

InfoPoint PA – PA Energy Alliance
“Nuclear Uprates-Lower Cost, Emission Free Electricity”
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Participants

Host: Craig Rhodes
Guests: Karen Walsh
Dr. Forrest Remick
Dr. Patrick Moore

Moore: We cannot possibly run factories and hospitals and schools and our lives on energy resources that disappear for three or four days at a time. When the wind stops blowing you have to have something to back it up and that has to be a reliable source of power, like a nuclear plant, that you know is going to be there for you.

Host: Reliance on foreign oil, fossil fuels, clean energy, global warming and climate change,.. words that we've all become familiar with as the issue of America's future energy needs continues to be debated. How big of a role will nuclear energy play in those future needs, particularly here in Pennsylvania where legislation is currently being considered that would define how much of our energy will be coming from environmentally friendly sources. This is “InfoPoint PA, Nuclear Uprates-Lower Cost, Emission Free Electricity.”

Welcome. I'm Craig Rhodes. You're about to hear a lot on that topic from three experts.

Karen Walsh is currently the Executive Director of the Pennsylvania Energy Alliance. Her extensive resume includes working with Senator Bob Casey as a Deputy Chief of Staff, and also with his dad, Governor Robert P. Casey as Press Secretary during his re-election campaign and as a Special Assistant to the Governor.

Dr. Forrest Remick, recently retired, he was a private consultant to various government, industry and university clients. He served a five year term on the U.S. Nuclear Regulatory Commission and was President for Research and a Professor of Nuclear Engineering at Penn State University.

And Dr. Patrick Moore, currently co-chair of the Clean and Safe Energy Coalition. He founded, and for the last twenty years, has worked with Greenspirit, a consultancy working to develop sustainable strategies for agriculture, forestry, mining and energy. And he was a founding member and spent 15-years of his life working for the world's largest environmental activist organization,.. Greenpeace,.. which is an interesting story in itself that we'll hear about shortly.

Karen I'll start with you. What is the Pennsylvania Energy Alliance? Who is the Pennsylvania Energy Alliance?

Walsh: The Pennsylvania Energy Alliance is a group of community leaders, scientists, medical professionals, business people and citizens who support nuclear energy and the environmental and economic benefits that it brings to our commonwealth. Our group launched in January of this year and when we launched we released the findings of a statewide poll that was conducted last October that found between 70 and 80 percent of Pennsylvania residents support nuclear energy and recognize how important it is to reducing our dependence on foreign oil and the carbon emissions in our environment. The issue that we're working on right now is advocating for the inclusion of something called nuclear uprates in House Bill 80, which is currently being debated in the General Assembly. Nuclear uprates are state-of-the-art upgrades to existing nuclear power plants, that unlike new construction, are shovel ready, which means they can bring new jobs to our commonwealth right now.

Host: And we're going to be focusing on nuclear energy and what role it gets to play in the future energy mix, but in order to get to that point we need some history. The year was 2004. Our state lawmakers in Pennsylvania enacted what is called the Alternative Energy Portfolio Standards Act, or AEPS. What is its purpose?

Walsh: What that does is it mandates by 2020 that Pennsylvania electricity customers must purchase a certain percentage of their electricity from legislatively approved sources, such as wind, solar and clean coal technology. And this law is important because it provides a strong and important incentive for the development of alternative energy sources, which are very expensive. And the Pennsylvania Energy Alliance supports that. We support anything that helps lower energy prices, reduces the carbon in our environment and enhances the reliability of our electricity. So we are supportive of all of that.

Host: I sense a big "however" in your voice though Karen. So here we are 2009 now and legislation currently being considered on Capitol Hill called House Bill 80, which essentially is updating AEPS. It includes amendments that would substantially increase the percentages of wind, solar,.. it even adds clean coal technology to the environmentally beneficial resource list. "However",.. Karen:

Walsh: What we are advocating right now is for nuclear to be included in House Bill 80. As it currently exists right now, nuclear is excluded from this menu of legislatively approved energy sources, and we don't feel that is wise considering nuclear energy produces over 34 and a half percent of Pennsylvania's electricity. Nationwide, nuclear energy produces over 70 percent of the country's carbon-free electricity. We support including nuclear because it is the most reliable source of alternative energy. We are supportive of wind and solar, but by definition it just does not have the proven technology and the reliability of nuclear.

Host: OK, so we have the original AEPS Act. We're now looking at House Bill 80 to update that Act and you want nuclear energy to be part of the House Bill 80 amendments to AEPS. But we're not talking all nuclear energy here are we Karen? We're talking about something called nuclear uprates, a term that we used at the beginning of the program in the title that many may not be familiar with. Please explain.

Walsh: The Pennsylvania Energy Alliance supports allowing nuclear energy plants to make very, very expensive modifications to existing plants to increase their output. So we're not talking about including all nuclear in this legislation. If a nuclear energy company is going to invest hundreds of millions of dollars to upgrade their equipment to increase the amount of electricity they can produce, then that incremental power should be allowed as part of the Alternative Energy Portfolio Standards Act. So by including nuclear uprates in House Bill 80, we could increase the output at Pennsylvania's existing nuclear power plants by up to 20 percent, we could decrease carbon emissions and we could lower wholesale electricity prices. Because of its reliability, nuclear energy mitigates and moderates the price of electricity that all consumers pay. It's just a simple supply and demand equation. And because nuclear is what they call a baseload source of power, which can operate around the clock, that reliability helps moderate the price that all consumers pay.

Host: And maybe we can get one of our nuclear men involved here in the discussion for maybe a more technical view on nuclear uprates. Dr. Remick,.. uprates,.. as Karen said, not building new but updating or upgrading existing plants?

Remick: That's correct. A power uprate is just that. You're increasing the power level of the reactor so that you can generate more electrical energy from the same plant at usually a relatively small cost compared to building a new plant. Back when the plants were designed and went into operation, the computer codes and things that are used to calculate the safety of the nuclear power plant from the standpoint of, how high can the temperatures go without damaging the fuel and so forth, were very conservative. We call them deterministic. They were based on the best engineering knowledge and judgement at that time. Since that time we've gained a lot of experience in operating nuclear power plants and the codes that are used to calculate and design the plant are much, much better and they're more realistic. And so one, through use of modern code, can find out that the safety factor in the plants is greater than might have been anticipated from just our deterministic approach. And so you can produce more power. Or maybe the plants just need a larger turbine generator to generate electricity. By installing that you can produce more power from the reactor and feed it to the turbine generator. So it's just a matter of getting more electricity, more energy out of the operation of the same plant.

Host: Karen you wanted to add something?

Walsh: There is a nationally recognized energy consulting firm known as Bates-White,.. and they did a study of the Peach Bottom nuclear plant in York County,.. and they examined what the effect would be of increasing the output at Peach Bottom alone by 20%. And they estimate that allowing this uprate, increasing Peach Bottom's output by 20%, would save Pennsylvania consumers about 130 million dollars a year in electricity costs. In addition to the economic benefit, the environmental benefit of increasing the electricity by 20%, because it is carbon-free, zero emissions,.. the environmental benefit of that increase would be equal to removing 700,000 cars from Pennsylvania roadways.

Host: Karen what you just said is a great lead-in to what I want to talk about next, but before we go any further I do want to mention that if you would like to explore the issue further, you can find plenty of good information at the Alliance website, www.paenergyalliance.com. Now we've defined the issue at hand, but what about nuclear energy itself. What's liked about it, and even what some don't like about it. So enter Dr. Patrick Moore. Dr. Moore you have an incredibly interesting resume but one thing in particular stands out above all others,.. from a founder and fifteen year member of the environmental group Greenpeace, to an advocate for nuclear energy. What happened?

Moore: Yes and it's unfortunate that it seems to be contradictory because in fact I think we actually made a really big mistake back in the early days of the movement, back in the 70's and 80's when Greenpeace was campaigning against nuclear energy, along with nuclear weapons. We made the mistake of lumping them together as if everything nuclear was evil, when in fact it's clear that there are beneficial uses of nuclear technology, one of which is nuclear medicine. Nobody would ever lump nuclear medicine in with nuclear weapons and yet nuclear medicine uses radioactive substances in order to diagnose and treat millions of people. Those medical isotopes are produced in nuclear reactors. There's no reason therefore not to use nuclear reactors to make energy. Energy is something we all need. Electricity is basically essential for civilization at this point in history. We can make energy clean with nuclear power. My transition from being opposed to nuclear energy, to being in favor of it, had a lot to do with losing my fear of nuclear energy. I was just like so many other people. I think it was the fear of nuclear war and nuclear holocaust, that everything nuclear was associated with destruction, when in fact if you actually look at the reality of the situation, the nuclear plants and even the used nuclear fuel, or nuclear waste which people tend to call it, even though it really isn't the right thing to call it because most of it can be recycled,.. they're not hurting anybody. There's no one being injured by nuclear power in the United States. And if you look at other areas of our life, like driving around in cars for example, a lot of people are being killed and injured by that technology. That's what we should be afraid of, not nuclear power. So losing my fear of nuclear energy was really what tipped the scales and caused me to realize that this was actually one of the most important energy sources for our future.

Host: So it's not that you totally disagree with the Greenpeace organization and many of the issues it fights for, but you just saw a split coming with nuclear energy.

Moore: It's not as if I'm in favor of resuming nuclear testing or killing whales. I'm totally onside with all those issues and we did really good work, but we made a big mistake on nuclear power and they've allowed themselves to adopt positions which I don't agree with. These are decisions that they've taken since I left, but I could sort of see the writing on the wall. But today the biggest contradiction of all is that nuclear energy is producing 75% of the clean energy in the United States and yet is rejected as a future energy source by the same people who are concerned so much about climate change. There's a complete disconnect here from a logical point of view. There's absolutely no sense to it whatsoever and yet they're still clinging to these very outdated positions on energy technologies.

Host: What were some of the things you saw in nuclear energy that made you switch teams?

Moore: Well first of all the actual invention of nuclear energy ... being able to produce electricity with uranium,.. is one of the highest achievements of science in the history of human civilization. It is like tantamount to a miracle that a tiny little amount of uranium can be put into a reactor and produce so much power,.. and do it in such a way that there is no air pollution being emitted, that there is no CO2 being emitted from the reaction. Of course the full life cycle of nuclear has a very small amount of CO2 because you have to use trucks to mine the uranium and stuff like that, but when you look at the overall life cycle it's around 2% of coal. So it's really negligible in terms of its greenhouse gas contribution. And it is capable of replacing large baseload power plants that are otherwise producing a lot of CO2 today. It is a very, very important element of the future of our energy and it doesn't compromise the environment in the way that other technologies do. It is a very small footprint on the land. When you think of how much power it produces, it doesn't use that much material. Most people don't realize it. It takes about five times as much steel and concrete to get the same amount of power out of a wind farm as it does out of a nuclear plant.

Host: Dr. Remick,.. nuclear energy,.. what's good about it?

Remick: There are several advantages. One, it is definitely now a proven technology. It exists in many countries of the world. I'm sure you know that France gets close to 80% of their electricity from nuclear so they're less dependent on oil imports and the burning of coal and things like that. Uranium is essentially quite abundant and if we ever run out of uranium, which we'll never see in our lifetime or our grandchildren's lifetime, there's something else called thorium, which could also be converted to nuclear fuel fairly readily. So we have a lot of it in the United States. It's a domestic supply. The volume of material that it takes,.. I mean a tiny amount of uranium and so forth,.. has a tremendous amount of energy. Not only that, the waste products are much, much smaller in volume and quantity. Currently in the United States it's the cheapest form of producing electricity. And of course the one big advantage you hear about, no greenhouse gases.

- Host: All strong argument from both of you gentlemen. Clean, no harm to the environment, cost-effective, reliable. Let's touch on a few of the arguments in greater detail. No doubt building new nuclear plants is very costly. But we're talking about nuclear uprates, where enhancements are made to existing facilities in order to produce more electricity. Dr. Moore, a costly proposition as well?
- Moore: This applies to many things in our civilization. For example, if you build a building and you don't put any insulation in it, it will cost you less to build a building, but the operating cost of that building will skyrocket for your heating and cooling bills. So it's worth paying for the insulation up front. The same thing is true of nuclear power. It's worth paying a large amount of capital expense in order to get a machine that is going to last for 60 or 80 years, producing energy at a very low cost, because the actual cost of production of nuclear energy is along the same lines as the least expensive hydroelectric and coal. It's good, clean baseload energy at a reasonable price and we need to understand that and be willing to basically pay the cost up front in order to get that long-term, clean energy in the future.
- Host: Karen jump in here. Dr. Moore mentioned something called baseload power. I'm thinking it has something to do with the reliability factor.
- Walsh: Wind and solar, hydroelectric power, they all provide clean energy, but they can't provide the reliable, continuous flow of energy that nuclear power can. None of them can even come close to the kind of capacity factor that nuclear operates at.
- Moore: It's really important, and this distinction isn't made often enough, that solar and wind are not even in the same category as nuclear as baseload power. Solar and wind are intermittent sources of power and they disappear for three or four days at a time sometimes,.. when it's cloudy and at night with solar, and when the wind doesn't blow with wind. And very often you have nothing coming from these two resources. It is extremely expensive. That is the real problem with these alternative renewables, especially solar. If you look at Germany, where they have a formal solar power program, which is what's called a feed-in tariff, the utilities are required to pay 50 euro cents a kilowatt hour, i.e. about 70 to 75 cents U.S., for a kilowatt hour at the point of production. That is like twenty times the price of nuclear energy. It is completely ridiculous in that sense and you could be spending that money on energy technologies that are not intermittent and that are far less expensive. Wind makes more sense on the grid but it too is expensive. And as I said, when the wind stops blowing you have to have something to back it up and that has to be a reliable source of power like a nuclear plant that you know is going to be there for you. Because we cannot possibly run factories and hospitals and schools and our lives on energy resources that disappear for three or four days at a time. You have to have reliable energy in order to have a grid where people can plug in when they want to and get power.
- Host: One of the big arguments against nuclear energy is the waste materials it creates. What do we do with all the waste?

Moore: In the first place the amount of nuclear waste is not that much. All the nuclear waste that has been produced in fifty years, in the 104 plants that are operating in the U.S. today, would cover one football field twenty feet deep. That's all it is. It's a small amount of material. And in addition to that, 95% of that can be recycled back into fuel again. The French have been doing it for thirty years. Then the true waste, which is the fission products, have a much shorter half-life. The longest lived ones have half-lives of thirty years. They are easily stored. They are basically put into glass. You melt sand, which is what glass is made of, silicon dioxide, pour the fission products into it, cool it, and it solidifies so that you basically have got the fission products embedded in a rock. Then you encase that with stainless steel and concrete and put it in the ground in a silo where it will remain for 300 years until all of the fission products have decayed. Meanwhile, you're able to get twenty times as much energy out of that fuel as you could in the first place. So rather than looking at the stored used nuclear fuel as some kind of threat or danger or just a waste product, we should be looking at it as one of the valuable future energy resources we have. And it's domestic. It's here in the country. Even if the original uranium was imported from outside, once it's here it's enough fuel to last for hundreds of years. This is what people have to understand. They should look at this as a precious future resource, not as something they should be afraid of.

Host: And speaking of being afraid, that's the other big argument against nuclear energy, it's not safe. Dr. Remick, nuclear will probably always have a certain stigma attached to it because of the events that occurred at Three Mile Island and Chernobyl.

Remick: The TMI accident scared a lot of people. Nobody was injured, but it scared a lot of people and scared some utilities because it cost the utility a fair amount of money. Then the Chernobyl accident in Russia happened. But of course the answer to that is we don't have any facility in the United States or the western world like what the Soviets built and so forth. The plants that we have in the western world are much, much safer, designed to, if there is an accident, to contain any radioactivity just like was done at Three Mile Island.

Host: So what do you say to those who say it's not safe?

Remick: Well I just ask them to look at the record. I mean the fact that there are 104 plants in the United States producing a tremendous amount of electricity, currently doing it at the lowest cost of electricity, and there is no member of the public that has been injured or killed by the operation of those plants. So what do they mean it's not safe? As I say I challenge to find any other way of producing electricity, including wind power and solar and so forth, in which there aren't possible adverse effects. So I think it's just a matter of looking at the record and trying to understand. I'm not saying it's not a technical type of operation. It requires very skilled and knowledgeable people in general. But you have to look at the record.

Host: Karen where do we stand now with public opinion concerning nuclear energy? It used to take a beating I believe, especially here in Pennsylvania, home of Three Mile Island, but that was years ago. Wasn't there a recent statewide poll conducted in Pennsylvania? What did that show?

Walsh: 82% of respondents in a survey last fall said they believe nuclear power is important to meeting our energy needs. Over 80% believe that nuclear power is a reliable source of electricity. 73% believe that nuclear power will lead the country to greater independence from foreign energy sources. And we asked specifically if people lived near any of Pennsylvania's nuclear energy plants, and even among those who did, three-fourths of those surveyed had a favorable opinion, not only of the plant in their neighborhood, but also of nuclear energy. So there really is a realization that after almost 50 years now, over 50 years of nuclear energy in Pennsylvania, that it is a safe, reliable way to provide electricity.

Host: Karen just a few minutes left. We did mention it towards the beginning of the program. I do want you to restate the Pennsylvania Energy Alliances' stand concerning House Bill 80 and the amendments it proposes to the Alternative Energy Portfolio Standards Act.

Walsh: The goal was to expand the menu of options for where we got our electricity. It was a laudable goal to include alternative sources, which we do support. We are a clean energy alliance. We are very supportive of nuclear, but we are also supportive of clean coal, wind and solar. We just want to make sure that nuclear is included in the mix. And so right now our challenge is to educate lawmakers so that they understand that the law as written, though laudable, provides a disincentive to the most reliable and proven method of producing electricity in Pennsylvania,.. to make the necessary improvements in their plants to provide more clean energy for Pennsylvanians.

Host: Dr. Moore do you agree that nuclear uprates need to be included in House Bill 80?

Moore: Up until now the word renewable has been the key word in all of these alternative energy portfolios. And renewable isn't something magic. What we're looking for here is clean and sustainable, and those are not necessarily the same as renewable. Nuclear energy is not renewable, but it is extremely sustainable, not only from a fuel point of view, because there's thousands of years of uranium and thorium resources in this world that can be used as nuclear fuel, but it's also extremely clean and cost-effective. Now I would say that solar energy is not sustainable and that is because it costs too much money. There's no way that people are going to accept it once they realize, as more and more solar is built, what it's doing to their energy bills. Although then they'll end up blaming the utilities instead of the politicians who passed the act that puts in so much solar power. The thing is, people mix up the words renewable and sustainable and clean and green, as if they all mean the same thing when they really don't. What we're really looking for is clean, sustainable energy that we know will last long into the future. Why shouldn't nuclear be included in a clean energy or alternative energy portfolio when the objective of doing so is to reduce CO2 and air pollution from fossil fuels primarily? So if nuclear fills the bill in terms of what this legislation is trying to achieve, this can be done far more cost-effectively and provide baseload reliable power which wind and solar simply can't do.

Host: Including nuclear updates in House Bill 80 seems like a no-brainer. Why the fight?

Moore: There is a very vociferous minority of people who are strongly anti-nuclear. It's almost like a religious cause to these people. Whereas two-thirds of the American public support new nuclear energy, it should be a no-brainer that it moves forward without a fight, but unfortunately the politicians are not necessarily as advanced in their thinking on this as the general public. They still see that there is a down side to being in favor of nuclear energy because of this vociferous minority. They're afraid of it. And I think they've got to get some courage and some leadership here and move forward on this because it's the right thing to do. There's simply no doubt about it. You can analyze it left, right and center, it is obviously the right thing to do. And yet there is a political hesitation on the part of some leaders because they've got the majority of people on their side, and many, many people will applaud them if they have the courage to come out in favor of nuclear power instead of being afraid of it.

Host: Karen Walsh, Dr. Forrest Remick, Dr. Patrick Moore, thank you. For more information on Nuclear Updates-Lower Cost, Emission Free Electricity, visit www.paenergyalliance.com. Make your own informed decision. For InfoPoint PA, I'm Craig Rhodes.

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