

## SYMPOSIUM

# Can We Save and Expand Nuclear Power in the States?

*New York Independent Senate candidate Diane Sare organized a roundtable of experts February 26 on saving and expanding nuclear power capacities and technologies, immediately the Indian Point Nuclear Reactor #3 in her state, and the Byron and Dresden nuclear power plants in Illinois. Dennis Speed of The LaRouche Organization moderated. The remarks of the panelists have been edited. The extensive discussion with the online audience is not included here. The entire event is available [here](#).*

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## The Role of Nuclear Power in Economic Reproduction

**Diane Sare:** What I want to talk about a little bit is economy, because I think unfortunately, today this is a science which is very poorly understood. And to get at that I want to talk about government, because I think *that's* something that's very poorly understood these days. And I would say, if the government does not improve your conditions of life—that is the point of government, and it's particularly in the Preamble to the U.S. Constitution, “to promote the General Welfare”; and also includes “for our Posterity”—if the government doesn't serve that purpose, then there is no reason to have it.

I think it's worth considering what life would be like if you did not have organized society—Albert Einstein wrote a very good paper about the individual and society, this paradox. If we took this idea, of the rugged individualist to an extreme—so, the things we take for granted, like power lines, public streets, a sanitation system—if those things did not exist, and we were all really on our own: First of all, you couldn't live in a neighborhood. Every person would need a huge area of land to sustain themselves. And your life would probably be much shorter than it is now, and much more miserable. And you would find yourself spending 90% or more of your time, just trying to figure out how to eat, stay warm, stay cool, survive mass disasters, etc. Benjamin Franklin is not often quoted on this, but he had some very polemical things to say about people who didn't want to pay taxes. He said they shouldn't live in the town; they should go out in the woods and be bar-



Sare for Senate

*Diane Sare, independent candidate for U.S. Senate from New York.*

barians as they deserved.

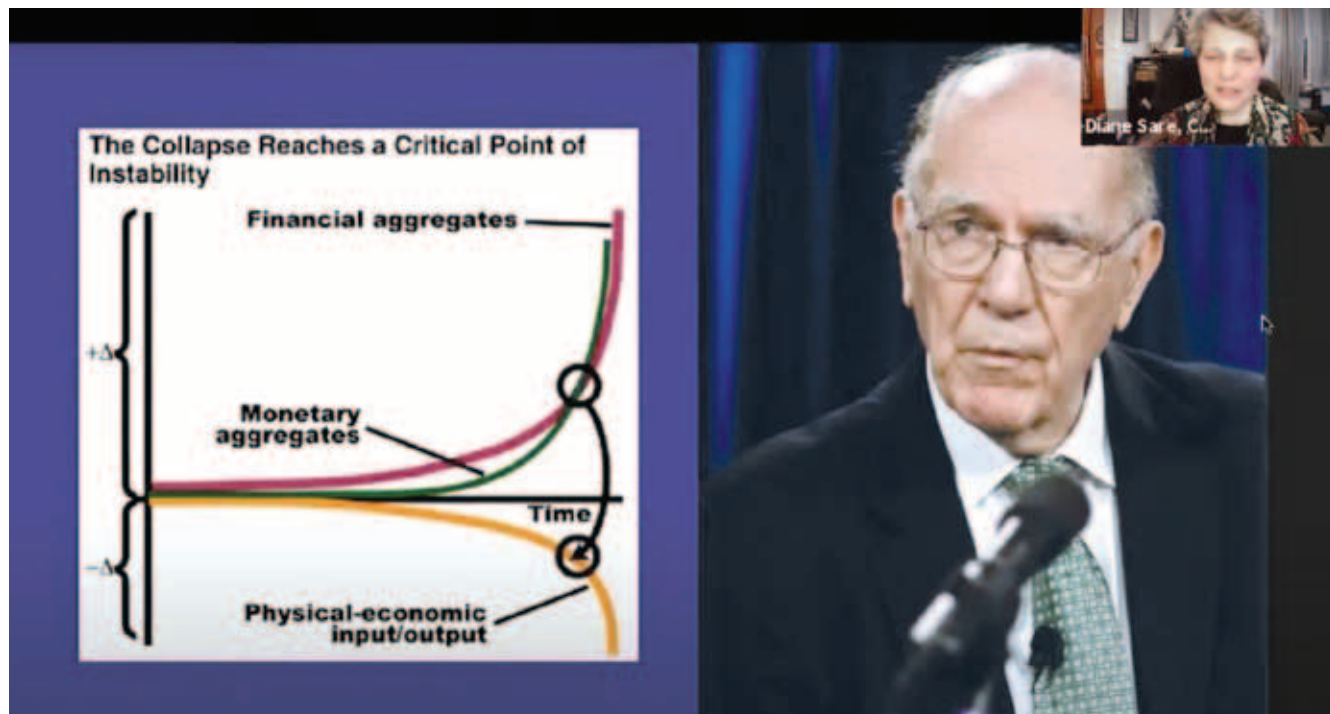
The purpose of human economy is actually not about money. There's great confusion on this point. The purpose of human economy is to create the conditions where each generation has a higher standard of living than the generation before. You want to create conditions where each generation can be more *human* than the previous one. What I mean by that is that you can spend less and less of your time worrying about basic physical needs, and more and more of your time developing your mind; becoming a thinker; becoming a genius, whether it's in Classical music or science or something that transforms the life of future generations.

### Difference between Humans and Animals

Now LaRouche, in 1996, developed something which he called the “Triple Curve collapse function.” See **Figure 1**. That's LaRouche. He said that about the year 1966, on the left side of the curve, the red, green and gold lines were together. If you had an industry,

FIGURE 1

The Collapse Function Reaches a Critical Point of Instability



In 1996, Lyndon LaRouche developed the “Triple Curve,” showing the interaction of monetary and financial aggregates with the physical economy.

EIRNS

where industry was growing, the physical economic value would go up at the same rate as its stock value—the “financial aggregates.” In other words, these were not separate curves; they worked together.

But what happened was, because of the deregulation of the economy, and the very important shift of Nixon taking the dollar off the gold-reserve system, you could have floating exchange rates. Suddenly it became not only possible, but what began to occur, is that the financial aggregate—like Enron, for example. You’re producing less electricity, so the physical output goes down; the monetary aggregate, the amount of money floating around, the stock value, goes up.

You have a bizarre situation where the worse your physical economy was, the higher your stock market was. And we are now at a point today, where the higher the market is, the worse the economy is. Nobody in their right mind should run around talking about the “great” stock market as an indicator of an economic recovery.

And what happens—when you get a hyperbolic function like this—you get to the asymptote, where it goes vertical. It’s a shock front. That’s where the system blows out. That happened in 2008. Did we change our ways? No! We printed more money! We

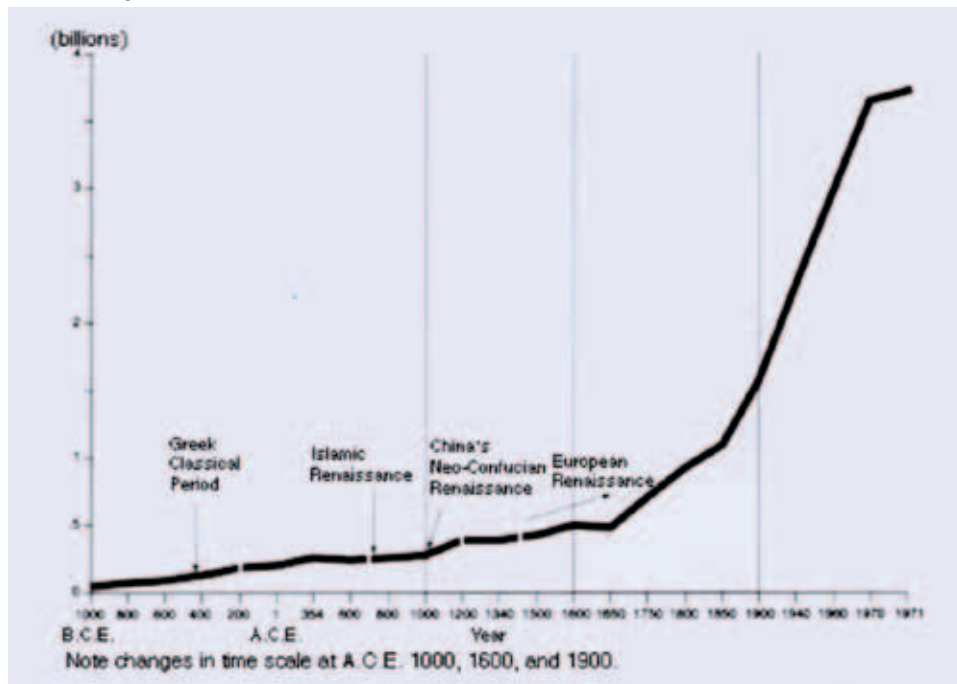
created another bubble.

And—we won’t deal with this too much today—but this is where part of this Green New Deal comes in, because the carbon swaps, and all of this stuff, is a way of creating a *new* bubble to prop up the system.

Now what is the difference between human beings and animals, an animal economy? Well, if you have a bunch of rabbits, and they just breed and breed and breed, and you don’t have any foxes, or anything else that’s going to eat them, at a certain point they’re going to eat all the grass. They’re going to consume all their food and they’re going to starve to death. I don’t know if rabbits get violent and start attacking each other, like rats who—I’ve done this experiment—but at a certain point they’re going to die. They don’t make a breakthrough or a discovery about how to get more food. They run out of resources and they die off.

Human population does not do this. See **Figure 2**. What has happened—and this is perfectly natural; it is not unnatural; it is not a terrible threat to the universe—is that population is growing at a non-linear rate, a hyperbolic rate. These inflection points that are on the chart show where you had certain breakthroughs, certain discoveries. Lyndon LaRouche used to always like

**FIGURE 2**  
**World Population Growth**



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to talk about the guy who discovered how to use fire to cook his food; because obviously, cooking your food was a vast improvement in sanitation, and probably longevity at that point.

So, discoveries were made which made it possible for people to live longer, have a higher standard of living, and—as Alexander Hamilton understood very well—when this happens, you need a greater division of labor. So, you *have* more people, but you actually *need* more people.

Human beings are the only creature, the only living being that can actually change our species characteristic as a matter of will. And in terms of energy (see **Figure 3**, if you go from, say, burning wood, where you need a huge amount of fuel for not that much energy; and then you make a discovery of charcoal, or coal, and you discover that you can get a lot more energy from less. You get to oil and natural

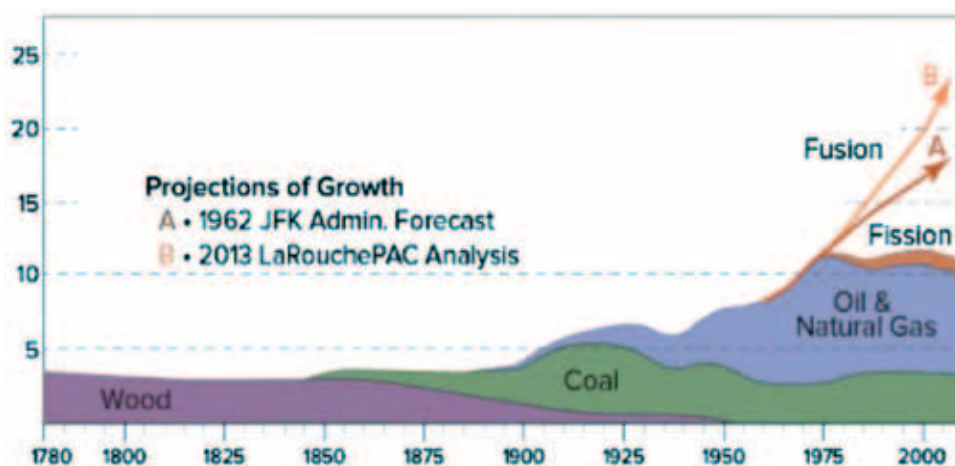
gas; and the great discovery was nuclear fission, and ultimately we should be at nuclear fusion.

Note that Figure 3 shows *per capita* energy consumption. Because just as population grows hyperbolically, it is actually necessary and good that energy consumption per capita grows at the same rate. If you think about what happened with Franklin Roosevelt’s Rural Electrification Administration—which Wall Street vehemently opposed; because they said “We can see lighting people’s apartments in the city where they live close together; but we don’t want to spend money for 40 miles of copper wire to get the elec-

tricity out to the farmhouse.” But of course, what happened to the farmhouse when you had electricity? You could control the lighting for your chickens; you could get them to lay a lot more eggs. If you could refrigerate the milk you could store it longer. In other words, having the electricity allowed you to increase, geometrically, your resources.

When we get to the point of the development of nu-

**FIGURE 3**  
**United States Energy-Flux Density**  
(KW Per Capita, by Energy Source)



clear fission, this was stopped. Dennis [Speed, moderator] just referenced the case of Three Mile Island; you had the idea of [President Dwight] Eisenhower, the idea of Atoms for Peace, that we could eliminate poverty, that we could have massive, abundant, cheap, clean energy to develop the world. And instead, you got a terror campaign and a shut-down. Because in effect, what it means if people have access to this kind of energy, is that the power of man over nature increases, and the power of imperial colonial powers, like the British Empire, or the Dutch colonies, or whatever, becomes diminished.

### LaRouche's Warnings

This is really what I wanted to get at: that human beings change by means of a creative, scientific discovery. And that is unique; no animal can do it. And contrary to what we've all been pretty much brainwashed to believe, it is not good to shrink. It is not good to consume less. It is not good to be "sustainable." If you stick with one resource, and you don't change what you are doing—like, suppose we decided to have combustion engines forever and ever and burn fossil fuels—well, at a certain point you'd have to go farther and farther, you'd have to go more out of your way. The efficiency goes down; the cost increases; the safety decreases; in other words, you're creating something which is more and more physically expensive.

And what that leads to is a reduction in the capacity to sustain your population.

And the last thing I'll say, is that LaRouche actually warned in the 1970s, that if you impose this kind of shrinkage on the world, on the world economy, that you would end up with pandemic disease. Because when you grind down the standard of living; when you lower the possibility of sustaining human existence by lowering energy supply, water, and things like that, then you have to increase the death rate. And we are in such a



NEI

*President Dwight Eisenhower signals the start of construction of the Shippingport Nuclear Power Station in 1945, the world's first, on the Ohio River in Beaver County, Pennsylvania.*

situation in many parts of the world today...

I think that most human beings are not suicidal. If people understand the nature of the problem, and the actual potential of nuclear science, both fission and ultimately fusion, we can transform the planet much for the better. But we have to move very quickly, I think. Things are disintegrating at a rate much faster than a lot of us imagine possible.

**Dennis Speed:** OK, very good. So, we're now going to introduce the entire panel, if we can just bring them all up.

We have Theresa Knickerbocker, who is the mayor of Buchanan, New York, otherwise known as the home of the Indian Point nuclear power plant.

Dr. Jerry Cuttler, who is a nuclear scientist and professional engineer, consultant in nuclear energy and radiation health effects. He worked, from 1974, on 25 CANDU reactors. I think that's Canada Deuterium Oxide and Uranium, if I'm not mistaken. And he's been providing services to nuclear power plants.

We also have with us Eric Dawson, the co-founder of Nuclear New York, which is a non-partisan 501(c)3 promoting the importance of nuclear energy.

From Illinois, I believe, we've got Nick Kockler, who's with the United Brotherhood of Carpenters Local 58, and who's going to talk about what's going on out there with the Byron and Dresden plants in Illinois, the attempt to shut those plants down, although there's a lot of pushback going on on that right now.

And then there's Bruce Todd, who's a millwright from Local 15, in New Jersey. He worked on, and built nuclear plants, and I think he worked down at Three Mile Island if I'm not mistaken.

I want to thank all of you, first of all, for being here with us. We're going to start with the mayor, since she's sitting right there in the hot seat, and a seat that's been hot for a long time.

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## Be Educated Against Environmentalist Hypocrisy

**Mayor Theresa Knickerbocker:** I'm not going to take a lot of your time, because there are many other people that need to speak, but I just want to give you a basic overview.

Our Unit 1 went on line in 1962, so we were, basically, one of the first commercial nuclear power plants in the country. Units 2 and 3 were built after that; and, you know, it's built on 240 acres on the beautiful Hudson River. And for years, we had anti-nuclear people that campaigned against it, and the community didn't really get involved that much. I don't think they thought it [shut-down] would ever happen. But in January 2017 it finally happened. The Governor and Entergy and Riverkeepers signed an agreement to close the plant.

But the background on that—what you have to understand, is that Entergy, for 10 years, tried to get a water certificate. It cost them \$10 million a year; and it didn't look like a water certificate was in sight. The price of gas went down. And it's kind of interesting now to see—gas prices are going back up, and they will continue to climb. I think it was the constant campaigning, fearmongering, fearmongering, fearmongering. And if I had to look back and say how one could stop a nuclear power plant being closed—I wish I knew many of you people in 2015, 2016—I think it's about education. I think it's about educating people that it's not this Fukushima thing, it is not this scary—I've been in the plant many, many times. I've been on different tours. I will give Entergy kudos. They run a tight ship at this plant. The people that work there are top-shelf people. They live in the community. It was just the anti-nuclear campaign.

What I find most interesting, in a sick, twisted way, is that these people call themselves environmentalists, but what replaced Unit 2 was a 1,000 megawatt gas-fired plant, and what will replace—on April 30 we have Unit 3, our other unit, closing—that will also be replaced by a gas-fired plant. So, I can't stress enough, the education of the community, the education of elected officials. It's not this big scary monster. The people in the community did not fear it. And what you have are people from outside the area that are telling you, basically, what's good for you and what's not good for you....



Town of Buchanan

*Theresa Knickerbocker, Mayor of Buchanan, New York.*

It's just a sad situation. With the closing of this plant we are losing half our revenue. We are losing 1,000 very good paying jobs. And we are losing a good corporate neighbor. Not only to Buchanan, but throughout Westchester County. Entergy, and I will say this to the day I die, was an excellent corporate neighbor. They gave out money to many different organizations, many different municipalities. So, they're going—our library, our school—they're going to be very much missed. This is something we are not going to be able to replace....

### **Reliable Power, National Security**

I would also say, not only the education, but it is so important in this country—I don't know who has to get through to our elected officials on higher levels—that you cannot rely on one source of energy. Nuclear is great. There are zero carbon emissions. But there's got to be some type of a mix in the portfolio. So, yes, if you want solar panels, that's great, that could be a percentage; you want this, you want that; but nuclear is the only one that is reliable. For the security of our country, you need reliable power. And I don't know why people are not getting it. If Texas wasn't an indication of what could happen—that could cripple this country.... It's a security issue and it's just a quality of life issue for people in general.

That's where I am here in Buchanan. And what the future is—I will be very honest with you; I think it's



NRC

*The Indian Point Nuclear Power Station, in Buchanan, New York, scheduled to be shut down in 2021.*

too late for Indian Point. If I saw a sliver of hope on some way that we could keep that plant open, I'd be on that. But the problem is, there was an agreement made, between the Governor—the State of New York—En-tergy, and Riverkeepers. And the only option to get out of the closure of the plant, was either war—and we don't want to see that, nobody wants to see that—and the only other thing is, if there wasn't the power supply that is needed. With the other, gas plant going on line May 1, that takes care of that; and the Public Service Commission feels strongly that we will have the power needed.

One of the other things, that I kind of laughed at, is that they were saying—the PSC—if people would, like, use less electricity.... You know, I'm not seeing that. In the middle of winter, I am not turning my thermostat down, I am not doing it. In the middle of summer, I am not turning my air conditioning down; I am not going to conserve. And I am not somebody who is so different. The average Americans like their comfort. Why am I going to have my thermostat on 55 to conserve electricity because you can't supply that to me? So, if I sound angry, I am very angry about what happened to this community which didn't have to happen....

Dennis Speed: All right, Mayor, thank you very much. We're next going to hear from a lot of other people who of course have a lot of things to say, and maybe you'll see light at the end of the tunnel, perhaps, in what's being discussed as we go along.

Dr. Cuttler, I'd like to go to you next.

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## You Can Bring a Closed Plant Back

**Dr. Jerry Cuttler:** Thank you for inviting me. I'd like to talk a bit about Canada first, and then we can talk about Indian Point. I think you could learn from what happens in Canada.

Canada is divided into ten provinces. Four of them get their electricity mostly from hydro: British Columbia, Manitoba, Quebec, and Newfoundland. Four of them use mostly fossil: Alberta (the oil sands); Saskatchewan has a lot of oil; Nova Scotia and Prince Edward Island use oil. Now the two remaining ones—Ontario and New Brunswick, they have nuclear reactors. New Brunswick's electricity is one-third nuclear, one-third hydro and one-third fossil; they have one reactor. Ontario has 20 reactors; 60% of the electricity is nuclear, 30% is hydro, and 10% is gas and renewables, or "unreliables."

For ideological reasons, the Ontario government wanted renewable electricity from privately-owned suppliers. It offered to buy all they could produce. So, the electrical system operator gives wind generation priority to the market. But when it does not deliver, privately-owned gas-fired generation goes up and down to fill the gap. The nuclear reactors usually run at steady power levels, but they can move up and down too, sometimes dumping steam into the lake.

Now, the nuclear reactors are owned by the people of Ontario, that is, they are owned by the provincial government; so, it's like a TVA, perhaps. And we also own the used fuel, so there is no issue about who owns the so-called waste—we do. Ontario, as I mentioned, has 20 reactors. There are two operating companies, Ontario Power Generation (OPG), owned by the province, and Bruce Power, a private company. Now, Ontario Power Generation looks after eight reactors at Pickering and four at Darlington; Bruce Power operates eight reactors, four Bruce A and four Bruce B ones. Two of the Pickering reactors are shut down, so there are actually 18 reactors operating.

There was a time when the Bruce A reactors needed to be refurbished. They were old and needed an overhaul. And there was no money to do it. So, they were shut down, and they were down for 10 years. A private company was established, Bruce Power, and it negotiated a contract with the Ontario government to operate the eight Bruce reactors. Part of the deal was refurbishing the four reactors that were shut down. But that was going to cost billions of dollars. So, they said:

Look, we cannot do this unless you guarantee us a fixed price for the electricity we're going to sell, and give us a market, because the only way we can do this is to go to pension funds' investments, to borrow money from them, billions of dollars. And we have to assure them that we'll repay it, plus interest.

Now, the only way they could guarantee that they'll be able to repay that debt was to have assurance that they would get a defined revenue, at least a minimum.

So, the Province guaranteed a price of 8 cents/kWh, which is quite low, but it was guaranteed. Not only that, but they guaranteed that they would buy the electricity. So, these reactors were refurbished, and they're running! And the Bruce B reactors are also running.



Courtesy of Jerry Cuttler

Dr. Jerry Cuttler

Now other Bruce reactors need to be refurbished. And Bruce Power is going to do the same thing. It will get loans from investors, and with the guaranteed revenue on the sale of electricity, it will proceed to refurbish the remaining reactors, one by one.

The Darlington reactors are also old and are being refurbished. All these reactors are over 30 years....

### The Evidence on Low-Dose Radiation

Each nuclear plant has an operating license. We have a regulator like your Nuclear Regulatory Commission; it is called the Canadian Nuclear Safety Commission.

In 2018, the license of the eight-reactor Pickering nuclear plant was expiring, and OPG applied for a ten-year extension. The regulator organized a public hearing, because this is a very controversial matter. There were about 100 intervenors. Fifty of them were anti-nuclear and made presentations urging the regulator to shut the whole plant down immediately. And the other 50 supported the ten-year extension. The OPG application was to operate the reactors for six years and then shut them down because the pressure tubes were expected to begin failing (cracking), and it was not economic to retube and refurbish these small-size 500 MWe reactors (vs. the others that are 900 MWe size).

In my submission, I argued that pressure tube cracking is not a safety issue; it will likely not damage fuel and release radioactive material. OPG agreed with this judgment. I also pointed out that radioactive material released due to any credible accident would be small and would not harm surrounding residents nor the environment. The radiation dose would be low. Not only that, but the dose would provide a health benefit. The medical evidence that I presented was not challenged by OPG nor by the regulator. The regulator asked me for my final remarks, and I urged the regulator to revise the radiation protection regulations. The response was that this would happen when the international medical community accepts the controversial evidence of low-dose beneficial effects. My

presentation and this discussion are in the public record.

The public and most of the medical community lack knowledge of the biology of radiation on health. A myth was created way back, just after the Second World War and the bombing of Hiroshima and Nagasaki. Politicized scientists wanted to create a radiation health scare to stop the testing and production of nuclear weapons; and so, they created a theory that linked radiation exposure to a risk of cancer. And that theory is still supported even though there is much evidence that it is incorrect. There is strong political resistance against changing it.

Anyhow, this is the basis for a lot of the anti-nuclear opposition....

In conclusion, what I want to say is, even though nuclear reactors were shut down for ten years at Bruce, we were able to refurbish them and put them back into operation. So, if you don't tear the plant apart, you can bring it back.

### The Case of Indian Point

Now, let's go on to Indian Point. There's an anti-nuclear political movement, and it's all through North America, Canada and the U.S. Their objective: They want to shut down all the nuclear plants and they want to phase out nuclear energy in the U.S. There are 100 reactors there, and they're going after them, one after another. Now Indian Point is an easy target. Why? Because of the accident in Fukushima in 2011. There was an enormous evacuation because of the radiation scare. So, the anti-nuclear people are saying: "Gee, if we had an accident at Indian Point, the release of radioactive material would blow over New York City. We can't evacuate New York City, so we'll shut down the nuclear plant as a precaution."

Now, a Fukushima-type accident is not likely to happen in Indian Point. There's no possibility of a tidal wave. The only thing that could produce that kind of accident would be a meteorite hit, a direct meteor hit. And that's not credible. There really is no argument for saying that the reactors in Indian Point are going to have that sort of damage. So, this whole safety issue of risk to New York City, is bogus. What happens is people who want to shut down Indian Point put pressure on the government; people work out deals. Now, the reactor is owned by a private company, Entergy. It's not your TVA ownership. So, if someone gives them a good offer, they're happy to

sell it. So, [in 2019] Entergy sells it to Holtec Manufacturing, Inc., Camden, New Jersey—and Holtec will get money to decommission it. So, the plant owners make money, but the people lose, and they end up paying more for unreliable electricity, either because it's windmills, or the price of gas, or its availability is unreliable.

The solution, I think, is: You've got to find a way where the government can own those reactors; and you've got to assure a fixed price for their electricity, otherwise the company that is hired to operate the reactors can't earn the revenue needed to cover the operating and maintenance costs, and raise the funds to refurbish it, as needed. No nuclear operator can run the reactors if there is no assurance of a reasonable revenue....

**Dennis Speed:** OK, well thank you very much, doctor. Now we're going to go to Eric Dawson, co-founder of Nuclear New York.

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## Nuclear Power Raises the Quality of Life

**Eric Dawson:** Great! Well, thank you for inviting me again.

My name is Eric Dawson, and I co-founded an organization called Nuclear New York. We are a nonpartisan, not-for-profit environmentalist organization promoting the preservation and expansion of nuclear energy to reduce air pollution and carbon emissions....

And just to say a little about me—I got into this field—I'm not from a science background, but I've always been in favor of reducing environmental problems. But at the same time, I was very frustrated by the efforts from most activists in the field demanding that people reduce their quality of life; i.e., through banning cheap electricity and ultimately curtailing people's freedoms. You find a lot of hypocrisy in the field—quite a few activists famously lecturing middle-class families about driving SUVs while they themselves are traveling in limousines and private jets and mega-yachts. So, I only endorse solutions that do not reduce the quality of life for average people at all. And that has led me to promote nuclear energy.

And as I see it, the major problem in the public energy policy debates and the legislation that's put forth is that the debate is framed as a binary. It's "renew-





Sare for Senate

*Eric Dawson*

ables” versus “fossil fuels.” But we feel that energy policy is actually non-binary. There’s a third option, nuclear, and this third option is carbon free, conveniently.

There’s really no reason for a fanatical devotion to any particular technology. We should simply use what works, and nuclear actually works. And in the real world of millions of people living nearly century-long life spans in first-world, modern countries, we can’t simply ban fossil fuels to eliminate all pollution. It’s not realistic. It’s not possible. Instead, we must gradually displace fossil fuels in a market through substitution. Now, famously, the energy source with the most negative externalities is coal. But if you look at the past 20 years, the great reduction in coal has come about not through banning it, but through displacing it in a market by expanding natural gas. And this is overall a good thing. There are problems with gas, but there are fewer problems with gas than with coal.

This is always a “would you rather” game. There is no utopia. If we want to reduce gas, ultimately, we have to displace it by expanding some other energy source. And we think it should be nuclear. Nuclear is the best of both worlds. It has the reliability and efficiency of fossil fuels, but the absence of air pollution and carbon emissions. There are also other less obvious environmental concerns, like land use and material use as far as concrete and steel, and these sorts of things. And if you

compare by energy units that are produced, nuclear is actually vastly better than any other source in those ways—the lowest land-use intensity and the lowest material intensity. And this actually aids towards wildlife conservation....

### **Indefinite Renewal of Nuclear**

But as other speakers have touched on, the worst part of renewables is that they are intermittent and ultimately, we are “fragilizing” our electric grid by increasing intermittent energy sources. Something will be needed to compensate, and that something is fossil fuels, usually gas. And so, I would say [of] New York State—ultimately more intermittent wind and solar means more baseload natural gas. There’s no way around it. In every major case study, phasing out of nuclear power has resulted, ironically, in increased carbon emissions—you can look it up, especially Germany, but also in Vermont and California.

Many rich countries with the cleanest air heavily rely on nuclear power, countries like Canada, but also France, Finland, Sweden, Switzerland, many others.

I would also like to bring up these kinds of definitions to break through the kind of rigidity of the public debate—that when we think of what is the definition of “renewable,” although nuclear energy is not technically renewable because it requires uranium, it requires so little uranium. And we could extract [fuel] from the ocean in the future, [so] that we could likely supply the entire world on nuclear alone for thousands of years [nuclear fusion power—ed.]. And even if you ignore the problem of intermittence, although solar and wind are technically renewable, the lights don’t turn on magically, just when the sun is out, and when the wind blows. Solar panels and wind turbines have such a high material intensity that they have to be replaced every 20 or 30 years, and they require the mining of rare minerals that are transported via fossil fuels around the world.

Just to touch on the common objections to nuclear, I would argue that they are ultimately relatively weak, if you consider the totality of evidence. There is a low risk of meltdown. Nuclear power has been used for over 60 years ... there are 400 plants in over 30 countries. Yet there’s only been three major accidents and two of those resulted in zero, zero deaths from radiation. The only really tragic one, famously, was Chernobyl in 1986. But upon looking at it, and I

encourage you to read more about this, it was really an indictment of the Soviet system, not the technology itself.

Each accident, each problem, each negative externality has to be balanced with the positives. So even if you look at something like Fukushima, the accident in 2011, even though there are zero deaths, there was economic damage. But you have to balance it out with the fact that this provided millions of Japanese people with clean electricity for 40 years. And this is in East Asia, where air pollution is really a problem that actually harms people....

### Nuclear Power Saves Lives

So, one thing that, if you remember nothing else other than this, I would encourage everybody at home to look up on the internet: “deaths per energy source” and “deaths per electricity unit by energy source.” Often these graphs are “deaths per kilowatt hour” or “terawatt hour,” but that is really the best way to evaluate energy sources. It’s not just looking at one incident or imagining some tragic situation. You have to balance

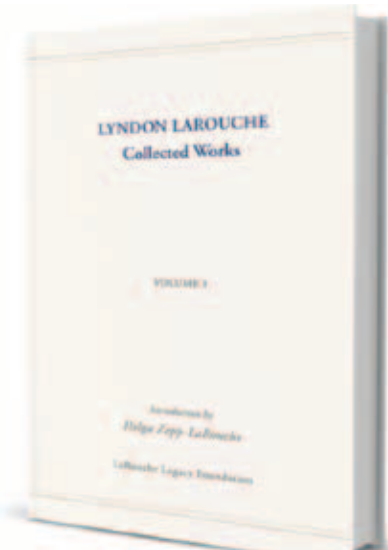
how much electricity was produced “per death” that actually results. And you’ll find that nuclear is at the bottom of the list....

Nuclear saves lives. And as far as New York, there are three functioning plants in upstate that are still going. But the one that we’re worried about is downstate. That’s Indian Point. And Indian Point provides a significant minority, but still a minority of New York City’s electricity. But it provides a majority, a vast majority of its *clean* electricity, meaning no air pollution, no carbon emissions. And unfortunately, it is scheduled to be shut down April 30th of this year. People can debate the severity of these different environmental problems. But for any politicians or activists or concerned citizens who think that global warming is an emergency, that air pollution is an emergency, that the Covid-19 pandemic is an emergency that’s exacerbated by air pollution; then based on these emergencies alone, New York State should keep nuclear plants like Indian Point open....

**Dennis Speed:** Thank you. OK, Nick Kockler.

## LYNDON LAROUCHE Collected Works, Volume I

This first volume of the Lyndon LaRouche Collected Works contains four of LaRouche’s most important and influential works on the subject of physical economy:



- *So, You Wish to Learn All About Economics?*
- *There Are No Limits to Growth*
- *The Science of Christian Economy*
- *The Dialogue of Eurasian Civilizations: Earth’s Next Fifty Years*

**So, You Wish to Learn All About Economics?** was first published in 1984 and has become the single most translated of LaRouche’s books.

**There Are No Limits to Growth** first appeared in 1983 as a direct response to the Club of Rome’s *The Limits to Growth*, thoroughly refuting the latter’s unscientific Malthusian argument, which underlies the “green” environmentalist movement today.

**The Science of Christian Economy** (1991) is a groundbreaking study written by Mr. LaRouche during the five-year period he was unjustly incarcerated as a political prisoner in significant measure for the arguments he sets forth in this book.

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## What Will It Be Like 20, 30, 50 Years from Now?

**Nick Kockler:** I live here in Illinois, about 75 miles northwest of Chicago, about 20 miles from the Wisconsin border. Ever since I've lived out here for 30 years, every watt of electricity we've used has come from the Byron nuclear plant—very safe, very reliable. The only time we lost any power was when a car ran into a telephone pole, knocked the line over, and they got it up and running shortly.

We had the news recently—I guess it's been a little while now—that they wanted to close both the Byron and the Dresden plants. This has gone on now—this has been twice—they've scared everybody. A few years ago, they had the same threat, and the Illinois State Legislature was able to come up with a formula to throw a few dollars on everybody's electric bill to keep those plants open. So that worked out for a few years....

I agree with what the Mayor said: Education is the key. Because the information that people are getting is just awful. They don't understand that here in Illinois, there's 11 reactors at six different sites that produce



Sare for Senate

*Nick Kockler*

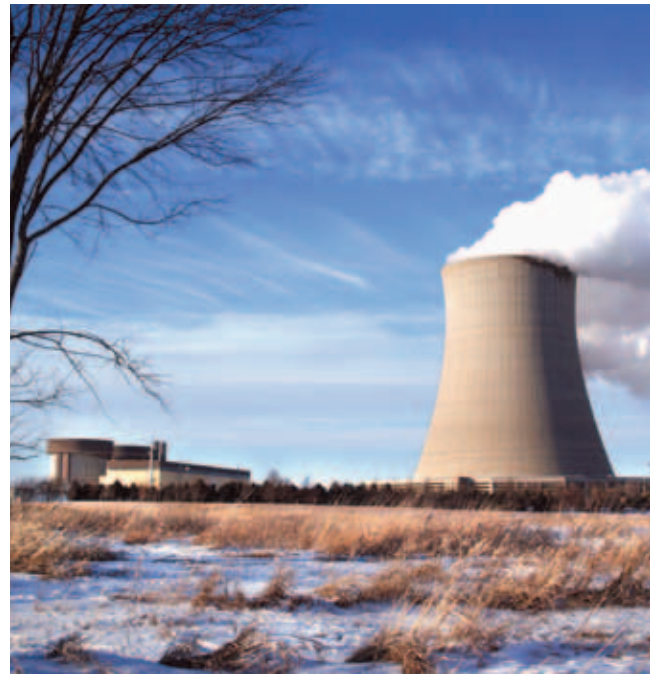
50% of the electricity in Illinois, and produce 95% of the clean energy that Eric mentioned. The rest is provided by coal- and gas-fired and the other things. There's wind farms here and solar panels and things of that nature that have a supplement.

But like we know and we've heard, the supplements are intermittent, and then they need to build some back-up capacity for that. And those contribute, like we've



NRC

*Dresden Nuclear Power Station Unit 1 near Morris, Illinois.*



Courtesy of Exelon Nuclear

*The Byron Nuclear Power Plant, in Ogle County, Illinois.*

heard, to the pollution problem. Then you have this vicious circle that exacerbates the problem and everybody is pointing fingers, but the reality that the amount of energy in uranium, way surpasses the amount of energy in anything else that can produce the type of electricity you need in a modern society.

Both the Dresden and the Byron plants are scheduled to be closed. One is, like I said, northwest of Chicago; the other one is southeast of Chicago. They provide in the neighborhood of fifteen hundred full time employment, and when there's outages and maintenance to be done, it boosts the employment up to two thousand people.

That type of input for the local communities—let's see here—I jotted it down. On average, each of the six sites that I mentioned with the 11 reactors provides \$40 million dollars in payroll to the employees and \$470 million dollars in spending to the local goods and services. On top of that, there's another \$136 million dollars in local taxes that goes directly to the schools in that area, the roads, law enforcement, the type of services that people expect... We have a little bit of time here in Illinois because the plants are not scheduled to be decommissioned until the fall, and my understanding is that they haven't submitted their petition to FERC for the decommissioning. That's a big issue here.

I've been a nuclear energy proponent for many, many years, and I just kind of follow it. But now I decided to kind of get in the fight to try to help and do things—not just now, but like Dennis mentioned, what's it going to be like 20, 30, 50 years from now. You know, are we going to have like one billion people, like some people would like the population to collapse to? Or are we going to have growth?...

Now, what happened to me and why? A couple of years ago, they were going to put a solar farm near my house.... And I went to the McHenry County Zoning Board meeting.... There was a gentleman there who was a consultant for an environmental engineering company. I recognized his name because he used to be the McHenry County Board Chairman. And when he retired from being the McHenry County Board Chairman, he became a state legislator. He was one of those rare politicians that said, "If I get re-elected three times, then I'm done." And he walked away from it and became a consultant.

In his presentation at the discussion of these solar

farms, he said something that surprised me and it shocked all the Zoning Board members. He said: "These solar farms are small potatoes. You should be concerned if they close the nuclear plant down the road, that supplies electricity to millions of people." The people at the Zoning Board, they all looked like deer in headlights.... Everybody wants to feel good about putting in a solar farm or putting in a windmill. But they don't understand how actually backward thinking that is.

I followed up with that environmental engineer this week. I figured, OK, I'll touch base with him, see if he remembers me at all. I sent him an email asking if he was interested in talking about the Byron situation. And to my surprise, his assistant e-mailed me back almost the same day and then she said, "You'd be better off talking to Mike." I called him on the phone. He said, "I'm busy now. I'll call you back in 15 minutes." He was on the phone with me for about 35, maybe 40 minutes and I was very impressed, because the first thing he said was, "Yes, we should keep the nuclear generating capacity. It's an essential part of the mix." And then he went into when he was in the legislature, how all these bills for the deregulation and the pricing of electricity and all these things work.

**Dennis Speed:** Ok, very good. So, Bruce, you are the caboose.

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## A Whole New Realm of Nuclear Power Development

**Bruce Todd:** A lot's been said so far. So, I want to go back to, actually, what Diane had started to talk about in the beginning about economic development. Because if you look where the beginnings of the nuclear industry started in the country, they had originally gone on the idea that we were going to have a certain quality and quantity of growth and development in the country. Out of that came the idea that we actually were going to need two hundred and fifty nuclear plants just for the United States itself. Now, we haven't seen that.

You can see that directly because of the conditions, the state of affairs of most of the former industrial areas of the country, which is not just even the Midwest. It



*Bruce Todd*

Sare for Senate

stretches all the way into New Jersey, to California, to the Southwest, places like Santa Fe, St. Louis—all these areas were major industrial centers. And if you consider the type of growth and development that should have gone on, you wouldn't see what you see in those areas right now.

I've worked in quite a few of the nuclear plants. I want to go back a little bit, say, for example, Oyster Creek. I only live about a mile from the now shut-down Oyster Creek nuclear power plant, which Holtec is starting to disassemble.

If you went ... into some of the newer plants that I worked in, like at the Artificial Island, which is run by PSE&G—Salem One, Salem Two and the Hope Creek plant—they are entirely different. They have a much more modern feel to them, design, quality of energy output. So, you could see the direction that they were going with that. But also, Artificial Island only has three nuclear plants, whereas the original design was for six nuclear plants.... There was actually an island that was going to be built off Atlantic City with two nuclear plants on it. Now, this just gives you an idea of the scale of development that they were visualizing and the direction the country was going.

Let me get up to the newer type, which is what we should be really discussing—the new modular, small modular reactors, pebble bed type reactors. All of these are the type of reactors that should be being built right now, to offset what was being said about

the use of coal and oil, etc.

If you had had two hundred and fifty nuclear power plants in the country, you wouldn't even be discussing mining for coal, drilling for oil. You know, we would be—well, let me put it another way—if you look at what just happened with the Perseverance Rover on Mars. If you think of the quality of the technology involved in that, and you applied that to the building and developing of nuclear power plants now—now you're getting a real sense of what should be going on, instead of the talk about shutting down Indian Point or Byron or anywhere else.

Clearly, these plants can continue to run. Most of the fleet of nuclear plants in the country, probably within the last 20 years, have had major refurbishing going on. I worked on some of those, like over at the Salem One and Two plants. They did a lot of that. They created the better efficiencies, the better output, more longevity in the cycle of operation. Where it used to be only one year, you get two years out of a refueling of the plants. So, there's constantly been upgrading. But now we're on the verge of where we should be really stepping into a whole new realm of development of nuclear power.

And, you know, there's whole areas that we even haven't even gone into, that were planned for—things like desalination of water. At one time, the Atomic Energy Commission had designed a nuclear power plant strictly for desalination of water, that was designed to produce enough water for the entirety of Los Angeles County of California, desalinating water from the Pacific, versus what happened a couple of years ago with water shortages all over California, and massive wildfires.

So that's the real idea, I think, that we've got to be discussing and should be discussing with other countries. You know, the potential is so great for the use of nuclear power.... I think that's really the direction we've got to look at in this thing. It's not that we have to save a few plants, but we can actually—those that aren't refurbished yet should be refurbished. The ones that are scheduled for closure should never be closed.

If you look at Texas, there's the perfect example of why the nuclear plants shouldn't be closed, and we should be moving on to other areas of use of nuclear power, both here on Earth and in the galaxy, we're looking at, up above us. For both fission power in rockets and fusion. Those are the areas that we really need to be going into.