LL97 Hospital Plant Quick Card: The 2030 Problem at a Glance

Condensed field reference translating New York City Local Law 97 emissions limits (1 RCNY 103-14), the 2030 cliff, penalty calculations ($268/ton), and fuel coefficient schedules into actionable hospital plant engineering metrics.

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1. THE ALLOWANCE CLIFF: HOSPITAL LIMITS (1 RCNY 103-14)

2024–2029 Statutory Limit

0.02381

tCO2e / sq ft / year ("Hospital: General Medical & Surgical"). Highest ceiling in the law; shared only with labs & data centers.

2030–2034 Statutory Limit

0.00734

tCO2e / sq ft / year. A steep **69.17% cut**. The clinical allowance concession completely expires at 2030.

Annual Excess Fine Rate

$268 / ton

Every metric ton of CO2e emitted above the facility's square-footage allowance is penalized annually until plant changes.

The 500,000-Square-Foot Benchmark: An allowance of **11,905 metric tons/year** collapses to **3,670 metric tons/year** on January 1, 2030. A hospital operating at today's limit that changes nothing carries **~8,235 tons of excess emissions**, producing an annual penalty of **$2.2 million every single year**.

2. FUEL EMISSIONS COEFFICIENTS (1 RCNY 103-14 SCHEDULE)

Purchased Fuel / Utility	2024–2029 Coefficient	2030–2034 Coefficient	2035–2039 Coefficient	2040–2049 Schedule	Plant Impact & Trajectory
Natural Gas (Firm/Interruptible)	0.00005311 t/kBtu	0.00005311 t/kBtu	0.00005311 t/kBtu	0.00005311 t/kBtu	**Fixed forever.** The law never forgives a gas molecule. Permanent 30-year exposure.
District Steam (Con Edison)	0.00004493 t/kBtu	0.00004320 t/kBtu	0.00003200 t/kBtu	0.00002500 t/kBtu	Charged on *delivered* steam. Declines gradually as utility decarbonizes supply.
Grid Electricity	0.000288962 t/kWh (~0.0000847 t/kBtu)	0.000145000 t/kWh (~0.0000425 t/kBtu)	0.000086700 t/kWh (~0.0000254 t/kBtu)	**0.000000000 t/kWh** Zero emissions	**Collapses by 50% in 2030**, drops further in 2035, reaches zero in 2040. The only input that cleans up automatically.

3. 1,000 MMBTU DELIVERED HEAT COMPARATOR ACROSS COMPLIANCE PERIODS

Heating Technology	Energy Input Required	2024–2029 CO2e	2030–2034 CO2e	2035–2039 CO2e	2040–2049 CO2e
On-Site Gas Boiler (80% seasonal efficiency)	1,250 MMBtu fuel burned	66.4 tons	66.4 tons	66.4 tons	**66.4 tons**
Purchased District Steam (100% delivered heat)	1,000 MMBtu steam metered	44.9 tons	43.2 tons	32.0 tons	**25.0 tons**
Heat Recovery Chiller / Heat Pump (COP = 3.0)	97,700 kWh grid power	28.2 tons	14.2 tons	8.5 tons	**0.0 tons**

The Crossover Rule (2030): From 2030 onward, a kBtu of grid electricity counts for less CO2e than a kBtu of steam or natural gas. By 2040, electric heat generates zero emissions under the law.

4. INFECTION CONTROL VS. PLANT DIALS: ASHRAE 170 TABLE 7.1 BASELINE

Ventilation is the statutory floor the hospital's emissions number stands on. Minimum air change rates and pressure relationships are clinical requirements mandated by infection control, not negotiable comfort settings.

Clinical Space Classification	Total ACH (Min.)	Outdoor Air ACH (Min.)	Pressure Relationship	Exhaust Destination Requirement
Operating Room (OR)	20 total ACH	4 OA ACH	Positive (+) to adjacent	Recirculating or exhaust permitted
Airborne Infection Isolation (AIIR)	12 total ACH	2 OA ACH	Negative (−) to corridor	100% direct outdoor exhaust (no recirc)
Protective Environment (PE)	12 total ACH	2 OA ACH	Positive (+) to corridor	Direct or HEPA filtered exhaust
Standard Patient Room	4 total ACH	2 OA ACH	Neutral / designated	General hospital return / exhaust

Legitimate Dial 1: Unoccupied OR Setback

Standard 170 permits OR airflow turndown when the room is unoccupied, **provided positive pressure relationship is continuously maintained**. Cuts fan power (cubic reduction $P \propto Q^3$) and conditioning loads during off-hours.

Legitimate Dial 2: Inactive AIIR Turndown

An Airborne Infection Isolation Room not actively housing an infectious patient may drop from **12 to 6 total ACH**, provided negative pressure to the corridor is continuously held and verified.

5. CORE PLANT DECARBONIZATION RULES

1. The Steam-to-Gas Boiler Trap

Converting from district steam to on-site gas boilers **worsens** emissions: 44.9 tCO2e (steam) vs. 66.4 tCO2e (gas boiler at 80% eff) per 1,000 MMBtu delivered heat. Gas is charged on fuel burned, including all combustion/flue losses.

2. Heat Recovery Chillers (HRC) on Reheat

Hospitals cool air below dew point to dehumidify, then reheat it. Heat recovery chillers harvest 90–140°F condenser heat for reheat coils, preheat, and DHW. Combined COP reaches **~7.0**, replacing boiler fuel with heat already made.

3. Exhaust Air Classification & Recovery

Clinical/isolation exhaust requires **run-around coil loops or sealed heat pipes** (closed fluid circuits; zero cross-contamination). Rotating enthalpy wheels are excluded from AIIR/labs due to carryover leakage.

4. Cooling Plant & RCx Value Right Now

Electric kWh saved today is saved at the highest emissions coefficient (0.000288962 t/kWh). High-efficiency chillers, VSD pumps, tower resets, fixing failed-open steam traps, and clearing BAS overrides retire $268/ton liability immediately.

6. PLANT ENGINEERING ORDER OF OPERATIONS

Step 1: Recover internal waste heat first — Condenser heat and exhaust recovery carry *zero fuel emissions coefficient*.
Step 2: Electrify remaining thermal loads — Grid electricity collapses by 50% at 2030 and falls to zero in the 2040s.
Step 3: Treat fossil fuel plant as a 30-year liability — Natural gas carries a fixed penalty schedule that never forgives.