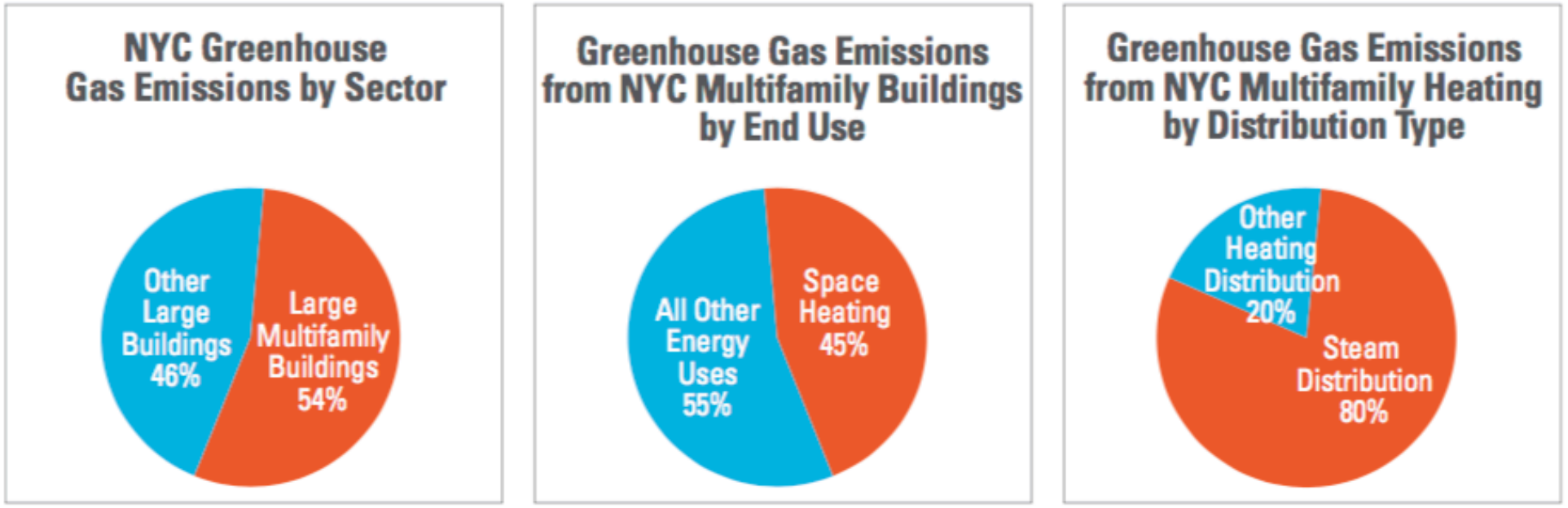
Greener, Greater Buildings Plan

1. PlaNYC
2. 80 x 50
3. Four laws created:
   - **Local Law 84:** Benchmarking
   - **Local Law 85:** NYC Energy Conservation Code
   - **Local Law 87:** Energy Audits & Retro-commissioning
   - **Local Law 88:** Lighting & Sub-metering

See http://nyc.gov/ggbp for more info

Results from NYC LL84 Data as of 2014

Figure 1: Greenhouse Gas Emissions in NYC Properties over 50,000 Sq. Ft.



Note: Multifamily buildings refers to those over 50,000 sq. ft. Sources: 2014 NYC Local Law 84 Benchmarking Report and 2013 LL87 data.

Local Law 87 (LL87)

- **What:** Mandates that buildings over 50,000 gross square feet undergo energy audit and retro-commissioning every 10 years.
- **How:** Quantifies a building's energy and water consumption and provides a master list of findings and deficiencies that must be resolved
- **Why:** Provide building owners a clear understanding of their building's performance.
- **When:** Submit the report once every 10 years by December 31 of the relevant year.
- **Or Else:** Failure to comply with LL87 subjects properties to fines of $3,000 the first year and $5,000 for each additional year. NYC DOB randomly reviews reports for compliance and quality.

Definition

RETRO-COMMISSIONING:

A systematic process of ***optimizing the operation and energy-efficiency of existing building systems through the identification and correction of deficiencies.***

Retro-commissioning includes calibration of sensors, adjustment of control settings and programs, cleaning of equipment, preventive maintenance, changes in operating practice and repair of defects.

Key Points

- Start the process early: ~ 18 months before the deadline
- Verify if the building is exempt from part or the entire law
- File for financial hardship or extension early if applicable
- Educate the client about the process and its value to them
- Make time to create a Current Facility Requirements document
- Review the O&M plans, procedures & budget
- Low bidders will be vetted by DOB – **Ranges $5,000-$50,000**
- Agent should show their methodology and savings calculations in the report

What are the "Base Building" systems?

- HVAC (Heating, Ventilation and Air Conditioning)
- Electrical and Lighting
- Domestic Hot & Cold Water
- Building Envelope
- Elevators, escalators, etc

- **Exclusions:**
  - Tenant Systems
  - Tenant Equipment or appliances
  - Drain-Waste-Vent system

Select a Qualified Retro-commissioning Agent

- The agent CANNOT be a member of the building staff.
- The agent performing or supervising the retro-commissioning must be either: an architect, engineer, Certified Refrigerating System Operating Engineer or Licensed High Pressure Boiler Operating Engineer OR be a certified commissioning professional who is also registered with NYC DOB as one of the following:

  - Certified Commissioning Professional (CCP)
  - Certified Building Commissioning Professional (CBCP)
  - Existing Building Commissioning Professional (EBCP)
  - Commissioning Process Management Professional (CPMP)
  - Accredited Commissioning Process Authority Professional (ACPAP)

- If the agent is not a registered, certified commissioning professional (on the list above), then an individual under the agent's direct supervision must be.

§28-308.3 Retro-commissioning required.

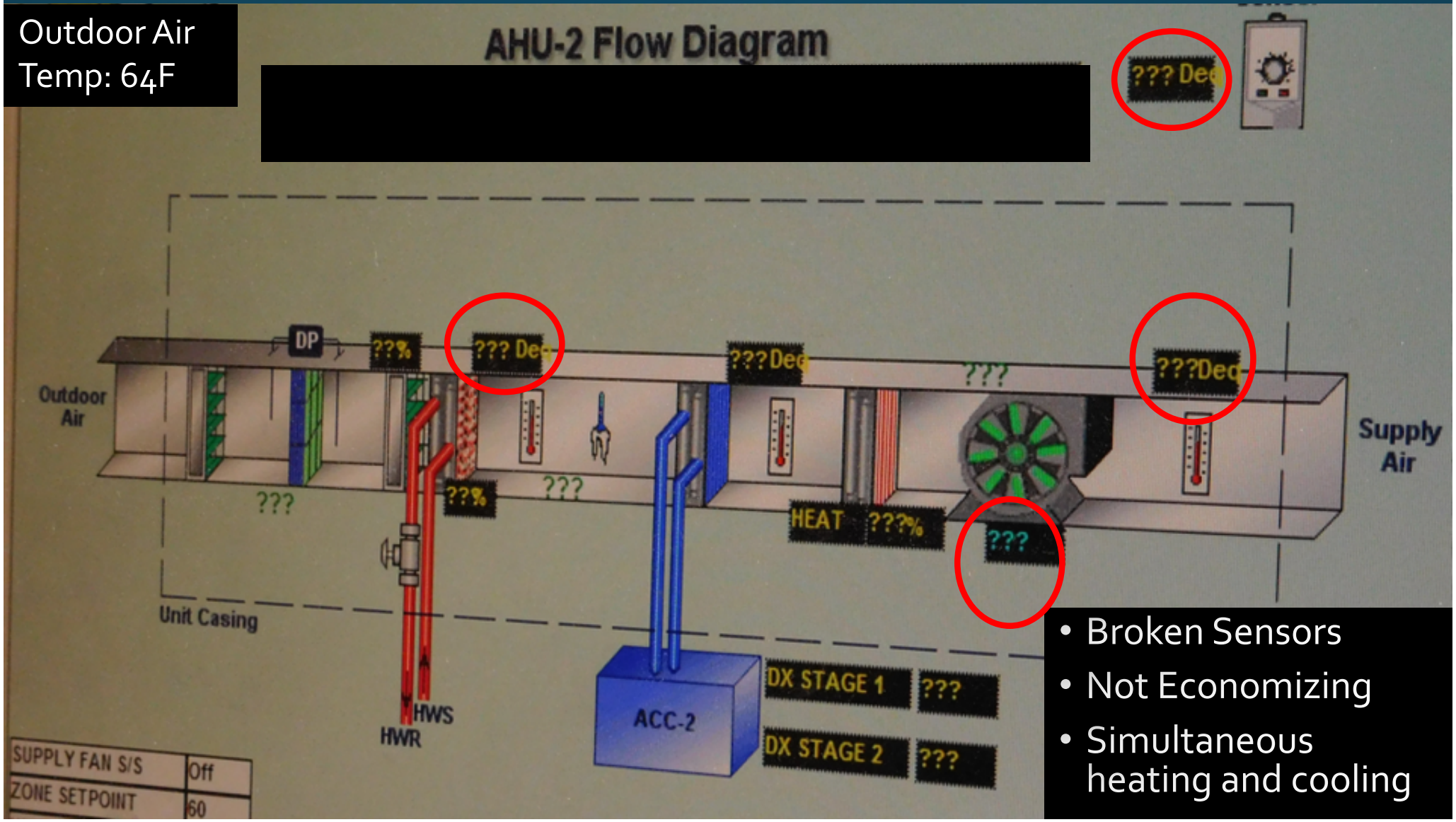
- *At a minimum, shall ensure that sufficient analysis, corrections and testing have been done so that the base building systems meet the following criteria demonstrating efficient operation:*
  1. Operating protocols, calibration, and sequencing
  2. Cleaning and repair
  3. Training documentation
- **Local Law 87 DOES require property owners to correct problems found during retro-commissioning.**

Sample Retro-commissioning DOB tool

Retro-Commissioning Measure List	Compliant	Notes	Explanation of Deficiency Corrected	Approach Taken to Comply
1. Operating protocols, calibration, and sequencing:				
1.1. HVAC temperature and humidity set points and setbacks are appropriate and operating schedules reflect major space occupancy patterns and the current facility requirements.	YES	Deficiency Observed and Corrected	Temperature setpoints and setbacks for all AHUs were adjusted to meet current facility requirements (CFR).	Implemented RCM#1: Temperature setpoints were noted in the appendix section of the retro-commissioning report based on the interviews with building maintenance staff, building occupants, space temperature measurements, functional testing on HVAC controls, and data logging. There was no BMS system. There were no humidity setpoints and setbacks required per CFR. Operating schedules reflected major space occupancy patterns and the CFR.
1.2. HVAC sensors are properly calibrated.	YES	Deficiency Observed and Corrected	1) Calibrated OAT, MAT, RAT and enthalpy sensors for all AHUs greater than 5,000 CFM. Replaced OAT, MAT and RAT sensors for AHU-3 because calibration was not possible 2) Calibrated OA temperature sensor serving boiler controller. 3) All temperature and pressure gauges associated with boilers were calibrated.	Implemented RCM#2: All critical sensors and sample set of monitoring sensors were tested for proper calibration. Gauge readings were compared against instrument measured readings and recommendation was made to calibrate/replace (if calibration is not possible) all monitoring sensors that were out of calibration by +/- 20% and all critical sensors that were out of calibration by +/- 10%.

Uninsulated Chilled Water Distribution

Air Handler Unit Flow Diagram:
Heating and Cooling Coil



- Broken Sensors
- Not Economizing
- Simultaneous heating and cooling

Questions?

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