**Nuclear Hotseat #789 - 8/11/26**
**AI and Nukes: An Unholy Alliance - Physicist MV Ramana**

**Libbe HaLevy:** [00:00:00] AI and nukes. It seems that wherever you look, new massive AI data centers are being proposed, joined at the hip with the idea that small modular nuclear reactors, SMRs or SMRs for short, will provide the means to power them. But none of these SMRs have been let alone tested. They seem to exist only in PowerPoint presentations intended to secure massive amounts of government funding, your tax dollars, for the nuclear industry.

And the industry's players are being very cagey in how they word what they say about these plans to make it sound like they're further along than they really are. So it takes a genuine expert, someone who can read between the lines as to what is not being said, to tell you-

**M. V. Ramana:** If you look carefully at these press releases, what you find is [00:01:00] that they are quite cagey about what exactly they are doing.

They are not very specific. For example, the announcement between Amazon and Energy Northwest. And Amazon now has a agreement with them where they basically say they are going to fund the feasibility phase of an SMR project. Now, what exactly does funding a feasibility phase mean? Does it mean they're going to build a reactor?

Does it mean they're going to give $100,000 to some researcher to do a kind of economic assessment of these reactors? Is it going to be funding for developing a bunch of nice PowerPoint slides? We don't know what that means. And then they say in exchange for that, they're going to get the right to purchase electricity from the first project involving four modules.

When they say we have the right, it doesn't mean that they necessarily have to buy.

**Libbe HaLevy:** Well, when physicist and author M.V. Ramana [00:02:00] points out a whole range of flaws in the framing of nuclear as a necessary PowerPoint for the proposed AI revolution, you see the looming Godzilla of nuclear reactor proliferation that represents the latest threat we face from that awful, deadly, dangerous seat that we all share.

**Nuclear Hotseat Theme:** Nuclear Hotseat What are those people thinking? Nuclear Hotseat What have those boys been drinking? Nuclear Hotseat The corium is sinking. Our time to act is shrinking, but our activists are linking.

Nuclear Hotseat It's da bomb

**Libbe HaLevy:** Welcome to Nuclear Hotseat, the weekly international news magazine keeping you up to date on all [00:03:00] things nuclear from a different perspective. We're a

show for people who know nothing about nuclear who want to know something, and people who know something about nuclear who would like to know just a little bit more.

My name is Libbe HaLevy I'm the producer and host, as well as a survivor of the nuclear accident at Three Mile Island from just one mile away, so I know what can happen when those nuclear so-called experts get it wrong. This week, an extremely timely interview with physicist M.V. Ramana on the nuclear industry's proposed connection between AI data centers and small modular nuclear reactors, none of which, by the way, have ever been built or tested.

Ramana is the author of the book Nuclear Is Not the Solution, The Folly of Atomic Power in the Age of Climate Change. Here, he clearly spells out what's wrong with this latest push to make nuclear reactors the [00:04:00] main engine intended to power AI data centers. We will also have nuclear news from around the world and lots more honest and verifiable nuclear information, all of it coming up in just a few moments.

Today is Tuesday, August 11, 2026, and here is this week's nuclear news from a different perspective. Here in California, Governor Gavin Newsom has just announced that he will not extend operations of the nuclear power plant Diablo Canyon past 2030. In a move clearly designed to kick this radioactive can down the road and avoid any negative consequences as he revs up to run for the Democratic nomination for president in 2028, Newsom said of the extension, that will be the baton that I pass on to the next administration.

You probably don't recall, but Diablo Canyon was [00:05:00] already agreed to be shut down, the plans were in place, and it was moving forward when suddenly Gavin Newsom, who had been in favor of shutting down that reactor, suddenly did an about-face and became its biggest booster. Makes me wonder about the PACs that are already contributing to his war chest for president.

Note that his current term only goes until January of 2027, so it's not that he decided that he would not give approval for the reactor to restart. He just sidestepped a hot bullet. We'll have more on this from San Luis Obispo Mothers for Peace on next week's show. In Europe, operation of the so-called reliable nuclear reactors has been hard hit by droughts this summer, which have wreaked havoc in European power production, and the hit to the region's economy can already be measured in the hundreds of billions of euros.

On Monday, August second [00:06:00] and Tuesday, August third in Romania, that country's military used three hundred ninety-seven pounds of explosives to blast rock near the lower Danube's Bala Canal in an effort to redirect water into the river's main channel and towards the state-owned Cernavoda Nuclear Power Plant.

Extreme heat waves and low rainfall across the region have left the Danube at record low levels, forcing Romania's Cernavoda Nuclear Plant to shut down. That did not work, so on August seven and eight, Romania raced to sink four barges laden with rock into the Danube River in an attempt to redirect water downstream towards the Cernavoda nuclear reactor.

The plant's director, Romeo Urzan, said that the Danube's water level had decreased about two centimeters or point seven inches from Wednesday to Thursday, and that without sinking the barges, the plant's second reactor would likely have to be shut [00:07:00] down in five to six days. In neighboring Hungary, the Danube's record low levels have pushed the country's only nuclear power plant, Paks, to the brink of powering down entirely for the first time in decades.

The government has asked households, public institutions, local authorities, and companies to reduce consumption of electricity or shift it away from the evening peak between five PM and ten PM. The Paks reactors were operating at little more than ten percent of capacity this past Sunday, and it was expected to stop generating entirely on Monday for the first time in more than four decades.

It could remain offline for weeks. Meanwhile, the heatwave in Europe has yet to reach its expected peak. And as if that's not enough, the Gravelines nuclear power facility in France has been under assault from jellyfish. Yes, Mother Nature's army of [00:08:00] spineless invertebrates have been clogging the intake valves for the cooling water.

This is not an isolated event, because over the last 15 years, nuclear reactors have powered down or shut down completely be- jellyfish and other spineless marine organisms have repeatedly forced nuclear reactors to reduce power or shut down by clogging the cooling water intake. These include Torness in Scotland, St.

Lucie in Florida, Shimane in Japan, Hadera in Israel, Oskarshamn in Sweden, Hongyanhe and Ningde in China, and now for the second year in a row, Gravelines in France. As for power reductions or shutdowns because of water being too hot or not enough of it, in the last 10 years, this has happened in Finland, Germany, Switzerland, multiple, multiple times in France, Romania, and if you reach back to 2014, Turkey Point in the US.

In the strongest documented [00:09:00] examples, at Ringhals 2 in Sweden in 2018, seawater reached the plant's maximum permitted cooling temperature, and the reactor was first reduced to 55% power and then shut down completely. In France in 2022 alone, five different nuclear facilities, Bugey, Blaye, Golfech, Saint-Alban, and Tricastin, were affected by extreme heat and/or low river flows.

France temporarily relaxed environmental thermal discharge requirements to keep some reactors operating. So tell me, all you pro-nuclear people who claim nuclear energy is so reliable, how can that be when heat, low water levels, or spineless jellyfish can shut them down? And now for something completely different, here's this week's featured interview.

Physicist M.V. Ramana has been featured numerous times on Nuclear [00:10:00] Hot Seat, and his input is highly prized here for his understanding of nuclear power's failures, shortcomings, and dangers, and the clarity with which he can explain its complexities so even newbies to the issue can understand. He is the Simmons Chair in Disarmament, Global and

Human Security, and a professor at the School of Public Policy and Global Affairs at the University of British Columbia.

He's the author of the 2024 book S- Nuclear Is Not the Solution: The Folly of Atomic Power in the Age of Climate Change. Ramana is the recipient of a Guggenheim Fellowship, a Leo Szilard Award from the American Physical Society, and the 2026 Alliance for Nuclear Accountability DC Days Award. Here, he spells out what's wrong with this latest push to make nuclear reactors the energy engine of AI data centers.

I spoke with Ramana on [00:11:00] July 25th, 2026. M.V. Ramana, it is always a joy and highly educational to have you on Nuclear Hotseat

**M. V. Ramana:** Thank you, Libby. I learn so much from your show by listening to all the amazing people that you interview, and I really respect all of the hard work that you put into keeping this going, so it's my honor and my privilege to be part of this.

**Libbe HaLevy:** And you are indeed one of the most amazing people I interview. You recently published an article in the Bulletin of the Atomic Scientists entitled Data Centers Powered by Next Gen Nuclear? Don't Fall for Big Tech's PR Hype. So let's unpack this, 'cause there's a lot in it. The push for AI data centers seems to be relying heavily on the assumption that new nuclear reactors, the small modular ones, will be built in proximity and will power them.

What is the connection [00:12:00] that the industry is trying to build up between AI and nukes?

**M. V. Ramana:** There are two industries at play here. There is the big tech AI industry, and there is the nuclear industry, and both are trying to take advantage of each other in some fashion. So from the nuclear industry's point of view, and we know this, this game quite well, what the nuclear industry basically says is there is this new demand that is being generated by all of these data centers, many of which are being used for chatbots and AI and so on, and nuclear energy is the only solution that can actually meet those energy needs.

This is exactly the kind of story we heard back in the early 2000s when they projected huge demand growths and saying nuclear energy is going to be the way that's going to be solved. And so for them, this is another reason for going to the government and saying, "You need to subsidize us. You need to make sure [00:13:00] that we are being built," and so on and so forth.

And of course, this is also going to go to the public, and many of these companies that are setting up small modular reactors are trying to go public and do an IPO and raise funds that way, basically trying to find some gullible public members of the public who will buy these stocks in the hope that these are going to go up.

And of course, the stock market is a strange place. You know, if you buy stocks, sometimes it'll go up even though there is no fundamental reason for it to go up. But as long as enough people get fooled, then you, you might come out advantageous, and that's a separate story there. That's the reason why the nuclear industry is making a lot of effort to promote itself as the solution to the AI and data centers' energy demands

**Libbe HaLevy:** You call their announcements, meaning the nuclear industry's announcements about their plans for building new modular [00:14:00] nuclear reactors to power AI data centers, as press releases.

What do you mean by that?

**M. V. Ramana:** The nuclear industry is looking to the AI and data centers energy demand as a way to justify building new nuclear reactors and get subsidies. The big tech's interest in nuclear power comes from a very different point of view. Big tech is thinking that if it's going to be building all these data centers, one of the potential concerns that people are going to have is the fact that if these are powered by fossil fuels, then that will lead to increased emissions.

And if you look at annual reports of companies like Microsoft or Amazon, you see that they are reporting greater emissions. And some years back, I think what, uh, some of these companies... Of course, we don't know what they are discussing behi- inside their boardrooms, but my guess is they would have [00:15:00] seen the potential negative public backlash from all of this energy use and emissions, and they would have had actually a good model to think about, which was the cryptocurrency Bitcoin industry.

Some years ago, there was a lot of news coverage about how much energy Bitcoin mining was using and how the emissions from this was larger than some small countries, let's say Denmark or Uruguay or something of that sort, and that was not a good publicity moment for that industry. As a result, there were many countries that started regulating that.

The Biden administration put in some regulations on cryptocurrency mining. China actually banned Bitcoin mining because of these concerns. The... In my view, I would imagine that people who are in these big tech companies would, would have seen what happened there and said, "We need to get ahead of this." And so [00:16:00] they started making these announcements about how they were going to build nuclear power plants, especially these small modular reactors, and that is going to take care of any of these emission concerns.

So those are the kinds of press releases that we saw starting in October 2024. Uh, both Google announced an agreement with this company called Kairos Power, and Amazon announced an agreement with this, uh, utility company called Energy Northwest about building small modular reactors, these XC100 reactors.

**Libbe HaLevy:** You call these announcements, which are seemingly very big news stories from these companies, as being press releases. What do you mean by labeling them that?

**M. V. Ramana:** So these are press releases which are quite uncritically reported by mainstream media, and mainstream media just repeats whatever talking points Amazon [00:17:00] or Google or Meta have made.

Why I would like to label them as press releases is because we need to be critical about what we take away from them. So if you look carefully at these press releases, what you find is that they are quite cagey about what exactly they are doing. They are not very specific. For example, the announcement between Amazon and Energy Northwest.

Energy Northwest, by the way, is the rebranded name of the old utility in Washington State that had the largest municipal bailout in the-- back in the 1980s when they were planning to build a bunch of nuclear reactors. So they rebranded themselves Energy Northwest, and Amazon now has a agreement with them where they basically say they are going to fund the feasibility phase of an SMR project.

Now, what exactly does funding a feasibility phase mean? Does it mean they're [00:18:00] going to build a reactor? Does it mean they're going to give $100,000 to some researcher to do a kind of economic assessment of these reactors? Is it going to be funding for developing a bunch of nice PowerPoint slides? We don't know what that means.

Okay? And then they say they are going to-- in exchange for that, they're going to get the right to purchase electricity from the first project involving four modules, which is expected to generate 320 megawatts of energy capacity. Okay. Again, we should try to drill down into what that kind of means. When they say we have the right, it doesn't mean that they necessarily have to buy.

We have the right to go to the bookstore and buy a book, does not mean I'm going to go and actually buy the book. And so Amazon's why is it using that language is something we should be thinking about. And Amazon could look at when this project, if it is ever completed, they can look at the project and say, "Hey, we don't want this electricity.

It's too expensive." [00:19:00] That's entirely possible. So why I'm sort of analyzing these press releases is because if you look at it carefully, what it says is much less than what it's construed to be by the media. The media seems to think that they have actually invested in small modular reactors, they're going to build a whole bunch of them, and so on and so forth.

But these companies are actually quite careful, at least from what I can see in the public releases. And I would imagine that these companies have smart lawyers and smart engineers and economists who can look at the track record of nuclear power, at the high cost of nuclear power, and would have told their CEOs, "You shouldn't be committing to buying huge amounts of this.

It's good publicity, but it's not actually something which is good for your financial bottom line."

**Libbe HaLevy:** In the article, you're very clear about stating that no small modular nuclear reactors... And by the way, they call them SMRs, [00:20:00] small modular reactors. They leave out the other N word, which is nuclear.

**Nuclear Hotseat Theme:** Yes.

**Libbe HaLevy:** So I will call them what they are.

You're clear that there are no small modular nuclear reactor projects currently under construction in the United States, yet they have been announced in these press releases as projected to be in operation and generating electricity as early as 2031. This seems like a major disconnect. How realistic are those projections?

**M. V. Ramana:** The simple answer is they're not realistic. Uh, we have seen these kinds of announcements many, many times in the past, and they never come true. If you, uh, look back to, for example, the small modular nuclear reactor design that's most advanced in the United States in terms of having received a certification from the Nuclear Regulatory Commission, namely NuScale, NuScale originally was saying that it would [00:21:00] have its first nuclear reactors operational by the 2015, 2016 time period.

Now they're talking about the 2030s. So this is always a moving target, and many of these reactors, the ones that the big tech companies are talking about, have not even obtained any kind of certification from the Nuclear Regulatory Commission. They cannot start building them right away, and there are lots of questions about it.

And then there are other reactor designs where they need materials that are not available in large quantities, namely high assay low enriched uranium, HALEU fuel, and this is also not something which is readily available in the United States. So there are going to be a lot of roadblocks before these companies can even start building these small modular nuclear reactors.

And then we know from all of the experiences with nuclear [00:22:00] reactors, small and large, that construction always takes much longer than is expected. I usually refer to an academic study that looked at 180 different nuclear reactor construction projects and found that 175 of them had exceeded their budget and had taken longer to build.

The experience we know from both Russia and China of building small modular nuclear reactors, in the case of Russia, it's the KLT-40S, and that took 13 years to, uh, go between the time construction was started to the point when it started generating electricity. Initially, the projection was that it would be done in three years.

And in China, which, you know, in generally never exceeds, uh, timelines for most of its projects, the small modular reactor, the high temperature gas cooled reactor units took more than twice [00:23:00] the promised time, which was 15 months And after the reactors have started operating, their operating operational record has not been great.

So that's a different part of the story, which is that even if these reactors were to be built, there is no guarantee that they will actually be supplying electricity in any kind of steady fashion that these companies can rely on.

**Libbe HaLevy:** And an important point there is that we don't even know if they're going to work, if they're going to be safe, because with none having been built, they haven't been tested.

And I can remember growing up being told that when a car company came out with a new model of car, you never wanted to buy the first year that it was out because they were still working the bugs out. And that I would assume the same principle would apply to nuclear, although potentially with much greater and much more devastating impact.

Now let's talk about the money. Where is the money supposed to come from [00:24:00] for these new nuclear reactors? How much has been pledged, and is it an adequate amount to move forward?

**M. V. Ramana:** The press releases that I talked about, when you look at them, they are quite conspicuous in not really mentioning how much money is being put in.

There are only a few of these press releases that actually talk about how much they were going to invest. One, for example, was announcement from Amazon, where Amazon and a number of other investors, and all these investments seem to come from large groups of investors, not just one single company, even though these single companies have enormous amounts of money, so they can very easily just write a check if they so choose to.

But they are not. Instead, what they are doing is going around finding a number of other investors. So in the case of the October twenty twenty-four announcement from Amazon, that consortium involved Amazon's Climate Pledge fund, the [00:25:00] Citadel founder and CEO Ken Griffin, affiliates of something called Ares Management Corporation, the University of Michigan, all of them said they were going to invest approximately five hundred million dollars in, in X-energy, which is the designer of the high-temperature gas-cooled reactor that I mentioned.

And similarly, TerraPower, this is the company that Bill Gates started, they announced that they had raised six hundred and fifty million dollars from a group that involves the venture capital arm of NVIDIA, the company that makes chips, and current investors, which included Bill Gates as well as a South Korean company called Hyundai.

These numbers, five hundred, five hundred million dollars, six fifty million dollars, to put that into perspective, you have to think about what it might cost to build one of these small modular reactors. The latest... One of the estimates of the TerraPower's Natrium nuclear plant is nine point four billion dollars.

That's [00:26:00] billion with a B. As opposed to the millions of dollars these companies are investing. And this is for just 345 megawatts of electrical power, assuming that it operates at the design capacity, as we mentioned. There's no guarantee that these reactors are actually going to operate in the way that they have been advertised.

If you go back to the NuScale project that was to be built by a consortium of Utah's municipal power suppliers, that UAMPS project was estimated to cost $9.3 billion for just 460 megawatts of electricity, involving six of these NuScale modules. And that project got canceled because this cost was just too much for these municipal power suppliers.

And so many of these companies said they were not going to invest in this project, and eventually that project was canceled. [00:27:00] And this is the most advanced small modular reactor design in the US. But these amounts are much larger than the kinds of money that we have seen these companies willing to commit.

And so there is no reason to think that they are actually going to get built unless a whole bunch of public go in and fund into this. And I don't see a lot of evidence of that happening. I mean, there are people who are investing in it, and these stock prices go up and down whenever there's an announcement from the government saying they're going to do this or that, make the regulations easy.

You might see the stock price go up a little bit, and then more people might probably invest. But then some other announcement comes along, and the stock price declines. And so I don't see the public giving $10 billion roughly that is required for these projects to go forward. And that is only for one project, and these companies are looking for many, many, many [00:28:00] projects

**Libbe HaLevy:** You mentioned something that I think we need to get clear on for the listeners.

You mentioned megawatts, and there are pronouncements coming from the industry about gigawatts. Can you give us some equivalency so we can wrap our head around what those amounts mean?

**M. V. Ramana:** Data centers are of different sizes. It depends on how much computing capacity they require. And the largest data centers that have been proposed are talking about building gigawatts.

A gigawatt is a billion watts of power. To put that in context, a typical household might use something like 1,000 watts, a kilowatt at, of capacity. So that might be the energy demand from your oven or your refrigerator. All of those things combined might amount to something like one kilowatt. And this is about a million times more [00:29:00] than that.

And these are some of the larger projects. There are even larger projects that have been proposed, uh, going up to five gigawatts or, you know, seven gigawatts, things of that sort. And to put that also into perspective The nuclear plants that were built in Vogtle in Georgia, those were each designed, the AP1000 reactors were each designed to generate little over one gigawatt of electricity, 1.1 gigawatts of electricity.

All right? So each of these large data centers might require the equivalent of one large nuclear plant.

**Libbe HaLevy:** And inform us as to how long and how much money the Vogtle plants cost.

**M. V. Ramana:** Yeah. The Vogtle plant took roughly about 10 years to construct, depending on when you want to state the start of construction, and the initial cost estimate when construction started was $14 billion.

And by the time construction [00:30:00] ended, it was over $36 billion. The $14 billion, one should put that into perspective, is when in the mid-2000s the Bush administration passed the Energy Policy Act that put in place the incentives for electric utility companies to invest in nuclear plants, those incentives and the Energy Policy Act were premised on the fact that each of these AP1000 reactors would cost something like $2 to $3 billion to build, so the combined Vogtle reactor project should have cost something like $5 to $6 billion.

Instead, that cost went up to $14 billion by the time the construction started and there was some kind of definitiveness about what all would be required, and then that 14 billion then jumped to over $36 billion. When we are talking about small modular reactors, especially the very new ones, the kind of cost estimate [00:31:00] should be considered to be the equivalent of the $5 to $6 billion before the escalation to 14, before the escalation to $36 billion.

So we should expect to see all of these small modular reactors cost much more than what those companies are claiming they might cost.

**Libbe HaLevy:** And also, if they run according to track record in the nuclear industry, they will also take much longer to build.

**M. V. Ramana:** That's right. If you look at nuclear power projects around the world, typically it has taken about 20 years, give or take a few years, between the time that, let's say, a country decides they're going to build a nuclear power plant to the point when electricity is actually generated and flows into the grid.

So you can look at Finland, you can look at the Vogtle project, you can look at France. All of these countries have taken roughly 15 to 20 years between the time when they decided to build a nuclear plant and electricity starts flowing into the grid.

**Libbe HaLevy:** Let's take a look [00:32:00] at what an AI data center using all of these gigawatts of energy is going to do to consumer electricity rates.

**M. V. Ramana:** The simple answer is it's going to go up. And the reason it's going up is because the demand from data centers is growing very rapidly. And the simplest way for them to actually meet this energy demand is not to build small modular reactors or even a natural gas plant. The simplest way for them is to just plug into the local grid, uh, in whatever state they may be setting up this data center in.

And the utility company is generally obliged to meet whatever demand is being posed on them. But the problem now has been that these demands are growing so rapidly that these utility companies simply have not planned for this fast rate of growth, so they do not have the capacity. [00:33:00] And so they are in a mad scramble trying to get new generation going, and that's driving up all kinds of prices, and ultimately, all of those price increases are going to be coming straight to the consumers in those places.

And so in state after state, we have seen many, many consumers talking about how their electricity bills have gone up by, you know, 50%, 80%, 100%, and so on and so forth, making life very, very difficult.

**Libbe HaLevy:** We will continue the interview with physicist and author M.V. Ramana in just a moment. But first, nuclear is a hydra-headed monster, always morphing into new forms to bring us new nightmares.

Here, we learn about how nuclear reactors and AI data centers are joined at the hip, at least according to the promoters of both technologies. Can't have one without the other? So how about we, the people, continue to push back against both? AI [00:34:00] is not the reason we need more nuclear reactors. Nuclear reactors are a major factor in why we should not ever go with AI.

And it is my belief that if you're against AI data centers, you must by extension be against new nuclear, which brings with it all the problems of old nuclear, highly radioactive waste, cancer-causing emissions. If you listen to this show, you know the drill. And there's a new one, the terrorist threat, because the special fuel small modular nuclear reactors require, called HALEU, is enriched to a high enough level that it could fission and thus be used in the making of a nuclear bomb.

Are you sure you want that in your neighborhood? If not, that's why you need Nuclear Hotseat We keep up with the latest nuclear stories and present them to you in a form that you can wrap your head around. Our reports are based on verifiable [00:35:00] sources, genuine

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Whatever you can do to help, I'm grateful that you're listening and that you care. Now back to this week's featured interview on AI and nukes with physicist M.V. Ramana. In all of this, not that I wish to enable AI data centers, but has there been any consideration and to what extent consideration of genuine renewables providing energy such as solar and wind?

**M. V. Ramana:** I think from the viewpoint of most of the data centers, they are not necessarily very [00:37:00] committed to one energy source or the other. Many of them are just saying, "We want it to be as fast as possible." My own understanding of how this ecosystem is evolving involves all kinds of different companies. There are some which are coming to it with renewables and maybe backed up by some amount of storage, and there are other companies that are using natural gas, and then there are these few companies that are talking about nuclear power and so on and so forth.

But what is important here is if you were to think about the broader trends without thinking about specific data centers and just thinking, okay, let's look at the United States as a whole and what is the different energy demands going. So there's a standard report that comes out every year called the Statistical Review of World Energy.

This is put out by a group called Energy Institute, which was formerly BP, the British Petroleum Company, and they have been doing this for decades at this [00:38:00] point. It's a very reliable source of energy information. This is what, for example, we use in the World Nuclear Industry Status Report that Michael Schneider and others put together to try and compute what is the share of nuclear electricity in the world's electricity, for example.

And just as an aside, I will say this year's calculation showed that nuclear energy's share of global electricity had finally dipped to under 9%. It's 8.8%, down from 17.5% in 1996, so roughly about half of what it was in the mid-1990s. Okay, end of aside. Coming back to the Statistical Review of World Energy, in the 2026 report, for the first time they documented what is the demand from data centers There's a lot of uncertainty about it, but their figures for the United States alone shows that the demand has grown from [00:39:00] 172.8 terawatt-hours in 2020 to 312.6 terawatt-hours in 2025.

And I'll give you a number to put that terawatt-hours into consideration. So the rate of growth is something like around 12 to 13% every year. Just to put that into context, if some company were to build a 300-megawatt small modular nuclear reactor, it will just produce something like 2.6 terawatt-hours every year, even if it operated for 24 hours a day, 365 days a year.

It's not going to do that, but that's just to give you a perspective. So a small modular reactor would produce maybe 100th or 150th of the total energy demand from all these data centers. Now, the second number I want to give is that over the same period between 2020 and 2025, the amount of energy [00:40:00] that renewable energy projects around the country have been contributing to the grid in the United States.

So this does not include all of those solar panels that are on people's roofs and are just feeding electricity to those houses. So this excludes that. This is only the electricity that's going into the grid. That number grew from 547.7 terawatt-hours in 2020 to 926.9 terawatt-hours in 2025.

**Libbe HaLevy:** That's close to double.

**M. V. Ramana:** That's close to double, exactly. But more important for the discussion that we are having, the increase in renewable energy generation has outpaced, at least so far, all of the growth in demand from data centers. I mentioned that the data centers were, in 2025, requiring about 312 terawatt-hours, but the increase has been over 312 terawatt-hours between 2020 and 2025 from renewables.

Renewables today are contributing roughly [00:41:00] around three times as much energy to the grid as these data centers demand. But I think we should not lose sight of the question about whether this demand from data centers is really justified and whether we need to be supplying power at all costs. I want to come back to that question at some point.

**Libbe HaLevy:** Let's come back to it now. Do you think this demand from AI data centers for energy is justifiable?

**M. V. Ramana:** The data centers are used for multiple things. We are now having this conversation over Zoom, and some data center somewhere is actually storing all this information. And data centers are used when you maybe make an order on Amazon to order a book there, though hopefully people don't do that.

Uh, data centers are also used to do all kinds of surveillance of people, collecting information about what protesters may be saying in one place, all kinds of [00:42:00] things. And they are also used to deal with the use of, uh, systems like Claude in the bombing of Iran. The people who were running that campaign proudly mentioned how AI had speeded up how fast these targets had been selected.

Targets meaning schools and other buildings where people were going to be killed. And last but not least, some of these data centers are used to train these large language models that are used to produce this material. And, you know, many of these uses are not things which are in the public interest. So I think we should be asking the question whether these data centers should be built, whether we should be subsidizing them, whether we should be paying higher electricity prices so that these data centers can receive the electricity that they are using And we should also ask the question, is AI something we should be supporting?

If you think about AI, [00:43:00] many of these products, they of course have enormous environmental consequences. We have been talking primarily about energy, but they also have enormous demands of water. And of course, if nuclear plants were to be built to meet the energy demand, those would also require huge amounts of water for cooling, and nuclear power plant is one of the most water-intensive ways of generating electricity.

And then the, the non-environmental cost having to do with the fact that many of these models have been trained on stolen data. It's stuff that, you know, you or I have written that these companies have just hoovered up from the internet and used it to train their models. They didn't give-- ask us for permission.

They're not giving us a share of their profits. They are just profiting off our work. So there is something deeply unethical about these models. And last but not least, what are these being used for? So these companies are investing [00:44:00] literally trillions of dollars, and the only reason they can think about doing that is they want to sell this to other companies so that those companies can basically lay off all the people that are working for them or reduce their staff dramatically.

And then some part of that savings from laying off the staff is going to go to that company, and the other half of it is probably going to go to these AI companies That's their only business model, which basically means that the young people today are much less likely to get a job because each of these companies is thinking, "Oh, why do I want to hire somebody when I can just buy this AI, uh, models and access to it?"

And so its social impacts are deeply problematic. We are going into a future where many of the students that I teach here in UBC, they are really concerned about whether or not they're going to get a job, whether that job [00:45:00] is going to be stable, whether that's going to be meaningful. Because the other thing that these models do to people's work is it kind of degrades what you do.

For example, if you are a software programmer, many of these companies say you shouldn't be writing your own software programs. What you should be doing is using one of these AI models to generate the first code, and then you can just go through it and make any corrections that might be needed. That's a much less skill-oriented task than if you were to write your own computer program.

It's sort of like you are a very skilled carpenter, you might like to make a nice chair. But instead, what you're told is you go to IKEA, you buy your chair, and then maybe you can, you know, polish it a little bit and give it a little bit of sheen. Obviously, nobody is going to pay you the kind of money that you would be paying you if you were to make your own chair, as opposed to an IKEA chair that you polish up.

So maybe you'll get, you know, f- uh, $5 an hour [00:46:00] for one and $100 an hour for the other. That's the kind of future that many of these people are going to be facing. And so we should be asking the question whether this AI business is really something we should be supporting. And I'll also finally say that this question is worth pursuing because I do not think these companies actually have a viable business model.

As I mentioned, they are spending trillions of dollars, and what most people think is, "Oh, I'm using ChatGPT to generate, let's say, the recipe for a lemon cake, or to figure out what is a good travel routine for my holiday in Italy," or something of that sort. If each of these people were to be actually charged how much money it takes for this system to actually give those results, the recipe for the lemon cake, for example, it'll probably charge them $30 for that recipe.

I'm just making up a number there, but it's a sizable number. At that point, [00:47:00] nobody's going to use that. Then they will call you and say, "Hey, you know, my friend, can you please tell me how you made that lemon cake with-- that you made in the party last year? I want to make it for my friends today." And so you'll go back to old-fashioned ways of generating recipes, figuring out how to do your trip to Italy, and so on.

It's now because this is all available for free- And these companies are hoping that somehow you will get hooked onto it, and you will start paying them lots of money. But the money that normal consumers can pay is nowhere near what it takes to actually generate that system. And this is going to get only worse if AI really becomes successful in companies being able to lay off large numbers of people.

In that case, you know, my children, for example, they are not at risk... I mean, they're not likely to get really well-paying jobs, in which case they cannot afford even the ch- low prices that these AI companies might be charging. So who are they going to sell this to is, I think, a very open [00:48:00] question. And I don't think that this AI business model is likely to succeed, at least in the way that the Sam Altmans and Elon Musks of the world are envisioning.

And there is many people who are market analysts who are saying this bubble is going to burst at some point. And when it bursts, to come back to what we were saying, all of this nonsense about small modular reactors will also hopefully go away with that.

**Libbe HaLevy:** You've just laid out a very complex and interconnected vision of what this move into an AI-generated nuclear-powered world might look like and the problems there.

What has been the public's response to this?

**M. V. Ramana:** The public has responded, for the most part, especially in recent days, with resisting building of data centers. Tomorrow, in fact, here in Vancouver, there is going to be a No to AI and [00:49:00] Data Centers rally. The last time there was one a few weeks ago, there were close to 1,000 people who marched all the way from Vancouver Art Gallery to the City Hall, making a demand that no data centers be built here in Vancouver.

And this is, I think, a pattern that is across North America. A Gallup survey from March 2026 found that people opposed data centers for a variety of reasons, including energy consumption, water usage, electricity bills, noise pollution, concerns about the quality of life that they are all living in, the economic effects from loss of jobs.

These are all the reasons why people were opposed to it. And the numbers that they sort of-- We look at, uh, you know, one recent, uh, poll from Ipsos, when people were asked whether they support or oppose the construction of new data centers in the United States, forty-four percent of those polled were opposing it, [00:50:00] whereas only about twenty-one percent of the people supported it.

So opposition was more than double the people who supported it. And then when this question was modified to asking: Would you support a data center being built within your community? Then support dropped to fourteen percent, whereas opposition jumped to fifty-seven percent. And most importantly, sixty-one percent of those people did not agree with the proposition that rapid growth in the use of artificial intelligence was mainly a good thing for the country.

In other words, most people thought this was not a good idea. And this is what I think is motivating a lot of the pushback against data centers and AI

**Libbe HaLevy:** So we have this growing wave of opposition to AI data centers, which is finding a lot of success in communities around the country, yet there [00:51:00] is no comparable pushback against nuclear, and people have not perceived that while you might say no to a data center now, if a small modular nuclear reactor that might power it gets built in your area, in your community, it's a stealth way that, you know, five, six, eight however many years from now, the AI companies can come back and say, "Look, it's easy.

We've already got a nuke here. That's what will power us." So it becomes a backdoor way of getting the AIs in and approved. What will it take to link the awareness of AI not good, nukes not good? If you're against AI, you need to be against nukes as well.

**M. V. Ramana:** That's a great question. I wish I had a good answer for you.

I think what we are doing, like writing about it, talking about it, you producing this podcast, these are ways of trying to [00:52:00] influence that narrative. But I want to step back and ask the question, if we were to do a similar poll, I don't have the numbers off the top of my head, but I would imagine that opposition to nuclear power plants would actually be less than opposition to data centers.

And I want to ask the question, why is that the case? Had this same poll been done, let's say 15 years ago, then you would have probably found a much greater level of opposition, because 15 years ago was when the Fukushima disaster happened. Those kinds of disasters are what remind people that nuclear power is a dangerous thing.

It is in the news. People understand that nuclear power is dangerous, nuclear reactors can have meltdowns and other kinds of accidents, and they obviously then start asking difficult questions about nuclear power. Now, after Fukushima, for a little while, the mainstream media was talking about how bad that disaster was, the difficulties of [00:53:00] evacuating people, the way there were pockets of hot radioactive particles being deposited in various places, and so on and so forth.

So all that was to remind people that nuclear is a dangerous thing. What has happened since then is you would see year after year, there is less and less coverage about Fukushima, about Chernobyl, about the dangers, and more and more propaganda about how nuclear is safe and clean and cheap, and all of those lies that the nuclear industry always puts out.

And if you're a young person growing up and you're only subject to this idea that nuclear is clean because it doesn't emit carbon dioxide, and of course, we, and the people in your audience of your program know that that's not true. But people are subject to this propaganda that nuclear is clean, it's a solution to climate change, it's cheap, it's only constrained by regulatory burden, blah, blah, blah.

And so then at some point they all think, "Okay, this is going [00:54:00] to be a good idea for the world." Until something happens. Now, we don't want accidents to happen all the time, but that unfortunately is one of those times when we get to sort of shape the public narrative at least a little bit. In the absence of that, all we can do is to try and take every opportunity to remind the public that this is not a good idea.

And this is what you've been doing, this is what I've been doing, this is what all of the guests that you have on your show are trying to do. We are a few people, we don't have a lot of resources, but we punch above our weight, I think.

**Libbe HaLevy:** And boy, are my knuckles sore

**M. V. Ramana:** One of the ways in which the data centers and AI industry has boosted up nuclear power is by claiming that they're going to restart old nuclear power plants in the United States, most importantly, Three Mile Island Unit 1 in Pennsylvania.

This is [00:55:00] the sister unit to the unit that melted down back in the 1970s. And the utility that owned this reactor, Exelon at that time in 2017, decided to shut down the Three Mile Island Unit 1 because for more than five years, it had recorded losses on this plant. It tried to sell power into the regional grid, and in all of those auctions, Three Mile Island was not selected because its power was so expensive.

And other such reactors that have been shut down for economic reasons in the last decade, Palisades Nuclear Reactor in Michigan and Duane Arnold in Iowa. These reactors were all shut down because they were single units where the economics was not working out. Now, some of these units are being considered for reopening, and the claim is, "Oh my God, this is going to [00:56:00] produce so much energy for these small modular reactors.

Look, nuclear power is the way that we are going to deal with this." But if you look at all of these reactors, and let's assume that despite all the risks that go with reopening old nuclear reactors, and I'm particularly concerned about Palisades, I know you have talked to people about the problems with that particular reactor.

But let's assume that the Nuclear Regulatory Commission and all of the other regulatory authorities allow this to be restarted. Then what you would see is that you would-- these together will generate around 2,225 gigawatts of power at best, assuming everything is working fully and so on. And if they were to operate at their historical load factors, the load factor is a measure of how efficient a power plant operates.

So if it had a load factor of 100%, [00:57:00] it means that the power plant is operating at the design capacity 24 hours a day, 365 days a year with no shutdowns. Now, no plant really operates that way. If you can look at what are the operational efficiencies of the Three Mile Island Unit 1, Palisades, and Duane Arnold What you find is that they generate about 15 terawatt hours of electricity at best, and that is a very small fraction of the 2025 demand of 312 terawatt hours.

And that's ends the list. There are not that many old nuclear reactors waiting to be restarted. So even in the best case scenario, you are going to be nuclear power plants that can only produce a very small fraction of the energy demand from these data centers in the short run. By, by short run, I mean let's say till the 2030s.

**Libbe HaLevy:** Is there anything you haven't had a chance to share with us that [00:58:00] you would like to at this time?

**M. V. Ramana:** I think that the discussion about data centers and AI and nuclear power should lead us to also these larger questions about what kind of a world it is that we want to live in. We have to use this moment to not just talk about the bad problems of data centers and AI, but we have to, or for that matter, small modular reactors, but thinking about what is the mindset that is actually thinking of these as desirable and as ways of dealing with the many problems of the world.

Small modular nuclear reactors as a way to deal with climate change, for example, offers us a fundamental insight into how the people who are so rich and powerful and deciding so many things about the world are thinking about, that they are willing to actually risk nuclear catastrophes just because they want to keep business as [00:59:00] usual operating in a world that is rapidly becoming far less ecologically sustainable.

And the data centers is exactly the same thing. At a moment when we should be reducing our energy demand, our use of materials, what these powerful people have said is we have to double into how fast we are consuming energy, even if it means increasing emissions, even if it means restarting coal plants, and also building all these dangerous new nuclear plants.

I think that's the larger question that we all have to be grappling with and raising in places where these questions typically are not talked about because this is not considered to be polite to talk about these difficult questions.

**Libbe HaLevy:** I love the fact that neither one of us is polite, and we do talk about these nuclear issues.

Ramana, it is always astonishingly educational and engrossing to have a conversation with you. I look forward to our next. But for now, [01:00:00] I want to thank you for being my guest this week on Nuclear Hotseat

**M. V. Ramana:** Libby, I'm always grateful for the opportunities you provide, not just to me, to a lot of other people who are doing extraordinary work and do not often have the public platforms that they need to be able to expound on what they are doing.

So I'm very grateful to you. Thank you for all that you do, and please keep it up. And if there's anything I can do to support it, I'm mo- more than happy to do so.

**Libbe HaLevy:** Physicist M. V. Ramana. He is author of the excellent 2024 book, Nuclear Is Not the Solution: The Folly of Atomic Power in the Age of Climate Change.

We will have a link up to it on our website, nuclearhotseat.com, under this episode number 789. We'll also have a link to his article in the Bulletin of the Atomic Scientists, "Data Centers Powered by Next-Gen Nuclear? Don't Fall for Big Tech's PR Hype." [01:01:00] We will also have links up to two episodes dealing with the Palisades proposed nuclear reactor

restart, with nuclear engineer and whistleblower Arne Gundersen and nuclear waste specialist Kevin Kamps, both of whom have been deeply involved in the issues.

Again, they're up on the website under this episode number 789. This has been Nuclear Hot Seat for Tuesday, August 11, 2026. Sign up to get Nuclear Hot Seat delivered via email every week as soon as it posts by going to the website nuclearhotseat.com and fill out the yellow opt-in box. This episode of Nuclear Hot Seat is copyright 2026 Libbe HaLevy and Nuclear Hotseat

All rights reserved, but fair use allowed as long as you cite the program, website, names of guests whose comments you use, and me. For now, this is Libbe HaLevy of Nuclear Hot Seat reminding you that as Eric Epstein of Three Mile Island Alert said, [01:02:00] "The Faustian bargain with nuclear is you get electricity for a minute and radioactive waste forever."

There you have it, your weekly nuclear wake-up call. So whatever you do, don't go back to sleep, because we are all in the Nuclear Hotseat

**Nuclear Hotseat Theme:** Nuclear Hotseat What are those people thinking? Nuclear Hotseat What have those boys been drinking? Nuclear Hotseat The corium is sinking. Our time to act is shrinking, but the activists are linking.

Nuclear Hotseat It's da bomb