

## Lipa hearing

Ron Leonard testifying for the [RenewableEnergyCoalition.org](https://renewableenergycoalition.org) Founder 2020. Organizer/founder of NYS solar energy industries association in 1994. I feel I am qualified to give expert testimony and access to resources due to my 50 years of experience, starting in NYS in the environment and founder of NYS first large solar thermal manufacturer Bio-Energy Systems, Inc. in 1976 which went public as BESICORP in 1981.

We were also responsible for the creation of IPPNY as a company and later the individuals / principals were able to place or provide access to capital for over 2 GW of power plants in NYS starting in the late '80's (including the power plant in Yapank- **Caithness Long Island Energy Center** is a 350 [MW](#)). Our other extended team member from Boundless energy was responsible for the LI to NJ subsea power cable. BESICORP expanded its manufacturing and national distribution capacity acquiring the company SunWize in 1992. We were the first to manufacture Photovoltaic solar panels in Kingston NY in volume and were (according to NYSERDA) the largest solar distributor in the US before we sold the company in the early 2000's.

The following is testimony recently in Nassau county: Thomas Falocone CEO- LIPA since 2016:

*Please excuse any computer transcription errors.* Now with PSEG that PSEG LI contract expires on December 31, 2025 so it's a little over two years from now and that means that we have to decide on a path forward it in and move expeditiously so that transition whether it occurs to LIPA management or whether we still like other management providers through a competitive bidding process that transitions already begun we've anticipated it when we negotiate a contract with the SAG the longest lead time transition activity is the separation of IT systems from PSEG Newark operations, most of the major all the major systems and support with operations are already separate. Some of the back office systems I've been identified and at the board passed a plan to separate those systems through the end of 2024 so that has begun And other significant tasks include selecting that management provider with the live, or somebody else augmenting that management team transitioning the 2,600 employees (now) with LIPA to the new provider, contracting for goods and services needed after a PSEG contract expires, and most importantly proactively communicating with the customers about the change this going to happen, and each of those begins with deciding on what the future holds so until the state New York is Otherwise, LIPA will plan to rebuild the contract starting early next year for legislature in the governor decide otherwise, we will probably let plans about the process out it does need to begin so that we have time to market to all those other providers to negotiate with those multiple providers to see the labor board approval to the sink, the state controllers approval and then to proceed with all those transition activities in the two years of Romain so time is of the essence and we are at the fork in the road. The second topic I want to focus on was governance. It's covered extensively in your report.

It's also foundational to LIPA's future success for all the reasons mentioned the report describe LIPA's current governance model. We are five members are appointed by the governor and 4 for by the state legislature, which ever combination of board advisory or cause a regulatory structures that the legislature in the governor choose another number mention in the report the governance model ultimately needs to be responsive, timely, transparent and coherent, or describes the key roles of the board, and that includes establishing the strategic vision for life, and what we're trying to accomplish, making decisions very important decisions to balance cost and service quality. We can always hold cost down as long as don't care about quality but that the tough part is balancing how clean how reliable how customer first how affordable and that is a very difficult decision in the fundamental role of the board and then also hiring oversight of the CEO and in the management providers there is no one best governance model that insurance excess, but there are governance models that could result in duplicate rolls And responsibility or unnecessary conflict and complexity. Multiple overlapping bodies with similar responsibilities can frustrate customers with the lack of clarity and accountability. I'd like a hybrid management structure between LIPA and PSEG frustrates customers with the lack of clarity and accountability today so as you were born, The Legislatures, report notes extra layers of governance can be a concern for financial markets result in Lower credit ratings. They can be a hindrance to try to attract qualified people because people kind of wanna know where with the goal is and how to get there that's the fundamental roll the management, but we need to guidance. Let me be clear though and saying that no it is not to say that the board cannot or should not be complemented by advisory regulatory structures that is certainly within the parameters of you to decide the right format to make those difficult cost and quality service and strategic a password, strategic decision and whatever you believe is proper and best we're going to follow it those types of advisory structures are common in public power utilities, but as your report notes, the ultimate authority and the responsibility to the customer has to rely in the board someone has to be in charge of deciding Think the draft report to show up very well. The Report says the Citizen serve by the public party LIPA must know then understand that the board has ultimate authority. Otherwise he'll be confusion and frustration is where citizens input can be most I'm impactful, and when there are multiple layers of authority, the decision making process can be drawn out the detriment of the utility incidents a server so in some whatever you choose whatever you think is right, it just needs to be coherent. Have to be someplace you go to to get an answer and that we can have them move forward with the final thing I wanted to talk about is employees, the IBEW workers, and also the nonmembers of IbeW the nonunion members that are also about thousand those labor agrees with the commission, and the grant report that is critical Importance at the current workforce and the establish relationship with local 1049 be maintained we are proud to have a strong constructive relationship with IbeW to put the safety and welfare of the employees serving our customers first in our thoughts are they are the foundation everything we do there are approximately 2,600 Servco employees. This is the permanent workforce they have been with us through Lilco Keyspan National, Grid, PSE&G and they will be there forever right so this is the group

that we care about and they should be held harmless in any potential management transition in 2025 as they were in prior management transitions. This is the third time we've done this 1998 was the transition 2014 was a transition. This is a policy. We can all agree on the commission great report to three models the MTA model, the LLC model and the professional employer organization model in our review that the draft report LLC model was referred to as the LLC model best preserves the existing collectively, bargain, benefit plans, and rights of the Servco employees. It's consistent with the public policy pursued by the state since the creation of life at 1986 it recognizes the importance of maintaining promises to the workforce. Notably, the original labor act exempted all life employees from the tailor rack, the public employment law, and that should be preserved and private sector right should be preserved and the right to maintain in LIPA benefits and retirement plans should be preserved. We concur with the draft report Conclusion that NLRB jurisdiction would likely be retained under the LLC model. It is helpful for a number of factors, including the existing labor contract, and Ibeu relationship, or recognized by the NLRB will be maintained through the transfer the Servco workforce that life engages in significant interstate commerce. I also an important consideration too, and I'll Arby's considerations, and we agree with a recommendation to grab for port of creating an agreement between Servco labor and local 1049 record or....., understanding and interest in the status quo. we support amending the way back to maintain existing benefit plans. They extend the Taylor law exemption applies to wipe employees to the circle employees and these are all valuable strategies to maintaining NLRB jurisdiction. We endorse those strategies so with that I look forward to continue discussion with the commission, the legislature in the governor as we all work towards a customer first utility For all of your constituents and our customers and happy to take your question. Thank you for about two questions, first of June agree with the cost saving estimates that have been reported yes I am in the commission graph report and then subsequently the report released yesterday which was going through coach both our original estimates and then also a conservative case with the report yesterday that it's more likely to come out closer to our estimate the conservative case I'm having to go through the fox say hello to you can you go through your estimate? Yeah it's about \$75 million a year plus minus a little bit and then what would you please shut off so if this is a very simple contract analyze in most as you're the commission report released yesterday articulates the most important part of it is we pay roughly \$80 million from 19 people and you could replace those people for less than 4 million and there in lives the savings and then the rest is basically just pluses and minuses for that and the report and. **Editorial**, Basically 4 LIPA employees replace 19 PSEGLI staff?

**One of the reason I include the testimony of LIPA's CEO is this section:** We can always hold cost down as long as don't care about quality but that the tough part is balancing how clean how reliable how customer first how affordable and that is a very difficult decision in the fundamental role of the board and then also hiring oversight of the CEO and in the management providers there is no one best governance model that insurance excess, but there are governance models that could result in

duplicate rolls And responsibility or unnecessary conflict and complexity. Multiple overlapping bodies with similar responsibilities can frustrate customers with the lack of clarity and accountability.

If you would forgive the editorial comment all of the above, not just this section, it is delving in the tall grass around the edges of the issues. Possibly where the lions wait to pounce?

No fault of Tom's but the legislature might be faced with choices that have a false equivalency. The above might be one? You can choose option E, 100% renewable energy and we can show you how.

I can definitely tell you ratepayers deserve to have the best of all worlds now and we can prove that possible by a quick grid study. That study I recommended in a public board meeting years ago before covid to LIPA. Yes quality and lower cost are available with the added advantage of no pollution and better efficiency/reliability. Your conclusion that doing the same thing again and again, over the decades, and expecting different results for ratepayers (is Einstein definition of insanity). I applaud your action now based on Gov. Cuomo's statement of I'm as serious as a heart attack in considering a alternative to the present situation, fundamental reform is necessary to achieve just results and your option, **Environment** choice, is public power with a board that is responsible to the local needs of LI fits the bill? Let's accomplish something in finality for rate payer relief and stop paying for fossil fuel game of energy going up the smoke stack inefficiently?

Who was the most hated corporation in the nation after October 2012? LILCO. With that in mind after Sandy's devastation on LI. Let's look back at history and remember how LILCO/LIPA ratepayers were saddled with enormous debt, had unreliable costly power for decades- without recourse and options. Their original deal to get from under crushing debt from a costly and dangerous nuclear power plant fostered upon ratepayers by a clueless LILCO board, was negotiated by a Republican governor to win the support of the outgoing for-profit utility. Enters the new company 1985.

That (bad choice) to quote The NY Times " When 2.7 million Long Islanders wake up, way back then, and turn on their lights, toasters and blow-dryers, it will be the last time they do so as customers of the Long Island Lighting Company.

Finally -- after three decades of turmoil over Lilco's abandoned nuclear power plant at Shoreham, public resentment over soaring electricity bills, repeated state attempts to take over the utility -- a new era in electrical power is dawning on Long Island.'" **Editorial Did it really?**

Fancy that first promise of fundamental reform which included a big extra challenge: ratepayers still had to pick up the tab for a dead nuclear power plant that never worked. It simply should never have been built in the first place it is/was a stranded asset that serves no purpose. This constituted a major failure of governance (hatched in 1966 by the Long Island Lighting Company (LILCo)) that has



to be avoided in the future. The original cost was estimated to be about \$65 million.

**Early on**, the capacity for the Shoreham Nuclear Power Plant was increased from 540 to 820 [megawatts](#)

- The increase in power output also increased the price to \$217 million and pushed the completion of the project to 1975
- By 1979, cost overruns and delays pushed the price tag to \$1.5 billion and an opening date of 1981
- Construction on the plant was completed in 1985 and ran at low power for testing purposes
- The final cost is estimated at \$5.5 billion
- The plant never generated any power for Long Island and the debt still hangs on ratepayers of LI

Yet even with this massive extra cost, the new utility (LIPA) [reduced rates by 20% on day one](#). This in May 1986 by restructuring debt, not taking the loss. So ratepayers are still obliged to pay \$400 million more in 2023. Now we still face the new challenge of rate increases yearly, poor service, punishing new rate structures (Demand Rates) a solar tax & the dirty power provided by outdated power plants. PSEGLI claims a 5% rate increase other sources say something different? What escape do residential commercial ratepayers have? Clean cheap reliable, Solar Energy and hopefully a municipally run local utility not lauded over by a monopoly!

The good news is that present (and former industry expert New Yorkers) have a proven model to give relief to ratepayers with clean power! The first action to scientifically prove savings for ratepayers is a grid study which would follow those done on the MISO and even some more recently on Island communities with fantastic results. The group is Clean Power Research.

Carl Rabago' existing study model shows residential solar is a big \$ contributor to the NYS grid just like in CA <https://vimeo.com/578217779> these systems on roofs provide savings to all ratepayers regulate less of whose roof they're located on. Let's continue on with that plans with rebates here following the rebate value in NYC.

A **Breakthrough**, the work of Marc Perez, [who notes in a published paper](#) that the price of solar has dropped so much that one could overbuild the system to provide enough energy, even on cloudy days. Additional news since Marc wrote this, the worldwide price of solar dropped again.

"In the past decade, solar module prices plummeted more than 90%, according to energy research firm Wood Mackenzie. Meanwhile, the cost to build conventional plants such as coal rose by 11%. Solar panels have become so cheap that the true cost of electricity is shifting from solar arrays themselves to the steel and land needed to house them. ...The low cost overcame renewables' traditional weakness: the intermittency of supply if the sun or wind fails to appear. Oversizing a

system by a factor of 2-3, they found, was optimal."

<https://www.cesa.org/event/using-overbuilding-curtailment-to-achieve-100-clean-electricity/>

As part of the [Minnesota Solar Pathways](#) project, **Clean Power Research** analyzed alternative pathways to achieving 100% renewable energy production across the Midcontinent Independent System Operator (MISO) service territory. The resulting [Solar Potential Analysis—MISO Region](#) showed that overbuilding plus curtailment of PV and wind resources was the most cost-effective implementation strategy. Overbuilding + curtailment acts as "implicit storage" enabling these resources to deliver 100%-ready power 24/365 without fail while using only a small affordable fraction of the seasonal storage reserves that would be required otherwise. This is truly a path forward that offers considerable immediate savings & reliability.

Historically the LI grid has been saddled with antique power plants. Do you use your 50 year old car as a daily driver (good luck with that; pollution, unreliable, failures- sound familiar). Look at 2009 the power plant in Yaphank was funded and built. This was the first "modern" power plant built in the 30 years before that. Yes some of those antiques are still wheezing out power today here. Some of my friends were the capital access getting that Yaphank power plant built. Sadly there was not enough MW manufacturing back then to replace big central power with clean renewable energy.

The world has changed though since then. Back in 2009 the US was the major producer of PV panels. Soon in the latter part of that year China supplanted the US as the worlds major solar panel manufacturer. I saw this happening up close and personal at the beginning of the new decade when I personally toured most of the US manufacturing plants. China followed my touring a couple of years later... some say stealing the lead from us and never looking back? Now (finally) through federal legislation, the Infrastructure Restructuring Act, IRA funding is taking back solar manufacturing into the US.

Plants planned and under construction are going to allow our ability to manufacture clean power from the present 7GW to +60 GW of PV panels here in the US. We for the first time ever are predicted to install 32GW of solar panels on the US Grid in 2023. We can do this and to meet Greenhouse gas reduction requirements the US needs to install 60GW of solar panels yearly. With this USA manufacturing completed soon it is well within our capacity.

As an island Grid LI has the, other, obvious disadvantage of importing power at times of high usage or emergencies. Another associates company Boundless Power was the first to tackle ratepayers need to cheaper power here and more reliable power from elsewhere when an emergency occurs. By installing a subsea power cable from NJ directly to Long Island the contract executed allowing lower cost power to enter a previously isolated grid.

# Providing LIPA Access to Diverse, Reliable, Low Cost Power



This was the only completed merchant transmission project in the previous ten years that was completed on time and on budget. \$1.4 Billion (est.) in net benefits to LI ratepayers bills.



What is the new solution, simply stated clean reliable energy located in the Load pocket. Yes local high paying jobs and actual clean power on LI. As to those jobs the IRA federal & NYS legislation requires union or prevailing wages for those (typically over 1 MW) projects construction.

Well what about all that clean power from upstate NY? They have plenty of hydro, wind and large solar power to spare?

What ever there is there is can't move S. Easily. Because of a choke point moving power down state beyond Leeds NY substation in Green county.



Well what about that 90MW of offshore windmills we hear about? The latest news is despite Orsted (the first company to put a footing in the Atlantic off LI) buying out its partner company to proceed with their winning contract. The CEO just announces the possibility of having to withdraw from the wind business? <https://www.reuters.com/business/energy/orsted-ceo-says-abandoning-us-wind-projects-real-option-bloomberg-news-2023-09-05/>

Solar energy and other clean renewable energy is ready to step up and fill the void. LI has been the pioneer and the lead for solar in NYS. The first ever grid connected solar energy project on a roof was installed under the gov. Pataki administration in Greenport NY. The first ever US 1MW solar project (also the first large rooftop commercial solar system) was installed on Fowler industries roof on LI.

Where are we gonna put all this Solar energy? Good news again there is plenty of "bad land"- Roofs, right of ways, landfills / contaminated land, parking lots i.e., 22MW of solar carports were installed

over a decade ago on LI, & yes it's possible to actually site, limited solar projects, directly alongside crops in farm land that both increased crop production and guarantees the family farmer income yearly income, agrivoltaics.

We can produce clean energy where it's needed in the load pocket if you want to see what that looks like for you, look at the [NYSolarmap.com](https://www.nysolarmap.com), that shows 40% of NY existing solar is located on LI, 40% mentioned By Christopher Hann PSEG LI, in a Previous Suffolk hearing. And what solar would do for your house or building. LI has a proud history of success we need to continue this with public power and 100% renewable energy.

Mar 2022

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# New York Solar by the Numbers

3

**State Rank for Overall  
Solar Jobs**

Solar Foundation

3

**Percentage of State  
Electricity from Solar**

SEIA

10

**GW-dc Goal for 2030  
Distributed Solar**

New York State

557

**MW-dc Solar Capacity  
Installed in 2021**

NYSERDA

2040

**Goal Year for 100%  
Clean Energy**

New York State

3,322

**MW-dc Total Installed  
Solar Capacity**

NYSERDA

10,214

**Solar Workers in New  
York State**

Solar Foundation

11,650

**Solar Projects  
Completed in 2021**

NYSERDA

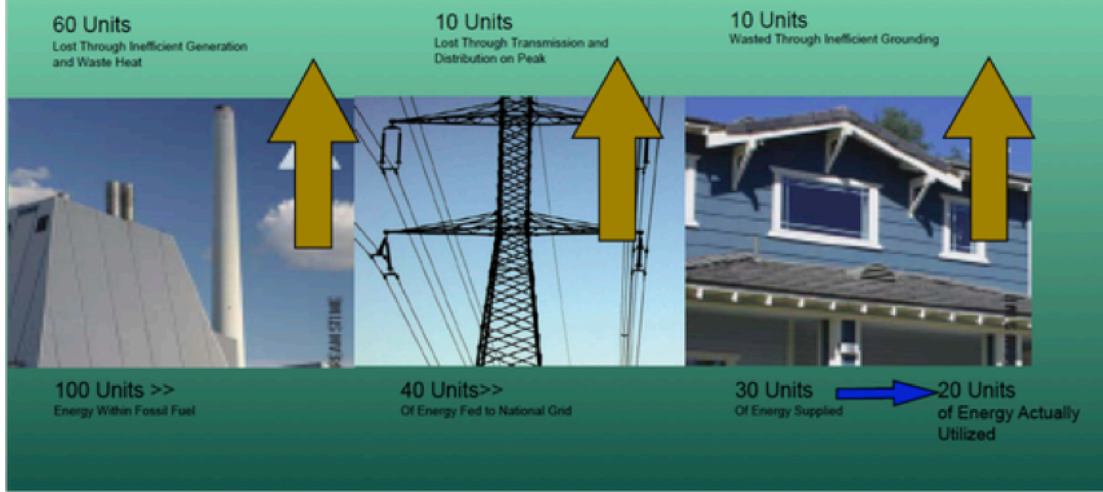
161,611

**Total NY Solar  
Installations**

NYSERDA

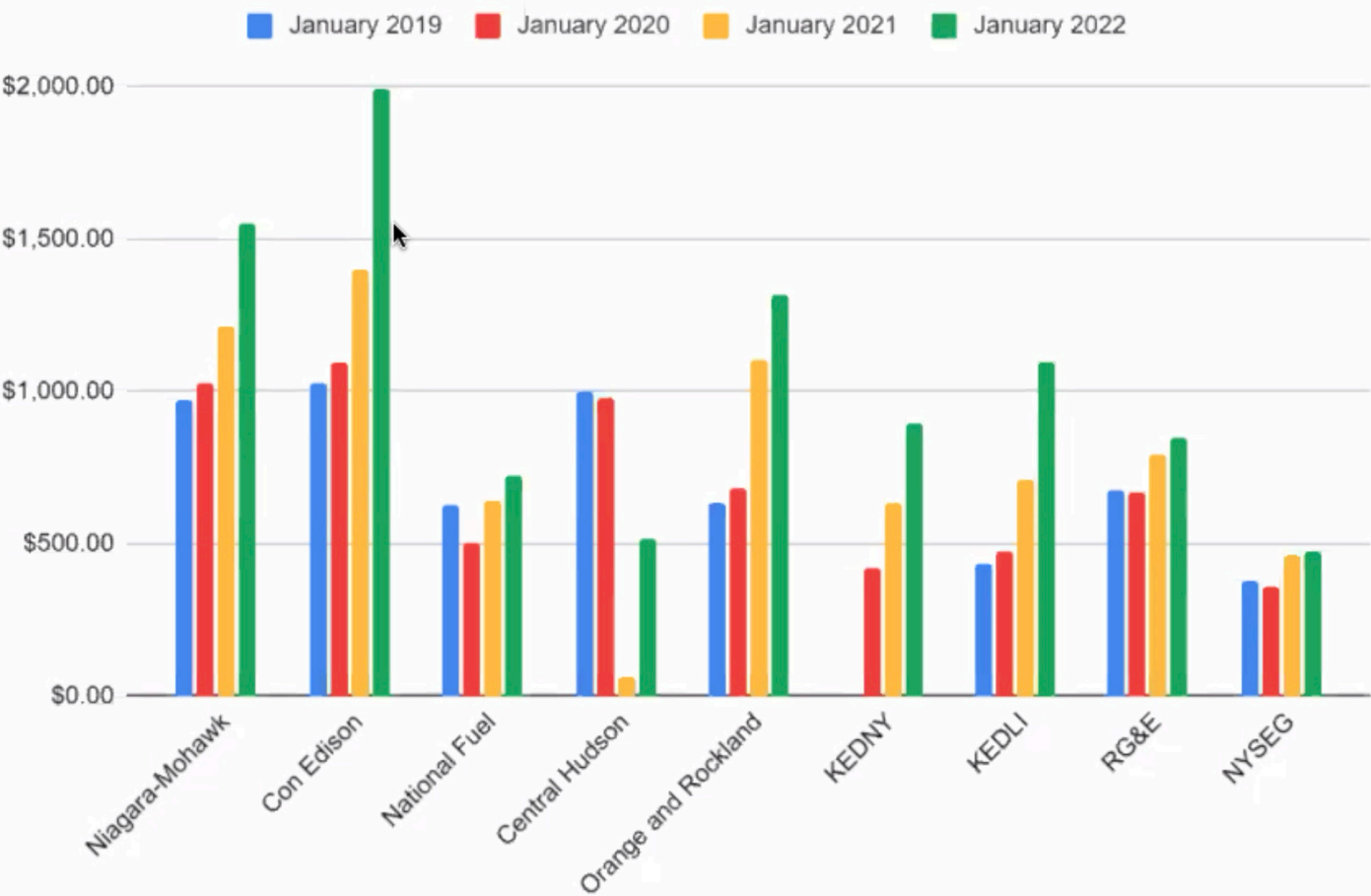
FERC says- Only 20% of the fossil energy results in electricity, 80% is lost in the production distribution process, this is unsustainable.

# Electric System Losses to Inefficiency



At the same time ratepayers are forced to pay more yearly for dirty expensive, unreliable power.

# Average energy debt per household in New York State 2019-2022





# Higher Energy Bills

- January, customers were hit with higher than expected bills. These bills may add to an energy burden that's already too high for many people.
- Con Edison saw average increases that were 24 percent for gas heating and 15 percent for electric heating.
- PSEG ratepayers on Long Island saw the price of electricity rise about 26% compared to February 2021.
- Central Hudson Gas & Electric Corp. says its customers in the Hudson Valley could see electric bills rise as much as 46% this winter.
- New York State Electric & Gas ratepayers have reported bills spiking 121 % higher than the month before.

## New York cannot continue failing to resolve this crisis any longer.

- The utilities and the Public Service Commission (PSC) have had more than a year and a half to work on a plan to address the mounting energy debt crisis.
- They have yet to offer solutions that would not put the burden of debt back onto ratepayers.
- To date, neither Governor Hochul nor the Public Service Commission have offered any real solutions for this ongoing crisis.

GOVERNOR KATHY HOCHUL



NEW YORK STATE OF OPPORTUNITY | Public Service Commission



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Chair and CEO



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Tracey A. Edwards



David J. Velenky



John B. Maggione

How much longer can NYS keep bailing out monopoly utility stockholders outrages electric price

increases because of the reliance of fossil fuel for electricity production?

In November 2021, the Biden-Harris Administration added 4.5 billion to the budget for the Low Income Home Energy Assistance Program (LIHEAP) to help families with their utility bills. The money, under the American Rescue Plan, is available until September 2022.

New York State is also offering assistance to people who require energy relief. The Office of Temporary and Disability Assistance (OTDA) [highlights several benefits](#) which low-income households and families can apply for.

Early on: According to the Public Service Commission, utility arrears have increased by over \$700 million since the start of the Covid-19 pandemic. This brings the total unpaid electric and gas bill to almost \$1.5 billion in New York. This is unsustainable NYS can't afford to pay utilities for bad decisions based on relying on dirty inefficient fossil fuels.

### **The solar #'s for 2020:**

The old statistics indicate that Long Islands \$1.5 billion solar business community still leads the state. But just barely, due to the hit the industry took from federal import duties imposed on Solar Panels. In 2023 the lead has shifted?

LIPA has procured 374 MWs of Clean Energy Standard resources through RFPs and feed-in tariffs, including:

- 108 MWs of solar projects that are currently operational;
- 90 MWs of solar projects under development;
- 130 MWs of offshore wind under development; and
- 46 MWs of fuel cells under development.

We see a lot of possible projects occurring this year due to companies securing ITC project compliance allowing them taking the full 30% federal tax credits for something built now.

The [NYSolarmap.com](https://nysolarmap.com) tells us there is 207.65MW of solar in Suffolk county and 107.58MW in Nassau county now.

The looming closure of the fossil fueled inefficient polluting behemoths on LI should spur the need for fundamental reform of LIPA with public power and a rapid conversion to 100% renewable energy now.

Back in 2020 we were warned- The Long Island Power Authority released a New York State mandated Repowering Feasibility [Study of the Northport Power Station](#), alongside its annual Property Tax Report. The study shows that accelerating the retirement of 400 to 600 megawatts of vintage, fossil-fueled steam power plants in 2022 can save Long Island electric consumers over \$300 million. The Repowering Study finds that the need for Long Island's aging steam power plants has significantly decreased and that replacing the plants with newer, more efficient natural gas

plants would raise customer costs by \$1.2 to \$1.7 billion. The study finds that replacing a single unit of the four-unit Northport plant would raise customer bills by nearly \$700 million. Instead, the study found that retiring, not replacing, one of the four units at the Northport plant in 2022 would be the best option – reducing customer cost by \$300 million without harming system reliability.

The Northport Power Station has undergone a gradual decline in its annual energy production, from 55.8 percent of plant capacity in 2005 to 15.2 percent last year. That decline is expected to continue to 2.9 percent of plant capacity by 2035.

In response to the study, LIPA announced that by year-end it would complete a review of the savings from retiring other similar 1960s-era steam plants in Island Park and Port Jefferson and recommend an additional retirement of 400 to 600 megawatts of steam plants by 2022. LIPA expects additional steam plant retirements after new offshore wind projects are interconnected into the Long Island electric grid in 2024.

This announcement follows the decision to retire smaller “peaking” power plants in West Babylon and Glenwood Landing in 2020 and 2021 and two larger steam plants in Far Rockaway and Glenwood Landing in 2012. LIPA will also review additional “peaking” plant retirements, including two units at Glenwood Landing.

**Back then- LIPA chief executive Tom Falcone said the first retirement of 400 megawatts to 600 megawatts of generating capacity — the equivalent of one or two big steam-generating units — would be followed by additional retirements after 2024, when the first big offshore wind turbines are slated to be operating off the Long Island and Massachusetts coasts.**

“These plants aren’t here forever and we are trying to bring them [the tax cases] to some sort of fruition and give these communities some time to adjust,” said Falcone, referring to settlement offers that include gradually reducing taxes over seven years, with extensions.

Each of Long Island’s three large functioning steam-based power stations owned by National Grid consist of multiple generating units or plants, as well as some smaller so-called peaking units for high-demand summer use. The Northport power station, for example, has four larger steam-based units.

With the conclusion of a state-mandated study of the Northport station, LIPA found it’s both unnecessary and unfeasible to overhaul the 60-year-old facility, whose four units are each capable of producing 350 megawatts. Combined they can produce enough to power hundreds of thousands of homes.

With projections that the plant will be used even less over the next 10 years — just 2.9% of the time by 2030 — LIPA’s study found that the most cost-effective move would be to retire one of those four units, according to the study and discussions with LIPA officials. Retirement of one unit would save ratepayers \$303 million over 20 years compared with a cost of up to \$1.7 billion to overhaul the entire plant, the study said.

The study and LIPA’s conclusions come as the authority’s efforts to negotiate lower taxes for three

power stations across Long Island have largely stalled. LIPA and the Town of Huntington had been in talks to reduce the \$84 million LIPA pays in taxes for the National Grid-owned Northport power station until the pandemic hit and the town asked for a two-year delay on a settlement given the financial fallout. LIPA has declined.

These polluting power plants still show the blatant disregard for the health of LI Ratepayers pocketbook in lack of efficiency & operational reliability. We have a standard to live up to that has been put into law by the Governors recommendation and action by state government under Governor Andrew M. Cuomo's climate leadership targets under the Climate Leadership and Community Protection Act. All utilities in the state are faced with retiring outdated fossil or nuclear powered power in favor of clean power without continued increases on utility bills due to fuel costs. The state has set timetables for decarbonizing its electricity system including moving toward 70% renewables by 2030, 100% carbon-free electricity by 2040, and a carbon-neutral economy by 2050.

Another NYS Utility, NYPA, has stated its intention to comply with the law "VISION2030 includes a path to decarbonization by transitioning the NYPA's natural gas plants to low- or zero-carbon emission technologies and committing to supplying its customers with carbon-free electricity by 2035, five years ahead of the goal of carbon-free electricity by 2040. The roadmap further details the NYPA's plans to deploy a vast, improved transmission network across the state to enable new, additional renewable energy to come onto the electric grid, and to preserve the steadfast role of clean hydropower as the state's renewable energy base.

Simply stated 100% renewable energy works using solar if its daytime (except when you have an eclipse) there is sunlight. With multiple sources of clean all producing together there are no gaps. Sun shines here wind blows there....We can show scientifically how it works.

Dr. Perez looked at one of the worse sunlight area states in America, Minnesota mid continent ISO. Let me emphasize this is peer reviewed science not one person espousing some esoteric theory. As part of the [Minnesota Solar Pathways](#) project, Clean Power Research analyzed alternative pathways to achieving 100% renewable energy production across the Midcontinent Independent System Operator (MISO) service territory. The resulting [Solar Potential Analysis—MISO Region](#) showed that overbuilding plus curtailment of PV and wind resources was the most cost-effective implementation strategy. Overbuilding + curtailment acts as "implicit storage" enabling these resources to deliver 100%-ready power 24/365 without fail while using only a small affordable fraction of the seasonal storage reserves that would be required otherwise.

When you look at solar collector output you have jiggly lines due to varied output cut out, the jiggles Variable sunlight, even out if you cut the peaks you then have baseload power. Combine multiple sources of renewable energy (Solar, Wind, Biomass, Geothermal, Hydro etc.) over a large enough

geographic area the output you get is reliable baseload power. Guess what, that's cheaper to do, faster to install and provides redundant - resilient to weather event- power!

Do you understand the horrible waste the system we have is based on? The thrown away polluting energy is mind boggling. When Perez says over production is " curtailed" that does not mean thrown away but means it is available for other commercial uses (which turns around other polluting sectors of the economy to use **cost effective** renewable energy). Yes storage is a part of this but under the Perez Baseload Renewables Method™ much less storage needed and more reliability.

Let's start with the first waste, the grid itself and remember this is not just economic waste it is burning fossil fuels and throwing 80% of that into the atmosphere as waste greenhouse gasses. Here (below) is Federal Energy Regulatory Commission (FERC)'s graphic (above) showing that waste in long line electrical distribution **only 20% of the energy is delivered** as electricity that's unsupportable/unsustainable. You understand that 40% of NYS electrical demand is all located South- in Westchester NYC & LI. We need distributed clean energy located in the load zone. Renewable energy can do that quickly and cost effectively.