

The PRESIDING OFFICER. The clerk will call the roll.

The bill clerk proceeded to call the roll.

Mr. DODD. Madam President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. DODD. Madam President, I ask unanimous consent that during today's session the recess time for the caucus luncheon period and any period of morning business be counted postcloture.

The PRESIDING OFFICER. Without objection, it is so ordered.

RECESS

Mr. DODD. Madam President, I ask unanimous consent that the Senate stand in recess under the previous order.

There being no objection, the Senate, at 12:21 p.m., recessed until 2:15 p.m. and reassembled when called to order by the Acting President pro tempore.

FAMILY SMOKING PREVENTION AND TOBACCO CONTROL ACT—MOTION TO PROCEED—Continued

The ACTING PRESIDENT pro tempore. The Senator from Tennessee.

NUCLEAR POWER

Mr. ALEXANDER. Mr. President, 1 year ago I went to the Oak Ridge National Laboratory in Tennessee to propose a new Manhattan Project to put America on the path to clean energy independence. The project would focus on seven grand challenges: plug-in electric cars and trucks, carbon capture from coal plants, making solar power cost competitive; recycling used nuclear fuel, advanced biofuels from crops we don't eat, green buildings, and fusion. Last week I went back to Oak Ridge, spoke to a gathering, a summit of people from several States who were meeting to talk about how to attract and keep high technology jobs. I proposed that the United States should build 100 new nuclear plants during the next 20 years, while scientists and engineers figure out the grand challenges I discussed 1 year ago. This would double America's nuclear powerplants which today produce 20 percent of all of our electricity and 70 percent of our pollution-free, carbon-free electricity. This is an aggressive goal. But with Presidential leadership, it could happen. I am convinced it should happen. Conservation and nuclear power are the only real alternatives we have today to produce enough low-cost, reliable, clean electricity to clean the air, deal with climate change, and keep good jobs from going overseas. Climate change may be the inconvenient problem of the day, but nuclear power is, for many skeptics, the inconvenient answer. These nuclear skeptics cite regulatory delays and past problems with safety. They appoint commissions

to slow walk decisions about recycling used nuclear fuel. They point to the shortage of welders for new plants. They complain that Japan and France are building most of the essential equipment for new nuclear plants. No surprise, since Japan is building 1 nuclear plant a year, and France is producing 80 percent of all of its electricity from nuclear powerplants. The skeptics say that carbon from coal plants contributes to climate change, which is true, and so they offer their solution: operate our big complex country, which uses 25 percent of all of the energy in the world, on electricity generated from the wind, the sun, and the Earth. One day that might be possible. But today there is a huge energy gap between the renewable electricity we wish to have and the reliable, low-cost electricity that we must have. My guess is, it will be 30 or 40 or 50 years before these new sources of electricity are cheap enough and reliable enough to supply most of the power to our electric grid.

The nuclear skeptics in Congress, urged by the President, reported last month an energy and climate change bill that would require 20 percent of our electricity to be made from a very narrow definition of renewable energy. My visit to Oak Ridge was to a gathering to discuss how to attract and keep high tech jobs in the region. I tried to paint a picture for those attending about how this legislation would affect those who attended.

To put things in perspective, the Tennessee Valley Authority produces an average of about 27,000 megawatts of electricity for industrial and household customers in our seven-State region. Sixty percent comes from coal, 30 percent from nuclear, 8 percent from hydroelectric power, and 1 percent from natural gas. Across the country, it is 50 percent coal, 20 percent nuclear, 20 percent natural gas, and 6 percent hydroelectric power. Nationally, only about 1½ percent of electricity comes from the Sun, the wind, and the Earth. Almost none of the TVA's power does. But the 40 percent of TVA power that comes from nuclear and hydro plants is just as clean as these narrowly defined renewables. It is free of pollution that dirties the air, and it is free of carbon that contributes to global warming. In that sense, TVA is the sixteenth cleanest utility in the country already.

Here is another yardstick. The new nuclear powerplant at Watts Bar in Tennessee can produce 1,240 megawatts of electricity. The Bull Run coal plant produces about 870 megawatts; the Fort Loudoun Dam, 150 megawatts. All three operate almost all the time. This is called base load power, which is important since large amounts of power can't be stored. Some forget that solar power is only available when the Sun shines and wind power is only available when the wind blows.

So how much renewable electricity is available in our region? The new solar plant our Governor Phil Bredesen has

proposed in Haywood County would cover 20 acres but produce just 5 megawatts. The 18 big wind turbines atop Buffalo Mountain, a few miles away from where I made my speech, have the capacity to produce 29 megawatts but actually produce only 6 megawatts. It may be also possible to squeeze a few hundred megawatts from turbines in the Mississippi River. The Southern Company's new biomass plant in Georgia—biomass is sort of a controlled bonfire of waste wood products—would produce 96 megawatts. All this for a utility that needs 27,000 megawatts to operate at any given time.

Each of these sources of renewable energy consumes a lot of space. For example, the big solar thermal plants in the western desert where they line up mirrors to focus the Sun's rays take more than 30 square miles—that is more than 5 miles on a side—to produce the same 1,000 megawatts that one can get from a single coal or single nuclear plant that sits on one square mile. Or take wind, to generate the same 1,000 megawatts with wind, one would need 270 square miles. That is 16 miles on a side. An unbroken line of wind turbines 50 stories high from Chattanooga to Bristol would give us only one-fourth of the electricity we get from one unit of the Watts Bar nuclear powerplant which fits on one square mile, and we would still need the nuclear powerplant for the times when the wind doesn't blow. There is good reason why there is only one wind farm in the entire southern United States. In our region, the wind blows less than 20 percent of the time. Much of that time is at night when TVA already has several thousand megawatts of unused electricity.

Biomass will be a renewable source that we will emphasize in the South, we are told. That's a good idea. It might reduce forest fires, and it will conserve resources. The National Forest Service told us last week that there are 2 million tons of wood scraps and dead trees in Tennessee's forests, and pulp and paper companies might produce another 2 million tons. That sounds like a lot. But let's not expect too much. We would need a forest the size of the entire 550,000-acre Great Smoky Mountain National Park to feed a 1,000-megawatt biomass plant on a sustained basis. That is a plant that would produce as much electricity as one nuclear power unit.

Think of the energy it is going to take to haul this around. Georgia Southern says it will take 160 to 180 trucks a day to feed biomass into a 96-megawatt electrical plant. Remember, TVA uses at least 27,000 megawatts of electricity every day.

Of course, conservation and efficiency are the places to start when looking at America's and, especially, Tennessee's electricity futures. Tennesseans use more electricity per person than residents of any other State. If we reduced our use to the national