresidential buildings	Public (start date to be determined)
San Francisco	Energy benchmarking summaries for nonresidential buildings	Public (available now for buildings > 50k sq. ft.)
Seattle	The most current energy benchmarking report	Available by request of tenants, prospective tenants or buyers and potential lenders



## What If The Owner Wants To Install Solar?

**Or participate in Demand-Response?  
Or the tenant wants to put solar on the roof?**

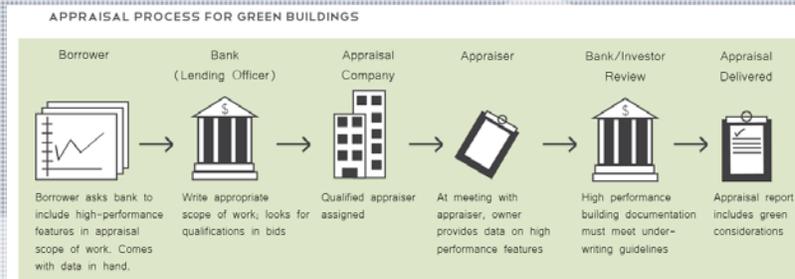
**What happens to a NNN lease when the power is supplied by the building?**

**The lease needs to change.**



## How Do I Get The Value Back When I Sell?

- Appraisal Institute and Appraisal Foundation now revising standards for appraisal to value green and efficiency technologies
- New guide completed 2014
- Increased market penetration of 2016
- Owners must be active participants via internal valuation, working with lender on scope, provide value narrative and data



## Current Model-- Office



Property Information	
Listing Category	Lease
Property Status	Available
Property Type	Office
Building SF	110,000 SF
Office SF	90,000 SF
Minimum Available SF	5,000 SF
Maximum Contiguous SF	90,000 SF
Total Available SF	90,000 SF
Building Class	B
Vacancy	Direct

Pricing	
Sale Asking Price	N/A
Lease Rate Per SF	\$14.00
Lease Type	FSG



## How Are Tenants Billed For OpEx?

Today: Pro-rata share determined by SF.  
Tomorrow: Submeters and EMS connected to each space and building system

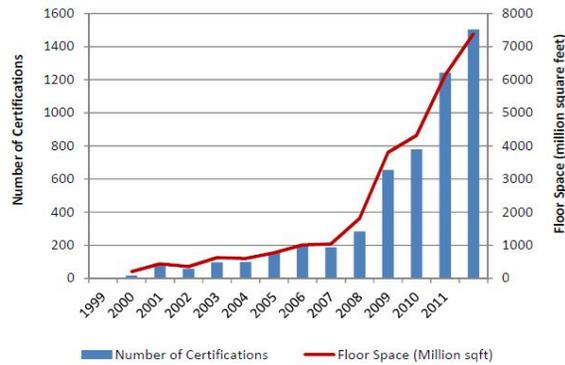


# What Does This Mean For Occupants?



# What Does Class A Space Look Like In 3-5 Years?

Annual Number and Square Footage of ENERGY STAR Certified Commercial Buildings (through December 31, 2011)



## Resources

- [www.greenleaselibrary.com](http://www.greenleaselibrary.com) – Lease language examples and case studies.
- [www.buildingrating.org](http://www.buildingrating.org) – Benchmarking regulations information.
- [www.energystar.gov/buildings](http://www.energystar.gov/buildings) -- Lots of resources from the ENERGY STAR program.



## Questions?

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