INDEPENDENT INTERVENOR EXHIBIT 4

LL97 ELECTRIFICATION INCREASES EMISSIONS AND COSTS

This exhibit documents the Independent Intervenors claim that the mandates for building electrification in the CLCPA and Local Law 97[1] (LL97) will increase emissions for many years. The numbers underpinning Local Law 97 are underestimating electric grid emissions by 36% at a minimum. By making the electric utility system look "greener" they are providing a false basis for the entire law. This is also a problem with the CLCPA implementation plan. LL97 establishes building GHG emission limits. The GHG coefficient of energy consumption described in Figure 1 uses incorrect emissions numbers to calculate the penalties and as a basis for electric grid efficiency. In clause 1 they are using 0.000288962 tCO2e per KWh (metric tons/Kwh). That value equals 0.288962 tCO2e per MWh. The basis for utility system emissions in LL97 to calculate penalties for non-compliance is 0.288962 x 2203 pounds per metric ton = 636.5 pounds per MWh. However, US EPA eGrid 2023 data[2] highlighted in yellow in the NYCW Line (NY City-Westchester) notes that the actual emissions are 865 pounds per MWh in downstate NY, 36% higher than what the LL97 is using to calculate their policy values and the associated penalties.

[1] https://www1.nyc.gov/assets/buildings/local_laws/ll97of2019.pdf

[2] https://pragmaticenvironmentalistofnewyork.wordpress.com/wp-content/uploads/2025/06/2023-epa-emissions-summary-data-released-1-2025.pdf

Figure 1: Section 28-320.3.1.1 of LL97[3]

**Section 28-320.3.1 was added by: Local Law 97 of 2019. This law has an effective date of November 15, 2019.*

*****§28-320.3.1.1 Greenhouse gas coefficient of energy consumption for calendar years 2024 through 2029.** The annual building emissions of a covered building in accordance with this section, greenhouse gas emissions shall be calculated as follows for calendar years 2024 through 2029:

1. Utility electricity consumed on the premises of a covered building that is delivered to the building via the electric grid shall be calculated as generating 0.000288962 tCO_2e per kilowatt hour or, at the owner's option, shall be calculated based on time of use in accordance with referenced emissions factors promulgated by rules of the department. The department, in consultation with the office of long term planning and sustainability, shall promulgate rules governing the calculation of greenhouse gas emissions for campus-style electric systems that share on-site generation but make use of the utility distribution system and for buildings that are not connected to the utility distribution system.
2. Natural gas combusted on the premises of a covered building shall be calculated as generating 0.00005311 tCO_2e per kbtu.
3. #2 fuel oil combusted on the premises of a covered building shall be calculated as generating 0.00007421 tCO_2e per kbtu.
4. #4 fuel oil combusted on the premises of a covered building shall be calculated as generating 0.00007529 tCO_2e per kbtu.
5. District steam consumed on the premises of a covered building shall be calculated as generating 0.00004493tCO_2e per kbtu.
6. The amount of greenhouse gas emissions attributable to natural gas powered fuel cells shall be credited compared to the electricity grid marginal emissions factor that will be determined by the commissioner and promulgated into rules of the department.

   Exception: Natural gas powered fuel cells that commence operation prior to the later of January 1, 2023 or the promulgation of such rules, shall be credited compared to the electricity grid marginal emissions factor published in the most recent New York state energy research and development authority renewable energy standard program impact evaluation and clean energy standard triennial review; or a successor to such report issued by the New York state energy research and development authority.

There is another problem with LL97 future projections. The 636.5 pounds per MWh used in the LL97 document magically drops to 319 pounds/MWh in 2030 - 2034, half of the 2024 value in Section 28-320.3.1.2 of LL97[4]. The presumption that emissions on the electric system will be further halved is not consistent with the observed implementation of lower emitting resources. They are starting from numbers that err in their favor by 36% and it just gets worse from there.

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3 https://www.nyc.gov/assets/buildings/apps/pdf_viewer/viewer.html?file=2014CC_AC_Chapter3_Maintenance_of_Buildings.pdf&section=conscode_2014

4 https://www.nyc.gov/assets/buildings/apps/pdf_viewer/viewer.html?file=2014CC_AC_Chapter3_Maintenance_of_Buildings.pdf&section=conscode_2014

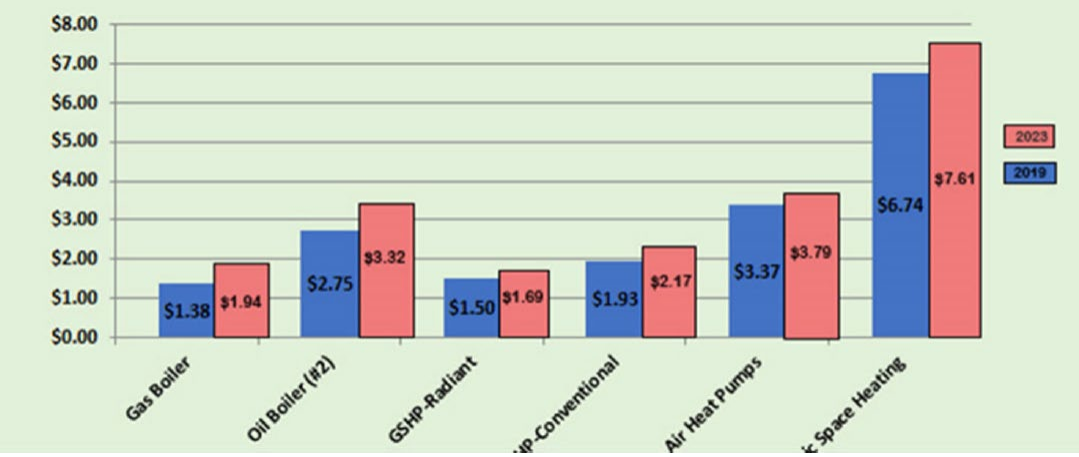
The numbers used to calculate the district steam emissions in the document are just as big of a fantasy. When you can easily find such flagrant errors in major parts of the document, nothing that is contained in it can be trusted. Everything has been skewed to justify the politically correct narrative. This is going to do enormous damage to the city and its residents.

An article[5] by Samantha Maldonado in The City documents the conversion of a 20-unit oil heated Brooklyn co-op to air source heat pumps. The Brooklyn co-op electrification used NYSERDA Grants to offset the cost of the conversion. Compared to oil heat, air source heat pumps (ASHPs) aren't that much more costly to operate. $3.79 per therm compared to $3.32 per therm and if the oil burner was older, it may have been less efficient and more expensive to operate. In addition, anything lost on the heating side, could be made up for in reduced AC costs during the summer from the newer equipment. From a cost perspective, the conversion may have been cost-effective, especially if they also added insulation while they were renovating.

Richard Ellenbogen developed the following charts for heating costs and comparative emissions for NYSERDA and the PSC in 2019 and updated in 2023. When those charts were shown to NYSERDA in 2019, they begrudgingly admitted that the numbers were correct. Figure 2 compares costs for six technologies: gas boiler, oil boiler (#2), ground-source heat pump - radiant, ground-source heat pump – conventional, air source heat pump, and electric space heating (and cooking). The blue bars were the comparative costs in 2019 and the pink ones are from 2023 in the NY Metro Area.

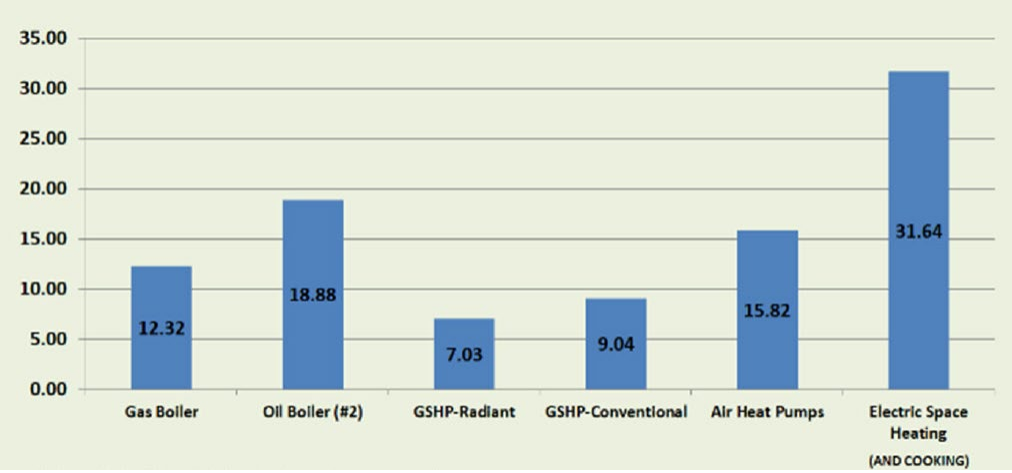
[5] https://www.thecity.nyc/2024/04/25/electric-heating-housing-brooklyn-heights/

Figure 2: Cost to deliver one therm of energy at the customer premises using various heating methods in the New York City metropolitan area



Air source heat pumps (ASHPs) are improvements over oil-fired boilers. If you compare ASHPs Carbon footprint to Oil Heat (Figure 3), the ASHPs are about 16% better than an oil furnace. They also have no particulate emissions and NOx emissions which are better controlled at the generating plants.

Figure 3: Pounds of CO2 emitted producing one therm of energy at the customer premises for various heating methods in the New York City metropolitan area



However, if you compare Air Source Heat pumps to gas heat conversions do not make sense, both in the cost to operate which is double and with the higher system-wide holistic

carbon footprint. The emissions are moved from the building to fossil-fired generating plants, and they are increased,

Moldonado's article notes that "The saga of a Brooklyn Heights co-op building's switching from oil to electric heat tells both a success story and a cautionary tale about what it takes to reinvent a century-old residence for a greener new era. The article does not recognize the scale of the conversion both in terms of the number of facilities and the changes in the technology. Engineers understand the inertia of those systems and the difficulties involved with rapid changes. When you start requiring changes for large systems, the dynamics are entirely different than for just a few locations.

The example of a single 20 unit building does not translate to converting the entire city. The quantity of the replacement technology be it ground-source or ais-source heat pumps will stretch already broken supply chains to the limit. It took one relatively small building four years to convert. Moldonado describes the process:

> "It's been a long process," said DeFehr, whose windows were open to provide relief from the stuffy heat she couldn't regulate. The work at the Hicks Street building shows how transitioning to electric heating from fossil fuels can require considerable time, financial resources and technical expertise. The daunting renovation is one that thousands of other buildings in the city may be considering as a deadline draws closer to comply with a city climate rule, known as Local Law 97.

The lede for the article states: "Even with rebates and resident expertise, the price tag is up to $40,000 per apartment. Shareholders say it'll be worth it as new mandates loom." At that rate,

LL97 and CLCPA implementation will cost over $100 billion. The Independent Intervenors can clearly document that will be worth the investment.

One of the issues is that it was $40,000 per unit with rebates. Con Ed and the state don't have the money to issue rebates for everyone. The heat pump rebate program in Westchester ran out of money two years early. The after rebate $40,000 cost results in the following figures at 6% interest over 30 years. An extra $2900 per year in housing costs. For many NY City residents, that could break their budgets. 33% of NY City residents already pay 50% of their salaries for rent. Where will an extra $240 per month come from?

Monthly payment: $239.82

Total interest paid: $46,335.28

Total to be repaid: $86,335.28

Number of payments: 360

Estimated payoff: April 2054

Effective annual percent: 6.17%

Also, who is paying these rebates? The money is coming from somewhere and it's the taxpayers or the other ratepayers.

There is another overarching issue. It is not just the cost of the apartment conversions themselves. Con Ed had to upgrade the building service. That's not a major issue if you are only looking at one building but LL97 doesn't look at one building. It looks at all the buildings. Con Ed has not provided an estimate of the total expected costs to upgrade the entire system to meet the electrification mandates. Con Ed's own documents as part of this rate case in EIOP-7 clearly show major issues with material shortages as well as other logistic issues and the process is only a couple of years old as documented below.

Richard Ellenbogen's house was built 20 years ago to be almost all electric uses the GSHP-Radiant numbers on the charts above. It also has a data collection system that monitors all the parameters in the entire house. On certain cold evenings when the electric car is charging, the power meter will hit over 33,000 watts and the heat pump system could be the most efficient one in NY State. That system could not be built today but it was legal in 2003 when the home was built. Air source heat pumps will use over twice as much energy as the ground source heat pumps there. There's a 150 KVA transformer on the pole across the street from the house, which is relatively large for a residential neighborhood in Westchester. Five houses like that one would blow up the transformer. Three houses like that one with ASHP's would blow up the transformer. The point is that one house or one building is not a problem. It's the extrapolation that makes the entire law untenable.

Further, as an experiment this past winter, the GSHP system was turned off and the house ran using two backup high efficiency natural gas boilers using the identical hydronic water system that the heat pumps use. It is an "apples to apples" comparison. Using the boilers, the Utility bill was $2000 lower this past winter ('24 – '25) when compared to using the heat pumps the prior winter ('23-'24), despite the fact that utility rates are now higher than last year and this past winter was 120-degree days colder than the prior year. Those that claim that heat pumps of any type will lower heating bills have never done the math. As downstate residents are already suffering with some of the highest utility bills in the nation, serious thought must be devoted to this process. Between the higher utility bills and the higher holistic carbon footprint from electric heat on the downstate system, what benefit does building electrification actually have on the downstate utility system?

Confirming the above is information contained within Con Ed's own testimony which can be found in EIOP-7, DMM Document 65. Starting on page 73 of that document is a discussion of the Corona No 1 to Hillside No. 1 Transfer. Beyond the $860 million cost of the project are the following comments. As is made clear by the caption titled "Project Relationships" from page 79, copied below, the $860 million is only the first piece of a much larger project. On page 77 appears the following with the important sentence highlighted:

> An overload in Corona 1 is predicted to occur. **Many of Con Edison's Brooklyn/Queens substations are near full capacity and do not offer the feasibility of load transfer. In the event the area station overloads, load shedding may be required during peak conditions which would cause thousands of customers to encounter service outages.**
>
> Without pursuing the project, the Company networks will encounter the potential inability of maintaining reliable system power flow controls, system reliability and resiliency concerns and/or possible customer outages for an extended period during peak load condition.
>
> Additionally, should the de-load of Corona 1 be deemed necessary, and no action has been pursued, there may not be sufficient time available to de-load the Corona 1 via the split of the Flushing Network.
>
> Risk 4: Delays due resource/support coordination. There are a large number of projects to expand the electric distribution system that may strain existing resources.
>
> Risk 5: Material Availability Issues

Risk 6: One major risk is for load to increase faster than forecasted which will cause load to exceed equipment ratings before completion of projects to de-load such equipment.

Project Relationships (if applicable)

As described in the Work Description section above, this project is only one part of the work needed to transfer load from the Corona No. 1 Area Substation and relieve the potential station overload in 2033. To make the load transfer described above, a new Area Substation must also be constructed, the Hillside station. These projects will be closely coordinated to ensure that the overall load relief solution is in place by 2033.

In the above comments, Con Ed is acknowledging that the system is already inadequate for the existing electric load and furthermore, making the improvements in a timely fashion may be impacted by material shortages. It is also highly likely that based upon the dates of these documents, steel and aluminum tariffs were not figured into the costs so they will likely be substantially higher than what has been presented. Furthermore, if Con Ed must upgrade the entire system with all of the feeders to support increased electrification in all of these buildings, the material shortages will become even more acute.

A second example appears on pdf page 67 of the same document and is related to the Cedar Street Substation. New Rochelle has experienced extraordinary growth of late with approximately 9000 units of additional housing stock added in the past eight years. While that would increase electric load, the issue was compounded by the gas moratorium between 2020 – 2023 which led to several buildings installing electric heating systems resulting in an even greater system load. On page 68 of the same document is the following statement:

> Based on forecasted load growth for Washington Street Area Substation, the station would have its station capability surpassed in 2033. With "just-in-time" planning, temporary emergency load transfers (1-Hour Capability) for 2033 – 2034 would be utilized until exhausted in 2035 when a 50 MW load transfer is required to provide load relief. However, probabilistic assessment identified Washington Street Area Substation to have an elevated risk of customer interruption as it approaches its substation capability. For this reason, the project timeline has been risk adjusted at Washington Street Area Substation from 2035 to 2031.

Even beyond all of the above, as part of 15-E-0302, the Public Service Commission has acknowledged that with the 2030 deadline just 4-1/2 years away, the entire NY State System is only 46.1% renewable and that share is expected to drop to 44.4% by 2030 because of load growth. Almost the entirety of the renewable energy is upstate and with recent difficulties in building transmission infrastructure, that renewable energy may be difficult to transmit downstate, confirming Lindsay Anderson's warnings. It also calls into question Local Law 97's claim of a 50% reduction in utility system emissions in 2030.

Between the previously explained enormously high costs of building electrification, the shoddy math and science used to support it, the energy shortages documented by the NYISO and the PSC, the doubling of heating bills caused by electrification, and Con Ed's documented difficulties with expanding the system quickly enough to support it along with exorbitant rate increases incurred for that purpose, the question has to be asked, "Why the heck are we doing it for a potential upside of a 0.0000075 degree-C drop in global temperature?"