The Big Blackout and Amnesia in Congress:

Lawmakers Turn a Blind Eye to the Danger of Nuclear Power and the Failure of Electricity Deregulation

The Northeast and Midwest blackout of 2003, the largest power outage in North American history, calls attention to the chaos that deregulation has wrought on the continent's power grid, in terms of both the opportunistic, relentless profit-seeking of energy traders and the heightened vulnerability of nuclear power reactors, 21 of which were immediately shut down when the blackout hit. The blackout should serve as a wake-up call, spurring legislators to pursue an energy policy that prioritizes safe, clean, sustainable energy sources; strengthens regulation; and places the energy needs of citizens above the endless corporate quest for profits.

Sadly, though, congressional lawmakers seem to have suffered a collective blackout of their own, forgetting the spectacular failure of electricity deregulation (epitomized by the California energy crisis), which was the prime culprit of the blackout, and denying the serious risks of nuclear power. The omnibus energy bills recently passed in both houses of Congress actually *further* electricity deregulation, repeal consumer protections and, in addition, provide huge taxpayer-financed incentives for the development of more nuclear power stations. Ironically, electricity deregulation was once touted as the antidote to expensive government support of inefficient and over-budget nuclear plants such as Grand Gulf in Mississippi constructed under regulated markets; now, however, deregulation is being coupled with obscene federal subsidies for the development of new nuclear reactors.

Unfortunately, many policymakers and politicians have misidentified the cause of the blackout, ignored one of its most serious effects, and offered as a solution massive legislation that would only make the situation worse. Although there are problems with many facets of the nation's energy system, many of the deficiencies that have been highlighted since the blackout are either non-existent (such as the alleged shortage of electricity capacity) or have been mischaracterized.

In this report, Public Citizen analyzes one of the most serious and immediately dangerous effects of the blackout: the unreliability and heightened vulnerability of nuclear power reactors. Furthermore, we trace the cause of the blackout to the chaotic effects of electricity deregulation. Finally, we consider the folly of the pending omnibus energy legislation in Congress, which completely fails to provide the most appropriate legislative prescription for the problem: the strengthening of electricity regulations and consumer protections, coupled with investment in safe, renewable and reliable electricity generation and distribution systems.

THE BLACKOUT DEMONSTRATES THE UNRELIABILITY, VULNERABILITY, AND DANGER OF NUCLEAR POWER REACTORS

Unfortunately, some nuclear industry cheerleaders are opportunistically exploiting the blackout to promote further reliance on the inherently unsafe, unreliable and polluting technology of nuclear power. As usual, they espouse nuclear "solutions" to nearly every problem, while turning a blind eye to the myriad problems caused by the nuclear industry itself. Sen. Pete Domenici (R-N.M.), chairman of the Energy and Commerce committee, and a staunch supporter of nuclear power, issued a statement after the blackout in which he claimed:

> This outage clearly demonstrates how close the nation is to its energy production and distribution limit. […] Ensuring the proper level of power to the country demands that we make trade-offs, *including…greater use of such sources as nuclear energy…* [Emphasis added]

In the aftermath of the recent blackout, it is important to consider the enormous risks and reliability deficiencies of nuclear power. The unique dangers of nuclear power were exacerbated by the huge power outage: 21 nuclear reactors—which are, ironically, dependent upon off-site power—were forced to shut down in the U.S. and Canada. Power loss from the grid forces nuclear power stations to resort to emergency generators for basic safety operations while in shutdown mode—a contingency operation that presents a whole host of new risks for the plant. Power outages, especially on a grand scale, put already-vulnerable nuclear facilities at an even greater risk of serious accident.

An Ever-Present Vulnerability: The Country's Nuclear Power Plants are Disintegrating

Our country's nuclear reactors are crumbling and most efforts to repair them are akin to putting a finger in a leaking dike. Nonetheless, the U.S. Nuclear Regulatory Commission (NRC) has granted operating license renewals (for 20-year extensions to the initial 40-year license terms) to all 16 reactors that have submitted applications—even though most of these reactors have operated for fewer than 30 years. Considering the intrinsic dangers and vulnerabilities of nuclear power, and the grave consequences that can result from any malfunction—be it a technical glitch or a human error—the most reliable thing that a nuclear plant can provide is danger. Irresponsible management and regulators that cater to the industry do not help.

Consider the dangers that exist when everything is operating normally; they are only exacerbated during a blackout. Nuclear power plants operate under enormous pressure, heat and stress, in addition to the unique interactions that radiation causes within the plants' complex array of parts. This partially explains why so many U.S. reactors are perpetually at risk of a serious accident, long before their initial 40-year license term has ended. From steam generator tubes to emergency cooling pumps to reactor vessel heads (top and bottom), there is a constant supply of crises:

- The degradation and rupture of steam generator tubes at nuclear reactors has been a problem at U.S. reactors since at least 1975, when there was a spontaneous tube rupture at the 5-year-

old Point Beach reactor in Wisconsin. The NRC describes steam generator tubes as serving "an important safety role because they constitute one of the primary barriers between the radioactive and non-radioactive sides of the plant. For this reason, the integrity of the tubing is essential in minimizing the leakage of water between the two 'sides' of the plant."[i] Steam generator tube rupture can "cascade," wherein a break in one tube triggers ruptures in adjacent tubes. If severe, a cascade could precipitate a nuclear meltdown at a reactor. At a 1988 conference, former NRC Commissioner Kenneth Rogers, speaking about the effects of aging U.S. nuclear plants, said: "Degradation (of the steam generator tubes) would decrease the safety margins so that, in essence, we have a 'loaded gun,' an accident waiting to happen."[ii] Nonetheless, neither the industry nor the NRC has been able to adequately address the problem, and the Indian Point 2 reactor—only 35 miles from Manhattan—experienced a serious steam generator tube failure in February 2000.[iii] Reactors shut down from the recent blackout that have had tube ruptures include Indian Point 2, Indian Point 3 and Ginna—all in New York. Such a rupture occurring prior to a blackout would place a heavy burden on emergency backup systems, increase the chance of meltdown and further tax plant emergency crews. At least 16 steam generator tube ruptures have occurred since the first in 1975.

- The cracking, leaking and acid-caused degradation of reactor vessels and connected components have been a known issue at nuclear reactors for at least 15 years. In March 1987, workers at the Turkey Point 4 reactor in Florida discovered that a small amount of boric acid had corroded the reactor vessel head (the "lid" of the reactor that contains the enormous radioactivity and pressure inside). Since that time, similar cracking, leaking and acid corrosion of reactors have occurred at many plants in the U.S., including Salem, San Onofre, Arkansas Nuclear One, Fort Calhoun, Calvert Cliffs, Three Mile Island, Sequoyah and Comanche Peak, among others. With both the industry and the NRC failing to adequately address the problem, a much-delayed inspection in March 2002 at Ohio's Davis-Besse plant uncovered a football-sized corrosion hole in the reactor's head. (Davis-Besse is owned and operated by FirstEnergy, the company suspected by analysts and state officials to be responsible for an initial trigger of the recent blackout. On September 8, Davis-Besse will celebrate a plant record of 570 consecutive days without producing power, at a cost of over $500 million.) The acid had bored through over 6 inches of carbon steel; less than a quarter inch of stainless steel was all that prevented a serious loss-of-coolant accident at the reactor—an accident that can lead to meltdown. The seriousness of this brush with disaster shook the nuclear industry worldwide.

- After years of cutting corners, ignoring problems and cutting deals with the NRC to delay necessary inspections and repairs, FirstEnergy had to bite the bullet and replace the entire reactor vessel head (the cost of which will possibly get passed on to ratepayers). Other additional problems have since been rediscovered—including the lack of a thorough "safety culture," as documented by the NRC's Inspector General in a December 2002 report —that have kept the plant shut down. On July 30, the NRC issued to the FirstEnergy Nuclear Operating Company (FENOC) an "integrated inspection report" that included a preliminary "yellow" finding, representing a problem of "substantial safety significance" (second only to a "red" finding of "high" safety significance on the NRC's color-coded scale) regarding the reactor's emergency core cooling system. The NRC cited the company with a failure to

"adequately implement design control measures" to correct known problems with its emergency cooling systems. The NRC noted that metal screens that filter recirculated cooling water in the event of a loss-of-coolant accident—the type of accident that nearly occurred at Davis-Besse—could be blocked by debris that is frequently found in the emergency core cooling system. Such a blockage could lead to a core meltdown. A similar problem had plagued another type of U.S. nuclear reactor, and its potential occurrence at pressurized water reactors (PWRs) has been known for over 10 years; a structural problem at one PWR concerns all 69 PWRs like Davis-Besse.

The Blackout of 2003 Could Have Been MUCH Worse

We know that even the normal functioning of a reactor is fraught with danger, and there is a constant risk of yet another unforeseen, undiscovered or ignored problem leading to a disaster. A close, critical examination of the vulnerabilities in the emergency infrastructure of nuclear plants reveals the great danger posed by blackouts like the one just experienced.

Malfunctioning Emergency Diesel Generators

What exactly happens to a nuclear power plant when the power goes out? First, when a plant loses offsite electrical supply, it automatically shuts down or "scrams." (One engineer likened this to applying the clutch to a car moving 60 miles per hour.) It must then connect to another source of electricity to keep coolant circulating to prevent the reactor core from overheating and causing a meltdown. All nuclear power plants maintain several diesel-powered backup generators on site for use in the event of power loss, but sudden reliance on backup diesel generators is less than reassuring, as the following case studies illustrate.

In the past 12 months—from September 2002 to August 2003—there have been 15 reported instances in which emergency diesel generators have been declared inoperable. In seven cases, when such a failure brought a plant below the required number of backups, a complete shutdown of the plant was required; on four of these occasions, all backup generators failed at once. In April 2003, the Cook nuclear power plant in western Michigan shut down when emergency water flow to all four diesel generators was blocked by "an influx of fish on the intake screens."[iv] Cook also shut down in January when one of its two emergency generators was inoperable for over 72 hours.[v]

In all, four of the nine plants affected by the blackout have shut down in the past year because of problems with backup generators: New Jersey's Oyster Creek, situated between New York City and Philadelphia; Nine Mile Point in New York state; Indian Point, located on the outskirts of New York City and the subject of tremendous controversy over problematic evacuation plans; and Fermi, located only 30 miles from Detroit. On February 1, 2003, all four backup generators at Fermi were simultaneously declared inoperable when a diesel fuel spill caught fire. All four backup generators had similar fuel drain configurations, making them equally prone to such leaks and fires. The generators had to remain off-line for several hours while they were reconfigured to avert future catastrophes.

Without emergency generators, steam and battery power provide a "last chance" means to cool a reactor and stave off a meltdown. The batteries can operate for between two and eight hours; but in the recent blackout, Detroit did not see full power returned until Saturday, August 16, over 36 hours after power first went out. Had the emergency generators failed during this timeframe—as they did in the aforementioned situations—a nuclear meltdown and widespread radioactive release is rendered not at all beyond possibility.

Emergency Sirens and Evacuation Plans

If the blackout had caused a meltdown or other severe accident, it appears that many of the emergency sirens in place to alert officials and the public would not have operated because of a lack of power. In "event reports" submitted to the NRC in the hours after power was lost, the Indian Point and Ginna nuclear stations (both in New York) noted that many of their emergency sirens would have been rendered impotent due to the blackout, and at least 25 percent of the sirens covering the area around the Ginna plant were inoperable. In the case of Indian Point, the sirens in four surrounding counties—including the densely populated Westchester County, with nearly 1 million people—would have failed, leaving the region in a tragic state of ignorance in the event of a meltdown.

It is a terrible irony that power outages, which have so much potential to cause accidents at nuclear power reactors, also disable the emergency alert sirens designed to notify the public of danger. On April 4, 2003, five nuclear power stations in New York and Wisconsin reported that more than half of their emergency sirens were not working due to power outages. (Interestingly, on that same day, the operators of the Monticello nuclear power station in Minnesota reported that some of their emergency alarms were inadvertently actuated.)[vi]

Problems with emergency sirens are not uncommon and are not limited to failure due to a loss of power. In fact, on the very same day of the big blackout—though completely unrelated—the operators of the Kewaunee nuclear power station reported that all 13 emergency sirens serving Kewaunee County, Wisconsin, were rendered inoperable due to a "communications problem." Nearly 70 percent of the "coverage population" would have been left in the dark if there were a serious accident at the plant.[vii]

Since the beginning of this calendar year, plant operators have filed 43 event reports with the NRC regarding emergency siren problems, which range from inadvertent actuation to disablement due to power loss. More than 50 percent of the reported problems since January were due to mere power outages. Twenty of the reports in that time span cited equipment failure or malfunction.

At some plants, problems with emergency sirens are perpetual. In the past eight months, the Indian Point nuclear power station has reported 10 separate instances of siren disablement due to either power loss or equipment failure.

In the event that there is an emergency at a reactor, and even if the sirens do function properly, will the public know what to do and where to go? A disturbing example of the inadequacies of such emergency and evacuation plans can be found at the Indian Point reactors, located only 35

miles from Manhattan. There are many reasons to doubt the emergency and evacuation plans for the site. For instance, an independent study was conducted in December 2002 by James Lee Witt, a former director of the Federal Emergency Management Agency (FEMA), to evaluate evacuation plans to be used if a terrorist attack caused radioactive releases from the plant. Witt concluded that the plan was inadequate and that key aspects were simply unfixable. The area's high population density and traffic congestion would necessarily complicate evacuation for New Yorkers and residents from surrounding states, and existing plans naively assume that only persons instructed to evacuate will attempt to do so. Indian Point is situated in the most densely populated area of any U.S. nuclear power plant, and a radioactive release could affect over 20 million people.

Local emergency personnel, who would be risking their lives in the event of an accident or attack, are hardly confident that they would be able to handle the overwhelming problems that would accompany such a disaster. In May, 175 Indian Point-area first responders signed a petition to FEMA and the NRC expressing their concerns that "even [their] best efforts may not be enough to adequately protect the public health and safety of the citizens of this region." They understand that, in the event of a major accident or terrorist attack, chaos would likely reign over the densely populated region.

The four counties that are responsible for implementing the emergency evacuation plan have refused to participate in the annual emergency and evacuation plan certification process, citing concerns by their own emergency officials who doubt that they could implement the plan. The decision by Westchester, Rockland, Putnam and Orange county officials to not participate in the certification received the support of the New York State Emergency Management Office, given New York's "home rule" policy, which defers to the judgments of local municipalities in such matters. Unfortunately, both NRC and the FEMA have pressed ahead and rubber-stamped approval of the plan.

"Spent" Fuel Pools are Highly Vulnerable

A lesser-known vulnerability at nuclear plants is the so-called "spent" fuel pools. The term "spent" fuel is itself a misnomer, since the fuel is only spent in the sense that it can no longer assist in boiling the water to turn the turbines. The fuel is exhausted for that purpose, yet it is still very hot and extremely radioactive—more so when taken out of the reactor than when it is put in. When removed from the reactor core, this irradiated fuel (a more accurate name) is submerged in large pools of water—"spent" fuel pools—in a building adjacent to the reactor for cooling and storage. These buildings are typically just standard industrial constructions, built of concrete blocks and corrugated metal (much less "robust" structures than the still-questionable reactor containment structures) and are thus even more vulnerable to terrorist attacks. In the event of an attack or an accident, these structures would do little or nothing to contain radioactive releases. Depending on the amount of fuel stored in the pools, most of which are fully stocked or overloaded, such a facility has the potential to unleash a disaster at least as great as one originating at the reactor itself.

Shockingly, these fuel pools DO NOT get backup power from emergency diesel generators. When the offsite power goes out, the pool water cannot be re-circulated to prevent boiling,

evaporation, exposure of the fuel rods and, ultimately, a fire and meltdown. The risk of this occurring is greatest when a "fresh" load of fuel has recently been transferred from the reactor core to the fuel pool (most reactors refuel about every 18 months). Suffice it to say that the vulnerability of irradiated fuel pools presents a grave radiation risk to the public.

Nuclear Power Plants Can't Get the Lights Back On

To get the power grid back up and running again after a blackout requires plants that have "blackstart" capability. This means that they are able to start up independently and return power to the grid. Nuclear plants are not blackstart facilities because they must rely on offsite electricity from the grid itself to power up to full capacity. Any backup power systems at nuclear facilities are devoted to keeping the reactor core cool and avoiding meltdown. Backup systems can't provide enough power to fire up the reactor itself. Due to these same concerns, nuclear plants are given first priority to receive electricity once the grid is blackstarted, eliminating their dependence on (demonstrably unreliable) emergency backup generators.

Other sources for generating electricity are typically more flexible, reliable and faster in recovering from a blackout. When a blackout hits, all power plants—nuclear and non-nuclear—go into shutdown mode to prevent further overloading or tripping of the system. The difference among plants lies in their ability to quickly restart in preparation to connect to the grid. Wind farms and hydro generators can restart right away. Natural gas plants might take a few hours. Coal plants can restart in eight hours. A nuclear plant that has not been damaged by a rapid "scram" shutdown triggered by the blackout needs up to 48 hours or more (and that's just for U.S. reactors; Canada's reactors fare much worse). FirstEnergy's Perry nuclear plant—located near the likely epicenter of the blackout in eastern Ohio—suffered damage in 5 percent of its reactor control rods when the reactor was rapidly shut down. Repairs to the control rods delayed the restart. While the rest of the country's grid was back up and running, the Perry plant was down and out.

Canada's Candu Reactors Candidn't

Ontario, the Canadian province affected by the blackout, has found itself regretting its reliance on nuclear for 36 percent of its power. Its cleverly named "Candu" reactors were designed to automatically unlink from the grid in the event of a blackout and then remain in standby mode at 60 percent power, but that isn't what happened during the blackout. Instead, half of the province's 12 operable reactors went into full automatic shutdown, with another four requiring full manual shutdown. Only two of the reactors responded to the grid breakdown as designed, by partially reducing power. With 10 of 12 reactors down, the difficulty of cold-restarting the Candu reactors quickly became evident, as full shutdowns involve a chemical "poisoning" of the reactor process which takes days to dissipate, allowing the reactor to power up.

Power was restored to most of the province by the following Sunday, but a state of emergency remained in place. More than a week after the blackout, five of the province's reactors were still shut down, more than 150,000 federal, provincial and municipal workers stayed at home, and the provincial government urged businesses to restrict operations and asked that heavy industries reduce consumption by half. The economic impact was severe.

THE WRONG CURE: Pending Congressional Legislation Would Exacerbate the Danger of Nuclear Power and the Failure of Deregulation

The blackout has focused public and media attention on the pending omnibus energy legislation in Congress. Each house has passed an energy bill; now these bills must be reconciled in a House-Senate energy conference committee, which will convene in September. The resulting conference report would then be subject to a vote in each chamber. Unfortunately, Congress has chronically misdiagnosed the cause of the blackout; or, more likely, key members are too beholden to the energy industry to stand up to its greed and exploitation. Despite overwhelming evidence that electricity deregulation has failed and nuclear power is unsafe and unreliable—showcased spectacularly in the recent blackout—Congress obstinately continues to promote nuclear power and push for more deregulation.

California, Round Two:
There's No Shortage of Electricity Capacity, Power Plants or Transmission Lines

By next summer, the United States will have a 34 percent reserve margin for electricity generation capacity, indicating a very large surplus of power plants.[viii] This glut of power weakens the Bush Administration's claims that the recent electric blackouts give us a reason to build more nuclear power plants or at least keep the current, dilapidated nuclear fleet running.

The same goes for transmission capacity. At the time of the blackout, the grid was only at 75 percent capacity. Yet, shortly afterward, Secretary of Energy Spencer Abraham claimed that $50 billion in new transmission lines need to be built to relieve bottlenecks, and that consumers should pay 100 percent of the cost. Of course, Abraham didn't say that deregulation precipitated the bottlenecks and strains on the nation's electric grid in the first place. The transmission system was designed to accommodate local electricity markets, not the large, freewheeling trading of electricity and movement of power over long distances under deregulation. Sending power over a much wider area decreases efficiency and burdens a transmission system designed to serve local utilities.

And despite its proponents' claims, deregulation has been no friend to ratepayers. Prices have increased in every deregulated wholesale market: California prices shot up 1,000 percent, electricity prices in New England's wholesale market have increased by nearly 400 percent, and power prices in the Pennsylvania-Jersey-Maryland (PJM) (the mid-Atlantic regional power grid operator) deregulated market have increased as much as 250 percent under deregulation. As a result of these failures, nine states have repealed or significantly delayed their deregulation laws. But deregulation's reliance on markets for infrastructure investment has already devastated reliability.

Deregulation freed utilities from having to reinvest ratepayer money back into the transmission system, instead replacing that orderly planning with reliance on the whims of the free market. But the market—which, by definition, lacks a sound regulatory structure—has not provided utility companies with incentives to make necessary investments in transmission; this is due largely to the loopholes added to the Public Utility Holding Company Act (PUHCA) over the

past decade. PUHCA, notwithstanding its corruption under the influence of big energy companies, is an essential electricity consumer protection that limits the way in which large utilities can invest ratepayer money into non-electricity assets.

But lawmakers, apparently blind to the failure of deregulation (or, more likely, too beholden to industry interests), have targeted PUHCA for elimination, which would weaken regulators' ability to protect consumers of electricity from the market forces that have wreaked havoc upon the system. For Congress, hindsight is hazy at best. This push for deregulation is compounded with efforts to revive the most expensive and least reliable form of electricity generation: nuclear power.

Congress Must Address Deregulation in the Energy Bill

Republican leaders have sought to exploit the crisis to push for regressive measures in the energy bill. Rep. Billy Tauzin (R-La.), chair of the House Energy and Commerce Committee and co-chair of the conference committee, said that the blackout points to "the critical need for Congress to enact a comprehensive national energy bill this year." However, the energy bills approved by the House and Senate not only fail to address electricity reliability, they threaten to make the situation worse.

Both bills will expand deregulation by replacing state jurisdiction over power lines with corporate-controlled Regional Transmission Organizations (RTOs). These larger, multi-state markets will not result in any savings for consumers, but they will make the market even more centralized and will facilitate larger amounts of power being moved over even greater distances. Instead, Congress should be encouraging decentralized power and transmission solutions that keep the infrastructure state-regulated and at the service of local communities.

Moreover, the House bill alters the Federal Power Act's definition of "just and reasonable rates" to permit owners of transmission lines to charge consumers more for the use of transmission lines. But building more lines is not necessary to avoid further blackouts. This provision amounts to a tremendous giveaway to utilities without doing anything substantive to address reliability. Increasing the rate of return for all owners of transmission lines—both existing and proposed—across the board is no guarantee that reliability problems will be addressed. While the rule deregulates transmission by allowing owners to charge whatever price they want, it doesn't provide any guarantee that consumers will enjoy any savings in the future. This is a big difference from the current model in which transmission rates are regulated and consumers are protected.

The House bill also grants the secretary of energy the authority to overrule state concerns regarding controversial transmission line projects. It also grants the federal government the power of eminent domain to seize private land to build the transmission lines.

Only one measure included in congressional energy legislation will actually address the reliability problems with the transmission grid. Both the House and Senate bills mandate and establish enforcement of National Transmission Reliability Standards, an important response to the recent blackout.

But the potential benefit of the reliability provision is thwarted by the full repeal of the Public Utility Holding Company Act (PUHCA) in both bills. PUHCA is an important federal electricity consumer protection that limits the way that large utilities can invest ratepayer money in non-electricity assets. Repeal of PUHCA will result in a wave of mergers, with companies like ExxonMobil likely acquiring utilities. These new, complex companies will have little incentive to reinvest money into historically low-profit assets like transmission lines, and their opaque corporate structures will make it impossible for states and the federal government to truly decipher their finances. PUHCA repeal will therefore lead to an over-concentration within the electric industry, leaving a handful of companies that are largely unaccountable to consumers.

Investors Avoid Nuclear, but Congress Turns a Blind Eye to Safety and Reliability Problems and Pushes More Subsidies

Nuclear power plants have historically proven to be a dicey business investment, at best. A recent DOE report designed to help promote new nuclear plants conceded that "economic viability for a nuclear plant is difficult to demonstrate."[ix] Despite a record indicating that nuclear plant owner/operators tend to prioritize production over safety, take every conceivable shortcut, and avoid essential maintenance and upgrades, the costs of construction and decommissioning alone are still daunting to potential investors.

A May 2003 Congressional Budget Office (CBO) cost analysis of Senate energy bill, S.14 (the energy bill abandoned by the Senate in favor of the energy bill from the 107th Congress)—which, like the House energy bill, would provide loan guarantees and power purchase agreements to finance half the development and construction costs of new nuclear power reactors—warned that "plant operators would default on the borrowing that financed its capital costs" for the construction of the plant. The CBO predicted the odds for such defaults to be "very high – well above 50 percent."

The push in the House and Senate energy bills to build new nuclear power plants will not address the energy problems demonstrated in the blackout; it will only expose the public to greater dangers. Yet the House and Senate energy bills pile on subsidies, including incentives for research and development and tax breaks for nuclear operators. Both bills authorize DOE's *Nuclear Power 2010* program to promote the construction of new nuclear reactors, as well as the *Generation IV* program to develop new reactor designs. The House bill provides $3.2 billion in subsidies for nuclear energy research and development and tax breaks for nuclear operators, while the Senate bill gives away $1.5 billion to the nuclear industry.

Furthermore, both bills reauthorize the Price-Anderson Act to extend federal insurance protection to potential new reactors that get built. The private insurance sector, having made its own economic analysis of nuclear power's risks, refuses to fully cover a nuclear power plant (or individual insurance customers) in case of an accident or terrorist attack. Simply put, if Price-Anderson is not reauthorized, there will be no new nuclear power plants, as no corporation would be willing to shoulder such enormous potential liabilities in the event of a catastrophic attack or accident. The lawsuits and settlements that would certainly follow such an event could easily bankrupt any reactor owner without Price-Anderson in place.

Nuclear plants can only be a lucrative investment for investors when regulatory agencies (such as the NRC) roll over and play dead (or even act as industry promoters rather than regulators) and when legislation lavishes subsidies on the nuclear industries, at ratepayer and taxpayer expense.

CONCLUSION: Current Energy Legislation is a Crass Denial of the Danger of Nuclear Power and the Failure of Electricity Deregulation

The blackout is a spectacular demonstration of the unreliability of nuclear reactors and the failure of deregulation. It also highlights the shocking imprudence of congressional attempts to revive nuclear power and promote more deregulation.

The only things that nuclear plants can always be counted on to provide are radioactive waste and the risk of catastrophic accidents and radioactive releases. Nuclear plants are also an albatross on the power grids, by not contributing to post-blackout grid recovery, but requiring a first-priority input of electricity once the power grid has been recovered. When a blackout does occur, their constant, inherent dangers are multiplied as the plants depend on unreliable diesel generators to avoid catastrophic accidents. If backup systems should fail, it is only a matter of time before disaster strikes. If that should occur, reactor communities must contend with unreliable alarm sirens and inadequate, unfixable emergency and evacuation plans. The problems with nuclear reactors in times of blackouts are an extremely disturbing combination.

And electricity deregulation, which precipitated the blackout, has failed in every regard. It has resulted in higher prices for ratepayers, diminished reliability and a strained transmission system caused by chaotic energy trading. Only the energy industry and its friends in Congress have benefited from the anarchy of a deregulated electricity market.

The only energy crises that the United States faces have been created by electricity deregulation and a foolish refusal to embrace safe, clean, sustainable energy sources. Failure by Congress to pursue this path is utterly pathological, and it puts the American public at a greater risk of more blackouts, higher electricity rates and the danger of a serious accident at a nuclear power plant. Let us hope that this blackout serves to put Congress on alert to cast aside the monied interests and make consumers' access to energy its first priority.

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